Draft

BALLONA WETLANDS RESTORATION PROJECT

Environmental Impact Statement/ Environmental Impact Report

State Clearinghouse No. 2012071090

Prepared for
United States Army Corps of Engineers, Los Angeles District

California Department of Fish and Wildlife, South Coast Region (Region 5)

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DRAFT ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL IMPACT REPORT
BALLONA WETLANDS RESTORATION PROJECT

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Abstract

The Ballona Wetlands Ecological Reserve, located in the City of Los Angeles and partially within unincorporated Los Angeles County, California, is bisected by and includes a channelized reach of Ballona Creek. It is traversed by Culver, Jefferson, and Lincoln Boulevards. What once were more than 2,100-acres of marshes, mud flats, salt pans, and sand dunes currently provides approximately 153 acres of wetland habitat, as well as 83 acres of non-wetland waters of the U.S. (including navigable waters of the U.S.). All aquatic resources within the reserve are degraded. The California Department of Fish and Wildlife (CDFW) proposes a large-scale restoration that would entail enhancing and establishing native coastal aquatic and upland habitats within the Ballona Reserve. The proposal is intended to return the daily ebb and flow of tidal waters where practically feasible to achieve predominantly estuarine conditions, maintain freshwater conditions, and enhance physical and biological functions within the Ballona Reserve. To implement the proposal, CDFW is working with the Los Angeles County Department of Public Works-Flood Control District (LACFCD) to modify Los Angeles County Drainage Area (LACDA) project features (Ballona Creek channel and levee system), a Federal flood risk management project operated and maintained by LACFCD, within the Ballona Reserve.

This Draft EIS/EIR evaluates the potential environmental effects of three alternatives to restore wetlands, other aquatic resources, and adjacent habitats within the reserve (Alternatives 1, 2, and 3) and a no Federal action/no project alternative (Alternative 4) that reflects conditions that would result (including from sea level rise) if no Federal, state, or local discretionary approvals were authorized. To varying extents, each of the restoration alternatives would enhance and create native coastal wetland, other aquatic resources, and upland habitats; improve flood and storm water management in the surrounding area; provide public access and visitor amenities; and modify infrastructure and utilities within the reserve to support the restoration efforts. Alternative 1: Full Tidal Restoration/Proposed Action would be implemented within an approximately 483 acre area and would remove existing levees, create a sinuous (i.e., non-linear) Ballona Creek channel with two primary meander-shaped bends, restore contiguous tidal wetlands and other aquatic resources north of Culver Boulevard, and enhance managed wetlands south of Culver Boulevard. Alternative 2: Restored Partial Sinuous Creek would occur in an approximately 426 acre area. It would realign the channel in a manner similar to Alternative 1, but would only restore full tidal wetlands in a portion of the area relative to Alternative 1. Alternative 3: Levee Culverts and Oxbow would occur in an approximately 163 acre area, but would not remove existing levees (leaving the channel as-is). It would focus restoration efforts north of the channel and west of Lincoln Boulevard. Alternative 4: No Federal Action/No Project would have no active restoration or enhancement and would maintain existing activities and conditions.

Comment Deadline

Comments on this Draft EIS/EIR must be received no later than 5 p.m. on the 45th day following publication of this Draft EIS/EIR. Send comments by email or mail to CDFW or the Corps via the contact information provided above. Comments submitted to one agency will be reviewed by the other agency as well, so comments need to be sent to one agency only.

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KEY DEFINITIONS AND ACRONYMS

The terms listed below are key to understanding this Draft EIS/EIR. This list supplements the more robust list of key definitions and acronyms provided in the Glossary (Appendix J).

Abbreviation/Acronym	Definition
Ballona Reserve	Ballona Wetlands Ecological Reserve as described in Section 1.2.1 and shown in Figure ES-2.
Ballona Wetlands	The aquatic ecosystem in the vicinity of the Ballona Reserve, which once spanned more than 2,100 acres and supported a great diversity of aquatic resources from Playa del Rey to Venice and inland to the Baldwin Hills, as discussed in Historical Ecology of the Ballona Creek Watershed, Southern California Coastal Water Research Project Technical Report No. 671[1] and Historical Wetlands of the Southern California Coast, An Atlas of U.S. Coast Survey T-Sheets, 1851-1889.[2]
CDFW	California Department of Fish and Wildlife, the CEQA lead agency for this EIS/EIR.
CEQA	California Environmental Quality Act
Corps	U.S. Army Corps of Engineers, the NEPA lead agency for this EIS/EIR.
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
Fiji Ditch	An excavated, unlined drainage channel that runs parallel to Fiji Way along the northern boundary in the eastern portion of Area A within the Ballona Reserve. The eastern part of the Fiji Ditch is located in the northwestern part of Area C. The Area A and Area C segments are not connected.
LACDA	Los Angeles County Drainage Area. The LACDA project is a Federal flood risk management project. The Los Angeles County Department of Public Works maintains a portion of the Ballona Creek channel by virtue of an easement and by statutory obligation as the non-Federal sponsor of the LACDA project. Approval of the Project may include modifications to LACDA project features within the Ballona Reserve by removing all or portions of the existing levees and the concrete channel in favor of constructing new flood risk management levees, restoring the wetland floodplain, constructing new water-control structures (such as culverts, weirs, and tide gates, and access roads) and/or erosion protection features, modifications to existing operations and maintenance requirements.
LACDPW	Los Angeles County Department of Public Works. LACDPW "is responsible for the design, construction, operation, and maintenance of roads, traffic signals, bridges, airports, sewers, flood control, water supply, water quality, and water conservation facilities" within Los Angeles County.[3]
LACFCD	Los Angeles County Department of Public Works-Los Angeles County Flood Control District. The Los Angeles County Flood Control District owns and operates the levees within the Ballona Reserve; planning and operational activities of the Flood Control District reside within the LACDPW.[4] LACFCD, as defined herein, is the applicant pursuant to Section 14 of the Rivers and Harbors Act of 1899 as codified in 33 U.S.C. § 408 (commonly referred to as "Section 408").

[1] Dark, Shawna; Stein, Eric D., et al., 2011. *Historical Ecology of the Ballona Creek Watershed*. Southern California Coastal Water Research Project. Technical Report #671.
[2] Grossinger, Robin, Stein, Eric, et al., 2011. Historical Wetlands of the Southern California Coast, An Atlas of US Coast Survey T-Sheets, 1851-1889. [http://www.sfei.org/sites/default/files/So_Cal_T-sheet_Atlas_highres.pdf] January 2011.
[3] Los Angeles County Department of Public Works, 2017. About Us. [http://dpw.lacounty.gov/landing/aboutUs.cfm] Accessed February 23, 2017.
[4] Los Angeles County Flood Control District, 2017. About the District. [https://dpw.lacounty.gov/lacfcd/] Accessed February 23, 2017.

Abbreviation/Acronym	Definition
navigable waters of the U.S.	Navigable waters of the United States are generally defined as those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity. (33 C.F.R. § 329.4).
NEPA	National Environmental Policy Act
ocean waters	Ocean waters are the open seas lying seaward of the “baseline” from which the “territorial seas” are measured. Generally, the “baseline” is the mean lower low water line (or low water mark) along the coast or “closing lines” that are drawn on maps across river mouths and openings of bays and that are depicted on official United States Nautical Charts.
Project	For purposes of this EIS/EIR, the term Project with a capital “P” means restoration of the Ballona Wetlands Ecological Reserve and incidental work necessitated by the proposed restoration activities. Three different options for implementing the Project (i.e., restoring the Ballona Reserve) are analyzed in this EIS/EIR: Alternative 1, Alternative 2, and Alternative 3. Under Alternative 4, the No Federal Action/No Project Alternative, none of the proposed restoration activities would occur.
SCC	State Coastal Conservancy
SoCalGas	Southern California Gas Company
SoCalGas Property	The seven potential natural gas well relocation sites on property owned by the Southern California Gas Company as described in Section 1.2.1 and shown in Figure ES-2.
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
waters of the state	This term is defined in California Water Code Section 13050(e) as “any surface water or groundwater, including saline waters, within the boundaries of the state.” The term is broadly construed to include all waters within the state’s boundaries, whether private or public, including waters in both natural and artificial channels.
waters of the U.S.	The term as defined in the Corps’ regulations at 33 C.F.R §328.3 (in place prior to August 28, 2015), as modified by guidance in place prior to August 28, 2015.
wetland	The official definition of “wetland” differs among regulatory agencies, although all variations involve these three elements: • Wetland Hydrology: The presence of water at or above the soil surface for a sufficient period of the year to significantly influence the plant types and soil chemistry. • Hydric Soil: Soil that is wet long enough during the growing season to develop low-oxygen conditions. • Hydrophytic Plants: Plants adapted to saturated soil conditions. The Corps and USEPA, for example, require that all three elements be present to define a wetland. By comparison, the State considers the presence of any one of these three elements to define a wetland. Unless otherwise clearly indicated, this EIS/EIR uses the Corps and USEPA’s definition.

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers (Corps) and California Department of Fish and Wildlife (CDFW) are preparing a joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Ballona Wetlands Restoration Project proposed on approximately 566 acres, the majority of which is held in fee by the State of California as part of the Ballona Wetlands Ecological Reserve (Ballona Reserve), with the remaining incidental work to occur on approximately 4 acres adjacent to the Ballona Reserve. The Project site is located in the western portion of the City of Los Angeles and partially within an unincorporated area of the County of Los Angeles, California.

This EIS/EIR has been prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 U.S.C. §4321 et seq.), Council on Environmental Quality (CEQ) regulations (40 C.F.R. Part 1500 et seq.), Executive Orders (e.g., Executive Order 11990, Protection of Wetlands), Corps' regulations (33 C.F.R. Parts 230, 320-332), the California Environmental Quality Act (CEQA) (Pub. Res. Code §21000 et seq.), the State of California's CEQA Guidelines (14 Cal. Code Regs. §15000 et seq.), and other environmental laws. The Corps is the NEPA lead agency and CDFW is the CEQA lead agency. This EIS/EIR has been prepared by Environmental Science Associates on behalf of the lead agencies and has been independently reviewed by Corps and CDFW staff. The scope of the document, methods of analysis, and conclusions represent the independent judgment of the Corps and CDFW. Staff members from the Corps, CDFW, and others who helped prepare this EIS/EIR are identified in Chapter 5, *List of Preparers and Contributors*.

This EIS/EIR describes the affected resources and evaluates the potential environmental consequences (whether beneficial effects or adverse impacts) to those resources as a result of the design, implementation, and long-term maintenance of a wetland restoration project at the Ballona Reserve and other ancillary work. In addition to tidal wetland restoration, the proposal addresses upland and non-tidal wetland restoration, public access and visitor amenities, flood risk and stormwater management infrastructure, natural gas and other utility modifications necessitated by the proposed restoration work, and the potential disposal sites intended to receive excavated/dredged materials generated from the proposed restoration activities.

For purposes of this EIS/EIR, the term Project with a capital "P" means restoration of the Ballona Reserve and incidental work necessitated by the proposed restoration activities. Use of the term "Project" does not in way indicate or imply the Corps' endorsement of the Project. Three different options for implementing the Project (i.e., restoring the Ballona Reserve) are analyzed in this EIS/EIR: Alternative 1: Full Tidal Restoration/Proposed Action, Alternative 2: Restored Partial Sinuous Creek, and Alternative 3: Levee Culverts and Oxbow. Under Alternative 4: No Federal Action/No Project, none of the proposed restoration activities would occur. Although this EIS/EIR refers to Alternative 1 as the "Proposed Action" for purposes of NEPA, use of this term does not in any way indicate the lead agencies' preference for Alternative 1. As an informational document, an EIS/EIR does not recommend approval or denial of any specific alternative. This EIS/EIR will be used to inform decision makers and the public about the environmental consequences of each of the alternatives analyzed.

ES.1 Background and Project Overview

The Ballona Reserve is located in southern California, south of Marina del Rey and east of Playa del Rey. It extends roughly from the Marina Freeway (State Route [SR] 90) to the east, the Westchester bluffs to the south, Playa del Rey to the west, and Fiji Way to the north. See Figure ES-1, *Regional Location*. CDFW manages and maintains primary ownership of the Ballona Reserve, with a smaller interest owned by the California State Lands Commission (CSLC). The Los Angeles County Department of Public Works-Flood Control District (LACFCD) owns and operates the Ballona Creek channel and levee system, which are features of the Federally-authorized Los Angeles County Drainage Area (LACDA) project.[1]

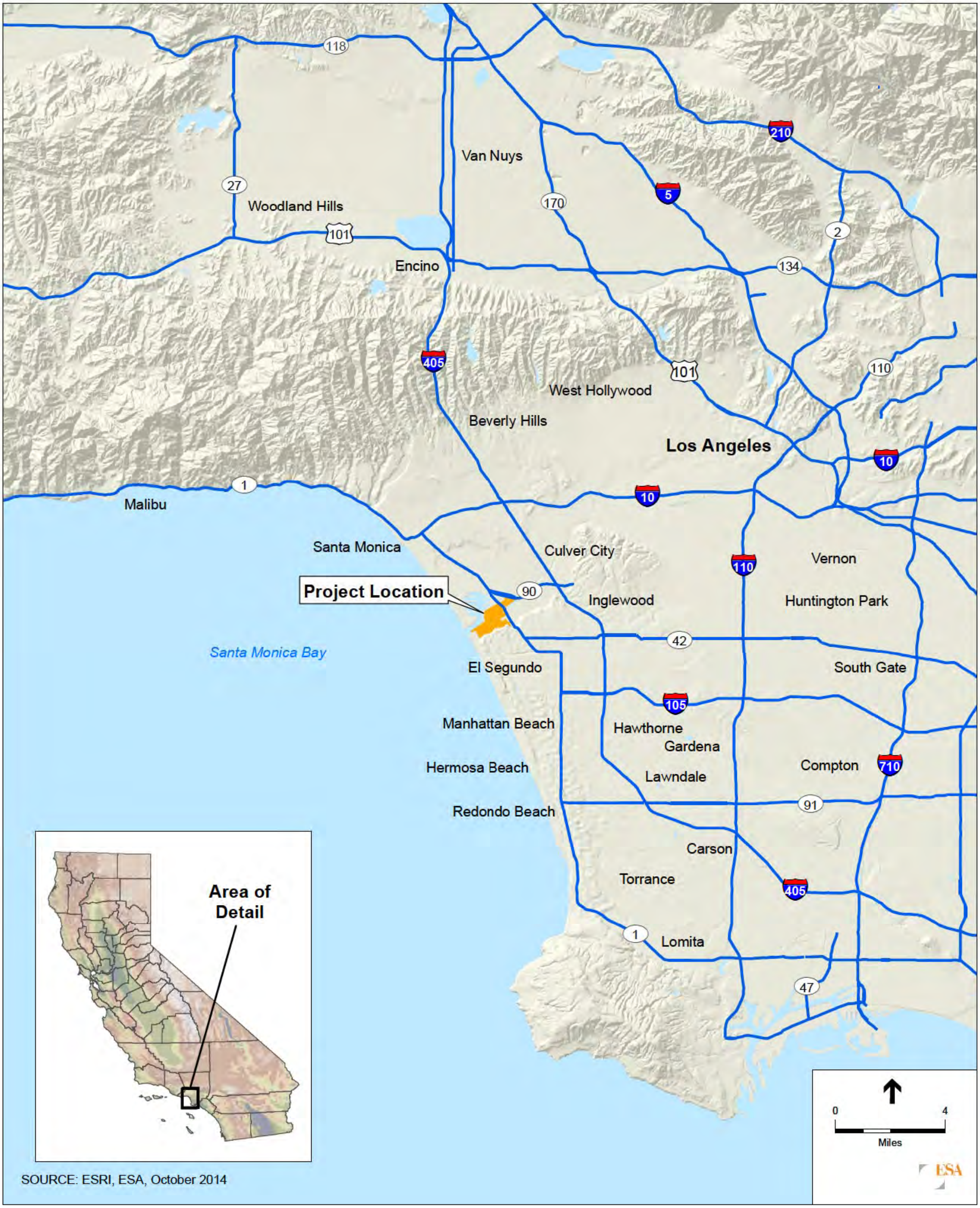
The wetlands ecosystem in the vicinity of the Ballona Reserve once supported a great diversity of aquatic resources that stretched from Playa del Rey to Venice and inland to the Baldwin Hills (Dark et al. 2011; Grossinger et al. 2011). As preliminarily delineated by Wetland Research Associates (WRA) in 2011, the Ballona Reserve provides approximately 153 acres of potential wetlands, as well as approximately 83 acres of potential non-wetland waters of the U.S.[2] (see Appendix D14, *Ballona Creek Wetlands Ecological Reserve Preliminary Delineation of Wetlands and Non-Wetland Waters*), including a segment of Ballona Creek. Under Section 10 of the Rivers and Harbors Act (33 U.S.C. §403; "Section 10"), navigable waters of the U.S. include all tidally-influenced waters up to the mean high water mark (MHW) in their natural, unobstructed state. For purposes of this analysis, the Corps has determined that the portion of the Project site that would be subject to tidal influence without the presence of the levees (based on the current topography) would be subject to the Corps' Section 10 jurisdiction. This area is shown in Figure 1-1, *Existing Topography, Tidal Inundation, and Section 10 Waters*.

The United States Environmental Protection Agency (USEPA) has determined that all wetland habitats within the Ballona Reserve are impaired (USEPA 2012). Furthermore, a portion of the Ballona Reserve has been identified as "among the most degraded wetlands in California" using standardized wetland condition protocols (Johnston, Medel, and Solek 2015).

The Ballona Reserve looks very different today than it did in the past. A once-meandering Ballona Creek was cemented into a straight, concrete channel in the 1920s. Approximately 2.8 to 3.5 million cubic yards (cy) of dirt was dumped on top of the wetlands during the construction of

1 The Corps, in cooperation with the Los Angeles County Flood Control District, constructed the Ballona Creek channel and levees within the Ballona Reserve as part of the LACDA project. The Los Angeles County Flood Control District transferred operational activities to the Los Angeles County Department of Public Works. The Los Angeles County Department of Public Works-Flood Control District (collectively, "LACFCD") is the applicant for the Section 408 permit that would be required to modify LACDA project features within the Ballona Reserve.

2 However, within the Project boundary, the site includes 151.7 acres of potential wetlands and 68.3 acres of potential waters of the U.S. (see Table 2-1a in Chapter 2).



Ballona Wetlands Restoration Project

Figure ES-1
Regional Location

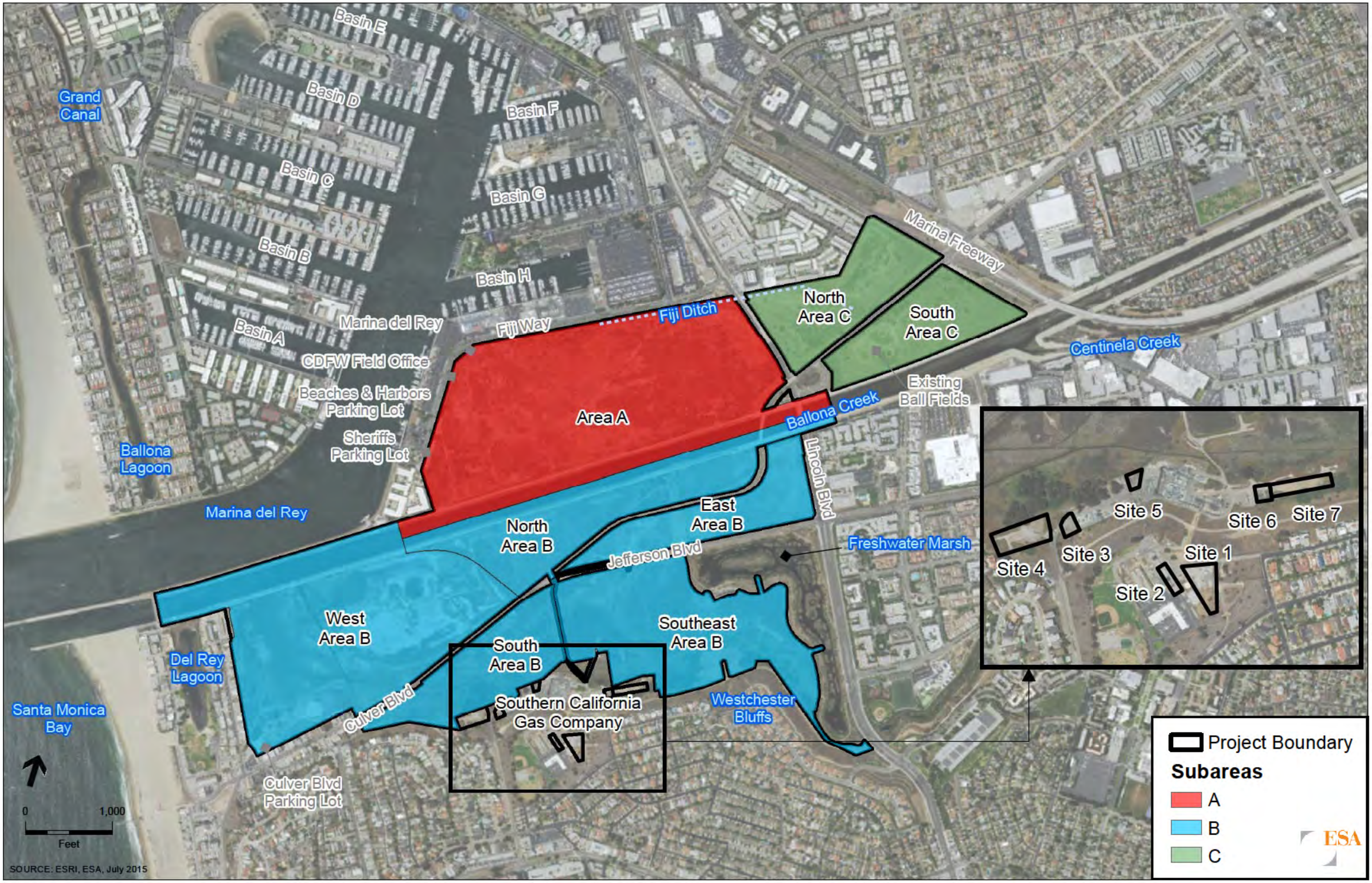
Marina del Rey in the 1950s, transforming what had been wetlands abundant with fish and waterfowl into upland and degraded wetlands. Non-native, invasive plants now crowd out native plants and provide less support for native wildlife, including some listed species that continue to occupy the Reserve. The Ballona Reserve is closed to the general public absent specific authorization from CDFW. Some small scale education and restoration activities occur in one area, little league baseball games are played in another area, illegal uses (such as trash dumping and transient people's encampments) occur throughout the Ballona Reserve, and LACFCD undertakes operation, maintenance, repair, replacement and rehabilitation activities within the Ballona Creek channel and levees for purposes of flood risk management.

Seeking to restore wetland habitat and functions within the Ballona Reserve, CDFW is proposing a large-scale effort to restore, enhance, and establish native coastal wetland and upland habitats within the Ballona Reserve; these efforts would require incidental work on adjacent property. To implement the proposal, CDFW is working with the LACFCD to modify LACDA project features (e.g., the Ballona Creek channel and levee system) within the Ballona Reserve. The three main components of the Project are restoring wetlands and wetland functions within the Ballona Reserve, restoring and improving public access to the Ballona Reserve, and maintaining existing levels of flood risk management provided by the Ballona Creek channel and levee system.

Natural gas storage wells and associated pipelines owned and operated by the Southern California Gas Company (SoCalGas) are located within the Ballona Reserve. The active storage wells that would be affected by the proposed restoration activities would be relocated to SoCalGas's property adjacent to the Ballona Reserve as part of the Project and, similarly, the natural gas pipeline also would be relocated. The potential natural gas storage well relocation sites (Sites 1 through 7, the "SoCalGas Property") and the Ballona Reserve together constitute the "Project site" for purposes of this EIS/EIR.

The Ballona Reserve portion of the Project site is divided into three main areas. Under existing conditions, Area A is approximately 163 acres, Area B is approximately 329 acres (including the Ballona Creek channel), and Area C is approximately 69 acres. Area B is further divided into North Area B, East Area B, Southeast Area B, South Area B, and West Area B; and Area C is further divided into North Area C and South Area C. See Figure ES-2, *Project Site*.

This Project is a major Federal action for which discretionary permits would be required from the Corps for compliance with Section 404 of the Clean Water Act and Sections 10 and 14 of the Rivers and Harbors Act, among other authorities. Corps approval also would be required to modify the Operation, Maintenance, Repair, Replacement and Rehabilitation plan (OMRR&R, Los Angeles District, Corps of Engineers 1999) to reflect any approved changes to existing LACDA project infrastructure within the Project site. See Table 1-1, *Summary of Required Permits and Approvals*, for a summary of these and other permit requirements. The proposed activities also would require discretionary approvals from state or local agencies for activities that could result in a significant impact on the physical environment. Therefore, environmental review of the Project is required under both NEPA and CEQA.



Ballona Wetlands Restoration Project

Figure ES-2
Project Site

ES.2 Formal Agency Involvement

ES.2.1 Project Proponents

CDFW manages and maintains primary ownership of the Ballona Reserve with a smaller interest owned by the CSLC. LACFCD operates and maintains the Ballona Creek flood risk management channel and levees (including the segments within the Ballona Reserve) for flood risk management purposes. To modify lands within the Ballona Reserve as necessary to implement the Project, CDFW applied for authorization from the Corps on June 1, 2012, to discharge dredged and fill material into waters of the U.S. under Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. §1344; "Section 404") and for work or structures in or affecting navigable waters of the U.S. under section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. §403; "Section 10"). The LACFCD submitted a request pursuant to Section 14 of the Rivers and Harbors Act (33 U.S.C. §408, "Section 408") on July 23, 2013 to alter or modify the LACDA project features.

CDFW is working with the LACFCD, California State Coastal Conservancy (SCC), The Bay Foundation, and the CSLC to revitalize and restore the Ballona Reserve. In 2004, the SCC approved state bond funds to support planning and restoration efforts at the Ballona Reserve. Each partner is committed to a collaborative process that can achieve what no single partner could achieve on its own.

ES.2.2 Lead Agencies

NEPA and CEQA define roles for "lead agencies." Under NEPA, the lead agency is the entity that prepares or takes primary responsibility for preparing the NEPA document (40 CFR §1508.16). Under CEQA, the lead agency is the public agency that has principal responsibility for carrying out or approving the project (14 Cal. Code Regs. §15367). The Corps and CDFW are the lead agencies under NEPA and CEQA, respectively, for this EIS/EIR. The Corps and CDFW are preparing this joint EIS/EIR in the interest of efficiency and to avoid duplication of effort. In their role as lead agencies, the Corps and CDFW are examining affected resources and evaluating potential environmental consequences (both adverse impacts and beneficial effects) that could result from implementing the restoration alternatives evaluated in this EIS/EIR.

ES.2.3 Cooperating Agencies

Under NEPA, agencies other than the NEPA lead agency that have jurisdiction by law or special expertise with respect to the environmental effects anticipated from the Project may participate in the NEPA process as cooperating agencies (40 CFR §§1501.6, 1508.5). The United States Fish and Wildlife Service (USFWS) participated in the development of the Draft EIS/EIR for the Ballona Wetlands Restoration Project as a Cooperating Agency between January 5, 2015 and February 1, 2017 (USFWS 2017).

ES.2.4 Responsible and Trustee Agencies

Under CEQA, public agencies other than the lead agency that have discretionary approval power over a Project are "responsible agencies" (CEQA Guidelines §15381). For this Project, responsible agencies include, but are not limited to, the Fish and Game Commission, State Water

Resources Control Board, California Coastal Commission, and South Coast Air Quality Management District. State agencies that have jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California are "trustee agencies" under CEQA (CEQA Guidelines §15386). For this Project, the CSLC is a trustee agency. A list of responsible and trustee agencies is provided in Table 1-1, *Summary of Required Permits and Approvals*.

ES.3 Purpose and Need / Project Objectives

ES.3.1 Purpose and Need under NEPA

In accordance with CEQ regulations, an EIS's Purpose and Need section "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 C.F.R. §1502.13).

The purposes, pursuant to NEPA, of the Project are to:

1. Restore ecological functions and services within the Ballona Reserve, in part by increasing tidal influence to achieve predominantly estuarine wetland conditions.

2. Ensure any alteration/modification to the LACDA project components within the Ballona Reserve maintain the authorized LACDA project levels of flood risk management, which in this section of Ballona Creek, includes ensuring there is no reduction to the conveyance capacity of up to 68,000 cubic feet per second (cfs)[3] and that LACDA project features reduce flood risk to the surrounding communities and infrastructure for up to the 100 year flood event.

In addition to defining the purpose of an applicant's project pursuant to NEPA, the Corps must evaluate the proposed discharge of dredged or fill material into waters of the U.S. for its compliance with the Clean Water Act Section 404(b)(1) Guidelines (40 C.F.R. Part 230). A critical, initial part of evaluating this compliance is identifying the basic purpose of the applicant's proposal as well as the overall project purpose.

The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed action and is used by the Corps to determine whether an applicant's project is water dependent (i.e., whether it requires access or proximity to or siting within a special aquatic site to fulfill its basic purpose). Where the activity associated with a discharge that is proposed for a special aquatic site is not water dependent, practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise. The basic

3 The Ballona Creek channel was designed in the 1930s, and documentation for the original design capacity is limited. LACFCD design drawings (1959) and as-builts (1963) for later work on the segment of the Ballona Creek channel within the Ballona Reserve indicated a design discharge of 49,500 cfs. Documentation for other, subsequent projects refers to a Standard Project Flood (SPF) flow of 46,000 cfs, which was first computed by the Corps in the 1950s (USACE LA District 1979). The SPF figure was later revised to identify a future, unrestricted SPF of 68,000 cfs (USACE LA District 1979). The authorized discharge will be confirmed by the Corps during the permitting process for the Project, but would not be higher than 68,000 cfs.

purpose of this Project is ecological restoration, which in the context of this Project is a water-dependent activity, and so the rebuttable presumption does not apply. However, where a discharge is proposed for a special aquatic site, all practicable alternatives to the proposed discharge that do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise.

The overall project purpose serves as the basis for the Corps' Section 404(b)(1) alternatives analysis and is determined by further defining the basic purpose in a manner that more specifically describes the applicant's goals for the project and that allows a reasonable range of alternatives to be analyzed. For this EIS/EIR, the above-stated NEPA purpose is the same as the overall project purpose.

The need for the Project under NEPA is to restore coastal aquatic resources to increase available breeding and foraging habitat for wildlife while maintaining flood protection for surrounding communities; and to provide public access for compatible recreational and educational opportunities that are not currently available within the Ballona Reserve. A substantial portion of California's historic coastal aquatic resources has been lost. The Ballona Reserve aquatic ecosystem is one of the last remaining opportunities for major coastal habitat restoration in Los Angeles County. It is estimated that historically the Ballona Creek watershed supported a great diversity of aquatic resources.

ES.3.2 CEQA Project Objectives

CEQA requires an EIR to include a "statement of objectives sought by the proposed project" (CEQA Guidelines §15124). The statement of objectives assists the State lead agency in developing a range of alternatives to evaluate in the EIR. CDFW's objectives in proposing this Project are supported by the Science Advisory Committee[4] for the Project and by the public stakeholder group members that participated in a day-long design charrette at the beginning of the planning process.

The NEPA purpose and need and the CEQA Project objectives are aligned in their focus on restoring wetland and other ecological functions within the Ballona Reserve and maintaining existing levels of flood protection provided by the Ballona Creek flood risk management channel and levee system. While the NEPA purpose and need and CEQA Project objectives are stated differently, they are connected by the overarching Project purposes.

The CEQA objectives are as follows:

1. Restore, enhance, and create estuarine and associated habitats:
    a) That support a natural range of habitat formations and functions, including multiple habitat types, in the Ballona Reserve, to create a regionally important wetland area;

[4] The Science Advisory Committee is an interdisciplinary team of scientists that was assembled at the beginning of the restoration planning process to ensure that the restoration plan was developed based on the best available science (Ballona Wetlands Restoration Project 2017; Project Management Team 2005).

b) That are self-sustaining by allowing for adaptation to sea level rise, minimizing the need for active management, and reducing impacts of human activities and invasive species through the provision of large, contiguous areas of diverse intertidal wetland habitats with wide transition and buffer areas;

c) That sustain multiple levels of biodiversity associated with estuarine and associated systems by strategically preserving, restoring, enhancing, and developing multiple habitats (including a variety of wetland types and upland habitats) and incorporating transitional and upland habitat connections to the wetlands to support recruitment and the various life stages of a diverse native flora and fauna;

d) That contribute to the biodiversity and health of the Ballona Reserve by providing for the management of native upland habitat; and

2. Protect and respect cultural and sacred resources, to enable cultural use of the Ballona Reserve by Native Americans and provide appropriate interpretive information about prior human uses of the Ballona Reserve.

3. Establish natural processes and functions within the Ballona Reserve that support estuarine and associated habitats through measures such as improving tidal circulation into the wetlands to enlarge the amount of area that is tidally inundated, increasing tidal prism and excursion, lowering residence time of water, ensuring a more natural salinity gradient, and creating dynamic hydrologic interactions between the Ballona Creek channel, wetlands within the Ballona Reserve, and the Santa Monica Bay.

4. Develop and enhance wildlife dependent uses and secondary compatible on-site public access for recreation and educational activities by:

a) Providing a system of entries, gathering spaces, and walking trails with interpretation and learning opportunities focused on the natural resources and cultural context of the restored and enhanced native uplands habitat; and

b) Providing new access for cyclists along the new levees.

5. Protect and avoid impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management, ensuring consistency with future implementation of regional plans, and limiting the need for significant modification to regionally important infrastructure.

6. Provide oversight of the Ballona Reserve to accomplish management functions such as ensuring public safety and resource protection while minimizing security and maintenance costs by:

a) Encouraging appropriate and legal public use throughout the Ballona Reserve through a system of trails; signage; providing for safe traffic and parking; and deterring dumping, camping, and other uses that are incompatible with the Ballona Reserve’s habitat values.

b) Maintaining the existing on-site office and maintenance yard locations for CDFW staff to accommodate increasing CDFW presence for management and monitoring throughout the Ballona Reserve.

7. Ensure that alterations/modifications to LACDA project components do not adversely impact the LACDA project by:

   a) Retaining the authorized conveyance capacity within the Ballona Creek Channel.

   b) Ensuring that structural changes to LACDA project features satisfy Corps and LACFCD criteria for functional, operational, and maintenance purposes.

ES.4 Overview of Alternatives

The EIS/EIR describes and analyzes three alternatives that would, to various extents, implement the Project, and one No Federal Action/No Project Alternative. Each of the alternatives is described in detail in Chapter 2, *Description of Alternatives*.

ES.4.1 Alternative 1: Full Tidal Restoration/Proposed Action

Alternative 1 proposes the Project as described in permit applications to the Corps. The Proposed Action is intended to return the daily ebb and flow of tidal waters where practically feasible to achieve predominantly estuarine conditions, enhance freshwater conditions, and enhance physical and biological functions within the Ballona Reserve. Restoring wetland functions and services would reestablish native wetland vegetation and provide important habitat for a variety of wildlife species. A restored, high-functioning wetland also would benefit the adjacent marine environment and enhance the quality of tidal waters.

Under Alternative 1, the existing armored levees on a portion of Ballona Creek would be removed, Ballona Creek would be realigned to flow in a more natural meander-shaped pattern, and the land north of Ballona Creek would be lowered to create a connected floodplain. Within the Ballona Reserve, Alternative 1 would: establish 81.0 acres of new and enhance 105.8 acres of existing native wetland waters of the U.S. (total wetland waters of the U.S established or enhanced: 186.8 acres); and establish 38.7 acres of new and enhance 58.0 acres of existing non-wetland waters of the U.S. (total non-wetland waters of the U.S established or enhanced: 96.7 acres). New, broadly-sloping, partially-earthen levees would surround the Ballona Reserve and protect surrounding development from potential flooding from Ballona Creek. This alternative would subject 31.4 acres of wetland waters of the U.S. to permanent loss, 0.2 acre to permanent loss of function, and 30.2 acres to temporary impact; subject 5.2 acres of non-wetland waters of the U.S. to permanent loss, 5.7 acres to permanent loss of function, and 25.0 acres to temporary impact; and work within 58.3 acres of navigable waters of the U.S. (36.2 acres of temporary impacts, 5.9 acres of permanent loss of function, and 16.2 acres of permanent loss of waters). Between 2,290,000 and 2,420,000 cy of dredged or fill material would be repositioned on the Project site as perimeter levees, transition zones, and upland restoration areas to allow Ballona Creek to reconnect with its historic floodplain. Waters of the U.S. are shown in Figure 3.4-17. Reconnecting the creek to West Area B and building a berm around the salt pan would allow the salt pan to be maintained up to 2.1 feet of sea level rise.[5] The berm and levee also would provide space for the marsh to migrate upslope. In South and Southeast Area B, the larger tide range proposed in Alternative 1 would maintain tidal salt marsh through 3.5 feet of sea level rise.[6]

New trails, two pedestrian/bike bridges, and bike paths would be created. The Ballona Reserve would be open for recreational, educational, and other legal public uses during posted hours. A new three-story parking structure along Fiji Way would be constructed within the existing parking lot footprint, and improvements would be made to the existing dirt parking lot off Culver Boulevard at Pershing Drive (the West Culver lot). Fill material generated by restoration-related excavation would be redistributed primarily on-site in North Area C (up to 720,000 cy), with additional material to be relocated to South Area C (up to 300,000 cy) and exported off-site (up to 110,000 cy). Restoration of the Ballona Reserve would not require closure of the baseball fields and related parking in Area C, although use of the baseball fields could be disrupted during restoration-related activities. SoCalGas-managed natural gas storage wells and associated pipelines within the portion of the Ballona Reserve affected by Alternative 1 would be abandoned and/or relocated to the SoCalGas Property.

Following restoration, portions of the reconfigured Ballona Creek channel would be located closer to the boat slips located north of Area A; new water control structures (e.g., culverts and tide gates) would be operated and maintained; and perimeter levees and flood berms would be maintained (see Figure 2-41, *Alternative 1, Phase 1: Operations and Maintenance*; see also Figure 2-42, *Alternative 1, Phase 2: Operation and Maintenance*). Operation and maintenance activities would include: continuation (unchanged) of existing trash removal efforts at the existing trash boom system (or trash net) between the Culver Boulevard and Lincoln Boulevard bridges; regular visual inspections of culverts and other water control structures in their new locations; repair and replacement of tide gates; sediment removal from the realigned Ballona Creek channel and sediment basins (once every 50 years); sediment removal from the connector channels between the water control structures and the Ballona Creek channel (potentially during the first 10 years post-construction); and maintenance and repair of levees, access roads, fences, paths, and other public access amenities (as needed) (Appendix B5, *Preliminary Operations and Maintenance Plan*). Berms would be maintained along lower perimeter elevations of South and Southeast Area B to maintain the existing level of flood risk protection (e.g., around the SoCalGas facility and along Culver Boulevard and Jefferson Boulevard). Maintenance of the berms would be focused on erosion protection primarily via the establishment and maintenance of vegetation. CDFW would conduct the same nature and type of activities to operate and maintain the non-LACDA project facilities within the Ballona Reserve, using the same types of equipment and at the same intervals as the agency does under existing conditions. Such activities would include, for example, inspecting and locking gates, repairing fences, controlling pests and weeds, and removing trash and debris from the non-LACDA project areas within the Ballona Reserve (Id.).

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5 While the timing of sea level rise cannot be known with certainty at this time, it is anticipated that 2.1 feet of sea level rise would occur between the years 2050 and 2070.

6 Ibid.

ES.4.2 Alternative 2: Restored Partial Sinuous Creek

Alternative 2 is similar to Alternative 1, but a smaller length of the Ballona Creek channel levee would be removed. Within the Ballona Reserve, Alternative 2 would: establish 83.1 acres of new and enhance of 56.3 acres of existing native wetland waters of the U.S. (total wetland waters of the U.S established or enhanced within the Ballona Reserve following the implementation of Alternative 2: 139.4 acres); and establish 38.7 acres of new and enhance 15.3 acres of existing non-wetland waters of the U.S. (total non-wetland waters of the U.S established or enhanced within the Ballona Reserve following the implementation of Alternative 2: 54.0 acres). This alternative would subject 21.7 acres of wetland waters of the U.S. to permanent loss, 0.7 acres to permanent loss of function, and 24.5 acres to temporary impacts; subject 1.8 acres of non-wetland waters of the U.S. to permanent loss, 5.5 acre to permanent loss of function, and 22.4 acres to temporary impacts; and work within 36.1 acres of navigable waters of the U.S. (27.2 acres of temporary impacts, 5.8 acres of permanent loss of function, and 3.1 acres of permanent loss of waters). Between 2,120,000 and 2,180,000 cy of dredged or fill material would be repositioned on the Project site as perimeter levees, transition zones, and upland restoration areas to allow Ballona Creek to reconnect with its historic floodplain.

Under Alternative 2, some of the existing armored levees on the Ballona Creek channel adjacent to the Ballona Reserve would be removed, and Ballona Creek would be realigned to flow in a natural meander-shaped pattern as described in Alternative 1; however, the southern levee of the Ballona Creek channel adjacent to West Area B would not be breached and the existing water control structures would remain in place. Existing habitats in West Area B would be retained. New partially-earthen levees would be built around the northern perimeter of Area A and along the north side of Culver Boulevard in North Area B to protect surrounding development from potential flooding of Ballona Creek. Fill material generated by restoration-related excavation would be redistributed primarily on-site in East Area B (up to 340,000 cy), with additional material to be relocated to North Area C (up to 500,000 cy), and South Area C (up to 540,000 cy); up to 10,000 cy would be exported off-site. Management of existing tide gates to provide some acclimation to sea level rise in West Area B would be possible temporarily; however, between 2030 and 2050, the salt pan would permanently flood or become mudflat when water levels behind the gate increase by approximately 1 foot.

Public use and parking improvements would be the same as described for Alternative 1. The baseball fields would be closed during restoration of the Ballona Reserve and reopening would be contingent on various factors. SoCalGas-managed natural gas storage wells and associated pipelines within the portion of the Ballona Reserve affected by Alternative 2 would be abandoned and/or relocated to the SoCalGas Property.

Following restoration, portions of the reconfigured Ballona Creek channel would be located closer to the boat slips located north of Area A of the Project site and new water control structures (e.g., culverts and tide gates) would be operated and maintained. Maintenance of Ballona Creek channel and levees under Alternative 2 would be the same as described under Alternative 1 (Appendix B5, *Preliminary Operations and Maintenance Plan*). Maintenance of water control structures under Alternative 2 would be similar to the description under Alternative 1, but with the following exceptions. Under Alternative 2, West Area B would not be improved. The existing West Area B gates connecting West Area B to Ballona Creek would remain and would continue to be maintained as under the existing conditions (Id.). Maintenance of flood risk management berms under Alternative 2 would be the same as described under Alternative 1. CDFW would conduct the same nature and type of activities to operate and maintain the non-LACDA project facilities within the Ballona Reserve, using the same types of equipment and at the same intervals as the agency does under existing conditions. Such activities would include, for example, inspecting and locking gates, repairing fences, controlling pests and weeds, and removing trash and debris from the non-LACDA project areas within the Ballona Reserve (Id.).

ES.4.3 Alternative 3: Levee Culverts and Oxbow

Restoration under Alternative 3 would be focused in Area A and Area C. Enhancement of Area B habitats would consist exclusively of invasive nonnative plant removal and native plantings. The existing armored levees on the Ballona Creek channel adjacent to the Ballona Reserve would remain intact. No levee breaching would occur. Instead, two new culvert water control structures would be installed within the northern Ballona Creek channel levee to support restoration of tidal circulation in Area A, but with an oxbow-shaped channel. Coastal wetland habitats similar to those proposed in Alternative 1 would be restored within the marsh plain created between a new levee along the northern perimeter of Area A and the existing Ballona Creek channel levee.

Within the Ballona Reserve, Alternative 3 would establish 48.0 acres of new native wetland waters of the U.S. and enhance none of the existing wetland waters of the U.S. (total wetland waters of the U.S established or enhanced: 48.0 acres); and establish 28.1 acres of new non-wetland waters of the U.S. and enhance none of the existing non-wetland waters of the U.S. (total non-wetland waters of the U.S established or enhanced: 28.1 acres). This alternative would subject 3.7 acres of wetland waters of the U.S. to permanent loss, subject 3.5 acres of wetlands and 0.5 acre of non-wetland waters of the U.S. to temporary impacts, and involve work within 0.5 acre of navigable waters of the U.S. (temporary impacts). Up to 190,000 cy of dredged or fill material would be repositioned on the Project site as perimeter levees, transition zones, and upland restoration areas to allow Ballona Creek to partially reconnect with a portion of its historic floodplain and up to 1,230,000 cy of dredged or fill material would be exported from the Project site. Management of tide gates in West Area B to provide some acclimation to sea level rise would be possible temporarily; however, between 2070 and 2100, the tide gates would be permanently closed to prevent flooding from sea-level rise, and the existing tidal wetland habitats in West, South, and Southeast Area B would be cut off from the estuary. Once mean lower low water (MLLW)[7] reaches the height at which the tide gates close (3.4 feet [ft.] North American vertical datum [NAVD 88][8]), the site would no longer drain. At this point, the tide gates would need to remain closed to prevent flooding of adjacent roads.

7 Mean lower low water (MLLW) is the average height of the lowest tide recorded at a tide station each day during a recording period.

8 The North American Vertical Datum of 1988 (NAVD) is the vertical elevation control datum established for vertical control surveying in the United States and accounts for the fact that mean sea level is not the same equipotential surface at all tidal bench marks. NGVD 29 stands for National Geodetic Vertical Datum of 1929, a system that was used by surveyors and engineers for most of the 20th Century. It has been the basis for relating ground and flood elevations, but it has been largely replaced by the more accurate North American Vertical Datum of 1988 (NAVD 88). The Corps uses NGVD 29 in the context of this Project because the Ballona Creek channel and levee system were built to that datum. This EIS/EIR uses NAVD 88 because it is more accurate and because it is the current national geodetic vertical datum as of the drafting of the EIS/EIR.

The trails, paths, and parking improvements described in Alternative 1 for Area A and Area C also would occur under Alternative 3. Restoration of the Ballona Reserve under Alternative 3 would not require closure of the baseball fields, although use of the baseball fields could be disrupted during restoration-related activities. One pedestrian/bike bridge would be constructed over Lincoln Boulevard to provide access to Area C. SoCalGas-managed natural gas storage wells and associated pipelines within the portion of the Ballona Reserve affected by Alternative 3 would be abandoned and/or relocated to the SoCalGas Property.

Under Alternative 3, the Ballona Creek channel would not be reconfigured; therefore, all channel-related operation and maintenance activities would be the same as under existing conditions (see Figure 2-52, *Alternative 3: Proposed Habitats*; Appendix B5, *Preliminary Operations and Maintenance Plan*). Maintenance of water control structures under Alternative 3 would be similar to the existing conditions, with the addition of two new banks of culverts and gates connecting Area A to the Ballona Creek channel. The existing West Area B gates connecting West Area B to Ballona Creek would remain and would continue to be operated and maintained as under the existing conditions (Id.). Twelve new tide gates connecting the Ballona Creek channel to Area A would be operated, maintained, and replaced at the same frequency as described under Alternative 1. Alternative 3 does not include flood risk management berms and, thus, no new or additional maintenance would be needed (Id.). CDFW would conduct the same nature and type of activities to operate and maintain the non-LACDA project facilities within the Ballona Reserve, using the same types of equipment and at the same intervals as the agency does under existing conditions. Such activities would include, for example, inspecting and locking gates, repairing fences, controlling pests and weeds, and removing trash and debris from the non-LACDA project areas within the Ballona Reserve (Id.).

ES.4.4 Alternative 4: No Federal Action/No Project Alternative

Under Alternative 4, no Federal, state, or local approvals would be granted. No restoration would take place except for the small-scale removal of invasive nonnative species by volunteers using only hand tools. No modification to the Ballona Creek channel or the levee system would be made. This alternative would not result in the permanent or temporary discharge of dredged or fill material into potential waters of the U.S. No new wetland or upland habitats would be established, but some existing habitats may be enhanced through continued volunteer efforts.

CDFW would continue to remove trash and debris, remove transient encampments, and monitor and enforce other unauthorized or illegal activities. The LACFCD would continue to maintain and operate existing LACDA project structures and facilities within the Ballona Reserve to obtain the maximum flood protection benefits consistent with the OMRR&R and Federal requirements (33 C.F.R. §208.10). Operation of these facilities would continue to involve inspection, operation of field facilities such as gates and staff gages, the implementation of any immediate maintenance or corrective action such as debris removal, and related reporting and documentation. Excavation and dredging maintenance activities would occur as necessary to remove accumulated sediment from the channel area. Maintenance of the LACDA project facilities would continue to include routine repair and restoration activities as well as inspections to detect hazardous or malfunctioning conditions (Los Angeles District, Corps of Engineers 1999). General maintenance of the Ballona channel and levee system would continue to ensure that they are clear of debris, weeds, and wild growth and that they are not being restricted by the depositing of waste materials, building of unauthorized structures or other encroachments; the capacity of the channel or floodway is not being reduced by the formation of shoals; and the banks are not being damaged by rain or wave wash, and that no sloughing of banks has occurred; riprap sections and deflection dikes and walls are in good condition. General levee maintenance would continue to include, but not be limited to: removal of wild growth and drift deposits; repair of damage caused by erosion or other forces; and proper attention to levee drains, drain gates, revetment work and riprap, and access roads to and on levees (33 C.F.R. §208.10(b)). General drainage structure maintenance would continue to include, but not be limited to, the implementation of measures necessary to assure that inlet and outlet channels are kept open and that trash, drift, or debris is not allowed to accumulate near drainage structures; further, flap gates and manually operated gates and valves on drainage structures would continue to be examined, oiled, and trial operated at least once every 90 days (33 C.F.R. §208.10(d)). Consistent with the OMRR&R, the following actions would continue to occur as necessary to maintain landscaping for LACDA project structures and features: supplemental watering, foliage pruning, root pruning, pest control (potentially including herbicides, insecticides, and fungicides), weed abatement, and plant removal, replacement, and supplementation (Los Angeles District, Corps of Engineers 1999). Hardscaping, including gravel and stone ground covers, paving systems, signage and artwork, and removal of graffiti and vandalism also would continue as needed (Los Angeles District, Corps of Engineers 1999). Non-routine (emergency) maintenance would occur consistent with the OMRR&R to insure the serviceability of LACDA project structures and facilities in times of flood (Los Angeles District, Corps of Engineers 1999).

Management of existing tide gates to provide some acclimation to sea level rise would be possible temporarily; however, between approximately 2070 and 2100, the tide gates would be permanently closed to prevent flooding from sea-level rise, and the existing tidal wetland habitats in West, South, and Southeast Area B would be cut off from the estuary. Once MLLW reaches the height at which the tide gates close (3.4 ft NAVD 88), the site no longer would drain. At this point, the tide gates would need to remain closed to prevent flooding. No changes would be made to existing elevations within the Ballona Reserve; instead, existing armored levees channelizing Ballona Creek would remain in place, and Ballona Creek would not reconnect with its historic floodplain. Additionally, no new culverts would be created. No fill material would be generated or require disposal. The Ballona Reserve would remain closed to the public except as authorized by CDFW; no new visitor or recreational improvements or amenities would be provided; no parking structure would be constructed or operated; and no improvements to existing parking areas would be made. Existing agreements regarding use of the baseball fields would not be affected under Alternative 4. SoCalGas would continue to manage wells and pipelines within the Ballona Reserve and independently would pursue well and pipeline abandonment and/or relocation outside the Ballona Reserve based on its priorities and as required by the California Department of Conservation, Division of Oil, Gas, & Geothermal Resources.

ES.5 Areas of Potential Controversy Known to the Lead Agencies

Comments were received during the scoping process for the Project that followed the August 2012 issuance of a Notice of Intent (NOI) under NEPA and Notice of Preparation (NOP) under CEQA and included the joint public scoping meeting held on August 16, 2012. Appendix A, *Scoping Report*, describes the scoping process for this Project, as well as the public input received. Based on input received from agencies, members of the public and others, general areas of controversy related to the Project include:

Aesthetics: Concerns related to the effects of berms in Area C, whether or how levees would affect views of Santa Monica Bay and the wetlands. See Section 3.2, *Aesthetics*.

Air Resources: Concerns related to potential air quality impacts from vehicle emissions at West Culver parking lot and, more generally, restoration-related air impacts. See Section 3.3, *Air Quality*.

Biological Resources: General concerns related to potential impacts to wildlife (e.g., mammals, birds, reptiles, amphibians, fish, and insects) and vegetation (including special status species, invasive nonnative species, and the proposed shift in habitat types). Other comments related to biological resources impacts caused by underground gas storage activities; increased recreational use and visitor access; habitat fragmentation; proposed restoration and post-restoration activities; and changes to on-site elevations. Other concerns related to impacts to the existing dunes and salt pan. See Section 3.4, *Biological Resources*.

Cultural Resources: Concerns related to a need for confidentiality related to on-site cultural resources, a desire for consultation with the Native American Heritage Commission and representatives of the Tongva, appropriate response in the event of a discovery of human remains, and a preference for preservation in place rather than excavation of cultural, historical, and religious resources. See Section 3.5, *Cultural Resources*.

Geology: Concerns related to the stability of Playa del Rey bluffs, the Lincoln Boulevard fault, and risks associated with liquefaction, subsidence, earthquakes, and tsunamis were noted. See Section 3.6, *Geology, Seismicity, and Soils*.

Hazards and Public Safety: Concerns related to the health and safety of neighbors during restoration activities, migration of SoCalGas's operations (e.g., relocation of existing infrastructure), potential disturbance of contaminated soils, and methane gas release due to subsidence. See Section 3.8, *Hazards and Hazardous Materials*.

Water Resources: Concerns related generally to water quality (including impacts to waters listed as impaired under Clean Water Act Section 303(d) and risks of increased sedimentation and trash), algae blooms, scour, flooding, sea level rise, freshwater-saltwater interaction, and groundwater hydrology. Comments also requested information about beneficial impacts of enhanced tidal flow, water quality, and hydrology. See Section 3.9, *Hydrology and Water Quality*.

Noise: Concerns related to traffic noise on Culver Boulevard and potential Project implementation-related vibration impacts on existing condominiums. See Section 3.10, *Noise*.

Recreation: Concerns related to potential effects associated with changes to existing use of the levees and Ballona Creek channel by crew teams and other members of the public and potential impacts of increased recreational use on wildlife species. Potential impacts to species are analyzed in Section 3.4, *Biological Resources*. Potential impacts to recreation are addressed in Section 3.11, *Recreation*.

Transportation and Traffic: Concerns related to neighborhood traffic, parking, and pedestrian and bicycle access during Project implementation and, after restoration, use of Culver Boulevard as a Tsunami Evacuation Route; and access to the restoration area for first responders and vector control. See Section 3.12, *Transportation/Traffic*.

Alternatives: Comments suggest that various potential alternatives should be considered, including a Ballona Ecosystem Education Project alternative, Friends of Ballona Wetlands conceptual plan, a "no bulldozing" alternative where work would be done by volunteers, a "go slow" alternative using exclusively hand tools, an "acquire rather than restore" alternative, an "increased management only" alternative, a "return to 1800" alternative, a "wildlife friendly" alternative, reduced scale alternatives, and increased scale alternatives. See Chapter 2, *Description of Alternatives*.

ES.6 Issues to be Resolved

Issues to be resolved include choosing among the alternatives summarized in Section ES.4, *Overview of Alternatives*, and whether and how to mitigate the potential impacts identified in Section ES.7, *Summary of Potential Impacts and Mitigation Measures*.

ES.7 Summary of Potential Impacts and Mitigation Measures

Table ES-1, *Summary of Impacts and Mitigation Measures for Alternative 1*, summarizes impacts, significance determinations, and mitigation measures by environmental parameter. Impacts, significance determinations and, where appropriate, mitigation measures for the other alternatives analyzed in detail in this EIS/EIR are described on a resource-by-resource basis in Chapter 3, *Environmental Consequences*.

ES.8 Comparison of Alternatives

The analysis of adverse impacts and beneficial effects in this EIS/EIR allows agencies and members of the public to consider the comparative merits among the alternatives and, thereby, fosters informed decision making and public participation. Table ES-2, *Summary of Habitat Acreages by Alternative*, presents the habitat acreages created and enhanced for each alternative compared to existing conditions. Based on the analysis in Chapter 3, *Environmental Consequences*, Table ES-3, *Summary of Environmental Consequences*, identifies the major characteristics and significant environmental effects of each alternative and summarizes the similarities and differences among them. None of the alternatives would cause significant and unavoidable adverse impacts. All impacts would be beneficial effects or, if adverse, would be less than significant or less than significant with mitigation incorporated.

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Aesthetics			
Impact 1-AE-1: Alternative 1 would not have a substantial adverse effect on a scenic vista.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 1-AE-2: Alternative 1 would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 1-AE-3: Alternative 1 would not substantially degrade the existing visual character or quality of the site and its surroundings.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 1-AE-4: Alternative 1, if mitigated, would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.	Potentially Significant	**Mitigation Measure AE-4a: *Construction Lighting*.** Construction contractors shall ensure that all temporary construction lighting shall be designed and installed to be fully shielded (full cutoff) and to minimize glare and obtrusive light by limiting outdoor lighting that is misdirected, excessive, or unnecessary. Construction lighting shall be oriented away from nearby land use areas that are not being affected by construction. **Mitigation Measure AE-4b: *Lighting Plan.*** Prior to implementing any changes to the existing parking areas, a lighting plan shall be developed and implemented that requires all exterior lighting to be directed downward and focused away from adjacent sensitive uses and habitats to encourage way-finding and provide security and safety for individuals walking to and from parking areas.	Less than Significant
Air Quality			
1-AQ-1a: Alternative 1's construction-related and post-restoration emissions would not exceed the General Conformity applicability rates.	Less than Significant	No mitigation measures are required.	Less than Significant
1-AQ-1b: Alternative 1 would not conflict with or obstruct implementation of SCAG's Regional Comprehensive Plan and Guide.	Less than Significant	No mitigation measures are required.	Less than Significant
1-AQ-2: Alternative 1's implementation-related emissions would not exceed SCAQMD's maximum daily emissions thresholds during construction years 2017, 2018, 2019, and 2023 or during the post-restoration phase.	Less than Significant	No mitigation measures are required.	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Air Quality (cont.)			
1-AQ-3: Alternative 1 would result in net increases in $PM_{2.5}$ PM_{10}, VOCs, and NO_x, which are criteria pollutants or precursors to a criteria pollutant for which the region is non-attainment under applicable federal and/or state ambient air quality standards; however, these increases in emissions would not be cumulatively considerable.	Less than Significant	No mitigation measures are required.	Less than Significant
1-AQ-4a: Alternative 1 would not expose sensitive receptors to substantial localized concentrations of criteria air pollutants.	Less than Significant	No mitigation measures are required.	Less than Significant
1-AQ-4b: Alternative 1 would not expose sensitive receptors to substantial localized concentrations of Toxic Air Contaminants.	Less than Significant	No mitigation measures are required.	Less than Significant
1-AQ-5: The implementation of Alternative 1, if not mitigated, could create objectionable odors that could affect a substantial number of people.	Potentially Significant	**Mitigation Measure AQ-1: *Odor Management Plan.*** In order to reduce odors from the decomposition of organic materials during excavation and stockpiling activities, contractors shall submit and implement, for and upon CDFW approval, an odor management plan to limit hydrogen sulfide levels to 10 parts per billion at the site perimeter. This concentration is below the state 1-hour standard of 30 parts per billion. The plan shall be reviewed and approved by the CDFW and include the following elements: a) Monitoring and recording of hydrogen sulfide at the perimeter of the Ballona Reserve to ensure compliance and implementation of the plan. Monitoring shall occur periodically during the days when fill in Area A is being removed. Monitoring shall occur along the perimeter with the closest off-site receptors in addition to the perimeter that is most directly downwind from the removal activities; b) Procurement and local storage of an oxidizer that can be applied in liquid form to treat stock piles of sediment or particularly odorous excavation areas; however, the use of such an oxidizer shall be approved by the CDFW, in advance, to ensure that it would not be harmful to aquatic organisms or cause long-term adverse effects in the aquatic environment (Ventana 2010); and c) Posting of signage at entrances to the Ballona Reserve (including at the Fiji Way entrance to the CDFW trailer, the Culver Boulevard entrance to the baseball fields, and the West Culver Parking Lot) listing the contact information for odor complaints.	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Biological Resources			
1-BIO-1a: Alternative 1 would have a substantial adverse short-term impact either directly or through habitat modifications, as well as some long-term, permanent impacts, on Essential Fish Habitat; however, following the Phase 2 restoration effort, Alternative 1 would result in a long-term net beneficial effect related to improved habitat quality.	Potentially Significant	Implement Mitigation Measures WQ-1a-i (Monitoring and Adaptive Management Plan) and WQ-1a-ii (Sampling and Analysis Plan). [See below under Hydrology and Water Quality]	Less than Significant
1-BIO-1b: Alternative 1 would, if not mitigated, result in a substantial adverse impact, either directly or through habitat modifications, on rare and special-status plants.	Potentially Significant	**Mitigation Measure BIO-1b-i: *Special-Status Plants*.** Known special-status plant populations shall be flagged by a qualified biologist/botanist prior to the start of vegetation or ground-disturbing activities, and shall be avoided to the extent feasible. Prior to any vegetation or ground disturbance, a qualified biologist/botanist shall conduct rare plant surveys at the appropriate time of year to determine whether special-status plant populations have established, expanded and/or migrated on-site. If new individuals or populations are identified during the rare plant surveys, they shall be flagged for avoidance to the extent feasible. During site restoration, qualified biologists, or experienced contractors with supervision by a qualified biologist, shall re-establish impacted species in restored habitat on site at a minimum ratio of 1:1 (number of plants established: number of plants impacted). Perennial species such as woolly seablite shall be salvaged and transplanted wherever feasible. For both perennial and annual species, seed shall be collected prior to restoration during the appropriate time of year (August/September for woolly seablite and May/June for Lewis' evening primrose). Seeds shall be propagated in a local nursery and incorporated into seed mixes for suitable habitat types (transition zone seed mix for woolly seablite and upland/dune seed mix for Lewis' evening primrose). Re-establishment and subsequent monitoring efforts for impacted special-status plant species shall be implemented as described in the Habitat Restoration and Monitoring Plan (Habitat Restoration and Monitoring Plan), and in accordance with appropriate local, state, and Federal policies or regulations. The Habitat Restoration and Monitoring Plan shall provide methodologies covering, but not limited to, collection of seeds or other propagules, storage of salvaged materials, locations of salvaging efforts, timing of salvaging efforts, monitoring of salvaged materials, success criteria, and remedial actions, and include the mitigation requirements described in this mitigation measure. **Mitigation Measure BIO-1b-ii: *Biological Monitoring*.** A qualified biologist(s) approved by USFWS and/or CDFW shall monitor restoration activities, such as ground and vegetation disturbance, for the duration of the Project to ensure that disturbance of habitat and special-status species within and adjacent to work areas is being avoided to the extent practicable. Attempts shall be made by the biologist to salvage all native wildlife species of low mobility that may be killed or injured prior to and	Less than Significant; Long-term Beneficial

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Biological Resources (cont.)			
1-BIO-1b (cont.)		during Project-related vegetation or ground disturbances. Salvaged species should be relocated to adjacent suitable habitat not subject to site disturbances. Any non-native flora or fauna can be abated by the biologist through any legal means available to CDFW. Additionally, ongoing monitoring and reporting shall occur for the duration of the restoration activity to ensure implementation of best management practices (BMPs). **Mitigation Measure BIO-1b-iii: *Noxious Weed Control Plan*.** A Noxious Weed Control Plan shall be prepared by a qualified biologist for CDFW approval prior to the start of restoration. The plan shall ensure that noxious weeds do not spread or otherwise prevent the establishment of native vegetation. The plan shall also be implemented during all restoration-related activities, and shall include, but not be limited to, the following: 1) control measures for selected invasive plant species on the site (potentially including herbicide use), 2) Project-specific procedure for handling noxious/invasive plants to prevent sprouting or regrowth, 3) Project-specific equipment cleaning procedures, and 4) Project-specific transportation of vegetation debris off site. The Noxious Weed Control Plan shall be reviewed during the WEAP training.	
1-BIO-1c: Alternative 1 would, if not mitigated, result in a substantial adverse impact on El Segundo blue butterflies, both directly and through habitat modifications.	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).	Less than Significant
1-BIO-1d: Alternative 1 would not result in a substantial adverse impact on monarch butterflies both directly and through habitat modifications.	Less than Significant	No mitigation measures are required	Less than Significant
1-BIO-1e: Alternative 1 would, unless mitigated, result in a substantial adverse impact either directly or through habitat modifications, on salt marsh-associated invertebrates (i.e., wandering skipper, western S-banded tiger beetle, and western tidal flat tiger beetle)	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).	Less than Significant; Long-term Beneficial
1-BIO-1f: Alternative 1 would, unless mitigated, result in a substantial adverse impact, either directly or through habitat modifications, on dune-associated special-status invertebrates.	Less than Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Biological Resources (cont.)			
1-BIO-1g: Alternative 1 would, unless mitigated, result in a substantial adverse impact on silvery legless lizard, both directly and through habitat modifications; however, following the Phase 2 restoration effort, Alternative 1 would result in a beneficial effect related to improved habitat quality.	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1g-i. **Mitigation Measure BIO-1g-i: *Pre- and Post-restoration Survey for Silvery Legless Lizard*.** Prior to restoration in areas with suitable habitat for silvery legless lizard a qualified biologist shall conduct focused legless lizard surveys. Any legless lizards captured shall be re-located to restored or preserved dune habitats. Focused surveys shall occur yearly for a period of 5 years following restoration to monitor legless lizard populations within the dune habitats.	Less than Significant; Long-term Beneficial
1-BIO-1h: Alternative 1 would, unless mitigated, result in a substantial adverse impact on San Bernardino ring-necked snakes and would result in a less-than-significant impact related to direct habitat modification for this species.	Potentially Significant	Implement Mitigation Measure BIO-1b-ii (Biological Monitoring).	Less than Significant
1-BIO-1i: Alternative 1 would, unless mitigated, result in a substantial adverse impact on Belding's savannah sparrows, both directly and through habitat modifications; however, following the Phase 2 restoration effort, Alternative 1 would result in a substantial beneficial effect in the quality and quantity of habitat for this species.	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring), BIO-1b-iii (Noxious Weed Control Plan), BIO-1i-i (Nesting Bird and Raptor Avoidance), and BIO-1i-ii (Belding's Savannah Sparrow Breeding Habitat). **Mitigation Measure BIO-1i-i: *Nesting Bird and Raptor Avoidance*.** A qualified biologist shall recommend approved limits of disturbance, including construction staging areas and access routes, to minimize impacts to nesting habitat for birds and raptors. To ensure the avoidance of impacts to native nesting avian species, the following measures shall be implemented pursuant to the MBTA and California Fish and Game Code. and maintenance activities during operations within and adjacent to avian nesting habitat shall be limited to the non-breeding season (September 1 – December 31) to the extent feasible. If will occur during the avian nesting season (generally January 1 – August 31), a qualified biologist shall conduct pre-nesting avian surveys within five days of the initiation of to determine the presence or absence of active nests. If a lapse in work of 5 days or longer occurs, another survey shall be conducted prior to work being reinitiated. Surveys shall include any potential habitat, including trees, shrubs, and on the ground, or on nearby structures that might be impacted by or maintenance activities that may cause nest destruction or abandonment, such as vegetation or weed removal, earth work, and vector control actions. If active nests are observed, a no-disturbance buffer marked with exclusion fencing will be established and maintained until the qualified biologist determines that the nest has fledged or failed. Fence stakes designed with bolt holes shall be plugged with bolts or other materials to avoid entrapping birds. The initial no-disturbance buffer shall extend a minimum of 500 feet in all directions for raptors and listed passerines and 300 feet in all directions for all other native passerines. A reduced buffer may be implemented at the discretion of the biologist for non-listed passerines; however, for raptors and listed passerines, the biologist will obtain approval from USFWS and/or CDFW prior to allowing work to commence within the 500-foot buffer.	Less than Significant; Long-term Beneficial

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Biological Resources (cont.)			
1-BIO-1i (cont.)		Prior to construction, a qualified biologist shall prepare a site-specific Nesting Bird Management Plan for CDFW approval. The plan shall detail methodologies and definitions to enable a CDFW qualified biologist to monitor and implement nest-specific buffers based on topography, vegetation, species, and individual bird behavior. The plan shall be supported by a nest log, which tracks each nest and its outcome, and shall be submitted to CDFW at the end of each work week for the duration of the avian nesting season. **Mitigation Measure BIO-1i-ii: *Belding's Savannah Sparrow Breeding Habitat.*** Only after Area A and/or South Area B meets the performance criteria outlined below may work be implemented in Area B as part of Alternative 1, Phase 2. Restoration of the full tidal range in the western portion of Area B (which would require extensive temporal loss and minor permanent loss of tidal marsh and salt pan habitats, which are currently occupied by Belding's savannah sparrow) shall not occur until it has been demonstrated that the species is actively using restored tidal marsh and salt pan habitats in Area A and/or South Area B and that the temporal and permanent loss of habitat in Area B will not have negative impacts on the species. As with other special-status species, focused monitoring efforts shall be implemented to ensure that populations of these species either remain at prerestoration levels or increase in size, and appropriate management efforts shall be implemented if populations of these species decline in size. The commencement of Phase 2 is dependent upon the following criteria: 1. Suitable breeding habitat will be created at a minimum acreage of 2:1 (created: impacted). Suitable habitat will consist of areas dominated by pickleweed with a hydrologic regime similar to that currently present in West Area B, with similar slope, inundation, and soil salinity. 2. Percent cover of pickleweed will approximate areas of West Area B, at a minimum of 60% cover. 3. At least one nesting pair of Belding's savannah sparrow will be documented in Area A prior to implementation of work in West Area B. Due to rapid fluctuations in the population observed on-site, the high site fidelity observed, and avoidance of any impacts to the majority of habitat in Area B, one nesting pair will be indicative of the successful establishment of suitable habitat for the species.	
1-BIO-1j: Alternative 1 would, unless mitigated, result in adverse impacts on coastal California gnatcatcher through temporary habitat modifications; further, following the Phase 2 restoration effort, Alternative 1 would result in a potential beneficial effect in the quality and quantity of habitat for this species.	Potentially Significant	**Mitigation Measure BIO-1j-i: *Coastal California Gnatcatcher Avoidance.*** To avoid indirect impacts of restoration on nesting coastal California gnatcatcher, work activities within 500 feet of coastal scrub vegetation shall be timed to avoid the season when nests may be active for this species (March 15 to June 30). If avoidance of work activities within this time period is not feasible, a focused survey for coastal California gnatcatchers shall be conducted in the season prior to initiation of work activities to determine their presence or absence within suitable habitat 500 feet of work limits. In accordance with the USFWS protocol for the coastal California gnatcatcher (USFWS 1997) focused surveys shall be conducted by a permitted biologist a minimum of: a) six (6) surveys at least on week apart between March 15-June 30; or b) nine (9) surveys conducted at least two weeks apart	Less than Significant; Long-term Beneficial

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Biological Resources (cont.)			
1-BIO-1j (cont.)		between July 1 to March 14. The results shall be submitted in a report to the Corps, USFWS, and CDFW. If occupied habitat and/or nesting individuals are determined to be present based on the focused survey, measures to avoid take of coastal California gnatcatchers and active nests, such as the creation of suitably-sized no-work buffers, shall be implemented prior to restoration activities. Prior to construction or post-restoration maintenance activities during the breeding season, a preconstruction clearance and nest survey shall be performed by a qualified biologist within 7 days prior to work activities to determine the location of nests within 500 feet of work areas. Measures such as erecting a temporary barrier with stacked hay bales shall be implemented to reduce the amount of work noise and motion in proximity to active nests. If a nest is detected, work shall halt within 500 feet of the nest, and the nest shall be monitored on a weekly basis by a qualified biologist familiar with coastal California gnatcatchers, until he/she determines the nest is no longer active or the young have fledged.	
1-BIO-1k: Alternative 1 would, unless mitigated, result in a substantial adverse impact on least Bell's vireo through temporary habitat modifications; however, following the Phase 2 restoration effort, Alternative 1 would result in a substantial beneficial effect in the quality and quantity of habitat for this species.	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring), BIO-1b-iii (Noxious Weed Control), and BIO-1k (Least Bell's Vireo Avoidance). **Mitigation Measure BIO-1k: *Least Bell's Vireo Avoidance***. To avoid direct impacts of restoration on occupied habitat or potentially suitable habitat for least Bell's vireos, all willow riparian habitat shall be avoided. All aspects of Project design such as the establishment of tidal channels, and any associated habitat disturbance including vegetation trimming or removal, shall avoid all willow habitat in Southeast Area B. To avoid indirect impacts of restoration on nesting least Bell's vireos, work activities within 500 feet of riparian vegetation shall be timed to avoid the season when nests may be active for this species (March 15 to August 1). If avoidance of work activities within this time period is not feasible, a focused survey for least Bell's vireos shall be conducted in the season prior to initiation of work activities to determine their presence or absence within suitable habitat 500 feet of work limits. The focused survey shall consist of eight site visits conducted 10 days apart during the period of April 10 to July 31 in compliance with the USFWS protocol. The results shall be submitted in a report to the Corps, USFWS and CDFW. If occupied habitat and/or nesting individuals are determined to be present based on the focused survey, measures to avoid take of least Bell's vireos and active nests shall be implemented prior to restoration activities. Prior to construction activities during the breeding season, a preconstruction clearance and nest survey shall be performed by a qualified biologist within 7 days prior to work activities to determine the location of nests within 500 feet of work areas. Measures such as erecting a temporary barrier with stacked hay bales shall be implemented to reduce the amount of work noise and motion in proximity to active nests. If a nest is detected, work shall halt within 500 feet of the nest, and the nest shall be monitored on a weekly basis by a qualified biologist familiar with least Bell's vireos, until he/she determines the nest is no longer active or the young have fledged.	Less than Significant; Long-term Beneficial

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Biological Resources (cont.)			
1-BIO-1k (cont.)		Post-restoration, willow habitat in Southeast Area B shall be monitored to ensure tidal habitats are not adversely affecting the survival or health of the willow thickets. Monitoring requirements and adaptive management actions for least Bell's vireos and occupied/suitable habitat for this species during restoration and post-restoration shall be identified in the Habitat Restoration and Monitoring Plan, including measures to prevent salinity-related impacts to willow thickets and ensure persistence of this habitat.	
1-BIO-1l: Alternative 1 would, unless mitigated, result in a substantial adverse impact on burrowing owl wintering habitat; however, following the Phase 2 restoration effort, Alternative 1 would provide suitable foraging habitat and may potentially expand foraging, wintering and potentially nesting habitat for this species.	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring), BIO-1b-iii (Noxious Weed Control), BIO-1*l*-i (Burrowing Owl Surveys), and BIO-1*l*-ii (Burrowing Owl Habitat Maintenance). **Mitigation Measure BIO-1*l*-i: *Burrowing Owl Surveys***. A qualified biologist shall conduct wintering/breeding protocol burrowing owl surveys in accordance with CDFW's 2012 Staff Report on Burrowing Owl Mitigation to determine whether or not owls are present within the Project site. If burrowing owls are detected, a Burrowing Owl Management Plan will be prepared and approved by CDFW prior to commencement of construction. The Burrowing Owl Management Plan will be based on CDFW's 2012 Staff Report on Burrowing Owl Mitigation and address owl specific minimization and avoidance measures, and measures to protect occupied habitat. The Burrowing Owl Management Plan will include mitigation for impacted occupied burrows at no less than a 3:1 ratio by installation of artificial burrows. Prior to construction, pre-construction surveys shall be conducted no more than 14 days prior to the commencement of work activities. A final survey prior to disturbance of a potential owl burrow shall be conducted within 24 hours of disturbance. Surveys shall be conducted throughout suitable habitat in the Ballona Reserve to detect wintering and breeding owls, if present. Destruction of unoccupied wintering burrows is considered a temporary impact, and suitable wintering habitat shall be restored to pre-Project or better conditions in upland areas. If an occupied burrow is impacted by Project activities, mitigation for that impact shall be implemented in accordance with the Burrowing Owl Management Plan as mentioned in the prior paragraph. Within 24 hours of post-restoration activities involving ground or vegetation disturbance within suitable burrowing owl habitat, a qualified biologist shall conduct a survey to check for signs of burrowing owl. If breeding or wintering owls are detected, burrowing owls and active burrows shall be avoided and the protective buffers established in the Burrowing Owl Management Plan shall be implemented. **Mitigation Measure BIO-1*l*-ii**: ***Burrowing Owl Habitat Maintenance****.* During post-restoration phases, suitable breeding and wintering habitat for burrowing owl shall be maintained and detailed in the O&M Plan and Habitat Restoration and Monitoring Plan. Measures and actions to maintain suitable habitat for burrowing owl shall be in accordance with Mitigation Management Plan and Vegetation Management Goals identified in the Staff Report for Burrowing Owl Mitigation (CDFG 2012), and may include the following:	Less than Significant; Long-term Beneficial

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Biological Resources (cont.)			
1-BIO-1l (cont.)		1. Manage vegetation height and density (especially in immediate proximity to burrows). Suitable vegetation structure varies across sites and vegetation types, but should generally be at the average effective vegetation height of 4.7 cm and <13 cm average effective vegetation height. 2. Promote self-sustaining populations of host burrowers by limiting or prohibiting lethal rodent control measures and by ensuring food availability for host burrowers through vegetation management.	
1-BIO-1m: Alternative 1 would, unless mitigated, result in a limited adverse impact, either directly or through habitat modifications, on nesting raptors.	Potentially Significant	Implement Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).	Less than Significant
1-BIO-1n: Alternative 1 would, unless mitigated, result in a substantial adverse impact on special-status upland birds; however, following the Phase 2 restoration effort, Alternative 1 would provide comparable amounts of habitat and may potentially expand foraging and nesting habitat for these species resulting in an overall net beneficial effect.	Potentially Significant	Implement Mitigation Measures BIO-1b-iii (Noxious Weed Control), and BIO-1i-i (Nesting Bird and Raptor Avoidance).	Less than Significant; Long-term Beneficial
1-BIO-1o: Alternative 1 would, unless mitigated, result in a substantial short-term adverse impact on special-status shorebirds; however, following Phase 2 restoration, Alternative 1 would have a beneficial effect on available breeding and foraging habitat for shorebirds.	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1i-i (Nesting Bird and Raptor Avoidance).	Less than Significant
1-BIO-1p: Alternative 1 would, unless mitigated, result in a substantial adverse impact on special-status marsh birds; however, following the Phase 2 restoration effort, Alternative 1 would expand the total area of suitable breeding and foraging habitat for marsh birds.	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1i-i (Nesting Bird and Raptor Avoidance).	Less than Significant; Long-term Beneficial

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Biological Resources (cont.)			
1-BIO-1q: Alternative 1 would, unless mitigated, result in a substantial adverse impact, either directly or through habitat modifications, on Southern California salt marsh shrew and South Coast marsh vole; however, following the Phase 2 restoration effort, Alternative 1 would expand the total area of suitable habitat for these species in the Ballona Reserve.	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).	Less than Significant; Long-term Beneficial
1-BIO-1r: Alternative 1 would, unless mitigated, result in a limited significant adverse impact either directly or through habitat modifications, on special-status bats.	Potentially Significant	**Mitigation Measure BIO-1r**: ***Bat Avoidance.*** *Avoidance of Maternity Roosts.* Work within potential bat roosting habitat shall avoid the maternity roosting season (March 1 to July 31) to the extent feasible. If work must be conducted within the maternity roosting season, prior to the start of work within or near trees, bridges or other structures within the work area, a qualified bat biologist shall conduct a preconstruction survey to determine if bats are roosting within the Project work area. If bats are not roosting, no further mitigation is required. If bats are roosting, all maternity roosts shall be avoided and an appropriate no-disturbance buffer shall be established at the discretion of a qualified biologist, based on the sensitivity of the bat species. If work within the buffer is deemed necessary, a qualified biologist shall monitor work activities to ensure no disturbance to the roost(s). For any palm tree scheduled to be removed as part of restoration, the following procedures shall be applied before the tree is removed: 1) Trees shall be removed outside of the maternity roosting season (prior to March 1 or after July 31); 2) Under the direction of a qualified bat biologist, select fronds would be removed prior to dusk to modify the structure of the tree the day before the tree is scheduled to be removed; and 3) Noise and vibrations (e.g., striking the base of the tree) shall be scheduled 15 minutes prior to removal of the palm tree, during daylight hours. *Exclusion Outside of Maternity Roosting Season.* If bats are determined by a qualified biologist to be roosting within or near bridges and other structures within the work area, bats shall be humanely evicted and excluded from those structures. The humane eviction/exclusion shall be conducted in the fall (September or October) preceding work activities that could affect roosting bats. Exclusion in the fall is recommended to avoid impacts to hibernating bats or a maternity roost (typically April through August in southern California) when flightless young are present. To protect roosting bats, a combination of acoustic surveys of habitat around structures, structure inspection, and exit counts shall be used to survey the area that may be directly or indirectly impacted by the Project. As bats may utilize dense tree canopies, snags, or bridges over creeks/water, these habitat types should be specifically surveyed. Foraging areas should also be identified and specific flight routes to those foraging areas as well. Bats shall be identified to the most specific taxonomic level possible, and roosts shall be evaluated to determine their size and significance.	Less than Significant; Long-term Beneficial

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Biological Resources (cont.)			
1-BIO-1r (cont.)		Bat surveys shall include: 1) the exact location of all roosting sites (location shall be adequately described and drawn on a map); 2) the number of bats present at the time of visit (count or estimate); 3) each species of bat present shall be named (include how the species was identified); 4) the location, amount, distribution and age of all bat droppings shall be described and pinpointed on a map; 5) the type of roost; night roost (rest at night while out feeding) versus a day roost (maternity colony) must also be clearly stated; and 6) All survey results, including field data sheets should be provided to CDFW. During installation of humane eviction/exclusion devices, each crevice shall be inspected using flashlights or fiber optic scopes for the presence of day-roosting bats. At crevices where the absence of day-roosting bats is confirmed, the crevices immediately shall be sealed using materials such as foam backer rod or pipe insulation secured with adhesive to prevent bats from entering and using the crevices. At crevices where bats are visibly present or where absence cannot be confirmed, humane eviction devices shall be installed that would allow the bats to exit the crevice but prevent them from returning. The qualified biologist performing the humane eviction shall determine the exact type of eviction device to be installed and exclusionary device used. The eviction device shall remain in place for at least 14 days following installation to allow sufficient time for all the bats to vacate the crevice. After the exclusionary period, the eviction device shall be removed and exclusion device installed. The exclusion device shall remain in place for the duration of work activities, and shall be inspected weekly by a qualified biologist. All aspects of the humane eviction/exclusion of bats shall be supervised directly and monitored by a qualified biologist approved by CDFW. Following completion of activities that could impact roosting bats, the exclusion devices shall be removed by the contractor (under supervision of the qualified biologist) to allow bats to return to the roost crevices.	
1-BIO-2a: Alternative 1 would result in a substantial increase in southern mud intertidal habitat (i.e., mud-flat), which would be a long-term beneficial effect, following short-term adverse impacts to a portion of existing on-site southern mud intertidal habitat during site restoration.	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).	Less than Significant; Long-term Beneficial
1-BIO-2b: Alternative 1 would result in a substantial increase in southern coastal salt marsh habitat, which would be a beneficial effect, following short-term adverse impacts to a portion of existing on-site southern coastal salt marsh habitat during site restoration.	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).	Less than Significant; Long-term Beneficial

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Biological Resources (cont.)			
1-BIO-2c: Alternative 1 would result in an increase in coastal brackish marsh habitat, which would be a beneficial effect, following short-term adverse impacts during site restoration.	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).	Less than Significant; Long-term Beneficial
1-BIO-2d: Alternative 1 would result in an increase in southern willow scrub habitat, which would be a beneficial effect, following short-term adverse impacts to a portion of existing on-site southern willow scrub habitat during site restoration.	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).	Less than Significant; Long-term Beneficial
1-BIO-2e: Alternative 1 would, unless mitigated, result in a substantial adverse impact on southern dune scrub habitat.	Potentially Significant	Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).	Less than Significant
1-BIO-2f: Alternative 1 would not have a substantial adverse impact on benthic communities, with a long-term beneficial effect related to increased habitat and habitat quality.	Less than Significant	No mitigation measures are required.	Short term Less than Significant; Long-term Beneficial
1-BIO-3a: Alternative 1 would result in an increase in the amount and quality of potential waters of the U.S. and waters of the State, with short-term adverse impacts to a portion of existing on-site waters, during site restoration.	Less than Significant	No mitigation is required.	Less than Significant; Long-term Beneficial
1-BIO-3b: Alternative 1 would, unless mitigated, result in a substantial adverse impact to human health relating to the potential presence of disease vectors associated with wetland habitats.	Potentially Significant	**Mitigation Measure BIO-3b: *Vector Management*.** A Vector Control Plan shall be developed in consultation with the Los Angeles County West Vector & Vector-Borne Disease Control District to ensure that there are not increases in vector-spread disease associated with restoration activities. Integrated vector management, developed as part of the Vector Control Plan, shall combine ecological management, monitoring, and limited biological and chemical control to control vectors on-site. Nevertheless, the Vector Control Plan should include the use of Bactimos PT or another insecticide that has BTI as an active ingredient. The Vector Control Plan also shall outline approved methods of control for other vectors, including rodents, without the use of rodenticides with the potential for secondary kill.	Less than Significant
1-BIO-4: Alternative 1 would not result in a significant impact on migratory wildlife movement.	Less than Significant	No mitigation is required	Less than Significant; Long-term Beneficial

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Cultural Resources			
1-CUL-1: Alternative 1 would, if not mitigated, cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5.	Potentially Significant	**Mitigation Measure CR-1: *Archaeological Monitoring*.** A Cultural Resources Monitoring Plan (CRMP) shall be developed and implemented for the Project. The CRMP also would be a component of a Historical Properties Treatment Plan (HPTP), per Section 106 of the NHPA, should the PA or MOA prepared for the project require an HPTP. A Secretary of the Interior Qualified archaeologist shall be retained to oversee preparation of the CRMP/HPTP, construction monitoring, and preparation of a final monitoring report. The qualified archaeologist shall develop the CRMP/HPTP based on Project design plans, the results of the archaeological and geoarchaeological studies prepared for the Project (Douglas et al. 2015; Lockwood 2015; Vader and Bever 2016), input from Native American representatives, and any other relevant information. The CRMP/HPTP shall provide measures for cultural resources construction worker sensitivity training; delineation of sensitive areas; archaeological and Native American monitoring; assessment and treatment of unanticipated discovery of archaeological resources and human remains; notification protocols; procedures for Native American coordination and input; weekly, monthly, and final reporting; and curation of cultural materials recovered during monitoring. The CRMP/HPHP shall be developed in coordination with CDFW, the Corps, and appropriate Native American representatives. The CRMP/HPHP shall specify the roles and responsibilities of involved parties, and also shall specify the location, duration and timing of monitoring, which minimally shall occur in areas of high or moderate sensitivity, and from the time of initial ground disturbance (which could include grading, vegetation removal, brush clearance, excavation, and other activities) until a depth at which the potential to encounter buried archaeological deposits is greatly reduced. These sensitive areas will include, minimally, archaeological sites CA-LAN-54 and CA-LAN-3784H (including a suitable buffer of at least 100 feet), and areas identified as highly sensitive in the geoarchaeological study. These areas shall be identified in maps to guide monitoring. The CRMP/HPTP shall outline procedures for determining when/where monitoring may be reduced or discontinued in consultation among CDFW, the Corps (in cases of an HPTP), qualified archaeologist, and appropriate Native American representatives. The CRMP/HPTP shall stipulate that archaeological monitoring shall be conducted by an archaeological monitor familiar with the types of resources that could be encountered and that the archaeological monitor shall keep daily logs detailing the types of activities and soils observed, and any discoveries. Monitors shall be empowered to halt and re-direct ground disturbing activities in the event of a discovery until it has been assessed for significance and treatment implemented, if necessary. The CRMP/HPTP shall state that avoidance or preservation in place shall be the preferred means of mitigating impacts to historical resources and unique archaeological resources but will provide procedures to follow should avoidance be infeasible (see Mitigation Measure CR-3). **Mitigation Measure CR-2: *Native American Monitoring*.** CDFW shall retain a Native American monitor who is traditionally and culturally affiliated with the Project site to carry out the monitoring as required by the CRMP/HPTP in CR-1. The monitor shall also be empowered to halt and re-direct work in the event of a discovery until it has been assessed for significance and treatment implemented, if necessary. The provisions of the Native American monitoring plan will be included in the CRMP/HPTP.	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Cultural Resources (cont.)			
1-CUL-1 (cont.)		**Mitigation Measure CR-3:** ***Treatment of Unanticipated Discoveries*.** The CRMP/HPTP developed as part of Mitigation Measure CR-1 shall include protocols for the assessment and treatment of any unanticipated discoveries of archaeological resources during Project implementation, including procedures for assessing the significance of the resources according to the National Register and California Register. To accomplish this, the unanticipated discoveries component of the CRMP/HPTP will contain: 1. A research design to be used to guide the evaluation of cultural resources, including a regional cultural setting, appropriate regional research questions, and field methods for the testing and evaluation of cultural resources. 2. Prescribed actions to be taken in the event that unanticipated cultural resources are discovered during construction, or known resources are impacted in an unanticipated manner, consistent with Mitigation Measure CR-1, including (but not limited to): a. Notification procedures b. Establishment of buffers for resources that will be avoided c. Documentation of resources on DPR forms d. Inspection of the resource(s) by a qualified archaeologist e. Evaluation of the resource for listing in the California Register and National Register, or as a unique archaeological resource under CEQA, and as a contributor to the BLAD f. Monitoring of construction in the vicinity of the resource per Mitigation Measures CR-1 and CR-2 3. Treatment protocols for significant cultural resources that cannot be avoided, to be developed in consultation with CDFW, the Corps, the SHPO and appropriate Native American representatives, may include but not be limited to: a. Data recovery excavation, with preparation of an attendant data recovery plan b. Surface artifact collection c. Further site documentation, including photography, collection of oral histories, preparation of a scholarly work, or some form of public awareness or interpretation d. Special studies where sufficient data exists, including but not limited to radiocarbon dating, residue analysis, sourcing and other materials analysis e. Historical research, as appropriate, with the aim to target the recovery of important scientific or other data contained in the portion of the significant resource to be impacted by the project f. A report documenting the methods and results of the treatment of the resource	

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Cultural Resources (cont.)			
1-CUL-1 (cont.)		**Mitigation Measure CR-4: *Compliance with Secretary of Interior's Standards*.** CDFW shall retain a Secretary of the Interior qualified architectural historian to ensure compliance with the Secretary of the Interior's Standards regarding the re-use of the Pacific Electric Railroad Bridge Abutments. The architectural historian shall prepare a character-defining features memorandum that outlines the characteristics of the bridge that convey its significance and that must be retained. In addition, the architectural historian shall provide guidance on the types of bridge spans that would be consistent with the Standards. The architectural historian shall review and approve the preliminary and final bridge design plans to confirm that it conforms to the Standards. The architectural historian shall also monitor construction of the new bridge span to ensure that the Project does not inadvertently damage or alter the character-defining features of the bridge abutments. Further, post-restoration plans for maintenance and repair of the bridge will need to be developed with input from an architectural historian and in accordance with the Standards to ensure that post-restoration use of the bridge will not impact the resource.	
1-CUL-2: Alternative 1 would, if not mitigated, cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5.	Potentially Significant	Implement Mitigation Measures CR-1 through CR-3.	Less than Significant
1-CUL-3: Alternative 1 could, if not mitigated, directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	Potentially Significant	**Mitigation Measure CR-5: *Paleontological Resources Impact Mitigation Plan*.** A Paleontological Resources Impact Mitigation Plan (PRIMP) shall be prepared prior to the start of restoration. The PRIMP shall be developed by a qualified paleontologist (defined as a paleontologist meeting the SVP Standards). The PRIMP shall identify areas where depth of excavation will extend into areas that are considered moderately to highly sensitive for paleontological resources, based on the final grading plans. Paleontological resource requirements shall be incorporated as a note on the grading plan cover sheet. The PRIMP shall include, but not be limited to: 1. During excavations in areas underlain by geologic units identified as having moderate to high paleontological sensitivity per the SVP guidelines and likely to contain paleontologic resources, a qualified vertebrate paleontologist, shall direct the paleontological monitoring. Areas of concern include all previously undisturbed paleontologically sensitive sediments of the fossiliferous San Pedro Sand (Qsp) and excavations beyond a depth of five feet into Quaternary alluvium (Qa). As shown in Table 3.5-1, Quaternary alluvium (Qa) underlies most areas of the project. San Pedro Sand (Qsp) underlies portions of South and Southeast Area B. Specific areas that will require monitoring will be developed in the PRMP based on the most current design plans. If no significant fossils are found, then, after an adequate amount of time, which the SVP (2010) considers to be 50% of the monitoring duration, the frequency of monitoring may be adjusted at the discretion of the qualified paleontologist.	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Cultural Resources (cont.)			
1-CUL-3 (cont.)		2. Paleontological monitors shall be equipped to salvage fossils as unearthed to avoid construction delays, collect necessary paleontological data, and to remove samples of sediments likely to contain the remains of small fossil invertebrates and vertebrates. If it is determined by the qualified paleontologist that appropriate sediments are present that may yield significant microvertebrates, a test sample should be collected per the SVP (2010) guidelines. If scientifically significant microvertebrates are recovered from the test sample, the PRIMP shall direct the qualified paleontologist or paleontological monitor to collect and screen a standard sample per the SVP (2010) guidelines. Monitors shall be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. 3. The PRIMP shall stipulate that the preparation of recovered specimens shall be conducted to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential in order to fully mitigate adverse impacts to the resources. 4. The PRIMP shall specify that the identification and curation of specimens into an established museum repository with permanent retrievable paleontologic storage. These procedures are also essential steps in effective paleontological mitigation and CEQA compliance. The paleontologist should have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not complete until such curation into an established museum repository has been fully completed and documented. 5. The PRIMP shall detail the preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, would signify completion of the PRIMP to mitigate impacts to paleontologic resources. Included in the report will be recommendations for post-restoration management protocols that might be necessary to reduce indirect impacts following project completion. These could include management requirements for restricting access to significant paleontological resources through a combination of law enforcement, protective enclosures, land access restrictions, or other means. The final PRIMP shall be submitted to and approved by the CDFW and the Corps prior to commencement of grading in the Ballona Reserve. The qualified paleontologist also shall contribute to any construction worker cultural resources sensitivity training, either in person or via a module provided to the qualified archaeologist.	

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Cultural Resources (cont.)			
1-CUL-4: Alternative 1 could, if not mitigated, disturb human remains, including those interred outside of formal cemeteries.	Potentially Significant	**Mitigation Measure CR-6: *Discovery of Human Remains*.** If human remains are encountered, the construction contractor shall immediately halt work in the vicinity (within 100 feet) of the find, notify CDFW and the Corps of the find, and unless CDFW decides to initiate contact, the construction contractor shall contact the Los Angeles County Coroner in accordance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5. If the County Coroner determines that the remains are Native American, the NAHC will be notified in accordance with Health and Safety Code Section 7050.5(c), and Public Resources Code Section 5097.98 (as amended by AB 2641). The NAHC will designate a Most Likely Descendant (MLD) for the remains per Public Resources Code Section 5097.98. Until the CDFW has conferred with the MLD and determined an appropriate course of action for protection, avoidance, or removal and disposition of the remains, CDFW and the Corps shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities take into account the possibility of multiple burials.	Less than Significant
1-CUL-5: Implementation of Alternative 1, unless mitigated, would result in the loss of a property's eligibility status under National Register Criteria A-C.	Potentially Significant	Implement Mitigation Measures CR-1 through CR-4	Less than Significant
1-CUL-6: The implementation of Alternative 1, unless mitigated, would result in the destruction of a site eligible under National Register Criterion D.	Potentially Significant	Implement Mitigation Measures CR-1 through CR-3	Less than Significant
1-CUL-7: The implementation of Alternative 1 would not result in a major modification of a National Historic Landmark or a property meeting the criteria of a National Historic Landmark as defined in 36 CFR Part 65.	No Impact	No mitigation measures are required.	No Impact
Geology, Seismicity, and Soils			
1-GEO-1a: Alternative 1 would not expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.	Less than Significant	No mitigation measures are required.	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Geology, Seismicity, and Soils (cont.)			
1-GEO-1b: Alternative 1 would not expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving strong seismic ground shaking.	Potentially Significant	**Mitigation Measure GEO-1b: *Geotechnical Recommendations.*** As a condition of approval, CDFW shall require that all the recommendations made in the July 1, 2013 Geotechnical Investigation Report for the Ballona Restoration Project by Group Delta Consultants, including revisions in response to Corps comments, are incorporated as part of Project designs. Recommendations that are applicable to earthwork, site preparation, levee design, and foundation design that were prepared for the project shall be incorporated in the Project. The final seismic considerations as well as recommendations for all other identified geotechnical hazards (including but not limited to expansive soils) for the site shall be in accordance with all current design requirements of the most recent California Building Code and any current Corps' standards. All recommendations and plans for all improvements proposed as part of the project shall be submitted to and approved of by the County and the Corps prior to the commencement of any ground breaking activities.	Less than Significant
1-GEO-1c-i: Alternative 1's levees and bridge structures would not expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving seismic-related ground failure.	Potentially Significant	Implement Mitigation Measure GEO-1b: *Geotechnical Recommendations*.	Less than Significant
1-GEO-1c-ii: The proposed parking structure would, if not mitigated, expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving seismic-related ground failure.	Potentially Significant	**Mitigation Measure GEO-1c: *Geotechnical Investigation and Report.*** As a condition to allowing the Los Angeles County Department of Beaches and Harbors to enter the reserve and construct the parking structure, CDFW shall require that entity, prior to proceeding with such construction to: 1) Commission a site-specific, design level geotechnical investigation for the proposed parking structure prepared by a registered geotechnical engineer. The investigation shall comply with all applicable state and local building code requirements and: a) Include an analysis of the expected ground motions at the site from known active faults using methodologies in accordance with the California Building Code; b) Determine and implement structural design requirements as prescribed by the most current version of the California Building Code, including applicable County amendments, to ensure that structures can withstand ground accelerations expected from known active faults; c) Determine the final design parameters for walls, foundations, foundation slabs, utilities, roadways, parking lots, sidewalks, and other surrounding related improvements in order to comply with the most current version of the California Building Code; 2) Ensure that project plans and specifications for foundation design, earthwork, and site preparation shall incorporate all of the recommendations contained in the site specific investigation. 3) Ensure that the project structural engineer shall review the site specific recommendations, provide any additional necessary amendments to meet Building Code requirements, and incorporate all applicable recommendations from the investigation in the structural design plans and shall ensure that all structural plans for the project meet current California Building Code requirements.	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Geology, Seismicity, and Soils (cont.)			
1-GEO-1c-ii (cont.)		4) Ensure that the approval agency review all project plans for grading, foundations, structural, infrastructure and all other relevant construction permits to ensure compliance with the applicable geotechnical investigation and other applicable Code requirements. 5) If expansive soils are present, the technical investigation shall provide recommendations to either remove or treat the expansive soils in accordance with current California Building Code Requirements and any local County amendments.	
1-GEO-1c-iii: Alternative 1 would, unless mitigated, expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving liquefaction.	Potentially Significant	Implement Mitigation Measure GEO-1b*: Geotechnical Recommendations*.	Less than Significant
1-GEO-1d: Alternative 1 would not expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving seismically-induced landslides.	Less than Significant	No mitigation measures are required.	Less than Significant
1-GEO-2: Alternative 1 would, unless mitigated, be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and, thereby, potentially result in seepage/piping, slope stability issues, or settlement.	Potentially Significant	Implement Mitigation Measure GEO-1b: *Geotechnical Recommendations*.	Less than Significant
1-GEO-3: Alternative 1 would, unless mitigated, be located on expansive soil and, thereby, create substantial risks to life or property.	Potentially Significant	Implement Mitigation Measure GEO-1b: *Geotechnical Recommendations* and GEO1c: *Geotechnical Investigation and Report*.	Less than Significant
1-GEO-4: Alternative 1 would, if not mitigated, be located on corrosive soils and, thereby, create substantial risks to life or property.	Potentially Significant	**Mitigation Measure GEO-4: *Corrosive Soil Testing*.** Any native or other fill soils that contact concrete or metal foundation elements of structures constructed under the Project shall be tested for corrosivity. Those soils, as determined by laboratory analysis and reviewed by a California licensed geotechnical engineer, that exceed acceptable thresholds of corrosivity shall be managed in accordance with recommendations of a qualified geotechnical engineer or corrosion engineer. Engineering recommendations could include soil reconditioning through mixing with non-corrosive soils, replacement of the corrosive soils in the vicinity of the foundation, or corrosion reducing systems for exposed metal such as “sacrificial anodes.” In addition, the contractor shall use Type II cement for all concrete and steel foundation work to further reduce the potential for degradation of concrete through corrosion.	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Greenhouse Gas Emissions			
1-GHG-1: Alternative 1 would not generate GHG emissions, either directly indirectly, that would have a significant impact on the environment.	Less than Significant	No mitigation measures are required.	Less than Significant
1-GHG-2: Alternative 1 would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions.	No Impact	No mitigation measures are required.	No Impact
Hazards and Hazards Materials			
1-HAZ-1: Alternative 1 would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials.	Less than Significant	No mitigation measures are required.	Less than Significant
1-HAZ-2: Alternative 1 could, unless mitigated, create a significant hazard to the public by potentially disturbing existing contaminated soil or groundwater at the Ballona Reserve.	Potentially Significant	Implement Mitigation Measure WQ-1a-ii: *Sampling and Analysis Plan (SAP)*	Less than Significant
1-HAZ-3: Alternative 1 would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.	Less than Significant	No mitigation measures are required.	Less than Significant
1-HAZ-4: Alternative 1 would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5; however, it would not create a significant hazard to the public or the environment.	Less than Significant	No mitigation measures are required.	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Hazards and Hazards Materials (cont.)			
1-HAZ-5: Alternative 1 would not be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, or within the vicinity of a private airstrip, and would the project result in a safety hazard for people residing or working in the project area.	No Impact	No mitigation measures are required.	No Impact
1-HAZ-6: Alternative 1 includes four activities that could affect but would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan by requiring temporary road closures, traffic lane restrictions, or interruptions for truck crossings.	Potentially Significant	Implement Mitigation Measures TRANS-1a, *Traffic Control and Safety Assurance Plan,* and TRANS-1b *Restriction of Lane Closures*.	Less than Significant
1-HAZ-7: Alternative 1 would not 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**.**	Less than Significant	No mitigation measures are required.	Less than Significant
Hydrology and Water Quality			
1-WQ-1a: The excavation and grading associated with restoration proposed under Alternative 1 could expose and release contaminated sediments resulting in water quality impacts in Ballona Creek.	Potentially Significant	**Mitigation Measure WQ-1a-i: *Monitoring and Adaptive Management Plan (MAMP)*.** A Monitoring and Adaptive Management Plan (MAMP) (Appendix F11 of the EIS/EIR) shall be prepared and implemented. The MAMP shall provide a framework for the assessment of the Project and watershed using the TMDL targets as assessment metrics. The MAMP shall use both Project monitoring, the sediment and water quality data gathered from the TMDL monitoring conducted by the Permittees (designated parties listed in the Ballona Creek and Ballona Creek Estuary TMDLs who are under a state-wide or LARWQCB NPDES MS4 Stormwater Permit), and monitoring conducted by the Corps in the Marina del Rey harbor entrance channel to determine if impairment conditions exist and provide protocols for any further measures to meet TMDLs and dredging requirements. The assessment of the effectiveness of the Project features and watershed measures (conducted by the Permittees) shall be determined through comparisons to the Sediment Quality Objectives (SQOs) and fish tissue targets. If the SQO analysis indicated an impaired or likely impaired condition, then further source and delineation monitoring shall be conducted. Depending on the source of the impairment, reparative measures shall be implemented by the Project proponents,	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Hydrology and Water Quality (cont.)			
1-WQ-1a (cont.)		Permittees, or in cooperation with parties as outlined in the MAMP framework to reduce the impacts to sediment to below the SQOs and fish tissue targets. SQOs shall be the regulatory target used to protect against negative biological impacts and are considered the performance standard to identify negative impacts. In the event that sediment quality impairments are found to be a result of the project, the sediment shall be excavated and disposed of off-site or buried beneath uncontaminated material on-site. If sediment quality impairments in the Marina del Rey harbor entrance channel are found to be a result of the project, CDFW shall coordinate with the Corps to develop a mutually agreed upon course of action, which could include participating in reparative measures proportional to the amount of increased impairment due to the project. Additionally, the MAMP shall monitor and address any changes in sediment deposition in the entrance of Marina del Rey after project implementation is complete. The plan shall use bathymetric data collected by the Corps to determine if deposition has increased substantially after completion of the project. In the event that substantial deposition is identified, CDFW shall coordinate with the Corps to develop a mutually agreed upon course of action, which could include participating in dredging proportional to the amount of increased deposition due to the project. Dredged material shall be disposed of back in the marsh by spraying a slurry of sediment in a thin layer across the marshplain or disposed of on- or off-site by other means in accordance with necessary permits or other approvals. The MAMP would ensure that any increases to deposition would be monitored and addressed in order to maintain boat access to the Marina consistent with historic dredging efforts. The MAMP would also monitor water levels in South and Southeast Area B to determine operation of the culverts in order to prevent flooding. Over time, flap gates would be installed on the culverts as part of Alternative 1 to limit the flow into South and Southeast Area B. Initial modeling indicated that adding a flap gate every 25 years would maintain the current level of flood protection, but the MAMP would ensure that water levels were monitored so that flap gates could be added as needed to maintain an acceptable level of flood risk. **Mitigation Measure WQ-1a-ii: *Sampling and Analysis Plan (SAP).*** A SAP shall be prepared and implemented prior to commencement of restoration and construction activities to identify any levels of constituents that may have been missed in previous sampling efforts. The results of the sediment sampling shall determine which materials shall be used as wetland surfaces (highest quality), as wetland foundation, or buried in the uplands (lowest quality) in accordance with the ER-Ls and ER-Ms developed by Long et al. (1995). The SAP shall also include, without limitation: a) In addition to the sampling and analysis of soil as identified in the SAP, soil and groundwater samples shall also be collected from any excavations that encounter groundwater. The soil samples shall be collected at or just below the static water level to sample soil that may have been affected by contaminated groundwater migrating from offsite properties. Each soil sample shall be labeled with a unique sample identification number, placed in to plastic bags in coolers with ice packs, along with the appropriate chain of custody documentation, and delivered to the analytical testing laboratory within the required testing method holding times.	

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Hydrology and Water Quality (cont.)			
1-WQ-1a (cont.)		b) All soil samples collected for the analyses described below shall be collected into Teflon-lined metal or plastic tubes and sealed to minimize the loss of volatile compounds. The groundwater samples shall be collected into glass bottles with Teflon-lined lids and the appropriate preservatives to seal in and preserve volatile compounds, if any. Each sample shall be labeled with a unique sample identification number, placed in to plastic bags in coolers with ice packs, along with the appropriate chain of custody documentation, and delivered to the analytical testing laboratory within the required testing method holding times. c) All soil and groundwater samples shall be analyzed for petroleum hydrocarbons using US EPA Test Method 8015 or equivalent, including a silica gel cleanup (USEPA Test Method 3630C or equivalent) to remove naturally occurring polar non-petroleum hydrocarbons that could interfere with the analyses. d) All soil and groundwater samples shall be analyzed for VOCs using USEPA Test Method 8260 or equivalent (at a minimum, the test methods shall be capable of detecting PCE). e) Following receipt of laboratory results of the chemical testing, soil or groundwater material that exceeds the reuse screening levels, CHHSLs, or PRGs and cannot be reused on site shall be transported by a DTSC-licensed hazardous waste hauler and disposed of at an offsite disposal facility licensed to receive the contaminated soil and groundwater. Alternative disposal options, such as onsite burial, shall be considered for soil and groundwater found not to contain contaminates or having concentrations below the regulatory thresholds.	
1-WQ-1b: Under Alternative 1, contaminated water and sediment from the watershed could, unless mitigated, be transported into the restored marsh resulting in areas of accumulated contaminated sediments and potential exceedance of water quality limits set forth by the Ballona Creek TMDL.	Potentially Significant	Implement Mitigation Measure WQ-1a-i *Monitoring and Adaptive Management Plan* (MAMP).	Less than Significant
1-WQ-1c: Under Alternative 1, water quality degradation could occur at Los Angeles (LA-2) or Newport Bay (LA-3) ocean disposal sites due to placement of excavated Project site sediments.	Potentially Significant	Implement Mitigation Measure WQ-1a-ii *Sampling and Analysis Plan (SAP)*.	Less than Significant
1-WQ-2: Alternative 1 would increase the extent of tidal inundation and could increase infiltration of salt water into the groundwater table resulting in the inland advancement of sea water intrusion.	Less than Significant	No mitigation measures are required.	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Hydrology and Water Quality (cont.)			
1-WQ-3a: The realignment and restoration of Ballona Creek proposed under Alternative 1 would result in erosion that could result in localized and downstream siltation.	Potentially Significant	Implement Mitigation Measure WQ-1a-i, *Monitoring and Adaptive Management Plan* (MAMP).	Less than Significant
1-WQ-3b: Alternative 1's proposed connection of Ballona Creek to the marsh would result in erosion but would not result in significant loss of habitat and/or levee destabilization.	Less than Significant	No mitigation measures are required.	Less than Significant
1-WQ-3c: Alternative 1 would not alter the capacity or characteristics of the existing storm drainage system such that there would be a reduction in available drainage capacity.	Less than Significant	No mitigation measures are required.	Less than Significant
1-WQ-4: Alternative 1's proposed realignment and restoration of Ballona Creek could, unless mitigated, significantly increase the risk of flooding.	Potentially Significant	Implement Mitigation Measure WQ-1a-i, *Monitoring and Adaptive Management Plan* (MAMP).	Less than Significant
1-WQ-5: Alternative 1 would not result in inundation by a seiche or tsunami.	Less than Significant	No mitigation measures are required.	Less than Significant
Noise			
1-NOI-1: Alternative 1 would, unless mitigated, result in noise levels that are in excess of standards established by the County of Los Angeles or City of Los Angeles.	Potentially Significant	**Mitigation Measure NOI-1-i:** The construction contractor(s) shall locate stationary noise sources as far as possible from noise-sensitive uses, to the extent feasible, and ensure that they are muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible. **Mitigation Measure NOI-1-ii:** All mobile off-road construction equipment operating at the Project site shall be equipped with properly operating mufflers. **Mitigation Measure NOI-1-iii:** Restoration-phase activities shall, to the extent feasible, be scheduled so as to avoid operating several pieces of heavy diesel-powered equipment simultaneously, which causes high noise levels. **Mitigation Measure NOI-1-iv:** Temporary barriers such as plywood structures or flexible sound control curtains at least 8 feet in height shall be erected, to the extent feasible, around the perimeter of the active work area to minimize the amount of noise on the surrounding sensitive receptors during noise-generating restoration activities.	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Noise (cont.)			
1-NOI-1 (cont.)		**Mitigation Measure NOI-1-v:** Project-related noise levels at the property line of the multi-family residential buildings located west of Area A and north of West Area B in the County of Los Angeles shall undergo spot check monitoring with a sound level meter that meets the requirements identified in Chapter 12.08 (Noise Control) of the County of Los Angeles Municipal Code to ensure that noise levels from the Project's implementation activities would not exceed 80 dBA at multi-family residences during active work hours. Where noise levels exceeding 80 dBA are detected, the construction contractor must be notified immediately and corrective actions must be implemented to reduce the noise levels to below 80 dBA. These corrective actions may include, but are not limited to, the erection of a noise barrier along the boundary of the Project site or the reduction in the amount of construction equipment operating concurrently to meet the County's noise standards for mobile equipment. **Mitigation Measure NOI-1-vi:** All construction staging areas during site restoration activities shall be located to maximize the distance between staging areas and occupied residential structures. **Mitigation Measure NOI-1-vii:** Two weeks prior to the commencement of restoration activities within Area A; North, East, Southeast, South, or West Area B; North or South Area C; or the SoCalGas Property, notification must be provided to all existing off-site residential uses located directly adjacent to the active work area that discloses the general work schedule, including the various types of activities and equipment that would be occurring throughout the duration of the construction period. **Mitigation Measure NOI-1-viii:** Signs shall be posted at the Project site that include permitted work days and hours, a contact number for the job site, and a contact number with the appropriate CDFW enforcement officers. **Mitigation Measure NOI-1-ix:** All Project noise-generating activities occurring in Area A shall be limited to the hours of 7:00 a.m. to 7:00 p.m. from Monday through Saturday and prohibited on Sundays or holidays as permitted under the County of Los Angeles Municipal Code, and all Project noise-generating activities occurring in Areas B and C and on the SoCalGas Property shall be limited to the hours of 7:00 a.m. to 9:00 p.m. from Monday through Friday, 8:00 a.m. to 6 p.m. on any Saturday or national holiday, and prohibited on Sundays as permitted under the City of Los Angeles Municipal Code, unless otherwise authorized or exempted under each of the respective municipal codes.	
1-NOI-2: Alternative 1 would, unless mitigated, result in vibration levels that exceed the County's 0.01 in/sec perception threshold at four locations, and so could result in vibration and associated groundborne noise-related human annoyance.	Potentially Significant	**Mitigation Measure NOI-2:** The operation of construction equipment at the Project site that generates high levels of vibration, such as large bulldozers, loaded trucks, and drill rigs, shall be prohibited within 100 feet of existing residential structures in both the County of Los Angeles and City of Los Angeles during restoration activities. Instead, small rubber-tired bulldozers, which generate vibration levels as low as 0.003 in/sec at 25 feet, shall be used within these areas during site preparation, grading, and excavation operations to ensure that vibration levels experienced at the off-site receptors would not be perceptible.	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Noise (cont.)			
1-NOI-3: Alternative 1 would not result in a substantial permanent increase in ambient noise levels in the Project vicinity from post-restoration activities.	Less than Significant	No mitigation measures are required.	Less than Significant
1-NOI-4: Alternative 1 would not result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity from on-site restoration activities above levels existing without the Project.	Less than Significant	No mitigation measures are required.	Less than Significant
1-NOI-5: Alternative 1 would not expose people residing or working in the Project area to excessive noise levels from a public airport or public use airport.	Less than Significant	No mitigation measures are required.	Less than Significant
1-NOI-6: Alternative 1 would not locate the Project within the vicinity of a private airstrip where it would expose people residing or working in the project area to excessive noise levels.	Less than Significant	No mitigation measures are required.	Less than Significant
Recreation			
1-REC-1: Alternative 1 would not increase the use of existing neighborhood and regional parks or other recreational facilities to the extent that substantial physical deterioration of the facilities would occur or be accelerated.	Less than Significant	No mitigation measures are required.	Less than Significant
Transportation and Traffic			
1-TRANS-1a: Restoration-phase activities associated with Alternative 1 would require temporary lane and road closures, and would increase traffic volumes at area intersections during and following restoration.	Potentially Significant	**Mitigation Measure TRANS-1a: *Construction Traffic Management Plan.*** The construction contractor(s) shall prepare a construction traffic management plan for each phase of the Project at the time of final design, prior to commencement of construction. This Plan would address details related to haul routes, dust control, noise control and City and County regulations. The construction management plan ensures that the construction activities and workers follow the City regulations and provides details of activities planned on-site. The Plan shall be developed on the basis of detailed design plans for the approved project, and shall include, but not necessarily be limited to, the elements listed below: a) Develop circulation and detour plans to minimize impacts on local streets. Haul routes that minimize truck traffic on local roadways and residential streets shall be used. As necessary, warning lights, signage and/or flaggers shall be used to guide vehicles through the construction work areas.	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Transportation and Traffic (cont.)			
1-TRANS-1a (cont.)		b) Control and monitor construction vehicle movements by enforcing standard construction specifications through periodic on-site inspections. c) Install traffic control devices where traffic conditions warrant, as specified in the applicable jurisdiction's standards (e.g., the California Manual of Uniform Traffic Controls for Construction and Maintenance Work Zones). d) Schedule truck trips outside of peak morning and evening commute hours to minimize adverse impacts on traffic flow (i.e., if agencies with jurisdiction over the affected roads identify highly congested roadway segments during their review of the encroachment permit applications). e) Post detour signs along affected roadways to notify motorists of alternative routes. f) Perform construction that crosses on street and off street bikeways, sidewalks, and other walkways in a manner that allows for safe access for bicyclists and pedestrians. Alternatively, provide safe detours to reroute affected bicycle/pedestrian traffic. g) At least two weeks prior to construction, post signage along all potentially affected roadways, recreational trails, bicycle routes, and pedestrian pathways, to warn motorists, bicyclists, and pedestrians of construction activities. The signs shall include information regarding the nature of construction activities, duration, and detour routes. Signage shall be composed of or encased in weatherproof material and posted in conspicuous locations for the duration of the closure period. At the end of the closure period, the contractors shall retrieve all notice materials. h) Construction activities shall be scheduled to minimize impacts during heavy recreational use periods (e.g., weekends and holidays). i) Implement a public information program to notify motorists, bicyclists, nearby residents, and adjacent businesses of the impending construction activities (e.g., media coverage, email notices, websites, etc.). Notices of the location(s) and timing of road closures shall be published in local newspapers and on available websites to allow motorists to select alternative routes. j) Store all equipment and materials in designated contractor staging areas. k) Maintain alternate one-way traffic flow past the construction zones where possible. l) Install detour signs to direct traffic to alternative routes around the closed road segment if alternate one-way traffic flow cannot be maintained past the construction zone. m) Limit lane closures during peak hours. n) Restore roads and streets to normal operation by covering trenches with steel plates outside of normal work hours or when work is not in progress.	

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Transportation and Traffic (cont.)			
1-TRANS-1a (cont.)		o) Comply with roadside safety protocols to reduce the risk of accidents. Provide “Road Work Ahead” warning signs and speed control (including signs informing drivers of state legislated double fines for speed infractions in a construction zone) to achieve required speed reductions for safe traffic flow through the work zone. Train construction personnel to apply appropriate safety measures as described in the traffic control and safety assurance plan. p) Maintain access for emergency vehicles at all times. Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, transit stations, hospitals, and schools. Provide advance notification to local police, fire, and emergency service providers of the timing, location, and duration of construction activities that could affect the movement of emergency vehicles on area roadways. q) Avoid truck trips through designated school zones during the school drop-off and pickup hours to the extent feasible. r) Provide flaggers in school areas at street crossings to manage traffic flow and maintain traffic safety during the school drop-off and pickup hours on days when pipeline installation would occur in designated school zones. s) Coordinate with the local transit providers to enable temporary bus routes or bus stops relocations within work zones as necessary. For example, access for Santa Monica Big Blue Bus Line 3 would be maintained at all times through the construction zone on Lincoln Boulevard during bridge construction. **Mitigation Measure TRANS-1b: *Restriction of Lane Closures.*** The construction traffic management plan, prepared for Mitigation Measure TRANS-1a, shall stipulate that lane closures on Culver Boulevard would be restricted to nighttime hours of 11:00 p.m. to 4:00 a.m.	
1-TRANS-1b: Post-restoration activities associated with Alternative 1, and increased visitorship to the Ballona Reserve, would increase traffic volumes on area roadways, but would not result in a noticeable increase in delays at off-site intersections.	Less than Significant	No mitigation measures are required.	Less than Significant
1-TRANS-2: Post-restoration activities associated with Alternative 1, and increased visitorship to the Ballona Reserve, would increase traffic volumes on area roadways, but would not conflict with level of service standards established by the County of Los Angeles congestion management agency for designated roads or highways.	Less than Significant	No mitigation measures are required.	Less than Significant

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Transportation and Traffic (cont.)			
1-TRANS-3: Alternative 1 would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks.	No Impact	No mitigation measures are required.	No Impact
1-TRANS-4: Alternative 1 would not substantially increase traffic hazards.	Less than Significant	No mitigation measures are required.	Less than Significant
1-TRANS-5: Alternative 1 would, unless mitigated, result in inadequate emergency access.	Potentially Significant	Implementation of Mitigation Measure TRANS-1a, *Construction Traffic Management Plan*	Less than Significant
1-TRANS-6: Alternative 1 would not adversely affect alternative transportation travel mode (public transit, bicycle, or pedestrian).	Less than Significant	Implementation of Mitigation Measure TRANS-1a, *Construction Traffic Management Plan*	Less than Significant
Utilities and Service Systems			
1-UTIL-1: Alternative 1 would not exceed wastewater treatment requirements of the Los Angeles Regional Water Quality Control Board.	Less than Significant	No mitigation measures are required.	Less than Significant
1-UTIL-2: Alternative 1 would not result in the construction of new water or wastewater treatment facilities or in the expansion of existing facilities.	Less than Significant	No mitigation measures are required.	Less than Significant
1-UTIL-3: Alternative 1 would have sufficient water supplies available to serve the Project from existing entitlements and resources, and new or expanded entitlements would not be needed.	Less than Significant	No mitigation measures are required.	Less than Significant
1-UTIL-4: Alternative 1 would be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs.	Less than Significant	No mitigation measures are required.	Less than Significant
1-UTIL-5: Alternative 1 would comply with federal, state, and local statutes and regulations related to solid waste.	No Impact	No mitigation measures are required.	No Impact

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR ALTERNATIVE 1

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Socioeconomics and Environmental Justice			
1-SE-1: Alternative 1 would not result in significant adverse employment-related or economic impacts, including on the availability or affordability of housing.	Less than Significant	No mitigation measures are required.	Less than Significant
1-SE-2: Alternative 1 would not result in substantial social change affecting people or communities.	Less than Significant	No mitigation measures are required.	Less than Significant
1-EJ-1: Alternative 1 could, unless mitigated, result in disproportionately high and adverse environmental impacts on a minority or low-income population, i.e., Native American groups, associated with restoration-related impacts on cultural resources.	Potentially Significant	Mitigation Measure EJ-1: Implement Mitigation Measures CR-1 and CR-2.	Less than Significant
Energy Conservation			
1-EC-1: Alternative 1 would result in the consumption of energy, but would not cause a significant adverse impact on local and regional energy supplies or requirements.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 1-EC-2: Restoration and post-restoration activities would, if mitigated, cause no adverse effect on local and regional energy supplies or requirements for additional capacity, would have a neutral effect on peak and base period demands, would comply with existing energy standards by directly supporting and furthering efforts toward achieving those standards, and would have no adverse effect on energy resources.	Potentially Significant	**Mitigation Measure EC-2a:** The parking garage operator shall use appropriate lighting levels for safety (estimated to be 1-2 foot candles) and shall use energy-efficient fixtures (e.g., LED or other lighting that provides efficiency comparable to or better than 55-watt induction lamps, which draw 58 watts per fixture). **Mitigation Measure EC-2b:** Parking garage operators shall turn off unneeded lights in the garage during the daytime in areas where ambient light is sufficient. Lights in emergency exit pathways shall remain on at all times for safety. **Mitigation Measure EC-2c:** If fans are installed to disperse exhaust fumes in the parking garage, a demand-control ventilation (DCV) system shall be installed rather than an “on/off” system. The DCV system shall continuously operate fans at less than 3% of the full-speed power draw and only increase the air flow when prompted by a sensor.	Less than Significant

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TABLE ES-2
SUMMARY OF HABITAT ACREAGES BY ALTERNATIVE

	Restoration Alternatives without Fill Areas[1]					Relocated Fill Areas[2]				Full Restoration Alternatives[3]				
	Existing Conditions	Alternative 1		Alternative 2	Alternative 3	Existing Conditions	High On-Site Fill	Mid On-Site Fill	No On-Site Fill	Existing Conditions	Alternative 1		Alternative 2	Alternative 3
Habitats		**Phase 1**	**Phase 2**								**Phase 1**	**Phase 2**		
Open Water	40.3	48.5	51.7	48.4	45.0	0.0	0.0	0.0	0.0	40.3	48.5	51.7	48.4	45.0
Southern Mud Intertidal	8.8	15.2	13.5	15.4	11.2	0.0	0.0	0.0	0.0	8.8	15.2	13.5	15.4	11.2
Low Salt Marsh	0.0	11.3	15.4	11.4	2.4	0.0	0.0	0.0	0.0	0.0	11.3	15.4	11.4	2.4
Mid Salt Marsh	0.0	58.2	84.4	64.2	28.8	0.0	0.0	0.0	0.0	0.0	58.2	84.4	64.2	28.8
High Salt Marsh	0.0	45.3	53.6	48.7	11.6	0.0	0.0	0.0	0.0	0.0	45.3	53.6	48.7	11.6
Muted Tidal Salt Marsh	18.2	14.4	1.5	14.4	12.5	0.0	0.0	0.0	0.0	18.2	14.4	1.5	14.4	12.5
Non-Tidal Salt Marsh	78.8	26.6	3.2	27.2	85.1	6.2	1.1	6.1	6.2	85.0	32.7	9.3	28.3	91.3
Non-Tidal Marsh	27.8	4.5	0.2	4.6	22.7	10.8	0.0	10.8	10.8	38.6	15.3	11.0	4.6	33.5
Coastal Brackish Marsh	6.1	11.7	11.6	11.7	8.7	0.3	0.0	0.0	0.3	6.4	11.7	11.6	11.7	9.0
Salt Pan	22.8	31.5	31.4	31.8	27.4	0.0	0.0	0.0	0.0	22.8	31.5	31.4	31.8	27.4
Transition Zone	0.0	21.8	28.0	23.7	9.9	0.0	0.0	0.0	0.0	0.0	21.8	28.0	23.7	9.9
Upland	200.8	124.1	126.1	116.9	137.9	70.9	86.9	69.7	69.4	271.7	193.9	195.8	203.8	207.4
Stabilized Dune	7.3	7.0	6.9	7.0	7.0	1.9	0.0	0.0	1.9	9.3	7.0	6.9	7.0	8.9
Eucalyptus Grove	2.8	2.5	2.4	2.4	2.4	0.0	0.0	0.0	0.0	2.8	2.5	2.4	2.4	2.4
Willow/Mulefat Thicket	13.4	11.5	8.4	8.4	9.1	0.5	3.4	3.5	0.5	13.8	15.1	11.9	11.8	9.6
Developed	38.8	31.9	27.6	29.8	44.1	9.0	8.2	9.5	10.5	47.7	41.4	37.1	38.0	54.6
Total Area	**465.9**	**465.9**	**465.9**	**465.9**	**465.9**	**99.6**	**99.6**	**99.6**	**99.6**	**565.5**	**565.5**	**565.5**	**565.5**	**565.5**
Total Area Available for Restoration[4]	**385.4**	**385.4**	**385.4**	**385.4**	**385.4**					**472.7**	**472.7**	**472.7**	**472.7**	**472.7**
Total Marsh and Salt Pan[5] (Degraded and Restored)	**153.7**	**203.3**	**201.3**	**213.8**	**199.2**	**17.3**	**1.1**	**16.9**	**17.3**	**171.0**	**220.3**	**218.2**	**214.9**	**216.5**
Total New Marsh and Salt Pan Created		**63.6**	**71.8**	**72.8**	**46.3**						**63.6**	**71.8**	**72.8**	**46.3**
Total Marsh and Salt Pan Enhanced		**74.6**	**129.5**	**74.7**	**6.3**		**1.1**	**16.9**			**74.6**	**129.5**	**75.8**	**6.3**
Total Marsh and Salt Pan Created or Enhanced		**138.2**	**201.3**	**147.5**	**52.6**		**1.1**	**16.9**	**0.0**		**138.2**	**201.3**	**148.6**	**52.6**

NOTES:
1 The Restoration Alternatives without Fill Areas includes Area A and North, West, South, and Southeast Area B.
2 The Relocated Fill Areas includes East Area B and North and South Area C.
3 To cover the possible range of fill placement impacts, this document analyzes Alternative 1 with the mid fill scenario, Alternative 2 with the high fill scenario, and Alternative 3 with the no fill scenario. However, a different combination of alternative and fill scenario could be chosen for the final project.
4 Total acreage minus Ballona Creek, willow/mulefat thicket in Southeast Area B, dunes in West Area B, eucalyptus grove in South Area B, and parking lots and other development. The restoration alternatives were designed to avoid these areas.
5 Total Marsh and Salt Pan includes low, mid, high, muted, and non-tidal salt marsh, non-tidal marsh, coastal brackish marsh, and salt pan.

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TABLE ES-3
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Environmental Resource Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Section 3.2, Aesthetics	*Restoration:* Mitigable short-term visual impacts from earth moving equipment and materials, stockpiled soil fill, visible dust plumes, and debris. Distant views of the Pacific Ocean from the Culver Boulevard Bridge would also be altered temporarily while restoration activities occur *Post-restoration:* Mitigable impact from security/safety lighting; increased visitors to the site, including pedestrians and bicyclists using the pathways, and diminished motorist views from portions of Culver Boulevard. Beneficial impact due to the establishment of more natural looking features and removal of trash and debris currently located on the site.	*Restoration:* Reduced impacts to scenic vista due to less restoration-related construction activities; fewer changes to topography. Similar short-term impacts from earth moving equipment and materials, stockpiled soil fill, a potential for visible dust plumes, and debris. Mitigable short-term impacts from construction light. *Post-restoration:* Fewer changes to scenic vistas as a result of the preservation of West Area B in its current state. Similar mitigable impact from security/safety lighting; increased visitors to the site, including pedestrians and bicyclists using the pathways.	*Restoration:* Reduced impacts to scenic vista compared to Alternatives 1 and 2 due to less restoration-related construction activities. Reduced short-term impacts from earth moving equipment and materials, stockpiled soil fill, a potential for visible dust plumes, and debris. Mitigable short-term impacts from construction light. *Post-restoration:* Fewer changes to scenic vistas compared to Alternatives 1 and 2. Similar mitigable impact from security/safety lighting.	No Project-related changes to the site would occur and thus no adverse impacts on scenic vistas, scenic resources, or the visual character and quality of the area would occur and no beneficial effects to aesthetic resources would occur either.
Section 3.3, Air Quality	*Restoration (Max Unmitigated)*: VOC=5.92 tons/yr; NOx=66.08 tons/yr; CO=36.58 tons/yr; PM10=14.87 tons/yr; and PM2.5=4.62 tons/yr. *Localized Construction Emissions (Max Unmitigated)*: NOx=787.3 lbs/day; CO=406.2 lbs/day; PM10=45.5 lbs/day; and PM2.5= 36.9 lbs/day *Post-restoration (Max)*: VOC=0.2 tons/yr; NOx=1.2 tons/yr; CO=2.9 tons/yr; PM10=0.6 tons/yr; and PM2.5=0.2 tons/yr. Maximum daily construction-related NOx emissions would exceed SCAQMD General Conformity applicability rates. Mitigation would significantly reduce NOx emissions.	*Overall reduced emissions for Restoration and Post-restoration when compared to Alt 1* *Restoration (Max Unmitigated)*: VOC=5.01 tons/yr; NOx=56.33 tons/yr; CO=31.27 tons/yr; PM10=14.38 tons/yr; and PM2.5=4.17 tons/yr. *Localized Construction Emissions (Max Unmitigated)*: NOx=787.3 lbs/day; CO=408.2 lbs/day; PM10=45.5 lbs/day; and PM2.5= 36.9 lbs/day *Post-restoration (Max)*: VOC=0.3 tons/yr; NOx=1.9 tons/yr; CO=3.3 tons/yr; PM10=0.6 tons/yr; and PM2.5=0.2 tons/yr.	*Overall reduced emissions for Restoration and Post-restoration when compared to Alt 1 and Alt 2* *Restoration (Max Unmitigated)*: VOC=2.22 tons/yr; NOx=24.42 tons/yr; CO=13.26 tons/yr; PM10=14.38 tons/yr; and PM2.5=2.10 tons/yr. *Localized Construction Emissions (Max Unmitigated)*: NOx=612.1 lbs/day; CO=294.2 lbs/day; PM10=37.0 lbs/day; and PM2.5= 28.9 lbs/day *Post-restoration (Max)*: VOC=0.3 tons/yr; NOx=1.9 tons/yr; CO=3.3 tons/yr; PM10=0.6 tons/yr; and PM2.5=0.3 tons/yr.	No Project-related emissions would be generated. *No impacts would occur*

TABLE ES-3 (Continued)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Environmental Resource Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Section 3.3, Air Quality (cont.)	Localized significance thresholds would be exceeded for NOx, PM10 and PM2.5. Mitigation would significantly reduce localized emissions.	Maximum daily construction-related NOx emissions would exceed SCAQMD General Conformity applicability rates. Mitigation would significantly reduce NOx emissions. Localized significance thresholds would be exceeded for NOx, PM10 and PM2.5. Mitigation would significantly reduce localized emissions.	Maximum daily construction-related NOx emissions would exceed SCAQMD General Conformity applicability rates. Mitigation would significantly reduce NOx emissions. Localized significance thresholds would be exceeded for NOx, PM10 and PM2.5. Mitigation would significantly reduce localized emissions.	
Section 3.4, Biological Resources	*Restoration:* Mitigable potential impacts to federally-listed El Segundo blue butterfly, California least tern, and least Bell's vireo. Mitigable adverse impacts and beneficial effects to special-status plant and wildlife species. Mitigable adverse and beneficial impacts to Salt Marsh-Associated Invertebrates habitat: • Permanent loss: 31.4 acres • Net gain: 153.4 acres Mitigable adverse and beneficial impacts to dune-associated Invertebrates habitat: • Permanent loss: 2.4 acres Mitigable impacts to silvery legless lizard habitat: • Permanent loss: 2.4 acres Mitigable impacts to San Bernardino ring-necked snake habitat: • Permanent loss: 47.9 acres	*Restoration:* Mitigable potential impacts to federally-listed El Segundo blue butterfly, California least tern, and least Bell's vireo. Mitigable adverse impacts and beneficial effects to special-status plant and wildlife species. Mitigable adverse impacts and beneficial effects to Salt Marsh-Associated Invertebrates habitat: • Permanent loss: 21.7 acres • Net gain: 124.3 acres Mitigable adverse impacts and beneficial effects to dune-associated Invertebrates habitat: • Permanent loss: 2.3 acres Mitigable impacts to silvery legless lizard habitat: • Permanent loss: 2.3 acres Mitigable impacts to San Bernardino ring-necked snake habitat: • Permanent loss: 44.1 acres	*Restoration:* Mitigable potential impacts to federally-listed El Segundo blue butterfly, California least tern, and least Bell's vireo. Mitigable adverse impacts and beneficial effects to special-status plant and wildlife species. Mitigable adverse impacts and beneficial effects to Salt Marsh-Associated Invertebrates habitat: • Permanent loss: 3.7 acres • Net gain: 42.8 acres Mitigable adverse impacts and beneficial effects to dune-associated Invertebrates habitat: • Permanent loss: 0.4 acres Mitigable impacts to silvery legless lizard habitat: • Permanent loss: 0.4 acres Mitigable impacts to San Bernardino ring-necked snake habitat: • Permanent loss: 54.4	No Project-related changes to biological resources would occur; *no impact* would result.

TABLE ES-3 (Continued)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Environmental Resource Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Section 3.4, Biological Resources (cont.)	Mitigable adverse impacts and beneficial effects to Belding's savannah sparrow habitat: • Permanent loss: 28.1 acres • Net gain: 69.6 acres Mitigable adverse impacts and beneficial effects to least Bell's vireo habitat: • Permanent loss: 0.3 acre • Net gain: 2.9 acres Mitigable adverse impacts and beneficial effects to shorebird habitat: • Permanent loss: 6.7 acres • Net gain: 13.4 acres Mitigable adverse impacts and beneficial effects to marsh bird habitat: • Permanent loss: 31.4 acres • Net gain: 38.6 acres Mitigable adverse impacts and beneficial effects to Southern California salt marsh shrew and South Coast marsh vole habitat: • Permanent loss: 31.4 acres • Net gain: 73.3 acres Mitigable restoration-phase adverse impacts and beneficial long-term effects to riparian and sensitive natural communities including: • Southern Mud Intertidal Habitat: Permanent loss: 2.4 acres. Net increase: 4.7 acres.	Mitigable adverse impacts and beneficial effects to Belding's savannah sparrow habitat: • Permanent loss: 9.5 acres • Net gain: 72.7 acres Mitigable adverse impacts to least Bell's vireo habitat: • Permanent loss: 0.3 acre • Net gain: 2.9 acres Mitigable adverse impacts and beneficial effects to shorebird habitat: • Permanent loss: 0.5 acre • Net gain: 15.6 acres Mitigable adverse impacts and beneficial effects to marsh bird habitat: • Permanent loss: 21.7 acres • Net gain: 35.0 acres Mitigable adverse impacts and beneficial effects to Southern California salt marsh shrew and South Coast marsh vole habitat: • Permanent loss: 21.7 acres • Net gain: 65.4 acres Mitigable restoration-phase adverse impacts and beneficial long-term effects to riparian and sensitive natural communities including: • Southern Mud Intertidal Habitat: Permanent loss: 0.3 acres. Net increase: 6.6 acres.	Mitigable adverse impacts and beneficial effects to Belding's savannah sparrow habitat: • Permanent loss: 0 acre • Net gain: 48 acres Mitigable adverse impacts to least Bell's vireo habitat: • Permanent loss: 0 acre • Net gain: 0 acre Mitigable adverse impacts and beneficial effects to shorebird habitat: • Permanent loss: 0 acre • Net gain: 7 acres Mitigable adverse impacts and beneficial effects to marsh bird habitat: • Permanent loss: 3.7 acres • Net gain: 40.9 acres Mitigable adverse impacts and beneficial effects to Southern California salt marsh shrew and South Coast marsh vole habitat: • Permanent loss: 0 acre • Net gain: 2.4 acres Mitigable restoration-phase adverse impacts and beneficial long-term effects to riparian and sensitive natural communities including: • Southern Mud Intertidal Habitat: Permanent impact: 0 acres. Net increase: 2.4 acres.	

TABLE ES-3 (Continued)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Environmental Resource Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Section 3.4, Biological Resources (cont.)	• Southern Coastal Salt Marsh: Permanent loss:31.4 acres Net increase: 61.0 acres • Coastal Brackish Marsh Permanent loss: 1.0 acre Net increase: 5.2 acres • Southern Willow Scrub: Permanent loss of 0.3 acres Net increase: 2.7 acres • Southern Dune Scrub Mitigable indirect impacts only. No permanent habitat loss or increase. • Benthic Communities Mitigable direct and indirect impacts. No permanent habitat loss or increase. Mitigable adverse impacts and beneficial effects to wetlands/waters of the State and US: • Permanent impacts: 42.5 acres • Net increase: 77.4 acres Mitigable impacts to human health due to disease vectors (i.e., mosquitos). Mitigable adverse impacts and beneficial effects to avian and aquatic migratory wildlife corridors. *Post-restoration:* Limited adverse impacts and net beneficial effects to special status plants, invertebrates, essential fish habitat, reptiles, birds, mammals.	• Southern Coastal Salt Marsh: Permanent loss: 21.7 acres Net increase: 63.7 acres • Coastal Brackish Marsh Permanent loss: 0.9 acre Net increase: 5.3 acres • Southern Willow Scrub: Permanent loss of 0.3 acres Net increase: 2.7 acres • Southern Dune Scrub Mitigable indirect impacts only. No permanent habitat loss or increase. • Benthic Communities Mitigable direct and indirect impacts. No permanent habitat loss or increase. Mitigable adverse impacts and beneficial effects to wetlands/waters of the State and US: • Permanent impacts: 29.7 acres • Net increase: 92.1 acres Mitigable impacts to human health due to disease vectors (i.e., mosquitos). Mitigable adverse impacts and beneficial effects to avian and aquatic migratory wildlife corridors. *Post-restoration:* Limited adverse impacts and net beneficial impacts to special status plants, invertebrates, essential fish habitat, reptiles, birds, mammals.	• Southern Coastal Salt Marsh: Permanent loss: 3.7 acres Net increase: 43.4 acres • Coastal Brackish Marsh Permanent loss: 0 acre Net increase: 2.4 acres • Southern Willow Scrub: Permanent loss: 0 acres Net increase: 0 acres • Southern Dune Scrub No impact • Benthic Communities No direct impacts, less than significant indirect impacts Mitigable adverse impacts and beneficial effects to wetlands/waters of the State and US: • Permanent impacts: 3.7 acres • Net increase: 72.4 acres Mitigable impacts to human health due to disease vectors (i.e., mosquitos). Mitigable adverse impacts and beneficial effects to avian and aquatic migratory wildlife corridors. *Post-restoration:* Limited adverse impacts and net beneficial impacts to special status plants, invertebrates, essential fish habitat, reptiles, birds, mammals.	

TABLE ES-3 (Continued)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Environmental Resource Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Section 3.4, Biological Resources (cont.)	Beneficial effects to riparian and sensitive natural communities, wetlands/waters of the U.S. and State, and avian and aquatic migratory wildlife corridors. Limited impacts to human health relating to the potential presence of disease vectors (i.e., mosquitos).	Beneficial effects to riparian and sensitive natural communities, wetlands/waters of the U.S. and State, and avian and aquatic migratory wildlife corridors. Limited impacts to human health relating to the potential presence of disease vectors (i.e., mosquitos).	Beneficial effects to riparian and sensitive natural communities, wetlands/waters of the U.S. and State, and avian and aquatic migratory wildlife corridors. Limited impacts to human health relating to the potential presence of disease vectors (i.e., mosquitos).	
Section 3.5, Cultural Resources	Mitigable potential impacts to four historical resources including one prehistoric archaeological district and one prehistoric archaeological site with known human burials. Mitigable potential impacts to paleontological resources	Impacts are reduced when compared to Alternative 1 due to reduced area of excavation. Potential impacts to four historical resources including one prehistoric archaeological district and one prehistoric archaeological site with known human burials when compared to Alternative 1. Due to reduced quantity of excavation, Alternative 2 has a reduced potential to impact paleontological resources	Impacts are reduced when compared to Alternatives 1 and 2 due to reduced area of excavation. Potential impacts to four historical resources including one prehistoric archaeological district and one prehistoric archaeological site with known human burials when compared to Alternatives 1 and 2. Due to reduced quantity of excavation, Alternative 3 has a reduced potential to impact paleontological resources when compared to Alternatives 1 and 2.	No Project-related changes to cultural resources would occur; *no impact* would result.
Section 3.6, Geology, Seismicity, and Soils	Mitigable hazard-related impacts involving strong seismic ground shaking, potential levee and bridge structure failure, seismic ground failure, liquefaction, unstable geologic unit or soils.	Similar but slightly reduced impacts when compared to Alternative 1 due to smaller levee construction footprint. Mitigable hazard-related impacts involving strong seismic ground shaking, potential levee and bridge structure failure, seismic ground failure, liquefaction, unstable geologic unit or soils.	Similar but slightly reduced impacts when compared to Alternatives 1 and 2 due to smaller levee construction footprint and construction of only one bridge. Mitigable hazard-related impacts involving strong seismic ground shaking, potential levee and bridge structure failure, seismic ground failure, liquefaction, unstable geologic unit or soils.	No Project-related changes to geology, seismicity, and soil resources would occur; *no impact* would result.
Section 3.7, Greenhouse Gas Emissions	*Restoration:* Direct and indirect GHG emissions combined would be 25,252 MT CO_2e.	*Restoration:* Direct and indirect GHG emissions combined would be 20,145 MT CO_2e.	*Restoration:* Direct and indirect GHG emissions combined would be 15,583 MT CO_2e.	No Project-related change in existing GHG emissions generation or sequestration would occur; no impacts or effects would result.

TABLE ES-3 (Continued)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Environmental Resource Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Section 3.7, Greenhouse Gas Emissions (cont.)	*Post-restoration*: Increased ability of the Ballona Reserve to function as a carbon sink would partially offset GHG emissions. 135 MT CO_2e per year	*Post-restoration:* Initially greater ability of the site to function as a carbon sink than under Alternative 1, but with sea level rise ultimately less carbon sequestration than under Alternative 1 and greater than under Alternative 3. 135 MT CO_2e per year	*Post-restoration:* Increased ability of the site to function as a carbon sink than under existing conditions, although for a shorter period of time than would occur under Alternatives 1 and 2. 135 MT CO_2e per year	
Section 3.8, Hazards and Hazardous Materials	Mitigable potential exposure to contaminated soil and groundwater. Mitigable temporary road closures.	Impacts would be similar to Alternative 1. Mitigable potential exposure to contaminated soil and groundwater. Mitigable temporary road closures.	Impacts would be similar to Alternative 1. Mitigable potential exposure to contaminated soil and groundwater. Mitigable temporary road closures.	No Project-related impacts involving hazards or hazardous materials would occur; no impact would result.
Section 3.9, Hydrology and Water Quality	Mitigable water quality impacts due to potential release of contaminated sediments into Ballona Creek associated wetlands. Mitigable potential for erosion and siltation. Mitigable increased risk of flooding on and off site	Impacts would be similar to Alternative 1, but with less potential for release of contaminated sediments and erosion/siltation. Mitigable water quality impacts due to potential release of contaminated sediments into Ballona Creek associated wetlands. Mitigable potential for erosion and siltation. Mitigable increased risk of flooding on and off site.	Reduced potential for release of contaminated sediments, erosion/siltation and flooding on and off site when compared to Alternatives 1 and 2.	No Project-related changes to existing water quality or hydrologic conditions and phenomena would occur; no impact would result.
Section 3.10, Noise	*Restoration:* Exposure of sensitive receptors to temporary noise levels in excess of standards established by the County of Los Angeles or City of Los Angeles. Potential to result in vibration levels that exceed the County's 0.01 in/sec perception threshold at four locations.	*Restoration:* Similar to Alternative 1, Alternative 2 would expose sensitive receptors to temporary noise levels in excess of standards established by the County of Los Angeles or City of Los Angeles. Similar to Alternative 1, Alternative 2 has the potential to result in vibration levels that exceed the County's 0.01 in/sec perception threshold at four locations.	*Restoration:* Similar to Alternatives 1 and 2, Alternative 3 would expose sensitive receptors to temporary noise levels in excess of standards established by the County of Los Angeles or City of Los Angeles. Similar to Alternatives 1 and 2, Alternative 3 has the potential to result in vibration levels that exceed the County's 0.01 in/sec perception threshold at four locations.	No Project-related changes to the existing noise environment would occur; no impact would result.

TABLE ES-3 (Continued)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Environmental Resource Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Section 3.10, Noise (cont.)	*Post-restoration:* No significant noise impacts would occur.	*Post-restoration:* No significant noise impacts would occur.	*Post-restoration:* No significant noise impacts would occur.	
Section 3.11, Recreation	*Restoration:* Temporary disruption of recreational activities on site, rerouted bike paths. No impacts warranting mitigation identified. *Post-restoration:* Improved recreational facilities for some public uses including bike paths and pedestrian trails. Improved fishing and aquatic recreational resources associated with restored Ballona Creek channel. Following restoration, the straightway within the Ballona Creek channel would be reduced to approximately 1,372 meters and so not long enough for competitions requiring a 2,000 meter straight-away.	*Impacts would be similar to Alternative 1.* *Restoration:* Temporary disruption of recreational activities on site, rerouted bike paths. No impacts warranting mitigation identified. *Post-restoration:* Improved recreational facilities for some public uses including bike paths and pedestrian trails. Improved fishing and aquatic recreational resources associated with restored Ballona Creek channel. Following restoration, the straightway within the Ballona Creek channel would be reduced to approximately 1,372 meters, which is not long enough for competitions requiring a 2,000 meter straight-away.	Impacts would be similar to Alternatives 1 and 2, but with fewer beneficial effects post-restoration because only one bicycle/pedestrian bridge would be constructed instead of two. *Restoration:* Temporary disruption of recreational activities on site, rerouted bike paths. No impacts warranting mitigation identified. *Post-restoration:* Improved recreational facilities for some public uses including bike paths and pedestrian trails. Improved fishing and aquatic recreational resources associated with restored Ballona Reserve. No change to the existing potential for use of the Ballona Creek channel for rowing competitions requiring a 2,000 meter straight-away.	No Project-related changes to existing recreational resources would occur; no impact would result.
Section 3.12, Transportation and Traffic	*Restoration:* Mitigable temporary lane and road closures. Mitigable temporary impacts to emergency access. Mitigable temporary impacts to Santa Monica Big Blue Bus Line 3 and Ballona Creek Bike Path. *Post-restoration:* Improved pedestrian trails and bike paths.	Impacts would be the same as Alternative 1. *Restoration:* Mitigable temporary lane and road closures. Mitigable temporary impacts to emergency access. Mitigable temporary impacts to Santa Monica Big Blue Bus Line 3 and Ballona Creek Bike Path. *Post-restoration:* Improved pedestrian trails and bike paths.	Impacts would be similar to Alternatives 1 and 2. *Restoration:* Fewer temporary lane and road closures than Alternatives 1 and 2. No impacts to emergency access. Mitigable temporary impacts to Santa Monica Big Blue Bus Line 3 and Ballona Creek Bike Path. *Post-restoration:* Improved pedestrian trails and bike paths.	No Project-related changes to existing traffic/ transportation conditions would occur; no impact would result.

TABLE ES-3 (Continued)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Environmental Resource Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Section 3.13, Utilities and Service Systems	*Restoration*: Approximately 346,480 gallons of drinking water plus up to 4,033,000 gallons of water per acre per year for irrigation. Approximately 10,000 to 110,000 cy of excavated soil and debris could be exported from the site. *Post-restoration*: No impact on water consumption. Increase in solid waste due to visitors offset by a decrease in solid waste due to a reduction in illegal dumping (less than 200 lbs per month).	*Restoration*: Reduced water consumption relative to Alternative 1. Reduced solid waste (between 0 and10,000 cy of excavated/dredged soil and debris) *Post-restoration*: Same as Alternative 1.	*Restoration:* Reduced water consumption relative to Alternative 1. Increased solid waste (1,230,000 cy of excavated/dredged soil). *Post-restoration:* Same as Alternative 1.	No impact to water consumption. Continued off-site disposal of approximately 1,000 lbs. (0.5 ton) of illegally dumped debris per month.
Section 3.14, Socioeconomics	*Restoration:* Short-term employment of 120 workers drawn from local areas. Employment of construction workers would result in a minor positive economic and employment beneficial effect in the communities in which workers reside and/or make purchases. Permanent displacement of up to 10 transients estimated to be living in the project area. *Post-restoration:* No impact on long-term employment, economic growth, or housing availability. Minor indirect beneficial economic effects for businesses in the communities surrounding the Project site may occur as a result of increased visitors.	*Restoration:* Same as Alternative 1. *Post-restoration:* Same as Alternative 1.	*Restoration:* Same as Alternative 1. *Post-restoration:* Same as Alternative 1.	No impact.

TABLE ES-3 (Continued)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Environmental Resource Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Section 3.14, Environmental Justice	*Restoration:* No direct impacts. Mitigable indirect air quality impacts from emissions of ozone precursors during restoration and construction activities. *Post-restoration:* No impact.	*Restoration:* Reduced air quality impacts as a result of less construction activities but increased recreation impact due to the closure of the baseball fields in South Area C. All other impacts would be similar to Alternative 1. *Post-restoration:* Same as Alternative 1.	*Restoration:* Reduced air quality impacts as a result of less construction activities. All other impacts would be similar to Alternative 1. *Post-restoration:* Same as Alternative 1.	No impact.
Section 5.4, Energy Conservation	*Restoration:* Mitigable impacts involving the consumption of gasoline, diesel, and electricity *Post-restoration:* Consumption of gasoline, diesel, and electricity would be similar to existing conditions.	*Restoration:* Mitigable impacts involving the consumption of gasoline, diesel, and electricity. However, less fuel and electricity would be consumed when compared to Alternative 1. *Post-restoration:* Consumption of gasoline, diesel, and electricity would be similar to existing conditions.	*Restoration:* Mitigable impacts involving the consumption of gasoline, diesel, and electricity. However, less fuel and electricity would be consumed when compared to Alternatives 1 and 2. *Post-restoration:* Consumption of gasoline, diesel, and electricity would be similar to existing conditions.	No Project-related changes to existing energy consumption would occur; no impact would result.

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CHAPTER 1
Introduction

The U.S. Army Corps of Engineers (Corps) and California Department of Fish and Wildlife (CDFW) are preparing a joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Ballona Wetlands Restoration Project proposed on 566 acres within the area held in fee by the State of California that comprise the Ballona Wetlands Ecological Reserve (Ballona Reserve), as well as incidental work on approximately 4 acres adjacent to the Ballona Reserve.

This EIS/EIR is being prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 U.S.C §4321 et seq.), Council on Environmental Quality (CEQ) regulations (40 C.F.R. Part 1500, et seq.), Executive Orders (e.g., Executive Order 11990, Protection of Wetlands), Corps' regulations (33 C.F.R. Parts 230, 320-332), the California Environmental Quality Act (CEQA) (Pub. Res. Code §21000, et seq.), State of California's CEQA Guidelines (14 Cal. Code Regs. §15000, et seq.), and other environmental laws. The Corps is the NEPA lead agency and CDFW is the CEQA lead agency. This EIS/EIR has been prepared by Environmental Science Associates on behalf of the lead agencies and has been independently reviewed by Corps and CDFW staff. The scope of the document, methods of analysis, and conclusions represent the independent judgment of the Corps and CDFW. Staff members from the Corps, CDFW, and others who helped prepare this EIS/EIR are identified in Chapter 5, *List of Preparers and Contributors*.

This EIS/EIR describes the affected resources and evaluates the potential environmental consequences (whether beneficial effects or adverse impacts) to those resources as a result of the design, implementation, and long-term maintenance of a wetland restoration project at the Ballona Reserve and other ancillary work. This EIS/EIR will be used to inform decision makers and the public about the environmental effects of the Project.

1.1 Purpose and Need/Project Objectives

1.1.1 Statement of Purpose and Need under NEPA

In accordance with CEQ regulations, an EIS's Purpose and Need section "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 C.F.R. §1502.13).

The purposes, pursuant to NEPA, of the Project are to:

1. Restore ecological functions and services within the Ballona Reserve, in part by increasing tidal influence to achieve predominantly estuarine wetland conditions.

2. Ensure any alteration/modification to the Los Angeles County Drainage Area (LACDA) project components within the Ballona Reserve maintain the authorized LACDA project levels of flood risk management, which in this section of Ballona Creek, includes ensuring there is no reduction to the conveyance capacity of up to 68,000 cubic feet per second (cfs)[9] and that LACDA project features reduce flood risk to the surrounding communities and infrastructure for up to the 100 year flood event.

In addition to defining the purpose of an applicant's project pursuant to NEPA, the Corps must evaluate the proposed discharge of dredged or fill material into waters of the U.S. for its compliance with the Clean Water Act section 404(b)(1) Guidelines (40 C.F.R. Part 230). A critical, initial part of evaluating this compliance is identifying the basic purpose of the applicant's project as well as the overall project purpose.

The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed action and is used by the Corps to determine whether an applicant's project is water dependent (i.e., whether it requires access or proximity to or siting within a special aquatic site to fulfill its basic purpose). Where the activity associated with a discharge that is proposed for a special aquatic site is not water dependent, practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise. The basic purpose of the project is ecological restoration, which in the context of this project is a water-dependent activity, and so the rebuttable presumption does not apply. However, where a discharge is proposed for a special aquatic site, all practicable alternatives to the proposed discharge that do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise.

The overall project purpose serves as the basis for the Corps' Section 404(b)(1) alternatives analysis and is determined by further defining the basic purpose in a manner that more specifically describes the applicant's goals for the project and that allows a reasonable range of alternatives to be analyzed. For this EIS/EIR, the above-stated NEPA purpose is the same as the overall project purpose.

The need for the Project under NEPA is to restore coastal aquatic resources to increase available breeding and foraging habitat for wildlife while maintaining flood protection for surrounding communities; and to provide public access for compatible recreational and educational opportunities that are not currently widely available within the Ballona Reserve. A substantial portion of California's historic coastal aquatic resources have been lost. The Ballona Reserve aquatic ecosystem is one of the last remaining opportunities for major coastal habitat restoration in Los Angeles County. It is estimated that historically the Ballona Creek watershed supported a great diversity of aquatic resources.

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[9] The Ballona Creek channel was designed in the 1930s, and documentation for the original design capacity is limited. LACFCD design drawings (1959) and as-builts (1963) for later work on the segment of the Ballona Creek channel within the Ballona Reserve indicated a design discharge of 49,500 cfs. Documentation for other, subsequent projects refers to a Standard Project Flood (SPF) flow of 46,000 cfs, which was first computed by the Corps in the 1950s (USACE LA District 1979). The SPF figure was later revised to identify a future, unrestricted SPF of 68,000 cfs (USACE LA District 1979). The authorized discharge will be confirmed by the Corps during the permitting process for the Project, but would not be higher than 68,000 cfs.

1.1.2 CEQA Project Objectives

CEQA requires an EIR to include a "statement of objectives sought by the project" (CEQA Guidelines §15124). The statement of objectives assists the State lead agency in developing a range of alternatives to evaluate in the EIR. CDFW's objectives in proposing this Project are supported by the Science Advisory Committee[10] for the Project and by the public stakeholder group members that participated in a day-long design charrette at the beginning of the planning process.

The NEPA purpose and need and the CEQA Project objectives are aligned in their focus on restoring wetland and other ecological functions within the Ballona Reserve and maintaining existing levels of flood risk management provided by the Ballona Creek flood risk management channel and levee system. While the purpose and need and Project objectives are stated differently, they are connected by the overarching Project purposes.

They CEQA objectives are as follows:

1. Restore, enhance, and create estuarine and associated habitats:

    a) That support a natural range of habitat formations and functions, including multiple habitat types, in the Ballona Reserve, to create a regionally important wetland area;

    b) That are self-sustaining by allowing for adaptation to sea level rise, minimizing the need for active management, and reducing impacts of human activities and invasive species through the provision of large, contiguous areas of diverse intertidal wetland habitats with wide transition and buffer areas;

    c) That sustain multiple levels of biodiversity associated with estuarine and associated systems by strategically preserving, restoring, enhancing, and developing multiple habitats (including a variety of wetland types and upland habitats) and incorporating transitional and upland habitat connections to the wetlands to support recruitment and the various life stages of a diverse native flora and fauna;

    d) That contribute to the biodiversity and health of the Ballona Reserve by providing for the management of native upland habitat; and

2. Protect and respect cultural and sacred resources, to enable cultural use of the Ballona Reserve by Native Americans and provide appropriate interpretive information about prior human uses of the Ballona Reserve.

3. Establish natural processes and functions within the Ballona Reserve that support estuarine and associated habitats through measures such as improving tidal circulation into the wetlands to enlarge the amount of area that is tidally inundated, increasing tidal prism and excursion, lowering residence time of water, ensuring a more natural salinity gradient, and

[10] The Science Advisory Committee is an interdisciplinary team of scientists that was assembled at the beginning of the restoration planning process to ensure that the restoration plan was developed based on the best available science (Ballona Wetlands Restoration Project 2017; Project Management Team 2005).

creating dynamic hydrologic interactions between the Ballona Creek channel, wetlands within the Ballona Reserve, and the Santa Monica Bay.

4. Develop and enhance wildlife dependent uses and secondary compatible on-site public access for recreation and educational activities by:

    a) Providing a system of walking trails with interpretation and learning opportunities focused on the natural resources and cultural context of the restored and enhanced native uplands habitat; and

    b) Providing new access for cyclists along the new levees.

5. Protect and avoid impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management, ensuring consistency with future implementation of regional plans, and limiting the need for significant modification to regionally important infrastructure.

6. Provide oversight of the Ballona Reserve to accomplish management functions such as ensuring public safety and resource protection while minimizing security and maintenance costs by:

    a) Encouraging appropriate and legal public use throughout the Ballona Reserve through a system of trails signage; providing for safe traffic and parking; and deterring dumping, camping, and other uses that are incompatible with the Ballona Reserve's habitat values; and

    b) Maintaining the existing on-site office and maintenance yard locations for CDFW staff to accommodate increasing CDFW presence for management and monitoring throughout the Ballona Reserve.

7. Ensure that alterations/modifications to LACDA project components do not adversely impact the LACDA project by:

    a) Retaining the authorized conveyance capacity within the Ballona Creek Channel; and.

    b) Ensuring that structural changes to LACDA project features satisfy Corps and Los Angeles County Department of Public Works-Flood Control District (LACFCD)[11] criteria for functional, operational, and maintenance purposes.

[11] The Los Angeles County Flood Control District is empowered by the Los Angeles County Flood Control Act of 1915 to provide flood protection and other services within its boundaries. LACFCD is the applicant with respect to the LACDA project facility components of the Proposed Action (Alternative 1). See Section 2.2.1.7, Operation and Maintenance Activities, and Appendix B5, Preliminary Operation and Maintenance Plan, for information about these responsibilities.

1.2 Overview of the Project

1.2.1 Location of the Project Site

The Project site includes the Ballona Reserve and seven potential natural gas storage well relocation sites (Sites 1 through 7) proposed within the SoCalGas Property located adjacent to the Ballona Reserve. See Figure ES-1, *Regional Location*, and Figure ES-2, *Project Site*.

The Ballona Reserve is located in southern California, south of Marina del Rey and east of Playa del Rey. It extends roughly from the Marina Freeway (State Route [SR] 90) to the east, the Westchester bluffs to the south, Playa del Rey to the west, and Fiji Way to the north. It is primarily located in the western portion of the City of Los Angeles and partially within unincorporated Los Angeles County, approximately 1.5 miles west of the San Diego Freeway (Interstate [I] 405) and approximately 0.25 mile southeast of Santa Monica Bay. The Ballona Reserve is bisected by and includes a channelized reach of Ballona Creek, and it is traversed by Culver Boulevard, Jefferson Boulevard, and Lincoln Boulevard. For purposes of this analysis, the Ballona Reserve is divided into Area A, Area B, and Area C. Each Area is described briefly below:

Ballona Creek runs through the center of the Ballona Reserve in a northeast to southwest direction within a concrete-sided, soft bottom channel. It has channel bed invert elevations ranging from elevation -2 to -8 feet North American Vertical Datum (NAVD 88)[12] and is bordered on both sides by flood protection levees with elevations sloping from approximately elevation 20 feet NAVD 88 at Culver Boulevard down to approximately elevation 15 feet NAVD 88 at the western boundary of the Ballona Reserve. The conveyance capacity of Ballona Creek is up to 68,000 cubic feet per second (cfs). The Corps constructed the Ballona Creek flood risk management channel (Ballona Creek channel) in 1937 and retains oversight and jurisdiction over the LACDA project, a Federal flood risk management project. The LACFCD operates and maintains the Ballona Creek channel and levee system by virtue of an easement and by statutory obligation as the non-Federal sponsor of the LACDA project. The State of California owns fee title to the Ballona Creek channel from the SR 90 Bridge downstream to the northwestern edge of Area B. Management responsibility for State of California lands within the Ballona Reserve was transferred to CDFW prior to the initiation of this EIS/EIR.

Area A is approximately 156 acres and lies in the northwestern portion of the Ballona Reserve north of Ballona Creek, west of Lincoln Boulevard, and south and east of Fiji Way. Area A is in unincorporated Los Angeles County. Fill was placed in Area A in the early 1930s and the 1960s during the excavations of Ballona Creek and the development of Marina del Rey, respectively. Area A is undeveloped, with the exception of parking areas along the western boundary, a gas company access road on the western end, and a drainage channel along the northern boundary.

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12 The North American Vertical Datum of 1988 (NAVD) is the vertical elevation control datum established for vertical control surveying in the United States and accounts for the fact that mean sea level is not the same equipotential surface at all tidal bench marks. NGVD 29 stands for National Geodetic Vertical Datum of 1929, a system that was used by surveyors and engineers for most of the 20th Century. It has been the basis for relating ground and flood elevations, but it has been largely replaced by the more accurate North American Vertical Datum of 1988 (NAVD 88). The Corps uses NGVD 29 in the context of this Project because the Ballona Creek channel and levee system were built to that datum. This EIS/EIR uses NAVD 88 because it is more accurate and because it is the current national geodetic vertical datum as of the drafting of the EIS/EIR.

The existing Ballona Creek levees run along the southern edge of Area A. An excavated, unlined drainage channel known as the “Fiji Ditch” runs parallel to Fiji Way along the northern boundary in the eastern portion of Area A. Runoff into the Fiji Ditch flows from North Area C and enters Area A when the water is high enough to top the catchment at Lincoln Boulevard. The Area A portion of the Fiji Ditch is tidally influenced from Marina del Rey.

Area B is approximately 335 acres. It is located in the southern portion of the Ballona Reserve, south of Ballona Creek Channel and west of Lincoln Boulevard. The State of California owns 60 acres in the southeast portion of the Ballona Reserve, including a freshwater marsh (the “Freshwater Marsh”). The Freshwater Marsh is a treatment wetland and compensatory mitigation project, constructed as part of the Playa Vista development and would not be affected as part of the Project. The remaining land owned by the State Lands Commission is leased to and managed by CDFW as part of the Ballona Reserve, and is a part of the Project site. Both Culver Boulevard and Jefferson Boulevard cross through Area B. Area B is located in the City of Los Angeles community planning area of Playa del Rey and is bordered by the Westchester Bluffs. As shown in Figure ES-2, Area B is divided into several subareas: East Area B, West Area B, North Area B, South Area B, and Southeast Area B.

Area C consists of approximately 69 acres located in the northeastern portion of the Ballona Reserve, north of Ballona Creek and east of Lincoln Boulevard. It is located in unincorporated Los Angeles County. SR 90 borders the northeastern edge of Area C. The area is bisected in an east-west direction by Culver Boulevard. Area C contains fill from the construction of the Ballona Creek channel and developments such as Marina del Rey, the Pacific Electric Railroad, the raising of Culver Boulevard, and SR 90. Culver Boulevard divides Area C into North Area C and South Area C. The SR-90 and on-ramp embankment to the northeast of Area C are not part of the Ballona Reserve or the Project site.

SoCalGas owns in fee, occupies, and operates the Playa del Rey Storage Facility, which is a natural gas storage system located at 8141 Gulana Avenue, Los Angeles (SoCalGas 2008). The storage field enables SoCalGas to store natural gas when demand is low and withdraw natural gas for delivery when demand is high. Natural gas is stored within a depleted oil reservoir at a depth of approximately 6,100 feet below ground surface. The surface operations include the injection and extraction of natural gas, using monitoring wells and associated pipelines within the Ballona Reserve and on SoCalGas’s property located adjacent to and south of Area B (see Figure ES-2, *Project Site*). Figure 2-31, *Area A: Gas Well Decommissioning*, shows the locations of the existing wells and pipelines in Area A. Figure 2-30, *South/Southeast Area B: Gas Well Decommissioning*, and Figure 2-32, *West and East Area B: Gas Well Decommissioning*, show the locations of the existing wells and pipelines in Area B. Existing wells that would not be affected by the Project would remain in place pending further action at some point in the future by SoCalGas pursuant to its existing operation, maintenance, and abandonment schedule.

The SoCalGas Property consists of Sites 1 through 7, which range between 0.19 and 0.99 acre in size and represent potential future locations for SoCalGas wells to be relocated from the Ballona Reserve as part of the project. The combined acreage of the seven sites is approximately 4 acres. The sites are in two main areas: the upper portion, which includes the office building and other uses, and the lower portion, which borders the Ballona Reserve and includes various wells and other uses. The upper portion is approximately 135 to 140 feet above mean sea level (MSL), and the lower portion is approximately 15 to 30 feet above MSL. Each of the seven sites is described briefly below:

1. **Site 1**, located in the East Bone Yard, is located in the upper facility on the bluff above the Ballona Reserve. This area is vacant of permanent structures and stores miscellaneous SoCalGas materials. The area is not paved and is mostly covered in gravel.
2. **Site 2**, located in the Upper Side Plant, also is located in the upper facility. This area has several SoCalGas structures and is mostly paved.
3. **Site 3**, located in the Western Plant, is located in the lower facility between the Ballona Reserve and Cabora Drive. Site 3 is vacant of permanent structures and appears to be mostly paved. Large trash bins are found here.
4. **Site 4**, located in the West Area, is located in the lower facility between the Ballona Reserve and Cabora Drive. Site 4 is at the western edge of the SoCalGas Property. A good portion of this area is undeveloped, with no permanent structures.
5. **Site 5**, located in the Central Plant area, is located in the lower facility between the Ballona Reserve and Cabora Drive. This area is partially undeveloped. There appears to be storage containers and other miscellaneous structures here.
6. **Site 6**, located in the Eastern Plant area, is located in the lower facility between the Ballona Reserve and Cabora Drive. The area is partially undeveloped and features an undeveloped vegetated slope and a gravel road.
7. **Site 7**, located in the Eastern Field, is located in the lower facility between the Ballona Reserve and Cabora Drive. This area is adjacent to Site 6 and contains similar features.

1.2.2 The Project: Restoration of the Ballona Reserve

The California State Legislature provided for the establishment of ecological reserves, like the Ballona Reserve, to further a policy of protecting threatened or endangered native plants, wildlife, or aquatic organisms or specialized habitat types, both terrestrial and non-marine aquatic, or large heterogeneous natural gene pools for the future use of mankind (Fish & Game Code §1580).

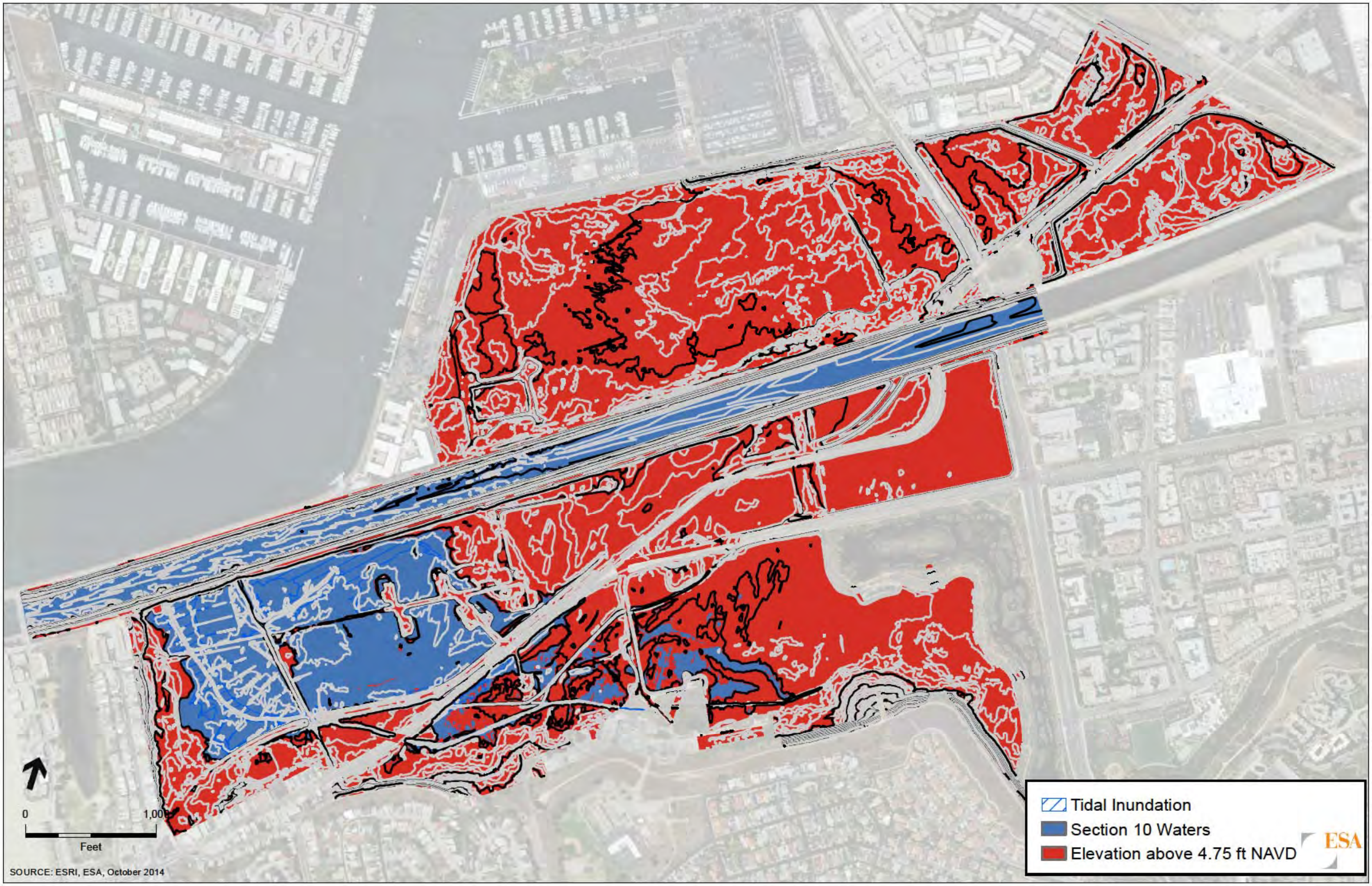
The wetlands ecosystem in the vicinity of the Ballona Reserve once spanned more than 2,100 acres and supported a great diversity of wetland types that stretched from Playa del Rey to Venice and inland to the Baldwin Hills (Dark et al, 2011; LACDPW, 2013). As preliminarily delineated by Wetland Research Associates (WRA) in 2011, the 577-acre Ballona Reserve now provides approximately 153 acres of potential wetlands, as well as approximately 83 acres of potential non-wetland waters of the U.S. (see Appendix D14), including the Ballona Creek channel. Under section 10 of the Rivers and Harbors Act (33 U.S.C. §403; “Section 10”), navigable waters of the U.S. include all tidally-influenced waters up to the mean high water mark (MHW) in its natural, unobstructed state. For purposes of this analysis, the Corps has determined that the portion of the project site that would be subject to tidal influence without the presence of the levees (based on the current topography) would be subject to the Corps' Section 10 jurisdiction. This area is shown in Figure 1-1, *Existing Topography, Tidal Inundation, and Section 10 Waters*.

The United States Environmental Protection Agency (USEPA) has determined that all wetland habitats within the Ballona Reserve are impaired (USEPA 2012). Furthermore, a portion of the Ballona Reserve has been identified as "among the most degraded wetlands in California" using standardized wetland condition protocols (Johnston, Medel, and Solek 2015). Invasive nonnative plants now crowd out native plants and provide little support to local wildlife. The Ballona Reserve is closed to the general public absent specific authorization from CDFW. Some small scale education and restoration activities occur in one area, little league baseball games are played in another area, illegal uses (such as trash dumping and transient people's encampments) occur throughout the Ballona Reserve, and LACFCD undertakes Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R, Corps 2009) activities within the Ballona Creek channel and levees for purposes of flood risk management.

CDFW proposes a large-scale restoration of the Ballona Reserve that would entail restoring, enhancing, and establishing native coastal wetland and upland habitats within the Ballona Reserve. CDFW applied for authorization from the Corps to discharge dredged or fill material into water of the U.S. pursuant to section 404 of the Clean Water Act (33 U.S.C. §1344; "Section 404") and for work or structures in or affecting navigable waters of the U.S. under Section 10. To implement the proposal, CDFW is working with Los Angeles County to modify LACDA project features (Ballona Creek channel and levee system). LACFCD submitted a request pursuant to section 14 of the Rivers and Harbors Act (33 U.S.C. §408; "Section 408") to alter or modify LACDA project features.[13]

From a biological and ecological perspective, CDFW considers restoration of the Ballona Reserve a unique project, unlike any other project in California whether such project is for development or restoration purposes. Foremost among the reasons this Project is unique is the fact that CDFW is not only the project proponent, but also the State's trustee for fish and wildlife resources with jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. Additionally, CDFW has jurisdiction over the Ballona Reserve, the California Fish and Game Commission designated the area an ecological reserve, and CDFW is responsible for administering regulations that apply to ecological reserves. And perhaps more importantly, CDFW is responsible for managing the Ballona Reserve and the native wildlife and habitats that the Legislature intended to be protected by ecological reserves. In addition to the unique role that CDFW has with regards to the Project, the Project itself is unlike the vast majority of projects that are analyzed under CEQA. Included among the Project's objectives is the desire to restore, enhance, and create estuarine and associated habitats as well as establish natural processes and functions within the Ballona Reserve that support such estuarine and associated habitats. Not only would implementation of the Project restore estuarine habitats, but the Project would pro-actively protect such habitat against sea level rise as compared to no project. And so it is against this backdrop of unique circumstances that CDFW conducted its analysis of effects that are presented in this EIR.

[13] This EIS/EIR refers to Alternative 1 as the "Proposed Action" for purposes of NEPA as that is the project for which CDFW and LACFCD have requested Corps approval.



Ballona Wetlands Restoration Project

Figure 1-1
Existing Topography, Tidal Inundation, and Section 10 Waters

This EIS/EIR refers to the proposed large scale restoration and incidental work necessitated by the proposed restoration activities as the "Project." The EIS/EIR describes and analyzes three alternatives that would, to various extents, implement the Project, and one No Federal Action/ No Project Alternative. The restoration alternatives were designed by the Lead Agencies with input from the public and scientific advisory committees that would advance the California State Legislature's policy described above and meet the purpose, need, and objectives of the Project. Use of the term "Project" does not in way indicate or imply the Lead Agencies' endorsement of any particular alternative. In fact, the Corps is neither a proponent nor opponent of the Project. And although this EIS/EIR refers to Alternative 1 as the "Proposed Action" for purposes of NEPA, use of this term does not in any way indicate the Lead Agencies' preference for Alternative 1. As an informational document, an EIS/EIR does not recommend approval or denial of any specific alternative. Each of the alternatives is summarized below and described in detail in Chapter 2, *Description of Alternatives*.

1.2.2.1 Alternative 1: Full Tidal Restoration/Proposed Action

The Proposed Action is intended to return the daily ebb and flow of tidal waters where practically feasible to achieve predominantly estuarine conditions, enhance freshwater conditions, and enhance physical and biological functions within the Ballona Reserve. Restoring wetland functions and services would reestablish native wetland vegetation and provide important habitat for a variety of wildlife species. A restored, high-functioning wetland also would benefit the adjacent marine environment and enhance the quality of tidal waters.

The Proposed Action would:

1. Establish 81.0 acres of new and enhance 105.8 acres of existing native wetland waters of the U.S. (total wetland waters of the U.S established or enhanced: 186.8 acres);
2. Establish 38.7 acres of new and enhance 58.0 acres of existing non-wetland waters of the U.S. (total non-wetland waters of the U.S established or enhanced: 96.7 acres);
3. Subject 31.4 acres of wetland waters of the U.S. to permanent loss, 0.2 acre to permanent loss of function, and 30.2 acres to temporary impacts;
4. Subject 5.2 acres of non-wetland waters of the U.S. to permanent loss, 5.7 acres to permanent loss of function, and 25.0 acres to temporary impact;
5. Work within 58.3 acres of navigable waters of the U.S. (16.2 acres of permanent loss of waters, 5.9 acres of permanent loss of function, and 36.2 acres of temporary impacts);
6. Reposition between 2,290,000 and 2,420,000 cy of dredged or fill material on the project site as perimeter levees, transition zones, and upland restoration areas to allow Ballona Creek to reconnect with its historic floodplain; and
7. Export from the site between 10,000 and 110,000 cy of excavated soil via trucks for disposal at local landfills, via barge to the Port of Los Angeles or Port of Long Beach for transfer to trucks for upland disposal at local landfills, or via barge to an off-shore disposal location, potentially including the Los Angeles ocean disposal site approximately 30 miles (26 nautical miles) away from the Ballona Reserve off the coast from San Pedro (LA-2) or

the Newport Bay ocean disposal site approximately 55 miles (48 nautical miles) away from the Ballona Reserve off the coast from Newport Beach (LA-3) in the Pacific Ocean. Both of the potential off-shore disposal sites have been designated by the USEPA pursuant to Section 102 of the Marine Protection, Research, and Sanctuaries Act. No offshore disposal would be authorized without prior sediment testing and suitability approval by the agencies with permitting authority over dredging and disposal activities.

The Proposed Action includes the following restoration-related components:

1. Removing approximately 9,800 feet of existing Ballona Creek levees;
2. Realigning Ballona Creek to a "meander-shaped" channel configuration;
3. Restoring, enhancing, and establishing estuarine aquatic and associated upland habitats connected to the realigned Ballona Creek;
4. Improving tidal circulation into the site and implementing other modifications to create dynamic interactions between the Ballona Creek channel, aquatic resources within the Ballona Reserve, and the Santa Monica Bay and thereby support estuarine and associated habitats within the Ballona Reserve;
5. Modifying existing infrastructure and utilities as necessary to implement restoration activities, potentially including the abandonment or relocation of SoCalGas wells and pipelines; and
8. Implementing long-term post-restoration activities, as needed, including inspections, repairs, clean-ups, vegetation maintenance, and related activities.

Proposed flood risk management-related components of Alternative 1 would enhance existing levels of flood risk management for Culver Boulevard and the developed areas to the south and restore tidal influence to Area A and Area B. Work would occur over several years with excavation in Area A and placement of fill in Area B, Area C, and/or in off-site location(s). The type and nature of the Operations and Maintenance (O&M) activities, including the types of equipment used to implement them, the "continuous" nature of O&M work for the LACDA project facilities, and the proposed intervals of scheduled maintenance activities for the LACDA and non-LACDA project facilities would be substantially similar to the O&M work that presently occurs within the Ballona Reserve. See Section 2.2.1.7, Operation and Maintenance Activities; see also Appendix B5, Preliminary Operation and Maintenance Plan, for additional details. Flood risk management activities would include the proposed modification of existing LACDA project infrastructure within the Ballona Reserve by:

1. Constructing new engineered levees set back from the existing Ballona Creek channel in Area A (6,300 feet) and along Culver Boulevard (8,000 feet);
2. Realigning the existing Ballona Creek channel with more natural meander-shape through the Project reach; and
3. Installing, operating, and maintaining new hydraulic structures (potentially including culverts with self-regulating tide gates or similar structures) to allow for controlled tidal exchange from the Ballona Creek channel to Area B South and East.

4. Implementing:

    a. Earthwork, including fills, cuts, and slopes as well as levee and embankment replacements, relocations, and removals;

    b. Concrete work, including removal of concrete Ballona Creek channel side slopes and replacement and attendant removal of integral parts of diversion works, side drain structures, and public utilities; as well as construction of two new bridges for soil transport during the restoration phase and for bicycle and pedestrian use during the post-restoration phase (one bridge would be constructed over Lincoln Boulevard, the other over Culver Boulevard);

    c. Stonework, including all grouted or ungrouted stone for facings and revetments as well as sand and gravel beddings and filters;

    d. Subdrain system work, including open systems with outlets into the channel, and pipeless gravel drains behind channel walls with weep holes;

    e. Side drain and related gate work;

    f. Fencing work, including wall safety fencing, safety fencing at ends of channels, covered channel barricades, spillway safety barricades, public utility safety barricades, access gates, and chain barricades;

    g. Bridge and (potentially) related bridge abutment work, including freeway, highway, street, railroad, pedestrian, public utility, gaging station, and diversion works bridges; and

    h. Bituminous surfacing, including surfaced berm roadways, surfaced berm-access ramps, and surfaced side drain entrances.

Public access-related improvements would include:

1. Realigning existing trails atop constructed levees and creating new trails with interpretive and learning opportunities focused on the natural resources and cultural context of the restored and enhanced native uplands habitat;

2. Constructing two bike and pedestrian bridges to provide access to North Area C (over Culver Boulevard) and Area B (over the Ballona Creek).

3. Constructing, operating, and maintaining a new three-story parking structure within the existing parking footprint in Area A and improving existing West Culver Parking Lot in the southwest corner of West Area B and the surface lot that would be next to the proposed three-story parking structure;

4. Encouraging appropriate and legal public use throughout the Ballona Reserve by enhancing public safety.

Following restoration, the reconfigured Ballona Creek channel would meander closer to the boat slips located north of Area A; new water control structures (e.g., culverts and tide gates) would be operated and maintained; and perimeter levees and flood berms would be maintained (see

Figure 2-41, Alternative 1, Phase 1: Operations and Maintenance; see also Figure 2-42, Alternative 1, Phase 2: Operation and Maintenance). Operation and maintenance activities would include: continuation (unchanged) of existing trash removal efforts at the existing trash boom system (or trash net) between the Culver Boulevard and Lincoln Boulevard bridges; regular visual inspections of culverts and other water control structures in their new locations; replacement of tide gates on the existing schedule (i.e., every approximately 10 years); sediment removal from the realigned Ballona Creek channel and sediment basins (once every 50 years); sediment removal from the connector channels between the water control structures and the Ballona Creek channel (potentially during the first 10 years post-construction); and maintenance and repair of levees, access roads, fences, paths, and other public access amenities (as needed) (Appendix B5, Preliminary Operations and Maintenance Plan). Berms would be maintained along lower perimeter elevations of South and Southeast Area B to maintain the existing level of flood risk protection (e.g., around the SoCalGas facility and along Culver Boulevard and Jefferson Boulevard). Maintenance of the berms would be focused on erosion protection primarily via the establishment and maintenance of vegetation. CDFW would conduct the same nature and type of activities to operate and maintain the non-LACDA project facilities within the Ballona Reserve, using the same types of equipment and at the same intervals as the agency does under existing conditions. Such activities would include, for example, inspecting and locking gates, repairing fences, controlling pests and weeds, and removing trash and debris from the non-LACDA project areas within the Ballona Reserve (Id.).

1.2.2.2 Alternative 2: Restored Partial Sinuous Creek

Alternative 2, *Restored Partial Sinuous Creek*, is similar to Alternative 1, but a smaller length of the Ballona Creek channel would be breached. Under Alternative 2, the existing armored levees on the Ballona Creek channel adjacent to the Ballona Reserve next to Area A and North Area B would be removed, and Ballona Creek would be realigned to flow along a more meander-shaped alignment as described in Alternative 1; however, the southern levee of the Ballona Creek channel running along a portion of the northern edge of West Area B would not be breached, and the existing water control structures (1a and 1b) would remain in place, as indicated by the black (developed) levee and purple water control structures in Figure 2-43. (By comparison, Figure 2-1, Alternative 1, Phase 2: Proposed Habitats, shows the same area without the levee and water control structures). Existing habitats in West Area B would be retained. New partially-earthen levees would be built around the northern perimeter of Area A and along the north side of Culver Boulevard in North Area B to protect surrounding development from potential flooding of Ballona Creek. Management of existing tide gates to provide some acclimation to sea level rise in West Area B would be possible temporarily; however, between 2030 and 2050, the salt pan and adjacent salt marsh habitats would permanently flood. In South and Southeast Area B, the larger tide range proposed in Alternative 2 would maintain tidal salt marsh through 2070.

Alternative 2 would:

1. Establish 83.1 acres of new and enhance of 56.3 acres of existing native wetland waters of the U.S. (total wetland waters of the U.S established or enhanced within the Ballona Reserve following the implementation of Alternative 2: 139.4 acres);

2. Establish 38.7 acres of new and enhance 15.3 acres of existing non-wetland waters of the U.S. (total non-wetland waters of the U.S established or enhanced within the Ballona Reserve following the implementation of Alternative 2: 54.0 acres);

3. Subject 31.7 acres of wetland waters of the U.S. to permanent loss, 0.7 acre to permanent loss of function, and 24.5 acres to temporary impacts;

4. Subject 1.8 acres of non-wetland waters of the U.S. to permanent loss, 5.5 acres to permanent loss of function, and 22.4 acres to temporary impacts;

5. Work within 36.1 acres of navigable waters of the U.S. (3.1 acres of permanent loss of waters, 5.8 acres of permanent loss of function, and 27.2 acres of temporary impacts);

6. Reposition between 2,120,000 and 2,180,000 cy of dredged or fill material on the project site as perimeter levees, transition zones, and upland restoration areas to allow Ballona Creek to reconnect with its historic floodplain; and

7. Export from the site up to 10,000 cy of material via any of the ways discussed in the context of Alternative 1.

Proposed flood risk management-related components of Alternative 2 would enhance existing levels of flood risk management for Culver Boulevard and the developed areas to the south. The type and nature of the O&M activities, including the types of equipment used to implement them, the "continuous" nature of O&M work for the LACDA project facilities, and the proposed intervals of scheduled maintenance activities for the LACDA and non-LACDA project facilities would be substantially similar to the O&M work that presently occurs within the Ballona Reserve. See Appendix B5 for details. Flood risk management activities would include the proposed modification of existing LACDA project infrastructure within the Ballona Reserve by:

1. Removing existing armored levees along Area A (3,800 feet) and North Area B (4,000 feet);

2. Installing new partially-earthen perimeter levees in Area A (6,300 feet) and along the North side of Culver Boulevard (4,800 feet);

3. Installing new water-control structures in South Area B; and

4. Constructing a Culver Boulevard stormwater detention wetland.

Public access-related improvements would be the same as for Alternative 1.

Following restoration, the reconfigured Ballona Creek channel would meander closer to the boat slips located north of Area A of the Project site and new water control structures (e.g., culverts and tide gates) would be operated and maintained (see Figure 2-1, Alternative 1, Phase 2: Proposed Habitats). Maintenance of Ballona Creek channel and levees under Alternative 2 would be the same as described under Alternative 1 (Appendix B5, Preliminary Operations and Maintenance Plan). Maintenance of water control structures under Alternative 2 would be similar to the description under Alternative 1, but with the following exceptions. Under Alternative 2, West Area B would not be improved. The existing West Area B gates connecting West Area B to Ballona Creek would remain and would continue to be maintained as under the existing conditions (Id.). Maintenance of flood risk management berms under Alternative 2 would be the same as described under Alternative 1. CDFW would conduct the same nature and type of activities to operate and maintain the non-LACDA project facilities within the Ballona Reserve, using the same types of equipment and at the same intervals as the agency does under existing conditions. Such activities would include, for example, inspecting and locking gates, repairing fences, controlling pests and weeds, and removing trash and debris from the non-LACDA project areas within the Ballona Reserve (Id.).

1.2.2.3 Alternative 3: Levee Culverts and Oxbow

Restoration under Alternative 3, *Levee Culverts and Oxbow*, would be focused in Area A and Area C. No new tidal influence would occur in Area B, where the enhancement of habitats would consist exclusively of invasive nonnative plant removal and native plantings. The existing armored levees on the Ballona Creek channel adjacent to the Ballona Reserve would remain intact. No levee breaching would occur. Instead, two new culvert water control structures would be installed within the northern Ballona Creek channel levee to support restoration of tidal circulation in Area A, but with an oxbow-shaped channel. Coastal wetland habitats similar to those proposed in Alternative 1 would be restored within the marsh plain created between a new levee along the northern perimeter of Area A and the existing Ballona Creek channel levee.

Alternative 3 would:

1. Establish 48.0 acres of new native wetland waters of the U.S. and enhance none of the existing wetland waters of the U.S. (total wetland waters of the U.S established or enhanced: 48.0 acres);
2. Establish 28.1 acres of new non-wetland waters of the U.S. and enhance none of the existing non-wetland waters of the U.S. (total non-wetland waters of the U.S established or enhanced: 28.1 acres);
3. Subject 3.7 acres of wetland waters of the U.S. to permanent loss and 3.5 acres to temporary impacts;
4. Subject 0.5 acre of non-wetland waters of the U.S. to temporary impacts;
5. Work within 0.5 acre of navigable waters of the U.S. (temporary impacts);
6. Reposition 190,000 cy of dredged or fill material within the Ballona Reserve as perimeter levees, transition zones, and upland restoration areas to allow Ballona Creek to reconnect with its historic floodplain; and
7. Export 1,230,000 cy of dredged or fill material from the Project site via any of the ways discussed in the context of Alternative 1.

Proposed flood risk management-related components of Alternative 3 would enhance existing levels of flood risk management for Culver Boulevard and the developed areas to the south. The type and nature of the O&M activities, including the types of equipment used to implement them, the “continuous” nature of O&M work for the LACDA project facilities, and the proposed intervals of scheduled maintenance activities for the LACDA and non-LACDA project facilities would be substantially similar to the O&M work that presently occurs within the Ballona Reserve. See Appendix B5 for details. Flood risk management activities would include the proposed modification of existing LACDA project infrastructure within the Ballona Reserve by:

1. Installing a new perimeter levee in Area A (6,300 feet);
2. Installing two new water-control structures (i.e., tide gates) along Area A; and
3. Constructing a Culver Boulevard stormwater detention wetland.

Public access-related improvements would be the same as Alternative 1 except that one (1) new pedestrian bridge would be installed rather than two (2). In addition, a new three-story parking structure would be constructed in Area A under this Alternative.

Under Alternative 3, the Ballona Creek channel would not be reconfigured; therefore all channel-related operation and maintenance activities would be the same as under existing conditions (see Figure 2-52, Alternative 3: Proposed Habitats; Appendix B5, Preliminary Operations and Maintenance Plan). Maintenance of water control structures under Alternative 3 would be similar to the existing conditions, with the addition of two new banks of culverts and gates connecting Area A to the Ballona Creek channel. The existing West Area B gates connecting West Area B to Ballona Creek would remain and would continue to be operated and maintained as under the existing conditions (Id.). Twelve new tide gates connecting the Ballona Creek channel to Area A would be operated, maintained, and replaced at the same frequency as described under Alternative 1. Alternative 3 does not include flood risk management berms and, thus, no new or additional maintenance would be needed (Id.). CDFW would conduct the same nature and type of activities to operate and maintain the non-LACDA project facilities within the Ballona Reserve, using the same types of equipment and at the same intervals as the agency does under existing conditions. Such activities would include, for example, inspecting and locking gates, repairing fences, controlling pests and weeds, and removing trash and debris from the non-LACDA project areas within the Ballona Reserve (Id.).

1.2.2.4 Alternative 4: No Federal Action/No Project

Under Alternative 4, no Federal, state, or local approvals would be granted. No restoration would take place except for the small-scale removal of invasive nonnative species by volunteers using only hand tools. No modification to the Ballona Creek channel or the levee system would be made. This alternative would not result in the permanent or temporary discharge of dredged or fill material into potential waters of the U.S. No new wetland or upland habitats would be established, but existing habitats would be enhanced through continued volunteer efforts.

CDFW would continue to remove trash and debris, remove transient encampments, and monitor and enforce other unauthorized or illegal activities. The LACFCD would continue to maintain and operate existing LACDA project structures and facilities within the Ballona Reserve to obtain the maximum flood protection benefits consistent with the OMRR&R and federal requirements (33 C.F.R. §208.10). Operation of these facilities would continue to involve inspection, operation of field facilities such as gates and staff gages, the implementation of any immediate maintenance or corrective action such as debris removal, and related reporting and documentation. Excavation and dredging maintenance activities would occur as necessary to remove accumulated sediment from the channel area. Maintenance of the LACDA project facilities would continue to include routine repair and restoration activities as well as inspections to detect hazardous or malfunctioning conditions (Los Angeles District, Corps of Engineers 1999). General maintenance of the Ballona channel and levee system would continue to ensure that they are clear of debris, weeds, and wild growth and that they are not being restricted by the depositing of waste materials, building of unauthorized structures or other encroachments; the capacity of the channel or floodway is not being reduced by the formation of shoals; and the banks are not being damaged by rain or wave wash, and that no sloughing of banks has occurred; riprap sections and deflection dikes and walls are in good condition. General levee maintenance would continue to include, but not be limited to: removal of wild growth and drift deposits; repair of damage caused by erosion or other forces; and proper attention to levee drains, drain gates, revetment work and riprap, and access roads to and on levees (33 C.F.R. §208.10(b)). General drainage structure maintenance would continue to include, but not be limited to the implementation of measures necessary to assure that inlet and outlet channels are kept open and that trash, drift, or debris is not allowed to accumulate near drainage structures; further, flap gates and manually operated gates and valves on drainage structures would continue to be examined, oiled, and trial operated at least once every 90 days (33 C.F.R. §208.10(d)). Consistent with the OMRR&R the following actions would continue to occur as necessary to maintain landscaping for LACDA project structures and features: supplemental watering, foliage pruning, root pruning, pest control (potentially including herbicides, insecticides, and fungicides), weed abatement, and plant removal, replacement, and supplementation (Los Angeles District, Corps of Engineers 1999). Hardscaping, including gravel and stone ground covers, paving systems, signage and artwork, and removal of graffiti and vandalism also would continue as needed (Corps 1999). Non-routine (emergency) maintenance would occur consistent with the OMRR&R to insure the serviceability of LACDA project structures and facilities in times of flood (Los Angeles District, Corps of Engineers 1999).

Management of existing tide gates to provide some acclimation to sea level rise would be possible temporarily; however, between approximately 2070 and 2100, the tide gates would be permanently closed to prevent flooding from sea-level rise, and the existing tidal wetland habitats in West, South, and Southeast Area B would be cut off from the estuary. Once MLLW reaches the height at which the tide gates close (3.4 feet NAVD 88), the site no longer would drain. At this point, the tide gates would need to remain closed to prevent flooding. No changes would be made to existing elevations within the Ballona Reserve; instead, existing armored levees channelizing Ballona Creek would remain in place, and Ballona Creek would not reconnect with its historic floodplain. Additionally, no new culverts would be created. No fill material would be generated or require disposal. The Ballona Reserve would remain closed to the public except as authorized by CDFW; no new visitor or recreational improvements or amenities would be provided; no parking structure would be constructed or operated; and no improvements to existing parking areas would be made. Existing agreements regarding use of the baseball fields would not be affected under Alternative 4. SoCalGas would continue to manage wells and pipelines within the Ballona Reserve and independently would pursue well and pipeline abandonment and/or relocation outside the Ballona Reserve based on its priorities and as required by the California Department of Conservation, Division of Oil, Gas, & Geothermal Resources.

1.3 Purpose of an EIS/EIR

1.3.1 NEPA

NEPA was enacted by Congress in 1969. It requires Federal agency decision-makers to document and consider the environmental consequences of their actions or decisions on the quality of the human environment. In enacting NEPA, Congress intended to ensure that environmental information would be available to public officials and citizens before decisions would be made and before actions would be taken. It further intended that NEPA would help public officials make decisions based on an understanding of the environmental consequences and take action to protect, restore, and enhance the environment.

When a Federal agency determines that a Federal action associated with a project could result in significant environmental effects, an EIS is prepared, which must provide full and fair discussion of anticipated significant environmental impacts. The EIS informs decision makers and the public of the reasonable alternatives to avoid or minimize significant impacts or enhance the quality of the human environment. An EIS is not only a disclosure document but also a decision making aid that is used by Federal officials in conjunction with other relevant material to make decisions regarding a proposed project.

1.3.2 CEQA

CEQA was enacted by the California legislature in 1970 and requires public agency decision makers to consider the environmental effects of their actions. When a state or local agency determines that a proposed project has the potential to significantly affect the environment, an EIR is prepared. CDFW, as the lead agency under CEQA, has determined that the Project may result in a significant impact on the environment, and an EIR must be prepared. The purpose of an EIR is to identify for public agencies and the public in general the significant effects of a proposed project on the environment, to identify feasible alternatives to the project, and to indicate the manner in which those significant effects can be feasibly mitigated or avoided. A public agency must mitigate or avoid significant environmental impacts of projects it carries out or approves whenever feasible. In instances where significant impacts cannot be avoided or mitigated, the project may nonetheless be carried out or approved if the approving agency finds that economic, legal, social, technological, or other benefits outweigh the unavoidable significant environmental effects. Like an EIS, an EIR is both a disclosure document and a decision-making tool.

1.4 Lead, Cooperating, Responsible, and Trustee Agencies

1.4.1 Lead Agencies

NEPA and CEQA define roles for “lead agencies.” Under NEPA, the lead agency is that entity that prepares or takes primary responsibility for preparing the NEPA document (40 C.F.R. §1508.16). Under CEQA, the lead agency is the public agency that has principal responsibility for carrying out or approving the project (14 Cal. Code Regs. §15367). The Corps and CDFW are the NEPA and CEQA, respectively, lead agencies for this EIS/EIR. The Corps and CDFW are preparing this joint EIS/EIR in the interest of efficiency and to avoid duplication of effort. In their role as lead agencies, the Corps and CDFW are examining affected resources and evaluating potential environmental consequences (both adverse impacts and beneficial effects) that could result from implementing the restoration alternatives evaluated in this EIS/EIR.

1.4.2 Cooperating Agencies

Under NEPA, agencies other than the NEPA lead agency that have jurisdiction by law or special expertise with respect to the environmental effects anticipated from the Project may participate in the NEPA process as cooperating agencies (40 C.F.R. §§ 1501.6, 1508.5). The United States Fish and Wildlife Service (USFWS) initially participated in the development of the Draft EIS/EIR as a cooperating agency; however, the agency withdrew from this role by letter dated January 23, 2017

1.4.3 Responsible and Trustee Agencies

Under CEQA, public agencies other than the lead agency that have discretionary approval power over a project are "responsible agencies" (CEQA Guidelines §15381). For this Project, responsible agencies include, but are not limited to, the Fish and Game Commission, State Water Resources Control Board, California Coastal Commission, and South Coast Air Quality Management District. State agencies that have jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California are "trustee agencies" under CEQA (CEQA Guidelines §15386). For this Project, CSLC is a trustee agency. Responsible and trustee agencies are listed in Table 1-1, *Summary of Required Permits and Approvals*.

1.5 Scope and Content of the Draft EIS/EIR

The analyses contained in this EIS/EIR were conducted based on professional judgment regarding the nature of the Project, Appendix G of the CEQA Guidelines, the Corps' standard NEPA practices, and comments received during the notice of preparation/notice of intent (NOP/NOI) review process.

The following issues have been determined to be potentially significant and, therefore, are evaluated in this EIS/EIR:

1. Aesthetics
2. Air Quality
3. Biological resources
4. Cultural Resources
5. Geology, Seismicity, and Soils
6. Greenhouse Gas Emissions
7. Hazards and Hazardous Materials
8. Hydrology and Water Quality
9. Noise
10. Recreation
11. Transportation and Traffic
12. Utilities and Service Systems
13. Socioeconomics
14. Environmental Justice

These issues are discussed and analyzed by resource area in Chapter 3. Mitigation measures to reduce potential significant impacts to a less than significant level are proposed whenever feasible.

1.5.1 NEPA Scope of Analysis

As discussed in Section 1.1.1, the Project site includes the Ballona Reserve and seven potential natural gas storage well relocation sites (Sites 1 through 7) proposed within the SoCalGas Property located adjacent to the Ballona Reserve. See Figure ES-1, *Regional Location*, and Figure ES-2, *Project Site*.

As part of the NEPA process, the Corps is responsible for establishing the NEPA scope of analysis pursuant to 33 C.F.R. Parts 230 and 325, Appendix B, which states:

> …the [Corps] district engineer should establish the scope of the NEPA document to address the impacts of the specific activity regarding the Department of the Army (DA) permit and those portions of the entire project over which the district engineer has sufficient control and responsibility to warrant Federal review.

Pursuant to Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C.1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C.403), any entity seeking to conduct dredge and fill activities in waters of the U.S. and for work and (or) structures in or affecting navigable waters of the U.S. must obtain a DA permit from the Corps. CDFW has submitted an application seeking dredge and fill activities in waters/navigable waters of the U.S. to construct new levees, form new tidal channels, modify existing tidal channels, re-contour areas to enhance tidal flow, and to create elevations conducive to establishing wetland habitat as part of Alternative 1: Full Tidal Restoration/Proposed Action. Pursuant to Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended (33 U.S.C. §1413), any entity seeking to transport dredged material for the purpose of disposal in ocean waters is required to obtain a DA permit. As discussed in Chapter 2, ocean disposal could result from any of the restoration alternatives.

Pursuant to Section 408, any entity seeking to alter, occupy or use any Federally-authorized civil works project under Corps jurisdiction must submit a Section 408 request. LACFCD in coordination with CDFW has submitted a Section 408 request to the Corps that proposes to realign Ballona Creek and associated levees to create a natural meander-shaped channel. New levees would be constructed at the perimeter of the Ballona Reserve restoring tidal influence to Areas A, B and C, while reducing flood risk to Culver Boulevard and developed areas to the south. The work would occur over several years with excavation and placement of fill beginning initially in Area A and Area B.

The Corps' NEPA scope of analysis encompasses 566 acres within the Ballona Reserve, as depicted in Figures ES-1 and ES-2. This portion of the Project site has been divided into three principal areas. The majority of the Ballona Reserve site is owned by the CDFW, with a smaller interest owned by the California State Lands Commission, which also owns the Freshwater Marsh adjacent the Ballona Reserve's southeast portion. The State Lands Commission and CDFW have agreed that CDFW manages all the lands in the Ballona Reserve portion of the Project site.

1.5.2 CEQA Scope of Analysis

CEQA informs CDFW's consideration of permit decisions and other discretionary approvals. CEQA applies to all discretionary projects proposed to be conducted or approved by a California public agency, including projects proposed by the lead agency, which are subject to the same level of review as private projects requiring agency approval (CDFW 2015).

The purposes of CEQA include: disclosing to the public the potential significant environmental effects of a project; preventing or minimizing damage to the environment through development of project alternatives, mitigation measures, and mitigation monitoring; enhancing public participation in the environmental review process; and improving interagency coordination through early consultations, scoping meetings, notices of preparation, and State Clearinghouse review. Consistent with these purposes, this EIS/EIR considers the potential environmental consequences (both adverse impacts and beneficial effects) that could result from implementing the restoration alternatives evaluated in this EIS/EIR.

1.5.3 Agency and Public Input

The scope of analysis and content of this EIS/EIR were established to ensure that the comments received from regulatory agencies and the public during the NOP/NOI review process would be addressed.

The following is a timeline of the public involvement and the NEPA/CEQA notices that have occurred:

1. **July 25, 2012.** The NOI was published in the Federal Register by the Corps (77 Fed. Reg. 43575), posted on its website, and mailed or emailed to agencies, organizations, and individuals.
2. **July 27, 2012.** CDFW issued a NOP under CEQA.
3. **August 16, 2012.** The Corps and CDFW conducted a joint scoping meeting.
4. **October 23, 2012.** The comment period for the NOI and NOP ended.
5. **January 29, 2013.** CDFW issued a revised NOP concerning a proposed visitor education center (the visitor education center proposal was suspended and as a result is not included in this EIS/EIR).
6. **March 30, 2013.** The comment period on the revised NOP ended.

Comments received during the NOI/NOP process were incorporated into a scoping report, which is included in Appendix A.

1.6 Intended Uses of this EIS/EIR

This EIS/EIR is intended to inform Federal, state, and local decision-makers and members of the public about the potential environmental impacts of the restoration alternatives. Federal, state, and local decision-makers are identified in Table 1-1, *Summary of Required Permits and Approvals,* which also identifies the permits and other authorizations that are anticipated to be required by these decision-makers for implementation of the Project. Not all permits or approvals identified are applicable to each alternative. The environmental effects of compliance with all applicable permit requirements are analyzed as part of the Project throughout this EIS/EIR.

1.6.1 Corps' Use

Pursuant to NEPA, this EIS/EIR fulfills the Corps' responsibility to document a reasonable range of alternatives, and provide full and fair discussion of anticipated significant environmental impacts within the Corps' NEPA scope of analysis.

The Corps would utilize contents of this document in its permit evaluation processes under Section 404, Section 10, and Section 408. The Corps' jurisdiction under each of these permitting schemes in the context of the Proposed Action is summarized below. The Corps' permit evaluation process also incorporates factors indicated in 33 C.F.R. §320.4 – public interest review: effects on wetlands; fish and wildlife; water quality; historic, cultural, scenic, and recreational values; consideration of private ownership; effects on coastal zones; and other Federal, state, or local requirements.

Pursuant to its authority under Section 404, the Corps would use this document to evaluate the impact on waters of the U.S. resulting from the Proposed Action's discharge of dredged or fill material (33 U.S.C. §1344). For purposes of analysis, this EIS/EIR assumes without deciding that the portion of the project site within the Ballona Reserve is subject to the Corps' Section 404 jurisdiction and that the portion of the project site within the SoCalGas Property is not. Therefore, all of the proposed dredge and fill activities that would be implemented within the Ballona Reserve (including, for example, construction of new levees, formation of new tidal channels, modification of existing tidal channels, re-contouring areas to enhance tidal flow, and creating elevations conducive to establishing wetland and other aquatic habitat) would require Section 404 authorization.

Pursuant to its authority under Section 10, the Corps would use this document to evaluate the impact of the Proposed Action on navigable waters of the U.S., including construction of any structure in or over any such waters, the excavating from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters (33 U.S.C. §403). Navigable waters of the U.S. generally are defined as those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events that impede or destroy navigable capacity (33 CFRC.F.R. §329.4). For purposes of analysis, this EIS/EIR assumes without deciding that the portion of the project site that would be subject to tidal influence without the presence of the Ballona levees (based on the current topography of the site) is subject to the Corps' Section 10 jurisdiction. This area is shown in Figure 1-1, *Existing Topography and Tidal Inundation*.

TABLE 1-1
SUMMARY OF REQUIRED PERMITS AND APPROVALS

Agency	Permits and Other Requirements	Jurisdiction/Purpose/Applicant
Federal Agencies		
United States Army Corps of Engineers (Corps)	NEPA Record of Decision	Lead agency under NEPA responsible for preparing the EIS and issuing a Record of Decision.
	Clean Water Act (CWA) §404 permit	Discharge of dredged or fill material into to waters of the U.S.(33 U.S.C. §1344). CDFW proposes dredge and fill activities in waters of the U.S. to construct the Project's new levees, form new tidal channels, modify existing tidal channels, re-contour areas to enhance tidal flow, and create elevations conducive to establishing wetland and other aquatic habitat.
	Rivers and Harbors Act (RHA) §408 permit	Alteration or permanent occupation or use of any sea wall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the United States (33 U.S.C §408), which includes alterations or modifications to the LACDA project. LACFCD is the applicant for the Section 408 permit and will continue to be responsible for operation and maintenance of LACDA project features within the Ballona Reserve.
	RHA §10 permit	Construction of any structure in or over any navigable waters of the U.S., the excavating from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters (33 U.S.C. §403). CDFW proposes to construct one or two bridges over navigable waters of the U.S., excavate material from such waters if/as needed for operation and maintenance purposes, and accomplish other work affecting the course, location, condition, or capacity of such waters.
	Marine Protection, Research, and Sanctuaries Act §103 permit	Transport of dredged material for the purpose of disposal in ocean waters at an ocean disposal site designated by the USEPA (33 U.S.C. §1 413). CDFW and LACFCD propose to dispose of excavated fill from the Project site, potentially including offshore disposal at the USEPA designated ocean disposal site LA-2 off San Pedro or LA-3 off Newport Beach. If ocean disposal is determined to be necessary to address excess fill material, a Section 103 permit application quantifying the volume of material proposed for off-site disposal and a Sampling and Analysis Plan (SAP) would be filed for consideration by the Corps in consultation with the Los Angeles Regional Contaminated Sediments Task Force (CSTF) and the Southern California Dredged Material Management Team (SC-DMMT). See, SC-DMMT January 2015 meeting minutes.[14]

14 Meeting minutes can be obtained from the Corps Los Angeles District website at: http://www.spl.usace.army.mil/Missions/Regulatory/ProjectsPrograms.aspx

TABLE 1-1 (Continued)
SUMMARY OF REQUIRED PERMITS AND APPROVALS

Agency	Permits and Other Requirements	Jurisdiction/Purpose/Applicant
Federal Agencies (cont.)		
United States Army Corps of Engineers (Corps) (cont.)	Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) plan	Corps approval would be required to modify the OMRR&R by replacing/updating data sheet BA-A-2 to reflect approved changes to existing LACDA infrastructure.
United States Fish and Wildlife Service (USFWS)	Federal Endangered Species Act (FESA) §7 consultation	Consultation with Federal action agencies (such as the Corps) for Federal actions that may affect threatened and endangered species listed under the FESA (16 USC §1531 et seq.).
Federal Emergency Management Agency (FEMA)	Flood Protection Act §206	Approval of Letter of Map Revision.
National Oceanic and Atmospheric Administration (NOAA) Fisheries Office of Habitat Conservation	Magnuson-Stevens Fishery Conservation and Management Act	Consultation to identify and describe adverse fishing impacts for essential fish habitat (EFH). The Corps will coordinate with the NOAA and provide information to further the conservation and enhancement of EFH.
United States Coast Guard (USCG)	General Bridge Act (33 U.S.C 525)	While an individual Coast Guard bridge permit is not required for the pedestrian bridge over Ballona Creek, the Corps is required to notify the USCG office at least 30 days prior to construction so that the USCG can provide the appropriate notification to mariners. The Corps must complete and return a Completion Report Information form which includes as built drawings, navigational clearance measurements, and a photograph of the bridge when construction of the bridge is completed. (USCG 2016)
State Agencies		
California Department of Fish and Wildlife (CDFW)	**CEQA certification of EIR and findings of overriding consideration if one or more significant unavoidable impacts is identified.**	**Lead agency under CEQA responsible for preparing and certifying the EIR. Also selects the alternative to be implemented in the Ballona Reserve.**
Fish and Game Commission	14 Cal. Code Regs. §630 et seq.	Regulation of visitor use within the Ballona Reserve.
California Coastal Commission	Coastal Zone Management Act (CZMA) (16 U.S.C §1451 et seq.) federal consistency review	Pursuant to section 307(c)(3) of the CZMA, after final approval by the Secretary of Commerce of a state's management program, any applicant for a required federal license or permit to conduct an activity, in or outside of the coastal zone, affecting land or water use or natural resource of the coastal zone of that state shall provide in the application to the licensing or permitting agency a certification that the proposed activity complies with the enforceable policies of the state's approved program and that such activity will be conducted in a manner consistent with the program. At the same time, the applicant shall furnish to the state a copy of the certification, with all necessary information or data. No license or permit shall be granted by the Federal agency until the state has concurred with the applicant's certification or until, by the state's failure to act, the concurrence is conclusively presumed. 16 U.S.C. §1456.

TABLE 1-1 (Continued)
SUMMARY OF REQUIRED PERMITS AND APPROVALS

Agency	Permits and Other Requirements	Jurisdiction/Purpose/Applicant
State Agencies (cont.)		
California Coastal Commission (cont.)	**California Coastal Act (Pub. Res. Code Div. 20, §30000 et seq.) coastal development permit**	**The use of land and water in the coastal zone. Development activities, which are broadly defined by the Coastal Act to include (among others) construction of buildings, divisions of land, and activities that change the intensity of use of land or public access to coastal waters, generally require a coastal permit.**
California Department of Conservation – Division of Oil, Gas, and Geothermal Resources (DOGGR)	California Statutes and Regulations for Conservation of Oil, Gas, & Geothermal Resources (State of California 2015)	Permit to abandon and drill replacement wells. Before an operator can drill a new well in California, the operator must file necessary forms, submit an indemnity, and receive division approval, Similarly, prior to plugging and abandoning a well under the Division's jurisdiction, an operator must submit a Notice to Intention to Abandon / Re-Abandon Well (OG 108).
California State Lands Commission (CSLC)	Public Resources Code §6001 et seq. permit	The CSLC has oversight responsibility for tidal and submerged lands legislatively granted in trust to local jurisdictions, including the freshwater marsh located in Area B of the Ballona Reserve (which is not part of the Project) and a 24-acre property that it leases to CDFW to manage as part of the Ballona Reserve. CSLC approval may be required for new construction, reconstruction, or modification of improvements on lands under the jurisdiction of the CSLC.
State Water Resources Control Board	National Pollution Discharge Elimination System (NPDES)— Construction General Permit and Implementation of a Project-specific SWPPP	Required for projects with 1 acre or more of land disturbance and potential impacts to waters of the U.S. or waters of the State.
State Office of Historic Preservation (SHPO)	National Historic Preservation Act (NHPA) (54 U.S.C. §100101 et seq.) Section 106 consultation	NHPA §106 requires Federal agencies (such as Corps) to take into account the effects of their undertakings on historic properties, i.e., properties that are included in the National Register of Historic Places or that meet the criteria for the National Register. If an undertaking could affect an historic property, then consultation with the appropriate State Historic Preservation Officer (SHPO) is required.
Local Agencies		
South Coast Air Quality Management District (SCAQMD)	**Permit to Construct**	**Restoration-related air emissions**
Regional Water Quality Control Board, Los Angeles Region (RWQCB)	CWA §401 water quality certification	Certification or waiver that proposed discharges into navigable waters are consistent with state water quality standards.
	Porter-Cologne Water Quality Control Act waste discharge requirements (WDRs) (Water Code §13260 et seq.)	Regulation of the discharge of waste to Waters of the State. All parties proposing to discharge waste that could affect Waters of the State must file a report of waste discharge (ROWD) with the appropriate RWQCB. The RWQCB will respond to the ROWD by issuing WDRs in a public hearing, or by waiving WDRs (with or without conditions) for that proposed discharge.
	Sediment TMDL	Project compliance with the Sediment TMDL is regulated by the RWQCB.

TABLE 1-1 (Continued)
SUMMARY OF REQUIRED PERMITS AND APPROVALS

Agency	Permits and Other Requirements	Jurisdiction/Purpose/Applicant
Local Agencies (cont.)		
Los Angeles County Floodplain Management Division	Conditional Letter of Map Revision	Determination of effects upon the hydrologic or hydraulic characteristics of a flooding source and the resulting modification of the existing floodway.
Los Angeles County Department of Beaches and Harbors (LACDBH)	Right of Entry Permit	Required if restoration activity or staging requires access through or use of County property. LACDBH is responsible for enhancing public access to and enjoyment of County-owned and operated beaches, including Marina del Rey. LACDBH operates parking lots in the Ballona Reserve. The Project proposes to convert one of these parking lots into a three-story parking structure.
City of Los Angeles Department of Public Works	Public Works "B" Permit (construction and encroachment permit with traffic control plan)	Required for any construction within, under, or over city roadways including bridges, retaining walls, sewer, and storm drains.
City of Los Angeles Building and Safety Department, City of Los Angeles Fire Department	Building and Grading Permits	Permitting authority for building and grading permits (Building and Safety Department); review and submittal of recommendations regarding building permit (Fire Department).
City of Los Angeles Bureau of Engineering	Storm Drain Connection Permits	Permitting authority for storm drain connections, permit for discharges of stormwater, and permits for water discharges to the wastewater collection system.
Los Angeles Department of Water and Power	Water service	Approval of new potable and recycled water service connections.
Local Landfill	Approval to accept nonhazardous solid waste	Approval to accept clean soil that will be exported off site for disposal.

The Corps also would use this document to evaluate the impact of the Proposed Action on the potential for flooding and safety pursuant to Section 408, which authorizes the Secretary of the Army, on the recommendation of the Chief of Engineers of the Corps, to authorize the alteration or occupation or use of a Corps civil works project (including the Ballona Creek channel, levees, and other components of the LACDA project facilities within the Ballona Reserve) if the Secretary determines that the activity will not be injurious to the public interest and will not impair the usefulness of the project.

The alternatives evaluated in this document and the analysis of environmental impacts also fulfill the Corps' responsibility to ensure compliance with the Clean Water Act 404(b)(1) Guidelines. For activities involving Section 404 discharges, the Corps is required to ensure that its permit decision is in compliance with the Section 404(b)(1) of the Clean Water Act. The Section 404(b)(1) Guidelines state that no discharge of dredged or fill material will be permitted if there is a practicable alternative to the proposed discharge that would have a less significant impact on the aquatic ecosystem, so long as the alternative does not have other significant environmental consequences (40 C.F.R. §230.10(a)). A Section 404(b)(1) evaluation typically includes the following types of analyses:

1. Factual determinations (e.g., on substrate; currents, circulation, and drainage patterns; suspended particulates and turbidity; water quality; mixing zone; habitat for fish and other aquatic organisms; wildlife habitat; endangered or threatened species; and biological availability of possible contaminants in dredged or fill material).
2. Findings of compliance or noncompliance with the restrictions on discharge, including evaluation of the availability of practicable alternatives that would have a less significant impact on the aquatic ecosystem, and findings of compliance with a variety of state and federal regulations.
3. Identification of practical steps taken to minimize potential significant impacts of the discharge on the aquatic ecosystem.
4. A conclusion about the compliance of the Proposed Action with the Section 404(b)(1) guidelines.

1.6.2 CDFW Use

CDFW is the state's trustee for fish and wildlife resources and has jurisdiction over approximately 90% of the Ballona Reserve (the State Lands Commission has jurisdiction over the remainder as described below). In 2003 and 2004, CDFW acquired the Ballona Reserve through a mix of purchase, donation and transfer. Because of its land ownership and its primary responsibility for authorizing the project, CDFW is acting as the state lead agency under CEQA. CDFW also may lead the implementation of the Project upon approval of an alternative.

This EIS/EIR will be used by CDFW in making a decision with regard to restoration and post-restoration activities within the Ballona Reserve and by other permitting agencies to inform their consideration of permit applications and other actions required to implement the Project. CDFW's certification of the EIR, notice of completion, findings of fact, and statement of overriding considerations (if necessary) will document CDFW's decision as to the adequacy of the EIR and inform subsequent decisions by CDFW whether to approve and construct the Project.

1.7 Organization of the Draft EIS/EIR

This EIS/EIR is organized as follows:

Executive Summary, provides a summary of the background and overview of the Project, briefly describes the alternatives evaluated in the EIS/EIR, identifies potentially significant adverse effects of the alternatives, and recommends mitigation measures. The Executive Summary also identifies areas of controversy known to the Corps and CDFW, as lead agencies, and discusses issues to be resolved concerning the Project.

Chapter 1 – Introduction, provides an overview of the Project, its location, and key components; describes the purpose and need and objectives for the Project; identifies cooperating, responsible, and trustee agencies; and summarizes the intended uses of the document as well as its scope and content.

Chapter 2 – Description of Alternatives, describes the alternatives considered in this EIS/EIR and discusses the potential alternatives that initially were considered but then not carried forward for more detailed consideration.

Chapter 3 –Environmental Consequences, describes each of the components of the technical sections of the EIS/EIR, explains terms used in the analysis of potential impacts and the approach to the analysis of cumulative effects, and then proceeds on a resource by resource basis to: provide information on existing conditions; analyze potential direct and indirect impacts of the alternatives; recommend feasible mitigation measures that could avoid, substantially lessen, or minimize potential significant impacts of the alternatives; discuss the significance of potential impacts following the implementation of recommended mitigation measures (i.e., the "residual impacts" that would remain after mitigation measures have been implemented, including significant unavoidable impacts); and then evaluate potential cumulative effects

Chapter 4 – Other Considerations, analyzes potential growth-inducing impacts of the alternatives; potential significant irreversible changes or irretrievable commitments of resources; Project impacts in the context of short-term uses versus long-term productivity; and consistency with Federal Executive Orders.

Chapter 5 – List of Preparers and Contributors, lists the agency preparers and contributors to this EIS/EIR.

Appendices, contain Project-specific technical reports and other information that supplements or supports the analyses in the body of the EIS/EIR.

1.8 Key Principles Guiding Preparation of This EIS/EIR

1.8.1 Emphasis on Significant Effects

This EIS/EIR focuses on the significant environmental effects of the alternatives analyzed in detail in Chapter 3, and their relevance to the decision-making process. The following sections describe the general framework for analysis under NEPA and CEQA. These summaries are not meant to capture the legal nuances that have developed through the passage and amendment of various statutes and regulations, and from corresponding judicial decisions; rather, the summaries are meant to communicate a general understanding of these two acts.

NEPA requires the lead Federal agency to rely on a "scientific and analytical basis for the comparison of alternatives" (40 C.F.R. §1502.16) in making its decisions. Commonly, in California, when preparing a joint document, the lead Federal agency will use the CEQA significance thresholds as the standard or basis for determining a project's impacts in terms of context and intensity, unless otherwise noted (certain instances are noted in this document).

"Environmental impacts," as defined by CEQA, include physical effects on the environment. In this document, the term is used synonymously with the term "environmental effects" under NEPA. The State CEQA Guidelines (14 Cal. Code Regs §15360) define the environment as follows:

> The physical conditions which exist within the area which will be affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.

This definition does not include strictly economic impacts (e.g., changes in property values) or social impacts (e.g., a particular group of persons moving into an area). The State CEQA Guidelines (14 Cal. Code Regs. §15131[a]) state that "economic or social effects of a project shall not be treated as significant effects on the environment." However, economic or social effects are relevant to physical effects in two situations. In the first, according to CEQA Guidelines Section 15131(a): "An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes…to physical changes caused in turn by the economic or social changes." In other words, if an economic or social impact leads to a physical impact, this ultimate physical impact would be evaluated in the EIR. In the second instance, according to CEQA Guidelines Section 15131(b): "Economic or social effects of a project may be used to determine the significance of physical changes caused by the project."

As with economic or social impacts, psychological impacts are outside the definition of the term "environmental." While not specifically discussed in the CEQA Guidelines, the exclusion of psychological impacts was specifically affirmed in the *National Parks and Conservation Association v. County of Riverside* (1999) 71 Cal. App. 4th 1341 and 1364

In view of these legal precedents, CDFW is not required to treat economic, social, or psychological impacts as significant environmental impacts absent a related physical effect on the environment. Therefore, such impacts are discussed only to the extent necessary to determine the significance of the physical impacts of the alternatives analyzed in detail in Chapter 3.

1.8.2 Forecasting

In this EIS/EIR, the Corps and CDFW have made their best efforts to predict and evaluate the reasonable, foreseeable, direct, indirect, and cumulative environmental impacts of the alternatives. NEPA and CEQA do not require the Corps and CDFW to engage in speculation about impacts that are not reasonably foreseeable (CEQA Guidelines §§15144, 15145). Neither NEPA nor CEQA requires a worst-case analysis when confronted with incomplete or unavailable information (40 C.F.R. §1502.22). NEPA requires disclosure if information is lacking for analysis. In such instances, where information is lacking, NEPA does not require obtaining such information if the costs to obtain the information are exorbitant or the means to obtain such information are not known. Rather, NEPA requires in Section 1502.22(b):

1. A statement that such information is incomplete or unavailable;
2. A statement of the relevance of the incomplete or unavailable information to evaluating the reasonably foreseeable significant adverse impacts on the human environment;
3. A summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environments; and
4. The agency's evaluation of such impacts based upon theoretical approaches or research methods generally acceptable in the scientific community.

1.8.3 Reliance on Environmental Thresholds and Substantial Evidence

The identification of impacts as significant or less than significant is one of the important functions of an EIS/EIR. While impacts determined to be less than significant need only be acknowledged as such, an EIR must identify mitigation measures for any impact identified as significant. The Corps has adopted the CEQA thresholds to meet its NEPA responsibilities for this EIS/EIR, unless otherwise noted in particular sections of this document for the NEPA analysis. In preparing this document, the Corps and CDFW have based their conclusions about the significance of environmental impacts on identifiable thresholds and have supported these conclusions with substantial scientific evidence.

1.8.4 Disagreement among Experts

During preparation of the EIS/EIR, it is possible that evidence that might raise disagreements will be presented during the public review of the EIS/EIR. Such disagreements will be noted and will be considered by the decision-makers during the public hearing process. However, to be adequate under NEPA and CEQA, the EIS/EIR need not resolve all such disagreements.

In accordance with the provisions of the CEQA Guidelines, conflicting evidence and expert opinions on an issue concerning the environmental impacts of the various restoration alternatives – when CDFW is aware of these controversies – has been identified in this EIS/EIR. The EIS/EIR has summarized the conflicting opinions and has included sufficient information to allow the public and decision-makers to take intelligent account of the environmental consequences of their actions.

In rendering a decision on a project where a disagreement exists among experts, the decision-makers are not obligated to select the most conservative, environmentally protective or liberal viewpoint. Decision-makers might give more weight to the views of one expert than to those of another and need not resolve a dispute among the experts. In their proceedings, the decision-makers must consider the comments received and address any objections, but need not follow said comments or objections so long as the decision-makers state the basis for their decision and the decision is supported by substantial evidence.

1.8.5 NEPA and CEQA Baselines

1.8.5.1 NEPA Baseline

The NEPA baseline is not bound by statute to a “flat” or “no growth” scenario. Therefore, the NEPA baseline may project construction and operational impacts that do not require Federal action or approval. Normally, any ultimate permit decision would focus on the type, nature, and duration of direct, indirect, and cumulative environmental consequences (whether adverse impacts or beneficial effects) as determined to be within the scope of analysis. Significance of impacts associated with each alternative is determined by comparing each alternative to the NEPA baseline (i.e., the incremental impact).

1.8.5.2 CEQA Baseline

Section 15125 of the CEQA Guidelines requires EIRs to include a description of the physical environmental conditions in the vicinity of a proposed project that exists at the time the Notice of Preparation (NOP) is published. The conditions that existed at the time the NOP was circulated for review (July 2012) are described in the Affected Environment sections of Chapter 3, unless updated baseline information was determined to be more appropriate; in that case, the Methodology section of the technical resource discussion describes the deviation from a baseline year of July 2012 and describes why it was a more appropriate approximation of existing conditions. Whatever year is selected, the CEQA baseline represents the environmental setting at a fixed point in time, with no anticipated project growth over time. The CEQA baseline environmental conditions constitute the physical conditions by which the CEQA lead agency compares project-related impacts to determine whether an impact is significant.

The CEQA baseline differs from the No Project Alternative, in that the No Project Alternative considers the existing conditions at the time the NOP was published, as well as what would reasonably be expected to occur in the foreseeable future if the project were not approved based on current plans and consistent with available infrastructure and community services.

1.8.6 Mitigation Measures

NEPA requires the identification of potentially adverse effects and appropriate mitigation measures to avoid or minimize such effects (40 C.F.R. §1502.14(f)). Mitigation measures are identified for adverse impacts that cannot be avoided or minimized adequately through project design. As described in the CEQ regulations and 2011 guidance titled, “Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact” (CEQ 2011), Federal agencies can use mitigation to reduce environmental impacts in several ways. Mitigation includes avoiding, reducing, minimizing, rectifying, and/or compensating for an impact (40 C.F.R. §1508.20).

According to Section 15126.4(a) of the CEQA Guidelines, each significant impact identified in an EIR must include a discussion of feasible mitigation measures that would avoid or substantially reduce the significant environmental effect. To reduce significant effects, mitigation measures must avoid, minimize, rectify, reduce, eliminate, or compensate for a given impact of the Project. Mitigation measures must satisfy certain requirements to be considered adequate. Mitigation should be specific and enforceable, define feasible actions that would demonstrably improve significant environmental conditions, and allow monitoring of their implementation. Mitigation measures that merely require further studies or consultation with regulatory agencies and are not tied to a specific action that would directly reduce impacts, or that defer mitigation until some future time, are not adequate.

Effective mitigation measures clearly explain objectives and indicate how a given measure should be implemented, who is responsible for its implementation, and where and when the mitigation would occur. Mitigation measures must be enforceable, meaning that the lead agency must ensure that the measures would be imposed through appropriate permit conditions, agreements, or other legally binding instruments.

Section 15041 of the CEQA Guidelines grants public agencies the authority to require feasible changes (mitigation) that would substantially lessen or avoid a significant effect on the environment associated with activities involved in a project. Public agencies, however, do not have unlimited authority to impose mitigation. A public agency might exercise only those express or implied powers provided by law; CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws. However, where another law grants discretionary powers to a public agency, CEQA authorizes use of those discretionary powers to mitigate or avoid significant effects on the environment when it is feasible to do so (CEQA Guidelines §15040).

In addition to limitations imposed by CEQA, the U.S. Constitution limits the authority of regulatory agencies. The Constitution limits the authority of a public agency to impose conditions to those situations where a clear and direct connection ("nexus," in legal terms) exists between a project impact and the mitigation measure. Finally, a proportional balance must exist between the impact caused by the project and the mitigation measure imposed upon the project applicant. A project applicant cannot be forced to pay more than its fair share of the mitigation, which should be roughly proportional to the impact(s) caused by the project.

For impacts identified in Sections 3.2 through Section 3.14 of this EIS/EIR, mitigation measures have been developed to avoid, minimize, rectify, or reduce potential significant adverse environmental effects that would be implemented during or following restoration. The analysis considers the Project's potential environmental impacts after the implementation of all recommended mitigation measures and regulatory requirements of Federal, state, and local agencies. A Mitigation Monitoring, Reporting, and Compliance Program (MMRCP) would be prepared by CDFW if the Project is approved to ensure the effective implementation of the mitigation measures identified to address adverse impacts. Because these mitigation measures are derived from a variety of sources, they also may be required by agencies other than CDFW and their implementation would be enforced by those other agencies. Whatever mitigation measures the Corps adopts would be set forth in the ROD.

1.8.7 Requirements to Evaluate Alternatives

According to NEPA and CEQA regulations, the alternatives section of an EIS/EIR is required to:

1. rigorously explore and objectively evaluate a range of reasonable alternatives;
2. include reasonable alternatives not within the jurisdiction or congressional mandate of the lead agency, if applicable;
3. include No Federal Action (NEPA) and No Project (CEQA) alternative;
4. develop substantial treatment of each alternative, including the proposed action, so that reviewers could evaluate their comparative merits;

5. identify the "agency's preferred alternative"[15] (NEPA);

6. include appropriate mitigation measures (when not already part of the proposed action or alternatives); and

7. present the alternatives that were eliminated from detailed study and briefly discuss the reason(s) for elimination.

NEPA (40 C.F.R. §1502.14(a)) and the CEQA Guidelines §15126.6) require that an EIS and an EIR, respectively, describe a reasonable range of alternatives to a proposed project, or to the location of a proposed project that could feasibly meet most of the basic objectives of the project but would avoid or substantially lessen any significant environmental effects. Chapters 2 and 3 of this Draft EIS/EIR describe and analyze, respectively, potential alternatives to the project described in CDFW's application materials (i.e., Alternative 1).

Alternatives for an EIS and EIR usually take the form of No Federal Action (no Federal permit), No Project (no state or local discretionary permits), and one or more alternatives that could reduce one or more of the potential significant effects, including by reducing the project size, via a different project design, or one or more suitable alternative project sites (40 C.F.R. §1502.14(c)). The range of alternatives discussed in an EIS and EIR need not be beyond a reasonable range (40 C.F.R. §1502.14(a); CEQA Guidelines §15126.6(c)), and an EIR is further governed by the "rule of reason" that requires the identification of only those alternatives necessary to permit a reasoned choice between the alternatives and a proposed project. An EIS and an EIR need not consider an alternative that would be infeasible. CEQA Guidelines §15126.6 explains that the evaluation of project alternative feasibility can consider "site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site." The EIS/EIR is not required to evaluate an alternative whose effects could not be reasonably identified, or whose implementation is remote, speculative, or would not achieve the basic purposes of the project.

With regard to CWA, section 404(b)(1) guidelines (40 C.F.R. Part 230) prohibit the Corps from issuing a permit unless it is the least environmentally damaging practicable alternative (LEDPA). The Corps must also assure that the project is not contrary to the public's interest. The factors that influence whether an alternative is available and practicable include cost, logistics, technology, and the ability of the alternative to meet the overall project purpose. The CWA section 404 (b)(1) guidelines primarily focus on impacts to waters of the U.S. The following must be satisfied in order for the Corps to determine that proposed discharges of dredged or fill material is in compliance with section 404(b)(1):

1. Alternative Analysis (40 C.F.R. §230.10(a)): Except as provided under §404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less significant impact on the aquatic ecosystem, so

[15] The "agency's preferred alternative" is the alternative that the federal agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors. See Question 4a of the CEQ's Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations (46 Fed. Reg. 18026).

long as the alternative does not have other significant environmental consequences. If an alternative is otherwise a practicable alternative, an area not presently owned by the applicant, which could reasonably be obtained, utilized, expanded, or managed in order to fulfill the basic purpose of the proposed activity may be considered;

2. Environmental Restrictions/Violation of Law (40 C.F.R. §230.10(b)): No discharge of dredged or fill material shall be permitted if it: (1) causes or contributes to violations of State water quality standards; (2) violates any applicable toxic effluent standard or prohibition; (3) jeopardizes the continued existence of species listed as endangered or threatened under the federal Endangered Species Act (ESA), or results in likelihood of the destruction or adverse modification of a habitat which is determined to be critical habitat under the ESA; and (4) violates any requirement imposed by the Secretary of Commerce to protect any marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972;

3. No Significant Degradation (40 C.F.R. §230.10(c)): Except as provided under §404(b)(2), no discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of waters of the U.S.; and

4. Minimize Adverse Effects (40 C.F.R. §230.10(d)): Except as provided under §404(b)(2), no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.

1.9 Public Comment on the Draft EIS/EIR

This Draft EIS/EIR is being circulated to Federal, state, and local agencies and to interested individuals who may wish to review and comment on the adequacy or accuracy of the analysis. Written comments may be submitted to the lead agencies during the 45-day public review period that began upon publication of the Notice of Availability (NOA) in the Federal Register by the USEPA. Written comments submitted electronically must be received by 5 p.m. on the 45th day following issuance of the NOA. Because of different administrative processes, CDFW will make the Draft EIS/EIR available for public review prior to the NOA, but the comment deadline will still occur at 5 p.m. on the 45th day following issuance of the NOA. Comments sent by mail must be postmarked on or before the close of the comment period. Comments received after the deadline may not receive a formal response in the Final EIS/EIR.

Written comments on this Draft EIS/EIR will be accepted via regular mail or e-mail to either of the parties identified below, and in person at a public meeting to be noticed under separate cover. Comments may be mailed:

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The Draft EIS/EIR, appendices, and all documents referenced in the Draft EIS/EIR are available for public review during normal working hours at the following locations:

California State Coastal Conservancy, 1330 Broadway, 13th Floor, Oakland, CA 94612-2530

Los Angeles Public Library, Playa Vista Branch, 6400 Playa Vista Drive, Los Angeles, CA 90094

County of Los Angeles Public Library, Lloyd Taber-Marina del Rey, 4533 Admiralty Way Marina del Rey, CA 90292

Los Angeles Public Library, Westchester-Loyola Village Branch, 7114 W Manchester Ave, Los Angeles, CA 90045

In addition to printed copies of the Draft EIS/EIR, electronic versions are also available. Due to the size of the document, the electronic versions have been prepared as a series of PDF files to facilitate downloading and printing. Interested parties may request a CD from the Corps or CDFW that contains the EIS/EIR. The Draft EIS/EIR also is available in its entirety on the Project website at www.ballonarestoration.org or on the Corps website at http://www.spl.usace.army.mil/Missions/Regulatory/ProjectsPrograms.aspx.

Electronic copies of this document have been formatted to make reading it electronically easier. The electronic version is “clickable,” which means where there is a reference to a figure, large table, or appendix, that resource can be quickly retrieved by clicking blue text. This allows readers to easily scan through the main document or click for more information on topics that interest them. The table of contents at the front of this document is also clickable, allowing ease of navigation through the document.

The lead agencies will review all substantive comments received during the review period and provide written responses in a Final EIS/EIR. The Final EIS/EIR will be made available to the public and will provide a basis for decision-making by permitting authorities.

1.10 References

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CHAPTER 2
Description of Alternatives

2.1 Introduction

Chapter 2 describes the restoration proposed by the California Department of Fish and Wildlife (CDFW) and the alterations/modifications to the Los Angeles County Drainage Area (LACDA) project proposed by Los Angeles County Department of Public Works-Los Angeles County Flood Control District (LACFCD)[16] in their application materials (Alternative 1), two other restoration alternatives (Alternative 2 and Alternative 3), and a no Federal action/no project alternative (Alternative 4). Chapter 2 also describes the method used to develop and evaluate the alternatives that were carried forward for detailed analysis, and briefly describes the alternatives that were considered but not carried forward.

The U.S. Army Corps of Engineers' (Corps) action is to make a decision on the permit application submitted by CDFW to restore the Ballona Wetlands Ecological Reserve (Ballona Reserve) and the request to alter/modify LACDA project facilities proposed by LACFCD as described in Alternative 1. The Corps is neither an opponent nor a proponent of the proposal. Decision options available to the Corps are to issue the permit, issue the permit with modifications or conditions, or deny the permit.

Alternative 1 is described in Section 2.2.2, *Alternative 1: Full Tidal Restoration/Proposed Action*. Alternative 2 is described in Section 2.2.3, *Alternative 2: Restored Partial Sinuous Creek*. Alternative 3 is described in Section 2.2.4, *Alternative 3: Levee Culverts and Oxbow*. Alternative 4 is described in Section 2.2.5, *Alternative 4: No Federal Action/No Project*.

2.1.1 NEPA and Clean Water Act Section 404(b)(1) Requirements for the Evaluation of Alternatives

In addition to meeting the requirements of NEPA, the alternatives analysis provides the basis for the Corps to make specific findings under the Clean Water Act (CWA). The Corps' NEPA regulations state that a Corps-prepared EIS involving a Department of the Army permit

[16] The Los Angeles County Flood Control Act of 1915 established the Los Angeles County Flood Control District and empowered it to provide flood protection, water conservation, recreation and aesthetic enhancement within its boundaries. In 1984, the Los Angeles County Flood Control District entered into an operational agreement with the Los Angeles County Department of Public Works. The Los Angeles County Flood Control District and Los Angeles County Department of Public Works collectively are referred to in this EIS/EIR as "LACFCD." LACFCD is the applicant with respect to the LACDA project facility components of the Proposed Action (Alternative 1) and would be responsible for its operation and maintenance.

application should be thorough enough to use for both the public interest review and the CWA Section 404(b)(1) Guidelines promulgated by USEPA (40 C.F.R. Part 230 and 33 C.F.R. Part 325, Appendix B, Section 9b[5][A]). Thus, the alternatives evaluation for this EIS/EIR must comply with both NEPA and Section 404(b)(1) Guidelines for alternatives analysis. NEPA and the Section 404(b)(1) Guidelines use different criteria for the types of alternatives that should be considered. NEPA considers "reasonable" alternatives, while the Section 404(b)(1) Guidelines consider "practicable" alternatives. Both sets of considerations are discussed below.

2.1.1.1 Overview of NEPA's "Reasonableness" Considerations and Other NEPA Requirements

NEPA's Reasonableness Factors

The alternatives analysis is the heart of an EIS, and Federal agencies must rigorously explore and objectively evaluate all reasonable alternatives. "Reasonable" alternatives are those that are practical or feasible from a technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant (46 Fed. Reg. 18026, Question 2a). The purpose of analyzing reasonable alternatives is to allow their comparative merits to be considered by agency decision makers and the public (40 C.F.R. §1502.14). The range of potential reasonable alternatives may include alternative sites, project configurations, project sizes, and technologies. Reasonable alternatives do not include those that are remote or speculative or that do not achieve the project purpose and need or cause unnecessary environmental harm. The "no action" alternative, which maintains existing conditions and practices on a project site, must be included among the alternatives analyzed. In this EIS/EIR, the no Federal Action alternative is Alternative 4.

Factors considered in the reasonableness determination in this EIS/EIR include the following:

1. Whether a potential alternative is too remote, speculative, impractical, or ineffective; and
2. Whether it accomplishes the purpose of the proposed action.
3. Whether a potential alternative would cause unnecessary environmental harm.

Alternatives Not Carried Forward for Detailed Review

For alternatives that were eliminated from detailed study, NEPA requires agencies to briefly discuss the reasons for their having been eliminated (40 CFR §1502.14). This EIS/EIR discusses alternatives that were not carried forward for more detailed review in Section 2.3.

No Action Alternative

CEQ regulations implementing NEPA require consideration of a "no action alternative" (40 C.F.R. §1502.14d). In accordance with the Corps' NEPA regulations, the no action alternative is one that results in no construction requiring a Corps permit. Under Alternative 4, the No Federal Action/No Project Alternative, no Federal, state, or local approvals would be granted. No wetlands restoration would take place except for the small-scale removal of invasive species by volunteers using only hand tools. Alternative 4 would not result in the permanent or temporary discharge of fill material into waters of the U.S. or non-wetland waters of the U.S. or result in work or structures in or affecting navigable waters of the U.S.[17] There would be no change to LACDA project facilities within the Ballona Reserve. Existing habitats would be enhanced through continued volunteer efforts.

2.1.1.2 Overview of Section 404(b)(1) Guideline's "Practicability" Considerations and Other Requirements

Section 404(b)(1)'s Practicability Considerations

Under the Section 404(b)(1) Guidelines, "practicable" alternatives are those that are available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes (40 C.F.R. §§230.10(a), 230.3(q)). If it is an otherwise practicable alternative, an area not presently owned by the applicant, which could reasonably be obtained, used, expanded, or managed in order to fulfill the basic purpose of the proposed activity, may be considered (40 C.F.R. §230.10(a)(2)).

The practicability considerations evaluated in this EIS/EIR include the following:

1. Overall Project Purpose: Section 1.2, Purpose and Need, explains the overall project purpose, which is to restore ecological functions and services within the Ballona Reserve, in part by increasing tidal influence to achieve predominantly estuarine wetland conditions; ensure any alteration/modification to the LACDA project components within the Ballona Reserve maintain the authorized LACDA project levels of flood risk management, which in this section of Ballona Creek, includes ensuring there is no reduction to the conveyance capacity of up to 68,000 cubic feet per second (cfs)[18] and that LACDA project features reduce flood risk to the surrounding communities and infrastructure for up to the 100-year flood event. If the alternative does not meet the overall project purpose, it will be eliminated.

2. Cost: The cost must be reasonable for a tidal habitat restoration project. "The mere fact that an alternative may cost somewhat more does not necessarily mean it is not practicable" (45 Fed. Reg. 85336). For comparison, estimated costs of other tidal habitat restoration projects in California are provided in Appendix B9, *Restoration Projects Cost Comparison*.

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[17] Navigable waters of the U.S. generally are defined as those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity. (33 C.F.R. §329.4). The term is used to define the Corps' jurisdictional authority (33 C.F.R. §329.1). Navigable waters of the U.S. include all tidally-influenced waters up to the mean high water mark (MHW) in its natural, unobstructed state. For purposes of this analysis, the Corps has determined that approximately 120 acres of the Project site would be subject to tidal influence without the presence of the levees (based on the current topography) and therefore is subject to the Corps' Section 10 jurisdiction. This area is shown in Figure 1-1, *Existing Topography and Tidal Inundation*.

[18] The Ballona Creek channel was designed in the 1930s, and documentation for the original design capacity is limited. LACFCD design drawings (1959) and as-builts (1963) for later work on the segment of the Ballona Creek channel within the Ballona Reserve indicated a design discharge of 49,500 cfs. Documentation for other, subsequent projects refers to a Standard Project Flood (SPF) flow of 46,000 cfs, which was first computed by the Corps in the 1950s (USACE LA District 1979). The SPF figure was later revised to identify a future, unrestricted SPF of 68,000 cfs (USACE LA District 1979). The authorized discharge will be confirmed by the Corps during the permitting process for the Project, but would not be higher than 68,000 cfs.

3. Logistics: The evaluated alternative must be possible to implement, operate, and maintain. If the alternative would not be possible to implement, operate, and maintain, the alternative will be eliminated.

4. Existing Technology: The evaluated alternative must be possible to construct using existing technology. If the alternative would not be possible to construct using existing technology, the alternative will be eliminated.

The purpose of considering practicable alternatives is to provide a basis for the Corps to identify the least environmentally damaging practicable alternative (LEDPA) consistent with the Section 404(b)(1) Guidelines' prohibition on discharges of dredge or fill material into waters of the U.S. if there is a "practicable alternative to the proposed discharge that would have less impact on the aquatic ecosystem, provided that the alternative does not have other significant environmental consequences" (40 C.F.R. §230.10(a)). See Figure 2-2a, *Corps Jurisdiction under Section 404 of the Clean Water Act, On-Site versus Off-Site Waters of the U.S.*

The thrust of the Section 404(b)(1) Guidelines is that applicants should design projects to meet the overall project purpose while avoiding impacts on aquatic environments. This approach is emphasized in a Memorandum of Agreement (MOA) between the USEPA and the Department of the Army concerning the determination of mitigation under the Clean Water Act Section 404(b)(1) Guidelines (EPA 1990), as modified by the Corps and USEPA Final Mitigation Rule promulgated at 33 C.F.R. Parts 325, 332; 40 C.F.R. Part 230). The MOA articulates the Section 404(b)(1) Guidelines' "sequencing" protocol as first, avoiding impacts; second, minimizing impacts; and third, providing practicable compensatory mitigation for unavoidable impacts and no overall net loss of functions and services. (As explained in Section 1.8.6, *Mitigation Measures*, the Corps is not considering compensatory mitigation in this EIS/EIR because the proposed restoration Project would not result in a net loss in aquatic resource functions or services.) Federal Executive Order No. 11988 also requires the Corps to consider alternatives that would avoid, if practicable, adverse impacts and incompatible development in an area subject to flooding by a 1% percent annual chance of exceedance flood event.[19] If avoidance is not practicable, the agency should design the action to minimize such impacts.

Regulation of Discharges into Special Aquatic Sites, such as Wetlands

The Section 404(b)(1) Guidelines establish two presumptions for projects that propose a discharge into a special aquatic site, such as wetlands. First, it is presumed that there are practicable alternatives to non-water-dependent projects, "unless clearly demonstrated otherwise" (40 C.F.R. §230.10(a)(3)). Second, "where a discharge is proposed for a special aquatic site, all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise" (40 C.F.R. § 230.10(a)(3)).

[19] President Obama's January 30, 2015, Executive Order (E.O.) No. 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, amended E.O. No. 11988. The amendments, however, do not affect E.O. No 11988's requirement that federal agencies consider alternatives that would avoid, if practicable, adverse impacts and incompatible development in an area subject to flooding by a 1% percent annual chance of exceedance flood event. (U.S. Department of Homeland Security 2015).

The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed project, and is used by the Corps to determine whether the activity associated with a discharge is water dependent (i.e., requires access or proximity to or siting within the special aquatic site to fulfill its basic purpose). Establishment of the basic project purpose is necessary only when the proposed activity would discharge dredged or fill material in to a special aquatic site (e.g., wetlands, mudflats). The "basic project purpose" is aquatic ecosystem restoration. Although the Proposed Action does discharge fill material in a special aquatic site (wetlands), the basic project purpose is water dependent, therefore the rebuttable presumption that practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise, does not apply. In addition, where a discharge is proposed for a special aquatic site, all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise. Because all action alternatives result in discharges to special aquatic sites due to the nature of the Project, there are no practicable alternatives that do not involve a discharge into a special aquatic site. Therefore, this rebuttable presumption does not apply.

General Prohibition of the Discharge of Fill Materials into Waters of the U.S.

Section 404(b)(1) Guidelines [40 CFR §230.10(a)] also generally prohibits the discharge of fill materials into jurisdictional waters under the following conditions:

1. If there is a practicable, less damaging alternative;
2. If discharges jeopardize the continued existence of species listed as endangered or threatened (impacts to listed species are analyzed in Section 3.4, *Biological Resources*);
3. If the discharge violates water quality standards (impacts to water quality are analyzed in Section 3.9, *Hydrology and Water Quality*);
4. If discharges will cause or contribute to significant degradation of Waters of the United States (as noted, water quality impacts are analyzed in Section 3.9, *Hydrology and Water Quality*); or
5. If appropriate and practicable steps have not been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem.

Summary of NEPA and Section 404(b)(1) Guidelines Considerations

CDFW and LACFCD have submitted applications for approvals and other authorizations that would be necessary to implement restoration as described in Alternative 1, which is the Proposed Action in this EIS/EIR for purposes of NEPA. As described in Table 1-1, *Summary of Required Permits and Approvals*, CWA Section 404 authorization would be required in connection with the proposed dredge and fill activities in waters of the U.S. to construct new levees, form new tidal channels, modify existing tidal channels, re-contour areas to enhance tidal flow, and create elevations conducive to establishing wetland and other aquatic habitat (see Figure 2-2b, *Alternative 1 Impacts to Section 404 Waters of the U.S.*; Figure 2-2c, *Alternative 2 Impacts to Section 404 Waters of the U.S.*; and Figure 2-2d, *Alternative 3 Impacts to Waters of the U.S.*). Construction of any structure in or over any navigable waters of the U.S., the excavating from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters would require Corps authorization pursuant to Rivers and Harbors Act Section 10 (see Figure 2-2e, *Alternative 1 Impacts to Section 10 of the Rivers and Harbors Act*; Figure 2-2f, *Alternative 2 Impacts to Section 10 of the Rivers and Harbors Act*; and Figure 2-2g, *Alternative 3 Impacts to Section 10 of the Rivers and Harbors Act*).

LACFCD submitted a Section 408 request to modify LACDA project structures within the Ballona Reserve such as the concrete-lined channel, levees, groins, and riprap. As described in Table 1-1, *Summary of Required Permits and Approvals*, Corps approval also would be required to modify the Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R Manual, Corps 1999) plan to reflect approved changes to existing LACDA infrastructure.

CDFW proposes to dispose of excavated fill from the Project site, potentially including offshore disposal at the USEPA designated ocean disposal site LA-2 off San Pedro or LA-3 off Newport Beach. If ocean disposal is determined to be necessary to address excess fill material, a Marine Protection Research and Sanctuaries Act Section 103 permit application quantifying the volume of material proposed for off-site disposal and a Sampling and Analysis Plan (SAP) would be filed for consideration by the Corps in consultation with the Los Angeles Regional Contaminated Sediments Task Force (CSTF) and the Southern California Dredged Material Management Team (SC-DMMT).

Cost estimates for Alternative 1 are preliminary, based on the conceptual design and assumptions that initially were reported in a 2008 feasibility study for the project (Santa Monica Bay Restoration Commission et al. 2008) as supplemented and updated in December 2016, including to reflect preliminary costs associated with mobilization, site preparation, the construction of structures (including the Lincoln Boulevard Bridge and the Culver Boulevard Bridge), installation of irrigation, planting maintenance, and monitoring. All costs will be refined as the conceptual design is further developed. Within the approximately 566 acre Project site, Alternative 1 would result in the restoration of 186.8 acres of established or enhanced wetland waters of the U.S. and 96.7 acres of established or enhanced non-wetland waters of the U.S. (see Table 2-1a, *Summary of Restoration of and Impacts to Jurisdictional Waters Under Alternatives 1, 2, and 3*). The total estimated cost of restoring the Ballona Reserve as described under Alternative 1 is approximately $182,822,316; the estimated cost per restored acre is approximately $908,208.

Pursuant to the NEPA reasonableness considerations and, Section 404(b)(1) Guidelines practicability considerations (see Section 2.1.1.3, Screening Criteria for Alternatives to the Proposed Action), this EIS/EIR considers two restoration alternatives to the Proposed Action: Alternative 2 is described in Section 2.2.3, *Alternative 2: Restored Partial Sinuous Creek*; Alternative 3 is described in Section 2.2.4, *Alternative 3: Levee Culverts and Oxbow*. A No Federal Action/No Project Alternative (Alternative 4) also is considered. A summary of impacts to Corps jurisdiction under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act and alterations/modifications to Corps structures and facilities under Section 14 of the Rivers and Harbors Act under Alternatives 1, 2, and 3 is provided in Table 2-1a.

TABLE 2-1a
SUMMARY OF RESTORATION OF AND IMPACTS TO CORPS JURISDICTIONAL WATERS UNDER ALTERNATIVES 1, 2, AND 3 (units are in acres)

CWA Section 404	Existing		Alternative 1		Alternative 2		Alternative 3	
Habitat	***Wetlands***	***Waters***	***Wetlands***	***Waters***	***Wetlands***	***Waters***	***Wetlands***	***Waters***
Established			81.0	38.7	83.1	38.7	48.0	28.1
Enhanced			105.8	58.0	56.3	15.3	0	0
Unaltered[1]	151.7	68.3	0	0	43.8	41.6	141.1	55.5
Total established or enhanced			186.8	96.7	139.4	54.0	48.0	28.1
Impacts[2]								
Temporary impacts			30.2	25.0	24.5	22.4	3.5	0.5
Permanent loss of function[3]			0.2	5.7	0.7	5.5	0	0
Permanent loss of waters[4]			31.4	5.2	21.7	1.8	3.7	0
Net Change (established minus permanently lost and loss of function)[5]			49.6	27.8	60.7	31.4	44.3	28.1

R&H Section 10	Existing	Alternative 1	Alternative 2	Alternative 3
Temporary impacts		36.2	27.2	0.5
Permanent loss of function		5.9	5.8	0
Permanent loss of waters		16.2	3.1	0
Unaltered[1]	119.9	61.6	83.8	119.4
Total permanent impacts		22.1	8.9	0
Amount of fill to be relocated on site		between 2,290,000 and 2,420,000 cy (Table 2-8)	between 2,120,000 and 2,180,000 cy (Table 2-24)	190,000 cy (Table 2-28)

R&H Section 14 (Section 408)		Alternative 1	Alternative 2	Alternative 3
Impacts to Corps structures and facilities		Removal of existing levees, building new levees, and creating a new channel system	Removal of existing levees, building new levees, and creating a new channel system.	Addition of culverts to existing levees
Comparative Costs				
Total estimated cost		$182,822,316	$144,765,227	$135,443,230
Estimated cost per restored acre		$908,208	$974,194	$2,574,966

NOTES:

1 Existing, to remain untouched.
2 Potential impacts to biological resources, including Corps jurisdictional areas are discussed in Chapter 3.4.
3 Permanent loss of aquatic resource functions due to conversion of substrate type (for example, from earthen to armored).
4 Conversion to uplands.
5 Does not include enhanced habitat

2.1.2 CEQA Requirements for the Evaluation of Alternatives

The range of alternatives under CEQA is governed by the rule of reason. CEQA Guidelines §15126.6 states that an EIR must describe a "range of reasonable alternatives" to the project or its location, which would feasibly attain most of the project objectives while avoiding or substantially lessening the significant impacts of a project, and evaluate the merits of each alternative relative to the project as proposed. An EIR must consider a reasonable range of alternatives that will foster informed decision making and public participation. The EIR also should identify any alternatives that were considered but rejected as infeasible and briefly explain the reasons underlying the lead agency's determination.

Among the factors that may be used to eliminate alternatives from further detailed consideration in an EIR are:

1. Whether the alternative would meet most of the basic project objectives. Section 1.1.2, CEQA Project Objectives identifies the seven objectives of Alternative 1, which, in summary, include to: restore, enhance, and create estuarine and associated habitats; protect and respect cultural and sacred resources; establish natural processes and functions within the Ballona Reserve that support estuarine and associated habitats; develop and enhance wildlife dependent uses and secondary compatible on-site public access for recreation and educational activities; protect and avoid impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management, ensuring consistency with future implementation of regional plans, and limiting the need for significant modification to regionally important infrastructure; provide oversight of the Ballona Reserve to accomplish management functions; and ensure that alterations/modifications to LACDA project components do not adversely impact the LACDA project. Of these, CDFW has determined the following to be the "most basic" project objectives: restoration, enhancement, and creation of estuarine and associated habitats; protection and avoidance of impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management and limiting the need for significant modification to regionally important infrastructure; and not adversely impacting the LACDA project.

2. Whether it would be "feasible," where feasible means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors (Pub. Res. Code §21061.1; CEQA Guidelines §§15126.6, 15364). Any alternative determined to be infeasible was not carried forward for more detailed review.

3. Whether it would be able to avoid or substantially lessen any of the significant impacts of the project as proposed;

4. Whether its implementation is remote or speculative.

CEQA also makes clear that an EIR must include "sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Project" (CEQA Guidelines §15126.6(d)). This EIS/EIR considers two restoration alternatives to Alternative 1 (i.e., the restoration proposal described in the permit applications to the Corps). Alternative 2 is described in Section 2.2.3, *Alternative 2: Restored Partial Sinuous Creek*; Alternative 3 is described in Section 2.2.4, *Alternative 3: Levee Culverts and Oxbow*. An EIR must include a "No Project" alternative. The description of each alternative must be sufficient to allow meaningful evaluation and comparison with a project. The lead agency also must identify the environmentally superior alternative, which CDFW does in this EIS/EIR in Section 4.4, Environmentally Superior Alternative.

2.1.3 Screening Criteria for Alternatives to the Proposed Action

Federal requirements for the evaluation of alternatives are described in Section 2.1.1. Consistent with those requirements, each of the alternatives considered in the environmental review process documented in this EIS/EIR was evaluated relative to NEPA's reasonableness factors and Section 404's practicability considerations. State requirements for the evaluation of alternatives under CEQA are described in Section 2.1.2. Those factors also have been evaluated. To account for overlap among the requirements, the following screening criteria have been applied to each of the alternatives considered in this EIS/EIR:

a. Is the alternative reasonable (i.e., not too remote, speculative, impractical, or ineffective)?
b. Would the alternative meet the purpose and need and overall project purpose?
c. Would the alternative meet most of the basic objectives of Alternative 1?
d. Would the alternative be practicable in terms of cost for a tidal habitat restoration project?
e. Would the alternative be practicable to implement, operate, and maintain (logistics)?
f. Would the alternative be practicable to construct using existing technology?
g. Would the alternative be more environmentally damaging than Alternative 1?
h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?
i. Would the alternative be feasible for purposes of CEQA?

These screening criteria are discussed in Section 2.1.1.4 for the alternatives to the Proposed Action that have been carried forward for more detailed review. These screening criteria also are discussed in Section 2.3 for the potential alternatives that were considered but not carried forward because they did not satisfy one or more of the criteria.

2.1.4 Evaluation of Alternatives to the Proposed Action

TABLE 2-1b
SUMMARY OF ALTERNATIVES RELATIVE TO SCREENING CRITERIA

Screening Criteria	Alternative 2	Alternative 3
a. Is the alternative reasonable (i.e., not too remote, speculative, impractical, or ineffective)?	Yes	Yes
b. Would the alternative meet the purpose and need and overall project purpose?	Yes	Yes
c. Would the alternative meet most of the basic objectives of Alternative1?	Yes	Yes
d. Would the alternative be practicable in terms of cost for a tidal habitat restoration project?	Yes	Yes
e. Would the alternative be practicable to implement, operate, and maintain (logistics)?	Yes	Yes
f. Would the alternative be practicable to construct using existing technology?	Yes	Yes
g. Would the alternative be more environmentally damaging than Alternative 1?	No	No
h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?	Yes	Yes
i. Would the alternative be feasible for purposes of CEQA?	Yes	Yes

Alternative 2: Restored Partial Sinuous Creek

a. Is Alternative 2 reasonable (i.e., not too remote, speculative, impractical, or ineffective)?

Alternative 2 would not be too remote, speculative, impractical, or ineffective. CDFW and LACFCD would proceed to permit and implement Alternative 2 if it were selected. Sufficient details are available to allow for meaningful evaluation of this restoration option, the implementation of which would be possible, sensible, and realistic. The alternative would be reasonable.

b. Would Alternative 2 meet the purpose and need and overall project purpose?

Yes, Alternative 2 would satisfy the purpose and need and overall project purpose. It would improve the functional uplift of habitats through restoration and enhancement, establish diverse tidal habitat for wildlife species, restore natural flow in tidal habitat, and facilitate restoration of a wide variety of habitats that are currently absent or of limited distribution within the Greater Los Angeles Area. Further, Alternative 2 would ensure that modification to existing LACDA project components within the Ballona Reserve would maintain the authorized LACDA project levels of flood risk management and continue to reduce flood risk to the surrounding communities and infrastructure for up to the 100 year flood event. More specifically, Alternative 2 would restore contiguous tidal wetlands in Area A and North Area B, realign Ballona Creek, enhance managed wetlands in South Area B, maintain existing managed wetlands in West Area B, and restore upland habitat in East Area B, North Area A and South Area C. Under Alternative 2, invasive plant species would be removed from the Ballona Reserve and Area A and North Area B tidal wetland would be restored, managed wetland enhancement would be provided in South/Southeast Area B, and upland habitat would be restored in East Area B, North Area C, and South Area C. Furthermore, Alternative 2 has been designed and would be implemented so as to at least maintain existing flood protection to the existing developed areas surrounding the Ballona Reserve. Alternative 2 would provide the same flood protection as Alternative 1: existing armored levees along Area A and North Area B would be removed, new partially-earthen perimeter levees would be installed in Area A and along the North side of Culver Boulevard, new water-control structures would be installed in South Area B, and a new Culver Boulevard stormwater detention wetland would be constructed.

c. Would Alternative 2 meet most of the basic objectives of Alternative 1?

Yes, Alternative 2 would meet most of the basic objectives of Alternative 1. It would result in the restoration, enhancement, and creation of estuarine and associated habitats in the amounts shown in Table 2-1a, *Summary of Restoration of and Impacts to Corps Jurisdictional Waters Under Alternatives 1, 2, and 3*. Alternative 2 would include the installation of two new permanent bridges for public access, but would not result in significant modification to existing, regionally important infrastructure. Further, Alternative 2 would not adversely impact the LACDA project.

d. Would Alternative 2 be practicable in terms of cost for a tidal habitat restoration project?

Alternative 2 is considered to be practicable in terms of costs. Cost estimates for Alternative 2 are preliminary, based on the conceptual design and assumptions initially reported in a 2008 feasibility study for the Project (Santa Monica Bay Restoration Commission et al. 2008) as supplemented and updated in December 2016 to reflect preliminary costs associated with mobilization, site preparation, the construction of structures (including the Lincoln Boulevard Bridge and the Culver Boulevard Bridge), installation of irrigation, planting maintenance, and monitoring (Appendix B9, *Restoration Projects Cost Comparison*). All costs will be refined as the conceptual design is further developed. Within the approximately 566 acre Project site, Alternative 2 would result in the restoration of 139.4 acres of established or enhanced wetland waters of the U.S. and 54.0 acres of established or enhanced non-wetland waters of the U.S. (see Table 2-1a, *Summary of Restoration of and Impacts to Corps Jurisdictional Waters Under Alternatives 1, 2, and 3*). The total estimated cost of restoring the Ballona Reserve as described under Alternative 2 is approximately $144,765,227; the estimated cost per restored acre is approximately $974,197.

e. Would Alternative 2 be practicable to implement, operate, and maintain (logistics)?

Yes, Alternative 2 would be practicable to implement, operate, and maintain. No governmental or other impediments would preclude its implementation. The project area is within the ownership or control of the parties necessary to restore, construct, operate, maintain, and monitor the proposed work within the Ballona Reserve and within the SoCalGas Property.

f. Would Alternative 2 be practicable to construct using existing technology?

Yes, Alternative 2 is considered to be practicable in terms of existing technology. Alternative 2 would not require use of technologies that are not available – all proposed work could be accomplished using a combination of common vehicles, equipment, tools, and methods.

g. Would Alternative 2 be more environmentally damaging than Alternative 1?

No, Alternative 2 would not be more environmentally damaging than Alternative 1. To the contrary, Alternative 2 would result in a comparable level of impacts as Phase 1 of Alternative 1 and none of the impacts that would be associated with Phase 2 of Alternative 1.

h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?

Alternative 2 would substantially lessen adverse impacts of Alternative 1 relating to Aesthetics (specifically regarding impacts to scenic vistas due to Alternative 2's reduction in restoration-related construction activities and fewer changes to topography), Air Quality (reduced emissions during restoration and post-restoration phases for Alternative 2), Biological Resources (18.6 acres less permanent loss of Belding's savannah sparrow habitat and nearly twice as much net gain compared to Alternative 1), Cultural Resources (due to reduced area of excavation for Alternative 2), and Utilities and Service Systems (due to Alternative 2's reduced water consumption and reduced generation of solid waste during restoration).

i. Would Alternative 2 be feasible for purposes of CEQA?

Yes, Alternative 2 would be feasible. The ecosystem restoration, flood risk and stormwater management, public access, and infrastructure and utility modification proposed under Alternative 2 could be accomplished successfully within a reasonable period of time, taking into account the legal, economic, technological, and environmental factors discussed as elements of practicability, as well as social factors.

Summary of Screening Criteria Determinations

Alternative 2 is reasonable and practicable for purposes of the NEPA and Section 404(b)(1) analyses. CDFW further has determined that Alternative 2 would meet most of the basic project objectives, would be feasible, and would not result in new or more significant environmental impacts as compared to Alternative 1.

Alternative 3: Levee Culverts and Oxbow

a. Is Alternative 3 reasonable (i.e., not too remote, speculative, impractical, or ineffective)?

Alternative 3 would not be too remote, speculative, impractical, or ineffective. CDFW and LACFCD would proceed to permit and implement Alternative 3 if it were selected. Sufficient details are available to allow for meaningful evaluation of this restoration option, the implementation of which would be possible, sensible, and realistic if smaller in scale than proposed in Alternative 1. Alternative 3 would be reasonable.

b. Would Alternative 3 meet the purpose and need and overall project purpose?

Yes, Alternative 3 would satisfy the purpose and need and overall project purpose. It would increase the functional uplift of habitats through restoration and enhancement, establish diverse tidal habitat for wildlife species, restore natural flow in tidal habitat, and facilitate restoration of habitats that are currently absent or of limited distribution within the Greater Los Angeles Area. Alternative 3 would restore tidal wetland in Area A with new Ballona Creek water-control structures, which would benefit species and habitats and improve wetland function within the Ballona Reserve and the adjacent marine environment by enhancing the quality of tidal waters. Alternative 3 would maintain existing managed wetlands in Area B and South Area C. Alternative 3 has been designed and would be implemented so as to at least maintain existing flood protection to the existing developed areas surrounding the Ballona Reserve. Under Alternative 3, a new perimeter levee would be installed in Area A, new water-control structures (i.e., tide gates) would be installed along Area A, and a Culver Boulevard stormwater detention wetland would be constructed.

Alternative 3 would not “maximize” the functional uplift of habitats relative to Alternative 1 because its limitation of restoration activities to Area A would not restore or enhance tidal habitat in Area B or Area C. Alternative 3 also would not maximize the acreage of tidal restoration or the mitigation of impacts of sea level rise.

c. Would Alternative 3 meet most of the basic objectives of Alternative 1?

Yes, Alternative 3 would meet most of the basic objectives of Alternative 1. It would result in the restoration, enhancement, and creation of estuarine and associated habitats in the amounts shown in Table 2-1a, *Summary of Restoration of and Impacts to Corps Jurisdictional Waters Under Alternatives 1, 2, and 3*. Alternative 3 would include the installation of one bridge for public access, and would not result in significant modification to existing, regionally important infrastructure. Further, Alternative 3 would not adversely impact LACDA project infrastructure within the Ballona Reserve.

d. Would Alternative 3 be practicable in terms of cost for a tidal habitat restoration project?

Yes, based on a preliminary analysis, Alternative 3 may be marginally practicable in terms of cost and so was carried forward for full analysis. The cost estimate for Alternative 3 is preliminary, based on the conceptual design and assumptions initially reported in the 2008 feasibility study for the Project (Santa Monica Bay Restoration Commission et al. 2008) as supplemented and updated in December 2016, including to reflect preliminary costs associated with mobilization, site preparation, the construction of structures (including the Lincoln Boulevard Bridge), installation of irrigation, planting maintenance, and monitoring (Appendix B9, *Restoration Projects Cost Comparison*). All costs would be refined as the conceptual design is further developed. Within the approximately 566 acre Project site, Alternative 3 would result in the restoration of 48.0 acres of established or enhanced wetland waters of the U.S. and 28.1 acres of established or enhanced non-wetland waters of the U.S. (see Table 2-1a, *Summary of Restoration of and Impacts to Corps Jurisdictional Waters Under Alternatives 1, 2, and 3*). The total estimated cost of restoring the Ballona Reserve as described under Alternative 3 is approximately $135,443,230; the estimated cost per restored acre is approximately $2,574,966

e. Would Alternative 3 be practicable to implement, operate, and maintain (logistics)?

Yes, Alternative 3 would be practicable to implement, operate, and maintain. No governmental or other impediments would preclude its implementation. The project site is within the ownership or control of the parties necessary to restore, construct, operate, maintain, and monitor the proposed work within the Ballona Reserve and within the SoCalGas Property.

f. Would Alternative 3 be practicable to construct using existing technology?

Yes, Alternative 3 is considered to be practicable in terms of existing technology. Alternative 3 would not require use of technologies that are not available – all proposed work could be accomplished using a combination of common vehicles, equipment, tools, and methods.

g. Would Alternative 3 be more environmentally damaging than Alternative 1?

Alternative 3 would not be more environmentally damaging than Alternative 1. Alternative 3 would have a substantially smaller project footprint than Alternative 1 with the intention, in part, of avoiding disturbance of existing habitat in Area B. Restoration under Alternative 3 would be focused in Area A and Area C only. Area B would not be actively restored using mechanized means, although small-scale control of invasive plant species by hand-tools and the planting and seeding of native species could occur. In Alternative 3, existing armored levees on the Ballona Creek channel adjacent to the Ballona Reserve would remain intact. The southern Ballona Creek channel levee would remain unchanged from its current condition. Because less restoration and other work would occur, less disturbance (and so reduced disturbance-related impacts) would result; however, the reduced level of restoration also means that fewer restoration benefits would accrue under Alternative3 relative to Alternative 1.

h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?

Alternative 3 would substantially lessen adverse impacts of Alternative 1 relating to Aesthetics (due to the overall reduction in restoration activities within the Ballona Reserve), Air Quality (reduced emissions during restoration and post-restoration phases for Alternative 3), and Biological Resources (e.g., reduced impacts to salt marsh-associated invertebrates habitat compared to Alternative 1: permanent loss of 3.7 acres for Alternative 3 compared to 31.4 acres for Alternative 1, and no permanent loss of shorebird habitat compared to Alternative 1's permanent loss of 6.7 acres).

i. Would Alternative 3 be feasible for purposes of CEQA?

Yes, Alternative 3 would be feasible. The ecosystem restoration, flood risk and stormwater management, public access, and infrastructure and utility modification proposed under Alternative 3 could be accomplished successfully within a reasonable period of time, taking into account the legal, economic, technological, and environmental factors discussed as elements of practicability, as well as social factors.

Summary of Screening Criteria Determinations

Alternative 3 may be marginally practicable in terms of cost and otherwise is reasonable and practicable for purposes of the NEPA and Section 404(b)(1) analyses; accordingly, Alternative 3 has been carried forward for full analysis. CDFW further has determined that Alternative 3 would meet most of the basic project objectives, would be feasible, and would not result in new or more significant environmental impacts as compared to Alternative 1.

2.2 Description of Alternatives Evaluated in Detail

2.2.1 Overview of Common Project Features

The description of each of the action alternatives is broken down into the following elements: ecosystem restoration, flood risk and stormwater management, public access and visitor facilities, infrastructure and utility modification, implementation and restoration process, monitoring and adaptive management, and operations and maintenance (the post-restoration phase). An overview of each of these elements is provided below (Sections 2.2.1.1 through 2.2.1.7). Table 2-1c, *Summary of Alternatives*, summarizes the Project elements included in each alternative. More specific details for each alternative are provided in the sections that follow. Alternatives considered, but not carried forward for consideration in this document are described further below in Section 2.3, *Potential Alternatives Considered but Not Carried Forward for More Detailed Consideration*.

TABLE 2-1c
SUMMARY OF ALTERNATIVES

Alternative Summary	Ecosystem Restoration	Flood Risk and Stormwater Management	Public Access and Visitor Amenities	Infrastructure and Utility Modifications	Implementation and Restoration Process
Alternative 1: Full Tidal Restoration/Proposed Action					
Restore contiguous tidal wetlands north of Culver Boulevard and enhance managed wetlands south of Culver Boulevard (South Area B).	Phased Restoration: • Phase 1 (Interim Restoration): – Area A and North Area B tidal wetland restoration and Ballona Creek realignment – South/Southeast Area B managed wetland enhancement – East Area B (western portion), North Area C, and South Area C (eastern portion) upland habitat restoration • Phase 2 (Final Restoration): West Area B tidal restoration	• Remove existing armored levees along Area A and North and West Area B • Install new partially-earthen perimeter levees in Area A, along the North side of Culver Boulevard, and in North and West Area B • Install new water-control structures in South Area B • Construct Culver Boulevard stormwater detention wetland	• Construct levee trail and bike paths • Add gateway entrances with art/education installations • Construct new three-story parking structure, improve existing West Culver Parking Lot • Install two new permanent bridges for public access	• Gas well abandonment and replacement with phasing • Gas pipeline relocation (Phase 1) • Removal of abandoned sewer pipe	• Large-scale grading: – Up to approximately 2,440,000 cubic yards (cy) of on-site soil excavation, transport, and placement (fill for levees and uplands) – Fill will be stockpiled in East Area B and the Culver levee (Phase 1) – 10,000 – 110,000 cy of off-site soil export • Install two new bridges for temporary soil transport/public access, which will later become permanent bridges for public access • Remove existing levees and realign Ballona Creek • Revegetation
Alternative 2: Restored Partial Sinuous Creek					
Restore contiguous tidal wetlands in Area A and North Area B, maintain existing managed wetland in West Area B, and enhance managed wetlands in South Area B.	Restoration: • Area A and North Area B tidal wetland restoration and Ballona Creek realignment • South/Southeast Area B managed wetland enhancement • East Area B, North Area C, and South Area C upland habitat restoration	• Remove existing armored levees along Area A and North Area B • Install new partially-earthen perimeter levees in Area A and along the North side of Culver Boulevard • Install new water-control structures in South Area B • Construct Culver Boulevard stormwater detention wetland	• Construct levee trail and bike paths • Add gateway entrances with art/education installations • Construct new three-story parking structure, improve existing West Culver Parking Lot • Install two new permanent bridges for public access	• Gas well abandonment and replacement • Gas pipeline relocation • Removal of abandoned sewer pipe	• Large-scale grading: – 2,130,000 cy of on-site soil excavation, transport, and placement (fill for levees and uplands) – 10,000 cy of off-site soil export • Install two new bridges for temporary soil transport/public access, which will later become permanent bridges for public access • Remove existing levees, except in West Area B, realign Ballona Creek • Revegetation
Alternative 3: Levee Culverts and Oxbow					
Restore tidal wetlands in Area A and maintain existing Area B managed wetlands.	Restoration: • Area A tidal wetland restoration with new Ballona Creek water-control structures	• Install new Area A perimeter levee • Install new Area A water-control structures (i.e., tide gates) along area A • Construct Culver Boulevard stormwater detention wetland	• Construct levee trail and bike paths • Add gateway entrances with art/education installations • Construct new three-story parking structure, improve existing West Culver Parking Lot • Install one new bridge for public access	• Gas well abandonment and replacement • Removal of abandoned sewer pipe	• Large-scale grading: – 1,420,000 cy of on-site soil excavation, transport, and placement – 1,230,000 cy of off-site soil export • Install one new bridge for temporary soil transport/public access, which will later become permanent bridges for public access • Install new water-control structures in existing Area A levee (i.e., north Ballona Creek levee) • Revegetation

TABLE 2-1c (Continued)
SUMMARY OF ALTERNATIVES

Alternative Summary	Ecosystem Restoration	Flood Risk and Stormwater Management	Public Access and Visitor Amenities	Infrastructure and Utility Modifications	Implementation and Restoration Process
Alternative 4: No Federal Action/No Project					
No actions requiring federal, state, or local discretionary approval would be allowed.	• No change. • Existing management and community volunteer restoration efforts would continue. • Ongoing influence of sea level rise would substantially impact tidal wetlands and related habitats over time • Invasive species would continue to invade the Project site and degradation that has been documented for the past six years would continue.	• No change to existing levees or other infrastructure would occur. • No culverts would be created, and no new levee armoring would occur.	• No change • No new visitor or recreational amenities would be provided • Existing public access restrictions would continue • No parking structure would be built, and no improvements to existing parking areas would be made.	• No change. • SoCalGas would continue to manage wells and pipelines within the Ballona Reserve and independently would pursue well and pipeline abandonment and/or relocation based on the utility's priorities.	• No increase in waters of the U.S. would occur • CDFW would continue to remove trash and debris, remove homeless encampments, and monitor and enforce other unauthorized or illegal activities. • Management of existing tide gates would continue until their permanent closure is necessitated, e.g., by the impacts of sea level rise. • Removal of invasive vegetation species by volunteers using hand tools could continue (no heavy equipment currently is used on site for the purposes of restoration).

2.2.1.1 Ecosystem Restoration

Ecosystem restoration includes native wetland and upland habitat restoration and enhancement. "Restoration" means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former or degraded resource; restoration may be divided into two categories: re-establishment and rehabilitation (33 C.F.R. §332.2).

As defined in the Corps' regulations (33 C.F.R. §332.2), "re-establishment" returns natural/historic functions to a former aquatic resource and results in a gain in aquatic resource area and functions, while "rehabilitation" improves aquatic resource functions without a gain in aquatic resource area. Alternative 1, Alternative 2, and Alternative 3 propose to restore tidal wetland in Area A. Alternative 1 and Alternative 2 also propose to restore tidal wetland in North Area B. This restoration could occur, for example, through the excavation of ruderal areas to an appropriate elevation followed by native plantings.

As further defined in the Corps' regulations (33 C.F.R. §332.2), "Enhancement means the manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area" (33 C.F.R. §332.2). Alternative 1 and Alternative 2 propose managed wetland enhancement[20] in South/Southeast Area B with water control structures (i.e., culverts with tide gates) to manage water levels and flows. This enhancement could include, for example, the return of tidal flow to an isolated salt marsh to create a dynamic tidal habitat supporting a greater diversity of native salt marsh plants and animals over time.

Habitat types that would be rehabilitated, re-established or enhanced within the Ballona Reserve include subtidal, intertidal, tidal wetland, brackish marsh, salt pan, dune, annual grassland, transitional, upland scrub, and riparian scrub. Restored habitat distribution and acreages vary by alternative.

Potential disturbances to sensitive habitats and species would be reduced through effective design of public access areas and predator management. The success of restoration efforts would be measured based on established performance criteria focusing on the abundance and diversity of native vegetation and the plants and wildlife that use the Ballona Reserve (see Section 2.2.6, *Monitoring and Adaptive Management*).

2.2.1.2 Flood Risk and Stormwater Management

The flood risk and stormwater management elements of the action alternatives would allow for habitat restoration while maintaining or improving existing flood risk and stormwater management. Flood risk and stormwater management may include modifications to LACDA project structures within the Ballona Reserve by removing all or portions of the existing levees

[20] "Managed wetland" is used to refer to wetland areas where water control structures (e.g., culverts with tide gates) are used to manage water levels and flows.

and the concrete-lined channel in favor of constructing new flood risk management levees, restoring the wetland floodplain, constructing new water-control structures (such as culverts, weirs, and tide gates, and associated access roads and/or erosion protection features), modifications to existing operations and maintenance requirements.

The existing LACDA project structures and facilities are continuously maintained in such a manner and operated at such times and for such periods as necessary to obtain the maximum flood protection benefits (33 C.F.R. §208.10). The LACFCD currently operates and maintains these structures and facilities within the Ballona Reserve consistent with the Corps' OMRR&R Manual for the LACDA project (Corps 1999, as amended). New tide gates (two self-regulating and one flap gate) were installed connecting West Area B to Ballona Creek in 2003. The LACFCD currently operates and maintains these structures consistent with the Corps' OMRR&R Manual for Ballona Creek Flood Control Channel Culver Modifications (Corps 2003).

As discussed in Part IV of the OMRR&R Manual for the LACDA project, "operation" includes all uses of the flood control system to collect and convey stormwater runoff in accordance with Federal flood control regulations (Corps 1999). There are four phases of flood operation: pre-stormflow, initial stormflow, final stormflow, and post-stormflow. Each phase includes a patrol procedure that involves inspection, operation of field facilities such as gates and staff gages, any immediate maintenance or corrective action, and reporting/documentation considerations. Consistent with the OMRR&R Manual, excavation and dredging maintenance activities occur as necessary to remove accumulated sediment from the channel area.

As discussed in Part V of the OMRR&R Manual for the LACDA project, "maintenance" includes all activities associated with ensuring proper and continued functioning of LACDA project structures and facilities, including repair and restoration procedures as well as inspection to detect hazardous or malfunctioning conditions (Corps 1999). Routine maintenance of channels and floodways is undertaken, among other regulatory reasons (33 C.F.R. §208.10(g)), to be certain that: the channel or floodway is clear of debris, weeds, and wild growth and is not being restricted by the depositing of waste materials, building of unauthorized structures or other encroachments; the capacity of the channel or floodway is not being reduced by the formation of shoals; and the banks are not being damaged by rain or wave wash, and that no sloughing of banks has occurred; riprap sections and deflection dikes and walls are in good condition. General levee maintenance includes, but is not limited to: removal of wild growth and drift deposits; repair of damage caused by erosion or other forces; and proper attention to levee drains, drain gates, revetment work and riprap, and access roads to and on levees (33 C.F.R. §208.10(b)).

General drainage structure maintenance includes, but is not limited to the implementation of measures necessary to assure that inlet and outlet channels are kept open and that trash, drift, or debris is not allowed to accumulate near drainage structures; further, flap gates and manually operated gates and valves on drainage structures are to be examined, oiled, and trial operated at least once every 90 days (33 C.F.R. §208.10(d)). Consistent with the OMRR&R Manual for the LACDA project the following actions occur as necessary to maintain landscaping for LACDA project structures and features: supplemental watering, foliage pruning, root pruning, pest control (potentially including herbicides, insecticides, and fungicides), weed abatement, and plant removal, replacement, and supplementation (Corps 1999). Hardscaping, including gravel and stone ground covers, paving systems, signage and artwork, and removal of graffiti and vandalism also are allowable (Corps 1999). Non-routine (or emergency) maintenance also occurs consistent with the OMRR&R Manual to insure the serviceability of LACDA project structures and facilities in times of flood (Corps 1999).

Appendix VI of the OMRR&R Manual for the LACDA project contains data sheets that provide relevant information about significant features of specific reaches of the LACDA project, including locations of gaging stations within the Ballona Reserve and vehicular access points to the portion of the Ballona Creek channel and levee system within the Ballona Reserve. The implementation of Alternative 1, 2, or 3 would require revisions to the OMRR&R Manual to reflect changes made to the existing LACDA project structures and facilities within the Ballona Reserve. No change to the existing OMRR&R Manual or its implementation would be required for Alternative 4.

2.2.1.3 Public Access and Visitor Facilities

Potential public access improvements and visitor amenities may include new pedestrian trails and bike paths, elevated pedestrian boardwalks, gateway entrances, educational features, viewing platforms with overlooks, new and improved parking facilities, and, if external funding becomes available and other factors are satisfied, potential replacement of baseball fields in Area C (as analyzed in Alternative 2). These improvements would develop and enhance public access, recreation, and interpretation opportunities within the Ballona Reserve. The public access and visitor facilities described in this document have been identified for the purpose of assessing potential environmental consequences and would be implemented, in full or in part, only if funding became available.

2.2.1.4 Infrastructure and Utility Modification

Infrastructure and utility modifications include natural gas monitoring well and associated pipeline abandonment and relocation, and sewer and water line removal and abandonment (as required). These modifications would allow for increased connectivity of habitat restoration within the Ballona Reserve, protection of existing utilities within the Ballona Reserve that are not otherwise abandoned or relocated, and consideration of residential neighbors of the SoCalGas Property, particularly in the vicinity of Potential Well Relocation Sites 4, 6 and 7.

2.2.1.5 Implementation and Restoration Process

Implementation would include grading and soil transport, levee lowering and breaching, realignment of Ballona Creek, clearing and grubbing, revegetation, construction of flood risk and stormwater management facilities, access roads/trails, and utility modifications. The description of implementation for each alternative details how each alternative would be accomplished.

2.2.1.6 Monitoring and Adaptive Management

The complexity of a large-scale restoration—ecological and funding objectives, constraints, and the presence of sensitive habitats and species—necessitates careful implementation of restoration within a monitoring and adaptive management program. Restoration monitoring would evaluate the biologic, hydrologic, and geomorphic performance of each restoration phase prior to the commencement of further phases and actions.

Adaptive management includes restoration phasing (e.g., restoration and enhancements that increase Belding's savannah sparrow nesting habitat prior to restoration modifications within existing Belding's habitat) and activities necessary to address the impacts of climate change, fire, flood, other natural events, or changed site conditions.

2.2.1.7 Operation and Maintenance Activities

Operation and maintenance (O&M) activities could include adjustments to and maintenance of water-control structures as-needed; monitoring and as-needed maintenance of restored habitat and vegetation, levees, and Ballona Creek; and the continuation of other routine O&M activities although such activities may be modified in terms of frequency, geography, or timing. The description of O&M activities for each alternative identifies the activities that would occur after Project implementation. A summary of these activities is provided further under the description of each alternative, below, and a more detailed description of O&M activities is contained in the *Preliminary O&M Plan*, provided in Appendix B5.

2.2.1.8 Project Design Features

CDFW has jurisdiction by law over natural resources affected by the Project that are held in trust for the people of the state of California, including fish and wildlife, designated rare or endangered native plants, and the Ballona Reserve, which is administered by CDFW. Seeking to restore wetland habitat and function within the Ballona Reserve and as described in more detail in this Chapter 2, CDFW is proposing a large-scale effort to restore, enhance, and establish native coastal wetland and upland habitats within the Ballona Reserve. Consistent with CDFW's jurisdiction over these special resources and with its mission of managing "California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public" (CDFW 2015), meaningful, long-term benefits are expected to accrue from the Project. Nonetheless, implementation of the Project (including related ground disturbance) is expected to cause some adverse impacts relating to hydrology and water quality.

During the project design process, CDFW, its partner agencies, and their consultants identified project elements or design considerations that could avoid or offset some of the undesirable impacts that may arise through project implementation. Accordingly, design features have been incorporated into the Project to avoid or offset these anticipated potential adverse impacts and to maximize anticipated environmental beneficial effects. These Project elements are identified as Project Design Features (PDFs), have been incorporated into the Project, and are specified in Table 2-2. Implementation of the PDFs would result in avoidance of actions or parts of actions; limitation of the degree or magnitude of components of the Project or their implementation; repair, rehabilitation, or restoration of the affected environment; or the reduction or elimination of potential impacts over time (14 Cal. Code Regs. §15370). PDFs are not optional, so the environmental analysis in Chapter 3 expects these PDFs, like other aspects of the Project, to be implemented if the Project is approved. Nevertheless, the PDFs are included in the Mitigation Monitoring and Reporting Program (an initial draft of which is provided in Appendix B6) to help the reader understand the various measures and design considerations that could avoid or reduce any adverse environmental impacts that may arise from the Project to below a level of significance.

TABLE 2-2
PROJECT DESIGN FEATURES INCORPORATED INTO THE BALLONA WETLANDS RESTORATION PROJECT FOR ALTERNATIVES 1, 2, AND 3

Potential Environmental Impact to be Avoided or Reduced	Design Features	Implementing Actions	Monitoring/Reporting Requirements	Timing
Air Quality				
Restoration-related construction emissions of NOx could result in an adverse impact on air quality.	AQ-1: Engine Standards for Off-Road Equipment. In order to reduce the impact of NOx off-road equipment exhaust emissions during construction, CDFW shall ensure that restoration and construction contracts stipulate that all off-road diesel-powered equipment used will be equipped with USEPA Tier 4 or cleaner engines, except for specialized equipment in which an USEPA Tier 4 engine is not available. In lieu of Tier 4 engines, Project equipment can incorporate retrofits such that emissions reductions achieved equal that of the Tier 4 engines. Tier 4 engines use advanced engine controls and sensors that significantly reduce engine emissions on all four constituents (NOx, hydrocarbons, CO, and PM). The use of Tier 4 engines would reduce NOx emissions generated by off-road equipment.	The restoration/construction contractor shall submit a detailed list of the equipment fleet that demonstrates achievement of this design feature to CDFW for CDFW's approval prior to receiving Notice to Proceed.		Prior to receiving Notice to Proceed.
Biological Resources				
Restoration activity-related impacts to protected wildlife and vegetation species	BIO-1: Worker Environmental Awareness Program. A Worker Environmental Awareness Program (WEAP) shall be implemented for work crews by qualified biologist(s) prior to the commencement of restoration activities and prior to site access by workers. Training materials and briefings shall include but not be limited to, discussion of the Federal and state Endangered Species Acts, the consequences of noncompliance with Project permitting requirements, identification and values of sensitive plant and wildlife species and significant natural plant community habitats, fire protection measures, hazardous substance spill prevention and containment measures, a contact person in the event of the discovery of dead or injured wildlife, and review of mitigation requirements. Training materials and a course outline shall be provided to the CDFW for review and approval at least 30 days prior to the start of site restoration. Maps showing the location of sensitive wildlife or populations of rare plants, exclusion areas, or other construction limitations (i.e., limited operating periods) shall be provided to the environmental monitors and work crews prior to ground disturbance.	Implementation of a Worker Environmental Awareness Program (WEAP)		Training materials and course outline to be provided to CDFW for review and approval at least 30 days prior to the start of site restoration. Training of work crews to occur prior to the commencement of restoration activities and prior to site access by workers

TABLE 2-2 (Continued)
PROJECT DESIGN FEATURES INCORPORATED INTO THE BALLONA WETLANDS RESTORATION PROJECT FOR ALTERNATIVES 1, 2, AND 3

Potential Environmental Impact to be Avoided or Reduced	Design Features	Implementing Actions	Monitoring/Reporting Requirements	Timing
Biological Resources (cont.)				
Impacts resulting from restoration/construction-related disturbance	BIO-2: Limit of Disturbance. Construction employees shall strictly limit their activities, vehicle use, equipment use, and placement of staged materials to the approved limits of disturbance and shall utilize designated staging areas and ingress/egress access routes. The work area(s) shall be the minimal area necessary to complete the objectives of a given phase of restoration and shall be specified in the site plans. The limits of work areas shall be delineated using environmentally sensitive area (ESA) fencing (e.g., high visibility orange screen), and shall exclude sensitive habitats to the extent feasible and exclude sensitive habitats that have not been authorized or permitted for disturbance. The placement of exclusionary fencing shall be supervised by a qualified biologist, and shall be maintained until the completion of all restoration activities and removed upon work completion.	Limit all activities to within approved limits of disturbance as specified in the site plans and delineated using environmentally sensitive area fencing		Fencing to be installed prior to commencement of restoration/ construction activities, to be maintained until the completion of all restoration activities, and to be removed upon work completion.
Potential impacts associated with removal of vegetation and/or other habitat	BIO-3: Habitat Restoration and Monitoring Plan. Prior to implementation of restoration activities involving vegetation or land disturbance, a Habitat Restoration and Monitoring Plan shall be prepared by a contractor under the direction of CDFW, for CDFW approval, and include the monitoring and adaptive management provisions detailed in section 2.2.2.6, Alternative 1: Monitoring and Adaptive Management, of Chapter 2, Description of Alternatives. The Habitat Restoration and Monitoring Plan can be a single site-wide plan that addresses every habitat type and species impacted by the Project, or individual restoration plans can be developed based on appropriate habitat types/species. All ongoing and post-restoration activities (e.g., habitat monitoring) shall comply with a corresponding approved Habitat Restoration and Monitoring Plan that should include applicable mitigation measures from this EIS/EIR. However, for purposes of assessing impacts in the EIS/EIR, the Habitat Restoration and Monitoring Plan is considered a mechanism to implement the standards and criteria detailed in Section 2.2.2.6 that will ensure successful performance of restoration actions. Because proper implementation of the Habitat Restoration and	Preparation of a Habitat Restoration and Monitoring Plan		To be developed prior to implementation of restoration activities involving vegetation or land disturbance, and to be implemented throughout the post-restoration phase for the specified timeframe (initially anticipated to be 10 years)

TABLE 2-2 (Continued)
PROJECT DESIGN FEATURES INCORPORATED INTO THE BALLONA WETLANDS RESTORATION PROJECT FOR ALTERNATIVES 1, 2, AND 3

Potential Environmental Impact to be Avoided or Reduced	Design Features	Implementing Actions	Monitoring/Reporting Requirements	Timing
Biological Resources (cont.)				
Potential impacts associated with removal of vegetation and/or other habitat (cont.)	Monitoring Plan is exceedingly important to the success of restoration efforts, this particular plan shall: a) Build directly from the guidance developed in the Conceptual Plan (provided in Appendix B3), with modifications as necessary. b) Identify specific restoration actions (e.g., revegetation requirements, removal of non-native plants) and monitoring to be implemented during restoration and long-term habitat management. c) Include a timeline for the implementation of the monitoring program based on the final plan for staging and implementation. Although a monitoring period of 10 years is recommended in the Conceptual Plan, the final length of the monitoring period shall be based on the phasing to be implemented during the restoration. d) Include a work plan or schedule for long-term monitoring after the site has achieved the performance goals outlined in Section 2.2.2.6, the Conceptual Plan, and in the Habitat Restoration and Monitoring Plan. e) Provide specific protocols for monitoring, including sample design (e.g., number of replicates, locations for sample points, transects, etc.), sampling methods to be implemented, and statistical methods for analyzing the data. f) Be designed as stated in the Conceptual Plan to evaluate the progress toward achieving restoration goals and to inform the need for adaptive management during the lifespan of the restoration and include actions such as maintenance, weeding, reseeding, or revegetation of native species consistent with the adaptive management program as described in Section 2.2.2.6. Performance goals for the restoration shall not focus on specific acreages or specific species, but shall focus broadly on habitat development, species composition, and, ecosystem functions.			

TABLE 2-2 (Continued)
PROJECT DESIGN FEATURES INCORPORATED INTO THE BALLONA WETLANDS RESTORATION PROJECT FOR ALTERNATIVES 1, 2, AND 3

Potential Environmental Impact to be Avoided or Reduced	Design Features	Implementing Actions	Monitoring/Reporting Requirements	Timing
Biological Resources (cont.)				
Potential impacts associated with removal of vegetation and/or other habitat (cont.)	A Post-restoration Management Plan (PMP) shall be included as a chapter, appendix, or other part of the Habitat Restoration and Monitoring Plan. The PMP shall establish procedures for avoidance and minimization of adverse impacts to sensitive biological resources during post-restoration operations and maintenance activities, in order to further progress towards meeting the standards and criteria detailed in section 2.2.2.6, Alternative 1: Monitoring and Adaptive Management, of Chapter 2, Description of Alternatives consistent with the Habitat Restoration and Monitoring Plan. The PMP shall: a) Include details related to the installation and maintenance of fencing or other type of demarcation along the edge of trails to prevent off-trail activities. b) If determined necessary, include details related to the establishment and maintenance of a buffer zone between the trail and upper edge of restored habitats. c) Include details related to the establishment of practices to rapidly detect and limit any impacts into new or restored habitat areas resulting from unauthorized access. This may include systematic monitoring of the trail and contiguous areas of the buffer zone for signs of damage or encroachment beyond the fence. Any signs of damage or encroachment would be remedied through a combination of signage, public education, more frequent patrolling (possibly including implementation of a volunteer patrol program), limitation on access (e.g., daylight hours only and seasonal closures) and, if necessary, more restrictive fencing. d) Clearly state adaptive management procedures including evaluation methods and periods. The procedures shall outline the processes necessary to implement any changes to the PMP.			

TABLE 2-2 (Continued)
PROJECT DESIGN FEATURES INCORPORATED INTO THE BALLONA WETLANDS RESTORATION PROJECT FOR ALTERNATIVES 1, 2, AND 3

Potential Environmental Impact to be Avoided or Reduced	Design Features	Implementing Actions	Monitoring/Reporting Requirements	Timing
Biological Resources (cont.)				
Impacts associated with the degradation of water quality, including from erosion	BIO-4 Water Pollution and Erosion Control Plan. To demonstrate compliance with all required permits, the contractor shall develop and submit to the CDFW for RWQCB approval an erosion control plan that will prevent the degradation of water quality arising from restoration activities, and implement BMPs, as described below. Many commonly employed BMPs can be found in the California Department of Transportation's (Caltrans') Stormwater Quality Handbooks, Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual (Caltrans 2007). These additional management practices, including their implementation and an evaluation of their effectiveness, shall be detailed in the erosion control plan and associated logbook and shall include, but not be limited to, measures to minimize sedimentation such as a) the installation of a 500-foot floating boom and turbidity curtain prior to the start of construction, b) the removal of floating debris upstream of the boom, c) use of sediment mats downstream of the work area, d) use of geotextile roads/mats and e) gravel construction entrances. Under the erosion control plan, the contractor shall maintain a logbook of all precipitation events and all instances of BMP implementation at all soil-disturbance sites, such as restoration sites, staging areas, and surface water crossings. The logbook shall contain the date and time of the precipitation event, as well as the duration and intensity of the precipitation. Additionally, the logbook shall record all BMPs that were implemented prior to and/or following the precipitation, as well as a narrative evaluation (and/or a non-narrative evaluation, as required by the jurisdictional agency) of the erosion-prevention effectiveness of those BMPs. The logbook shall be submitted to CDFW for review within 30 days following each major storm event. Site-specific characteristics shall determine the choice of BMPs to be employed. The erosion control plan shall include a proposed schedule for the implementation and maintenance of erosion control measures and a description of the erosion control practices, including appropriate design details and a time schedule. The contractor shall consider the full range of erosion control BMPs. The contractor also shall consider any	Development and submittal for approval to CDFW and RWQCB of an erosion control plan; maintenance of a logbook of all precipitation events and all instances of BMP implementation at all soil-disturbance sites; and submittal of the logbook to CDFW for review within 30 days following each major storm event.		Submittal of the logbook to CDFW for review within 30 days following each major storm event.

TABLE 2-2 (Continued)
PROJECT DESIGN FEATURES INCORPORATED INTO THE BALLONA WETLANDS RESTORATION PROJECT FOR ALTERNATIVES 1, 2, AND 3

Potential Environmental Impact to be Avoided or Reduced	Design Features	Implementing Actions	Monitoring/Reporting Requirements	Timing
Biological Resources (cont.)				
Impacts associated with the degradation of water quality, including from erosion (cont.)	additional site-specific and seasonal conditions when selecting and implementing appropriate BMPs. Management practices shall be selected and implemented so as not to conflict with any practices or prohibitions identified in this EIS/EIR Section 3.4, Biological Resources.			
Impacts to aquatic habitat associated with temporary disturbance or permanent loss	BIO-5 Avoid or Minimize Impacts to Aquatic Habitat. Temporary disturbance to and permanent loss of all aquatic habitat (open water, mudflats, marshes, salt pan) shall be avoided to the maximum extent feasible. All temporary staging areas and access roads, if necessary, shall be located away from aquatic habitats to the extent practicable, and aquatic habitats abutting impacted areas shall be clearly demarcated with Environmentally Sensitive Area fencing to avoid inadvertent disturbance during restoration activities. As detailed grading plans are prepared, they shall be designed to avoid temporary and permanent impacts to aquatic habitats to the extent practicable.	Location of temporary staging areas and access roads away from aquatic habitats to the extent practicable; clear demarcation of aquatic habitats abutting impacted areas with Environmentally Sensitive Area fencing; and design of grading to avoid impacts to aquatic habitats to the extent practicable.		During final design
Impacts associated with the degradation of water quality	BIO-6 Culvert Installation Best Management Practices. Culvert and tide gate replacement/installation shall occur in the dry season when tidal slough flows are at a minimum and water quality concerns are reduced. Excavations shall be designed to limit negative effects on water quality to the maximum extent practicable. If the tidal slough is flowing at a slow rate and cannot be captured and diverted, filter structures shall be installed downstream as needed to filter turbid discharge from the worksite. If flow is sufficient to be intercepted, a small diversion dam shall be built upstream and tidal slough flow shall be piped around the work site and discharged into the tidal slough below the work site. High flows that cannot be piped around work sites shall be isolated from the work area with berms. Any diversion of water shall be pursuant to a CDFW-approved plan that would be included in the Habitat Restoration and Monitoring Plan for controlling sediment (consistent with SWPPP), conducting the diversion (to avoid substantial effects on wildlife resources), and restoring the site to its prior condition post replacement/installation.	Replacement/ installation of tide gates only in the dry season; limit excavations; divert flows around work sites; filter turbid discharge from the worksite if needed; and restoring the site to its prior condition post replacement/ installation.		During replacement/ installation of tide gates

TABLE 2-2 (Continued)
PROJECT DESIGN FEATURES INCORPORATED INTO THE BALLONA WETLANDS RESTORATION PROJECT FOR ALTERNATIVES 1, 2, AND 3

Potential Environmental Impact to be Avoided or Reduced	Design Features	Implementing Actions	Monitoring/Reporting Requirements	Timing
Biological Resources (cont.)				
Impacts associated with loss of aquatic resource functions	BIO-7: Post-Restoration Functional Lift Assessments of Wetland Waters of the U.S. and State. Upon completion of restoration activities, the project shall demonstrate a no net loss of aquatic resource functions and demonstrate a substantial increase in wetland functions and values throughout the entire site. An assessment of habitat functions, such as biotic structure and hydrology, shall be conducted on at least an annual basis, using methods approved by the Corps, RWQCB, and CCC such as the California Rapid Assessment Method (CRAM). Based on the assessment, a discussion/analysis of functional lift for restored habitats in comparison with baseline conditions shall be prepared in the form of technical report. The results of the functional lift assessments shall be submitted to the Corps, RWQCB, and CCC on an annual basis as part of the Project's monitoring and reporting program outlined in the Habitat Restoration and Monitoring Plan (Project Design Feature BIO-3).	Assess habitat functions using approved methods; document discussion/ analysis of functional lift for restored habitats relative to baseline conditions in the form of technical report; submit reports to the Corps, RWQCB, and CCC annually		Annually following completion of restoration activities for the timeframe specified in BIO-3.
Potential restoration/ construction-related impacts to marine mammals and sea turtles	BIO-8: Biological Monitoring and Safety Zones to Protect Marine Mammals and Sea Turtles As a voluntary precaution to avoid direct impacts to marine mammals and sea turtles in Ballona Creek during in-water restoration or construction, a 320-foot (100 meter) safety zone shall be maintained around in-water work areas. At the discretion of the Resource Agencies, based on the findings of initial biological monitoring, the size or configuration of the in-water marine mammal safety zone may change. • A qualified biological monitor will conduct daily surveys before and during in-water activities in Ballona Creek to inspect the work zone and adjacent waters for marine mammals and sea turtles. Unless otherwise modified by the Resource Agencies, biological monitoring of in-water work will continue until all earth-moving work has been completed within the Ballona Creek channel. • Work activities shall be halted if a marine mammal or sea turtle enters the 320-foot aquatic safety zone and resume only after the animal has been gone from the area for a	Maintain a 320-foot (100 meter) safety zone (or other distance established per Resource Agencies' discretion) around in-water work areas; conduct daily surveys monitoring before and during in-water activities in Ballona Creek; halt work if a marine mammal or sea turtle enters the safety zone; allow work to resume only after the animal has been gone from the area for a minimum of 15 minutes.		Daily, before and during in-water restoration or construction activities, until all earth-moving work has been completed within the Ballona Creek channel

TABLE 2-2 (Continued)
PROJECT DESIGN FEATURES INCORPORATED INTO THE BALLONA WETLANDS RESTORATION PROJECT FOR ALTERNATIVES 1, 2, AND 3

Potential Environmental Impact to be Avoided or Reduced	Design Features	Implementing Actions	Monitoring/Reporting Requirements	Timing
Biological Resources (cont.)				
Potential restoration/ construction-related impacts to marine mammals and sea turtles (cont.)	minimum of 15 minutes. Unless the qualified biological monitor deems otherwise, the safety zone would only apply to marine and aquatic areas, and would not apply to terrestrial work activities.			
Hydrology and Water Quality				
Erosion of wetlands during restoration activities and after could deliver sediment laden runoff and associated constituents to Ballona Creek. Constituents associated with these sediments could then settle out into the channel and marsh at concentrations that may result in impairment based on Sediment Quality Objectives for biological resources/beneficial uses.	HWQ-1: A Stormwater Management Plan (Appendix B2) would be implemented and include drainage control features such as bio-swales, pre-treatment basins, armoring, and appropriate surface materials for paths and other public access features. These features are designed to capture and slow the flow of surface water and drop the sediment load during and after construction.	The Project would implement a Stormwater Management Plan prior to construction. The plan would help prevent contaminated sediment from entering the marsh and creek.	The Stormwater Management Plan is presented in Appendix B2.	Prior to construction
Realignment of the creek and connection of the creek to the wetlands could cause erosion in the channel that could result in downstream siltation.	HWQ-2: An armored sill would be constructed across the channel from the Culver Boulevard Bridge to the Lincoln Boulevard Bridge to limit scour at this location.	The Project would construct the armored sill during restoration activities		During construction.
Realignment of the creek and connection of the creek to the wetlands could cause erosion that could result in loss of habitat or levee destabilization.	HWQ-3: Four levels of erosion protection would be constructed along the channel banks and levees as shown in Figures 2-16, Alternative 1, Phase 1: Perimeter Levee Armoring Plan, and 2-17, Alternative 1, Phase 2: Perimeter Levee Armoring Plan. Level 1, which would include buried or surface armoring, would be placed along the levees at the entrance to the site and at the end of Area A along the Interim levee to protect against erosion from the expansion and contraction of flood flows. The Culver Boulevard levee in North Area B would be protected with Level 2, or buried armoring. Most of the Area A levee would have the lowest level of armoring, Level 4, since the sloped marshplain would channel flows away from the levee. In	The Project would construct the four levels of erosion protection during restoration activities.		During construction.

TABLE 2-2 (Continued)
PROJECT DESIGN FEATURES INCORPORATED INTO THE BALLONA WETLANDS RESTORATION PROJECT FOR ALTERNATIVES 1, 2, AND 3

Potential Environmental Impact to be Avoided or Reduced	Design Features	Implementing Actions	Monitoring/Reporting Requirements	Timing
Hydrology and Water Quality (cont.)				
Realignment of the creek and connection of the creek to the wetlands could cause erosion that could result in loss of habitat or levee destabilization (cont.)	Phase 2, Level 1 armoring would be added to the West Area B levee, where the flow would contract back into the channel. The southern, more protected part of the levee would have Level 2 armoring, and the levee south of the salt pan would be Level 4 armoring.			
Additional and larger culverts from West and North Area B to South and Southeast Area B would increase the risk of flooding behind Culver Boulevard.	HWQ-4: A berm would be constructed along Culver Boulevard, a section of Jefferson Boulevard, and on the SoCalGas Property in South and Southeast Area B to reduce the flood risk in these areas.	The Project would construct the berms during restoration activities.		During construction.

2.2.2 Alternative 1: Full Tidal Restoration/Proposed Action

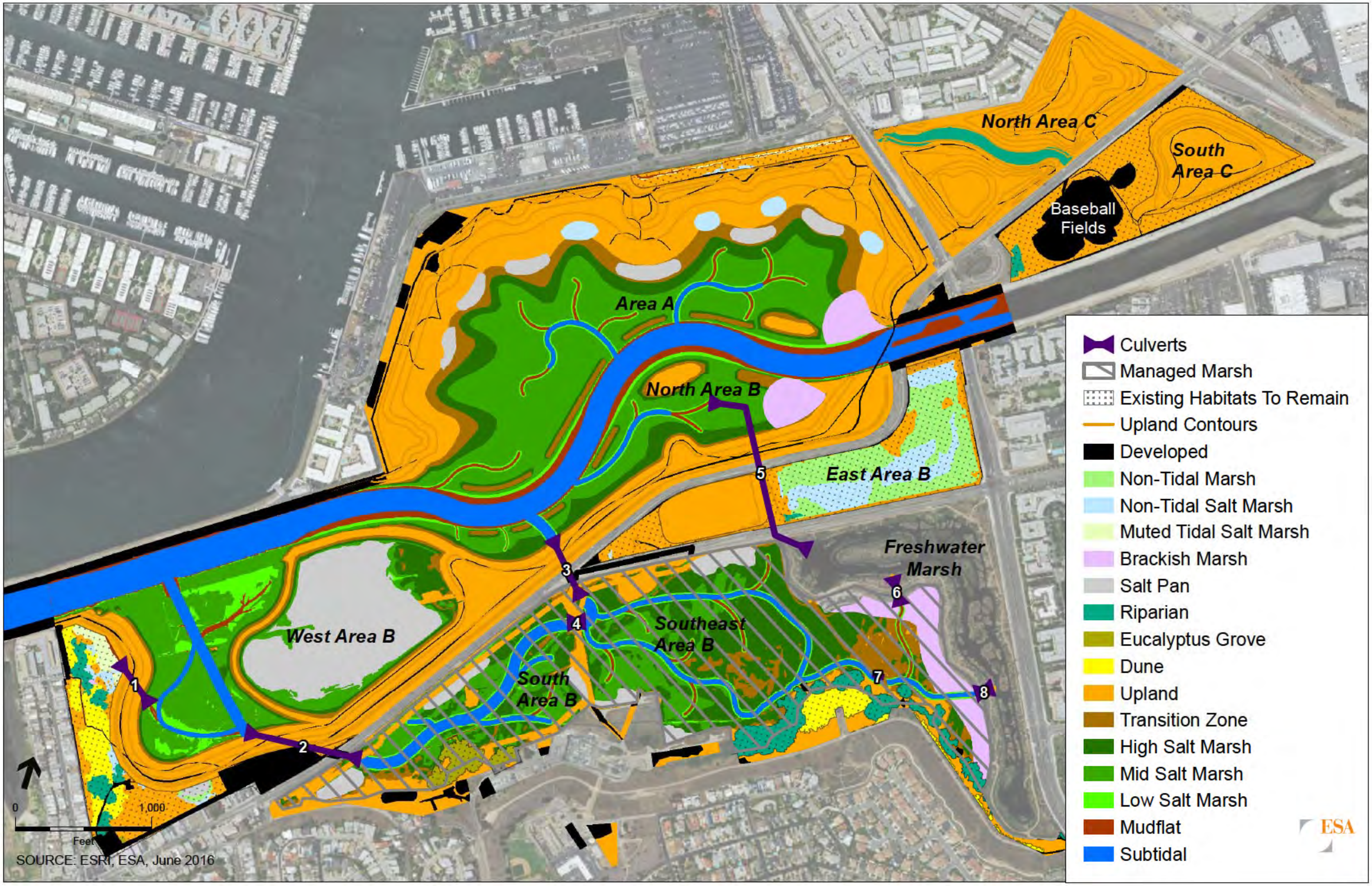
This alternative would result in the permanent loss of 31.4 acres of wetland waters of the U.S. and 5.2 acres of non-wetland waters of the U.S. There would be a loss of function to 0.2 acres of wetland waters and 5.7 acres of non-wetland waters and temporary impacts to 30.2 acres of wetland waters and 25.0 acres of non-wetland waters. Within the Ballona Reserve, 81.0 acres of native wetland and 38.7 acres of new non-wetland waters would be established. An additional 105.8 acres of native wetland and 58.0 acres of non-wetland waters would be enhanced.

All restoration and post-restoration activities that would be implemented in the portion of the Project site that would be subject to tidal influence without the presence of the levees (based on the current topography and as shown in Figure 1-1, *Existing Topography and Tidal Inundation*) would be subject to the Corps' Section 10 jurisdiction over work or structures in or affecting navigable waters of the U.S. Such activities would be implemented, generally speaking, in the current footprint of the Ballona Creek channel, West Area B, and limited portions of the Fiji Ditch (in Area A), South Area B, and Southeast Area B. Such activities would include, for example, the inspection and service of flap gates and other water control structures, sediment removal from Basin 14B, and water level monitoring in Ballona Creek.

In Alternative 1, the existing armored levees along the banks of the Ballona Creek channel within the Ballona Reserve would be completely removed. Ballona Creek would be realigned to flow in a more natural meander-shaped pattern, and the landscape grade in Area A would be lowered to create a connected floodplain. Native wetland, transition zone, and upland habitats would be established, restored, and enhanced throughout the site. See Figure 2-1, *Alternative 1, Phase 2: Proposed Habitats*).

New partially-earthen levees would be built around the northern perimeter of Area A, along the north side of Culver Boulevard in North and West Area B, and immediately east of the dune habitat in West Area B. See Figure 2-2, *Alternative 1, Phase 2: Preliminary Grading Plan*. The new levees would be set back from the existing Ballona Creek channel to reconnect the proposed realigned creek with its restored wetland floodplain, allowing a variety of coastal wetland habitats to form within the floodplain. The levees would be broad and gently sloped away from roadways and buildings, protecting development from the inundation of the restored Ballona Creek wetland floodplain and providing upland and transitional habitat zones within the restored Ballona Reserve.

New trails and bike paths constructed on top of the levees would ensure that visitors travel through the Ballona Reserve in designated areas, and gateway entrances would be added to the Ballona Reserve with educational and art installations. See Figure 2-3, *Alternative 1, Phase 2: Public Access Plan*. A three-story parking structure would be constructed along Fiji Way for use by the public, Los Angeles County Department of Beaches and Harbors (LACDBH), and CDFW staff. The new structure would reduce the existing parking area footprint in that location by up to approximately 0.8 acre and would provide a total of 302 parking spaces, an increase of 39 spaces from the existing parking lot. Upgrades to the existing West Culver Parking Lot would include improvements to drainage and installation of sidewalks.



Ballona Wetlands Restoration Project

Figure 2-1
Alternative 1, Phase 2: Proposed Habitats

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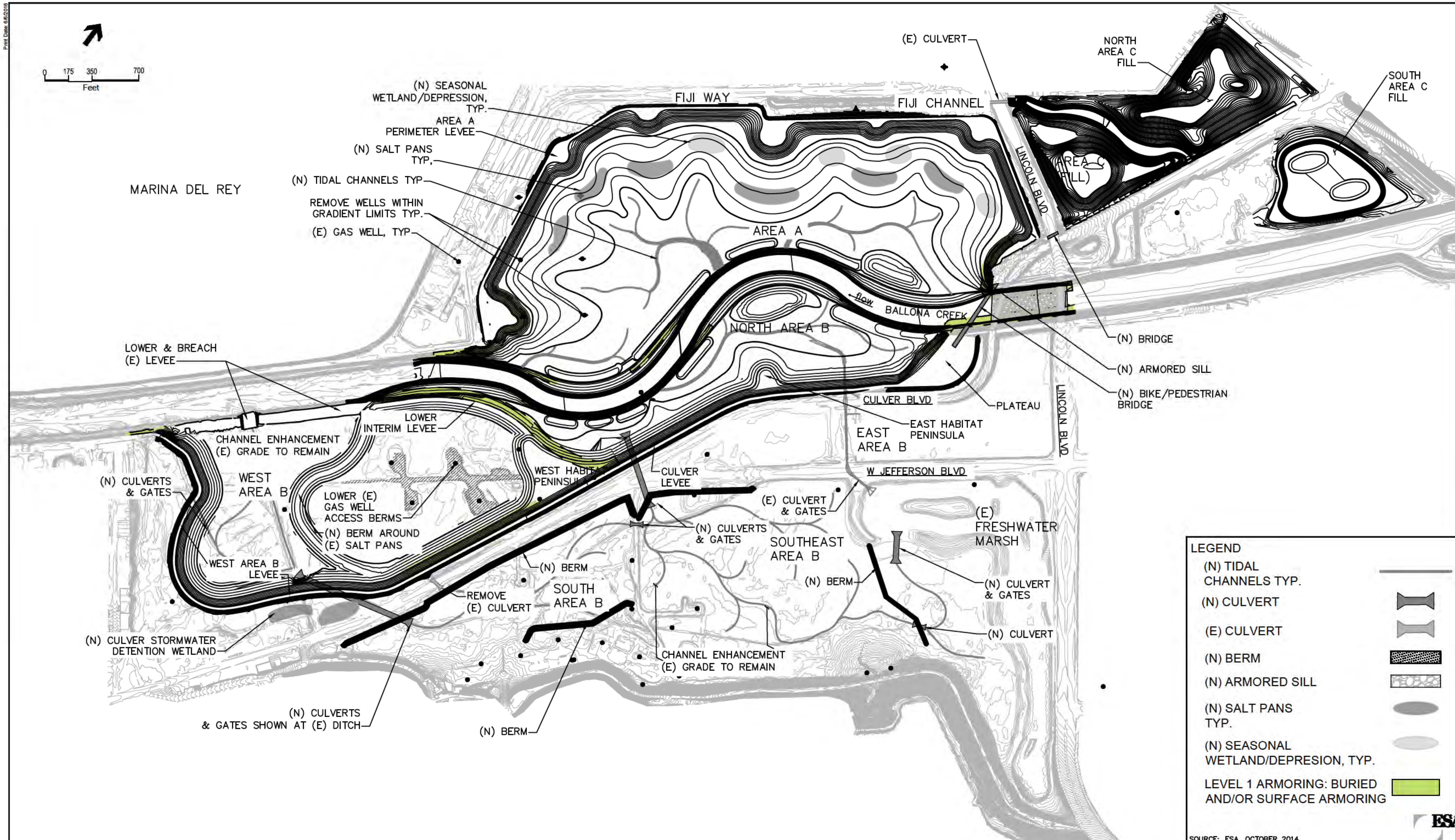

Ballona Wetlands Restoration Project

FIGURE 2-2

ALTERNATIVE 1, PHASE 2: PRELIMINARY GRADING PLAN

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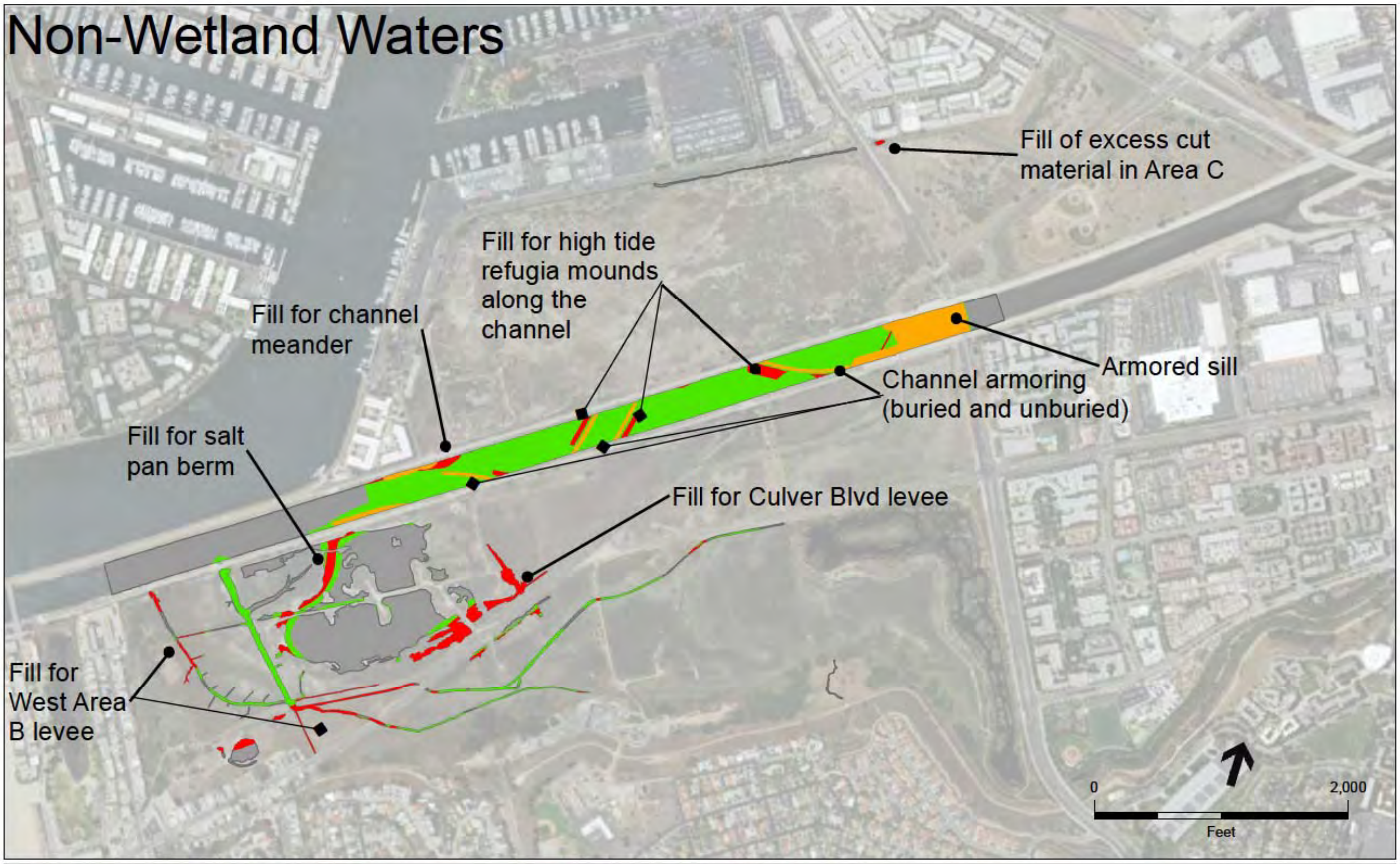
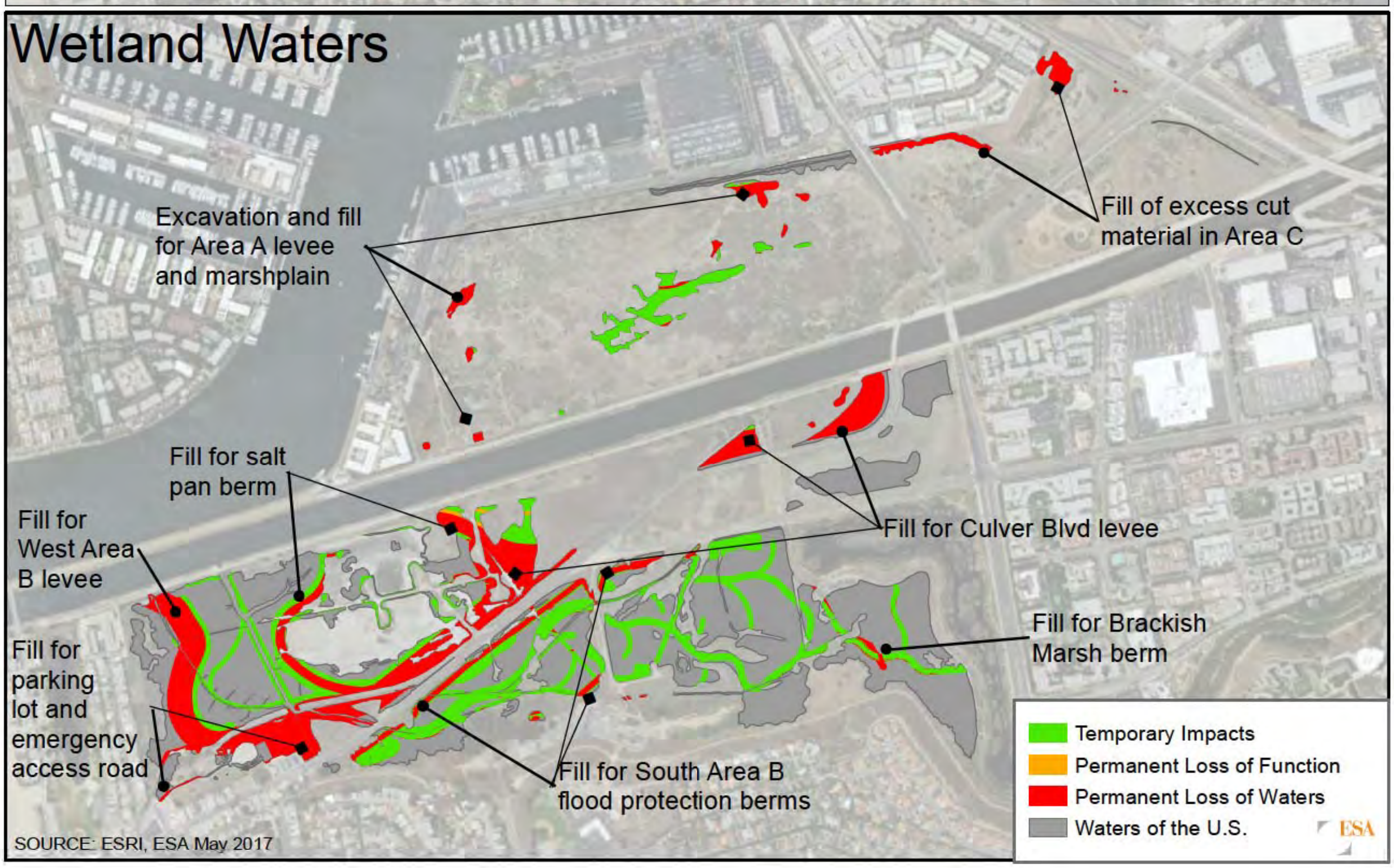
Ballona Wetlands Restoration Project

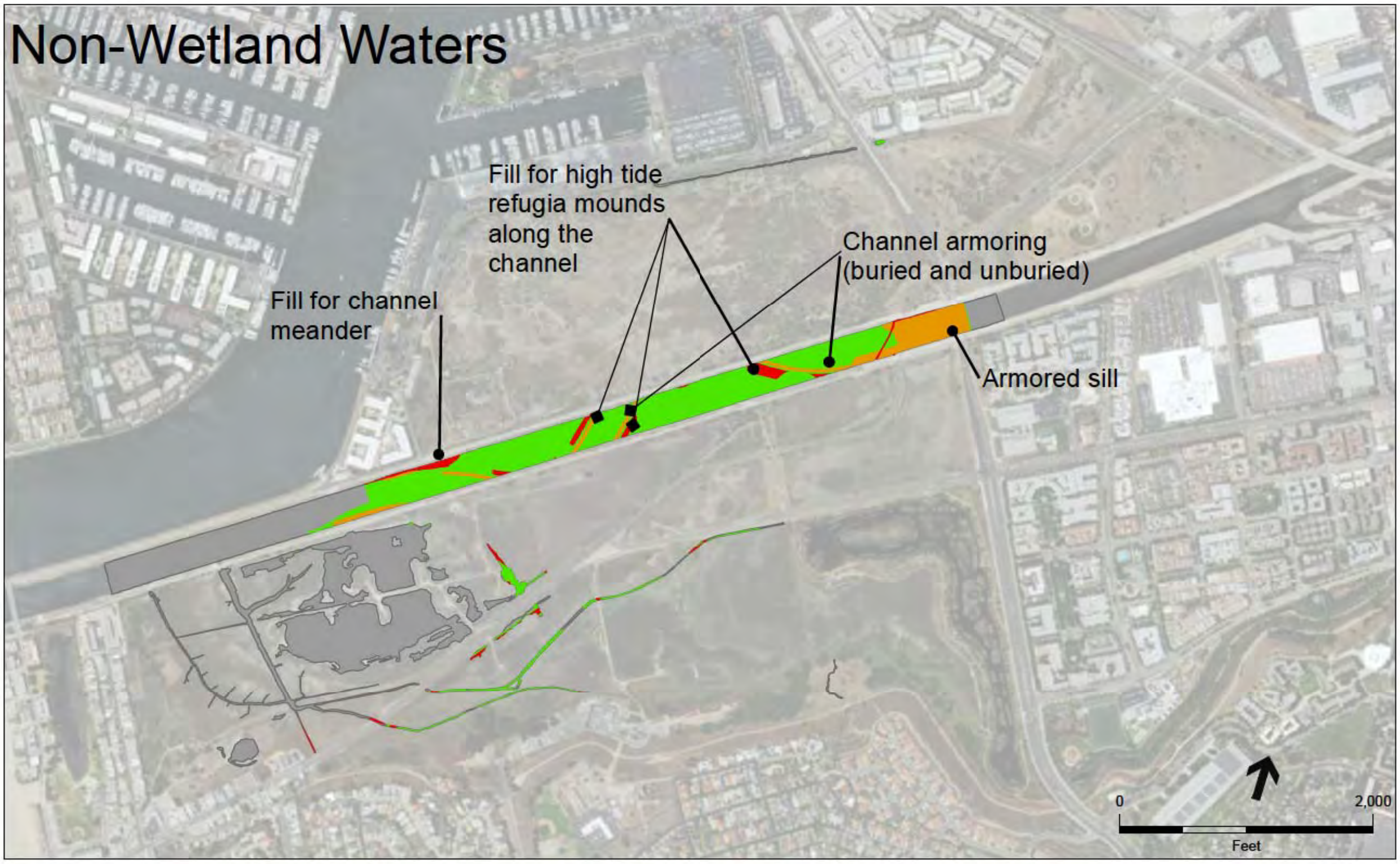
Figure 2-2a
Corps Jurisdiction under Section 404 of the Clean Water Act
On-Site versus Off-Site Waters of the U.S.

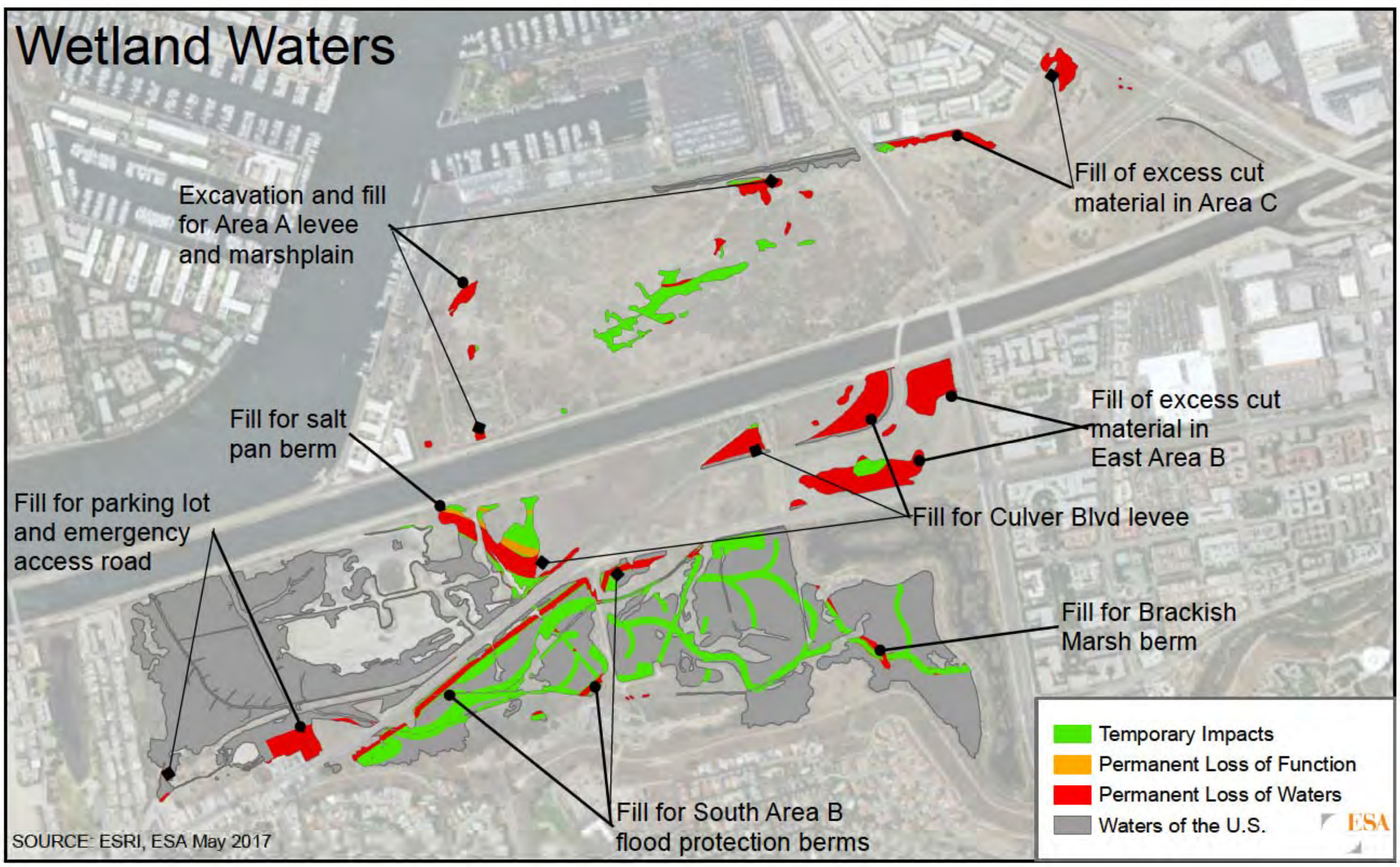




Ballona Wetlands Restoration Project

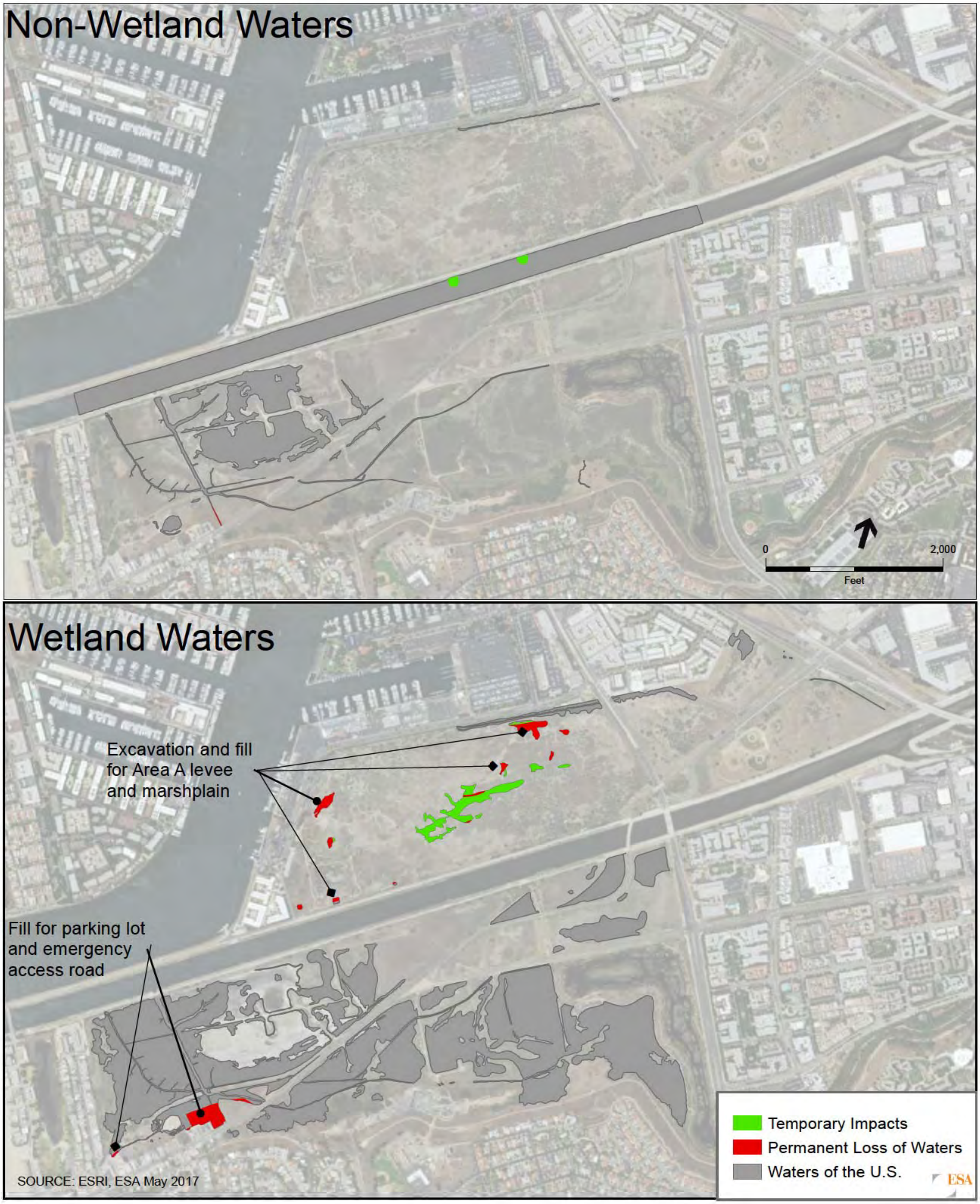
Figure 2-2b
Alternative 1 Impacts to Section 404 Waters of the U.S.





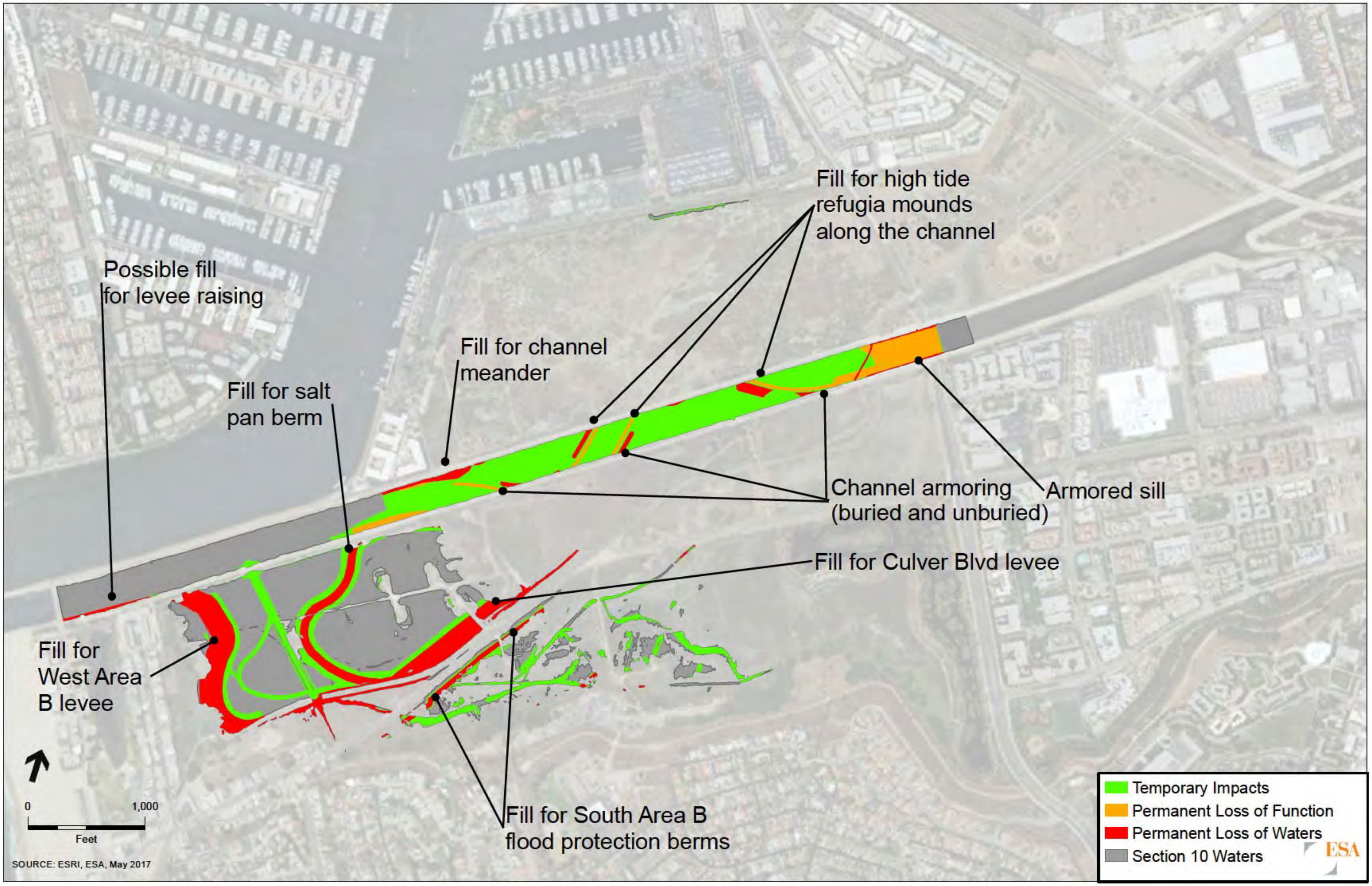
Ballona Wetlands Restoration Project

Figure 2-2c
Alternative 2 Impacts to Section 404 Waters of the U.S.



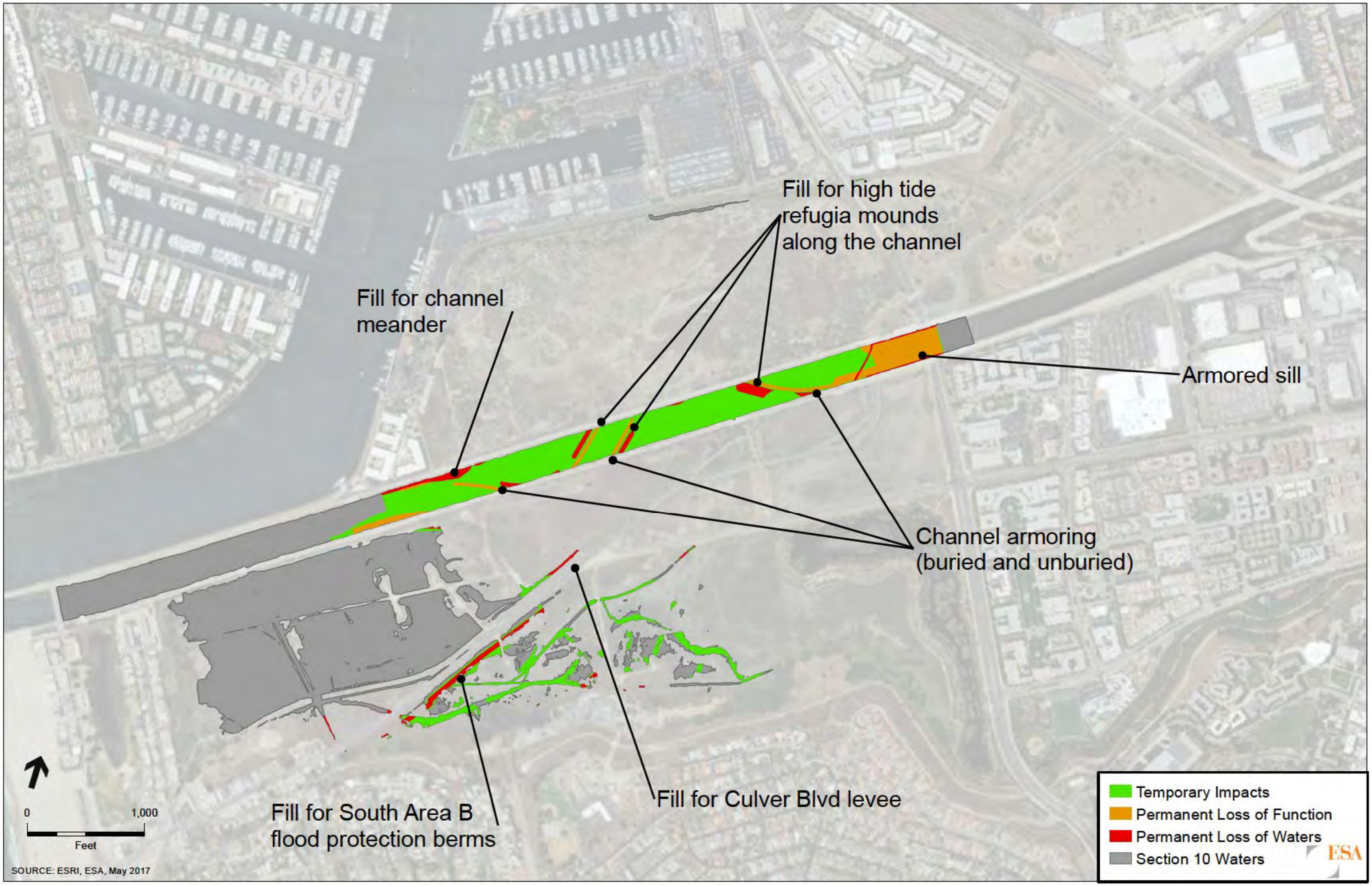
Ballona Wetlands Restoration Project

Figure 2-2d
Alternative 3 Impacts to Waters of the U.S.



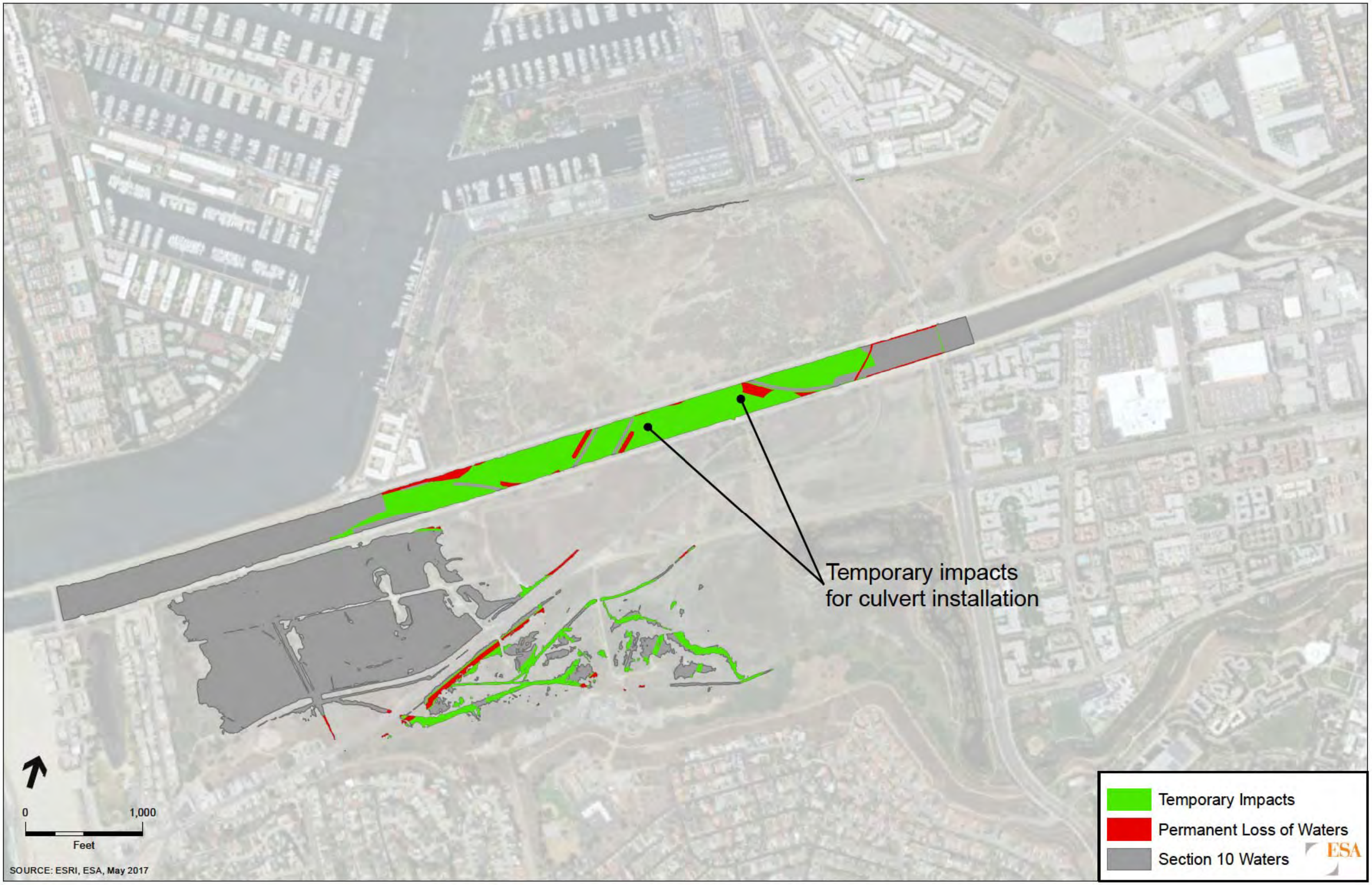
Ballona Wetlands Restoration Project

Figure 2-2e
Alternative 1 Impacts to Section 10 of the Rivers and Harbors Act



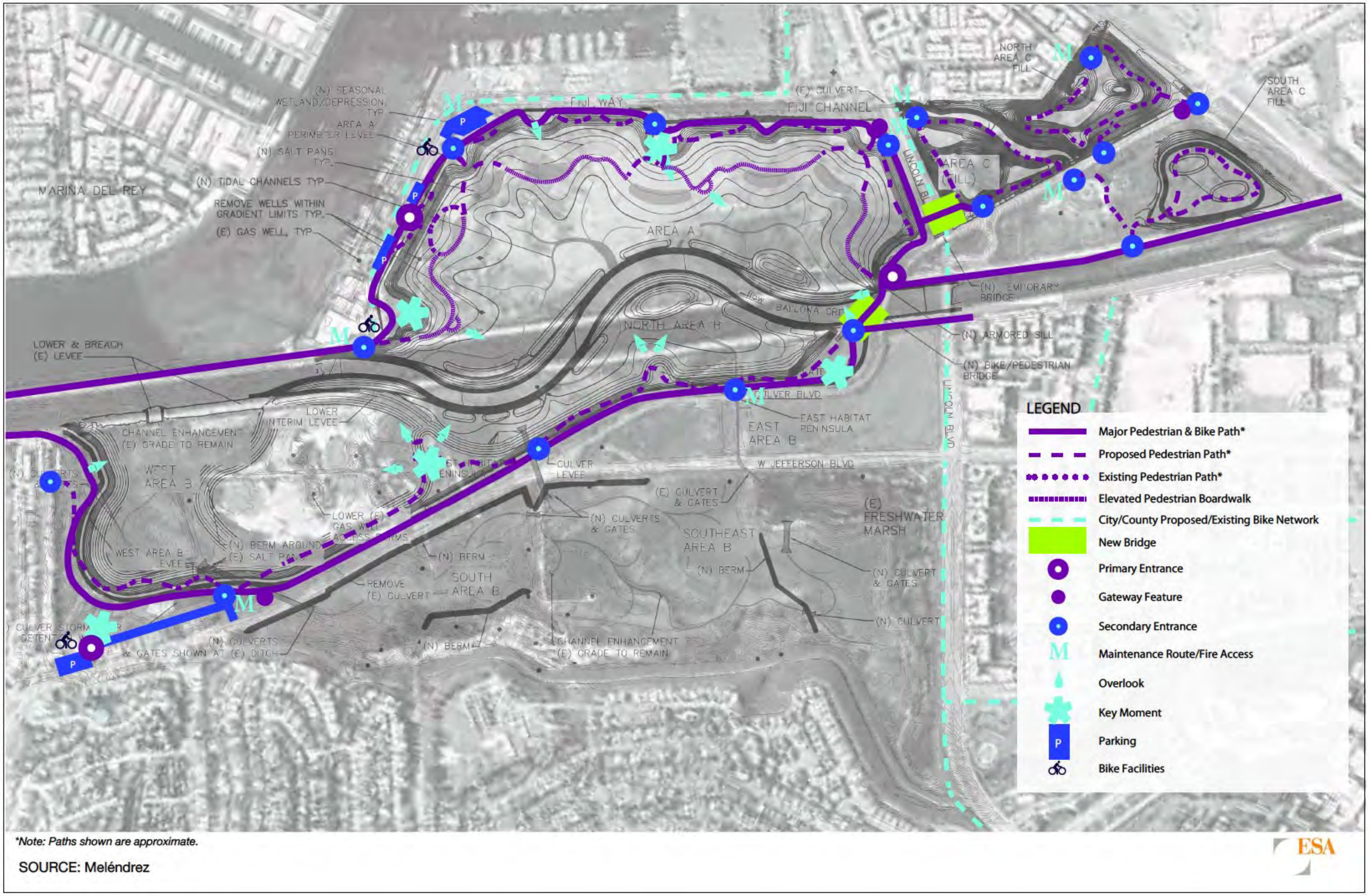
Ballona Wetlands
Restoration Project

Figure 2-2f
Alternative 2 Impacts to Section 10
of the Rivers and Harbors Act



Ballona Wetlands Restoration Project

Figure 2-2g
Alternative 3 Impacts to Section 10 of the Rivers and Harbors Act



Ballona Wetlands Restoration Project

Figure 2-3
Alternative 1, Phase 2: Public Access Plan

The existing SoCalGas natural gas monitoring wells would be decommissioned (i.e., capped and abandoned in place in accordance with applicable law) within the Ballona Reserve and related pipelines would be abandoned or modified to accommodate the proposed restoration activities.

Alternative 1 would occur in two phases:

1. **Phase 1:** Restoration of Area A, North Area B, and Area C, enhancement of the existing managed wetlands in South/Southeast Area B, construction of new perimeter flood protection levees and an interim levee along West Area B, and realignment of the Ballona Creek channel. Phase 1 would only decommission the gas wells that are required for the Phase 1 restoration. Other wells, including the wells in Area A and West Area B, would be maintained until they are decommissioned in Phase 2.

2. **Phase 2:** Full tidal restoration of West Area B and new West Area B perimeter flood protection levee. Remaining gas wells would be decommissioned and the well removal areas restored during Phase 2.

Detailed descriptions of Alternative 1 key elements are provided below.

2.2.2.1 Alternative 1: Ecosystem Restoration

Alternative 1 would restore connectivity of Ballona Creek with a broader wetland floodplain across the Ballona Reserve by removing the existing levees and creating a partially-earthen sinuous channel with two meander-shaped bends, which would be fixed in certain locations to protect adjacent infrastructure from erosion as discussed in the Ballona Creek Channel Realignment section and the Erosion Control Features section in Section 2.2.2.2. Sub-tidal and intertidal channels would extend from Ballona Creek into the vegetated tidal wetlands, providing habitat diversity and tidal circulation as shown in Figure 2-1, *Alternative 1, Phase 2: Proposed Habitats*. Material and debris from levee removal would be reused if appropriate or disposed off-site. Refer to Section 2.2.2.5, *Alternative 1: Implementation and Restoration Process*, for more detail on excavation that would take place during this Alternative.

In Area A, soil would be removed to restore tidal wetlands near the creek with gently sloping transitional and upland habitats between the wetlands and a new levee to be constructed along Fiji Way. Slight depressions in the transitional and upland areas would be created to form new salt pans and seasonal wetlands. Tidal wetlands would also be restored in Area B between Ballona Creek and upland habitats along the new Culver Boulevard and West Area B levees. In South Area B, existing wetlands and non-wetland waters of the U.S. would be enhanced by removing non-native, invasive plant species,[21] restoring native vegetation, creating new channels and salt pans, and managing wetland hydrology via new water-control structures (e.g., culverts with tide gates) in the Culver Boulevard levee. Brackish marsh would be established near the existing Freshwater Marsh (shown in Figure 2-1, *Alternative 1, Phase 2: Proposed Habitats*) and also may

[21] Invasive plants are those identified in the California Native Plant Society, Los Angeles – Santa Monica Mountains Chapter handbook entitled *Recommended List of Native Plants for Landscaping in the Santa Monica Mountains* (CNPS 1994); those species listed by the California Invasive Plant Council on any of its watch lists; and those otherwise identified by CDFW or the U.S. Fish and Wildlife Service (USFWS). Invasive, nonnative plant species often are referred to as “weeds.”

form along the upstream edge of Ballona Creek. The 1,730,000 cy of soil removed from Area A would be used to construct the new levees and create restored uplands in North Area C and South Area C. In North Area C, the Fiji Ditch[22] would be realigned and restored with riparian habitat along the new channel. The existing Fiji Ditch in Area A would be retained and enhanced through non-structural bank restoration (e.g., replacement of invasive plant species with native plantings). The existing habitats in East Area B would be enhanced through invasive plant species removal and revegetation. Revegetation activities would include removing invasive plant species, seeding/planting native plant species, and natural recruitment of native plant species in restored tidal wetlands.

As described above, ecosystem restoration under Alternative 1 would occur in two phases, which would be implemented using an adaptive management approach. After implementation of Phase 1, restored habitats would be monitored and evaluated against performance goals, namely: native vegetation establishment, improved hydrology, and sensitive species use, with Belding's savannah sparrow's use as a proxy for success. This is discussed further in Section 2.2.2.6, *Alternative 1: Monitoring and Adaptive Management*.

Restoration habitat targets and acreages by phase are presented in Table 2-3, *Alternative 1 Post-Restoration Habitats and Acreages*.

Phase 1 Restoration

A fully connected Ballona Creek and wetland system would be restored across the Ballona Reserve beginning west of the Culver Boulevard bridge and extending to the southwest (downstream) property boundary (Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*). Existing levees would be completely removed, and a more sinuous channel with two meander-shaped bends would be created through the site. The proposed channel alignment would mimic natural channel forms and support desired native habitats, vegetation, and wildlife species.

Restored Habitats (Alternative 1, Phase 1)

Area A

In Area A, soil that was deposited during the construction of Marina del Rey and Ballona Creek would be removed to recreate marsh plain habitats near the creek then slope up through transition zone and upland to a levee crest adjacent to Fiji Way inside the Ballona Reserve (for dimensions and quantities, see the Grading and Hydrology (Alternative 1, Phase 1) section below and Section 2.2.2.5). Slight depressions in the transition and upland areas would be created to form salt pans and seasonal wetlands. Tidal channels also would be excavated to provide tidal conveyance to the marsh and shorebird foraging habitats. The banks of the tidal channels and the realigned Ballona Creek would provide unvegetated mudflat habitat, which would support benthic invertebrates and foraging. Brackish marsh may form in Area A and North Area B near where the Ballona Creek channel enters the restored area. The existing Fiji Ditch in Area A

[22] The "Fiji Ditch" is an excavated, unlined draining channel that runs parallel to Fiji Way along the northern boundary in the eastern portion of Area A. The Fiji Ditch flows from North Area C and enters Area A when the water is high enough to top the catchment at Lincoln Boulevard.

TABLE 2-3
ALTERNATIVE 1 POST RESTORATION HABITATS AND ACREAGES[1]

Habitat Type	Existing Conditions	Impacts	Phase 1				Phase 2			
			Area A	Area B	Area C	Total	Area A	Area B	Area C	Total
Aquatic and Wetlands										
Aquatic*	40.3	24.6	11.1	37.4	0.0	48.5	11.4	40.4	0.0	51.7
Mudflat*	8.8	6.6	6.5	8.7	0.0	15.2	6.5	7.1	0.0	13.5
Tidal Salt Marsh	n/a	n/a[1]	45.9	68.8	0.0	114.7	53.0	100.4	0.0	153.4
Low Marsh	n/a	n/a	3.6	7.7	0.0	11.3	3.5	11.9	0.0	15.4
Mid-Marsh	n/a	n/a	31.5	26.6	0.0	58.2	36.9	47.5	0.0	84.4
High Marsh	n/a	n/a	10.8	34.5	0.0	45.3	12.6	41.0	0.0	53.6
Muted Tidal Marsh	18.2	9.8	0.4	14.0	0.0	14.4	0.4	1.1	0.0	1.5
Non-Tidal Salt Marsh	85.0	37.5	2.3	30.4	0.0	32.7	2.3	7.0	0.0	9.3
Non-Tidal Marsh	38.6	26.3	0.0	15.3	0.0	15.3	0.0	11.0	0.0	11.0
Coastal Brackish Marsh	6.4	1.7	2.6	9.1	0.0	11.7	2.6	9.0	0.0	11.6
Salt Pan	22.8	4.3	4.6	26.9	0.0	31.5	4.6	26.8	0.0	31.4
Willow/Mulefat Thicket	13.8	5.3	3.1	8.5	3.4	15.1	0.0	8.5	3.4	11.9
Uplands										
Transition Zone	n/a	n/a	9.9	12.0	0.0	21.8	10.9	17.1	0.0	28.0
Stabilized Dune	9.3	4.8	0.0	7.0	0.0	7.0	0.0	6.9	0.0	6.9
Eucalyptus Grove	2.8	0.2	0.1	2.4	0.0	2.5	0.0	2.4	0.0	2.4
Upland**	271.9	215.1	61.1	74.1	56.3	193.9	57.3	79.8	56.3	195.8
Grassland**	***19.4***	15.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Coastal Sage Scrub	***52.3***	48.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Invasive monoculture	***200.2***	150.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Developed	47.7	n/a	8.9	20.4	8.9	41.4	7.4	17.6	8.9	37.1
Total	**565.5**	**185.7[2]**	**156.4**	**335.0**	**68.6**	**565.6**	**156.4**	**335.1**	**68.6**	**565.6**

NOTES:

1 There is no fully tidal marsh under existing conditions, therefore there are no impacts.
All values provided in acres.

2 The total impact does not include disturbance of invasive monoculture since this would be a beneficial effect and not an adverse impact.

* Denotes aquatic and mudflat habitats would be subject to regular post-construction maintenance consisting of approximately 3.8 acres. Intended maintenance regime would include periodic sediment removal that would provide direct wildlife benefit during intervening periods, and allow for improved circulation to reduce the potential for large long duration maintenance projects. See Appendix B5 for additional details on activities and methods of maintenance to be conducted in these habitats.

** Denotes upland habitats would be subject to regular maintenance. Actual acreage of upland habitats dedicated to maintenance will be quantified after perimeter levee design has received approval. Maintenance in uplands is intended to meet multiple objectives, such as providing wildlife habitat, flood protection, and fuel modification. Please see Appendix B5 for additional details on activities and methods of maintenance to be conducted in these habitats.

SOURCE: ESA (2016).

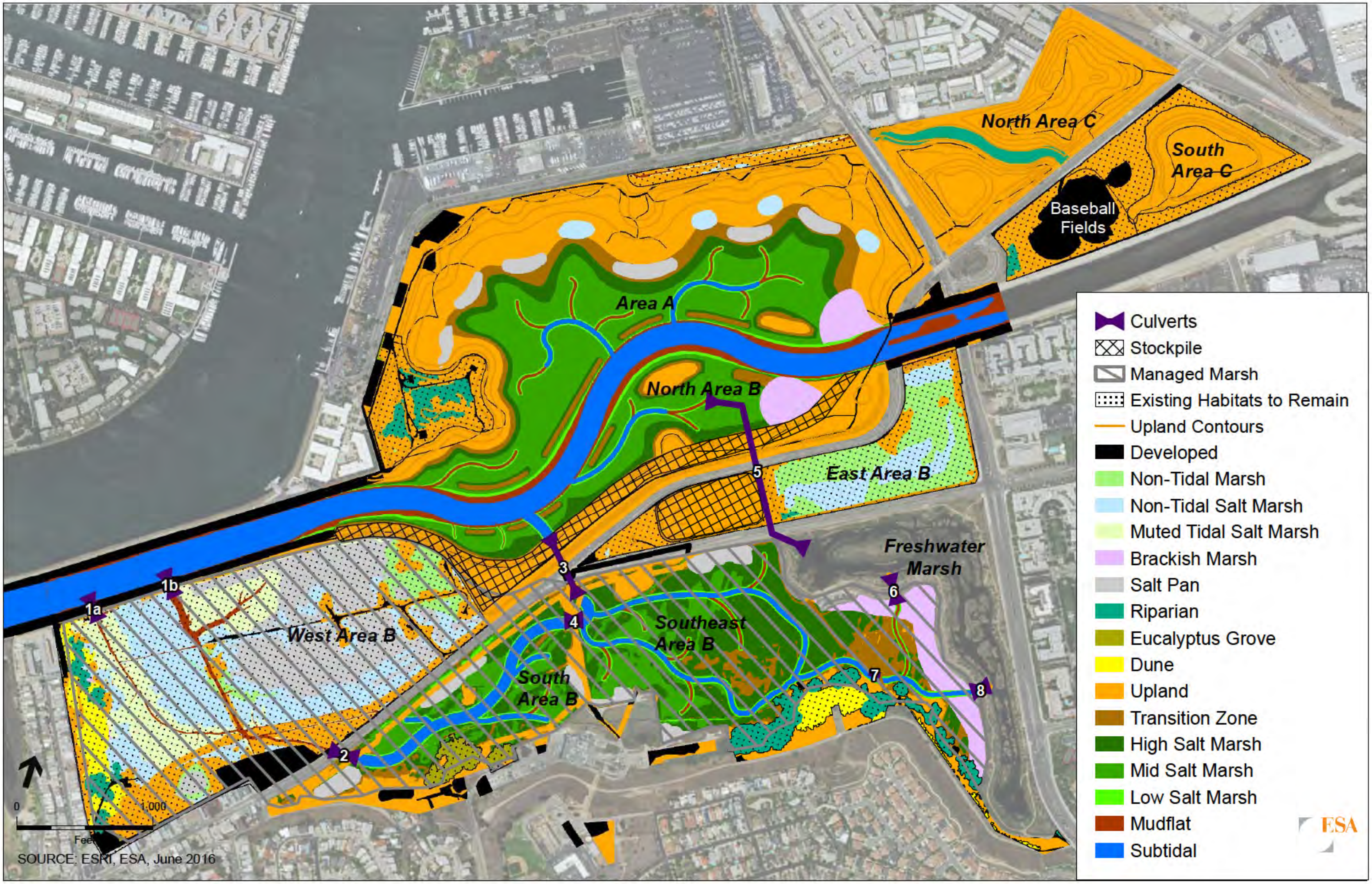


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Figure 2-4
Alternative 1, Phase 1: Proposed Habitats

would be retained and enhanced. Non-native vegetation would be removed along the banks of Fiji Ditch and the banks would be re-vegetated and stabilized with native plants (Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*).

North Area B

In Area B, a partially-earthen levee would be built along Culver Boulevard and planted with native upland habitat species that would slope down to marsh at Ballona Creek. An interim levee (described in greater detail below in the Grading and Hydrology/North Area B section) would be constructed between North and West Area B. (Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*).

West Area B

West Area B would continue to be managed to maintain Belding's savannah sparrow habitat, until monitoring confirms that the species is using other areas of the site (i.e., before proceeding with Phase 2).

South and Southeast Area B

Wetland enhancements in South and Southeast Area B would include:

1. Invasive vegetation removal and native vegetation restoration;
2. New water-control structures (e.g., culverts with tide gates) and modifications to existing water-control structures (e.g., weir structures) including Freshwater Marsh structures (see Grading and Hydrology/South and Southeast Area B section, below, for more details);
3. New tidal channels (to provide circulation, habitat, and barriers to predator access); and
4. Berms that would allow for higher managed water levels around the wetland perimeter and brackish marsh management in Southeast Area B.

The restoration of South and Southeast Area B would enhance passively managed muted tidal marsh and brackish marsh. The enhanced wetlands in South and Southeast Area B could be managed for a range of wetland habitats and would be managed adaptively within an adaptive management plan (see Section 2.2.2.6). The range of habitats that South and Southeast Area B could be managed for include:

1. Muted managed tidal wetland habitat (intertidal, but without the highest tide water levels due to limitation by tide gates, Figure 2-4);
2. Brackish marsh, primarily in Southeast Area B, supported by freshwater discharge from the Freshwater Marsh (see Grading and Hydrology/South and Southeast Area B section for more details);
3. Intermittently tidal wetland habitat with hydrologic characteristics similar to historic 1850s wetland habitats at Ballona Wetlands, in which the water-control structures would close to limit tidal circulation and create ponded/evaporative conditions;
4. Salt pan habitat; and

5. Future habitats: Options for future management of tide levels with projected sea level rise to maintain and/or enhance habitat conditions with rising sea levels (e.g., adjusting tide gates to limit high tide levels with sea level rise as analyzed in Appendix F9).

The Phase 1 restoration would improve habitat, including habitat for the Belding's savannah sparrow in South and Southeast Area B, by establishing habitat similar to West Area B through the excavation of new tidal channels intended to establish more channel habitat for foraging, restrict predator access, and improve the quality of the marsh vegetation in conjunction with invasive species removal.

In South Area B, the tidal range would be managed to accommodate the existing eucalyptus grove at the southern edge. Although non-native, the eucalyptus grove would be maintained for monarch roosting and blue heron nesting/roosting habitat. Tidal channels in this area would be restored to increase tidal flow into the wetlands, up to the elevation necessary to prevent salinity- and hydrology-related impacts to the eucalyptus grove. Existing eucalyptus habitat and dune habitat would be enhanced through removal of other non-native vegetation.

In the eastern-most portion of Southeast Area B, brackish marsh would be established by increasing and managing the portion of the Freshwater Marsh outflow that flows into Southeast Area B via new/modified water-control structures. A new berm and water control structure (i.e., wiers) between brackish marsh and managed tidal wetland to the west would allow for management of freshwater retention within the brackish marsh and saline tidal flows to the brackish marsh. These features would provide the ability to manage brackish marsh conditions including inflow, retention, and outflow of freshwater and saline tidal flows.

East Area B

Excavated soil (50,000 – 80,000 cy) would be stockpiled in the western portion of East Area B in Phase 1 for use in levee construction in Phase 2 as described below. The remaining habitat area would be enhanced through invasive plant species removal and revegetation.

Area C

In North and South Area C, upland habitats would be restored and enhanced, with an emphasis on coastal sage scrub and grassland habitat, with smaller areas of seasonal wetlands and a restored Fiji Ditch channel riparian corridor within the upper portion of the Fiji Ditch in North Area C.

Grading and Hydrology (Alternative 1, Phase 1)

Figure 2-5, *Alternative 1, Phase 1: Preliminary Grading Plan*, shows the preliminary grading plan for Phase 1 of Alternative 1. Figure 2-6, *Alternative 1, Phase 1: Perimeter Levees Plan*, shows the levee plan with the locations of typical grading cross-sections shown in Figure 2-7, *Alternative 1, Phase 1: Levee Sections*. Figure 2-8, *Alternative 1: Typical Channel Sections*), shows typical grading cross-sections for the channel. The grading and hydrology for Phase 1 of Alternative 1 is described further below.

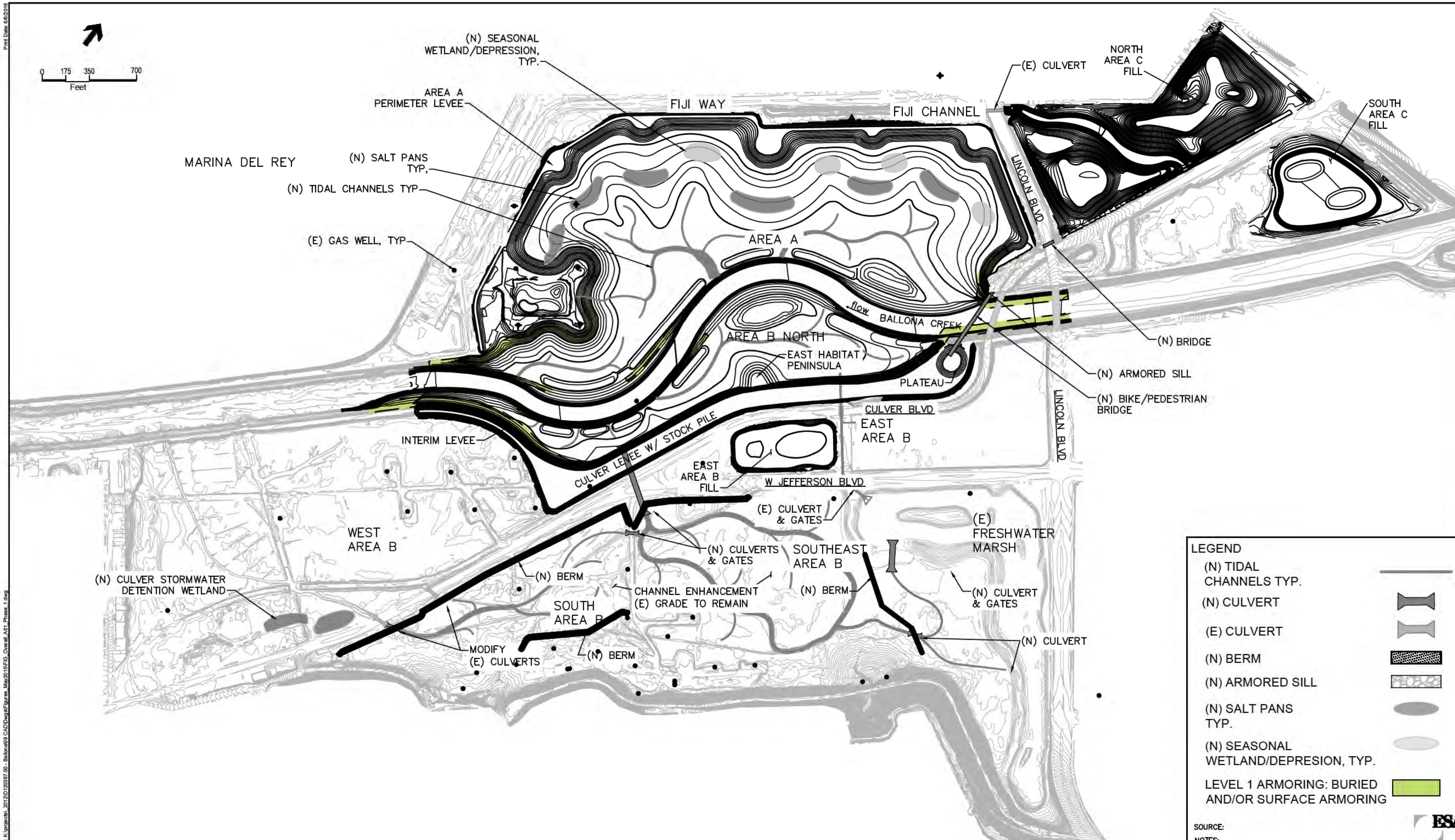

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FIGURE 2-5
ALTERNATIVE 1, PHASE 1: PRELIMINARY GRADING PLAN

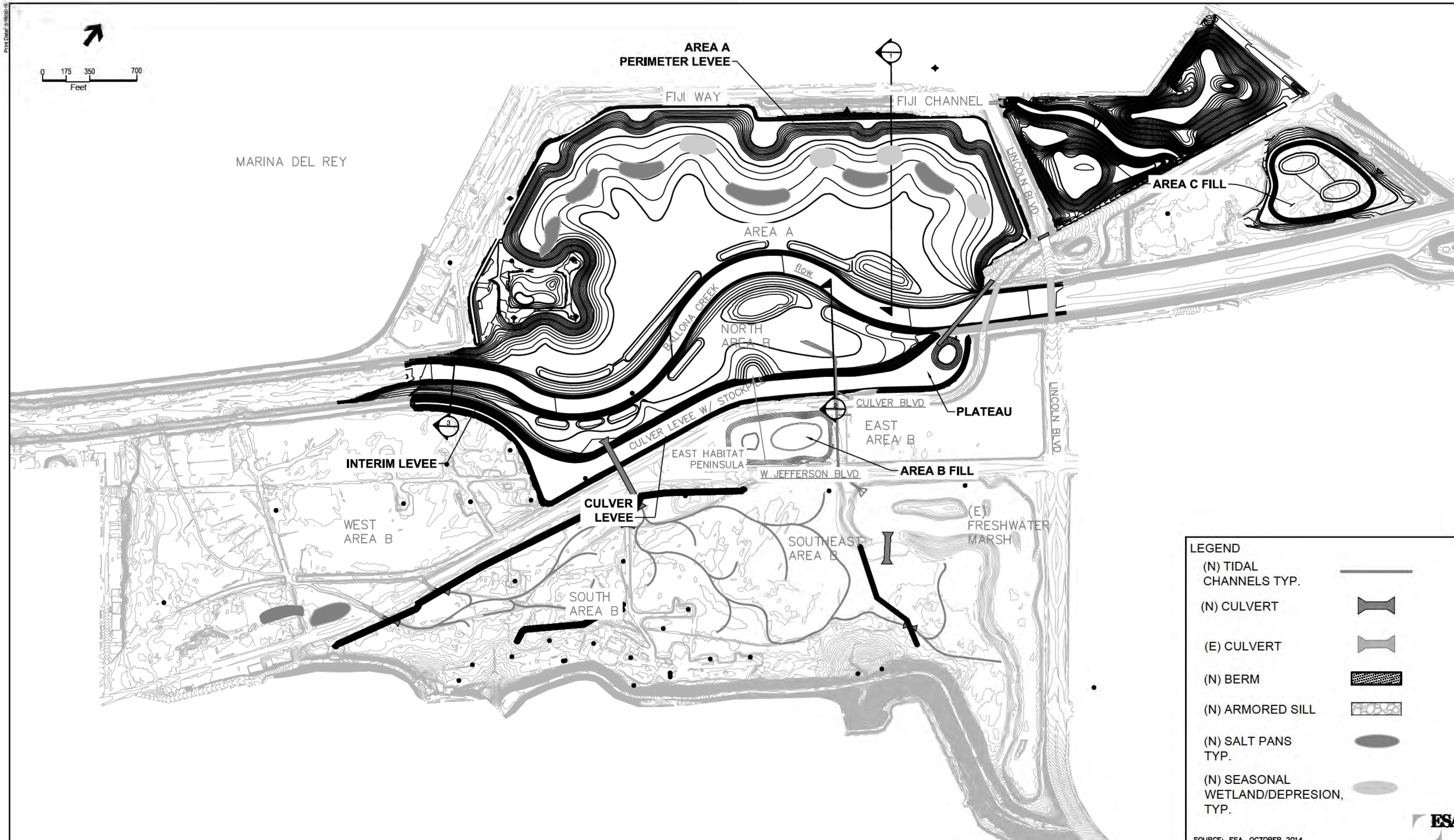

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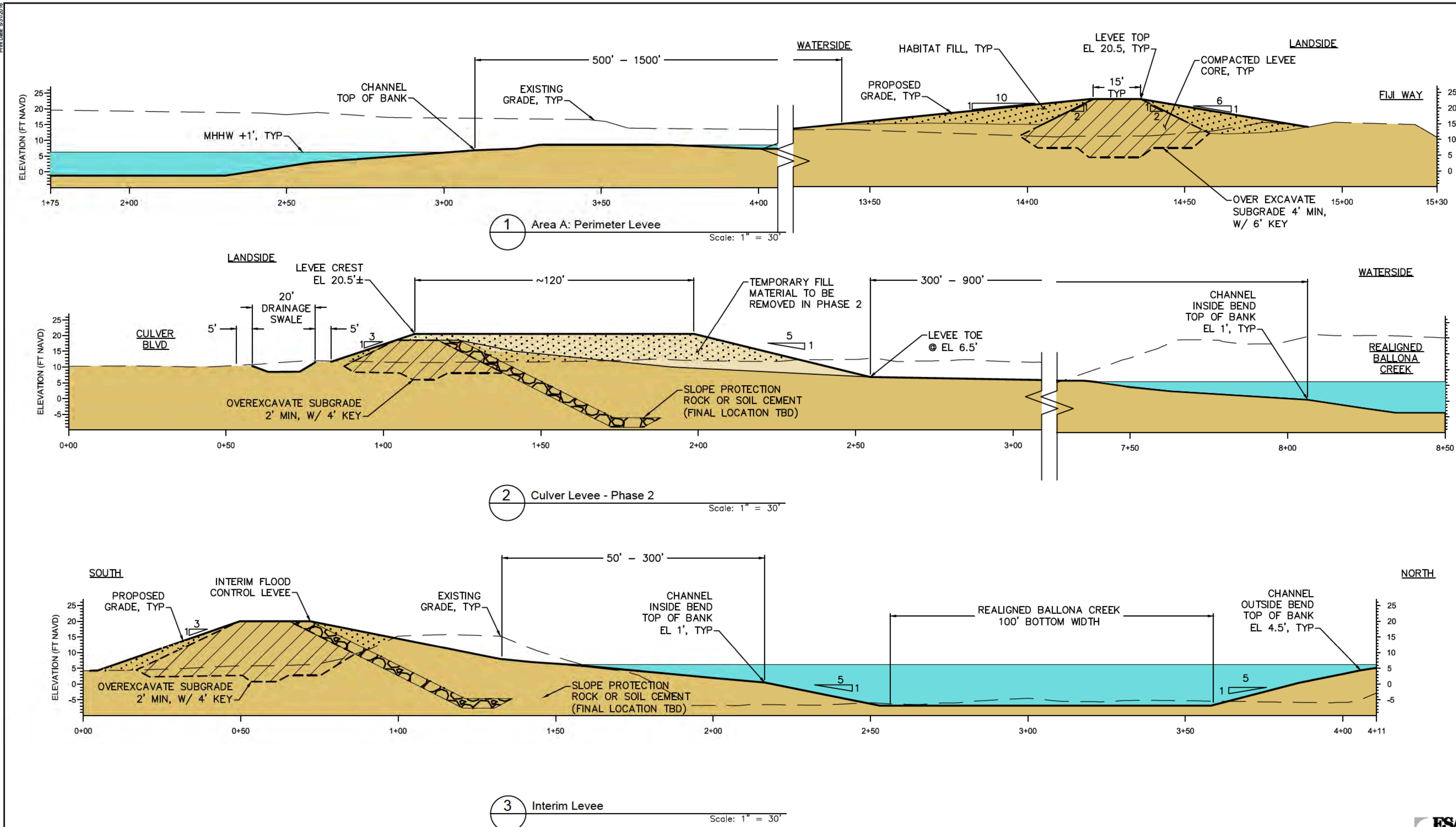
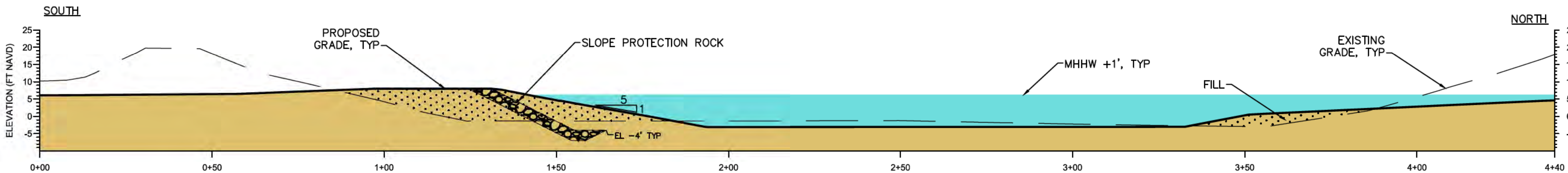
FIGURE 2-6
ALTERNATIVE 1, PHASE 1: PERIMETER LEVEES PLAN

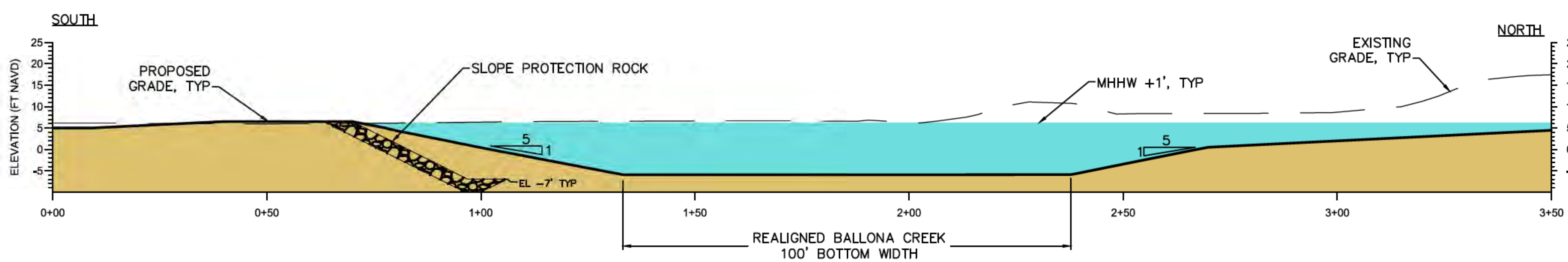


SOURCE: ESA, OCTOBER 2014

FIGURE 2-7
Alternative 1, Phase 1: Levee Sections



-- BANK ARMORING - FILL WITHIN (E) BALLONA CREEK CHANNEL
Scale: 1" = 30'



-- BANK ARMORING - EXCAVATED MEANDER-SHAPED PONDS
Scale: 1" = 30'

SOURCE: ESA, OCTOBER 2014

ESA

Ballona Wetlands Restoration Project

FIGURE 2-8
Alternative 1: Typical Channel Sections

Ballona Creek Channel Realignment

Channel depths would be similar to existing depths, ranging from approximately 2 to 8 feet below mean lower low water (MLLW) (channel bed invert elevation of approximately -2 to -8 feet North American Vertical Datum of 1988 (NAVD 88)[23]). The restored channel would have a top width of approximately 250 feet, which is similar to the existing channel. The channel banks would be graded to slopes of approximately 5:1 H:V to provide mudflat and low marsh habitat. On the inside of each meander-shaped bend, the channel bank would have a flatter slope to create a channel bar, which is typical of natural tidal creek channels and provides habitat complexity. The existing Ballona Creek channel would be filled between the created meander-shapes by placing four rock dikes across the channel to form two enclosed areas for fill placement. Following construction, the rock dikes would be left in place to help armor the channel meander-shaped bends (see Erosion Control Features in Section 2.2.2.2).

Once constructed, the majority of the partially earthen channel meander-shaped bends would only be partially confined to a rigid alignment. Some gradual channel migration and localized erosion and sedimentation would occur. The overall channel location would be guided by the sloping restored marsh plain and adjacent upland habitats. The channel alignment would be fixed only where required to protect adjacent infrastructure (Figure 2-8 *Alternative 1: Typical Channel Sections*; see the “Erosion Control Features” description and Figure 2-16, *Alternative 1, Phase 1: Perimeter Levee Armoring Plan*, and Figure 2-17, *Alternative 1, Phase 2: Perimeter Levee Armoring Plan*, in Section 2.2.1.2, *Alternative 1: Flood Risk and Stormwater Management*). In these locations, the restoration proposes some setback bank armoring (buried rock protection for bank stabilization; see Figure 2-7, *Alternative 1, Phase 1: Levee Sections*, and Section 2.2.2.2, *Alternative 1: Flood Risk and Stormwater Management*). The restored Ballona Creek banks and floodplain would experience some level of periodic erosion and deposition, which are typical for natural river and estuarine environments. The goal is to accommodate and support this level of natural channel and floodplain dynamics, while protecting developed areas outside the Project boundary. While these active processes may require periodic maintenance and adaptive management (e.g., removal of any major channel blockages such as sediment or debris), they also would benefit ecological processes such as natural disturbance regimes.

Area A

Phase 1 restoration within Area A would include construction of a perimeter levee along Fiji Way and Lincoln Boulevard and excavation (total net excavation volume of approximately 1,370,000 to 1,400,000 cubic yards from Area A) down to the previously filled marsh plain elevations (approximately 5 feet NAVD 88). Tidal channels would be excavated within the restored marsh to convey tidal flows and provide foraging habitat. Slopes between the marsh and levee would be graded to provide fringe salt pan and seasonal wetland habitats as well as upland and transition

[23] The North American Vertical Datum of 1988 (NAVD 88) is the vertical elevation control datum established for vertical control surveying in the United States and accounts for the fact that mean sea level is not the same equipotential surface at all tidal bench marks. NGVD 29 stands for National Geodetic Vertical Datum of 1929, a system that was used by surveyors and engineers for most of the 20th Century. It has been the basis for relating ground and flood elevations, but it has been largely replaced by the more accurate North American Vertical Datum of 1988 (NAVD 88). The Corps uses NGVD 29 in the context of this Project because the Ballona Creek channel and levee system were built to that datum. This EIS/EIR uses NAVD 88 because it is more accurate and because it is the current national geodetic vertical datum as of the drafting of the EIS/EIR.

habitat between uplands and wetlands. The excavated soil would be used to build the levees and exported to other areas on site as described below.

Perimeter Levee

The upland perimeter around the restored wetlands would be raised and/or regraded to function as a flood risk management levee, a modified LACDA project feature that would be operated and maintained by LACFCD. This levee would replace the existing north Ballona Creek channel levee and maintain or improve the existing level of flood risk protection for Fiji Way from Ballona Creek flooding. This levee would separate the restored wetlands from the Fiji Ditch. The levee would be constructed with a top width of 20 feet and would be approximately 6,300 feet long. The levee would include a 12-foot-wide maintenance access road on the top that would serve the dual purpose of providing a compatible public access trail.

Salt Pan and Seasonal Wetland Habitats

The restored slopes would be very broad (approximately 80:1 H:V to 100:1 H:V) and would vary somewhat to create microtopography. Slight depressions would be created along the perimeter of the high marsh and transition habitats to encourage the formation of salt pan and seasonal wetland habitat. These perimeter salt pans will function differently than the historic and existing salt pan habitat in West Area B. The historic salt pan habitat formed due to closure of the inlet between the wetlands and ocean and resulting evaporative conditions. The existing remnant salt pan habitat conditions include rain falling on the historically salty soils and evaporating, with a small area receiving periodic tidal inundation (e.g., approximately 3 acres in the northeast arm adjacent to the branch channel during king tides or once or twice per year). In contrast, the proposed perimeter depressions in Area A would be inundated infrequently by high tides, pond, and then evaporate, forming the salt pans. The topography will be graded to facilitate salt pan formation, but the salt pans would form on their own through natural processes and adaptive management may be used to encourage their development. Depressions also would be created higher up in transition and upland habitat to restore seasonal wetland habitat. With future sea level rise, restored seasonal wetland habitat may transition naturally to salt pan habitat as it is inundated by higher tides.

Tidal Channels

New tidal channels would be excavated in Area A to restore sinuous and branching networks of tidal channels through the wetlands. The largest channels would be up to 5 feet below the restored marsh plain, or approximately 0.4 feet above MLLW (channel bed elevations of approximately 0.2 foot NAVD 88). The smaller channels would be intertidal and would drain at low tide. The larger, subtidal channels (widest and deepest) would branch into smaller distributary channels, with depths varying from approximately 2 to 4 feet below the restored marsh plain (channel bed elevations of approximately 1.2 to 3.2 feet NAVD 88).

Soil Reuse and Disposal

Material excavated from Area A (approximately 1,730,000 cy of excavation) would be used to construct new levees in Areas A and B (approximately 330,000 to 360,000 cy of fill in Area A and 530,000 to 570,000 cy of fill in North Area B including stockpile for use in Phase 2), as well as the transition zones, upland peninsula, and other features in Area B. Additional excavated material would be reused on site to benefit the restoration and reduce the amount of surplus soil that would otherwise need to be disposed of off-site. Up to approximately 1.2 million cubic yards of additional fill material may be available after construction of restoration elements in Areas A.

This material would be placed in upland restoration areas in Area C. Any surplus soil that is not placed on site would be disposed of off-site. Refer to Section 2.2.2.5, *Alternative 1: Implementation and Restoration Process*, for more detail on excavation that would take place during this Alternative.

North Area B

Between the new Culver Boulevard levee and the south bank of the realigned Ballona Creek, Alternative 1 proposes a gently sloping transition from upland habitats along the levee down to vegetated marsh habitat and mudflat habitat along the restored Ballona Creek channel banks. However, in Phase 1, the Culver Boulevard levee would have a steeper slope down to the restored marsh to stockpile fill to be used in Phase 2.

Tidal wetlands would be restored between the new Culver Boulevard levee and the realigned portion of Ballona Creek in North Area B, with a full tidal connection between the wetlands and Ballona Creek (Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*). Existing elevations in North Area B range from approximately 6 to 9 feet NAVD 88. North Area B would be graded to create a marsh plain drainage basin between the realigned channel and the new levee, with elevations from 4.5 to 6.5 feet NAVD 88. The marsh plain basin would slope towards a tidal channel system that drains downstream to the outside bend of the Area B channel meander-shape. The marsh plain basin and channel system would also convey Ballona Creek overbank flows during storm events.

Culver Boulevard Levee

A new levee would be constructed north of Culver Boulevard to replace the existing south Ballona Creek channel levee and reduce flood risk compared to the current risk for Culver Boulevard and areas to the south (see discussion of existing flood risk in Section 3.9, Hydrology and Water Quality). The Culver Boulevard levee would extend from the Culver Boulevard Bridge along Culver Boulevard to the Interim Levee (approximately 1,300 feet) (Figure 2-5, *Alternative 1, Phase 1: Preliminary Grading Plan*). In Phase 2, the Culver Boulevard levee would be extended to the south along Culver Boulevard and around West Area B (4,500 feet).

In Phase 1, the Culver Boulevard levee would initially be constructed with a top width of 120 feet in order to stockpile fill from Area A for use in Phase 2 levee construction. The levee core would have a top width of approximately 15 feet and a bottom width of 50 feet. In Phase 1, the Culver Boulevard levee, including stockpiled fill, would have a slope of approximately 5:1 H:V down to restored North Area B marsh at elevation 6.5 feet NAVD 88. The levee would be offset from Culver Boulevard by 20 to 30 feet to allow for road drainage to the area between the road and the levee and to avoid existing utilities along Culver Boulevard, which would remain in place. Approximately 530,000 to 570,000 cubic yards of fill would be placed to construct the levee including the stockpiled fill.

The levee crest elevation is expected to be approximately 20.5 feet NAVD 88, which would include an allowance for sea level rise and improve the existing level of flood risk protection, as described in greater detail below under *Flood Risk and Stormwater Management*. Sea level rise is discussed in greater detail in Section 3.9, *Hydrology and Water Quality*, Section 3.3, *Biological Resources*, and Section 3.17, *Utilities and Service Systems*. The levee would include a 12-foot-wide maintenance access road and a public access trail on top (described further below).

Interim Levee

During Phase 1 of the ecosystem restoration, an Interim Levee (approximately 1,000 feet long) would be constructed between the new Culver Boulevard levee and the existing Ballona Creek channel levee along West Area B. The interim levee would have 5:1 H:V side slopes on the Ballona Creek side. The levee would be constructed with a top width of 20 feet and would include a 12-foot-wide maintenance access road and a public access trail on top.

Tidal Channels

New tidal channels would be excavated in North Area B between the new channel and the interim levee to create sinuous and branching networks of tidal channels through the wetlands. The largest channels (widest and deepest) would connect up to the culverts that connect to Southeast Area B and would be up to 7 feet below the restored marsh plain, or approximately 1.8 feet below MLLW (channel bed elevations of approximately -1.8 feet NAVD 88) (see Table 3-1 in the Preliminary Design Report in Appendix B1 for all channel dimensions). The smaller channels throughout the rest of the marsh would be intertidal and would drain at low tide. The larger channels would branch into smaller distributary channels, with depths varying from approximately 2 to 4 feet below the restored marsh plain (channel bed elevations of approximately 1.2 to 3.2 feet NAVD 88).

West Area B

West Area B wetlands would continue to be managed with the same self-regulated tide (SRT) gates during Phase 1 as in baseline conditions.

South and Southeast Area B

The restoration of South and Southeast Area B would include construction of the three new water-control structures described in the following section and modifications to the existing Freshwater Marsh water-control structures to provide water sources directly from Ballona Creek and from the Playa Vista Development Freshwater Marsh to create brackish marsh habitat. This enhancement also would include grading to create tidal channels to enhance habitat conditions, salt pans, and berms to allow for higher managed water levels and brackish marsh management.

Water-Control Structures

North Area B to Southeast Area B (Structure 3 in Figure 2-4). A new bank of multiple culverts would be installed near the intersection of Culver Boulevard and Jefferson Boulevard to provide managed tidal flows directly from Ballona Creek into South and Southeast Area B (Figure 2-5, *Alternative 1, Phase 1: Preliminary Grading Plan*). This connection would allow for enhanced water level management in South and Southeast Area B independent of West Area B water management, thereby allowing for continued management of existing habitats in West Area B. The bank of multiple culverts (e.g., six 5-foot-diameter culverts) would be constructed with control valves/gates such as slide and/or flap gates or SRT gates to manage flows and water levels. The gated culverts and the perimeter berms would allow for a full range of tides (up to an elevation acceptable for habitat and flood risk management including storm drainage), but would limit high water levels in South and Southeast Area B during storm events in Ballona Creek. These culverts would allow tidal flows and stormwater to discharge from South/Southeast Area B to Ballona Creek. Box culverts (i.e., rectangular culverts) would be placed within the roadways as there are utilities that must be crossed that would be difficult to relocate. Before and after the roadway, the conduits may transition to a series of pipes to allow installation of traditional flap gates.

Freshwater Marsh (Structures 5, 6, and 8 in Figure 2-4). The Playa Vista Development Freshwater Marsh would be maintained and managed as it is under baseline conditions. Under current operations, much of the Freshwater Marsh outflow discharges through the culvert to Ballona Creek. The Freshwater Marsh existing water-control structures described below would be adjusted and/or modified and a new water control structure (such as a culvert, weir, or tide gate) would be installed between the Freshwater Marsh and Southeast Area B to allow for a greater portion of the outflow to be conveyed into Southeast Area B to support brackish marsh.

The Freshwater Marsh has three existing water control outlet structures. In the northwest corner, a weir structure controls water levels and outflow to a culvert with flap gates, which then releases flow to Ballona Creek. Under baseline conditions, all dry-weather flows and rain events less than the 1-year storm event flow out of the Freshwater Marsh through this culvert to Ballona Creek. The culvert outlet at Ballona Creek would be maintained as is and drain into a new tidal channel in North Area B, as shown in Figure 2-5, *Alternative 1, Phase 1: Preliminary Grading Plan*.

In the south end of the Freshwater Marsh, the second existing structure, a culvert to Southeast Area B, could be used for maintenance but currently is closed. This structure would be modified (e.g., by installing a weir box and opening the structure) to allow for regular discharge into Southeast Area B while maintaining water levels in the Freshwater Marsh that exist under current operations.

The third existing outlet structure is a weir that allows water to flow into Southeast Area B. Under current operation, during storm events greater than the 1-year event,[24] stormwater flows over this overflow weir to Southeast Area B. This weir structure would not be modified.

Brackish Marsh (Structure 7 in Figure 2-4). An area of brackish marsh would be established in Southeast Area B, adjacent to the existing Freshwater Marsh. Outflow from the Playa Vista Development Freshwater Marsh would be routed into Southeast Area B to mix with enhanced tidal flows and support the brackish marsh. A low berm (6.8 ft NAVD 88) would be constructed to retain freshwater flows in this part of the marsh. The berm would have a top width of 5 ft, slope to the marsh at 10:1 H:V on both sides, and require 350 cy of fill to construct. A new culvert with weirs and gates would be installed in the Freshwater Marsh berm east of the existing overflow weir to allow for more frequent discharge from the Freshwater Marsh to Southeast Area B. The berm crest elevation would be 9 feet NAVD 88 and support marsh vegetation.

Gas Company Road (Structure 4 in Figure 2-4). The existing drainage culvert under the Gas Company Road between South and Southeast Area B would be modified or replaced with a new water control structure to allow for greater flows between the two areas and enhanced tidal flow management. The new or modified structure would include gates and/or weirs to allow for management flexibility (e.g., the ability to connect South Area B to either Southeast Area B or West Area B).

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24 A 1-year event could happen multiple times over a year.

Culver Boulevard (Structure 2 in Figure 2-4). A weir would be added to the existing culverts under Culver Boulevard between West Area B and South Area B to allow for management (e.g., to allow for higher water levels in South Area B than in West Area B, while maintaining the existing storm drainage from South/Southeast Area B to West Area B).

Tidal Channels

Sinuous and branching tidal channel networks would be created by excavating new channels to provide circulation, subtidal and intertidal channel habitat (including potential Belding's savannah sparrow foraging habitat), and barriers to predator access. The largest channels would be up to 7 feet below the restored marsh plain, or approximately 1.6 feet below MLLW (channel bed elevations of approximately -1.8 feet NAVD 88). The larger channels would branch into smaller channels, with depths varying from approximately 2 to 5 feet below the restored marsh plain (channel bed elevations of approximately 0.2 to 3.2 feet NAVD 88). The smaller distributary channels would be intertidal and would drain at low tide. Approximately, 9,400 cy would be excavated to construct the channels in South and Southeast Area B. Channel layouts for Alternative 1 are illustrated in Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*.

Berms

Berms would be constructed to maintain protection of Culver Boulevard, Jefferson Boulevard, and SoCalGas from seasonally high tide levels and storm events. Soil excavated from the tidal channels in South and Southeast Area B and/or soil from Area A would be used to construct the berms (11,300 cy would be required). The berms would be offset from Culver and Jefferson Boulevards by a 30 foot-wide bio-swale to allow for runoff from the road to drain into the area between the road and the berm and to avoid existing utilities, including the underground high-voltage power transmission line within the southern Culver Boulevard embankment, which would remain in place.

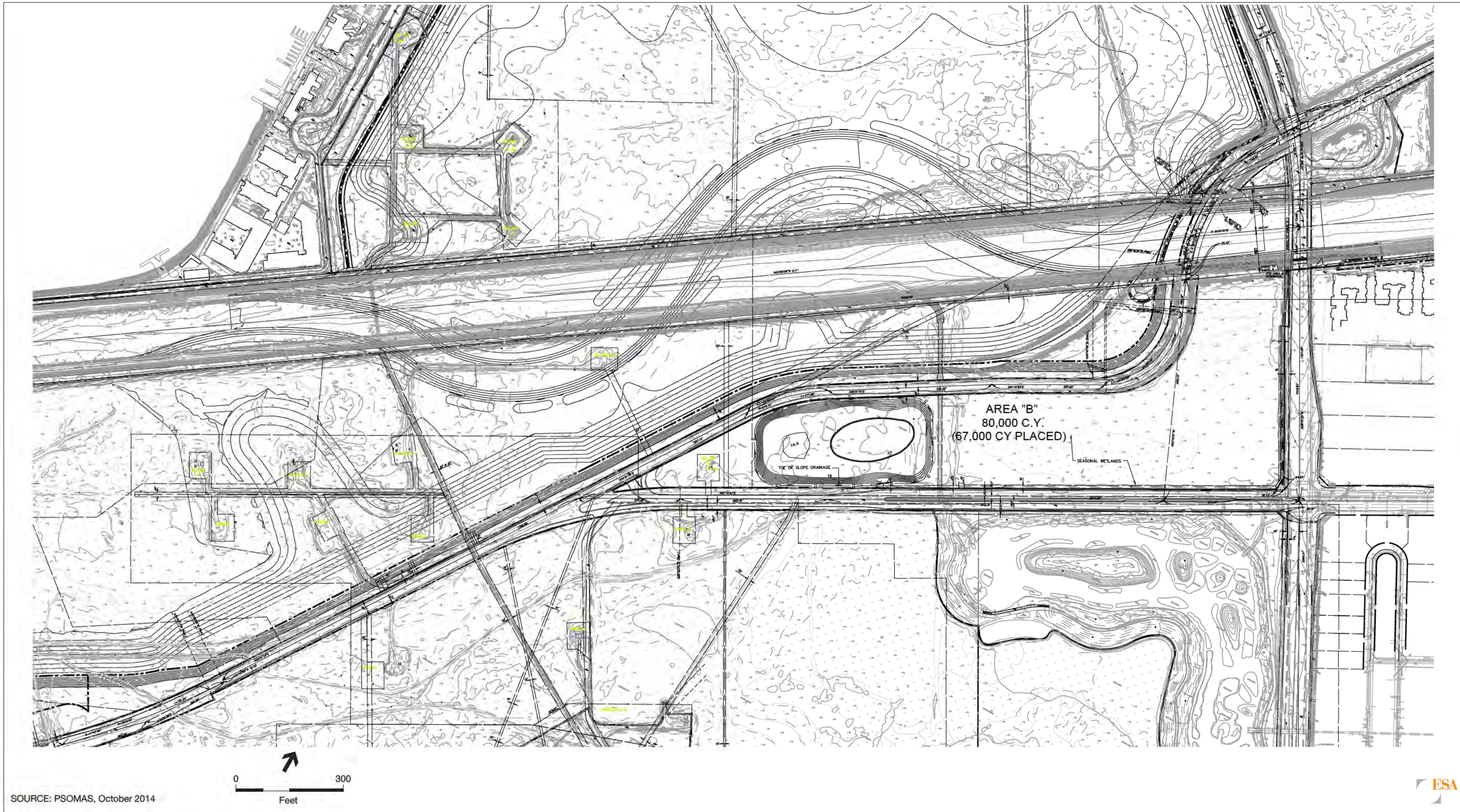
The berm crest elevations would be set to 9 feet NAVD 88 to allow for higher managed water levels while maintaining the existing level of inundation protection for Culver Boulevard and the SoCalGas Property. The berms would be offset from Culver Boulevard and the SoCalGas Property by 30 feet, with a top width of 8 feet, and side slopes of 5:1 H:V down to the marsh and 3:1 H:V on the opposite side.

Salt Pans

Portions of South and Southeast Area B would be graded and managed to encourage salt pan formation (e.g., around the perimeter of the marsh, as shown in Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*, or within the enhanced managed marsh). Shallow depressions would be created that infrequently would inundate, pond, and evaporate water.

East Area B

Soil excavated to restore wetlands in Area A would be stockpiled temporarily in the western portion of East Area B in Phase 1 for use in Phase 2 levee construction (Figure 2-9, *Alternative 1, Phase 1, East Area B:Proposed Grading*). The proposed elevations in Phase 1 would range from approximately 12 feet NAVD 88 to 17 feet NAVD 88. Corresponding fill heights would range from a few feet to approximately 9 feet above existing grade.



Ballona Wetlands Restoration Project

Figure 2-9
Alternative 1, Phase 1, East Area B: Proposed Grading

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North and South Area C

Soil excavated to restore wetlands in Area A would be used in North and South Area C to create elevated areas of upland habitat (Figure 2-10, *Alternative 1, North Area C:Proposed Grading, High Fill (600,000 cy or 720,000 cy adjusted)*; Figure 2-11, *Alternative 1, South Area C: Proposed Grading, Low Fill*). The adjusted fill volumes refer to the volume of fill that is compacted down to the in-place volume of fill. Existing elevations in Area C range from approximately 12 to 28 feet NAVD 88. Soil would be placed up to an elevation between 40 and 55 feet NAVD 88 (or a height of up to approximately 15 to 30 feet above existing grade). The upland areas would be graded so that rainfall would flow into and support seasonal wetlands and other upland habitats in Area C. Side slopes of the upland areas would vary from approximately 3:1 H:V to 20:1 H:V, as depicted in Figure 2-10, *Alternative 1, North Area C:Proposed Grading, High Fill (600,000 cy or 720,000 cy adjusted*), and Figure 2-11, *Alternative 1, South Area C:Proposed Grading, Low Fill*.

The existing Fiji Ditch in North Area C would be realigned to capture all flows in North Area C and restored to support riparian habitat. The existing channel functions as a storm drain ditch which extends from Culver Boulevard to the Lincoln Boulevard storm drain system, with an overflow culvert under Lincoln Boulevard to the Fiji Ditch in Area A. The restored Fiji Ditch would include a riparian corridor sloping from 6 feet to 4 feet NAVD 88 and meander shape between the higher elevation upland areas. The restored channel would continue to function as a storm drain channel once restoration is complete. The transition from the upland area to the riparian corridor would be a 10:1 H:V slope that is approximately 10 to 20 feet wide. The base of the riparian corridor would vary from 70 to 120 feet wide, with an average width of approximately 90 feet. Within the Fiji Ditch riparian corridor there would be a low flow channel that would be 10 to 15 feet wide and 1 foot deep.

Revegetation of Graded and Disturbed Areas (Alternative 1, Phase 1)

Revegetation activities during Phase 1 restoration would include invasive-nonnative plant species controls (primarily hand or mechanical removal) and the planting and seeding of native vegetation. Invasive-nonnative plant species would be removed or treated according to the protocols described in the Invasive Plant Material Treatment, provided in Section 2.2.2.5, *Alternative 1: Implementation and Restoration Process*. Approaches to establishing native vegetation communities are described below. Additional details of implementing revegetation procedures are described under the heading *Revegetation of Graded and Disturbed Areas* in Section 2.2.2.5.

Low and Middle Marsh

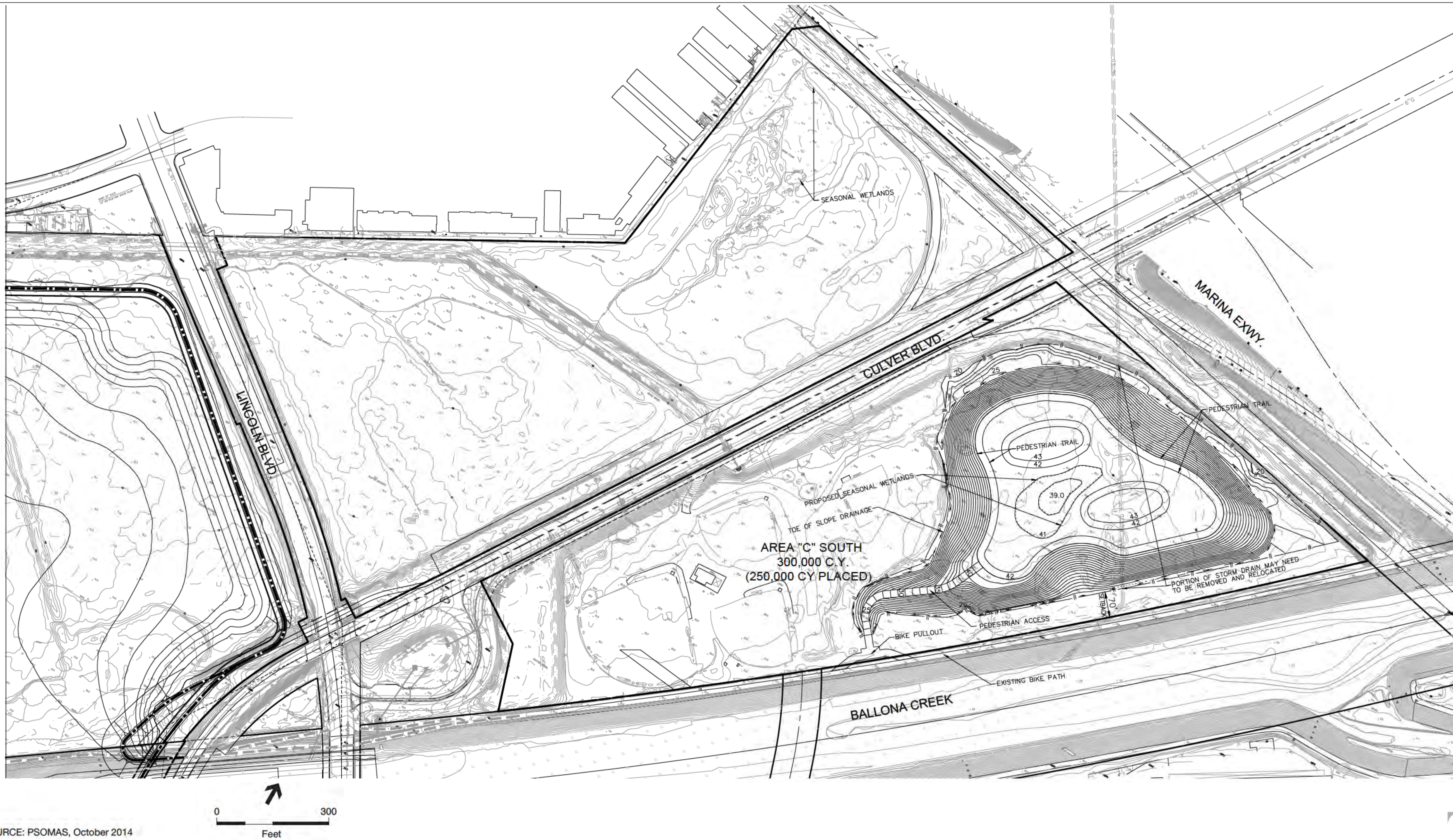
Low and middle tidal marsh areas would be revegetated by natural recruitment to the maximum extent possible. If natural recruitment is not feasible, then supplemental plantings or seedings would be required. Planting also would be used to ensure adequate seed source and establishment, and to stabilize areas susceptible to erosion. California cordgrass (*Spartina foliosa*), the primary plant species of the low marsh, does not occur at the Ballona Reserve and would need to be introduced from a nearby source, such as the Bolsa Chica Ecological Reserve, Upper Newport Bay Ecological Reserve, or Seal Beach National Wildlife Refuge. Irrigation for low and middle tidal marsh areas would not be required because these areas would receive regular tidal inundation.

SOURCE: PSOMAS, 2015

ESA

Ballona Wetlands
Restoration Project

Figure 2-10
Alternative 1, North Area C: Proposed Grading,
High Fill (600,000 cy or 720,000 cy adjusted)



SOURCE: PSOMAS, October 2014

ESA

Ballona Wetlands Restoration Project

Figure 2-11
Alternative 1, South Area C: Proposed Grading, Low Fill

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High Marsh and Transition Zone

High marsh and transition zone areas would be planted and seeded to establish target species in this area of high competition from weeds and dry and often hyper-saline conditions. Depending on rainfall and soil moisture levels, temporary above-ground irrigation may be used in the high marsh or transition areas. If rainfall is below average or is considered inadequate to establish high marsh and transition zone vegetation, or to improve plant survival or establishment, an irrigation system consisting of a pressurized main line with hose bibs for manual watering or an automated overhead spray system would be used. The irrigation system would be located above the tidal zone to allow for plant establishment in this environment (more information about irrigation is presented below and under the heading *Water Sources for Restoration and Irrigation*). Within transition zone habitats, higher elevation areas of unvegetated habitats or salt pan may develop and persist for some time before more complete vegetation colonization occurs with progressive sea level rise.

Irrigation methods and estimated annual water usage for low, moderate, and high water usage levels for each habitat type are shown in Table 2-4, *Irrigation Methods and Water Use Estimates*.

Brackish Marsh

Brackish marsh revegetation would include a combination of natural recruitment and/or active planting and seeding to provide adequate diversity and seed source. Supplemental water would be provided by a manual or automated irrigation system and/or a watering truck with hoses in areas accessible by road, as discussed under *Water Sources for Restoration and Irrigation* in Section 2.2.2.5, *Alternative 1: Implementation and Restoration Process*.

Seasonal Wetlands

The seasonal wetlands would be revegetated with a combination of planting and/or seeding. Initial irrigation would be provided in dry years to help establish target species.

Supplemental water would be provided by a manual or automated irrigation system and/or a watering truck with hoses in areas accessible by road, as discussed under *Water Sources for Restoration and Irrigation* in Section 2.2.2.5, *Alternative 1: Implementation and Restoration Process*.

Riparian Scrub and Woodland

Riparian scrub and woodland areas would be seeded and planted. Plantings would include container plants and willow pole cuttings. Willow pole cuttings would be collected on-site, near the Freshwater Marsh. A temporary drip or spray irrigation system would be installed for container planting establishment in the first several growing seasons, depending on the size of this habitat. Pole cuttings would not require supplemental irrigation because willows are able to reach deeper into the soil profile where additional moisture is available along the capillary fringe. Plantings showing signs of herbivory may require foliage protection cages to prevent wildlife browsing that is detrimental to plant survivorship.

TABLE 2-4
IRRIGATION METHODS AND WATER USE ESTIMATES

Habitat Type	High Water Option		Moderate Water Option		Low Water Option	
	Method of Irrigation	Water Use Estimate (gallons per acre per year)	Method of Irrigation	Water Use Estimate (gallons per acre per year)	Method of Irrigation	Water Use Estimate (gallons per acre per year)
Low Marsh	None	0	None	0	None	0
Middle Marsh	None	0	None	0	None	0
High Marsh and Transition Zone	Spray Irrigation System (10 months)	630,900 for High Marsh; 630,900 for Transition Zone	Water Cannon Spray for 3 Months for High Marsh; Hand Watering for 3 Months for Transition Zone	328,400 for High Marsh; 204,500 for Transition Zone	None	0
Brackish Marsh	Water Truck for 3 Months	525,700	Hand Watering for 3 Months	328,400	None	0
Seasonal Wetland	Spray Irrigation System (10 months)	630,900	Hand Watering for 3 Months	204,500	None	0
Riparian Scrub and Woodland	Spray Irrigation System (12 months)	1,084,600	Drip Irrigation System (10 months)	790,800	None	0
Upland Scrub	Spray Irrigation System (6 months)	190,100	Drip Irrigation System (6 months)	149,800	None	0
Upland Grassland	Spray Irrigation System (6 months)	190,100	None	0	None	0
Dunes	Drip Irrigation System (6 months)	149,800	Hand Watering for 3 Months	82,100	None	0
	Total Water Use	***4,033,000***		***2,088,500***		

NOTE: Low and middle marsh areas do not require irrigation because natural tidal inundation is sufficient for plant establishment.

SOURCE: WRA, 2014. Ballona Wetlands Ecological Reserve Irrigation Water Use Estimate, October 3.

Upland Scrub and Grasslands

Upland scrub areas may be only seeded or revegetated with a combination of planting and seeding. Depending on rainfall and soil moisture levels, an automated irrigation system may be installed to provide supplemental water to the plantings for 6 months up to the first several growing seasons if needed. Plantings showing signs of herbivory may require foliage protection cages to prevent wildlife browsing that is detrimental to plant survivorship.

Dunes

Dunes may be only seeded or revegetated with a combination of planting and seeding. Irrigation may not be needed if rainfall during the growing season is adequate. If rainfall is below average or soil moisture is determined to be inadequate to establish dune vegetation, a drip irrigation system may be installed to provide supplemental water. In areas accessible by road, a watering truck with hoses also may be used to provide manual supplemental irrigation. Plantings showing signs of herbivory may require foliage protection cages to prevent wildlife browsing that is detrimental to plant survivorship.

Phase 2 Restoration

In Phase 2, the existing West Area B managed wetland habitat would be restored to full tidal wetland by breaching and lowering the remaining western portion of the south Ballona Creek channel levee along West Area B (Figure 2-1, *Alternative 1, Phase 2: Proposed Habitats*). Stockpiled fill from the Culver Boulevard levee and East Area B would be removed and used to build the West Area B levee and a berm around the salt pan prior to breaching the existing levee. A low perimeter berm would be built around the existing salt pan to enhance and preserve the salt pan habitat for as long as sea level rise allows (i.e., around 2050). Refer to Section 2.2.2.6 for a discussion on sea level rise. The interim levee would be lowered and reconfigured to create the berm and an upland peninsula extending from the Culver Boulevard levee between north and West Area B. The Culver Boulevard levee slope would be regraded to create additional marsh habitat (approximately 0.7 acres) after the stockpiled material is removed. Figure 2-12, *Artistic Rendering of West Area B Levee*, shows an artistic rendering of the proposed habitat restoration along the Area B levee. The western portion of East Area B would be regraded to establish upland habitat. A new water control structure, consisting of a bank of culverts, would be installed in the new West Area B levee between west and South Area B to maintain the culvert connection under Culver Boulevard and allow for continued management of the South and Southeast Area B managed wetlands.

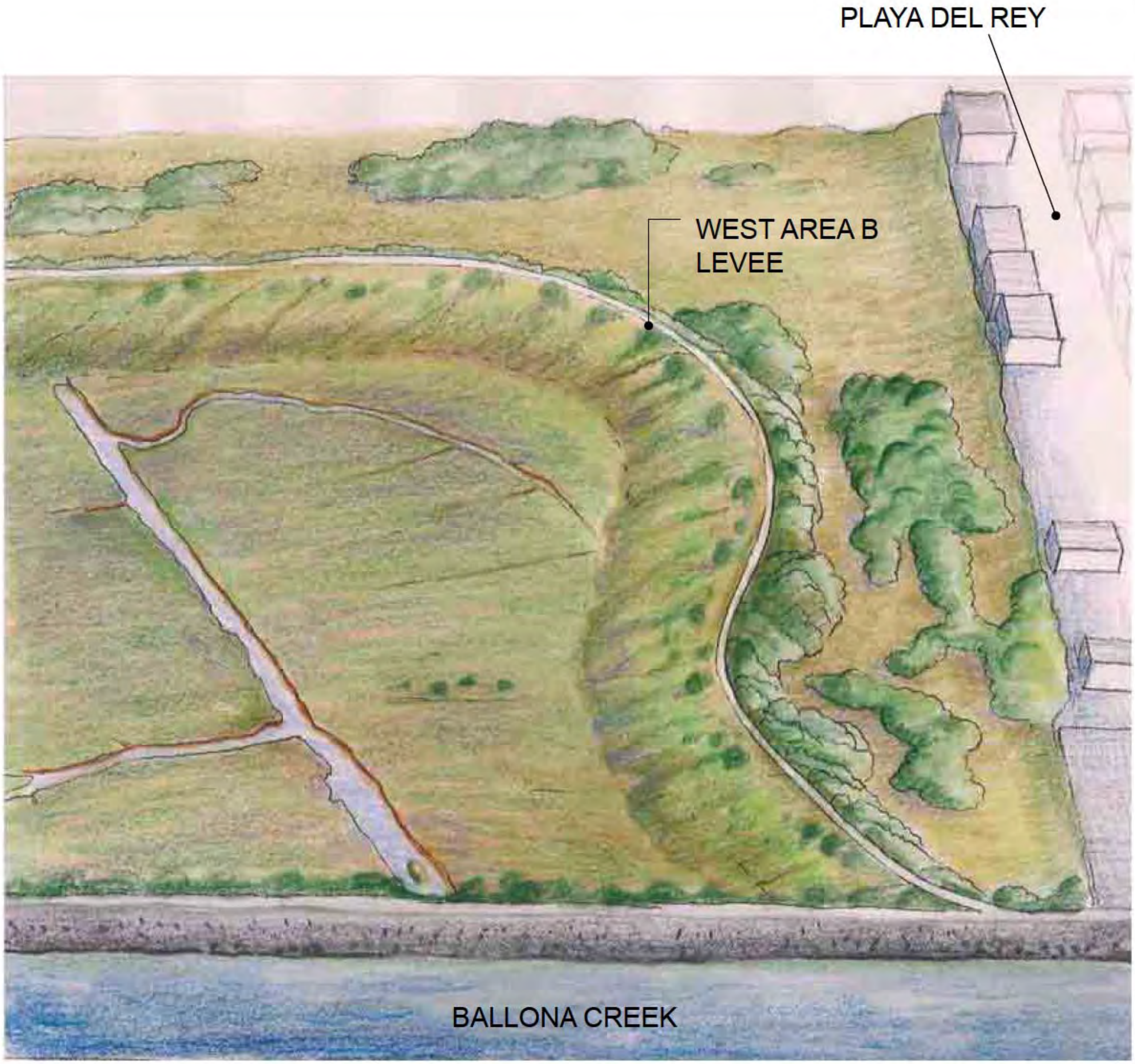
Remaining gas wells would be decommissioned and the gas well area would be restored in Phase 2. No ecosystem restoration would occur in other portions of Area A or in Area C under Phase 2 of Alternative 1. Existing restoration efforts completed under Phase 1 would continue to be monitored and managed toward established success criteria.

Restored Habitats (Alternative 1, Phase 2)

West Area B

A partially-earthen levee would be built along the perimeter of West Area B using soil stockpiled in the Culver Boulevard levee and East Area B (see West Area B Levee description below in the Grading and Hydrology section). The West Area B levee would provide upland habitat that would slope down to marsh or salt pan.

A small perimeter berm would be constructed around the existing salt pan to preserve and enhance the existing salt pan habitat (see Salt Pan Perimeter Berm description below in the Grading and Hydrology section). The perimeter berm would be constructed at an elevation that would support marsh habitat. Portions of the existing salt pan habitat contain ponded water when it rains, providing salt pan habitat functions such as bird roosting; however, only a limited portion of the existing salt pan receives periodic tidal inundation and evaporation, which also sustains and supports salt pan functions. The new berm would be overtopped by monthly/seasonal spring high tides, providing infrequent tidal inundation, ponding, and subsequent evaporation in the salt pan. The berm therefore would enhance salt pan habitat functions and prevent the low elevation salt pan



SOURCE: ESA , October 2012

Ballona Wetlands Restoration Project

Figure 2-12
Artistic Rendering of West Area B Levee

habitat from converting to marsh or mudflat habitats with restoration of West Area B to full tidal inundation. After decommissioning the gas wells within the salt pan, the gas well pads and access roads will be lowered to allow for additional salt pan habitat to develop.

New tidal channels would be excavated in West Area B to create a sinuous channel network within the full tidal wetland area between the new West Area B levee and the salt pan berm. The remaining south Ballona Creek channel levee along West Area B would then be lowered and breached to restore West Area B to full tidal wetland.

After completion of the Phase 2 full tidal restoration, much of West Area B is expected to convert to mudflat habitat over several decades if cordgrass is not planted and/or seeded (see Section 2.2.2.6). West Area B is at low marsh elevations, so existing pickleweed may not persist; however, the area would support cordgrass, but natural recruitment of native cordgrass is not likely to occur at the restored site. Alternative 1 includes the option of selectively planting and/or seeding native cordgrass in Phase 2 to encourage low marsh habitat development in this area. The decision on whether cordgrass is seeded/planted would occur through the adaptive management process.

North Area B, Upland Peninsula, East Area B, and South Area B

The Culver Boulevard levee would be regraded to remove stockpiled material and create gently sloping transition and upland habitats between the marsh and levee, including dunes and a small upland peninsula at the curve in the Culver Boulevard levee. An upland peninsula would be built in roughly the same location as the interim levee and would provide upland habitats and high tide refugia for wildlife (see Area B Upland Peninsula description in Grading and Hydrology section below). The western portion of East Area B would be regraded to remove stockpiled material and restored to upland and seasonal wetland habitat. South/Southeast Area B would continue to be managed to achieve the habitat restoration objectives described in Phase 1.

Grading and Hydrology (Alternative 1, Phase 2)

Figure 2-2, *Alternative 1, Phase 2: Preliminary Grading Plan*, shows the preliminary grading plan for Phase 2 of Alternative 1. Figure 2-13, *Alternative 1, Phase 2: Perimeter Levees Plan*, and Figure 2-14, *Alternative 1, Phase 2: Levee Sections*, show the levee plan with the locations of typical grading cross-sections. The grading and hydrology for Phase 2 of Alternative 1 is further described below.

West Area B

West Area B Levee

A new levee would be constructed north of Culver Boulevard to replace the existing south Ballona Creek channel levee in West Area B and to provide flood risk protection for Culver Boulevard and areas to the south and west. The West Area B levee would extend approximately 4,500 feet from the Culver levee at the upland peninsula, along Culver Boulevard, north of the businesses at the west end of Culver Boulevard, and between the existing dunes and wetlands along the western Project boundary (Figure 2-2, *Alternative 1, Phase 2: Preliminary Grading Plan*). The levee would be offset from Culver Boulevard by 30 feet and include a 20 to 30 foot-wide or more bio-swale to allow for runoff from the road to drain to the area between the road and the levee and to avoid existing utilities along Culver Boulevard, which would remain in place. The levee top width would be 20 feet and the levee would include a 12-foot-wide access road that would also be used to provide compatible public access trails (Figure 2-14, *Alternative 1, Phase 2: Levee Sections*). The levee would be constructed using the soil excavated from the Phase 1 stockpiles along the Culver levee slope and in East Area B.

The levee would be constructed with gradual levee slopes of approximately 20:1 H:V up to an elevation of approximately 10 feet NAVD 88 to provide transition zone habitat between the wetlands and the levee. Above this gentle transition zone slope, a steeper slope of approximately 10:1 H:V would be graded up to elevation 15 feet NAVD 88 with a 5:1 H:V slope up to the crest of the new levee. The levee crest elevation is expected to vary from approximately 17.5 feet NAVD 88 in the east to 16.0 feet NAVD 88 in the west, which would include an allowance for sea level rise and improve the existing level of flood risk protection.

North of the businesses at the west end of Culver Boulevard, the West Area B levee would be offset into the Ballona Reserve away from the property boundary to avoid the stormwater detention and treatment wetland and access improvements implemented in Phase 1 (Figure 2-15, *Stormwater Basin and Emergency and Bus Access Road*; see Culver Boulevard Stormwater Management description in Section 2.2.2.2, *Alternative 1: Flood Risk and Stormwater Management*, and Maintenance Roads and Fire Access in Section 2.2.2.3, *Alternative 1: Public Access and Visitor Facilities*).

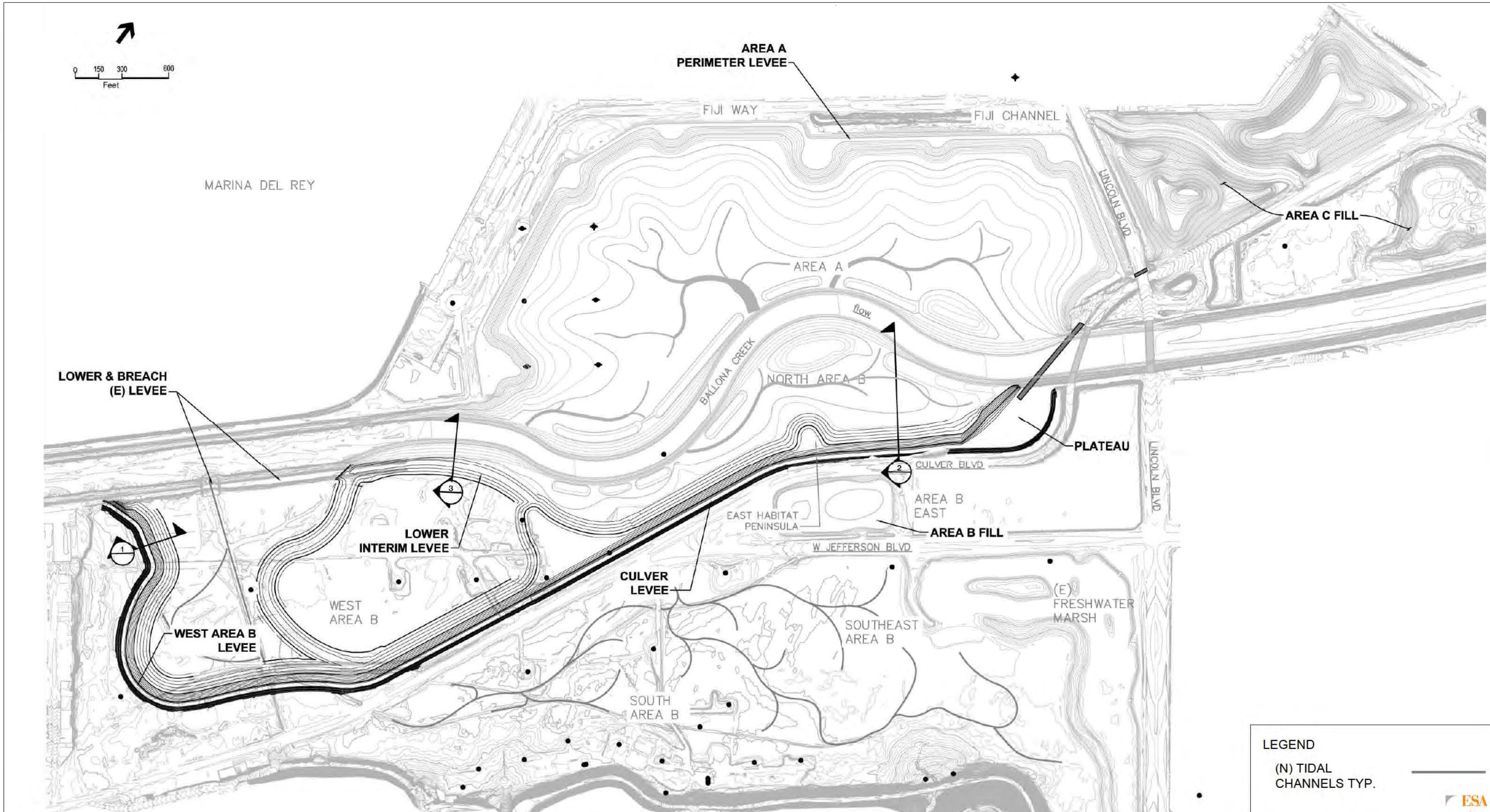
At the northwest corner of Area B, the downstream end of the new West Area B levee would tie in with the existing Ballona Creek channel levee.

Salt Pan Perimeter Berm and Restoration

A new berm would be constructed around the edge of the West Area B salt pan to limit the inundation to the area. The berm would be constructed with a 20:1 H:V slope up to 7.5 feet NAVD 88 to allow only the highest tides to overtop into the salt pan. The berm would be designed so that during spring tides, tide water would shallowly flow over the crest of the berm and/or sections of the berm that are slightly lower elevation overflow “spillways.” With the adjacent topography generally around 4 feet NAVD 88, the berm would be approximately 3.5 feet high. The gas wells in the middle of the salt pan would be decommissioned and removed during Phase 2. The raised well pads would be lowered to around 4 feet NAVD 88 to match the surrounding elevations.

Tidal Channels

New tidal channels would be excavated in West Area B to create a sinuous channel network within the full tidal wetland area between the new West Area B levee and the salt pan berm. The largest channels would be up to 5.8 feet below the restored marsh plain, or approximately 1.6 feet below MLLW (channel bed elevations of approximately -1.8 feet NAVD 88). The larger channels would branch into smaller distributary channels, with depths varying from approximately 2 to 4 feet below the restored marsh plain (channel bed elevations of approximately 1.2 to 3.2 feet NAVD 88). The smaller channels would be intertidal and would drain at low tide.



SOURCE: ESA, October 2014

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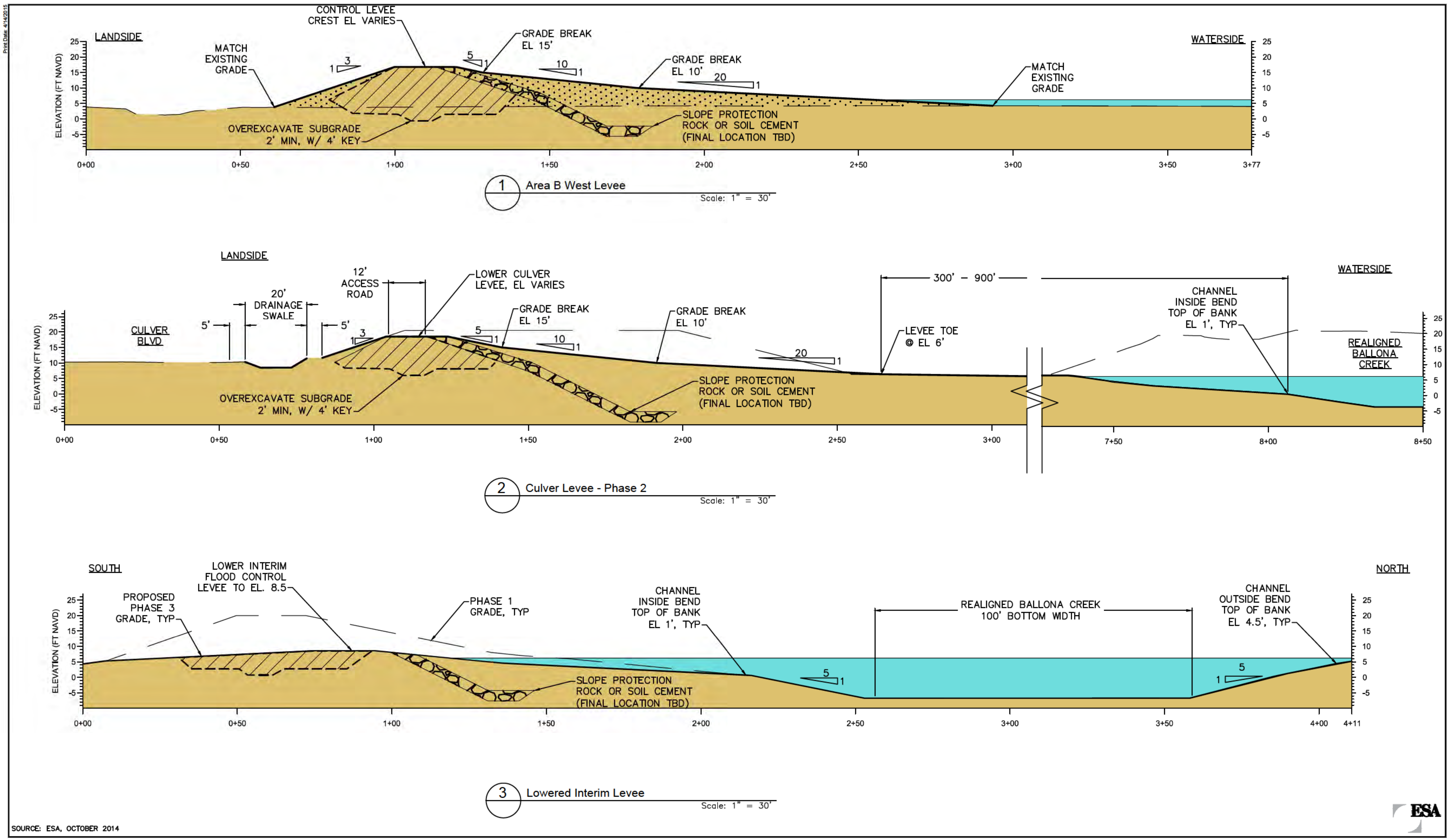
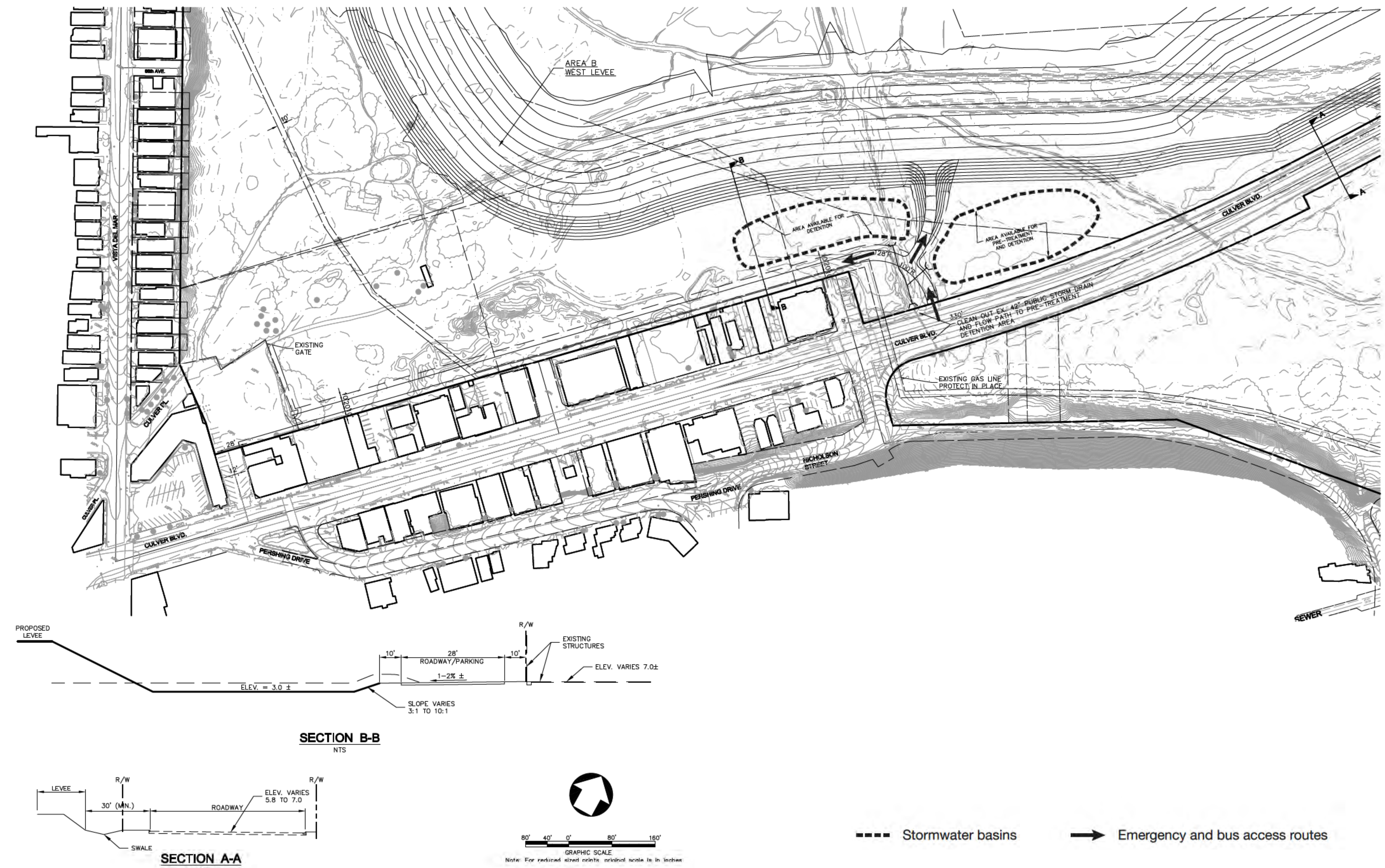
Figure 2-13
Alternative 1, Phase 2 - Perimeter Levees Plan



Ballona Wetlands Restoration Project

FIGURE 2-14
Alternative 1, Phase 2: Levee Sections



SOURCE: PSOMAS, June 2014

Ballona Wetlands Restoration Project

Figure 2-15
Stormwater Basins and Emergency and Bus Access Route

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South Ballona Creek Channel Levee Breach

West Area B would be restored by removing the existing self-regulating tide gate, creating an open tidal channel by breaching the existing Ballona Creek channel levee, and lowering the Ballona Creek channel levee and the interim levee (Figure 2-2, *Alternative 1, Phase 2: Preliminary Grading Plan*). The levee breach in West Area B would be approximately 100 feet wide, with a channel invert elevation of approximately -3 feet NAVD 88 (depth of 2.8 feet below MLLW). The existing levee would be lowered to create mid or high marsh (at an elevation around mean higher high water). The Area B interim levee would be lowered by approximately 9.5 to 12 feet (from 20.5 feet NAVD 88 to between 8.5 and 11 feet NAVD 88) and reconfigured to be the salt pan berm (8.5 feet NAVD 88 crest elevation) and an upland peninsula (11 feet NAVD 88 crest elevation) as described below. A large portion of the pickleweed vegetation in West Area B is at elevations that would support low marsh (cordgrass marsh vegetation) or mudflat under full tidal conditions. These areas therefore would remain at existing grade and vegetation communities would be allowed to naturally transition with no further manipulation to raise or lower the marsh plain.

North Area B

Extra fill stockpiled in the Culver Boulevard levee (approximately 190,000 cubic yards) would be removed to build the West Area B levee and the salt pan berm. The Phase 1 Culver Boulevard levee would have a slope of approximately 5:1 H:V from 6.5 feet NAVD 88 up to the crests of the new levee. In Phase 2, the slope would be reduced to 10:1 H:V from 6.5 feet NAVD 88 up to 15 feet NAVD 88 with the 5:1 H:V slope remaining above 15 feet NAVD 88. The Culver Boulevard levee would initially be constructed with a top width of 120 feet in Phase 1, but this would be reduced to 20 feet in Phase 2. The levee crest elevation is expected to be lowered from 20.5 to 18.5 feet NAVD 88, which would still include an allowance for sea level rise and improve the existing level of flood risk protection. The crest elevations for the new proposed levees around the perimeter of the restoration would be refined during the development of detailed engineering drawings. The levee would include a 12-foot-wide maintenance access road that would also be used to provide compatible public access trails on top.

East Area B

Fill stockpiled in East Area B (approximately 50,000 to 80,000 cubic yards) would also be removed to build the West Area B levee and the salt pan berm. The upland restoration areas would be graded so that rainfall would flow into and support seasonal wetlands and other upland habitats.

Area B Upland Peninsula

The Area B interim levee would be reconfigured into an upland habitat peninsula extending from the Culver Boulevard levee and transitioning into the salt pan berm, roughly in the same location as the interim levee (Figure 2-2, *Alternative 1, Phase 2: Preliminary Grading Plan*). The upland habitat peninsula would:

1. Provide larger areas of upland habitats and high tide refuge for wildlife along the south side of the Ballona Creek channel than without the peninsula (approximately 3.3 acres);

2. Guide and reconverge Ballona Creek storm flows though the realigned Ballona Creek channel back into the existing channel alignment downstream; and

3. Beneficially reuse soil excavated from the interim levee and the West Area B levee.

The top of the peninsula would be at an elevation of approximately 11 feet NAVD 88 and would slope gently down to marsh habitats (at approximately 6.5 feet NAVD 88) at a slope of approximately 20:1 H:V or less.

South and Southeast Area B Managed Wetland Enhancement

In Phase 2, new, larger culverts would be installed under Culver Boulevard, extending to reach West Area B under the West Area B levee, to allow for the option of greater tidal flows between West Area B and South Area B. New gates (e.g., self-regulating tide gates or similar structures) could be added to the culverts to maintain management options for South and Southeast Area B. The gated culverts and the perimeter berms would allow for a full range of typical tides, but would limit high water levels in South and Southeast Area B during storm events in Ballona Creek. The managed wetlands would continue to be managed to enhance habitat conditions, including Belding's savannah sparrow habitat.

Revegetation of Graded and Disturbed Areas (Alternative 1, Phase 2)

Revegetation activities during Phase 2 restoration would be similar to Phase 1 (e.g., for marsh, transition zone, upland, and dune habitats), but on a smaller scale. Revegetation would include controlling invasive-nonnative plant species and the planting and seeding of native vegetation. Invasive-nonnative plant species would be removed or treated per the Invasive Plant Material Treatment described in Section 2.2.2.5, *Alternative 1: Implementation and Restoration Process*. Revegetation of disturbed areas would occur as described therein.

Alternative 1 includes the option to plant California cordgrass in West Area B low marsh habitat as part of Phase 2. The decision on whether cordgrass is seeded/planted would occur through the adaptive management process.

2.2.2.2 Alternative 1: Flood Risk and Stormwater Management

Under Alternative 1, the flood risk management levees would be realigned along Fiji Way in Area A and along Culver Boulevard in West Area B. The levees that would be constructed under Alternative 1 would be engineered to meet or exceed current flood risk management standards.

The restoration would create a wider channel and floodplain system to convey creek flows and tides, allowing waters to spread out over the restored wetland floodplain within the Project site (Figure 2-1, *Alternative 1, Phase 2: Proposed Habitats*). Ballona Creek flows would enter the restoration at the upstream (northeast) end of the Project site from the existing Ballona Creek channel. The existing channel upstream of the restoration is approximately 250 feet wide (width of the potential flow area between the levees). Within the restoration area, the restored channel also would be approximately 250 feet wide and the combined channel and wetland floodplain system would expand this width to approximately 2,500 feet (0.5 mile) wide between the new levees to the north in Area A and the south in Area B. At the downstream (southwest) end of the restoration, flows in the restored channel/wetland system (approximately 0.3 mile or 1,800 feet in width) would converge and re-enter the existing channel and armored levee system and flow downstream to the ocean. During major creek flood events, flow would expand to fill the entire width of the restoration (i.e., the width of the restored/widened channel/wetland cross-section). Compared to storm flows in the existing channel, storm flow velocities in the restored channel and wetland areas would generally be lower due to the presence of vegetation and the wider cross-section; however, the wider restored channel/wetland cross-section is expected to maintain similar flow conveyance and maximum water surface elevations compared to baseline conditions (ESA PWA 2013a).

Alternative 1 also would include new water-control structures to maintain and enhance existing managed wetland in South/Southeast Area B. The new culverts would include gates to limit high water. Berms also would be constructed along the low spots in Culver Boulevard and along the SoCalGas property boundaries within the Ballona Reserve (Figure 2-1, *Alternative 1, Phase 2: Proposed Habitats*).

The developed commercial area adjacent to the southeast corner of West Area B is at a low elevation and has experienced flooding historically. A new stormwater basin would be created north of these businesses to hold and treat stormwater flows in this area (Figure 2-15, *Stormwater Basins and Emergency and Bus Access Routes*).

Flood Risk Management Features

The restoration and grading descriptions in Section 2.2.1.1, *Alternative 1: Ecosystem Restoration*, describe how levee grading and water-control structures would support restoration functions. The sections below detail the flood risk and stormwater management functions of levees, water-control structures, drainage, and erosion control features of Alternative 1.

Area A

In Area A, construction of a new perimeter levee would maintain or improve the level of flood risk protection provided by the existing Ballona Creek channel levee. Constructing the new perimeter flood risk management levee would involve regrading, compacting, and raising the existing higher-elevation upland perimeter and/or using appropriate material excavated from elsewhere in Area A to meet Corps flood risk management levee criteria. On the west side of Area A, the new perimeter flood risk management levee would start downstream at the end of the existing jetty between Ballona Creek and Marina del Rey Harbor. The section of the existing levee immediately upstream of the jetty would be raised. The new levee would extend from the existing levee around the perimeter of Area A between the restored wetlands and Fiji Way, with an offset between the levee and Fiji Way of 30 feet or more, which would include a bioswale. The levee offset would accommodate existing parking lots and planned parking improvements along Fiji Way and would avoid an existing natural gas monitoring well, Del Rey 17. The levee would continue along the south side of Fiji Ditch between the Ditch and the wetlands. The Fiji Ditch in Area A, currently open to the tides from Marina del Rey Harbor through culverts under Fiji Way, would be maintained as is. On the east side of Area A, the levee would extend along and approximately 30 feet away from Lincoln Boulevard and the Culver Boulevard Bridge to include a bioswale, and tie into the existing Ballona Creek channel levee.

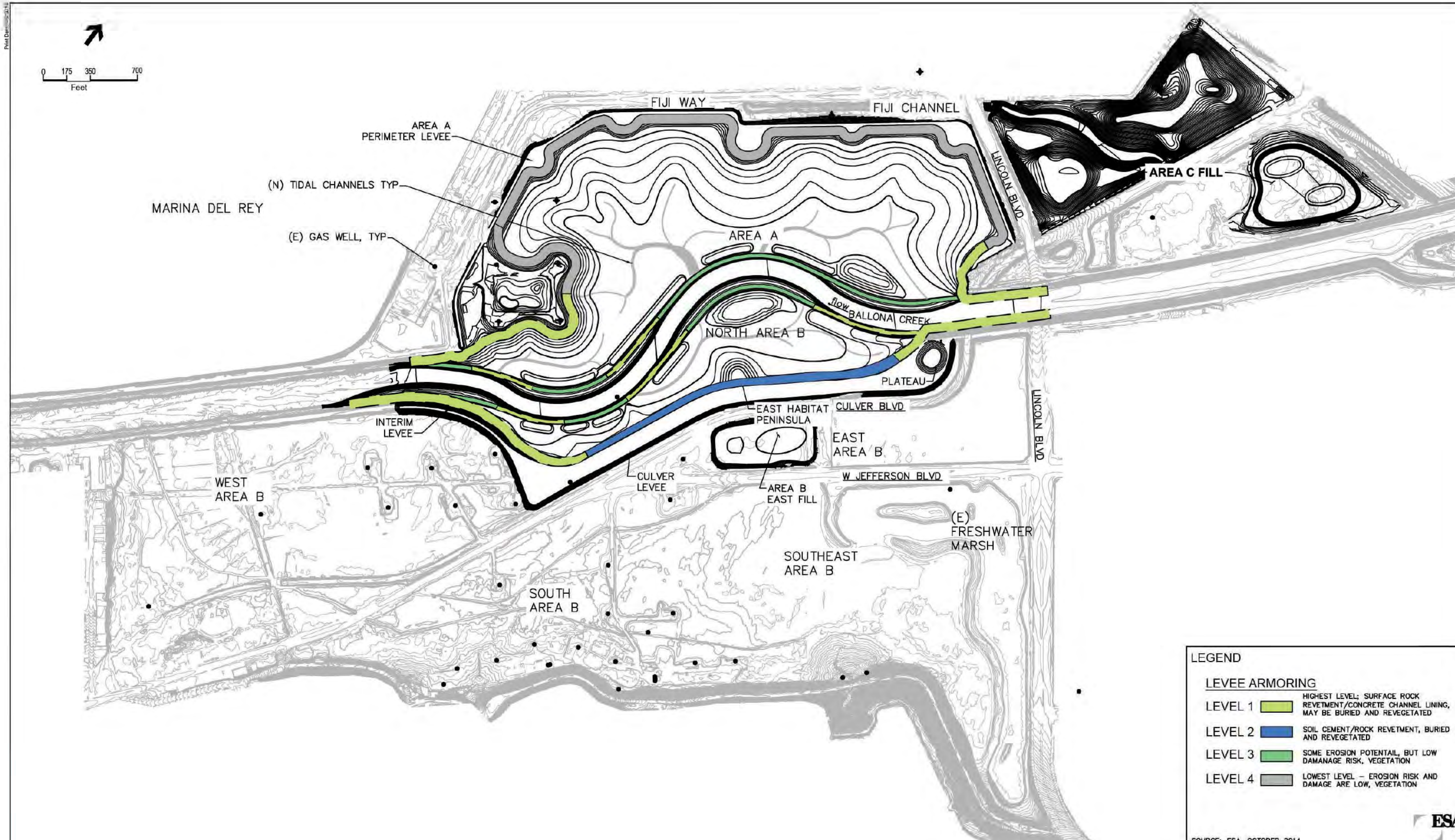
In Area A the new proposed flood risk management levee would generally be located 800 to 1,200 feet from the realigned Ballona Creek channel (Figure 2-2, *Alternative 1: Phase 2: Preliminary Grading Plan*). The levee would have a 10:1 H:V slope from the levee crest down to the upland habitat zone at elevation 11 feet NAVD 88. Below 11 feet NAVD 88, upland and transition zone habitats would slope down to the Area A restored tidal wetlands around elevation 5 feet NAVD 88 with a gradually varying flat transitional slope from 40:1 H:V to 150:1 H:V. This wide flat slope would support dense wetland and transitional vegetation (i.e., salt marsh vegetation and low shrubs, and perennial grasses), which is intended to protect the perimeter levee from higher velocity flows in the main Ballona Creek channel and to allow for transgression of habitats in response to sea level rise.

Area A is comprised of 15 to 25 feet of loosely consolidated dredge material from the excavation of Marina del Rey that was placed on top of the historic Ballona marsh soils. Given the unconsolidated existing materials, subgrade preparation along the levee alignment would include removal of existing vegetation and over-excavation to a depth of 4 to 6 feet below grade, including a keyway for levee construction. As described in more detail in the Project Design Report (PDR) in Appendix B1, the use of buried rock or soil cement armoring would be limited to locations where it is needed for levee protection. In Area A, these locations are likely at the upstream limit of the site, where storm flows would expand across the site, and at the downstream limit of Area A, where flows would reenter the creek during large events (see the description of *Erosion Control Features* at the end of this section; see also, Figure 2-16, *Alternative 1, Phase 1: Perimeter Levee Armoring Plan*, and Figure 2-17, *Alternative 1, Phase 2: Perimeter Levee Armoring Plan*.

The Project itself would act as a stormwater management feature for the Ballona Watershed. Although not a stated objective of the Project, the restored wetlands would provide a stormwater cleansing function that would help remove constituents of concern through bio-uptake (usage by plants) and the re-establishment of a viable, sustainable, and natural ecological system. Additionally, bio-swales would be installed throughout Area A at the toe of all slopes steeper than 10 to 1, and along the non-creek side of the levees. Bio-swales allow the collection of runoff from the adjacent contributing slopes, bio-uptake of constituents in the runoff, and infiltration into the soil of the minor flows collected. The Stormwater Management Plan prepared for the Project by PSOMAS (Appendix B2) provides the locations and sizing of the bio-swales in Area A.

Area B

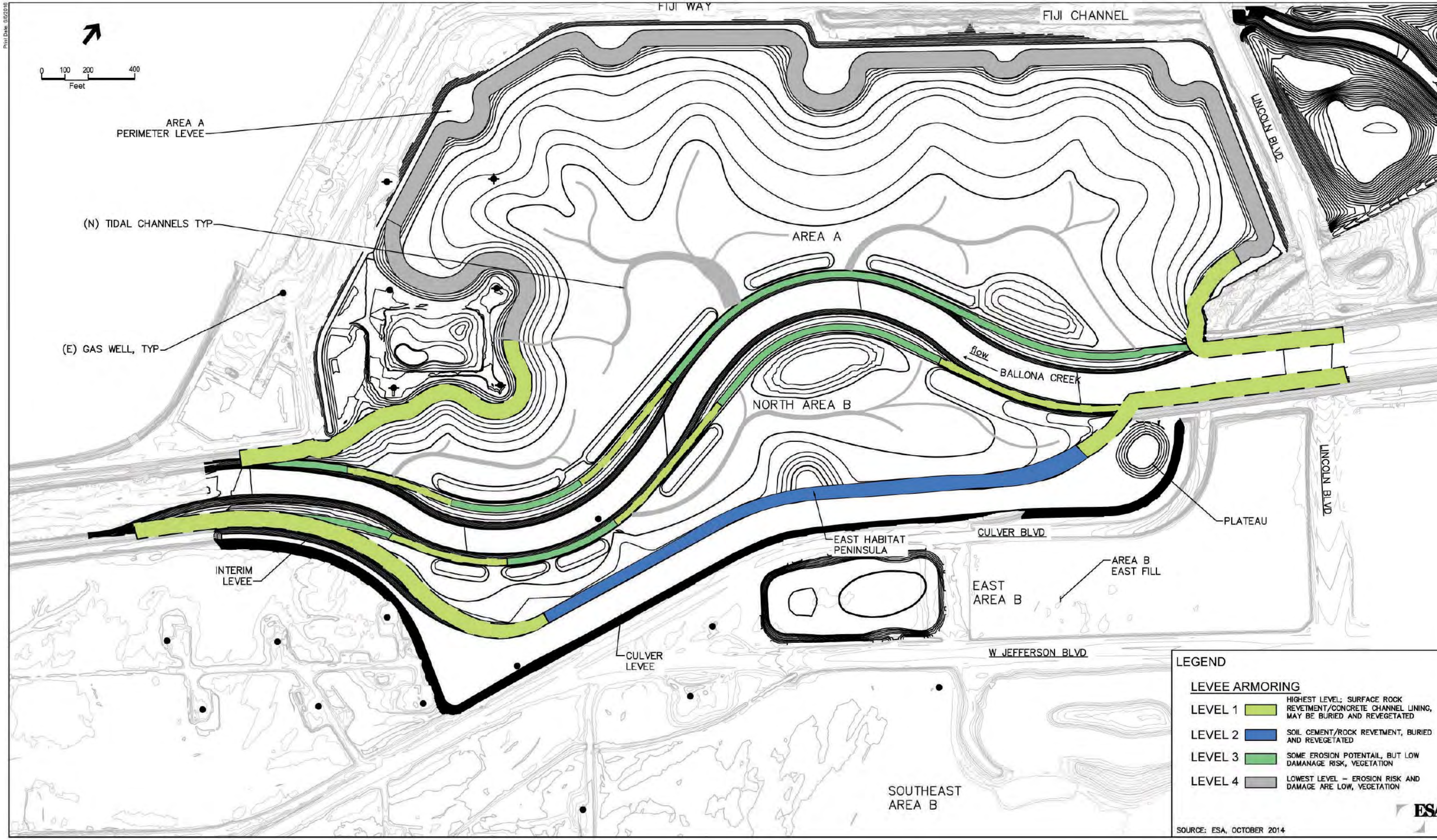
In Area B, Alternative 1 includes a new levee along Culver Boulevard (the Culver Boulevard levee) and the perimeter of West Area B (the West Area B levee) to replace the existing south Ballona Creek channel levee. The new levee would tie into the existing Ballona Creek channel levee upstream and downstream of the restoration. New water-control structures would be installed in the levee to provide managed tidal flows and storm drainage for South Area B. North of the businesses at the west end of Culver Boulevard, the new levee would be offset from the Ballona Reserve property boundary to allow for a stormwater detention and treatment wetland to improve stormwater drainage and reduce the existing localized flooding that occurs at the west end of Culver Boulevard. New berms would be constructed around portions of the perimeters of the South and Southeast Area B enhanced managed wetlands to maintain or improve the existing level of flood risk protection in these areas. The new levees, new water-control structures, Culver Boulevard stormwater management, and new berms are discussed further in the following pages.



Ballona Wetlands Restoration Project

FIGURE 2-16A

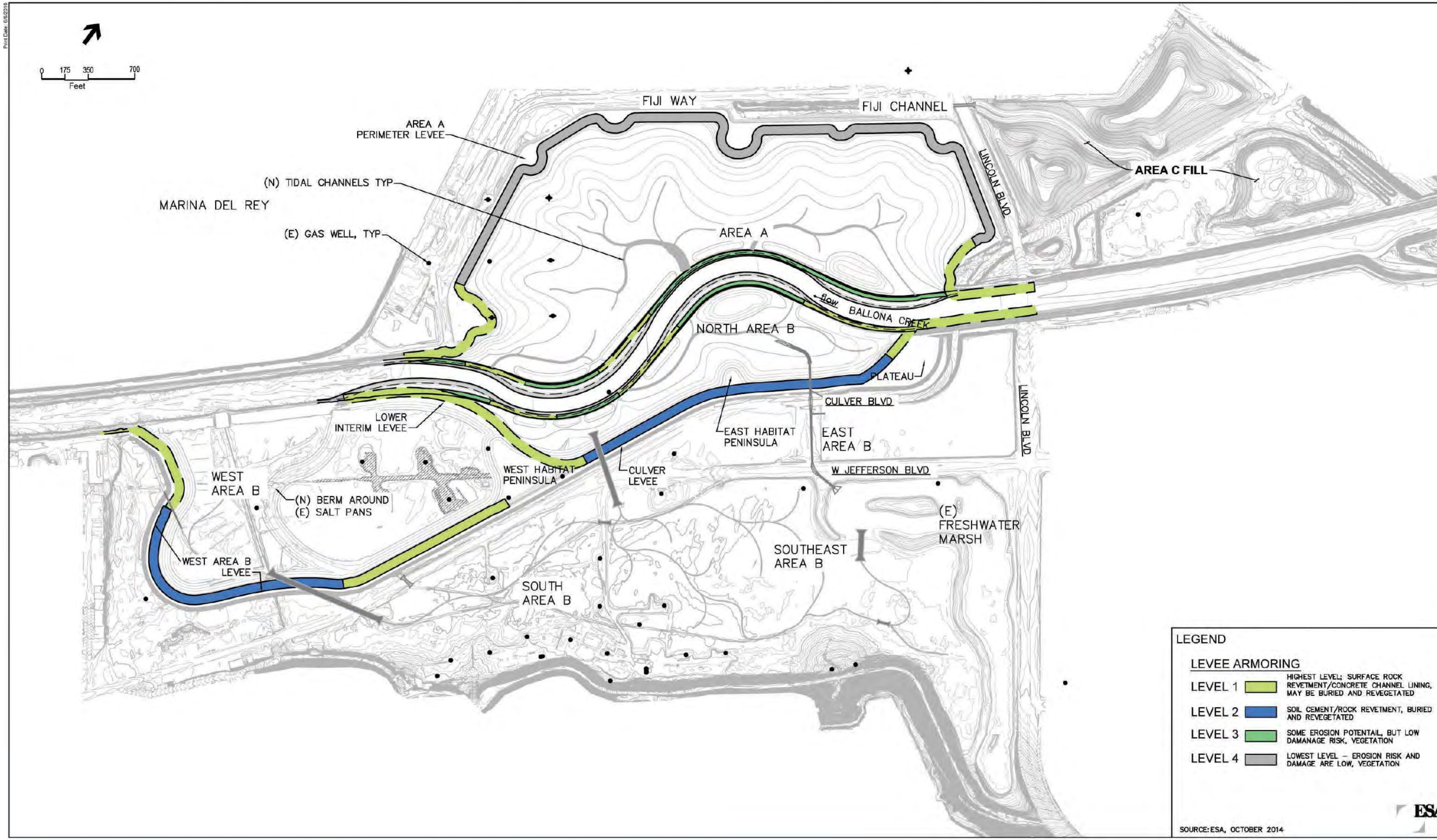
ALTERNATIVE 1, PHASE 1: PERIMETER LEVEE ARMORING PLAN



Ballona Wetlands Restoration Project

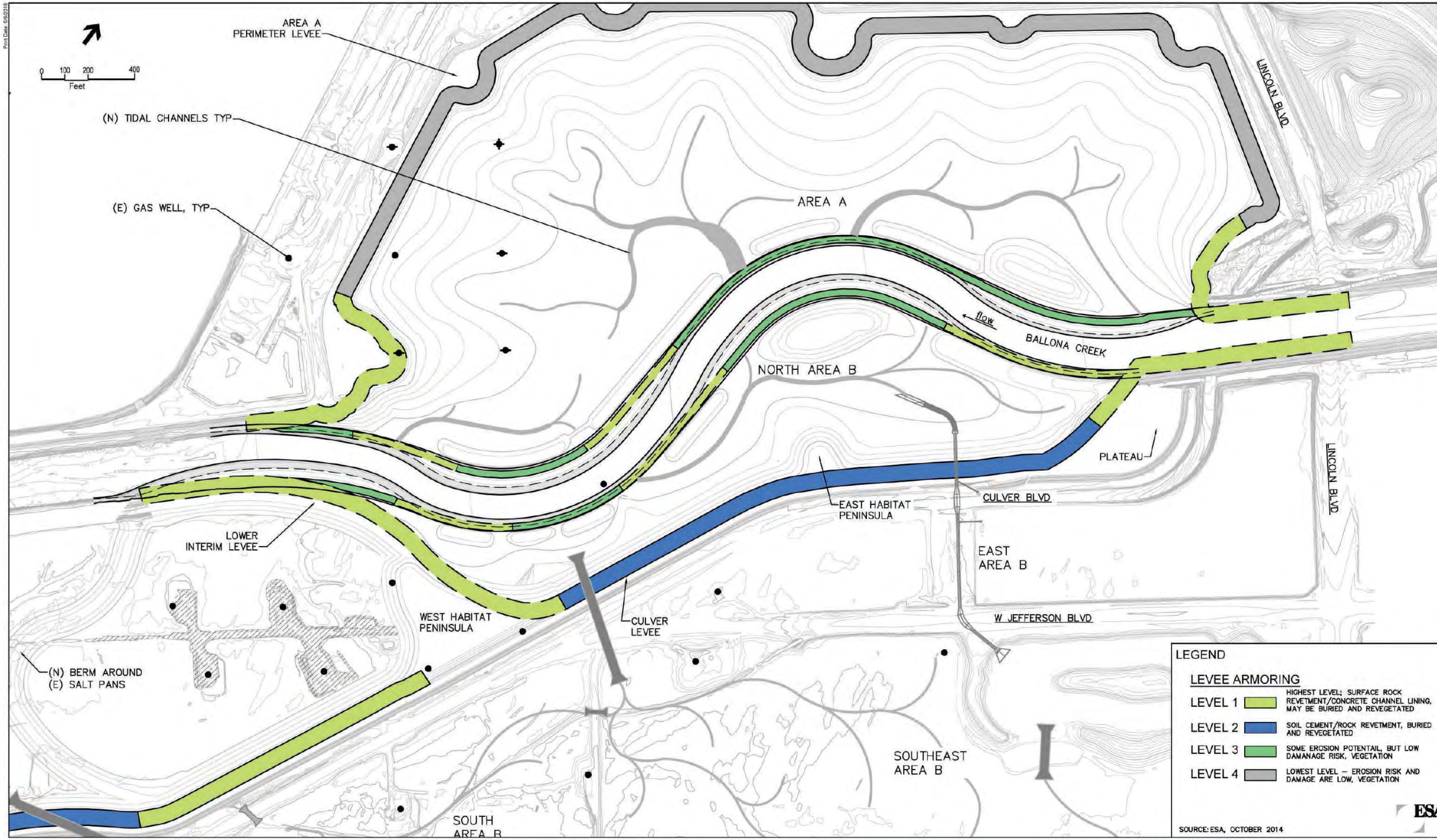
FIGURE 2-16B

ALTERNATIVE 1, PHASE 1: PERIMETER LEVEE ARMORING PLAN



Ballona Wetlands Restoration Project

FIGURE 2-17A
ALTERNATIVE 1, PHASE 2: PERIMETER LEVEE ARMORING PLAN



Ballona Wetlands Restoration Project

FIGURE 2-17B
ALTERNATIVE 1, PHASE 2: PERIMETER LEVEE ARMORING PLAN

Levees

Culver Boulevard Levee

The new Culver Boulevard levee would extend from the south end of the Culver Boulevard Bridge, where it would tie in to the existing Ballona Creek channel levee, along Culver Boulevard to West Area B (Figure 2-2, *Alternative 1, Phase 2: Preliminary Grading Plan*). The Culver Boulevard levee would include two distinct design sections:

1. A wide plateau at the upstream limit between Culver Boulevard and the old railroad alignment. This wide section is intended to vary the widening of the restored Ballona Creek floodplain to help even out the hydraulic drop of flood levels as flood flows enter the Ballona Reserve.
2. A 20-foot top-width section along Culver Boulevard to the intersection with Jefferson Boulevard. The continuation of this levee along Culver Boulevard and around the perimeter of West Area B is referred to as the West Area B levee described below.

The levee core would be located adjacent to Culver Boulevard, and the wider sections would support vegetated habitat closer to Ballona Creek (i.e., salt marsh vegetation, low shrubs, and perennial grasses. Beyond the levee top, each section would incorporate an average slope of 5:1 H:V down to 15 feet NAVD 88 and 10:1 H:V down to 10 feet NAVD 88, with a flatter 20:1 H:V transitional slope to the adjacent restored tidal wetlands.

In Area B, the subgrade generally is composed of historic marsh soils, which are relatively close to groundwater. Levee subgrade preparation likely would include removal of existing vegetation and over-excavation to a depth of 2 feet below grade. Along the levee core, over-excavation may be extended down to 4 feet below grade to provide a keyway for levee construction.

Armoring, including either buried rock or soil cement as described under *Erosion Control Features* below and in the PDR (Appendix B1), or possibly including reuse of the current channel levee materials, would be utilized along sections of the levee where the levee would be closer to the Ballona Creek channel and the potential risk of higher flow velocities and scour potential are greater, while levee sections that are farther from the Ballona Creek channel may not be armored. The intent is to bury armoring with soil and planted native vegetation (e.g., grasses, shrubs, and scrub) to provide habitat without affecting the integrity of the levee or armoring (see the description of *Erosion Control Features* at the end of this section). Figures 2-7 and 2-14 show the proposed armoring in cross-section.

West Area B Levee

The continuation of the new Culver Boulevard levee around the perimeter of West Area B, referred to as the West Area B levee, would run along the south and west side of West Area B and tie in to the existing downstream segment of the south Ballona Creek levee. On the west side of West Area B, the West Area B levee would be constructed through the existing wetlands, avoiding the existing dune habitat.

The West Area B levee would have an average slope of 3:1 H:V along the existing dunes to the west and a 5:1 H:V slope down to 15 feet NAVD 88, a 10:1 H:V slope down to 10 feet NAVD 88, and a 20:1 H:V slope down to the existing wetlands to the east. Along the existing dunes, Alternative 1 would create additional dune habitat along the levee shoulder. Along the wetland side of the levee, the transitional slope would vary to create a natural undulating shoreline. A design section showing the topographic variation is presented in Figure 2-12, *Artistic Rendering of West Area B Levee*.

Similar to the Culver Boulevard levee, the West Area B levee would be constructed on marsh soils with high groundwater. In addition, the West Area B levee would cross existing channels in several locations. Subgrade preparation would likely include removal of existing vegetation and over-excavation to a depth of 2 feet below grade. Along the levee core, over-excavation may be extended down to 2 to 4 feet below grade to provide a keyway for levee construction. New water-control structures would be installed to maintain channel connections as described below. Loose, unsuitable material would be over excavated and the area would be filled with compacted fill.

West Area B would be primarily a backwater area during flood events, and erosion potential is expected to be limited along most of the levee reach. Therefore, armoring may be limited to the downstream levee segment (see Figure 2-16, *Alternative 1, Phase 1: Perimeter Levee Armoring Plan*, Figure 2-17, *Alternative 2: Perimeter Levee Armoring Plan*, the "Erosion Control Features" description at the end of this section, and the PDR in Appendix B1). The levee may incorporate rock facing at the tie-in to the existing southern Ballona Creek channel levee, transitioning to buried soil cement or rock protection of the levee core along the downstream end of the levee reach.

Area B Interim Levee

As described in Section 2.2.1.1, *Alternative 1: Ecosystem Restoration*, Alternative 1 would be phased with full tidal restoration of West Area B occurring in the final Phase 2 restoration. During the interim Phase 1 restoration, an interim levee would connect the Culver Boulevard levee to the existing southern Ballona Creek channel levee just north of the existing natural gas monitoring well cluster in West Area B (Figure 2-5, *Alternative 1, Phase 1: Preliminary Grading Plan*). The interim levee would be constructed with steeper 5:1 H:V side slopes on the Ballona Creek side. Subgrade preparation would be similar to the Culver Boulevard and West Area B levees discussed above. The interim levee would incorporate buried rock or soil cement armoring along much of its length (see Figure 2-16, *Alternative 1, Phase 1: Perimeter Levee Armoring Plan*, and Figure 2-17, *Alternative 2: Perimeter Levee Armoring Plan*). Rock facing may be used at the tie-in with the southern Ballona Creek channel levee. Buried armor installed in Phase 1 on the outboard side of the interim levee would be retained after the levee is lowered and reconfigured into the salt pan berm and upland peninsula (in Phase 2) to protect the berm and peninsula from erosion where Ballona Creek flows would converge back into the existing channel alignment downstream.

Water-Control Structures

For the South and Southeast Area B managed wetland areas, new water-control structures would be installed to allow for managed tidal flows and water levels, but would close during certain storm events in Ballona Creek to limit high water levels in South and Southeast Area B. The water-control structures would be designed to allow for a full range of tides (up to an elevation acceptable for flood risk management and storm drainage); however, the structures would be operated to passively manage tide levels to achieve habitat objectives (e.g., lower managed tide levels for nesting habitat).

Culver Boulevard/West Area B Levee Water-Control Structures

Three new water-control structures would be installed in the new Culver Boulevard and West Area B levees and across Culver Boulevard and Jefferson Boulevard:

1. Southeast Area B water control structure: For the Southeast Area B managed wetland restoration (Phase 1 restoration), a bank of culverts (e.g., four 5-foot diameter pipes) with gates would be installed in the new Culver Boulevard levee and under the intersection of Culver Boulevard and Jefferson Boulevard to create a new tidal connection between Southeast Area B and North Area B (Culvert #3 in Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*).
2. South Area B water control structure: Once West Area B is restored (Phase 2 restoration), a bank of culverts (e.g., four 5-foot diameter pipes) with gates would be installed in the new West Area B levee and under Culver Boulevard between South and West Area B to maintain this connection. This structure is shown in the location of an existing channel between West and South Area B (Culvert #2 in Figure 2-1, *Alternative 1, Phase 2: Proposed Habitats*).
3. West Area B water control structure: For the West Area B restoration (Phase 2 restoration), a culvert (e.g., one or more 5-foot diameter pipe) with gates would be installed in the West Area B levee to connect the existing wetland behind the levee (adjacent to the dunes) with the restored West Area B full tidal wetlands. This culvert is shown in the location of the existing channel crossed by the levee (Culvert #1 in Figure 2-1, *Alternative 1, Phase 2: Proposed Habitats*).

The South and Southeast Area B culverts would be sized to provide local storm drainage from South/Southeast Area B to Ballona Creek and to provide tidal flows. The structures would likely be box culverts within the roadways as there are utilities that must be crossed that would be difficult to relocate (e.g., a City of Los Angeles 230 kV electrical line). Before and after the roadway, the conduits would be transitioned to a series of pipes to allow installation of traditional flap gates for protection against Ballona Creek flows, and to allow managed tidal circulation.

Each of the two banks of culverts in the Culver Boulevard/West Area B levee would consist of multiple culverts and gates (e.g., six 5-feet diameter culverts with gates). The gates would be designed to close or limit inflow during certain storm events in Ballona Creek to limit high water levels in South and Southeast Area B (e.g., self-regulating tide gates or gated culverts that provide only limited inflow and the required outflow capacity).

In Phase 1, the existing drainage culverts under the Gas Company Road between South and Southeast Area B (Culvert #4 in Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*) would be modified by expanding the culverts. Weirs would be added to the existing culverts under Culver Boulevard in South Area B to allow higher tides in South and Southeast Area B without increasing water levels in West Area B before Phase 2. The modified culverts would be used to manage the connection between West, South, and Southeast Area B for wetland habitat management, stormwater management, and to maintain circulation while maintenance is conducted on other water-control structures.

In Phase 2, the existing drainage culverts under Culver Boulevard between West and South Area B (Culvert #2 in Figure 2-1, *Alternative 1, Phase 2: Proposed Habitats*) would be modified by expanding the culverts. The weir from Phase 1 would be removed to allow more tidal flow into South Area B. Gates could be added to allow management of water levels in South and Southeast Area B.

Freshwater Marsh Water-Control Structures

The existing Freshwater Marsh is situated at the easterly edge of Area B, south of Jefferson Boulevard. The Freshwater Marsh serves multiple functions including acting as the downstream end of a stormwater conveyance system, providing attenuation of upstream storm flow volume and flow rate, providing water quality treatment of urban inflow, and providing Freshwater Marsh habitat.

Storm drainage from the Playa Vista area currently flows into the Freshwater Marsh and out to Ballona Creek through a culvert with a drainage flap gate (Culvert #5 in Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*). During periods of high flow in Ballona Creek, the flap gate closes and stormwater drainage collects in the Freshwater Marsh. Currently, storm flows greater than the 1-year storm event overflow from the Freshwater Marsh over the overflow weir into Southeast Area B. This overflow was designed to prevent storm drainage from (1) backing up into the Playa Vista riparian corridor and other inflow pipes to the Freshwater Marsh and (2) flooding upstream areas that drain to the Freshwater Marsh.

The existing freshwater marsh function, habitat, and perimeter berm/levee between the Freshwater Marsh and Southeast Area B would be maintained. The water-control structures would be adjusted and/or modified to convey a greater portion of the Freshwater Marsh outflow to the Southeast Area B managed marsh to support brackish marsh habitat, while continuing to maintain the freshwater marsh functions. The water control structure adjustments/modifications include:

1. The location of the existing overflow weir into the Brackish Marsh area would be maintained (Culvert #6 in Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*). A design feature of the overflow weir is the ability to adjust the overflow elevation for adaptive management in the long term. The overflow weir would be modified to raise the overtopping elevation to provide appropriate flood risk management with sea level rise, and to provide necessary storage volume for the overflows.

2. The existing outflow pipe to the Ballona channel would be maintained to allow for outflow from the FWM (Culvert #5 in Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*). When the existing levee is removed and the new Culver levee is constructed (Phase 1), the outlet of the Ballona Creek outflow pipe would be maintained as is and drain into a new tidal channel in North Area B as shown in Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*, or would be moved back to the Culver levee or out to the realigned Ballona Creek channel. The Ballona Creek outflow structure would be adjusted to reduce the amount of outflow to Ballona Creek (i.e., by raising the elevation of the weir that controls discharge

from the Freshwater Marsh to Ballona Creek), thereby allowing for a greater portion of the Freshwater Marsh outflow to be conveyed to the Southeast Area B marsh.

3. There is also a small existing overflow pipe at the south end of the Freshwater Marsh that has a valve structure currently closed (Culvert #8 in Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*). These outflows would be maintained for minor non-storm flows, to maintain circulation. This structure would be modified to facilitate outflow from the Freshwater Marsh to the Southeast Area B marsh (e.g., by installing a weir).

In addition, a new water control structure would be installed in the existing Freshwater Marsh berm to provide supplemental outflow from the Freshwater Marsh to the Southeast Area B marsh (Culvert #7 in Figure 2-4, *Alternative 1, Phase 1: Proposed Habitats*).

Stormwater Management

With the construction of the proposed levees, tidal influence at the west end of Culver Boulevard behind the levee would be eliminated (Figure 2-1, *Alternative 1, Phase 2: Proposed Habitats*) and storage volume for the excess overflow drainage would be eliminated. Replacement stormwater storage volume would be provided by creating a low area (retention basin) down to approximately 4 feet NAVD 88 between the commercial properties and the proposed levee. This storage basin would be sized to accommodate the overflow volume as well as the local area drainage (Figure 2-15, *Stormwater Basin and Emergency and Bus Access Routes*). This basin would also function as a water quality treatment measure for a portion of the runoff from the existing paved area of Culver Boulevard. Additionally, a pre-treatment basin would be constructed to address the minor increase in pollutant load from the proposed paved emergency and bus access road to be constructed in the Ballona Reserve immediately behind the commercial properties, as shown in Figure 2-15, *Stormwater Basin and Emergency and Bus Access Routes*. Other areas of Culver Boulevard further east would drain to bio-swales between the road and new levee to keep stormwater runoff away from the paved area, as well as to provide an infiltration and treatment function for the roadway. There also would be drainage swales between the roads and berms in South and Southeast Area B (described below) and pre-treatment basins along the slope of the bluffs. Appendix B2 provides sizing and location of the bio-swales and pre-treatment basins.

Berms

Berms would be constructed along lower perimeter elevations of South and Southeast Area B and tied into areas of high ground to maintain the existing level of flood risk protection (e.g., around the SoCalGas facility and along Culver Boulevard and Jefferson Boulevard) (Figure 2-2, *Alternative 1, Phase 2: Preliminary Grading Plan*).

Area C

Fill material would be placed in North and South Area C and the site would be restored to upland habitat. The existing Fiji Ditch in North Area C drains to the Lincoln Boulevard storm drain system via an overflow culvert under Lincoln Boulevard to the Fiji Ditch in Area A. The existing Fiji Ditch would be realigned and incorporated into a restored riparian corridor. The restored Fiji Ditch would convey local drainage, support riparian habitat, and continue to drain to the Lincoln

Boulevard storm drain system and the tidally influenced Fiji Ditch in Area A. Drainage from the restored upland habitat plateaus would support seasonal wetlands within the restored Fiji Ditch.

Drainage for South Area C would be collected on site through a network of graded surface bio-swales and channels and underground drainage conduits, and discharged into existing drainage facilities in Culver Boulevard and at the Culver Boulevard/Lincoln Boulevard intersection. In addition, some stormwater runoff from the eastern portion of South Area C would be directed to the existing seasonal wetlands adjacent to the Marina Freeway (SR-90) on-ramp, enhancing the native vegetation cover and biological function. In the northwest corner of North Area C, a settling basin would be constructed within Fiji Ditch just before the culvert under Lincoln Boulevard to remove sediment and contaminants from stormwater. Appendix B2, *Stormwater Management Plan*, provides the sizing and location of the bio-swales and settling basin.

Erosion Control Features

Alternative 1 provides enhanced erosion protection by realigning the flood risk management levees to the perimeter of Area A around the restored wetlands and restoring a wide vegetated floodplain that gradually slopes from wetland to upland habitats along the new perimeter levees. These broad slopes are expected to reduce storm flow depths and velocities near the new levees, thereby reducing the potential for levee erosion. Flow in the restored Ballona Creek channel would be guided by the sloping floodplain and upland peninsulas. Some gradual channel migration and periodic localized bank erosion and sedimentation would be expected to occur as is typical for natural river and estuary systems. The restoration would be designed so that (1) this level of change would be acceptable for the habitat restoration and flood risk management and (2) the channel would not require regular maintenance.

Portions of the side slopes of the realigned Ballona Creek consist of two types of armoring, concrete and rock. The new flood risk management levees would be set back away from the Ballona Creek channel. The additional space for flow provided by these setback levees and the resulting reduction in flow velocities and shear stresses would provide opportunities to utilize alternative measures for flood risk management, including those that would require less sidewall hardening, such as buried rock armoring or heavy vegetation.

Consistent with the primary purpose of the Proposed Action to create and restore native habitats, the Proposed Action design would limit the use of traditional armor (especially concrete) to a minimum as described further in the PDR (Appendix B1). Where flow velocities and scour potential are low, Alternative 1 would use vegetation to protect the levee slopes. Where the potential risk of higher flow velocities and scour potential are greater, the levee core (consisting of compacted and stabilized soil) would be protected with a protective cladding of either rock or soil cement[25] and covered by less compacted soils that allow planting and habitat establishment. The typical levee cross-sections for Area B presented in Figure 2-7, *Alternative 1, Phase 1: Levee Sections*, and Figure 2-14, *Alternative 1, Phase 2: Levee Sections*, illustrate this approach. Along Area A, where the perimeter levee is set back from Ballona Creek by 800 to 1,200 feet, the preferred armoring method would be to rely upon vegetation established on the flat, vegetated transitional slopes (100:1 H:V sloping up to 40:1 H:V and 10:1 H:V).

[25] Soil cement is a construction material, consisting of a mix of pulverized natural soil with a small amount of portland cement and water and compacted to high density.

Where higher flows do occur and scour potential is increased, levees would be protected by rock armoring as described further in the PDR (Appendix B1). This armoring would be designed to allow limited vegetation intrusion, similar to the rock facing currently in the channel. At existing and proposed bridge locations, the levees would be protected by soil cement where applicable and concrete surfacing where required.

Figure 2-16, *Alternative 1, Phase 1: Perimeter Levee Armoring Plan*, and Figure 2-17, *Alternative 1, Phase 2: Perimeter Levee Armoring Plan*, show levels of erosion protection based on modeled velocities during extreme storm events and the relative risk of erosion. The four levels of protection are:

1. ***Level 1 – Buried and/or surface armoring*** is proposed for areas with the highest level of erosion risk. These areas would be armored and are the most likely to include surface rock revetment or possibly concrete channel lining. The armoring may be buried and revegetated, but could be exposed during extreme storm events. If exposed, armored areas would be allowed to revegetate through natural recruitment (i.e., reestablishment of vegetation through natural processes rather than planting).

2. ***Level 2 – Buried armoring*** is proposed for areas that have reduced erosion likelihood due to lower predicted velocities. However, the velocities are high enough to pose some erosion risk and the consequences of erosion are relatively high. For example, the levee along Culver Boulevard is included primarily because erosion impacting levee integrity may affect the roadway. Soil cement or rock revetment armoring in these areas would be buried and revegetated as it would be unlikely to be exposed during storm events.

3. ***Level 3 – Unarmored vegetated channel banks*** are proposed for areas that have the potential to erode but the consequences of erosion are considered low. For example, erosion of the north bank of the new Ballona channel during a high flow event would be a manifestation of natural processes in the restoration area, and could provide ecological benefit with no damage to infrastructure.

4. ***Level 4 – Earth levees with vegetation*** are proposed in areas that have low erosion potential and low risk of damage to the Proposed Action. In the low risk areas within the Ballona Reserve, vegetation and possibly turf reinforcement (where needed) would be used for protection, as described further in the PDR (Appendix B1).

Buried or surface rock protection would be included in the locations shown in Figure 2-16, *Alternative 1, Phase 1: Perimeter Levee Armoring Plan*, and Figure 2-17, *Alternative 1, Phase 2: Perimeter Levee Armoring Plan*, to protect against erosion. There would be approximately 4,200 ft of Level 1 armoring on each bank, which is a reduction of approximately 2,800 ft per bank for existing conditions. These areas are described further in the PDR (Appendix B1) and include:

1. Portions of the levees and channel banks downstream of the Lincoln and Culver Boulevard Bridges where upstream flows enter the restored wetland area;

2. Portions of the levees, upland areas, and channel banks where flows from the realigned Ballona Creek channel and the restored Area A and North Area B wetlands converge back into the existing channel alignment downstream; and

3. The downstream end of the West Area B levee where flows from the channel and West Area B converge back into the existing channel alignment downstream of the restoration.

These erosion protection features are intended to guide Ballona Creek flows back into the existing channel and reduce the potential for the realigned channel to meander too far north or south.

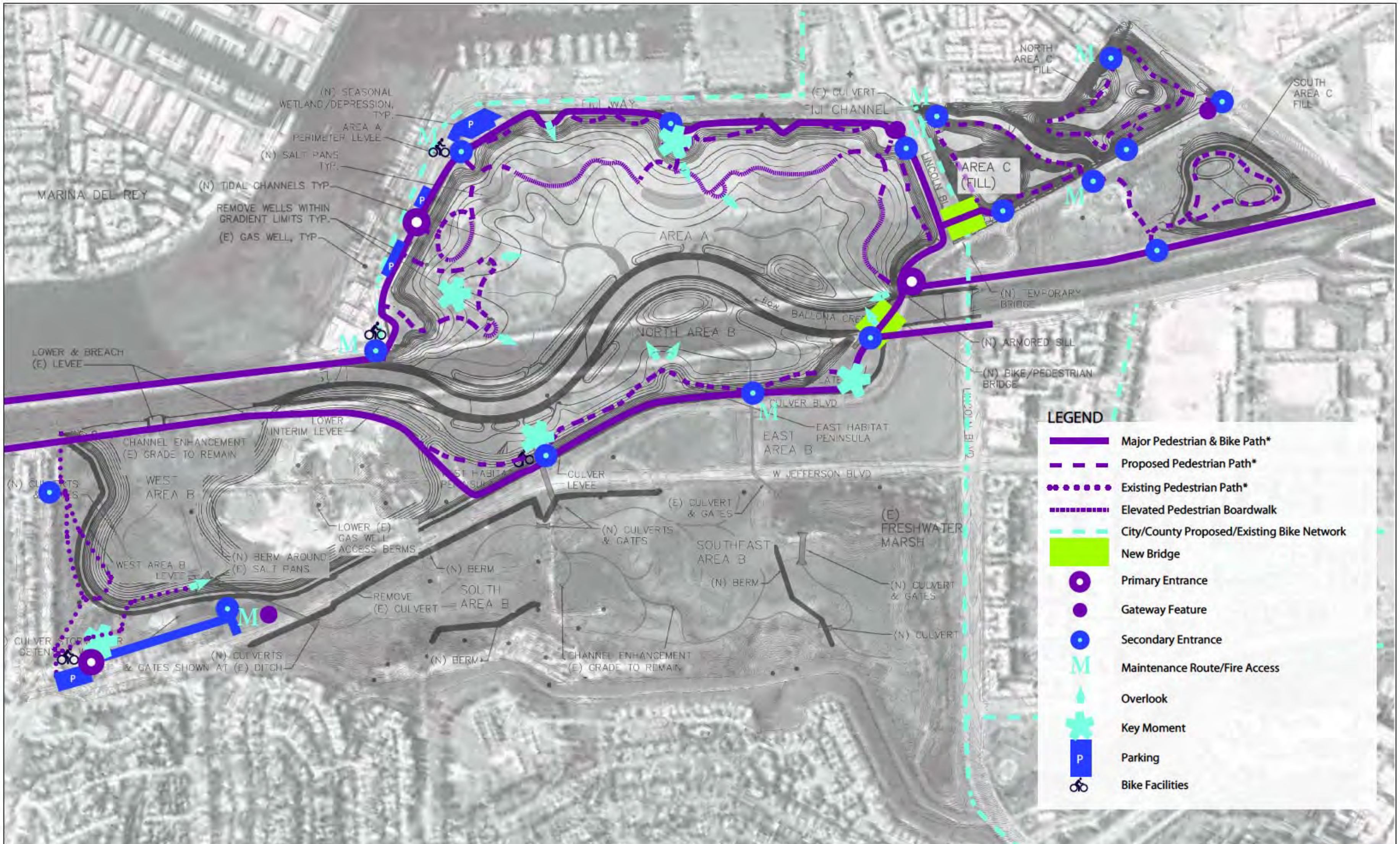
In addition, as described in detail in the PDR (Appendix B1), an armored sill (570 feet down the channel by 190 feet across the channel) would be constructed across the channel at the upstream end of the restoration from the Culver Boulevard Bridge to the Lincoln Boulevard Bridge (Figure 2-2, *Alternative 1, Phase 2: Preliminary Grading Plan*). This sill would be located where flows diverge from the existing confined channel upstream into the restored wetlands.

2.2.2.3 Alternative 1: Public Access and Visitor Facilities

The Project would develop and improve public access, recreation, and interpretative opportunities within the Project site under Phase 1, as shown in Figure 2-18, *Alternative 1, Phase 1: Public Access Plan*, and under Phase 2, as shown in Figure 2-3, *Alternative 1, Phase 2: Public Access Plan*. Alternative 1 includes construction of three monument signs into the Ballona Reserve with iconic entry monuments and associated landscaping.

Public access to the Ballona Reserve would be organized into three Primary Entrances and a series of smaller Secondary Entrances leading to the walking and biking trail (on levees) network around and within the site. Public access would be designed to encourage people to enter and experience the site. Kiosks will be used to provide necessary and interpretive information. The entrance sequence for visitors arriving by vehicle at one of the three proposed parking areas would follow an organized sequence. People would walk through a Primary or Secondary Entrance gate into a receiving plaza (approximate size ranges from 600 square feet to 1,000 square feet) with interpretive and directional signage. From there they could travel along any of the pedestrian trails, elevated boardwalks, and pedestrian/bicycle paths, stopping and sitting at the overlooks and at any or all of five “Main Informational Sites” where they could learn more about the wetlands habitats, animals, and the larger watershed system. At these areas visitors also could interact with educational public art pieces. Each of five Main Informational Sites would teach visitors about wetland and watershed structures and function, including but not limited to: a migratory stop; nursery grounds; wildlife habitat; water filter; and flood buffer).

Visitors arriving on foot or bicycle would enter the site at one of 16 potential Secondary Entrances, which would function more like trailheads and would be smaller in scale, compared to the Primary Entrances. The final location and quantity of entrances are to be determined by CDFW. Visitors arriving by bike may enter at the Primary or Secondary Entrances, or from the Marvin Braude Bike Trail or Ballona Creek Bike Path.



Note: Paths shown are approximate.

SOURCE: Meléndrez

ESA

Ballona Wetlands Restoration Project

Figure 2-18
Alternative 1, Phase 1: Public Access Plan

Primary and Secondary Entrances

Under Alternative 1, Primary Entrances would be constructed to open the site to the public and provide access to pedestrian and bicycle trails. An entrance in Area A would be provided across from Fisherman's Village along Fiji Way. A second entrance would be in the southeast corner of Area A where Culver Boulevard intersects the existing Ballona Creek Bike Trail on the north side of the Ballona Creek channel. The final entrance would be at the West Culver Parking Lot in the southwest corner of West Area B in Playa del Rey. The entrance across from Fisherman's Village along Fiji Way and the entrance at the West Culver Parking Lot would both have new or improved parking, would provide access to the bicycle trails, and would provide seating and bicycle parking. The entrance at the southeast corner of Area A would not have parking, but would provide access to the bicycle trails and would provide seating and/or bicycle parking.

Each entrance would include a gate and plaza (approximate size ranges from 600 square feet to 1,000 square feet) for small group gathering, with a canopy or similar shade element. Directional and interpretive signage at each entrance would help visitors position themselves within the Ballona Reserve and learn about the habitats. All three of the Primary Entrances would comply with the requirements of the Americans with Disabilities Act, as amended (ADA) Standards for Accessible Design relating to path of travel (Department of Justice 2010). A typical entrance is shown in Figure 2-19, *Typical Primary Entrance Visualization*.

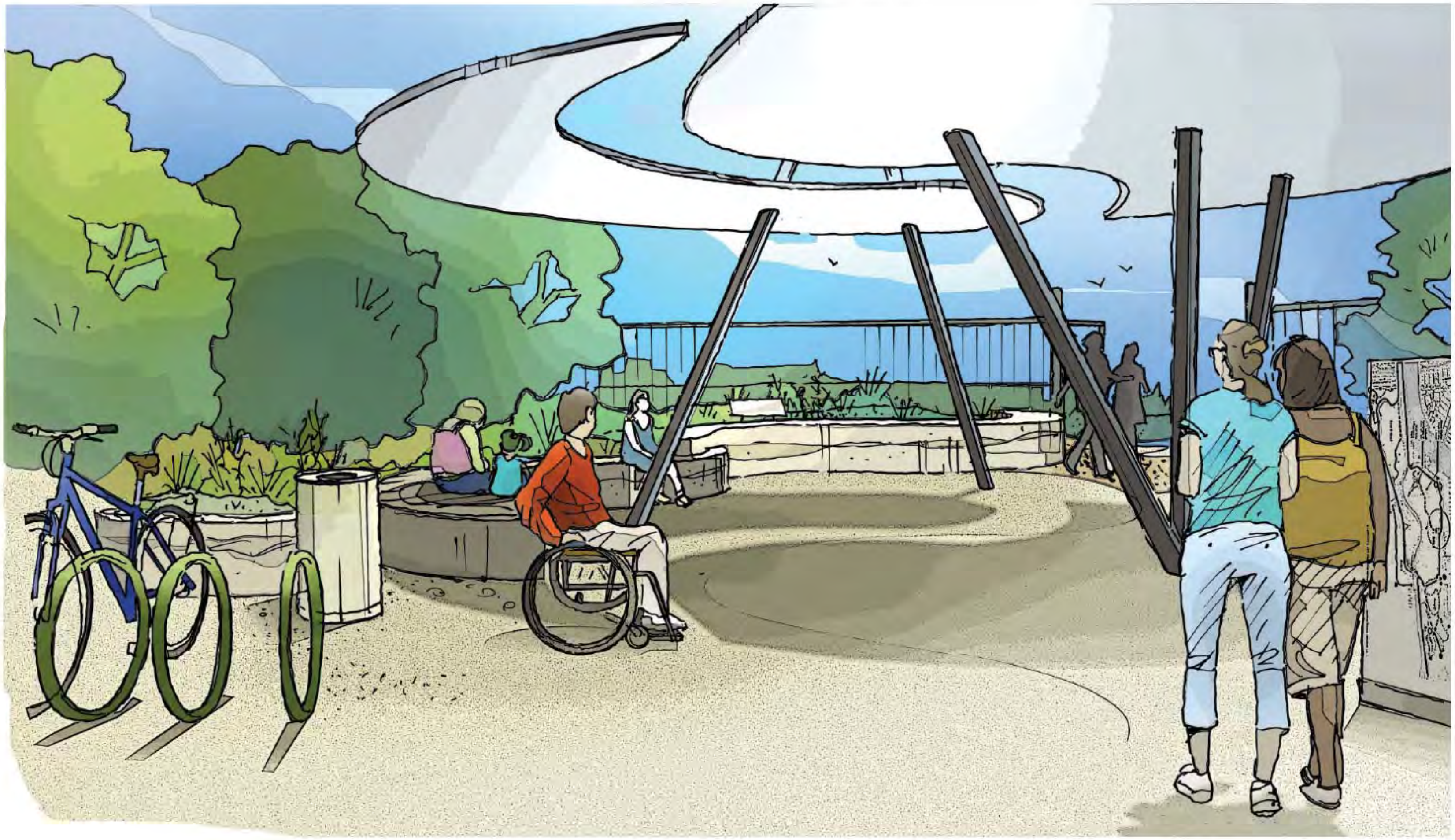
Sixteen Secondary Entrances also would be created to allow pedestrians and cyclists to access trails in the Ballona Reserve from adjacent neighborhoods (Figure 2-3, *Alternative 1, Phase 2: Public Access Plan*). Secondary Entrances would consist of a small gate (securable and lockable during Ballona Reserve closure) with informational and directional signage to help visitors position themselves on the site. Some, but not all of these entrances are ADA accessible. The entrances would only be closed to the public during flood or other events that could affect public safety, during nighttime hours, or at the discretion of the Department.

Entrances to the Ballona Reserve would be open to the public from approximately sunrise to sunset.

Parking

Area A

A new three-level parking structure would be built on the site of the existing LACDBH-operated parking lot to consolidate parking at this location into a smaller footprint. Conceptual plans for this parking structure are provided in Figure 2-20, *New Beaches and Harbor's Parking Structure*, and Figure 2-21, *Habitat Restoration in Beaches and Harbor's Parking Lot*. Building a structure to replace the existing parking lot would reduce the footprint of the original parking area and increase the area available for reclamation as upland habitat in the Ballona Reserve by up to approximately 0.8 acre. The structure would be accessed from a driveway off Fiji Way with right-turn in, right-turn out access only.



Visualization depicts potential concept for a Primary Entrance, including welcome plaza. Actual design and siting will vary.

SOURCE: Melendrez, July 2013

ESA

Ballona Wetlands Restoration Project

Figure 2-19
Typical Primary Entrance Visualization

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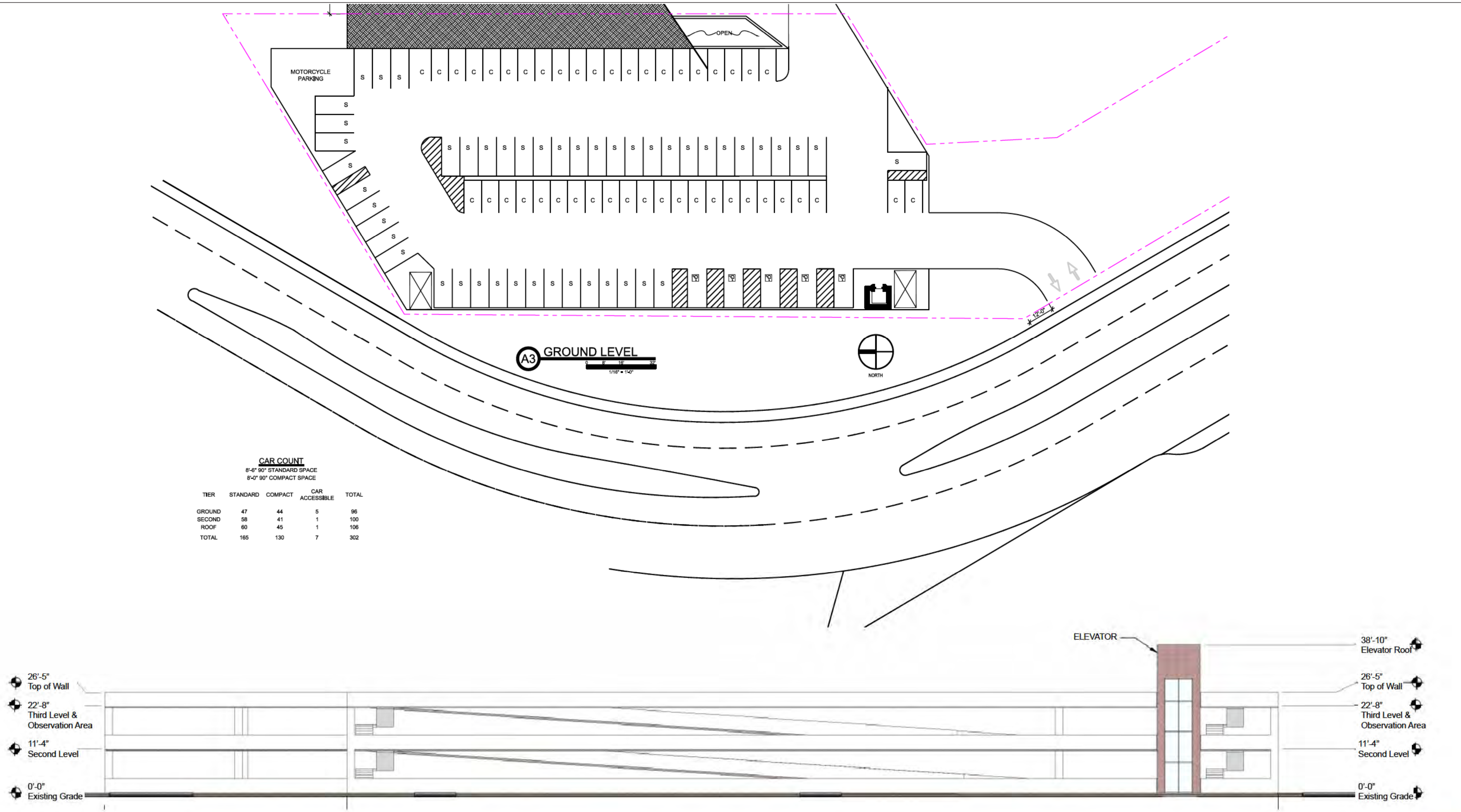

CAR COUNT
8'-6" 90° STANDARD SPACE
8'-0" 90° COMPACT SPACE

TIER	STANDARD	COMPACT	CAR ACCESSIBLE	TOTAL
GROUND	47	44	5	96
SECOND	58	41	1	100
ROOF	60	45	1	106
TOTAL	165	130	7	302

SOURCE: Department of Beaches and Harbors, February 2014

ESA

Ballona Wetlands Restoration Project

Figure 2-20
New Beaches and Harbor's Parking Structure

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Ballona Wetlands Restoration Project

Figure 2-21
Habitat Restoration in Beaches and Harbor's Parking Lot

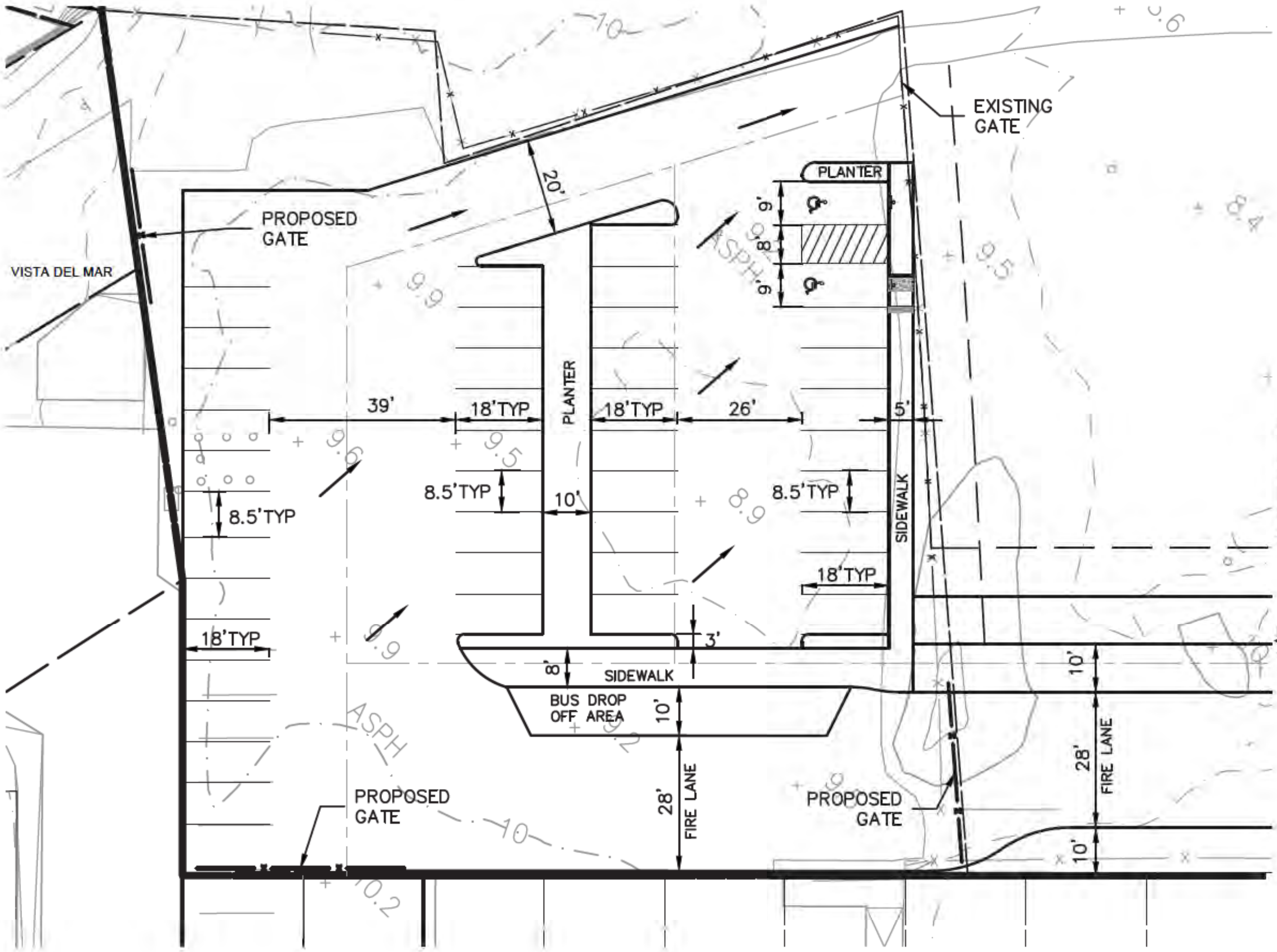
A total of 302 parking spaces would be included on the three floors of the parking structure, including standard, compact, and ADA-accessible spaces, along with an area for motorcycle parking. This is an increase of 39 parking spaces from the existing parking lot. A total of 20 spaces would be dedicated to LACDBH vehicles. An additional seven to nine spaces would be provided for CDFW staff. Remaining spaces would be publically available paid parking spaces using pay stations. The top deck of the structure would include parking and an observation deck with signage, maps, and telescopes allowing views of the reconstructed wetlands in Area A and beyond. Hours of operation for public use of the parking structure would be from sunrise to sunset and would be limited in duration. Parking would be locked after hours. Interior parking lot lighting would be installed to provide security and safety for individuals using the parking facility. The design of the parking structure would minimize ambient light spillover from the interior onto the constructed wetlands in Area A. Similarly, exterior lighting would be directed away from adjacent, sensitive habitats. Focused exterior lighting would be directed downward to encourage way-finding, and exterior ambient lighting would be installed to provide security and safety for individuals walking to and from the parking structure.

A CDFW office trailer, additional parking, and equipment storage would be located next to the proposed parking structure, similar to existing conditions. The Project would not affect the footprint or configuration of the sheriff-leased parking lot along Fiji Way (62 spaces).

Area B

The West Culver Parking Lot, currently a poorly-draining gravel lot that can accommodate approximately 50 cars, would be paved and striped, the drainage would be improved, and sidewalks would be installed. Approximately 43 parking places would be provided for daytime use of the Reserve (Figure 2-22, *New West Area B Parking Lot*). Of these, two would be dedicated to CDFW staff use. A separate school bus and emergency vehicle access would be provided on Culver Boulevard just east of the intersection with Nicholson Street, as shown in Figure 2-15, *Stormwater Basin and Emergency and Bus Access Routes*, and there would be a dedicated drop-off/pickup area for buses. This entrance to the Ballona Reserve would include interpretive signs, shade structures, and seating. The West Culver Parking Lot also would be graded to divert stormwater runoff to planted bio-swales before it enters the Ballona Reserve, reducing associated vehicular pollutants from entering the Reserve.

New gates and fences would be installed on the perimeter of the West Culver Parking Lot, and public parking would be available from dawn to dusk and would be limited in duration. Parking would be gated and locked after hours. Exterior lighting would provide only enough illumination for security purposes and would be focused away from adjacent, sensitive habitats and residences?.



PARKING STALLS SUMMARY	
STANDARD STALLS	41
ADA STALLS	2¹
TOTAL	43

SOURCE: PSOMAS, November 2013

ESA

Ballona Wetlands Restoration Project

Figure 2-22
New West Area B Parking Lot

Trails and Bridges

As shown in Figure 2-3, *Alternative 1, Phase 2: Public Access Plan*, approximately 19,000 linear feet (approximately 3.6 miles) of combined pedestrian and Class I bicycle paths[26] would be built on the Ballona Reserve under Alternative 1. In Area A, a new combined pedestrian and bicycle path would be constructed on the new perimeter levee, and approximately 0.75 mile of the existing Ballona Creek Bike Path would be eliminated from its existing location along the northern Ballona Creek channel. The new bike path would connect to and parallel the existing Marvin Braude Bike Trail that currently follows Fiji Way, continues north along Admiralty Way, and parallels Lincoln Boulevard to where it reconnects with the existing Ballona Creek Bike Path at the Culver Boulevard Bridge. Access to North Area C would be provided by the newly constructed bike and pedestrian bridge over Lincoln Boulevard and parallel to Culver Boulevard. Access to South Area C would be provided via the existing Ballona Creek Bike Path, which will be improved as a part of the Project up to the northern border of South Area C.

The new bike path would then cross Ballona Creek across the newly constructed bike and pedestrian bridge that parallels Culver Boulevard as it crosses the channel. Once the new bike path enters Area B, it splits into two newly constructed paths. One path would be constructed upon the existing south Ballona Creek channel levee between Culver Boulevard and Lincoln Boulevard and would provide a connection under the Lincoln Boulevard Bridge to an existing bike path in Playa Vista. The second path would travel southwest along the newly constructed Culver Boulevard levee and reconnect with the south Ballona Creek channel levee in West Area B.

The bike path component of proposed new trails would be a Class I bicycle path, marked for two-way traffic, at least 12 feet wide, and paved with a drivable surface. The bike path also would serve to provide Ballona Reserve management, maintenance, and emergency access when needed. The adjacent pedestrian path component would be 6 feet wide, constructed of stabilized decomposed granite, and compliant with the requirements of the 2010 ADA Standards for Accessible Design relating to path of travel (Department of Justice 2010). A planted buffer approximately 2 feet wide would separate the bicycle and pedestrian traffic and be compatible or removable for flood fighting (EM 1110-2-583). The combined pedestrian and bicycle paths would be located on top of the new levees, providing views of the entire Ballona Reserve except as shown in Figure 2-3, *Alternative 1, Phase 2: Public Access Plan*. Figure 2-23, *Alternative 1: Public Access Plan Detail*; Figure 2-24, *Typical Observation Deck*; Figure 2-25, *Typical Elevated Pedestrian Boardwalk*; Figure 2-26, *Typical Trail at Levees' Edge*; and Figure 2-27, *Typical Pedestrian & Bike Trail,* show typical trail sections.

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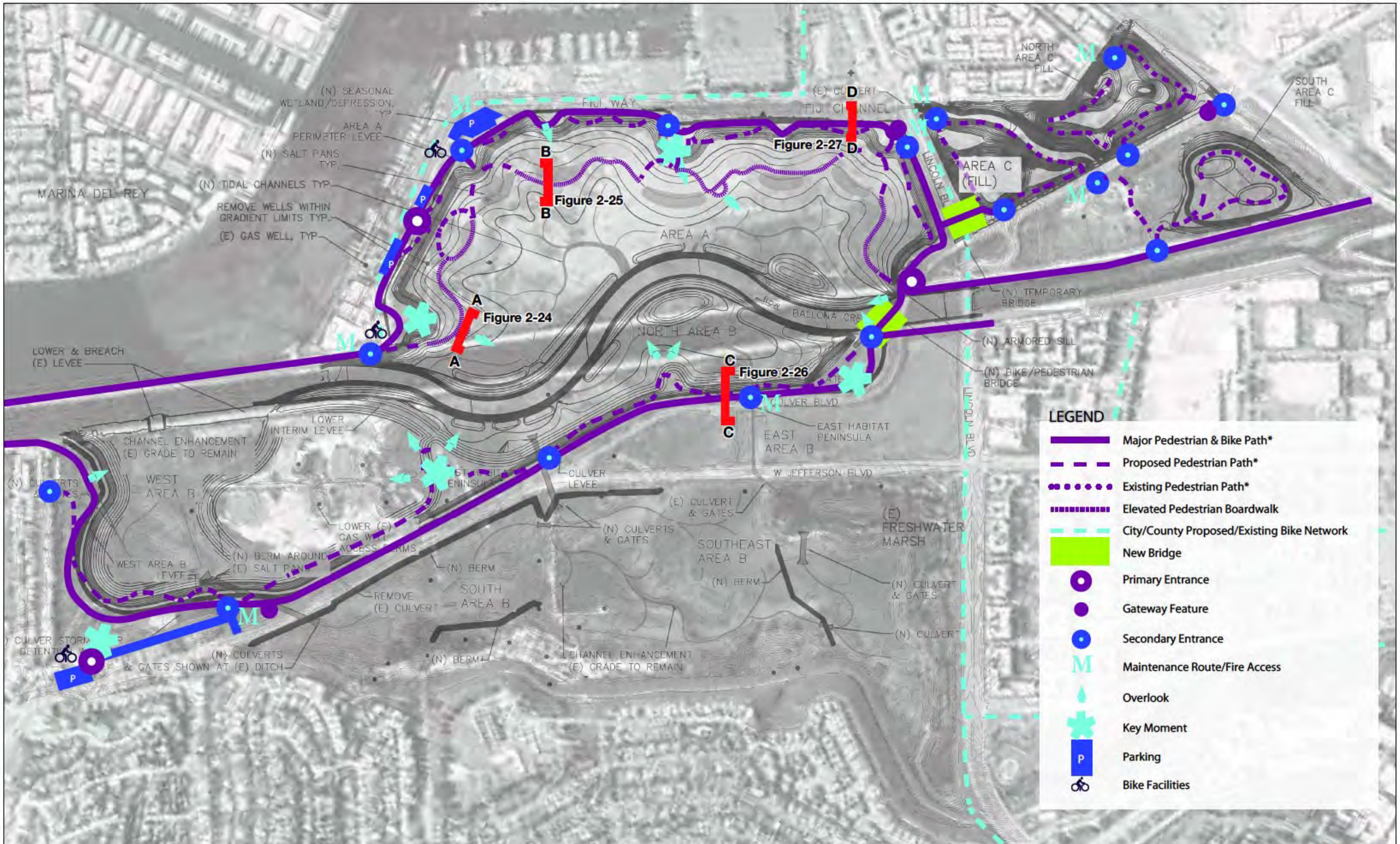
[26] Class I bicycle paths, also known as shared-use or multi-use paths, are paved paths used by cyclists, pedestrians, and other non-motorized modes of travel. They are physically separated from vehicular traffic and can be constructed in the roadway right-of-way or exclusive right-of-way. County of Los Angeles, Los Angeles County Bicycle Master Plan, October 2011.



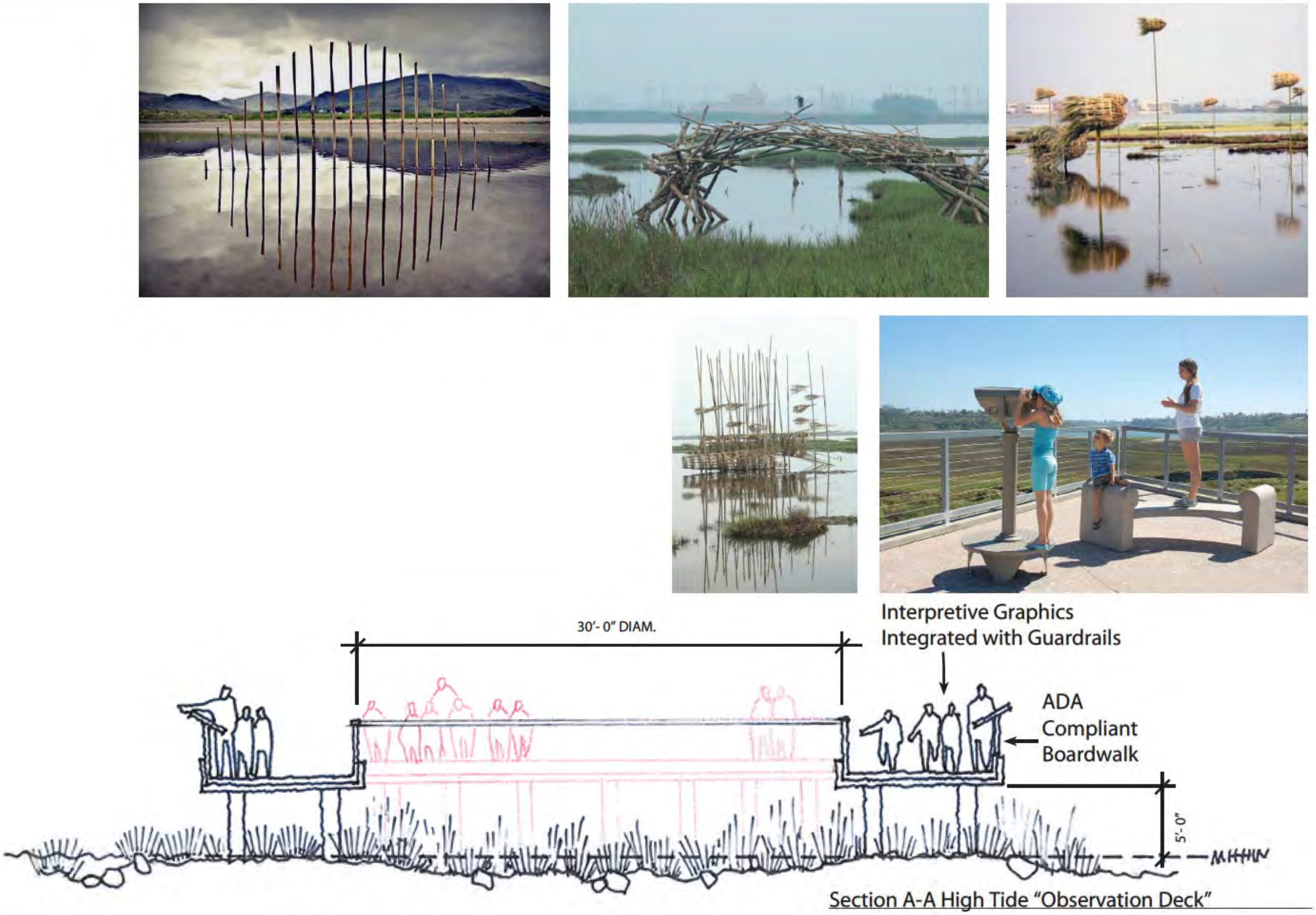
**Note: Paths shown are approximate.*

SOURCE: Meléndrez

ESA

Ballona Wetlands Restoration Project

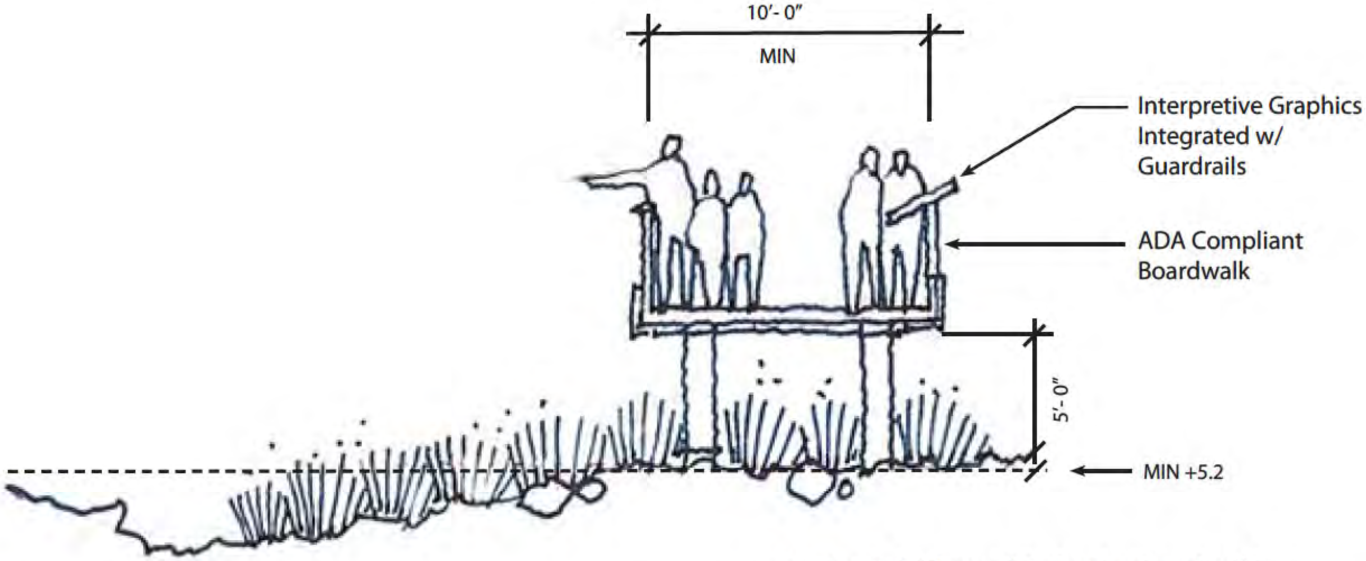
Figure 2-23
Alternative 1: Public Access Plan Detail



SOURCE: Melendrez, July 2013

ESA

Figure 2-24
Typical Observation Deck



Section B-B "Elevated Pedestrian Boardwalk"

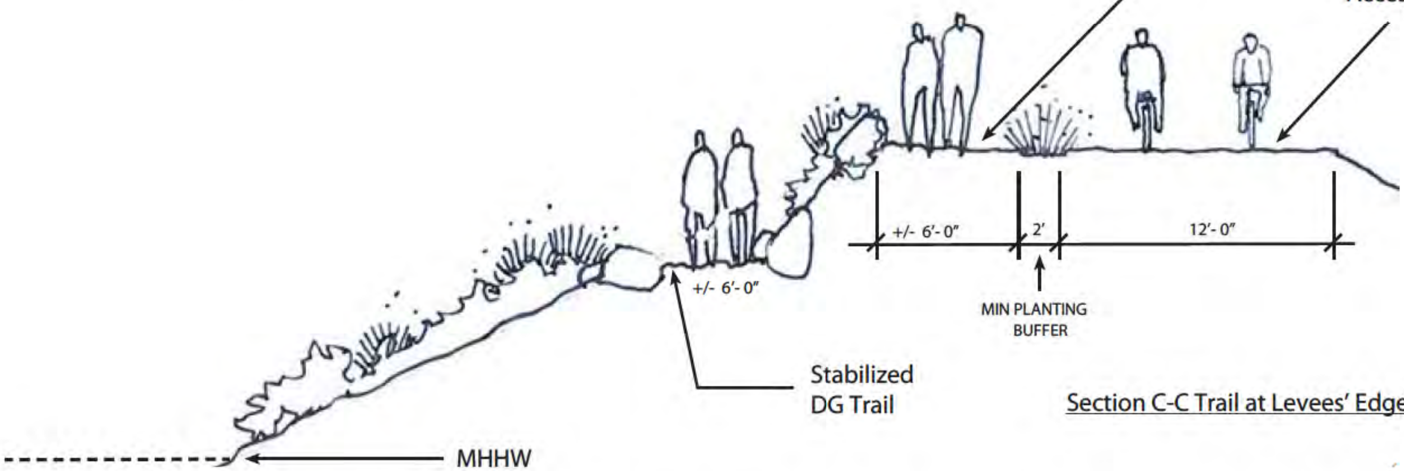
SOURCE: Melendrez, July 2013

ESA

Ballona Wetlands Restoration Project

Figure 2-25
Typical Elevated Pedestrian Boardwalk



SOURCE: Melendrez, July 2013, Not:e: The pedestrial trail would be located dependent on topography. It will either be adjacent to or slightly downslope of the bike path.

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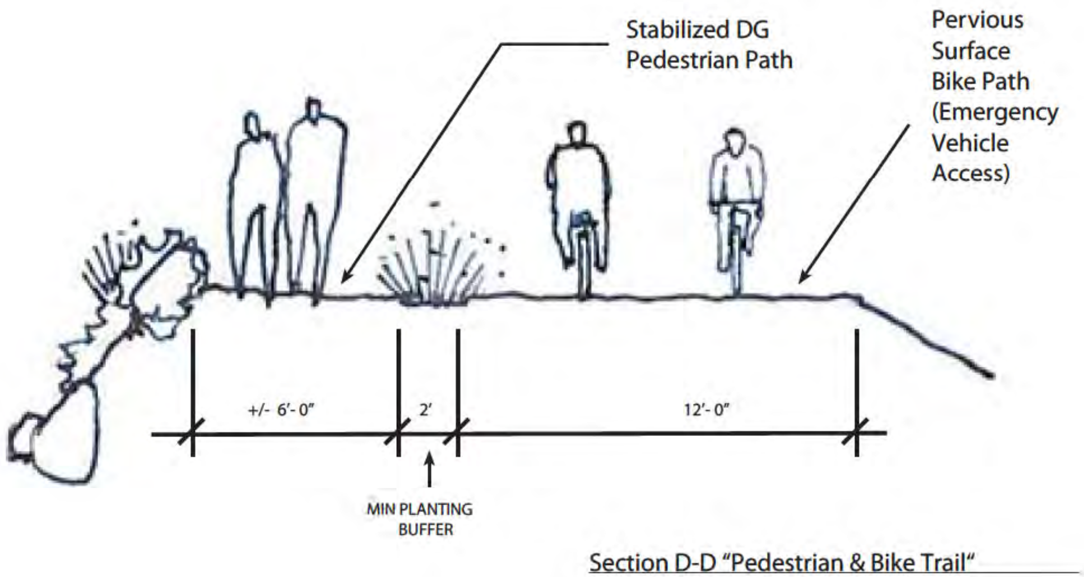
Ballona Wetlands
Restoration Project

Figure 2-26
Typical Trail at Levees' Edge



SOURCE: Melendrez, July 2013

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Ballona Wetlands
Restoration Project

Figure 2-27
Typical Pedestrian & Bike Trail

Pedestrian Trails and Elevated Boardwalks

Approximately 29,000 additional linear feet of pedestrian-only trails would be provided under Alternative 1 (Figure 2-3, *Alternative 1, Phase 2: Public Access Plan*). In addition, Alternative 1 would include construction of approximately 2,000 linear feet of elevated boardwalks to allow visitors to walk adjacent to the wetlands and obtain closer habitat views. In general, pedestrian trails would be 6 feet wide and constructed of stabilized decomposed granite, with native planting on either side where planting is possible. Signage and resting points with seating would be included along the trails. The boardwalks, which would be ADA compliant, would be 10 feet wide and be constructed of wood floor surface, with guardrails on either side. Figure 2-24, *Typical Observation Deck*; Figure 2-25, *Typical Elevated Pedestrian Boardwalk*; Figure 2-26, *Typical Trail at Levees' Edge*; and Figure 2-27, *Typical Pedestrian & Bike Trail,* show typical trail and boardwalk sections.

Area A

As shown in Figure 2-3, *Alternative 1, Phase 2: Public Access Plan*, the pedestrian trails in Area A generally would follow the perimeter levee but would be set off the levee tops toward the wetland landscape, affording closer views of the habitat areas. In Phase 1, an additional pedestrian trail loop would be built in Area A along the berms of the existing SoCalGas wells, as shown in Figure 2-18, *Alternative 1, Phase 1: Public Access Plan*. Because this area would be above the wetland grade, this trail would allow viewing vistas across the site. In addition, approximately 2,000 linear feet of elevated boardwalks would be constructed in Area A to allow visitors to walk adjacent to the wetlands to allow even closer views of Ballona Reserve habitats. The boardwalk would cross Area A in an approximately east/west direction over the newly restored marsh. By building an elevated boardwalk, visitors would be able to walk adjacent to the wetlands and view wildlife without impacting habitats. Finally, a new pedestrian trail would connect Area A to Area C via a new bridge over Lincoln Boulevard, as described below. In addition, another pedestrian/bike bridge connecting Area A to East Area B would be constructed over Ballona Creek.

Area B

The existing pedestrian trails in West Area B along the dunes would not be changed by the Project.

In Phase 1, a new bicycle and pedestrian trail would be built along the new Culver and interim levees and the existing south Ballona Creek levee along West Area B, connecting to the existing trails at the Pacific Avenue Bridge, as shown in Figure 2-18, *Alternative 1, Phase 1: Public Access Plan*. This Area B trail would connect to Area A via a new bridge across Ballona Creek near the Culver Boulevard Bridge.

In Phase 2, a new bicycle and pedestrian trail would be built along the new West Area B levee as shown in Figure 2-3, *Alternative 1, Phase 2: Public Access Plan*, which would replace the Phase 1 trail along the interim and existing south Ballona Creek levees. A pedestrian trail would be set off of the levee tops toward the restored wetlands and would follow the wetland perimeter, moving away from the levee road in some locations to provide better views of the wetland landscape. The trail also would connect to the Area B upland peninsula allowing visitors further access into the restored wetlands for wildlife viewing.

Area C

North Area C

As shown in Figure 2-3, *Alternative 1, Phase 2: Public Access Plan*, an approximately 3,800-linear-foot pedestrian loop trail system would be incorporated into North Area C following material placement and grading, with an approximately 1,400-linear-foot loop trail on the west side of the improved Fiji Ditch riparian corridor and another 2,400-linear-foot loop trail on the east side of the riparian corridor. Secondary entrances to the trails would be provided from Culver Boulevard, Lincoln Boulevard, and the housing complex located immediately north of the site. Trail placement would be designed to facilitate better views of the Ballona Reserve, landscape and management, maintenance, and emergency access. The pedestrian trail in Area C would connect to Area A via a new bridge across Lincoln Boulevard near the intersection with Culver Boulevard.

South Area C

A pedestrian loop trail system would be incorporated into South Area C following material placement and grading, as shown in Figure 2-3, *Alternative 1, Phase 2: Public Access Plan*. Secondary entrances to the trail would be provided from the bike path along the Ballona Creek levee and from Culver Boulevard near the baseball fields.

Bridges

A new bicycle and pedestrian bridge over Ballona Creek would be constructed adjacent to the Culver Boulevard vehicular bridge between Area A and North Area B. This Culver Boulevard Bridge would be 25 feet wide (including an 11 foot wide pedestrian path, 10 foot wide bicycle path, and 2 foot wide shoulders) and approximately 400 feet long. The bridge would connect the existing Ballona Creek Bike Path to the proposed Ballona Reserve pedestrian and bicycle path system. An overlook would be provided, with information provided about the rerouting of Ballona Creek. A new pedestrian bridge also would be provided over Lincoln Boulevard connecting Area A with North Area C. This Lincoln Bridge would be 25 feet wide and approximately 200 feet long. The bridges would serve two purposes: During restoration, the bridges would allow movement of soil among Areas A, B, and C, reducing the need to use surface streets such as Culver Boulevard and Lincoln Boulevard. After restoration is completed, the bridges would allow visitors to cross Ballona Creek and Lincoln Boulevard using paths and trails within Ballona Reserve.

Maintenance Roads and Fire Access

Maintenance routes would provide access to the Ballona Reserve for maintenance and emergency vehicles and to access SoCalGas facilities within the Ballona Reserve, primarily using the levee-top bicycle paths. Controlled access points to the levee-top paths would be provided for use by Ballona Reserve management, maintenance, SoCalGas, and emergency vehicles only.

Improved access also would be constructed in West Area B behind the commercial businesses along Culver Boulevard (Figure 2-15, *Stormwater Basin and Emergency and Bus Access Routes*) for emergency vehicles and bus access to the West Culver Parking Lot, as well as for public access within designated daylight hours.

Interpretive Features and Signage

Overlooks

Overlooks would be positioned along paths and trails to provide views and information about the Ballona Reserve (see Figure 2-24, *Typical Observation Deck*). Overlooks would include informational signage and, in some locations, directional signs. Benches to accommodate small groups also would be included in some locations.

Gateways

Under Alternative 1, three monument signs would be constructed at critical street intersections to identify the Ballona Reserve to passing vehicles, cyclists, or by pedestrians, through text, icon, or a combination of both as shown in Figure 2-3, *Alternative 1, Phase 2: Public Access Plan*. The monument signs would be approximately 12 feet in height or less, would be constructed of natural materials, and surrounded by native landscaping. The first sign would be situated on the southwest corner of the intersection of Lincoln Boulevard and Fiji Way. The second sign would be situated on the northwest corner of Culver Boulevard and SR-90 off ramp. The final sign would be located on Culver Boulevard, north of Nicholson Street, within West Area B.

Educational Signage

Five (5) areas would be designated in Area A, West and North Area B, and South Area C to provide visitors with opportunities to learn more about wetlands habitat, animals, and the larger watershed system (Figure 2-29, *Typical Key Moment Visualization*). Educational art pieces may be included.

2.2.2.4 Alternative 1: Infrastructure and Utility Modification

Modification of some existing infrastructure and utilities (including gas wells, sewer infrastructure, and storm drainage within the Ballona Reserve) would be required for the Project. Connections to exiting off-site water sources are discussed under *Water Sources for Restoration and Irrigation* in Section 2.2.2.5, *Alternative 1: Implementation and Restoration Process*. Alternative 1 would not modify existing public roads or power utilities.

Gas Well Decommissioning

Alternative 1 would decommission existing gas wells within the Ballona Reserve and abandon or modify gas pipelines to accommodate the restoration. SoCalGas would implement well abandonments and relocations. SoCalGas would replace certain monitoring wells before abandoning them by drilling replacement wells within SoCalGas Property along the southern bluff. SoCalGas would employ noise dampening controls during replacement well withdrawal and workover activities including, for example, the use of sound blankets, acoustic wraps, portable acoustic panels, and/or noise barriers. Other wells could be abandoned without replacement. Phase 1, Alternative 1 would decommission only the gas wells that are required for the Phase 1 restoration. All other wells, including the Area A wells and wells within the West Area B salt pan, would be maintained until they are decommissioned in Phase 2. Once the Area A wells are abandoned, this portion of Area A would be graded and restored. In addition, as

* Visualization depicts potential concept for a Gateway Element at one of the main intersection identified (Fiji Way and Lincoln Boulevard). Actual design and siting will vary.

SOURCE: Melendrez, July 2013

Ballona Wetlands Restoration Project

Figure 2-28
Typical Gateway Element Visualization

* Visualization depicts potential concept for a Key Moment. Actual design and siting will vary.

SOURCE: Melendrez, July 2013

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Ballona Wetlands Restoration Project

Figure 2-29
Typical Key Moment Visualization

described above under *Pedestrian Trails and Elevated Boardwalks*, a pedestrian trail loop would be built in Area A along the berms of the existing SoCalGas wells, as shown in Figure 2-18, *Alternative 1, Phase 1: Public Access Plan*.

Table 2-5, *Prioritized Plan for Gas Well Decommissioning*, summarizes gas well decommissioning and pipeline modification activities by phase.

TABLE 2-5
PRIORITIZED PLAN FOR GAS WELL DECOMMISSIONING

Alt 1	Area A	Area B
Phase 1		Modify pipeline serving Area A from proposed Culver Boulevard levee to existing Creek crossing (e.g., replace section of pipe at lower elevation to accommodate levee construction and wetland restoration).
	Abandon inactive Area A pipeline.	Drill replacement well from main plant area to replace Del Rey 12 and plug and abandon Del Rey 12 to allow for channel excavation.
	Modify the abandoned Del Rey 16 well as needed to accommodate restoration grading (e.g., re-abandon or over-excavate). This well is assumed to be 5 feet below grade and would require a pothole to locate the well.	Relocate Line 1167 Pipeline In Southeast B Into The Gas Company Road.
Phase 2	Drill replacement wells from main plant area to replace Del Rey 17, 18, and 19. Note that Del Rey 18 is located off site at the end of Fiji Way.	Drill replacement well from main plant area to replace Del Rey 9 and Vidor 18.
	Plug and abandon Del Rey 13, 14, 15, 17, 18, and 19.	Plug and abandon Del Rey 4, 5, 9, 11 and Vidor 1, 2, 3, 5, 14, and 18.
	Abandon active pipeline serving Del Rey 18 (from Del Rey 18 to the Gas Company facility).	

During construction, full-time all-weather access for heavy equipment (i.e., existing raised unpaved access) would be maintained to the wells that remain.

Phase 1 Well Abandonment

In Phase 1, site excavation would be directed around the wells in Area A, creating sloping upland transition habitat up to the wells.

Within Area B, Del Rey 12 would be abandoned to allow for the Phase 1 realignment of Ballona Creek. The interim levee between the new Culver Boulevard levee and the existing southern Ballona Creek channel levee along West Area B would be constructed to protect and avoid the cluster of wells in West Area B, including Vidor 1, 2, and 3 and Del Rey 4, 5, and 9. Phase 1 restoration allows for these wells to be maintained as is.

Phase 2 Well Abandonment

In Phase 2, Vidor 1, 2, and 3 and Del Rey 4, 5, and 9 in West Area B would be abandoned as part of the salt pan enhancement. Del Rey 13, 14, 15, 17, 18, and 19 would be abandoned in Area A and the surrounding area would be graded and restored (Figure 2-2, *Alternative 1, Phase 2:*

Preliminary Grading Plan). However, as described above under *Pedestrian Trails and Elevated Boardwalks*, a pedestrian trail loop would be built in Area A along any remaining berms of the existing SoCalGas wells

Pipeline Protection and Relocation

In Phase 1, the section of the gas pipeline between the new Culver Boulevard levee and the existing Ballona Creek crossing to Area A would be modified to allow Phase 1 levee construction and wetland restoration (Figure 2-5, *Alternative 1, Phase 1: Preliminary Grading Plan*). This would be accomplished by replacing the lower elevation pipe section with a sleeved pipe under the new Culver Boulevard levee, thereby eliminating the potential for differential settlement of the pipeline.

In Southeast Area B, a 1,500 foot portion of the Line 1167 30-inch natural gas pipeline crossing the wetland to Jefferson Boulevard would be excavated and removed from the wetlands and relocated to within the adjacent paved Gas Company Road to allow for the establishment of new tidal channels in Southeast Area B that would cross the existing pipeline alignment (Figure 2-5, *Alternative 1, Phase 1: Preliminary Grading Plan*).[27]

These relocations would be completed prior to grading within their respective areas. Other gas pipelines to remain in place would be avoided by setting earthwork back by at least 15 feet.

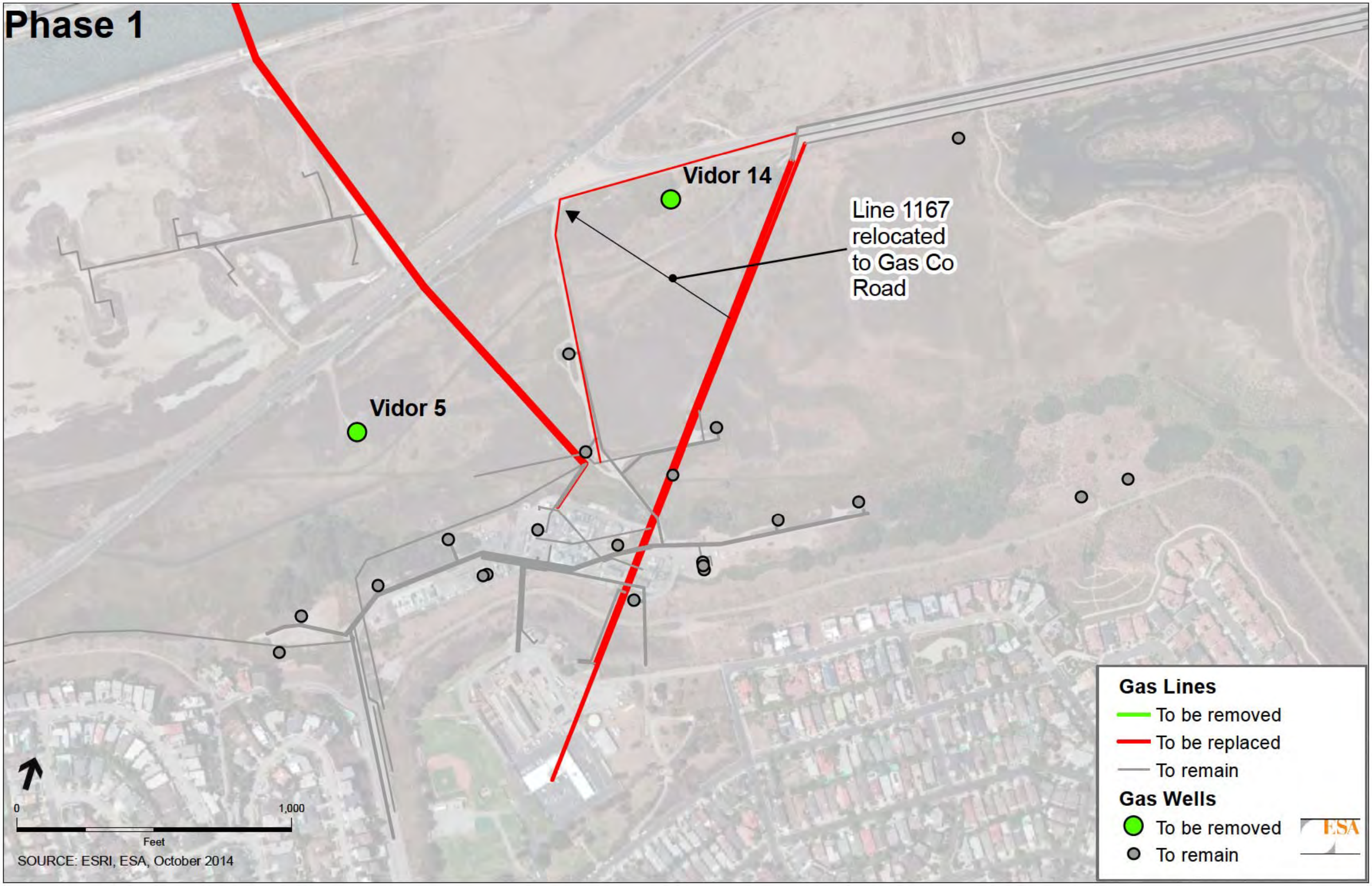
Existing abandoned pipelines, when located within restoration areas, would be removed from the restoration area and the sections remaining beyond the limits of proposed restoration earthwork would be capped at both ends. One known abandoned pipeline traverses Area A and along the north Ballona Creek levee.

Pipeline and well relocation plans are provided in Figure 2-30, *South/Southeast Area B: Gas Well Decommissioning*; Figure 2-31, *Area A:Gas Well Decommissioning*; and Figure 2-32, *West and East Area B:Gas Well Decommissioning*.

Sewer Infrastructure

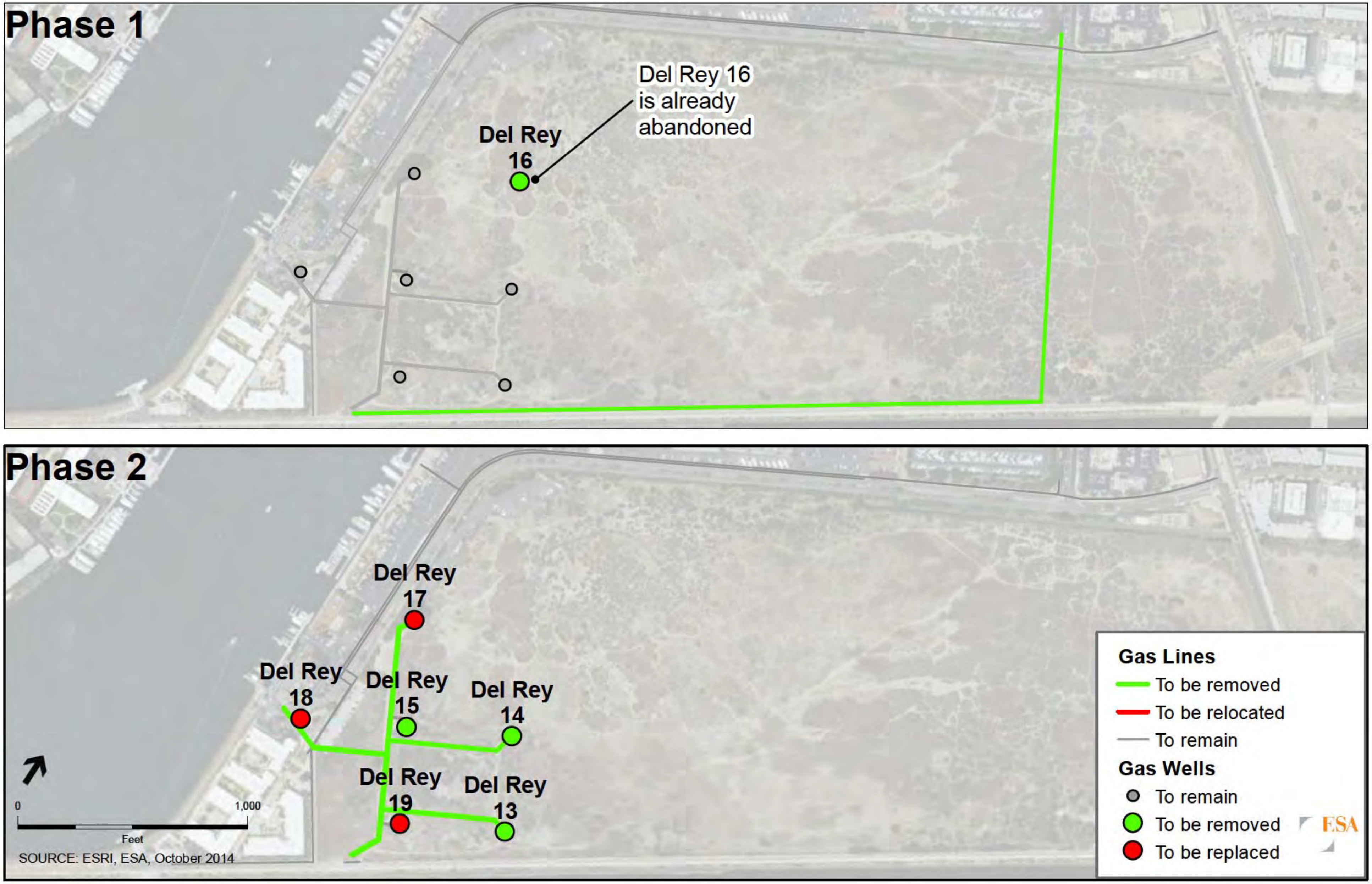
Property boundary and easement maps show a 20-foot-wide sanitary sewer and storm drain easement to the City of Los Angeles that generally runs north to south through Area A and Area B west of the Gas Company Road. The City of Los Angeles provided information indicating that there is an abandoned 36-inch reinforced concrete pipe within this easement (S. Kharagani, City of LA, pers. comm.). The abandoned pipe would likely need to be removed and capped where any excavation down to the pipe is planned for the restoration.

[27] Alternatively, SoCalGas may choose to abandon the gas pipeline in place, which would entail excavation a portion of the line, filling the pipeline with a slurry mixture, and capping the pipeline. However, this is not the preferred method.



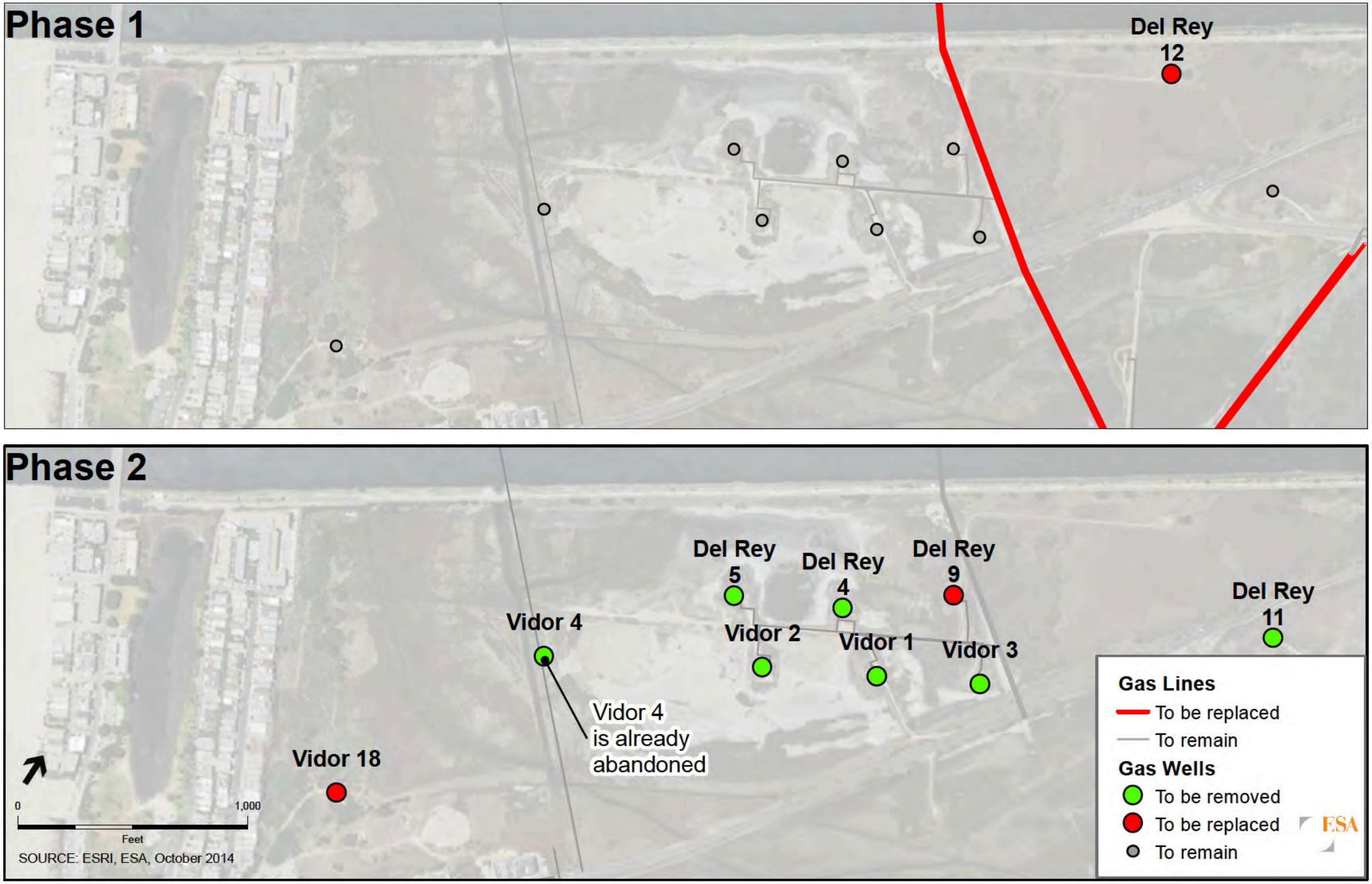
Ballona Wetlands Restoration Project

Figure 2-30
South/Southeast Area B: Gas Well Decommissioning



Ballona Wetlands Restoration Project

Figure 2-31
Area A: Gas Well Decommissioning



Ballona Wetlands Restoration Project

Figure 2-32
West and East Area B: Gas Well Decommissioning

Roads and Storm Drainage

Existing public roads running through the Ballona Reserve (Culver Boulevard, Lincoln Boulevard, and Jefferson Boulevard) would remain in place and would not be altered by the Project. Signage would be added at the new bus and emergency access entrance off Culver Boulevard to the West Culver Parking Lot indicating right turn in/right turn out only at Culver Boulevard.

Alternative 1 provides a number of stormwater controls and improvements. These are described in Section 2.2.1.2, *Alternative 1: Flood Risk and Stormwater Management*.

2.2.2.5 Alternative 1: Implementation and Restoration Process

The following sections detail how Alternative 1 would be implemented.

Restoration Phasing and Sequencing

Implementation of Alternative 1 is anticipated to occur in two phases consisting of multiple sequences beginning as soon as 2017.[28] The sequences would be grouped into two primary restoration periods, with the first lasting up to 5 years (e.g., 2017 to 2022) and the second beginning as soon as 1.5 years after the first period is complete (e.g., as soon as 2023). No restoration activities would occur between the two restoration periods to facilitate habitat restoration and plant establishment. See Table 2-6, *Alternative 1 Restoration Sequence Stages*, and Table 2-7, *Alternative 1 Restoration Schedule*. All restoration construction start dates are estimated for purposes of this analysis. The actual restoration start dates would depend on the permitting process and securing necessary funding.

Phase 1

In Phase 1, Area A site preparation would occur, including utility relocation, construction of bridges across Ballona Creek and Lincoln Boulevard for soil transport, and clearing and grubbing. Then soil would be excavated and used to build the Area A perimeter levee. Site preparation of North Area B would occur, including utility relocation, clearing and grubbing, and over-excavation along the levee alignment. Soil excavated from Area A would be transported to Area B and used to construct the Culver Boulevard levee and the interim levee. North Area C and South Area C would be cleared and grubbed and additional soil excavated from Area A would be transported to these areas and placed and graded to form new upland areas. The baseball fields may need to be closed during restoration. Soil for levee construction in Phase 2 would be stockpiled within the Culver and interim levees and East Area B.

For the South/Southeast Area B wetland enhancement, water-control structures would be installed and modified, and wetland enhancements, including channel excavation, berm construction, and invasive plant removal, would be completed.

28 The proposed construction start date may be adjusted in the Final EIS/EIR.

TABLE 2-6
ALTERNATIVE 1 RESTORATION SEQUENCE STAGES

Sequence #	Restoration Phase	Project Area(s)	Activity Description
1	1	B	Southeast Area B gas line 1167—remove and relocate existing gas line to Gas Company Road
2	1	B	South Area B enhancement – enhancement including channel excavation
3	1	A	Area A gas line removal and Del Rey 16 well modification-- remove existing inactive gas line. This well is assumed to be 5 feet below grade and would require a pothole to locate the well.
4	1	A & B	Pedestrian/bicycle bridge—relocate bicycle path under proposed bridge and construct pedestrian/bicycle bridge across channel with connection to bicycle path under the bridge
5	1	A & C	Lincoln Boulevard Bridge—build Lincoln Boulevard Bridge next to Culver Boulevard Bridge to connect Area A to Area C
6	1	A	Clear, grub, and stockpile before grading Area A
7	1	A	Excavate Area A—excavation starts 70 feet north of levee
8	1	A	Construct north levee—grading and construction of levee within Area A with or without gas wells remaining
9	1	B	North Area B north gas line relocation and Del Rey 12 well abandonment and replacement—remove and relocate active gas lines within sleeve;
10	1	B	Clear and grub North Area B
11	1	B	North Area B over-excavate and stockpile—excavate along Culver Boulevard—Jefferson Boulevard to 70 feet south of levee
12	1	B	Construct Culver Boulevard levee—grading and construction of levee
13	1	B	Clear, grub, and stockpile before grading East Area B
14	1	B	East Area B grading
15	1	C	Clear and grub North and South Area C
16	1	A & C	Area A grading and export to North and South Area C
17	1	C	Finish grading for uplands in North and South Area C
18	1	B	Area B box culverts—install two new culverts on Culver Boulevard and Jefferson Boulevard and realignment of Freshwater Marsh outlet
19	1	A & B	Area A and North Area B—excavate and breach existing levees
20	1	A & B	Area A and North Area B—block and fill existing levees
21	1	A & B	Area A and North Area B—remove existing levees
22	1	B	West Area B – construct fire access road, reconstruct Area B parking lot, and construct storage basin
23	1	A & B	Construct bicycle path, pedestrian walk, and amenities along top of levee
24	1	A	Export soil from Area A to off-site landfill or ocean disposal site
25	2	B	West Area B well abandonment and replacement
26	2	B	Clear and grub West Area B levee alignment
27	2	B	Construct West Area B levee—excavate stockpiled material from Culver Boulevard levee and East Area B, grading and construction of levee
28	2	B	West Area B fire access road—construct the fire access road. The portion of connecting Culver Boulevard to the levee top must be built with Sequence 27
29	2	B	West Area B channel grading

TABLE 2-6 (Continued)
ALTERNATIVE 1 RESTORATION SEQUENCE STAGES

Sequence #	Restoration Phase	Project Area(s)	Activity Description
30	2	B	Extension of bicycle path along south levee to Playa del Rey—extend the bicycle path along the top of the south levee to Playa del Rey with amenities
31	2	B	West Area B excavate and breach existing levees—remove existing levee at Ballona Creek and build levee on West Area B
32	2	B	West Area B remove existing levees—remove existing levee at Ballona Creek and build Levee on West Area B
33	2	A	Area A gas line and well abandonment and replacement
34	2	A	Area A grading and export to East Area B
35	2	B	Finish grading for uplands—complete grading in East Area B and construct optional bicycle path under Lincoln Boulevard Bridge

NOTE:
* Performed concurrently.

TABLE 2-7
ALTERNATIVE 1 RESTORATION SCHEDULE

Phase	Start Date	End Date
Phase 1—Interim Restoration: Area A, North Area B, South/Southeast Area B	January–November 2017 or later	March–July 2022 or later
Habitat Establishment, Monitoring & Adaptive Management—minimum of 1.5 years	April–August 2022 or later/longer	May–September 2023 or later/longer
Phase 2—Final Restoration: West Area B	April–September 2023 or later	January 2025–January 2026 or later

Once the new levees are in place, the channel meander shapes would be constructed. The new channel meander shapes would be excavated behind the existing levees, the existing levees would be breached to connect the new meanders to the existing Ballona Creek channel, and the existing Ballona Creek channel segments between the meander-shaped bends then would be blocked and filled. This sequence would maintain an open Ballona Creek channel throughout the restoration process. The existing levee then would be removed.

Finally, the public access features, including new bicycle and pedestrian paths and the West Area B fire access road and stormwater drainage improvements would be completed. The proposed parking structure across from Fisherman's Village along Fiji Way and parking improvements in the West Culver Parking Lot are included in Phase 1, although the availability of funding may affect the actual timing of restoration.

Phase 2

In Phase 2, the wells in West Area B would be abandoned and relocated. Clearing and grubbing would occur along the alignment of the new West Area B levee and salt pan berm. The West

Area B levee and salt pan berm would be constructed using the fill stockpiled in the Culver and interim levees and East Area B. A water control structure would be installed to connect the existing channel from West Area B to behind the dunes. A new water control structure would be installed under Culver Boulevard, and would be extended to reach under the West Area B levee. Tidal channels would be excavated in West Area B. The interim and south Ballona Creek levees would be lowered, regraded into the upland peninsula and salt pan berm, and breached. The wells in Area A would be abandoned and the area would be graded sloping down to marshplain. Revegetation would occur on the levees, berm, peninsula, and East Area B.

Restoration Schedule

Table 2-7, *Alternative 1 Restoration Schedule*, shows the proposed restoration schedule for Alternative 1.

Earthwork Quantity Estimates

Table 2-8, *Alternative 1 Earthwork Soil Volume*, summarizes overall earthwork quantity estimates for Alternative 1. Levee dimensions would be refined during final design as needed to meet Corps requirements, including Section 14 of the Rivers and Harbors Act, Section 408 requirements for modifications to Corps-approved flood risk management systems. The final volume of fill placement for levee construction would depend on the final design and the actual conditions during restoration (e.g., the compatibility of excavated soils). Maximum potential fill volumes are analyzed in this document; actual fill volumes may be less.

Between approximately 10,000 – 110,000 cubic yards of soil may need to be exported from the site depending on final levee design, levee compaction, and final grading in North and South Area C. Although quantities for cut and fill have been estimated for the preliminary design, exact calculations of how much excess fill would be generated by the excavation of wetlands areas and the removal of old fill soil will be determined in the final levee design process in cooperation with LACFCD and the Corps.

Stockpiling and Excess Fill Placement

During Phase 1, soil excavated from Area A would be stockpiled within the Culver Boulevard and Interim levees and East Area B fill in order to stockpile the soils for Phase 2 construction of the West Area B levee as discussed in Section 2.2.2.1, *Alternative 1: Ecosystem Restoration*, and shown in Figure 2-5, *Alternative 1, Phase 1: Preliminary Grading Plan*, and Figure 2-2, *Alternative 1, Phase 2: Preliminary Grading Plan*. In Phase 1, soil not needed for levee construction would be placed in upland areas (East Area B and North/South Area C) or exported (see “Off-Site Soil Export” under “Methods” on the following pages). Additionally, material from the existing channel levees would be stockpiled for use in channel armoring.

TABLE 2-8
ALTERNATIVE 1 EARTHWORK SOIL VOLUME

Phase	Area	Estimated Earthwork Volumes (cubic yards)			Notes
		Cut	**Fill**	**Cut/Fill Balance Transport (Cut-Fill)**	
Phase 1	Area A	1,520,000	(330,000) to (350,000)	1,190,000 to 1,170,000	Excavation for wetland restoration Placement for levee construction Transport to Area B and North Area C
	North Area B	310,000	(530,000) to (570,000)	(220,000) to (260,000)	Transport from Area A Excavation for wetland restoration Placement for levee construction Placement/stockpiling for Phase 2 levee construction
	East Area B	—	(50,000) to (80,000)	(50,000) to (80,000)	Transport from Area A Placement for upland restoration Placement/stockpiling for Phase 2 levee construction
	South/Southeast Area B	10,000	(10,000)	—	Transport from Area A Excavation for channel enhancements Placement for berm construction
	North Area C	40,000	(760,000)	(720,000)	Transport from Area A Placement for upland restoration
	South Area C	—	(300,000)	(300,000)	Transport from Area A Placement for upland restoration
	Subtotal	*2,090,000*	*(1,980,000) to (2,080,000)*	*10,000 – 110,000*	*Potential for off-site export of 10,000 to 110,000 cubic yards*
Phase 2	North Area B	190,000	—	190,000	Excavation of stockpiled soil for west Area B levee construction
	East Area B	50,000 to 80,000	—	50,000 to 80,000	Excavation of stockpiled soil for west Area B levee construction Transport to west Area B
	West Area B	70,000	(310,000) to (340,000)	(240,000) to (270,000)	Excavation for levee lowering/breaching and channel enhancements
	Subtotal	*310,000 to 340,000*	*(310,000) to (340,000)*	—	*On-site balance of cut and fill*
Total		***2,400,000 to 2,430,000***	***(2,290,000) to (2,420,000)***	***10,000 – 110,000***	***Potential for off-site export of 10,000 to 110,000 cubic yards***

NOTES: Fill placement volumes account for compaction of lower-density soil excavated from Area A when it is placed and compacted to a higher density in a fill placement area. Note that with projects that have levee fill volumes of several hundred thousand cubic yards, slight changes in the degree of slope or the width of the levees could greatly affect the amount of excess soil that would be created.

SOURCE: ESA, 2014.

Implementation Methods

Earthwork and Soil Transport

Much of the Project's earthwork would be accomplished by traditional land-based equipment (e.g., scrapers and excavators). Wetland restoration earthwork also would require some special equipment and implementation methods, as high groundwater and weak soils can preclude use of traditional land equipment. Specialized equipment and construction methods that may be needed, along with more typical techniques, are described in Table 2-9, *Equipment and Earthwork Methods for Wetland Restoration*. Additional detail is presented in Appendix B4, *Construction Equipment and Sequencing*.

TABLE 2-9
EQUIPMENT AND EARTHWORK METHODS FOR WETLAND RESTORATION

Special Equipment and Methods for Wetland Restoration	
Equipment	**Earthwork Methods**
Low ground pressure	Smaller, lighter equipment with large surface area tires or treads that reduces bearing pressure.
Mats	Timber planks (thick) lashed together and moved by bucket-type equipment.
Long-reach excavator	Track or wheel mounted excavator with a long arm and small bucket to allow extended reach to over 40 feet.
Clamshell and dragline crane	Usually track mounted, can reach 60 feet or more.
Amphibious excavator	Can float, and can excavate in shallow standing water.
Rotary ditcher	Excavates with rotating wheels that spray sediment across adjacent areas, resulting in a narrow ditch. Typically pulled behind other equipment but can be self-propelled.
Floating equipment	Cranes and excavators can be floated on barges for both transport and operation. Equipment can be trucked in and assembled to work in land-locked water bodies.
Hydraulic dredge	A water and sediment mixture can be excavated and pumped. Unlikely for Alternative 1.
More Common Construction Equipment	
Grader	
Truck	
Loader	
Backhoe	
Generator Set	
Drill Rig	
Forklift	

Soil transport would be accomplished using one or more of the methods identified in Table 2-10, *Soil Transport Options*.

TABLE 2-10
SOIL TRANSPORT OPTIONS

Transport Method	Application
Scrapers and loaders	Transport of materials within and between Areas A, B, and C
Haul and dump truck	Transport of materials within and between Areas A, B, and C; off-site transport of surplus excavated soils
Belt conveyor	Transport of materials between Areas A, B, C, and onto barges
Track excavators and dozers, trucks or other low ground pressure equipment	Areas below groundwater elevation (e.g., wetland channel excavation)
Hydraulic dredge	Areas below groundwater elevation

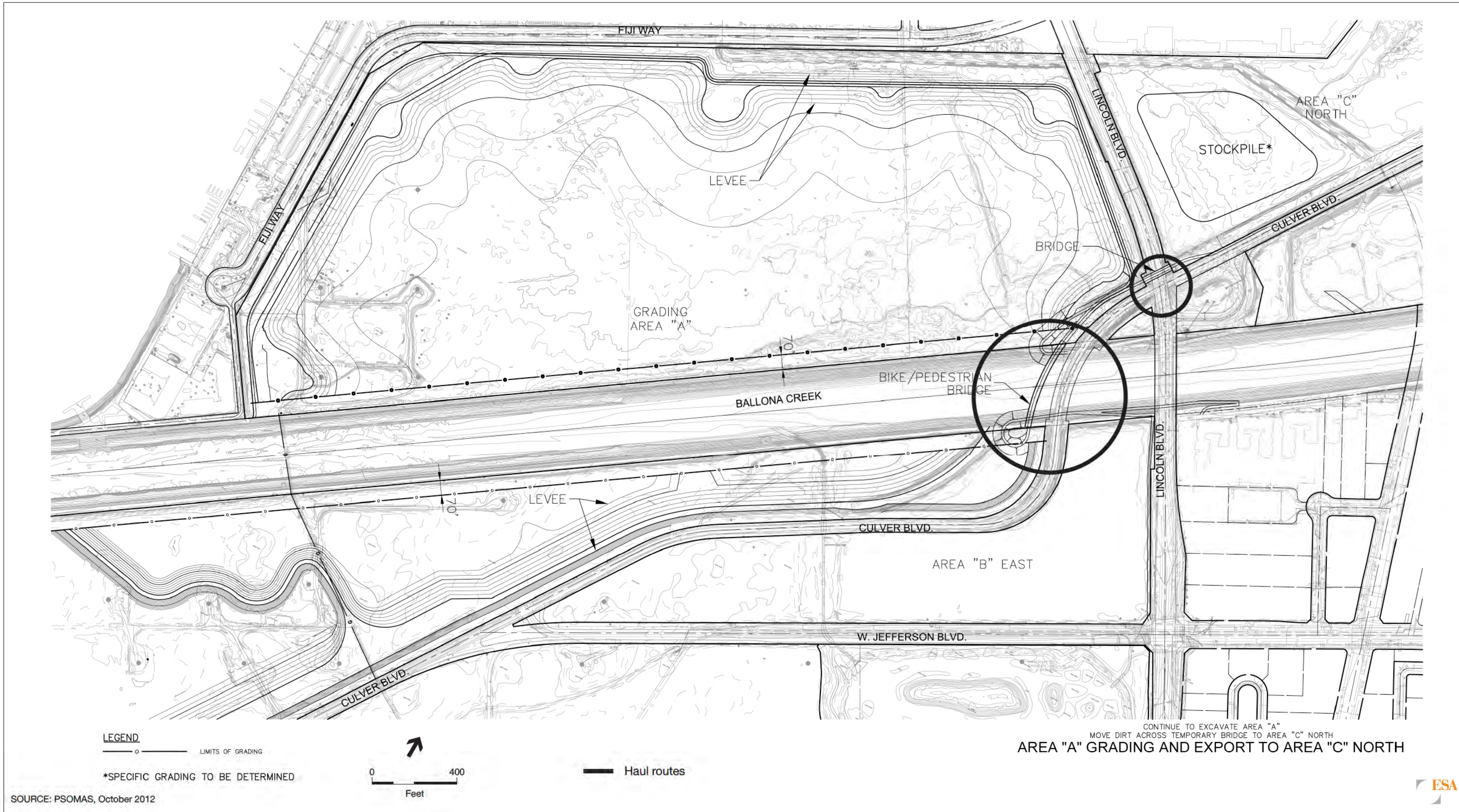
Alternative 1 would install permanent bridge crossings across Ballona Creek and across Lincoln Boulevard for pedestrian and bicycle trail crossings (Figure 2-33, *Potential Haul Routes*). These bridges would be used for transporting soil from Area A to Area B and North Area C during restoration. Table 2-11, *Soil Transport Methods between Areas A, B, and C*, summarizes additional methods for transporting soil between Areas A, B, and C that the restoration contractor could use to cross Ballona Creek, including a temporary floating crossing or a ford (e.g., temporary fill in the Ballona Creek channels with buried culverts to maintain conveyance).

TABLE 2-11
SOIL TRANSPORT METHODS BETWEEN AREAS A, B, AND C

Method	Application
New Bridges	New Lincoln Boulevard Bridge at old railway alignment and new Ballona Creek bridge for transport form Area A to North Area C and Area B.
Barge / floating crossing	Straight between Areas A and B across Ballona Creek
Temporary ford	Straight between Areas A and B across Ballona Creek
Bridge	Crossing Culver Boulevard between North and East Area B
Culvert	Drainage culvert under Lincoln Boulevard at Fiji Ditch from Area A to North Area C
Existing roadways	Crossing Culver Boulevard between North and East Area B and between North and South Area C, or Lincoln Boulevard from Area A to East Area B (return on Jefferson Boulevard, Lincoln Boulevard, and Fiji Way); Fiji Way and crossing Lincoln Boulevard from Area A to North Area C

An additional option for transporting soil from Area A to North Area C could include a conveyor system through the existing drainage culvert under Lincoln Boulevard at Fiji Ditch or using existing roadways (e.g., along Fiji Way and crossing Lincoln Boulevard with traffic controls). See Figure 2-34, *Photos of Typical Conveyor Loading Equipment*.

To transport soil to/from East Area B (i.e., to East Area B in Phase 1 to North Area B in Phase 2), a bridge would be installed over Culver Boulevard between North and East Area B, or trucks/scrapers would travel on existing roads with traffic controls (e.g., directly crossing Culver Boulevard between North and East Area B, or traveling on Lincoln Boulevard from Area A to East Area B, returning on Jefferson Boulevard, Lincoln Boulevard, and Fiji Way).



SOURCE: PSOMAS, October 2012

Ballona Wetlands Restoration Project

Figure 2-33
Potential Haul Routes

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Barge Supported Conveyor

Land Supported Conveyor System

Typical Dump Box (Grizzly)

SOURCE: BK Cooper, October 2014

ESA

Ballona Wetlands Restoration Project

Figure 2-34
Photos of Typical Conveyor Loading Equipment

Levee Lowering and Breaching

Levee lowering would involve a phased removal of earth to maximize the quantity that is moved prior to breaching and to limit the risk of uncontrolled breaching. Figure 2-35, *Photos of Typical Levee Lowering Staging/Breaching*, shows how this work typically is staged. In multiyear restoration, the minimum section of earth levee to remain through the winter is specified. The restoration contractor also would be required to sequence work to prevent site inundation, and typically would do this by leaving a small raised area (e.g., a "check berm") until final earthwork. Final earthwork often consists of dozer operation to quickly remove the check berm and side cast earth into the site. This last work may be timed for a neap tide (i.e., least difference between low and high tides) and staged to maintain access and egress along portions of the levee. This would facilitate phased lowering as portions of Alternative 1 would be completed. Alternatively, the contractor could use steel sheet pile coffer dams along the levee to allow for levee lowering during all tide levels.

Breaching also would be phased, similar to levee lowering. Breaching usually is accomplished by two long-reach excavators working on the lowered levee on either side of the breach to be excavated (Figure 2-35, *Photos of Typical Levee Lowering Staging/Breaching*). At first, earth would be loaded to trucks and taken elsewhere. Once the levee section is reduced to the point of incipient breaching at the next high tide, the operation usually shifts into a high production rate mode with excavated material sidecast. Often, other excavators and low-ground pressure dozers rehandle the sidecast earth and displace it farther away from the breach, thereby limiting the height of the side cast and maximizing the excavation rate. The work continues until the breach is excavated or the tides approach the levee surface. For larger breaches, multiple days or weeks may be required, resulting in relatively high potential velocities. In this case, an internal and potentially external earth berm (sometimes called a "donut" or "dredge lock") could be constructed to limit the area of impact during restoration. Steel sheet pile coffer dams also may be used to limit tidal inundation of breach excavations.

Ballona Channel Realignment

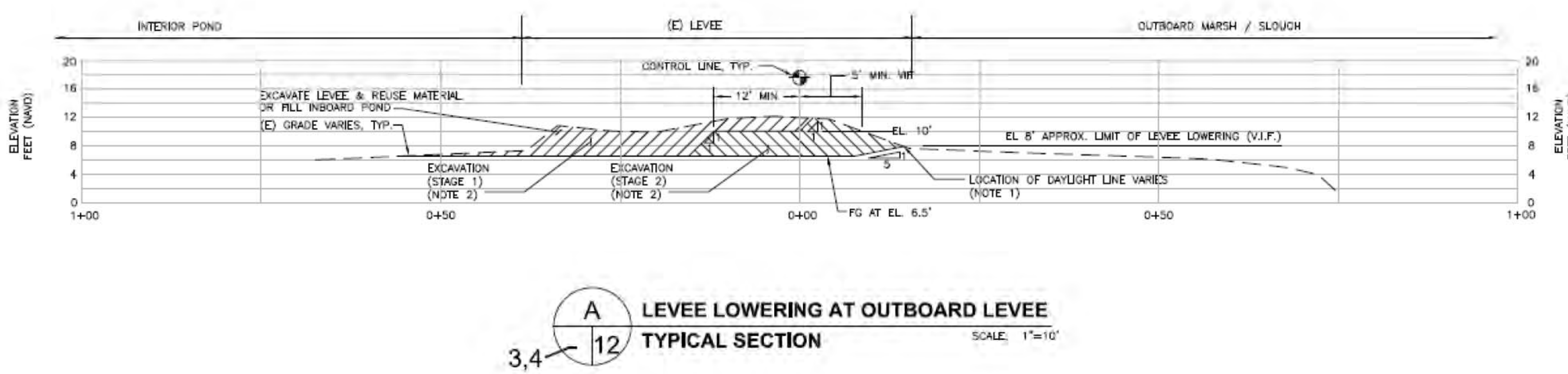
Alternative 1 includes a realignment of the Ballona Creek channel from a straight to a meander-shaped form. This would be accomplished with the following restoration sequence: (1) the new channel is excavated; (2) the new channel is breached; (3) the old channel is blocked on the upstream and downstream ends, with flows bypassing to the new channel; and (4) the old channel is filled between the blocked areas.

Blocking the channel would be accomplished in one (or a combination) of the following ways, depending on final design, permitting requirements, and restoration efficiency:

1. Rubble fill: A rock dike is constructed with floating equipment or "over the top" from land; the rock is graded to have a wide range of sizes, limiting contiguous voids and subsequent sediment migration;
2. Sheet piling is placed; the plan form would be a linear wall with steel or concrete, or have a cellular structure with steel;
3. Interlocking precast concrete gravity structures are used; and/or
4. Temporary fabric and sheet structures such as water or soil filled fabric tubes or metal frames and plastic sheets are used.

Two long-reach excavators and a low ground pressure dozer excavate a breach. Not seen is a third long reach excavator that re-handled the excavated material to spread it further, and additional dozers that helped spread the material. Ideally, the breach is constructed in a few hours, between high tides, including while water flows through. When multiple days or longer are required, flows through or over the breach are controlled to avoid failure of the breach.

The photograph shows the same levee close to the end of Phase 2 construction, with the levee crest lowered to high tide except for a small "check berm" to prevent overtopping. Note: The tidal boundary is on the left, opposite of the drawing.



The section drawing shows a 2-phased levee lowering excavation.

SOURCE: Group Delta, October 2012

ESA

Ballona Wetlands Restoration Project

Figure 2-35
Photos of Typical Levee Lowering Staging/Breaching

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Filling the blocked channel would be accomplished in one (or a combination) of the following ways, depending on final design and permitting requirements:

1. Dumping of earth from the sides, and building out;
2. Hydraulic slurry of sands, with subsequent earth moving above water; and/or
3. Land-based equipment in a dewatered condition.

Given that the material that would be excavated in Area A is primarily silty, use of hydraulic dredge methods would not be the preferred approach, but may be necessary in certain areas. Given that Ballona Creek is shallow and relatively calm water, use of temporary fabric and sheet structures may be preferred. Dewatering of the fill area may be practical, and land based equipment may be used.

Construction Period Levee Stability

Levee stability would be addressed by staged construction with geotechnical recommendations. Levee construction often requires a phased construction to compensate for settlement and to avoid overloading the subgrade and causing shear failure and mass movements. The increased weight of an earth levee typically would result in consolidation of underlying soils and settlement. The increased weight also would increase the shear stresses in the foundation soils, and can cause shear failure and deformation, and compromise the levee construction. Consequently, levee construction often requires a second construction phase one or more years later to compensate for settlement. The risk of slope failure can be reduced and the rate of construction increased by using flatter slopes. Conceptually, placing more material with a flatter slope reduces the gradient in loading and the maximum shear stress in the underlying earth.

Off-Site Soil Export

In Alternative 1, up between approximately 10,000 - 110,000 cubic yards of excavated soil could be exported from the site. There are three options for off-site soil export and disposal:

1. Export via trucks with disposal at local landfills, the most likely of which could include Scholl Canyon Landfill in the City of Glendale, Calabasas Sanitary Landfill in the City of Agoura, and/or the Lancaster Landfill and Recycling Center in Lancaster;

2. Export via barge to the Port of Los Angeles or Port of Long Beach, transfer to trucks for upland disposal at local landfills; or

3. Export via barge to an off-shore disposal location, potentially including the Los Angeles ocean disposal site approximately 30 miles (26 nautical miles) away from the Ballona Reserve off the coast from San Pedro (LA-2) or the Newport Bay ocean disposal site approximately 55 miles (48 nautical miles) away from the Ballona Reserve off the coast from Newport Beach (LA-3), each of which is managed by the United States Environmental Protection Agency (USEPA).

Clearing and Grubbing

Vegetation would be biologically monitored, cleared and grubbed prior to grading. Native plants and seeds/cuttings may be salvaged and reused for revegetation of restored areas. Invasive-nonnative plants would be stockpiled on site and treated (e.g., composted). The preferred approach would be to bury nonnative plant material in upland fill areas at a depth below which the nonnative vegetation or seedbank could reestablish.

Nonnative Plant Material Treatment

After grading, nonnative plants would be removed prior to and concurrent with revegetation to ensure native habitat enhancement. Specifically, invasive-nonnative species populations designated as High by Cal-IPC would be targeted for removal. If other invasive-nonnative plant species listed as having a moderate or limited impact by the Cal-IPC are present, they would be removed if, based on the CDFW's review, they are negatively affecting habitat and/or restoration efforts at the site.

Recommendations contained in the Cal-IPC Weed Workers Handbook and website (2014) and at the U.S. Department of Agriculture (http://plants.usda.gov/java/noxiousDriver) would be followed. Mechanical removal is the preferred method of removing invasive species; accordingly, invasive plant species removal would occur using mechanical methods to the maximum extent possible. This method of removal would be used in areas where the associated ground disturbance would not adversely affect sensitive wildlife species. Plant materials that are removed would be removed entirely and disposed of carefully, including stems and all root fragments, to prevent regeneration or spread. In general, removal would be performed during the late winter or early spring when soils are moist enough to remove entire plants without breaking the roots. Invasive species would be removed before the species set seed. When this is not feasible, seed heads would be removed from plants prior to removing the stems and roots. Seed heads of invasive species would be placed in plastic trash bags and removed from the Project site for proper disposal.

If mechanical or hand removal methods are tried and found to be ineffective after two years of repeated treatment, or the problem is too widespread for hand removal to be practical, then chemical controls would be implemented as described below. For some species, particularly woody species or large-biomass species (e.g., pampas grass), mowers, chainsaws, or other handheld equipment may be used if the eradication method would not adversely affect sensitive wildlife species.

Invasive plant materials that are removed would be disposed of carefully to prevent regeneration or spread. For plants that are not in seed, the material could be left on site to decompose. For any plants with seed, they would be removed from the site in a manner that does not disperse seed (in plastic bags for example) and disposed of at an off-site disposal area. As another form of disposal, plant material would also be buried on-site (e.g., in Area C) with an adequate depth of cover to not allow for invasive plant re-establishment.

Herbicides would be used in accordance with manufacturers' application guidelines for specific species when manual and mechanical removal methods are not effective, and may be used in conjunction with physical removal methods for species that are known to be difficult to control. The Project's restoration contractor would prepare an herbicide treatment plan for each treated invasive species, including such information as the type of herbicide to be used, application rates, and timing of treatment. The herbicide treatment plan would be submitted to the Ballona Reserve Manager for approval prior to herbicide application. Herbicides would be applied using a localized spot-treatment method and applied in a manner that would eliminate or reduce drift onto native plants. Herbicides would be applied to cut stumps for larger plants or large clumps of herbaceous nonnative species that cannot effectively be removed. In all such cases, they would be used only to the extent necessary to support native plant establishment and limit adverse impacts to sensitive species and habitats. For sites within 100 feet of a wetland or stream, herbicides approved by USEPA for use near wetlands and streams, such as the glyphosate-based Rodeo® or the imazapyr-based Habitat®. Herbicides would not be used when rain is predicted within 24 hours after application, and herbicide application would not resume again until 72 hours after rain. Herbicide rates would vary depending on the size of the plants treated.

During bird nesting season, appropriate measures would be taken to avoid disruption of bird nests.

Revegetation of Graded and Disturbed Areas

The Ballona Wetlands Conceptual Habitat Restoration and Adaptive Management Plan (Conceptual Plan) outlines revegetation design considerations and provides guidelines for implementing the Project. The Conceptual Plan is provided as Appendix B3. Revegetation of restored wetland areas may rely on natural recruitment, with targeted installation of salt marsh vegetation. Transition zone and upland habitats would require active revegetation and could require irrigation. The suitability of topsoil for target vegetation is an important consideration and management of topsoil may be required, particularly for revegetated upland areas where soil amendment or leaching of soil salinity may be needed.

Wetland and Transitional Areas

Low and middle tidal marsh areas would be revegetated by natural recruitment to the maximum extent possible. Planting also would be used to ensure adequate seed source and to stabilize areas susceptible to erosion. California cordgrass (*Spartina foliosa*), the primary plant species of the low marsh, does not occur at the Ballona Reserve and so would need to be introduced from a nearby source, such as the Bolsa Chica Ecological Reserve, Upper Newport Bay Ecological reserve, or Seal Beach National Wildlife Refuge, if cordgrass is desired at the site. Irrigation for low and middle tidal marsh areas would not be required because these areas would receive regular tidal inundation.

High marsh and transition zone areas would be planted and seeded to establish target species in this area of high competition from weeds and dry and often hyper-saline conditions. Depending on rainfall and soil moisture levels, temporary irrigation may be used in the high marsh areas. If rainfall is below average or is considered inadequate to establish high marsh and transition zone vegetation, or to improve plant survival or establishment, an irrigation system consisting of a pressurized main line with hose bibs for manual watering or an automated overhead spray system would be used. The irrigation system would be located above the tidal zone to allow for plant establishment in this environment. Within transition zone habitats, higher elevation areas of unvegetated habitats or salt pan may develop and persist for some time before more complete vegetation colonization occurs with progressive sea level rise.

Brackish marsh revegetation would include a combination of natural recruitment and/or active planting and seeding to provide adequate diversity and seed source. If necessary, supplemental water would be provided by a manual or automated irrigation system and/or a watering truck with hoses in areas accessible by road.

The seasonal wetlands would be revegetated with a combination of planting and/or seeding. Initial irrigation would be provided in dry years to help establish target species. If necessary, supplemental water would be provided by a manual or automated irrigation system and/or a watering truck with hoses in areas accessible by road.

Upland Areas

Upland scrub areas are presently common in higher elevation areas within Areas A and C. Upland scrub habitat areas are characterized by native shrub-dominated plant communities on well-drained soils in upland areas. The most common shrub species defining the existing upland scrub areas include coyote bush (*Baccharis pilularis*), big saltbush (*Atriplex lentiformis*), and California sagebrush (*Artemisia californica*). These and other appropriate species for the site, such as lemonade berry (*Rhus integrifolia*), and seacliff buckwheat (*Eriogonum parvifolium*), would be included in a planting and seeding plan for appropriate areas following weed removal activities.

Upland grassland habitat also would be established in appropriate locations following invasive nonnative plant species removal. Target native grasslands species include California barley (*Hordeum brachyantherum ssp. californicum*), purple needlegrass (*Stipa pulchra*), and alkali ryegrass (*Elymus triticoides*).

Proper soil preparation is important for successful plant establishment. Soil preparation includes measures for providing proper drainage, nutrient and mycorrhizae content, and erosion control. Plants installed in properly prepared soils would have better conditions for high survival and growth rates. Although not currently recommended, soils in planting areas may be tested and amended as necessary to provide optimal conditions for plant growth, should initial growth not be successful. Typical soil amendments may include compost, mycorrhizae, and fertilizer. Excess fertilizer application can favor the establishment of generalist non-native plant species over locally adapted native plant species; however, a minimal amount of fertilizer may be necessary to establish native plants if soil quality is found to be particularly poor and low in nutrients. If found to be necessary, amendments would be tilled into the upper 8 to 12 inches of soil.

Vegetation establishment would occur through a combination of natural recruitment, seeding, and planting with native plant materials appropriate for each habitat type. A native seed mix may be hydroseeded or installed by drill seeding or imprinting.[29] Areas with no vehicular access may be seeded manually. A hydromulch or rice straw mulch may be applied over the seed to suppress weed growth and provide additional nutrients and organic matter. Seeds would be sourced from on site, if feasible, or from other appropriate sites in the coastal areas of the Los Angeles and southern California regions if they are not available on site. Potential sites for seed collection could include, but are not limited to: El Segundo Dunes Preserve, Malibu Lagoon State Beach, Bolsa Chica Ecological Reserve, Upper Newport Bay Ecological Reserve, Los Cerritos Wetland Complex, Mugu Lagoon, and Seal Beach National Wildlife Refuge. Seeds would be collected by hand during the appropriate season for each species and would be propagated at a local native plant nursery (e.g., Grow Native Nursery in Los Angeles or Natural Landscapes in Rancho Palos Verdes).

Container plants also would be propagated from locally collected seed at a local native plant nursery and may be installed following seed application. Container plantings would be composed of species from target native habitat types. Mulch would be applied within the planting basins, and foliage protection cages would be installed around plants susceptible to wildlife browsing.

A temporary drip or spray irrigation system may be installed to provide water to the plantings during the establishment period following plant installation. Plants may be irrigated in the dry season to help with establishment, increase survivorship and insure native habitat enhancement and/or manual watering or Driwater® gel packs may be used to provide moisture to the plantings to sustain good plant health. Irrigation could last for up to 5 years with the precise duration, frequency, and amount of water used dependent upon annual precipitation, temperatures, and vegetation type. After the plants are established, irrigation no longer would be required. Irrigation water sources are described below.

Monitoring

All restored areas would be monitored for success in achieving approved vegetative performance criteria for a minimum of 10 years. See the discussion of *Performance Criteria* below for additional details. These areas would be maintained, weeded, and reseeded or replanted as necessary to meet required performance criteria.

Water Sources for Restoration and Irrigation

Domestic Water Meters

Water meters can be installed by the utility providers from the existing domestic water mains surrounding the Project boundary. These mains are relatively large for irrigation use and available for new water meter services. Construction impacts would be limited to the one to two days required for each meter and lateral installation. A meter could be installed anywhere along either side of Fiji Way or Lincoln Boulevard. It is expected that up to a total of seven new meters would be installed, to include one or two for Area A, two or three for Area B, and one or two for

[29] *Seed drilling* is a process where a sowing device on the back of a tractor precisely positions seeds in the soil and then covers them up. *Seed imprinting* is the process of rolling a site with a large waffle, sheep's foot, or similar pattern roller that leaves a dimpled pattern on the soil surface. This creates miniature microclimates where seeds can germinate and thrive.

Area C. Depending on placement of the meters and need for long term irrigation or potable water, these meters could be converted to permanent use.

In addition to water meters installed by utility providers, there are existing fire hydrants on Lincoln Boulevard and Fiji Way that can provide domestic water service to the Project site. A temporary utility company provided meter would be attached onto one of the hydrant outlets for access to potable water. Given the location of the adjacent hydrants on the side of the street opposite the Project boundary, either a temporary pipeline crossing of the street or filling of water trucks at the meter and transfer by vehicle would be required.

Recycled Water Meters

A meter service connection to the existing recycled water main could be provided near the intersection of Lincoln Boulevard and Jefferson Boulevard. The quality of the recycled water provided by the agency is intended for irrigation use and meets California Title 22 standards. Because the public main does not extend outside the limits of this intersection to either the north or west, the meter would likely be placed on the west side of Lincoln Boulevard, south of Jefferson Boulevard adjacent to the Freshwater Marsh, and not adjacent to the restoration area. At Los Angeles Department of Water and Power’s discretion, the meter service line could be routed diagonally through the intersection to locate the meter at the northwest corner of the intersection, which would be adjacent to the Project area. From this location recycled water could be provided directly for a portion of Area B and (via an on-site temporary distribution pipeline system) to other areas within the Ballona Reserve as needed to support Project activities. The distribution piping system would be routed across public streets by temporarily fastening pipes near the soffit of existing storm drains crossing Culver Boulevard and Jefferson Boulevard to provide water to the rest of Area B, and across and along the Ballona Creek to provide water to Area A and South Area C. A further extension could be provided to North Area C through an existing storm drain line under either Lincoln Boulevard or Culver Boulevard using piping between 2-inches and 4-inches in diameter and a series of temporary storage tanks in each area for consistent water volume availability. This also would allow pipeline and distribution point location adjustments to be made during grading and sequencing operations so as not to disrupt water availability. Agency provided water pressures (approximately 85 psi static pressure) would be sufficient; no pumping would be required. Depending on the tolerance of the proposed plant palette for the quality of recycled water available, the water service lifespan could be continued during the plant establishment period. Both then and between major phases if desired, this piping distribution system could be made long term through burial, and then abandoned in place when no longer needed.

Gas Well Abandonment and Replacement

Site Preparation

Access Roads

Two inches of compacted 0.75-inch base rock would be used to bring the existing access roads to the wells to 12 feet in width on the straight-aways and 20 feet in width at the corner of the turns, and capable of supporting standard highway permitted trucks up to 80,000 pounds. These access roads either will be removed and the area restored upon completion of the well abandonment process or will be left in place to facilitate monitoring efforts pursuant to implementation of the ongoing operation and maintenance activities that occur pursuant to the existing OMRR&R Manual for LACDA project facilities within the Ballona Reserve or for monitoring the restoration areas.

Well Site Locations

Two inches of compacted 0.75-inch base rock would be used to create a work pad 120 feet by 170 feet centered at the wellhead. The work duration to create a work pad would require a minimum of 5 working days per well.

Well Abandonment

Well abandonment would be undertaken after the access road and the well site location have been prepared. The process of abandoning a well would include bringing in a workover rig to remove downhole piping and setting cement plugs to isolate the producing zones. The wellhead would then be removed and the well casing cut and capped approximately 5 feet below grade. All concrete cellar material and piping would be removed. The well abandonment process would take between 30 and 45 workdays to complete.

Each well site would need to be accessible to install soil gas monitoring probes and monitor for gas leakage for 2 months following abandonment. If no gas leakage is detected during the 2-month period following abandonment, direct access to the well would no longer be required. If gas leakage is detected, deeper probes would need to be installed and monitored for 6 months. After it has been determined that there is no further gas leakage, the probes would be removed. SoCalGas would continue to conduct well gas leakage surveys on each abandoned well every 6 months. In the case of the well subsequently being submerged under water, another means of monitoring the well would be determined, such as checking for gas bubbles percolating in the water above the abandoned well.

Drilling Replacement Gas Wells

The process of drilling a replacement gas well would involve moving in a large rig capable of working 24 hours per day and having the necessary equipment to drill and install casing. The drilling rig would be moved in on as many as 30 flatbed trucks and then assembled on location. Prior to move in, a cellar first would be dug and shored using a cellar ring or concrete walls. Then a conductor pipe would be installed in the ground and the drilling rig rigged up. The drilling operation would involve directional drilling of a hole to the zone of interest. Once the hole is drilled to the proper depth, casing would be installed and cemented in place. The drilling rig would then be disassembled and moved out of the location. A smaller work-over rig would then be needed to complete the well by installing tubing and other completion equipment. Each replacement well would require between 35 and 50 work days to complete drilling. Any replacement gas well would be drilled outside the Ballona Reserve.

Replacement Gas Well Completion Operations

A workover rig would be used to install the downhole tubing and associated monitoring equipment following move out of the drilling rig. All surface piping including monitoring and instrumentation would then be installed after the workover rig is moved out. Each replacement well completion would require between 7 and 10 workdays to complete.

Investigate and Remediate Contamination Investigation and Remediation Associated with Gas Wells

During the abandonment, work-over, or drilling of gas wells at Playa del Rey, heavy petroleum hydrocarbons (e.g., crude oil) may be present in near-surface soil. This represents incidental contamination from normal oil field activities, such as spills of work-over fluid, small oil spills or leaks. Before the wells are drilled and after well abandonment, SoCalGas and its consultants would investigate potential oil contamination in near-surface soils (down to 15 feet below ground surface). If significant amounts of petroleum are found, SoCalGas and its contractor would remediate or remove the contamination for off-site disposal. Each investigation would take up to 2 weeks to complete; remediation work at each site may continue for up to 2 months.

Line 1167 30-inch Natural Gas Pipeline Relocation

Relocation of Line 1167 would require excavation and shoring of approximately 2,500 linear feet of new pipeline trench, followed by installation of approximately1,500 feet of new 30-inch, Grade X-60 gas pipeline (Figure 2-30, *South/Southeast Area B: Gas Well Decommissioning*). All new steel piping and fittings would be sand-blasted in the areas of bare steel and coated with a pipeline coating material. Approximately 600 square feet of coal tar pipeline coating would be removed from the existing pipeline to accommodate tie-in hot cuts. An approved industrial hygienist and hazardous waste abatement contractor would remove and dispose of all coal tar pipeline coating. Natural gas would be purged from within the abandoned 30-inch pipeline to be left in place, and steel end plates would be welded onto all open ends of the abandoned pipeline. All new pipeline excavations would be backfilled and compacted with a combination of native soil, sand, and zero sack slurry. The existing Gas Company Road would be repaved and widened, as necessary, to adequately cover the relocated 30-inch gas line. Line 1167 relocation would take approximately 30 work days to complete.

2.2.2.6 Alternative 1: Monitoring and Adaptive Management

Monitoring Program

The monitoring program proposed as part of the Project would evaluate progress toward achieving restoration goals and inform the need for adaptive management for a minimum of 10 years post-restoration. In general, the proposed restoration performance criteria do not focus on specific acreages or specific species, but instead focus more broadly on habitat development, species composition, and ecosystem function (Short et al. 2000; Zedler and Callaway 2000; Thom et al. 2010). The proposed performance criteria could be revised based on improvements in understanding of habitat development or species requirements, including lessons learned during the early phases of the restoration or from other similar restoration projects being conducted in the area.

In addition to being broad-based and adaptable, the proposed monitoring program would be in place for at least 10 years, which will capture long-term trends in habitat development and use by wildlife species (Zedler and Callaway 1999). A 10-year monitoring period was chosen for most variables discussed in the Conceptual Plan (Appendix B3) to balance funding limitations with the need to document long-term trends in habitat development. Although a 10-year monitoring period is recommended, it is understood that some aspects of habitat development and function may not be evident within the first 10 years and, for such variables, it may be necessary to extend the monitoring period by an additional decade or more.

The goal of monitoring would be to document trends in habitat development and assess progress toward meeting restoration objectives. For cases in which the course of habitat development is relatively uncertain or for monitoring parameters which may be highly variable, assessment of performance relative to conditions in suitable reference habitats in the region would be utilized. It should be understood that some level of uncertainty will always be present, and performance criteria may require modification based on an improved understanding of habitat development, ecosystem function, or species requirements. Furthermore, habitat development is an ongoing process that is likely to extend well beyond the prescribed monitoring period. Some aspects of the monitoring program would have a definitive end point (i.e., when performance criteria have been reached). However, given the highly modified nature of the watershed supporting the Ballona Reserve and the constraints imposed by the surrounding development, it is likely that some level of monitoring and management may be required indefinitely for invasive nonnative species or human disturbance, for example.

Monitoring would focus on the major biotic and abiotic factors that drive habitat development and ecosystem function—in particular, those factors that can be manipulated and managed or those parameters that can be used to gauge habitat development and ecosystem function (Thom et al. 2010). Sampling procedures and analyses of monitoring results would be implemented to appropriately reflect the level of accuracy achievable with each sampling procedure and the sample size achievable for each monitoring parameter. The end result of the monitoring program would be a simple, clear picture of habitat development at the Ballona Reserve in terms that can be understood by scientists, regulators, and members of the public alike.

Monitoring Parameters

The monitoring parameters in the monitoring program are based on: (1) the basic ecological drivers of habitat or community development (or surrogate indicators), (2) the restoration objectives for each habitat (e.g., use by wetland-associated birds), and (3) the variables which are more easily manipulated for management purposes. The parameters chosen for each habitat represent the minimum level of monitoring necessary to gain a basic understanding of the development of biotic communities at the Ballona Reserve. Given sufficient funding, additional monitoring parameters could be included in the monitoring program.

Special-Status Species

Special-status plant and wildlife species would be subject to focused monitoring efforts aimed at identifying trends in abundances and habitat use and informing the need for active management of the species or habitats in which they reside. To the extent feasible, monitoring of special-status species would be conducted using established protocols and would be incorporated into existing regional or state monitoring programs for these species. A separate monitoring plan would be developed for many special-status species or groups of special-status species (e.g. plants). Where possible, monitoring for special-status species would be integrated with regular habitat monitoring; however, for some species it may be necessary to modify monitoring protocols or to adjust the timing of monitoring events to coincide with important life stages of the species in question. All monitoring and management of special-status species would conform to the policies and guidelines set by CDFW and the U.S. Fish and Wildlife Service (USFWS) and/or National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS).

Reporting

During the 10-year monitoring program, annual monitoring methods and summary results would be detailed in a report to be prepared for CDFW and the Corps. The annual monitoring report would present an analysis and discussion of the data collected over the previous year and, when possible, would incorporate data and trends from previous years to create a complete picture of post-restoration habitat development. The analysis presented would be rigorous and detailed; however, the report would be written such that it could be understood by all parties involved in the restoration, whether they be technical experts or members of the general public.

In addition to the annual report, or following the 10-year formal monitoring program, brief monitoring memoranda may be produced and provided to agencies or partners for issues requiring rapid management decisions such as newly documented populations of invasive species, areas of severe erosion, or signs of human disturbance in sensitive habitats.

Performance Criteria

Performance criteria developed for the proposed monitoring program are based on the primary ecological drivers of habitat development and function (e.g., frequency of tidal inundation for salt pan habitat), the characteristic expression of such ecological drivers (e.g., lack of vegetation for salt pan habitat), and the primary values of the habitat (e.g., bird foraging in salt pan habitat). In some cases, performance criteria are based on a more easily monitored surrogate for one or more of these factors. For example, the use of mud-flat habitat for foraging by wading bird species should be correlated with the development of a benthic invertebrate community and may serve as a reasonable surrogate for monitoring benthic invertebrates.

The use of performance criteria relative to conditions at reference sites may provide some ability to overcome uncertainties related to habitat development, of which there are many, and to account for stochastic events which may affect plant and animal communities and ecosystem function at a regional scale. Initial performance criteria for restored native habitats are provided in Table 2-12, *Tidal Marsh Performance Criteria*, through Table 2-20, *Upland Scrub and Grassland Performance Criteria*.

TABLE 2-12
TIDAL MARSH PERFORMANCE CRITERIA

Monitoring Year	Performance Criteria
Vegetation and Invasive Plants	
Years 1–3	A. Canopy cover of native salt marsh species will increase in each of the first three years to a minimum of 35% cover by the end of Year 3. B. Canopy cover of invasive species rated as “High” or “Moderate” by the Cal-IPC, exclusive of annual grasses, will not exceed 10% cover in any year.
Years 4–7	A. Canopy cover of native salt marsh species will increase to a minimum of 50% cover by the end of Year 7. B. Vegetation will include a minimum of five native plant species, although one or two native species may dominate. C. Canopy cover of invasive species rated as “High” or “Moderate” by the Cal-IPC, exclusive of annual grasses, will not exceed 10% cover in any year.
Years 8–10	A. Canopy cover of native salt marsh species will increase to a minimum of 75% cover by the end of Year 10. B. Vegetation will include a minimum of five native plant species present in the habitat area, although one or two native species may dominate. C. Canopy cover of invasive species rated as “High” or “Moderate” by the Cal-IPC, exclusive of annual grasses, will not exceed 10% cover in any year.
Birds	
Years 1–3	A. A variety of tidal-marsh associated bird species will be observed foraging in the restored tidal marsh, although the species richness and abundance of birds may be lower than observed prior to the restoration. The species richness and abundance of tidal-marsh associated birds will not fall below 50% of pre-restoration levels after Year 1. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of seasonal prior survey data.
Years 4–7	A. Species richness and abundance of tidal marsh-associated birds may reach pre-restoration levels during this time and may increase. The species richness and abundance of tidal marsh-associated birds will not fall below 75% of pre-restoration levels after Year 7. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of seasonal prior survey data. B. Birds will be observed both foraging and demonstrating territorial behavior within the restored tidal marsh habitat.
Years 8–10	A. Species richness and abundance of tidal marsh-associated birds may be greater than pre-restoration levels by the end of Year 10; however, annual increases may slow relative to increases observed in Years 4–7. The species richness and abundance of tidal marsh-associated birds will not fall below pre-restoration levels within Year 10. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of seasonal prior survey data. B. Birds will be observed both foraging and demonstrating territorial behavior within the restored tidal marsh habitat. C. Successful breeding will be documented for at least one (Beldings savannah sparrow) tidal marsh-associated bird species.

TABLE 2-13
TIDAL CHANNEL PERFORMANCE CRITERIA

Monitoring Year	Performance Criteria
Morphology	
All Applicable Years	A. Ballona Creek channel cross-section will be within predetermined maintenance limits for providing flood risk protection. B. Channel bed elevations will provide unobstructed drainage at water-control structures (i.e., channel sedimentation will not inhibit water control structure operations) channel network (i.e., planform extent and sinuosity) will be within design parameters based on reference wetlands.
Years 1–3	Channels would adjust through scour and deposition along anticipated trajectories that support target habitats and functions including tidal exchange (e.g., tidal flows would reshape constructed channel banks).
Years 4–7	The initial rate of channel adjustment would be reduced and continuing on a trajectory towards dynamic equilibrium with tidal flows.
Years 8–10	Channel would reach a dynamic equilibrium with tidal flows, with adjustments occurring in response to sea level rise and storm events.
Fish	
Years 1–3	A. Relative species richness and abundance of fish will each be within or approaching pre-restoration levels within surveyed areas. The species richness and abundance of fish will not fall below 75% of pre-restoration levels after Year 3. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account seasonal prior survey data for multiple years if available. B. No major fish die-offs of wetland-dependent species will occur in greater numbers than baseline die-offs pre-restoration.
Years 4–7	A. Relative species richness and abundance of fish will reach approximately pre-restoration levels during this time. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of seasonal prior survey data if available. B. Native species richness and abundance of fish will not decrease continually across three or more consecutive years, when evaluated across the entire year. C. No major fish die-offs of wetland-dependent species will occur in greater numbers than baseline die-offs pre-restoration.
Years 8–10	A. Relative species richness and abundance of fish will each meet or exceed pre-restoration levels during Year 10. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of prior survey data if available. B. Native species richness and abundance of fish will not decrease continually across three or more consecutive years, when evaluated across the entire year. C. No major fish die-offs of wetland-dependent species will occur in greater numbers than baseline die-offs pre-restoration.
Water Quality	
All Applicable Years	Dissolved oxygen levels will remain within healthy levels for fish and other aquatic organisms; levels will not drop below 2 parts per million for more than 24 consecutive hours or more than 5% of the total number of readings across a year within primary channels.

TABLE 2-14
MUDFLAT PERFORMANCE CRITERIA

Monitoring Year	Performance Criteria
Macroinvertebrates[a]	
Years 1–3	A. Macroinvertebrate order richness will be near pre-restoration levels within three years following restoration of tidal activity and will not fall below 75% of pre-restoration levels after Year 3. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of seasonal prior survey data if available. B. Macroinvertebrate abundance or biomass (by order) will not decrease consistently (evaluated annually) during the first three years following restoration of tidal activity.
Years 4–7	A. Macroinvertebrate order richness will reach approximately pre-restoration levels during this time. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of prior survey data if available. B. Macroinvertebrate abundance or biomass (by order) will reach approximately pre-restoration levels during this time. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of prior survey data if available.
Years 8–10	A. Macroinvertebrate order diversity will meet or exceed pre-restoration levels during Year 10. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of prior survey data if available. B. Macroinvertebrate abundance or biomass (by order) will meet or exceed pre-restoration levels during Year 10. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of prior survey data if available.
Birds	
Years 1–3	A. A variety of wading and other mudflat-associated bird species will be observed foraging in mudflat habitat, although species richness may be lower than observed prior to the restoration. The species richness will not fall below 50% of pre-restoration levels after Year 1. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of seasonal prior survey data if available. B. The abundance of wading and other mudflat-associated bird species will show a steady increase in conjunction with the development of the macroinvertebrate community.
Years 4–7	A. The species richness of wading and other mudflat-associated birds observed foraging in mudflat habitat will reach approximately pre-restoration levels during this time. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of seasonal prior survey data if available. B. The abundance of wading and other mudflat-associated bird species observed foraging in mudflat habitat will reach approximately pre-restoration levels during this time. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of prior survey data if available.
Years 8–10	A. The species richness of wading and other mudflat-associated birds observed foraging in mudflat habitat will meet or exceed pre-restoration levels by the end of Year 10. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of seasonal prior survey data if available. B. The abundance of wading and other mudflat-associated bird species will meet or exceed pre-restoration levels during Year 10. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of prior survey data if available.

NOTE:
[a] Based on sampling of macroinvertebrates greater than 0.1 inch (3 millimeters) in size.

TABLE 2-15
BRACKISH MARSH PERFORMANCE CRITERIA

Monitoring Year	Performance Criteria
Vegetation and Invasive Plants	
Years 1–3	A. Canopy cover of native brackish marsh species will be a minimum of 35% cover by the end of Year 3. B. Canopy cover of invasive species rated as “High” or “Moderate” by the Cal-IPC, exclusive of annual grasses, will not exceed 10% cover in any year.
Years 4–7	A. Canopy cover of native brackish marsh species to be a minimum of 50% cover by the end of Year 7, and will show signs of natural recruitment. B. Canopy cover of invasive species rated as “High” or “Moderate” by the Cal-IPC, exclusive of annual grasses, will not exceed 10% cover in any year.
Years 8–10	A. Canopy cover of native brackish marsh species to be a minimum of 70% cover by the end of Year 10. B. Canopy cover of invasive species rated as “High” or “Moderate” by the Cal-IPC, exclusive of annual grasses, will not exceed 10% cover in any year.

TABLE 2-16
SEASONAL WETLAND PERFORMANCE CRITERIA

Monitoring Year	Performance Criteria
Hydrology	
All Applicable Years	During years of normal or greater rainfall, the majority of seasonal wetlands will be inundated for at least two consecutive weeks during the rainy season; these will generally be the same pools each year. The remaining seasonal wetlands will have soils that are saturated within 12 inches of the surface for at least two consecutive weeks during the rainy season; these will generally be the same pools each year.
Vegetation and Invasive Plants	
All Applicable Years	A. Canopy cover of invasive species rated as “High” or “Moderate” by the Cal-IPC, exclusive of annual grasses, will not exceed 10% cover in any year. B. The majority of plant cover, both native and nonnative, will be composed of wetland-adapted species listed as facultative (“FAC”) or wetter on the National Wetland Plant List.

TABLE 2-17
SALT PAN PERFORMANCE CRITERIA

Monitoring Year	Performance Criteria
Hydrology and Salinity	
All Applicable Years	A. Inundation frequency will range from monthly to seasonally. B. Inundation depths will range from 0 to 12 inches to support shorebird use. C. Water will pond, evaporate, and precipitate salt from tidal waters. D. Soil salinity will be on a trajectory to exceed soil salinity in adjacent tidal marsh areas.
Vegetation and Invasive Plants	
Years 1–5	A. A majority of the area originally designed as salt pan habitat will remain unvegetated (<15% canopy cover). Plants that establish during the early years may require physical removal; however, new plants will be prevented from becoming established as salinities rise. B. Canopy cover of invasive species rated as “High” or “Moderate” by the Cal-IPC, exclusive of annual grasses, will not exceed 5% cover in any year.

TABLE 2-17 (Continued)
SALT PAN PERFORMANCE CRITERIA

Monitoring Year	Performance Criteria
Vegetation and Invasive Plants (cont.)	
Years 6–10	A. A majority of the area originally designed as salt pan habitat will remain unvegetated (<5% canopy cover). Plants that became established during the early years will no longer be present within the salt pan habitat, and new plants will not become established. B. Canopy cover of invasive species rated as "High" or "Moderate" by the Cal-IPC, exclusive of annual grasses, will not exceed 5% cover in any year.
Birds	
Years 1–3	A variety of bird species will be observed foraging in the salt pan habitat, although the species richness and abundance of birds may be lower than observed prior to the restoration. The species richness and abundance of birds will not fall below 50% of pre-restoration levels after Year 1. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of prior seasonal survey data if available.
Years 4–7	Species richness and abundance of birds observed using salt pan habitat will reach approximately pre-restoration levels during this time and will increase in most years. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of seasonal prior survey data if available.
Years 8–10	Species richness and abundance of birds observed using salt pan habitat will each meet or be greater than pre-restoration levels during Year 10; however, annual increases may slow relative to increases observed in Years 4–7. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of prior seasonal survey data if available.

TABLE 2-18
RIPARIAN HABITAT PERFORMANCE CRITERIA

Monitoring Year	Performance Criteria
Vegetation and Invasive Plants	
Years 1–3	A. Canopy cover of riparian-associated species (outside of areas occupied by eucalyptus trees) will increase in each of the first three years to a minimum of 35% cover by the end of Year 3. Areas not occupied by eucalyptus trees will show signs of natural vegetation recruitment or will be planted with appropriate native species. B. Canopy cover of invasive species rated as "High" or "Moderate" by the Cal-IPC, exclusive of eucalyptus trees and annual grasses, will not exceed 10% cover in any year. The eucalyptus population will not be allowed to expand beyond the baseline population size as measured by the number of trees.
Years 4–7	A. Canopy cover of riparian-associated species (outside of areas occupied by eucalyptus trees) will increase to a minimum of 65% cover by the end of Year 7, and will show signs of significant natural recruitment. B. Canopy cover of invasive species listed as "High" or "Moderate" by the Cal-IPC, exclusive of the eucalyptus trees and annual grasses, will not exceed 10% cover in any year. The eucalyptus population will not be allowed to expand beyond the baseline population size as measured by the number of trees.
Years 8–10	A. Canopy cover of riparian-associated species (outside of areas occupied by eucalyptus trees) will increase to a minimum of 80% cover by the end of Year 10. B. Canopy cover of invasive species listed as "High" or "Moderate" by the Cal-IPC, exclusive of the eucalyptus trees and annual grasses, will not exceed 10% cover in any year. The eucalyptus population will not be allowed to expand beyond the baseline population size as measured by the number of trees.

TABLE 2-19
DUNE PERFORMANCE CRITERIA

Monitoring Year	Performance Criteria
Vegetation and Invasive Plants	
Years 1–3	A. Total plant cover may increase to be similar to that of other stabilized dunes in the region (25% to 75% canopy cover) within the first three years. Approximately 25% of the dunes may remain unvegetated. B. The species richness of native dune-associated plant species will be similar to that of other stabilized dunes in the region. C. Existing populations of invasive species listed as “High” or “Moderate” by the Cal-IPC, exclusive of nonnative annual grasses, will be significantly reduced during the early years of the restoration and will not exceed 10% canopy cover. Newly developed populations will not be allowed to become established.
Years 4–7	A. Total plant cover will be similar to that of other stabilized dunes in the region (25% to 75% canopy cover). Approximately 25% of the dunes may remain unvegetated. B. The species richness of native dune-associated plant species will be similar to or greater than that of other stabilized dunes in the region. C. Existing populations of invasive species listed as “High” or “Moderate” by the Cal-IPC, exclusive of nonnative annual grasses, will be significantly reduced during the early years of the restoration and will not exceed 10% canopy cover. Newly developed populations will not be allowed to become established.
Years 8–10	A. Total plant cover will be similar to that of other stabilized dunes in the region (25% to 75% canopy cover). B. The species richness of native dune-associated plant species will be similar to or greater than that of other stabilized dunes in the region. C. All populations of invasive species listed as “High” or “Moderate” by the Cal-IPC, exclusive of nonnative annual grasses, will be significantly reduced during the early years of the restoration and will not exceed 10% canopy cover. Newly developed populations will not be allowed to become established.

TABLE 2-20
UPLAND SCRUB AND GRASSLAND PERFORMANCE CRITERIA

Monitoring Year	Performance Criteria
Vegetation and Invasive Plants	
Years 1–3	A. Native canopy cover will be a minimum of 30% cover by the Year 3 surveys. B. Canopy cover of invasive species listed as “High” or “Moderate” by the Cal-IPC, exclusive of annual grasses, will not exceed 10% cover in any year.
Years 4–7	A. Canopy cover will increase to a minimum of 50% cover by the end of Year 7, and will show signs of significant natural recruitment. B. Canopy cover of invasive species listed as “High” or “Moderate” by the Cal-IPC, exclusive of annual grasses, will not exceed 10% cover in any year.
Years 8–10	A. Canopy cover will increase to a minimum of 65% cover by the end of Year 10. B. Canopy cover of invasive species listed as “High” or “Moderate” by the Cal-IPC, exclusive of annual grasses, will not exceed 10% cover in any year.
Birds	
Years 1–3	A. A variety of bird species will be observed foraging in the restored uplands, although the species richness and abundance of birds may be lower than observed prior to the restoration. The species richness and abundance of birds will not fall below 50% of pre-restoration levels after Year 1. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of prior survey data if available.

TABLE 2-20 (Continued)
UPLAND SCRUB AND GRASSLAND PERFORMANCE CRITERIA

Monitoring Year	Performance Criteria
Birds (cont.)	
Years 4–7	A. Species richness and abundance of birds will reach approximately pre-restoration levels and will not decrease with each successive year. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of prior survey data if available. B. Birds will be observed both foraging and demonstrating territorial behavior within the restored upland habitat.
Years 8–10	A. Species richness and abundance of birds will each be at or greater than pre-restoration levels by the end of Year 10. Due to natural inter-annual variation, the determination of pre-restoration levels will take into account multiple years of prior survey data if available. B. Birds will be observed both foraging and demonstrating territorial behavior within the restored upland habitat.

Adaptive Management

Successful adaptive management would require initial monitoring to identify and correct any problems in the restoration design. Consistent with the U.S. Department of Interior Technical Guide for Adaptive Management (2009), an adaptive management plan would be prepared prior to project implementation (and based on Appendix B3) to track restoration success relative to performance criteria and determine when criteria have been met and the restoration would proceed to its next phase. Namely, targeted invasive plant species would be removed; native vegetation would be successfully filling in areas that formerly consisted of weedy, nonnative species; hydrology would be improved over baseline conditions; and sensitive species would begin inhabiting the restored/ enhanced areas.

Triggers for any remedial adaptive management actions would be based on significant deviation from or a lack of progress toward achieving the performance criteria outlined for each monitoring parameter coupled with an evaluation of the trajectories of habitat development or directions of change. For many aspects of biotic community development, it may take several years for trends to become apparent, and changes in management should allow for sufficient time for trends to become apparent. If it is determined that progress toward performance criteria is not measurable or that the habitat appears to be progressing toward an alternative state, an evaluation of the causes involved and the trend toward meeting performance criteria would be undertaken to determine whether intervention or mid-course corrections are warranted.

In some cases, habitat development would be on track to meet long-term performance criteria and no actions would be warranted—in these cases, it would be appropriate to modify the performance criteria based on new developments in the understanding of the development of biotic communities. In other cases, it may be determined that additional monitoring parameters are necessary to determine the cause of poor performance. Once the causes of poor performance are identified, appropriate changes in management would be investigated and implemented. Any modifications implemented as a result of this process would be subject to quantitative monitoring and analysis specifically designed to evaluate the effectiveness of such modifications or changes in management.

Sea Level Rise

The Ballona Reserve is expected to be affected by future sea level rise due to climate change. According to the Project's Preliminary Hydrology and Hydraulics Report (see Appendix F7), this sea level rise would be expected to gradually convert the restored habitats to lower elevation habitats through transgression (e.g., from vegetated wetland to mudflat or from mudflat to subtidal habitats). Figure 2-36, *Habitat Evolution with Sea Level Rise: Restored Habitats*); Figure 2-37, *Habitat Evolution with Sea Level Rise: 2030 Projection (9 in of Sea Level Rise)*; Figure 2-38, *Habitat Evolution with Sea Level Rise: 2050 Projection (19 in of Sea Level Rise)*; Figure 2-39, *Habitat Evolution with Sea Level Rise: 2070 Projection (32 in of Sea Level Rise)*; and Figure 2-40, *Habitat Evolution with Sea Level Rise: 2100 Projection (59 in of Sea Level Rise)*, show the expected progression of the habitats through Year 2100. Additional information and sea level rise figures for Alternative 4 are contained in the Ballona Wetlands Inundation Memo, contained in Appendix B7.

Phase 1 Implementation

An adaptive management plan for the Area B managed wetland restoration would be implemented to incrementally test, monitor, and refine wetland habitat management. Different seasonal water management regimes (e.g., different seasonal managed high tide levels and Freshwater Marsh outflows to Southeast Area B) would be tested within the adaptive management plan in South and Southeast Area B. Vegetation and predator management approaches also would be tested (see Conceptual Plan, Appendix B3).

Vegetation cover spot monitoring would be conducted twice each year in areas across the site that previously consisted of monocultures of weeds until it is determined that native vegetation is sufficiently dense to allow for efficient ground-based monitoring—this level should be between 15 percent and 20 percent cover. During the Phase 1 restoration in South and Southeast Area B, the primary concern is that invasive plant species do not colonize the area after such plants have been removed, particularly where large stands of pampas grass have been removed. Furthermore, it is critical that seeded native species become established to prohibit future invasions by invasive plant species. Vegetation monitoring also would be used to assess functional gain/improvement in existing, non-tidal marsh vegetation in terms of growth and vigor.

In addition to vegetation monitoring, bird monitoring of the Phase 1 restoration area would be important to assess species-specific use by the Belding's savannah sparrow. This monitoring would follow established protocols approved by CDFW.

Restored habitats throughout the site would be monitored and evaluated against performance goals identified in the Conceptual Plan (Appendix B3). Namely, targeted invasive plant species would be removed, native vegetation would be successfully filling in areas that formerly consisted of weedy species, hydrology would be improved over baseline conditions, and sensitive species would be using the site. Belding's savannah sparrow's use of the site for nesting would be a proxy to determine successful habitat creation in Area A prior to full tidal restoration of West Area B in Phase 2.

Ballona Wetlands Restoration Project

Figure 2-36
Habitat Evolution with Sea Level Rise: Restored Habitats

Ballona Wetlands Restoration Project

Figure 2-37
Habitat Evolution with Sea Level Rise: 2030 Projection (9 in of Sea Level Rise)

Ballona Wetlands Restoration Project

Figure 2-38
Habitat Evolution with Sea Level Rise: 2050 Projection (19 in of Sea Level Rise)

Ballona Wetlands Restoration Project

Figure 2-39
Habitat Evolution with Sea Level Rise: 2070 Projection (32 in of Sea Level Rise)

Ballona Wetlands Restoration Project

Figure 2-40
Habitat Evolution with Sea Level Rise: 2100 Projection (59 in of Sea Level Rise)

Phase 2 Implementation

Monitoring and adaptive management of the final restoration would follow the specifics outlined in detail in the Conceptual Plan (Appendix B3). It would include a variety of monitoring and adaptive management criteria for each habitat type as previously described.

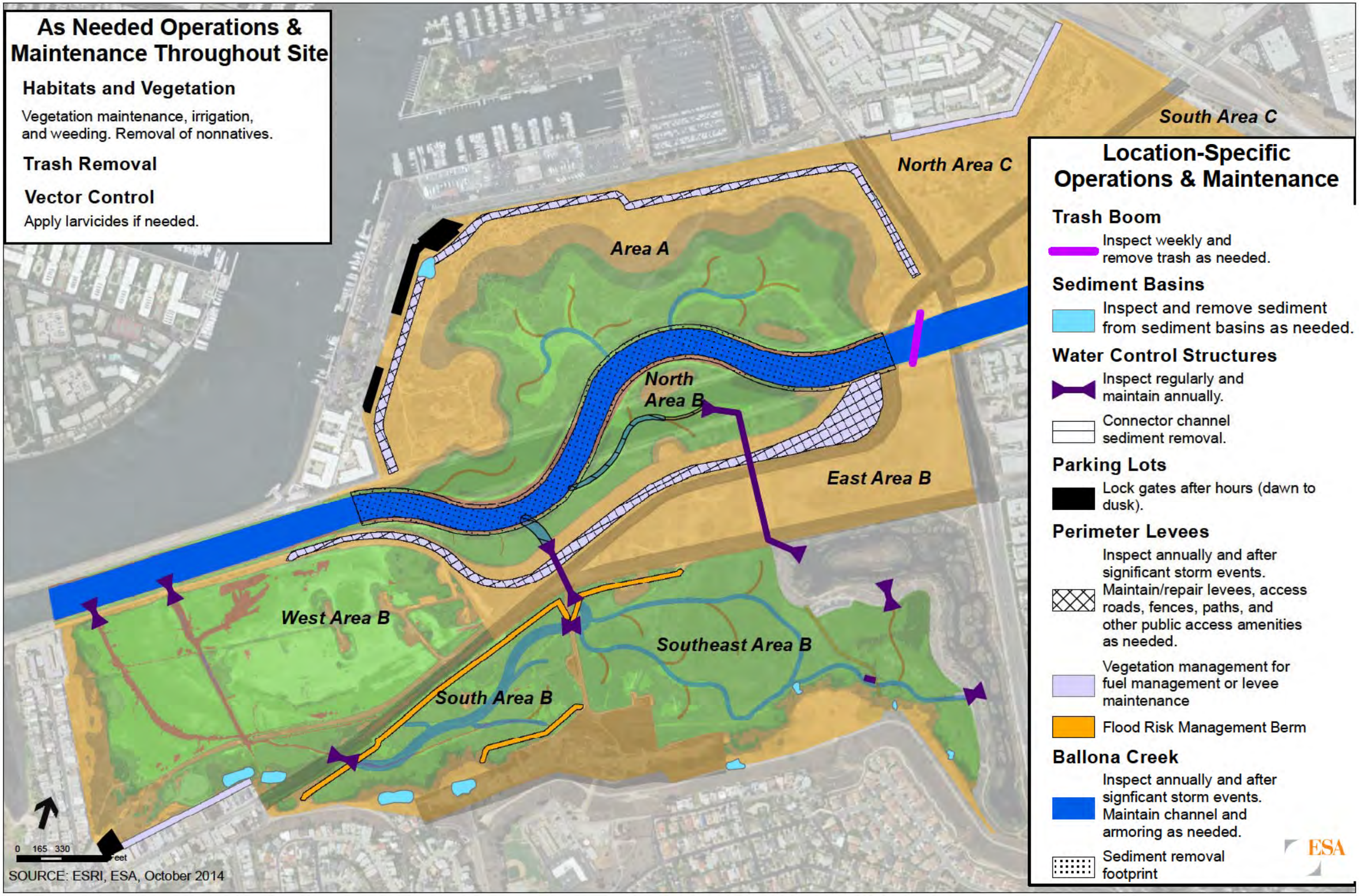
2.2.2.7 Alternative 1: Operation and Maintenance

The intent of the Project is to restore a wetland and creek habitat and flood risk management system that is sustained by natural processes and requires minimal O&M activities. A new long-term O&M Agreement between LACFCD and CDFW would need to be established identifying all new O&M responsibilities that address: (1) habitat and vegetation; (2) trash removal; (3) the newly modified channel and levees; (4) water-control structures; (5) parking facilities; (6) the baseball fields; (7) SoCalGas Property; and (8) other ongoing and routine maintenance. A Preliminary Operation and Maintenance Plan, including allocation of responsibilities between LACFCD and CDFW, is provided in Appendix B5. See Figure 2-41, *Alternative 1, Phase 1: Operations and Maintenance*, and Figure 2-42, *Alternative 1, Phase 2: Operations and Maintenance*. See also Table 2-21, *Other Current and Ongoing Routine Operation and Maintenance Activities*.

For purposes of this EIS/EIR, the portion of the Project site within the Ballona Reserve is assumed to be subject to the Corps' Section 404 jurisdiction over the discharge of dredged or fill material into to waters of the U.S. Therefore, all of the O&M activities described in Section 2.2.1.7, Operation and Maintenance Activities, and Appendix B5, Preliminary Operation and Maintenance Plan, that would include dredge and fill activities within the Ballona Reserve would require Section 404 authorization, unless the associated discharges are exempt or excluded from permitting requirements. Section 404 authorization could be required, for example, for the repair of water control structures and levees, formation of new tidal channels, modification of existing tidal channels, re-contouring areas to enhance tidal flow, and creating elevations conducive to establishing wetland and other aquatic habitat.

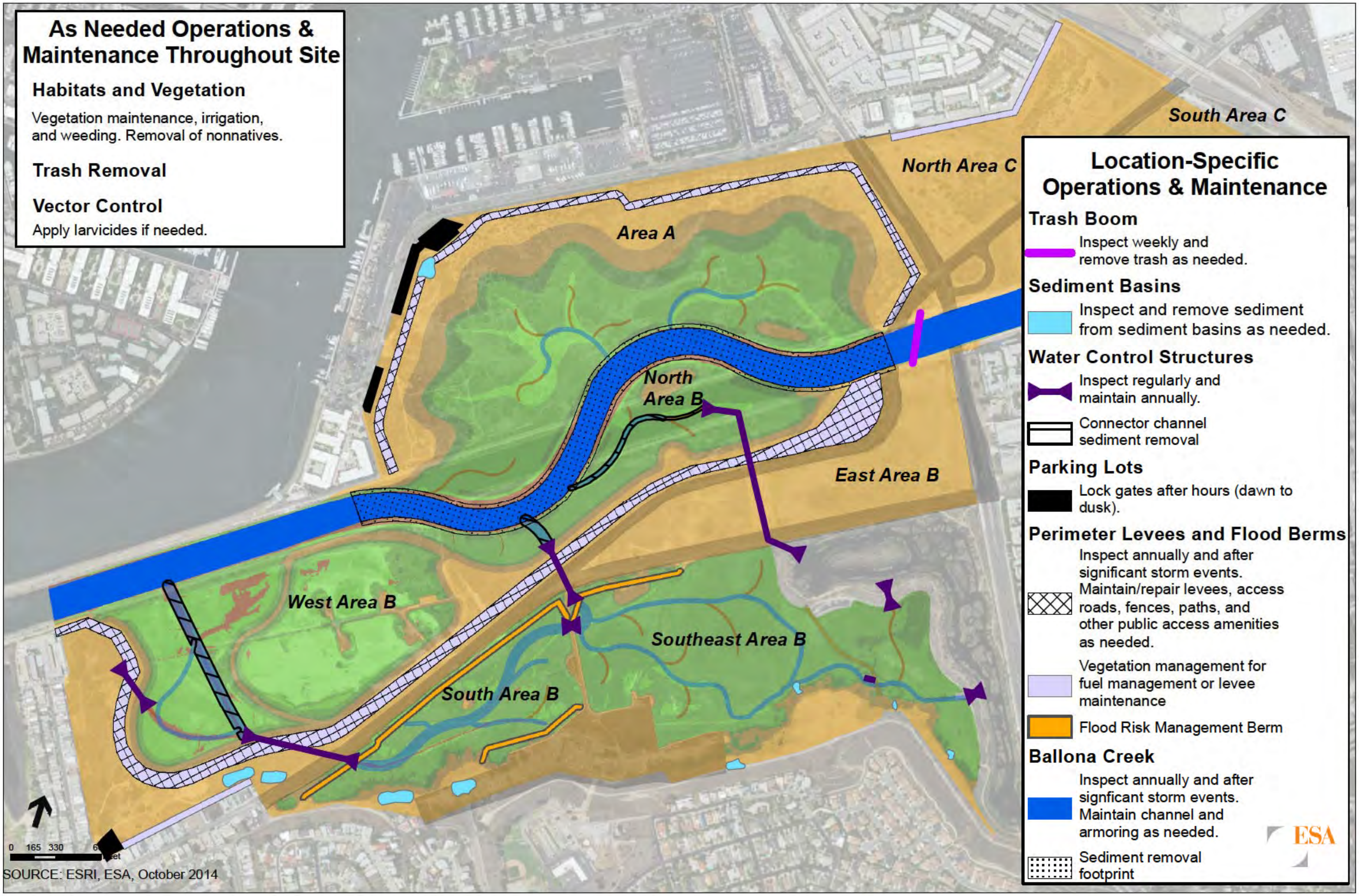
Further, for purposes of this EIS/EIR, the portion of the Project site that would be subject to tidal influence without the presence of the levees (based on the current topography and as shown in Figure 1-1, *Existing Topography and Tidal Inundation*) is assumed to be subject to the Corps' Section 10 jurisdiction. Work or structures in or affecting navigable waters of the U.S. would occur or be located within the current footprint of the Ballona Creek channel, West Area B, and limited portions of the Fiji Ditch (in Area A), South Area B, and Southeast Area B. O&M activities in these areas would include, for example, dredging, maintenance, repair, and/or replacement of flap gates and other water control structures, and sediment removal from Basin 14B.

O&M activities that would not require authorization under either Section 404 or 10 would include all of the activities described in Appendix B5, Preliminary Operation and Maintenance Plan, that do not result in dredge or fill and that would not take place within, above, or below navigable waters of the U.S. (i.e., outside the area shown in blue on Figure 1-1, *Existing Topography and Tidal Inundation*). Such activities include, for example, habitat restoration monitoring and maintenance, maintenance of public accessways such as trails, litter removal, erosion protection in upland habitat restoration areas such as the upland fill in Area C North and Area B, invasive species management including vegetation monitoring, and monitoring canopy cover and determining habitat suitability for monarch butterfly.



Ballona Wetlands Restoration Project

Figure 2-41
Alternative 1, Phase 1: Operations and Maintenance



Ballona Wetlands Restoration Project

Figure 2-42
Alternative 1, Phase 2: Operations and Maintenance

Habitats and Vegetation

Portions of the restored site would be planted (e.g., upland, transition zone, high marsh, and low marsh), while other marsh areas may rely on natural recruitment of salt marsh vegetation (e.g., mid marsh). The Conceptual Plan (Appendix B3) identifies maintenance activities that would likely be required to support establishment of restored habitats. Vegetation maintenance, irrigation, and weeding may be required for certain habitats, such as for transition and upland habitat plantings. Removal of invasive species would occur on site in perpetuity through the combination of a volunteer program and long-term management of the site using methods similar to those used during implementation.

Trash Removal Efforts

LACFCD operates and maintains an existing trash net across the Ballona Creek channel between the Culver and Lincoln Boulevard Bridges, which catches trash carried downstream by Ballona Creek flows, primarily during storm events. LACFCD inspects the trash net weekly and removes trash from the net as necessary. The restoration allows for continued O&M of the existing trash net. No changes to trash net O&M are anticipated. Trash removal would occur as needed within the restored wetlands for some trash that is not caught upstream at the existing trash net.

Ballona Creek Flood Risk Management Channel

LACFCD currently performs maintenance of the existing flood risk management channel. The channels and levees have not been modified since 1936, when the levees were constructed (Corps 2009, Data Sheet B-A-2). LACFCD currently is preparing permit applications for the removal of sediment from the Ballona Creek channel upstream of the proposed restoration, from about the Lincoln Boulevard Bridge to the SR-90, to lower the channel invert and improve drainage for storm drains along the channel (D. Sharp, LACFCD, pers. comm.).

Existing maintenance activities for Ballona Creek channel are expected to continue with the restored Ballona Creek channel. A monitoring and as-needed maintenance program would be developed for the new sinuous channel. The level of channel erosion and deposition during storm flow events is anticipated to be acceptable for the restoration and flood risk management. The channel would be inspected annually and after significant storm events (i.e., 10-year event or greater). The channel cross-section would be monitored to confirm that the cross-section and flood performance is within the predetermined maintenance limit. Any major debris or blockage of the channel that may negatively affect flood risk protection or restoration performance would need to be removed; however, this is not anticipated.

For purposes of estimating potential maintenance requirements and evaluating potential impacts related to sedimentation, up to 4 feet of uniform deposition along the new channel alignment would be allowed before channel maintenance would be required. This amount of sedimentation is estimated to take at least 50 years to accumulate in the channel and would require removal of approximately 125,000 CY of material. If this channel maintenance threshold were reached, LACFCD would perform the required maintenance using floating mechanical or hydraulic dredge equipment. Dredge equipment would be transported to the site by truck or barge via Marina del Rey Harbor or the Ballona Creek channel to the Pacific Avenue Bridge. Dredge equipment would be assembled in the channel. The channel would be dredged to the design dimensions of the channel. Dredged material either would be beneficially used within the wetlands (e.g., to raise sub-tidal and intertidal mudflat areas and create additional vegetated wetland habitat) or would be disposed of off-site. Land and marine-based off-haul options would be similar to options described for the construction of Alternative 1, although soil excavation and disposal volumes for maintenance activities would be less than construction volumes. Any off-haul activities for maintenance therefore would have a shorter duration than for construction activities. Sediment testing would be performed prior to channel maintenance and any soil requiring special management measures would be handled and disposed of according to regulations.

In locations where armoring would be installed to limit erosion, the scour protection would be inspected and maintained as-needed. In the event that buried armoring was exposed after a storm, natural processes would be allowed to revegetate those areas (e.g. vegetation recruitment in remaining soils, encouraging deposition) and no maintenance would be required to re-bury the armoring.

Perimeter Levees and Interior Berms

The levees and interior berms would require limited maintenance, e.g., inspection annually and after significant storm events (i.e., 10-year event or greater). The levees also would require periodic repaving of the bicycle path and walking trail, replacement or repair of installed fencing, replacement or repair of any overlook or educational equipment placed along the walking trail, trash collection and graffiti removal, and any other vandalism repair. Minor erosion prevention measures may be needed for both the levees and berms, periodically. The perimeter levees and berms would mainly be maintained by the LACFCD. It is anticipated that responsibility for O&M activities would be allocated between LACFCD and CDFW as indicated in AppendixB5, Preliminary Operation and Maintenance Plan.

Water-Control Structures

The existing West Area B self-regulating tide gate is operated and maintained by LACFCD (USACE 1999). LACFCD inspects and maintains the tide gate, including removal of debris/obstructions from the gate. The gates are checked on a weekly basis. Obstruction removal typically occurs twice per year, or as needed. The gates are inspected and serviced annually. O&M of the existing tide gates would continue until the structure is removed and the levee is breached in Phase 2.

For new water-control structures, tide gates and weirs would need regular inspection and annual maintenance to ensure proper operation, similar to current O&M for the West Area B structure. Gates and weirs may be adjusted seasonally for habitat management. Obstructions would be removed when necessary. If sedimentation in the channel limits the functionality of the water-control structures, a low ground pressure excavator would be used to remove material for the site. A temporary access route, 35-feet wide, would be created using mats to provide equipment access. LACFCD would continue to inspect and maintain both the existing and new water-control structures.

Stormwater Management Features

Maintenance of bio-swales is expected to be limited to non-native vegetation removal. Non-native plant removal would include work with hand tools such as shovels, rakes, hatchets, wheel barrows, and small trucks for hauling of equipment and spoils. It is expected that these efforts would occur once a year for the lifespan of the Project.

Maintenance of pre-treatment basins would include non-native vegetation removal, minor structural repair, and sediment removal. Non-native vegetation removal would utilize the same equipment, methods, and frequency as the bio-swales. Minor structural repair could include repair of storm drain pipes, headwalls, and berms associated with the stormwater management features. The pre-treatment retention/detention basins are designed to capture stormwater runoff from upstream tributary areas and allow the silts and other debris carried by the runoff to settle within the basins prior to infiltration and/or discharge into the Ballona wetlands. This "storage" must be maintained for proper functioning. A discussion of the sediment removal for each basin is presented in Appendix B5, Preliminary Operation and Maintenance Plan.

Parking Lots

Hours of operation for public use of the West Culver Parking Lot and the existing parking lot and new parking structure in Area A would be open from approximately dawn to dusk with parking for a limited duration. Parking areas would be locked after hours. The West Culver Parking Lot currently is unlocked, and CDFW and the City of Los Angeles Police Department periodically check for vehicles that are parked overnight. This lot would be locked after dusk as part of future operations.

Vector Control

Vector control activities do not occur within the portion of Ballona Creek that lies within the Project site, and there have been no known vector control practices within the Ballona Reserve over the last several years due to drought conditions. However, vector control practices do occur within the Freshwater Marsh adjacent to East Area B and Southeast Area B. In previous years, the Los Angeles County Vector West Control District (LACVWCD) has applied larvicides in South Area B, and likely other wet areas of the Ballona Reserve. The restored and enhanced tidal wetlands would be designed to provide daily tidal flushing to support tidal wetland functions, which would also discourage vector breeding; however, it is possible that vector control within certain areas of the restored wetland complexes may need to increase in frequency and/or amount. In the past, LACVWD conducted vector control activities without prior consultation with CDFW. It is CDFW's intent that future vector control activities within the Ballona Reserve would be coordinated between LACWVCD and CDFW.

SoCalGas Property

Operation and maintenance activities on the SoCalGas Property would include routine maintenance and inspect; gas well inspections; pipeline and plant hydrostatistic testing; and leakage surveys. Routine maintenance and inspection would typically be performed during daylight hours during the week. Gas well inspections would occur on a weekly basis. Hydrostatistic testing of field pipelines and the plant would occur every two to seven years, depending on the involved agencies, pipe condition, and location. Leakage surveys would be performed on active wells on a monthly basis, on abandoned wells on a semi-annual basis, and on pipelines once a year.

Other Current and Ongoing routine O&M Activities

Table 2-21, *Other Current and Ongoing Routine Operation and Maintenance Activities*, lists other routine current and ongoing O&M activities that would continue in Alternative 1.

TABLE 2-21
OTHER CURRENT AND ONGOING ROUTINE OPERATION AND MAINTENANCE ACTIVITIES

Ongoing O&M Activities	O&M Activity Frequency	Responsibility	Notes
Inspect and lock gates	Daily	LACFCD/CDFW	To be performed at existing and new gate locations.
Maintenance and repair of fence and gates	Monthly or as needed	LACFCD/CDFW	To be performed as needed for existing and new fence and gate locations will be operated by on-site Ballona Reserve staff.
Trail maintenance	Weekly or as needed	LACFCD/CDFW	To be performed as needed for existing and new trails.
Bicycle path maintenance	Weekly	LACFCD	Weekly sweeping and less frequent maintenance of path surface.
Access road maintenance	Approximately every 5 years	LACFCD	Pavement management and resurfacing.

SOURCE: P. Holland, Los Angeles County Department of Public Works. 2014. Personal Communication.

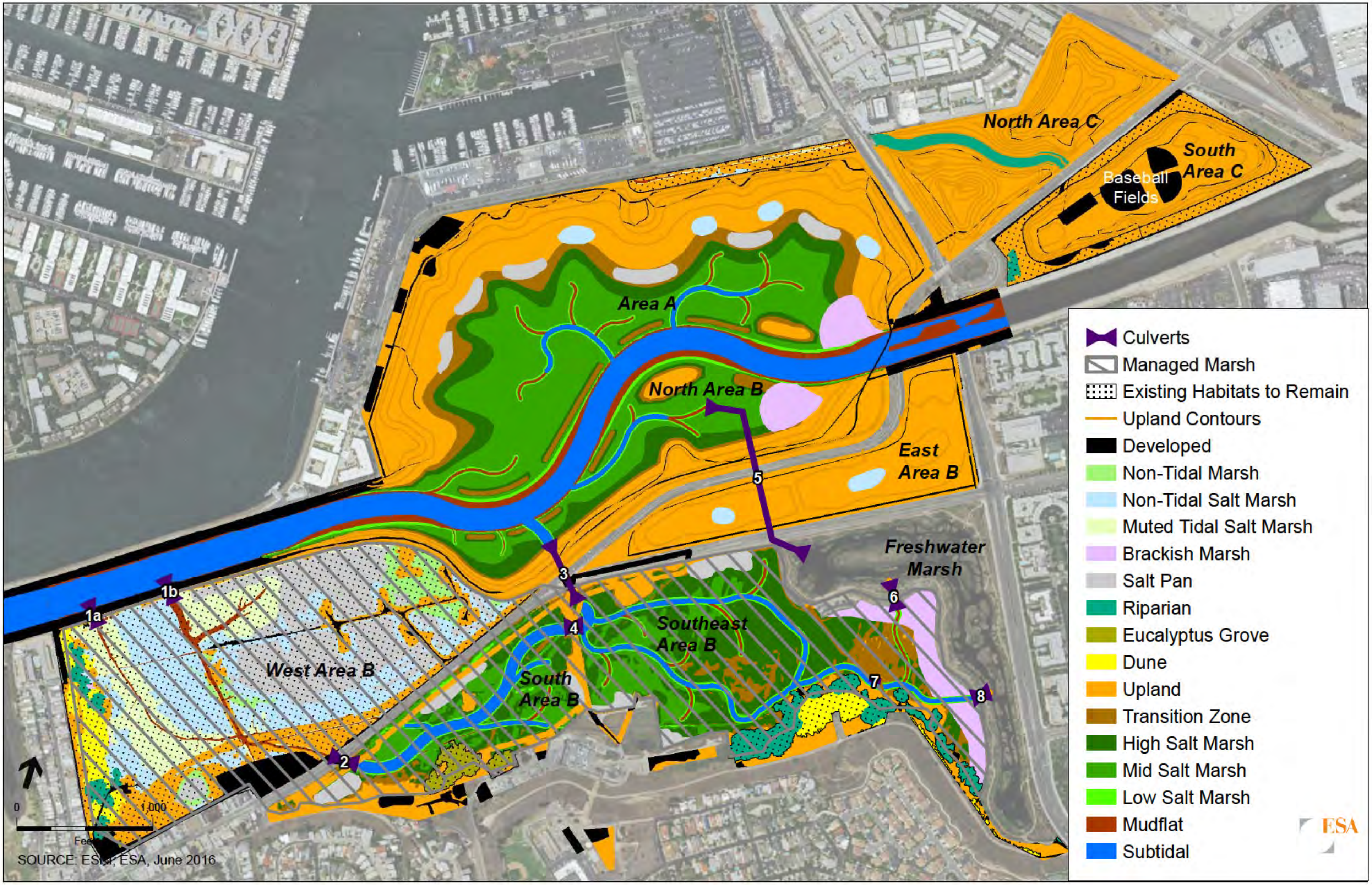
Current and Ongoing Law Enforcement Activities

Transient encampments have been encountered in the Ballona Reserve over time. Typically these encampments are identified by CDFW and are removed by local law enforcement. Once restoration is complete, it is possible that the homeless could try to establish these encampments once again in the Ballona Reserve. If this should occur, CDFW will address these ongoing illegal activities as they have in the past.

2.2.3 Alternative 2: Restored Partial Sinuous Creek

Alternative 2 is similar to Alternative 1, but with a slightly smaller footprint. In Alternative 2, existing armored levees on the Ballona Creek channel adjacent to the Ballona Reserve would be removed and Ballona Creek would be realigned to flow in a natural meander-shaped pattern as described in Alternative 1; however, the southern levee of the Ballona Creek channel adjacent to West Area B would not be breached, and the existing water-control structures would remain. As a result, this alternative restores a mix of fully tidal wetlands and managed wetlands in the Ballona Reserve while retaining existing habitats in West Area B (Figure 2-43, *Alternative 2: Proposed Habitats*). Alternative 2 would include the first restoration phase described in Alternative 1, but not the second and final restoration phase and without the stockpiled fill along the Culver Boulevard levee and East Area B in the first phase of Alternative 1.

New partially-earthen levees would be built around the northern perimeter of Area A and along the north side of Culver Boulevard in North Area B as shown in Figure 2-44, *Alternative 2: Preliminary Grading Plan*. The interim levee identified in Alternative 1 would become the new location for the final North/West Area B levee in Alternative 2. The levees would be broad and gently sloped away from roadways and buildings, protecting development from potential flooding of Ballona Creek, and providing upland and transitional habitat zones. The new levees would be set back from Ballona Creek to reconnect the creek with its floodplain, allowing wetland habitat to form within the floodplain.



Ballona Wetlands Restoration Project

Figure 2-43
Alternative 2: Proposed Habitats

As with Alternative 1, Alternative 2 would provide new trails and bicycle paths that would encourage appropriate use by visitors, and gateway entrances with educational and art installations as shown in Figure 2-45, *Alternative 2: Public Access Plan*. However, Alternative 2 would differ from Alternative 1 in that the trail would go along the North/West Area B levee (as in Phase 1 of Alternative 1) instead of going around the perimeter of West Area B and the baseball fields in Area C would be replaced (if external funding becomes available for this purpose and other factors are met) at a higher elevation following the placement of fill in that location.

Alternative 2 balances functioning tidal habitat creation with interim impacts to sensitive species habitats. While implementation of Alternative 2 would restore less full tidal wetland in the Ballona Reserve as compared to Alternative 1, it would eliminate the need to reestablish State-listed endangered Belding's savannah sparrow habitat prior to potential losses of such habitat during implementation of the second phase. Alternative 2 would maintain West Area B in its present managed tidal state.

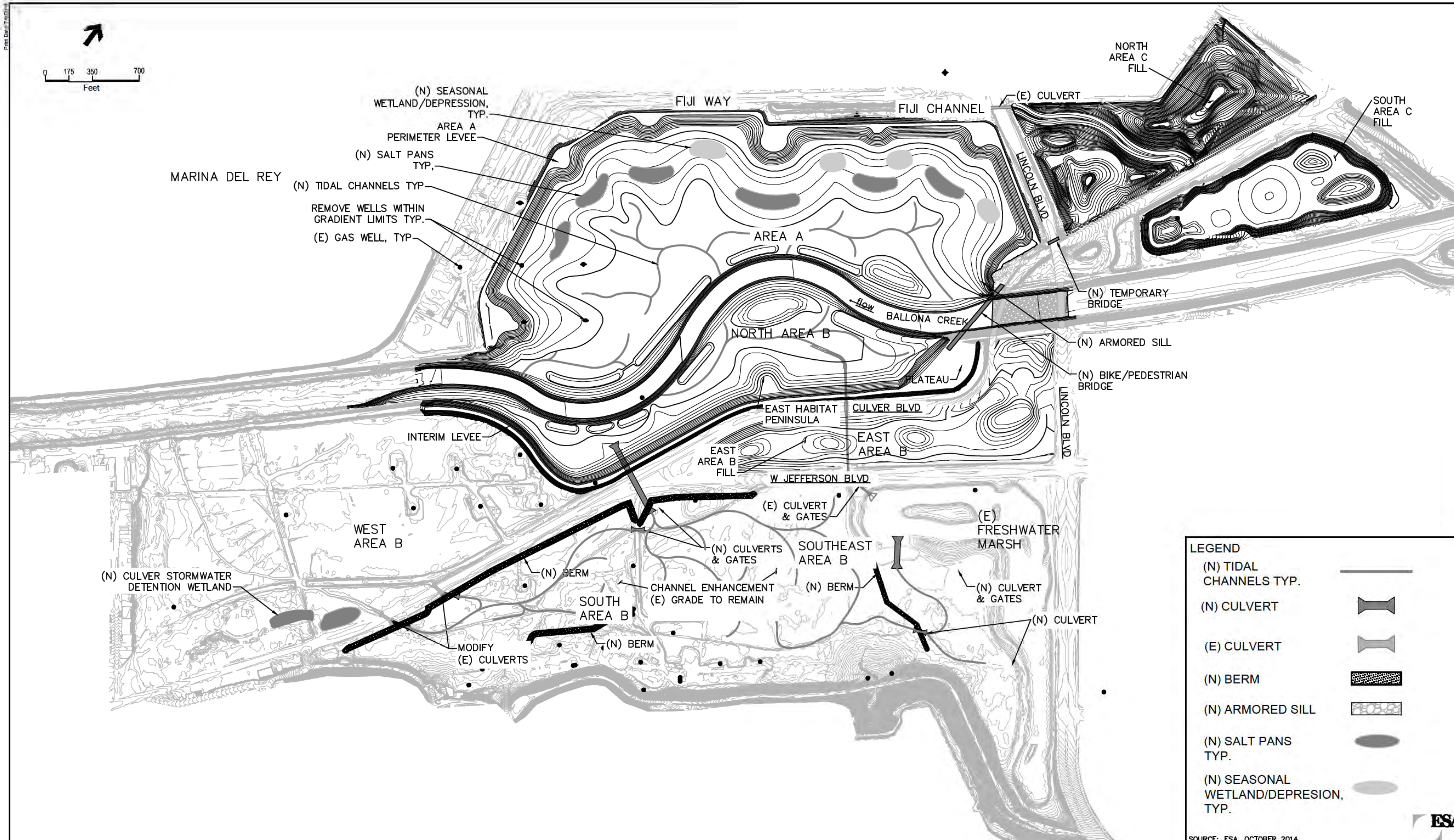
In addition, the existing SoCalGas wells would be decommissioned within the Ballona Reserve and pipelines would be abandoned or modified, as needed, to accommodate the proposed restoration activities.

This alternative would result in the permanent loss of 21.7 acres of wetland waters of the U.S. and 1.8 acres of non-wetland waters of the U.S. There would be a loss of function to 0.7 acre of wetland waters and 5.5 acres of non-wetland waters and a temporary impact to 24.5 acres of wetland waters and 22.4 acres of non-wetland waters. Within the Ballona Reserve, 83.1 acres of native wetland and 38.7 acres of new non-wetland waters would be established. An additional 56.3 acres of native wetland and 15.3 acres of non-wetland waters would be enhanced. With respect to the Corps' Section 10 jurisdiction, all work and structures that would occur in the blue area shown in Figure 1-1, *Existing Topography and Tidal Inundation*, would occur in or affect navigable waters of the U.S. Such activities would include, for example, dredging and service of flap gates and other water control structures. Under Alternative 2, West Area B would not be improved; therefore, reduced impacts to navigable waters relative to Alternative 1 would result.

2.2.3.1 Alternative 2: Ecosystem Restoration

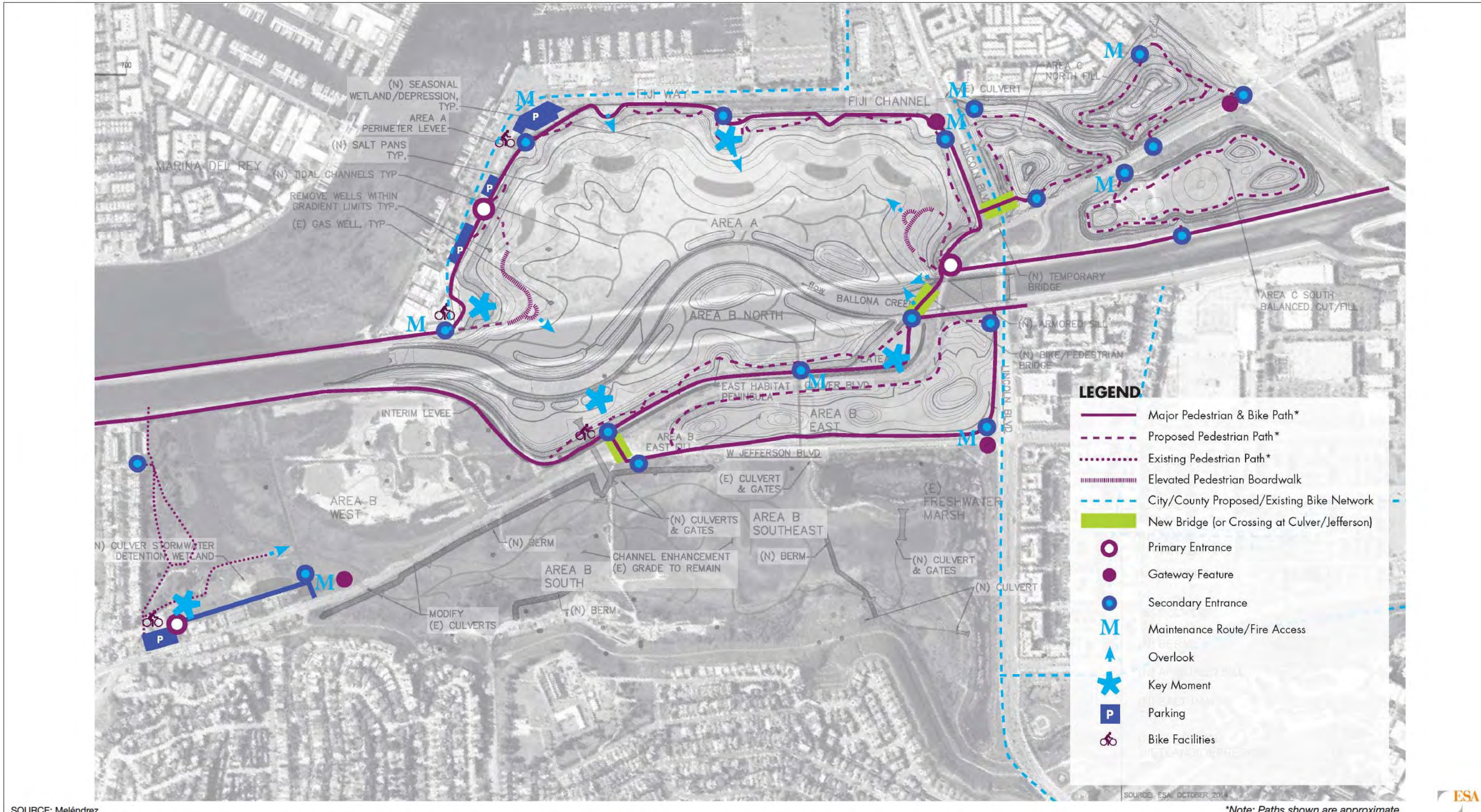
Alternative 2 would restore a fully connected Ballona Creek channel and wetland system across most of the site by removing the existing levees, and creating a sinuous channel with two meander-shaped bends (Figure 2-43, *Alternative 2: Proposed Habitats*). The proposed channel alignment would mimic natural channel forms and support desired native habitats, vegetation, and wildlife species. The proposed channel alignment also intentionally avoids cultural resource areas identified by archaeological studies and/or Tongva tribal representatives, as in Alternative 1.

Subtidal and intertidal channels would extend from Ballona Creek into the vegetated tidal wetlands, providing habitat diversity and tidal circulation (Figure 2-43, *Alternative 2: Proposed Habitats*). In Area A, soil would be removed to restore tidal wetlands near the creek with gently sloping transitional and upland habitats between the wetlands and a new levee constructed along Fiji Way. Slight depressions in the transitional and upland areas would be created to form new salt pans and seasonal wetlands. Tidal wetlands also would be restored in North Area B between Ballona Creek and upland habitats along a new Culver Boulevard levee. In South and Southeast Area B, the existing wetlands would be enhanced by removing invasive plant species, restoring native vegetation, creating new channels and salt pans, and managing wetland hydrology via new



Ballona Wetlands Restoration Project

FIGURE 2-44
ALTERNATIVE 2: PRELIMINARY GRADING PLAN



SOURCE: Meléndrez

*Note: Paths shown are approximate.

Ballona Wetlands Restoration Project

Figure 2-45
Alternative 2: Public Access Plan

water-control structures in the Culver Boulevard levee. Brackish marsh would be established near the existing Freshwater Marsh and also may form along the upstream edge of Ballona Creek. Soil removed from Area A would be placed to construct the new levees and create restored uplands in East Area B, North Area C, and South Area C. In North Area C, the Fiji Ditch would be realigned and restored with riparian habitat along the new channel. The existing Fiji Ditch in Area A would be retained and enhanced. Nonnative vegetation would be removed along the banks of Fiji Ditch, targeting invasive species removal, and the banks would be revegetated and stabilized with native plants.

Ecosystem restoration activities in Alternative 2 would include removing invasive plant species; seeding/planting native plant species; as well as natural recruitment of native plant species in restored tidal wetlands similar to Alternative 1.

Restoration habitat targets and acreages by phase are presented in Table 2-22, *Alternative 2 Restored Habitats and Acreages*.

TABLE 2-22
ALTERNATIVE 2 POST-RESTORATION HABITATS AND ACREAGES[1]

Habitat Type	Existing Conditions	Impacts	Alternative 2			
			Area A	Area B	Area C	Total
Aquatic and Wetlands						
Aquatic	40.3	24.5	11.5	37.0	0.0	48.4
Mudflat	8.8	4.5	6.5	9.0	0.0	15.4
Tidal Salt Marsh	n/a	n/a[1]	53.0	71.2	0.0	124.3
Low Marsh	n/a	n/a	3.5	7.9	0.0	11.4
Mid-Marsh	n/a	n/a	36.9	27.2	0.0	64.2
High Marsh	n/a	n/a	12.6	36.1	0.0	48.7
Muted Tidal Marsh	18.2	3.0	0.4	14.0	0.0	14.4
Non-Tidal Salt Marsh	85.0	25.8	2.3	25.9	0.0	28.3
Non-Tidal Marsh	38.6	24.9	0.0	4.6	0.0	4.6
Coastal Brackish Marsh	6.4	1.7	2.6	9.1	0.0	11.7
Salt Pan	22.8	0.5	4.6	27.2	0.0	31.8
Willow/Mulefat Thicket	13.8	4.8	0.0	8.4	3.4	11.8
Uplands						
Transition Zone	n/a	n/a	10.8	12.9	0.0	23.7
Stabilized Dune	9.3	1.9	0.0	7.0	0.0	7.0
Eucalyptus Grove	2.8	0.2	0.0	2.4	0.0	2.4
Upland	271.9	238.9	57.4	85.5	58.5	203.8
Grassland	19.4	16.7	n/a	n/a	n/a	n/a
Coastal Sage Scrub	52.3	48.0	n/a	n/a	n/a	n/a
Invasive monoculture	200.2	174.2	0.0	0.0	0.0	**0.0**
Developed	47.7	n/a	7.2	20.9	6.7	38.0
Total	***565.5***	**156.5**[2]	**156.4**	**335.1**	**68.6**	**565.6**

NOTE:
1 There is no fully tidal marsh under existing conditions, therefore there are no impacts.
2 All values provided in acres.
3 The total impact does not include disturbance of invasive monoculture since this would be a beneficial effects and not an adverse impact.

SOURCE: ESA 2016.

Restored Habitats (Alternative 2)

The restored habitats in Alternative 2 would be the same as those presented in Alternative 1, Phase 1 in Section 2.2.2.1, *Alternative 1: Ecosystem Restoration*.

Grading and Hydrology (Alternative 2)

Figure 2-44 shows the preliminary grading plan for Alternative 2. Figure 2-46, *Alternative 2: Perimeter Levees Plan*, and Figure 2-47, *Alternative 2: Levee Sections*, show the levee plan with the locations of typical grading cross-sections. The grading and hydrology for Alternative 2 is described further below.

Ballona Creek Channel Realignment and Area A

Grading for Ballona Creek and Area A would be the same for Alternative 2 as in Alternative 1. The grading is described in Section 2.2.2.1, *Alternative 1: Ecosystem Restoration*.

North Area B

Between the new levee and the realigned portion of Ballona Creek in North Area B, Alternative 2 proposes a gently sloping transition from upland habitats along the levee down to vegetated marsh habitat and mudflat habitat along the restored Ballona Creek channel banks.

Tidal wetland would be restored between the new Culver Boulevard levee and the realigned portion of Ballona Creek in North Area B, with a full tidal connection between the wetlands and Ballona Creek as described for Alternative 1 (Figure 2-43, *Alternative 2: Proposed Habitats*).

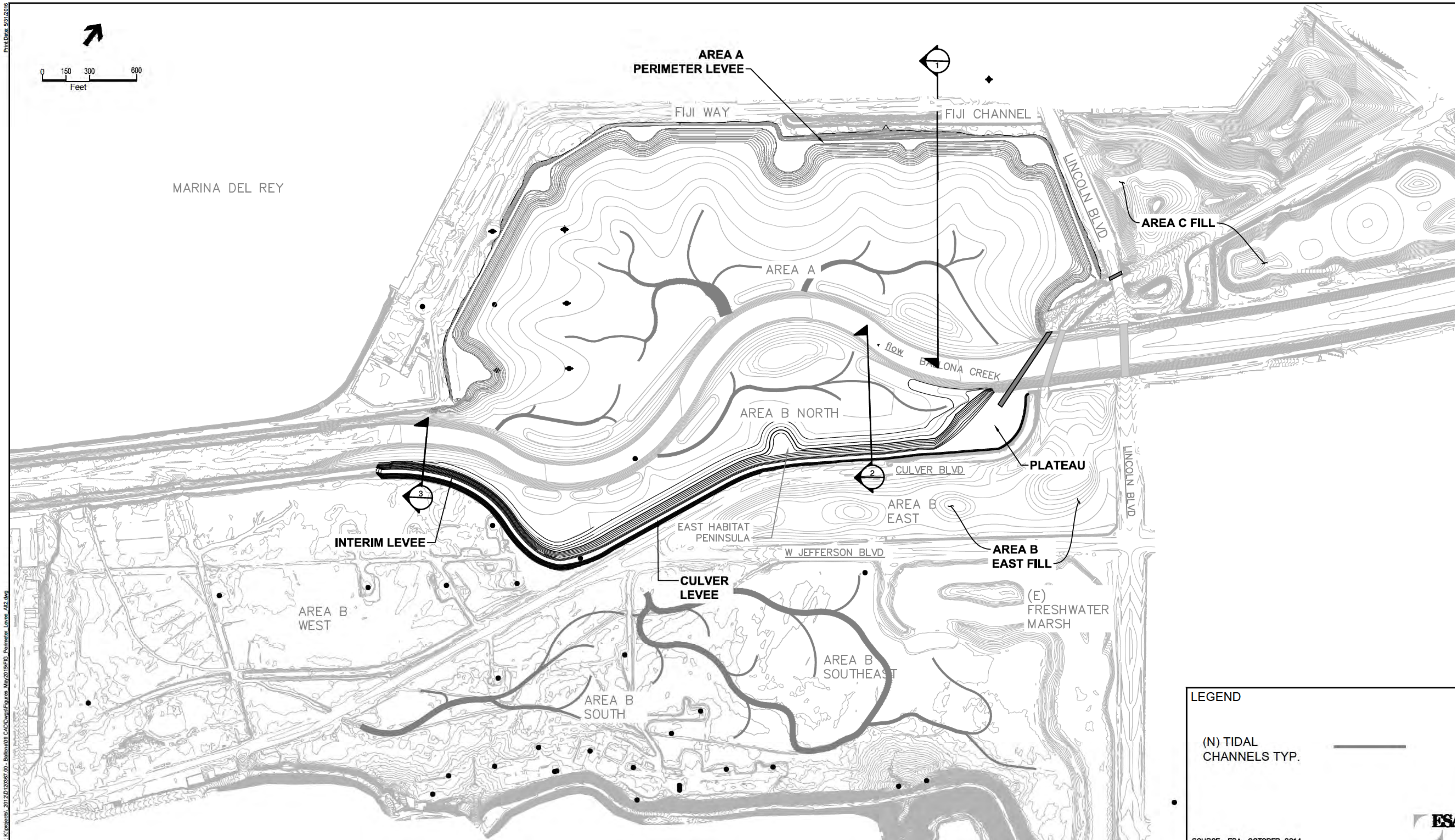
Culver Boulevard Levee

A new levee would be constructed north of Culver Boulevard to replace the existing south Ballona Creek channel levee and provide flood risk protection for Culver Boulevard and areas to the south. The Culver Boulevard levee would extend from the existing south Ballona Creek levee at the Culver Boulevard Bridge along Culver Boulevard to the North/West Area B levee, which would connect the Culver levee with the existing south Ballona Creek levee along West Area B as described below (Figure 2-44, *Alternative 2: Preliminary Grading Plan*). The Culver levee would be constructed with a top width of 20 feet and would have a slope of approximately 5:1 H:V from the levee crest down to 15 feet NAVD 88 and a 10:1 H:V slope down to the marsh plain. The levee would be offset from Culver Boulevard to allow for road drainage to the area between the road and the levee and to avoid existing utilities along Culver Boulevard, which would remain in place.

The levee crest elevation is expected to be approximately 18.5 feet NAVD 88, which would include an allowance for sea level rise and improve the existing level of flood risk protection. The crest elevations for the new proposed levees around the perimeter of the restoration would be refined during the development of detailed engineering drawings. The levee would include a 12-foot-wide maintenance access road, which would also serve as a pedestrian path and bike trail, on top.

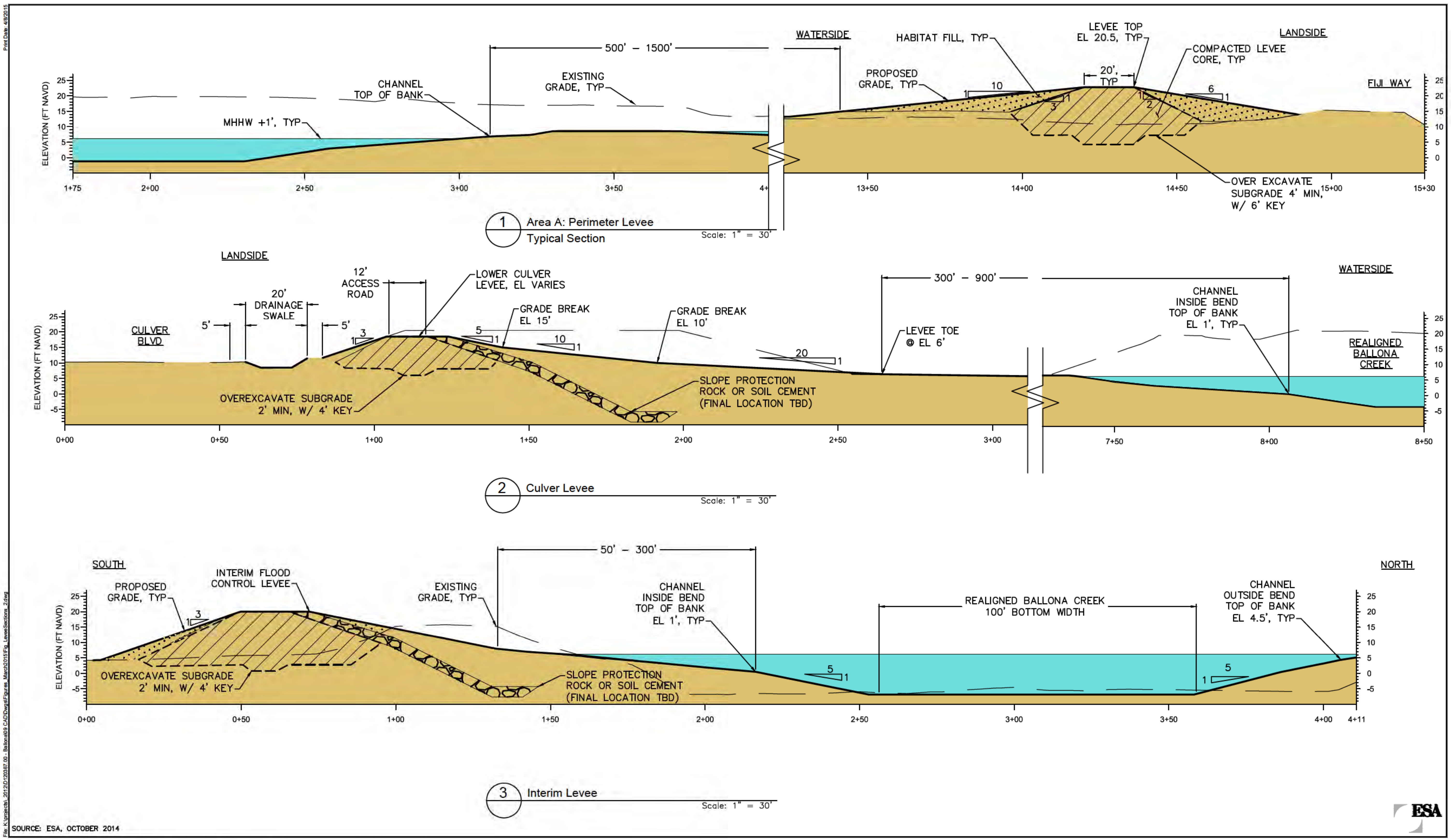
West Area B

No grading for habitat restoration would be done in West Area B in Alternative 2.



Ballona Wetlands Restoration Project

Figure 2-46
ALTERNATIVE 2: PERIMETER LEVEES PLAN



Ballona Wetlands Restoration Project

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FIGURE 2-47
Alternative 2: Levee Sections

East Area B

Soil excavated to restore wetlands in Area A would be placed in East Area B (Figure 2-48, *Alternative 2, East Area B: Proposed Grading*). Existing elevations in East Area B range from approximately 6 to 12 feet NAVD 88. Grades are currently from 5 to 15 feet below street level. The proposed elevations would range from approximately 8 feet NAVD 88 at the eastern end to 20 feet NAVD 88 at the northern end near the existing levee. Corresponding fill heights would range from a few feet to approximately 14 feet above existing grade. The proposed grades would be no more than 8 feet above the adjacent street level. The upland restoration areas would be graded so that rainfall would flow into and support seasonal wetlands and other upland habitats.

South and Southeast Area B

Grading for South and Southeast Area B, would be the same for Alternative 2 as in Alternative 1. The grading is described in Section 2.2.2.1, *Alternative 1: Ecosystem Restoration*.

North and South Area C

Soil excavated to restore wetlands in Area A would be placed in North and South Area C to create elevated areas of upland habitat (Figure 2-49, *Alternative 2, North Area C: Proposed Grading, Low Fill (450,000 cy or540,000 cy adjusted)*; Figure 2-50, *Alternative 2, South Area C: Proposed Grading, High Fill*). In South Area C, fill would be placed across the site and, if external funding becomes available for their construction, operation and maintenance, the baseball fields could be rebuilt on top of the fill.

Soil would be placed up to an elevation between 38 and 50 feet NAVD 88 (or a height of up to approximately 13 to 25 feet above existing grade). The upland areas would be graded so that rainfall would flow into and support seasonal wetlands and other upland habitats in Area C. Side slopes of the upland areas would vary from approximately 3:1 H:V to 20:1 H:V, as depicted in Figure 2-49, *Alternative 2, South Area C: Proposed Grading, Low Fill (450,000 cy or540,000 cy adjusted)*, and Figure 2-50, *Alternative 2, South Area C: Proposed Grading, High Fill*.

Revegetation of Graded and Disturbed Areas (Alternative 2)

Revegetation activities during restoration would include invasive plant species controls and the planting and seeding of native vegetation as in Alternative 1. Invasive plant species would be removed or treated per the Invasive Plant Material Treatment description in Section 2.2.2.5, *Alternative 1: Implementation and Restoration Process*. Additional revegetation procedures would follow the Revegetation of Disturbed Areas description in Section 2.2.2.5.

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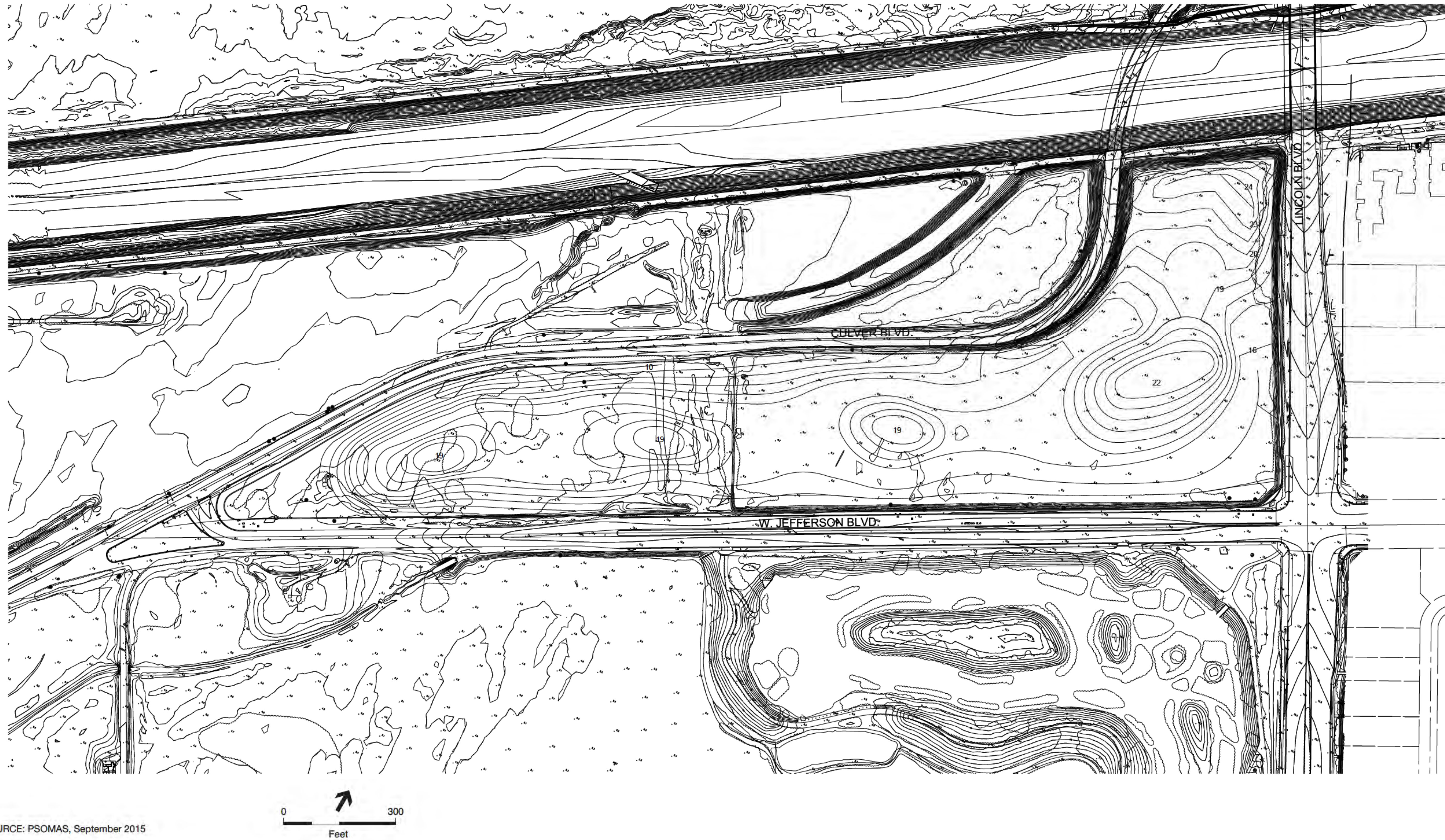

SOURCE: PSOMAS, September 2015

Ballona Wetlands Restoration Project

Figure 2-48
Alternative 2, East Area B: Proposed Grading

Ballona Wetlands Restoration Project

Figure 2-49
Alternative 2, South Area C: Proposed Grading, High Fill (450,000 cy or 540,000 cy adjusted)

SOURCE: PSOMAS, October 2014

Ballona Wetlands Restoration Project

Figure 2-50
Alternative 2, South Area C: Proposed Grading, High Fill

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2.2.3.2 Alternative 2: Flood Risk and Stormwater Management

Alternative 2 entails realignment of flood risk management levees as described in Alternative 1. Levees would be constructed along Fiji Way in Area A and along Culver Boulevard in Area B, as well as between North and West Area B (i.e., the interim levee from Alternative 1, referred to as the North/West Area B levee for Alternative 2). The proposed levees in Alternative 2 would be engineered to meet or exceed current flood risk management standards.

Alternative 2 also would include a new water control structure to enhance existing managed wetland in South/Southeast Area B. The new culverts would include gates to limit high water. Berms would also be constructed along the low spots in Culver Boulevard and along the SoCalGas property boundaries with the Ballona Reserve (Figure 2-44, *Alternative 2: Preliminary Grading Plan*).

The existing West Area B self-regulating tide gate would be maintained as is. A new stormwater basin would be created north of the developed commercial area at the southeast corner of West Area B to hold and treat stormwater flows in this area.

Detailed descriptions of flood risk and stormwater management features including the Culver Boulevard stormwater management improvements are the same as those presented under Alternative 1 for Phase 1 in Section 2.2.2.2, *Alternative 1: Flood Risk and Stormwater Management*, except for as described below.

Flood Risk Management Features

The Alternative 2 flood risk management features are similar to those in Alternative 1, Phase 1 with a few differences. The interim levee from Alternative 1 would be a permanent feature in Alternative 2, and material would not be stockpiled in the Culver Boulevard levee. Additionally, Alternative 2 would not include any new water-control structures in West Area B. Erosion control in Alternative 2 would be similar to Alternative 1, except there would be no armoring in West Area B (Figure 2-51, *Alternative 2: Perimeter Levee Armoring Plan*).

Levees

Culver Boulevard Levee

The new Culver Boulevard levee would extend from the south end of the Culver Boulevard Bridge, where it would tie in to the existing Ballona Creek channel levee, along Culver Boulevard to the Culver Boulevard and Jefferson Boulevard intersection, where it would tie into the North/West Area B levee (Figure 2-44, *Alternative 2: Preliminary Grading Plan*). The Culver Boulevard levee would include two distinct design sections:

1. A wide plateau at the upstream limit between Culver Boulevard and the old railroad alignment. This wide section is intended to vary the widening of the restored Ballona Creek floodplain to help even out the hydraulic drop of flood levels as flood flows enter the Ballona Reserve.

2. A 20-foot top-width section along Culver Boulevard to the intersection with Jefferson Boulevard. The continuation of this levee along Culver Boulevard and around the east side of West Area B is referred to as the North/West Area B levee, described below.

The levee core would be located adjacent to Culver Boulevard, and the wider sections would support vegetated habitat closer to Ballona Creek. Beyond the levee top, each section would incorporate an average slope of 5:1 H:V down to 15 feet NAVD 88 and 10:1 H:V down to 10 feet NAVD 88, with a flatter 20:1 H:V transitional slope to the adjacent restored tidal wetlands.

North/West Area B Levee

The North/West Area B levee (Alternative 1 Interim Levee) would connect the Culver Boulevard levee to the existing southern Ballona Creek channel levee just north of the existing natural gas monitoring well cluster in West Area B (Figure 2-44). The North/West Area B levee would be constructed with 5:1 H:V side slopes on the Ballona Creek side. Subgrade preparation would be similar to the Culver Boulevard and West Area B levees discussed in Alternative 1. The North/West Area B levee would incorporate buried rock or soil cement armoring along much of its length (Figure 2-47, *Alternative 2: Levee Sections*, and Figure 2-51, *Alternative 2: Perimeter Levee Armoring Plan*). Rock facing may be used at the tie-in with the southern Ballona Creek channel levee.

Water-Control Structures

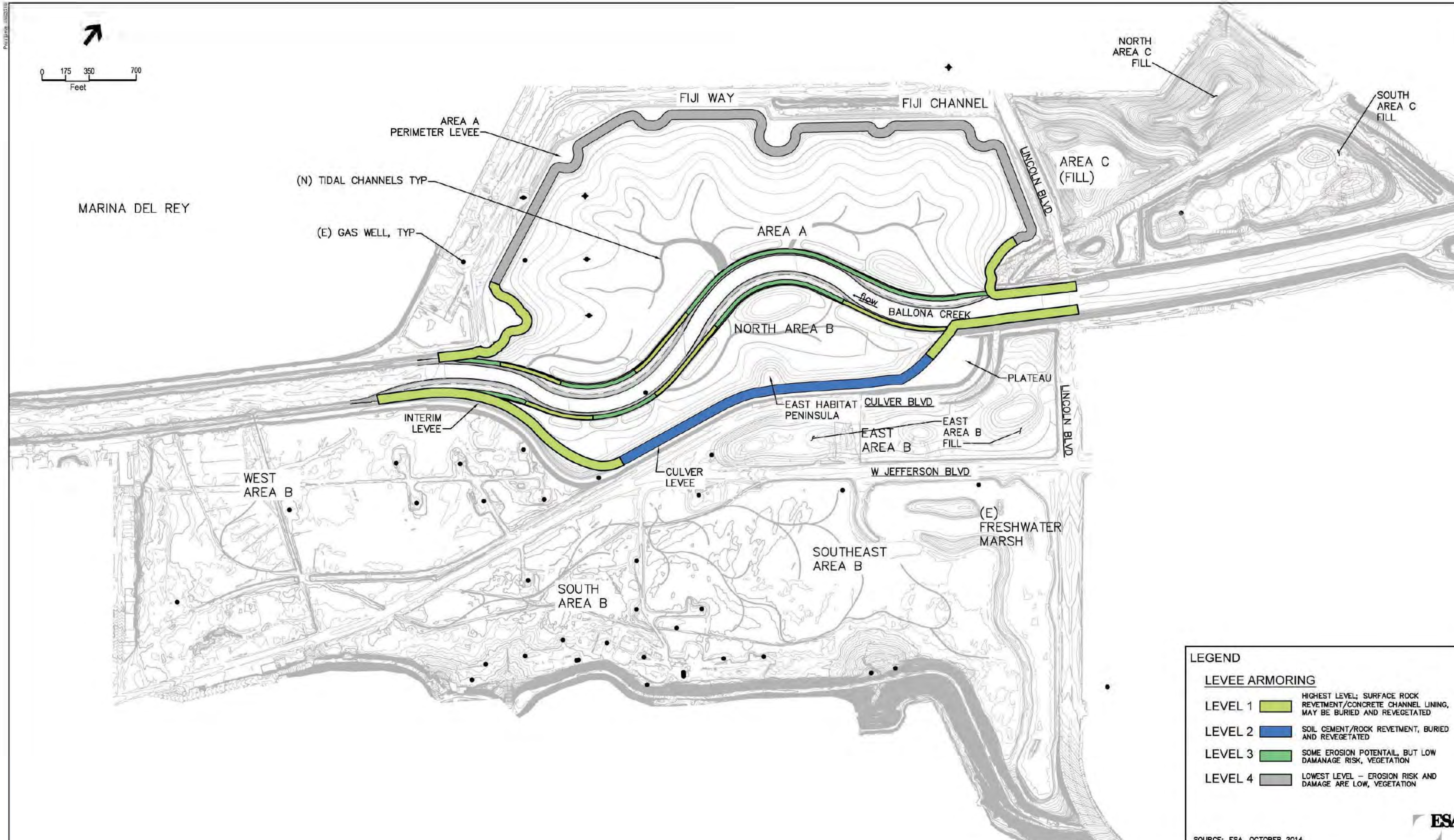
Alternative 2 water-control structures are the same as those described in Alternative 1 (Section 2.2.2.2, *Alternative 1: Flood Risk and Stormwater Management*), with the following exceptions:

- No new culverts would be needed to connect West and South Area B.
- No culverts would be needed to connect the existing channels within West Area B.

A new weir box would be installed on the culverts in the South Area B berm along Culver Boulevard to maintain the connection to West Area B for stormwater drainage. The remaining water-control structures would also be installed/improved in Alternative 2 as under Alternative 1.

Culver Boulevard Stormwater Management

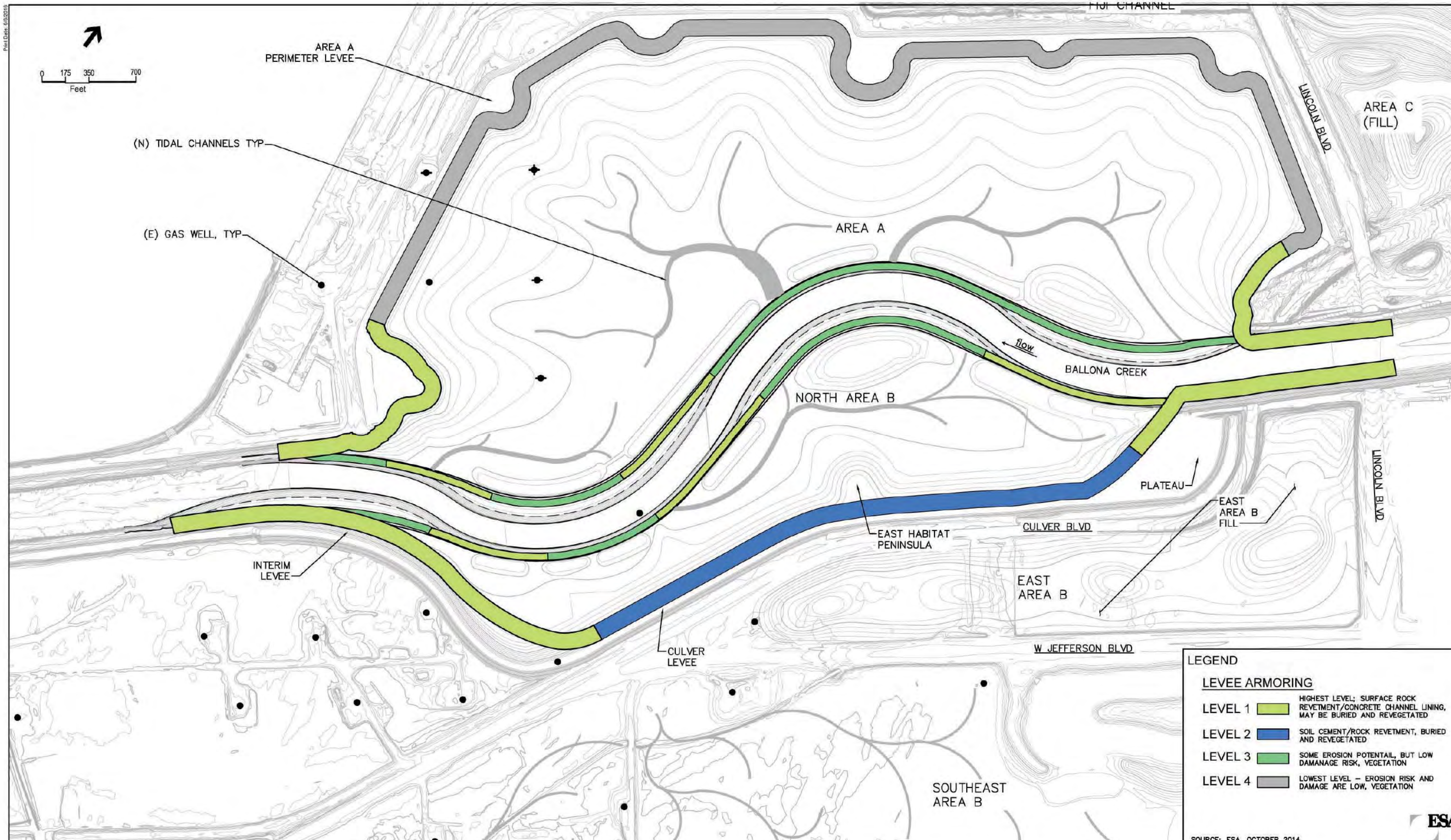
As described for Alternative 1, Culver Boulevard stormwater management would be improved by creating a low area down to approximately 4 feet NAVD 88 in west Area B. This storage basin would be sized to accommodate the local area drainage (Figure 2-15, *Stormwater Basin and Emergency and Bus Access Routes*). This basin would also function as a water quality treatment measure to address the minor increase in pollutant load from the proposed paved emergency and bus access road to be constructed in the Ballona Reserve immediately behind the commercial properties (Figure 2-15, *Stormwater Basin and Emergency and Bus Access Routes*), as well as a portion of the runoff from the existing paved area of Culver Boulevard.



Ballona Wetlands Restoration Project

FIGURE 2-51A

ALTERNATIVE 2: PERIMETER LEVEE ARMORING PLAN



Ballona Wetlands Restoration Project

FIGURE 2-51B

ALTERNATIVE 2: PERIMETER LEVEE ARMORING PLAN

2.2.3.3 Alternative 2: Public Access and Visitor Facilities

Improvements to public access, recreation, environmental education, and interpretative opportunities within the Project site would be comparable to those described for Phase 1 of Alternative 1 (Figure 2-45, *Alternative 2: Public Access Plan*). These would include construction of three primary entrances into the Ballona Reserve with adjacent parking, new trails, and new interpretive features and amenities (e.g., benches).

Under Alternative 2, the primary access difference would be that the pedestrian and bicycle path would connect between the Culver Boulevard levee and the south Ballona Creek channel levee via the North/West Area B levee along the eastern side of West Area B. In addition, a bike path would be constructed upon the existing south Ballona Creek channel levee between Culver Boulevard and Lincoln Boulevard. This bike path would connect from the bike and pedestrian bridge at Culver Boulevard, travel along the south Ballona Creek channel levee, and split into two paths. One path would connect with the bike path that parallels Lincoln Boulevard in East Area B. The other bike path would remain on the south levee, continue on toward Lincoln Boulevard, and eventually would provide a connection under the Lincoln Boulevard Bridge to an existing bike path in Playa Vista. As a part of this Alternative, the bike path would be constructed only within the Project's boundaries. Connections to paths or potential paths external to the Reserve are not part of Alternative 2. All other public access and visitor facilities improvements would be as described in Section 2.2.2.3, *Alternative 1: Public Access and Visitor Facilities*.

Additionally, Alternative 2 would raise the existing elevation of the baseball fields' location. The baseball fields may be replaced with three new ones. If replaced, external funding would be required. The replacement analysis assumes that one replacement field would have a 90-foot diamond for players 13 years old and over, and two would have 60-foot diamonds for players 12 years old and younger.[30] The existing baseball fields occupy approximately 6.2 acres of land devoid of vegetation; if reconfigured and replaced, they would occupy approximately 5.5 acres and be planted with a typical athletic turf grass.

2.2.3.4 Alternative 2: Infrastructure and Utility Modification

Some modification of infrastructure and utilities would be required to implement the restoration under Alternative 2. As with Alternative 1, modification of the existing public roads and power utilities is not anticipated.

Gas Well Decommissioning

Alternative 2 would decommission existing gas wells within the Ballona Reserve and abandon or modify gas pipelines as in Alternative 1, Phases 1 and 2, except for in West Area B. In West Area B including the existing salt pan, well abandonment would not be required for Alternative 2; however, abandonment of the remaining wells would still be desired in all cases as part of the overall restoration and improvement of the Ballona Reserve. SoCalGas would

30 Generally, the distance between base paths on fields for 12-year-olds and below in baseball and in all divisions of softball is 60 feet. A local Little League board of directors may opt to use a 50-foot diamond in the Tee Ball divisions. The distance in all divisions of baseball for 13-year-olds is up to 90 feet.

continue to proceed with well abandonment per its decommissioning plans as described under Alternative 1 in Section 2.2.2.4, *Alternative 1: Infrastructure and Utility Modification*; however, the specific timing of the remaining SoCalGas activities would not be driven by the restoration.

Sewer and Water Infrastructure

The City of Los Angeles–abandoned 36-inch reinforced concrete pipe would be removed and capped where any excavation down to this pipe are planned for the restoration.

Roads and Storm Drainage

Existing public roads running through the Ballona Reserve (Culver Boulevard, Lincoln Boulevard, and Jefferson Boulevard) would remain in place and would not be altered by the proposed wetland restoration activities. Signage would be added at the new bus and emergency access entrance off Culver Boulevard to the West Culver Parking Lot indicating right turn in/right turn out only at Culver Boulevard.

Other stormwater controls and improvements associated with Alternative 2 restoration are described in Section 2.2.2.2, *Alternative 1: Flood Risk and Stormwater Management*.

2.2.3.5 Alternative 2: Implementation and Restoration Process

Restoration activities would be sequenced as shown in Table 2-23, *Alternative 2 Restoration Sequence Stages*. Restoration phasing would be the same as described for Alternative 1, Phase 1.

In Alternative 2, utilities would be relocated within the Ballona Reserve, Area A and North Area B would be graded, and new levees would be constructed. Soil excavated from Area A would be transported to Area B and used to construct the Culver Boulevard levee. Water-control structures would be installed/modified, and the wetland enhancements in South Area B, including channel excavation and berm construction, would be completed. Area A site preparation, grading, and revegetation also would occur. Site preparation of North and South Area B would occur, including utility relocation, clearing and grubbing, and over-excavation along the levee alignment. Area C and East Area B would be graded to upland habitat. Once the new levees are in place, the channel meander shapes would be constructed and existing levee segments removed. An open Ballona Creek channel would be maintained throughout the restoration process. Finally, the public access features, including new bicycle and pedestrian paths and the West Area B fire access road and stormwater drainage improvements, would be completed.

Earthwork Quantity Estimates

Table 2-24, *Alternative 2 Earthwork Soil Volume*, summarizes overall earthwork quantity estimates for Alternative 2. Levee dimensions would be refined during final design to meet Corps requirements (e.g., Section 408 requirements for modifications to Corps-approved flood risk management protection systems). The final volume of fill placement for levee construction would depend on the final design and the actual conditions during restoration (e.g., the compatibility of excavated soils).

TABLE 2-23
ALTERNATIVE 2 RESTORATION SEQUENCE STAGES

Sequence #	Project Area(s)	Activity Description
1	B	Southeast Area B gas line 1167—remove and relocate existing gas line underneath Gas Company Road
2	B	South Area B enhancement—enhancement including channel excavation
3	A	Area A gas line removal—remove existing inactive gas line and cut and cap gas line at Fiji Way
4	A	Gas well abandonment - Drill new well at SoCalGas site to replace Del Rey 19, abandon and plug Del Rey 13, 14, 15, 17, 18, and 19, and remove existing gas lines serving removed wells
5	A	Remove vegetation around wells in Area A
6	A	Excavate and grade soil around wells in Area A and export soil to West Area B
7	A	Finish grading around wells in upland areas and reestablish upland vegetation
8	B	Abandon wells in Area B and drill new wells at SoCalGas Property
9	B	Remove vegetation around wells in Area B
10	B	Finish grading around wells in upland areas of Area B and reestablish upland vegetation
11	A & B	Pedestrian/bicycle bridge—relocate bicycle path under proposed bridge and construct pedestrian/bicycle bridge across channel with connection to bicycle path under the bridge
12	A & C	Lincoln Boulevard Bridge—build Lincoln Boulevard Bridge next to Culver Boulevard Bridge to connect Area A to Area C
13	A	Clear, grub, and stockpile before grading Area A
14	A	Excavate Area A—excavation starts 70 feet north of levee
15	A	Construct north levee—grading and construction of levee within Area A with or without gas wells remaining
16	B	North Area B north gas line relocation and well abandonment— abandon gas wells and relocate active gas lines within sleeve (can be conducted earlier, preferably with Sequence 3)
17	B	Clear and grub North Area B
18	B	North Area B over-excavate and stockpile—excavate along Culver Boulevard —Jefferson Boulevard to 70 feet south of levee
19	B	Construct Culver Boulevard and North/West Area B levees—grading and construction of levee
20	B	Clear, grub, and stockpile before grading East Area B
21	B	East Area B grading
22	C	Clear and grub North and South Area C
23	A & C	Area A grading and export to North and South Area C
24	C	Finish grading for uplands in North and South Area C
25	B	Area B box culverts—install two new culverts on Culver Boulevard and Jefferson Boulevard and realignment of Freshwater Marsh outlet
26	A & B	Area A and North Area B—excavate and breach existing levees

TABLE 2-23 (Continued)
ALTERNATIVE 2 RESTORATION SEQUENCE STAGES

Sequence #	Project Area(s)	Activity Description
27	A & B	Area A and North Area B—block and fill existing levees
28	A & B	Area A and North Area B—remove existing levees
29	B	West Area B – construct fire access road and reconstruct Area B parking lot
30	A & B	Construct bicycle path, pedestrian walk, amenities along top of levee, and LACFCD parking structure
31	A	Export any excess, unused soil from Area A to off-site landfill or ocean disposal site

NOTE:
* Performed concurrently

TABLE 2-24
ALTERNATIVE 2 EARTHWORK SOIL VOLUME

Area	Estimated Earthwork Volumes (cubic yards)			Notes	Compared to Alt 1
	Cut	Fill	Cut/Fill Balance Transport (Cut-Fill)		
Area A	1,730,000	(330,000) to (360,000)	1,400,000 to 1,370,000	Excavation for wetland restoration Placement for levee construction Transport to Area B and North Area C	Same
North Area B	310,000	(360,000) to (390,000)	(50,000) to (80,000)	Transport from Area A Excavation for wetland restoration Placement for levee construction	Less fill than Alt 1
East Area B	—	(340,000)	(340,000)	Transport from Area A Placement for upland restoration	More fill than Alt 1
South/Southeast Area B	10,000	(10,000)	—	Transport from Area A Excavation for channel enhancements Placement for berm construction	Same
North Area C	40,000	(540,000)	(500,000)	Transport from Area A Placement for upland restoration	Less fill than Alt 1
South Area C	—	(540,000)	(540,000)	Transport from Area A Placement for upland restoration	More fill than Alt 1
Total	***2,090,000***	***(2,120,000) to (2,180,000)***	***0 to 10,000***	*On-site balance of cut and fill expected with potential for off-site export of up to 10,000 cubic yards*	*Less cut and less fill than in Alt 1- less material to offhaul*

NOTE: Fill placement volumes account for compaction of lower-density soil excavated from Area A when it is placed and compacted to a higher density in a fill placement area. Note that with projects that have levee fill volumes of several hundred thousand cubic yards, slight changes in the degree of slope or the width of the levees could greatly affect the amount of excess soil that would be created.

SOURCE: ESA, 2014.

Stockpiling and Disposal of Excess Fill

Excess soil not needed for levees would be placed as fill in upland habitat restoration areas (East Area B and North and South Area C) as described for Alternative 1.

Restoration Sequencing and Schedule

Alternative 2 would be implemented over 5 years. Table 2-25, *Alternative 2 Restoration Schedule*, presents a preliminary construction schedule. Under Alternative 2, the baseball fields are anticipated to be closed from at least April 2018 to April 2019.

TABLE 2-25
ALTERNATIVE 2 RESTORATION SCHEDULE

Start Date	End Date
July–November 2017 or later	March–July 2022 or later

Restoration Methods

Restoration methods for soil transport, levee lowering and breaching, soil bearing and earthwork equipment, Ballona Creek channel realignment, levee stability, clearing and grubbing, nonnative plant material treatment, revegetation of graded and disturbed areas, and gas well abandonment and replacement would be as described in Section 2.2.2.5, *Alternative 1: Implementation and Restoration Process*.

2.2.3.6 Alternative 2: Monitoring and Adaptive Management

Monitoring program development, performance criteria, and adaptive management approaches would be the same under Alternative 2 as those described for Alternative 1 in Section 2.2.2.6, *Alternative 1: Monitoring and Adaptive Management*. The 10-year monitoring program would evaluate the progress toward achieving restoration goals and inform the need for adaptive management during the lifespan of the restoration. Performance criteria would be open to revision based on improvements in understanding of habitat development or species requirements, including lessons learned from the restoration or other similar restoration projects being conducted in the area.

Alternative 2 would not be dependent on the habitat performance in order to complete the restoration as in Phase 2 of Alternative 1.

2.2.3.7 Alternative 2: Operations and Maintenance

Under Alternative 2, the restoration intent would be to restore a wetland and creek habitat and flood risk management system that is sustained by natural processes and requires minimal O&M activities similar to that proposed under Alternative 1. A new long-term O&M Agreement (between LACFCD and CDFW) would need to be established identifying all new O&M responsibilities that address: (1) habitat and vegetation, (2) trash removal, (3) the newly modified channel and levees, (4) water-control structures, (5) parking facilities, and (6) other ongoing and routine maintenance as described for Alternative 1. The new long-term O&M Agreement would identify those responsible for flood risk management and non-flood-control aspects of the restored Ballona Reserve.

O&M details would be as described for Alternative 1 in Section 2.2.2.7, *Alternative 1: Operation and Maintenance*.

2.2.4 Alternative 3: Levee Culverts and Oxbow

This alternative would result in the permanent loss of 3.7 acres of wetland waters of the U.S. and no loss of non-wetland waters of the U.S. There would be no loss of function and a temporary impact to 3.5 acres of wetland waters and 0.5 acres of non-wetland waters. Within the Ballona Reserve, 48.0 acres of native wetland 28.1 acres of new non-wetland waters would be established.

All of the O&M activities that would be implemented in the portion of the project site that would be subject to tidal influence without the presence of the levees (based on the current topography and as shown in Figure 1-1, *Existing Topography and Tidal Inundation*) would be subject to the Corps' Section 10 jurisdiction over work or structures in or affecting navigable waters of the U.S. Alternative 3 would focus restoration efforts north of the Ballona Creek channel and west of

Lincoln Boulevard; restoration would not occur in North Area B, West Area B, South Area B, Southeast Area B, or East Area B. Therefore, O&M activities under Alternative 3 that could affect navigable waters of the U.S would be limited to those that would occur in the current footprint of the Ballona Creek channel and limited portions of the Fiji Ditch. Such activities would include, for example, the service of flap gates and other water control structures. Water level monitoring in the Ballona Creek channel would remain as it is under existing conditions, with no new impact to those navigable waters of the U.S.

Alternative 3 would have a substantially smaller Project footprint than Alternative 1 and Alternative 2 with the intention, in part, of avoiding disturbance of existing habitat in Area B. Restoration under Alternative 3 would be focused in Area A and Area C only. Area B would not be actively restored using mechanized means. Habitats otherwise would not achieve stated Project hydrologic and functional goals and remain in their current condition (e.g., muted tidal in West and South/Southeast Area B, nontidal in the remainder of Area B). In Alternative 3, existing armored levees on the Ballona Creek channel adjacent to the Ballona Reserve would remain intact. No levee breaching would occur. Instead, two new water-control structures with multiple culverts in each would be installed within the northern Ballona Creek channel levee to support full tidal restoration in Area A similar to Alternative 1, with an oxbow-shaped[31] channel (Figure 2-52, *Alternative 3: Proposed Habitats*). The southern Ballona Creek channel levee would remain unchanged from its current condition. Since the culverts to the creek would remain open to allow full tidal flow into the marsh, Alternative 3 would include a new perimeter flood risk management levee along with restoration of Area A.

A new partially-earthen levee would be built around the northern perimeter of Area A as described in Alternative 1 (Figure 2-53, *Alternative 3: Preliminary Grading Plan*). The levee would be broad and gently sloped toward the restored wetlands, protecting development from potential flooding of Ballona Creek and providing upland and transitional habitat zones within the restored Ballona Reserve. Between the new perimeter levee and the existing Ballona Creek channel levee a variety of coastal wetland habitats would be restored within the created marshplain similar to those proposed in Alternative 1.

As in Alternative 1, Alternative 3 would provide new trails and bicycle paths in Area A, which would encourage appropriate use by visitors, and gateway entrances with educational and art installations (Figure 2-54, *Alternative 3: Public Access Plan*). There would be no new trails in Area B or in Area C.

A new parking structure along Fiji Way for use by LACDBH, CDFW staff, and the public would reduce the existing parking area footprint within this portion of the Ballona Reserve by approximately 0.8 acre. Alternative 3 would include improvements to the existing West Culver Parking Lot in West Area B to make access safer and more appealing to visitors.

Alternative 3 is intended to reduce impacts to Federal and state jurisdictional wetlands, and eliminate the potential need to reestablish state-listed endangered Belding's savannah sparrow nesting habitat prior to implementation of a project phase that could impact the habitat, as under Alternative 1. However, Alternative 3 would result in restoring considerably less tidal wetland and other habitats in the Ballona Reserve than proposed under Alternative 1 and Alternative 2.

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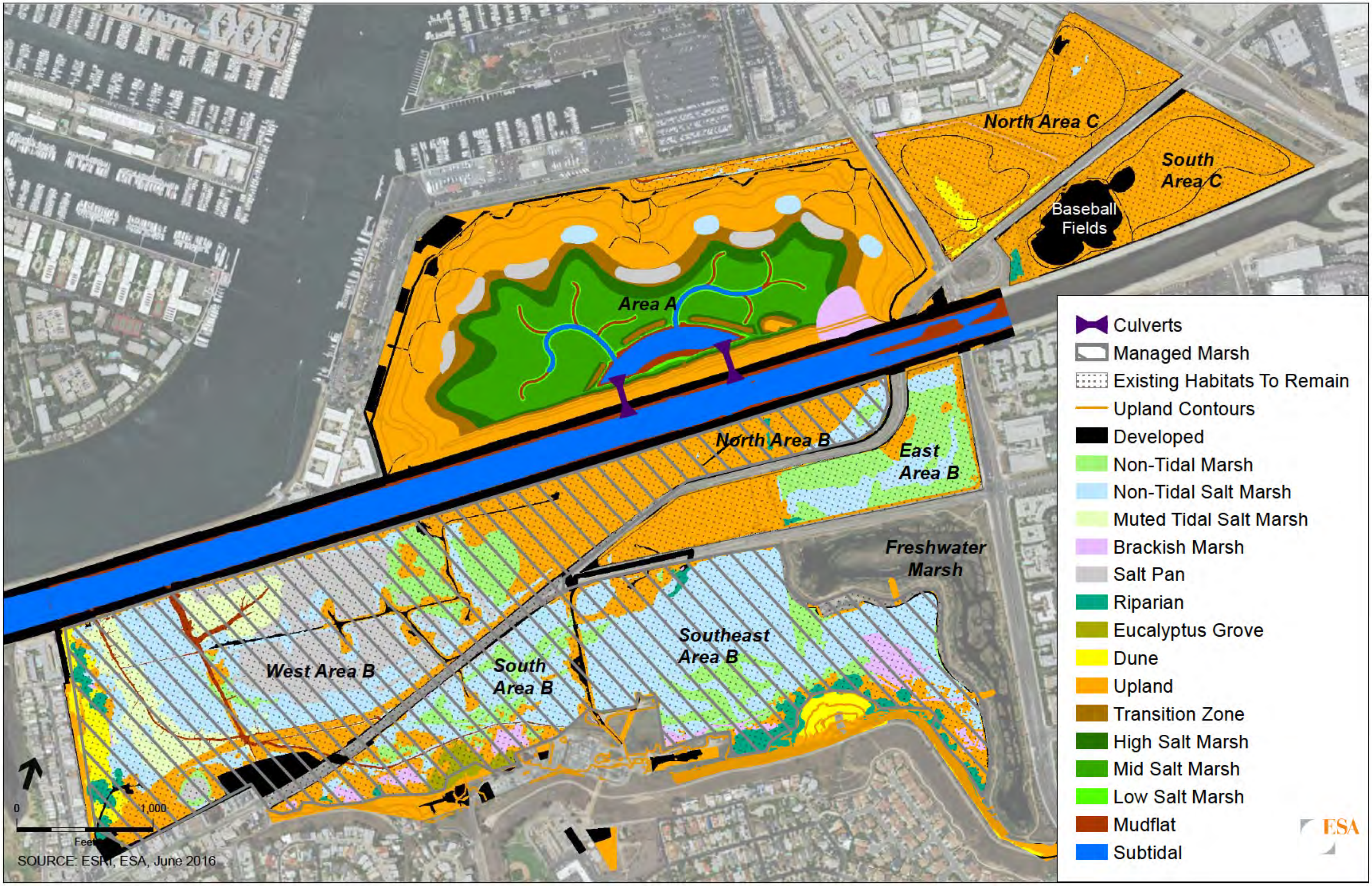
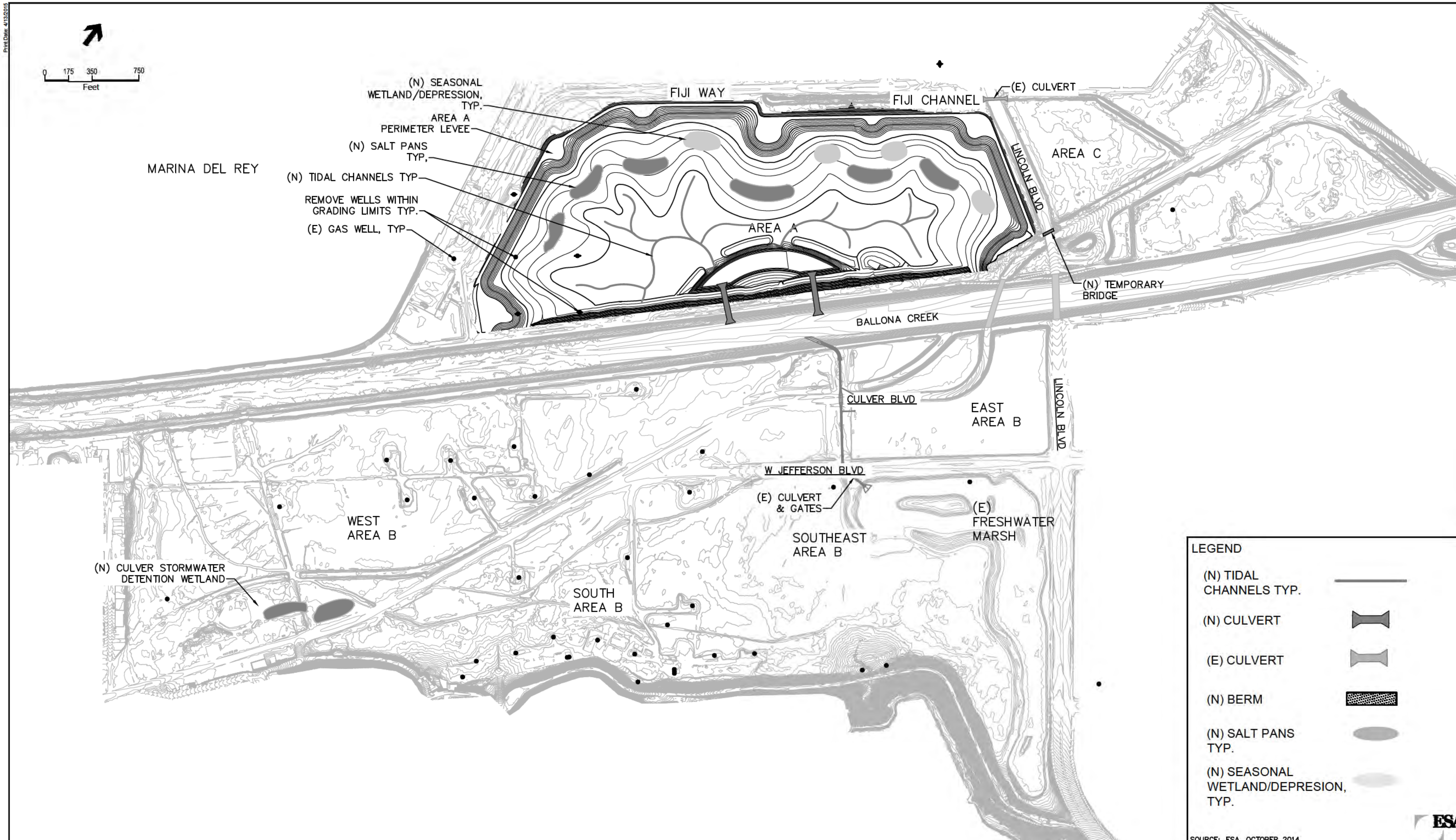
[31] The term "oxbow" *is used to describe a U-shaped bend in the course of a river.*



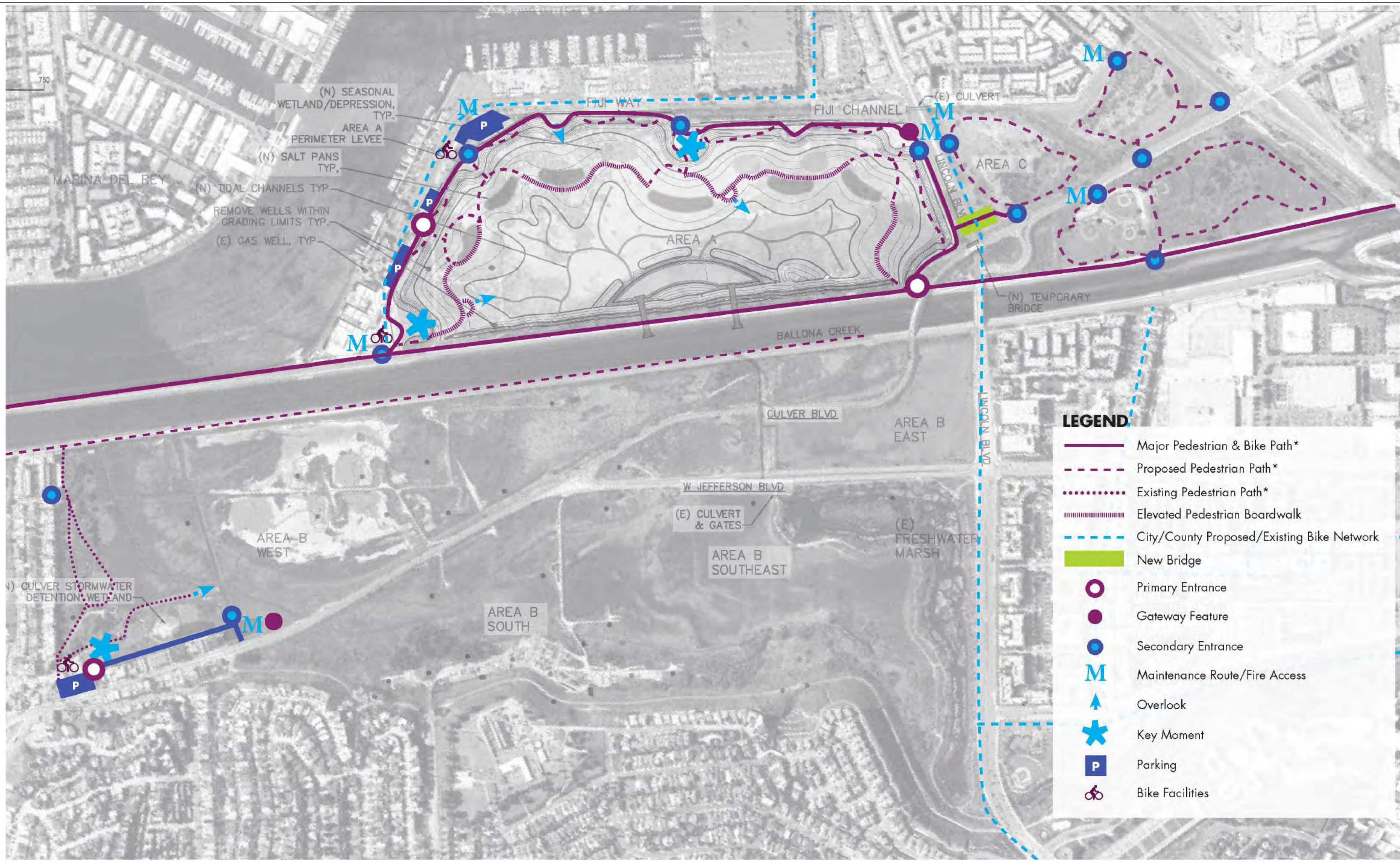
Ballona Wetlands Restoration Project

Figure 2-52
Alternative 3: Proposed Habitats



Ballona Wetlands Restoration Project

Figure 2-53
ALTERNATIVE 3: PRELIMINARY GRADING PLAN



SOURCE: Meléndrez

*Note: Paths shown are approximate.

Ballona Wetlands Restoration Project

Figure 2-54
Alternative 3: Public Access Plan

2.2.4.1 Alternative 3: Ecosystem Restoration

Alternative 3 would restore full tidal wetland habitats within Area A supported by two new culvert water-control structures installed in the northern Ballona Creek channel levee. The culverts would support subtidal and intertidal channels that would connect to vegetated tidal wetlands, providing habitat diversity and tidal circulation (Figure 2-52, *Alternative 3: Proposed Habitats*). In Area A, similar to Alternative 1, soil would be removed to restore tidal wetlands with gently sloping transitional and upland habitats between the wetlands and a new levee constructed along Fiji Way. Slight depressions in the transitional and upland areas would be created to form new salt pans and seasonal wetlands. Soil removed from Area A would be exported off-site. The existing Fiji Ditch in Area A would be retained and enhanced. North and South Area C would be enhanced without grading. Nonnative vegetation would be removed along the banks of Fiji Ditch, targeting invasive species removal, and the banks would be revegetated and stabilized with native plants.

Ecosystem restoration activities in Alternative 3 would include removing invasive plant species, seeding/planting native plant species, and natural recruitment of native plant species in restored tidal wetlands as in Alternative 1.

Restoration habitat targets and acreages are presented in Table 2-26, *Alternative 3 Restored Habitats and Acreages*. A detailed description of each ecosystem restoration phase is presented below.

A wetland system would be restored in Area A by connecting Ballona Creek to the floodplain through two water control structures in the north flood risk management levee (Figure 2-52, *Alternative 3: Proposed Habitats*). The existing levees would remain, and an oxbow-shaped channel would be created in Area A. The proposed channel alignment would mimic natural channel forms and support desired native habitats, vegetation, and wildlife species. The proposed channel alignment also intentionally avoids cultural resource areas identified by cultural studies and Tongva tribal representatives as in Alternative 1.

Restored Habitats (Alternative 3)

Area A

In Area A, soil would be removed to create marsh plain near the creek flood risk management levee then slope up through a transition zone and upland to a levee crest along Fiji Way. Slight depressions in the transition and upland areas would be created to form salt pans and seasonal wetlands. Tidal channels would also be excavated to provide tidal conveyance to the marsh and foraging habitats. Nonnative vegetation would be removed along the banks of Fiji Ditch, targeting invasive species removal, and the banks would be revegetated and stabilized with native plants.

Area C

In Area C, upland habitat would be enhanced without grading. Enhancement would include invasive removal and replanting.

TABLE 2-26
ALTERNATIVE 3 POST-RESTORATION HABITATS AND ACREAGES[1]

Habitat Type	Existing Conditions	Impacts	Alternative 3			
			Area A	Area B	Area C	Total
Aquatic and Wetlands						
Aquatic	40.3	0.4	17.5	27.5	0.0	45.0
Mudflat	8.8	0.1	6.0	5.2	0.0	11.2
Tidal Salt Marsh	n/a	n/a[1]	42.7	0.1	0.0	42.8
Low Marsh	n/a	n/a	2.4	0.0	0.0	2.4
Mid-Marsh	n/a	n/a	28.7	0.0	0.0	28.8
High Marsh	n/a	n/a	11.6	0.1	0.0	11.6
Muted Tidal Marsh	18.2	0.0	0.0	12.5	0.0	12.5
Non-Tidal Salt Marsh	85.0	1.5	2.7	88.5	0.1	91.3
Non-Tidal Marsh	38.6	5.1	0.0	33.5	0.0	33.5
Coastal Brackish Marsh	6.4	0.0	2.6	6.1	0.3	9.0
Salt Pan	22.8	0.0	4.6	22.8	0.0	27.4
Willow/Mulefat Thicket	13.8	4.3	0.0	9.2	0.4	9.6
Uplands						
Transition Zone	n/a	n/a	9.9	0.0	0.0	9.9
Stabilized Dune	9.3	0.1	0.0	7.0	1.9	8.9
Eucalyptus Grove	2.8	0.0	0.0	2.4	0.0	2.4
Upland	271.9	115.2	62.5	86.5	56.1	207.4
Grassland	19.4	6.5	n/a	n/a	n/a	n/a
Coastal Sage Scrub	52.3	33.3	n/a	n/a	n/a	n/a
Invasive monoculture	200.2	75.4	0.0	0.0	0.0	0.0
Developed	47.7	n/a	14.2	27.3	9.9	54.6
Total	**565.5**	**51.3[2]**	**162.6**	**328.7**	**68.6**	**565.5**

NOTES:
1 There is no fully tidal marsh under existing conditions, therefore there are no impacts.
2 All values provided in acres.
3 The total impact does not include disturbance of invasive monoculture since this would be a beneficial effect and not an adverse impact.

SOURCE: ESA 2016.

Grading and Hydrology (Alternative 3)

Figure 2-53, *Alternative 3: Preliminary Grading Plan*, shows the preliminary grading plan for Alternative 3. Figure 2-6 and Figure 2-13 show the Area A levee plan with the locations of typical grading cross-sections, as for Alternative 1. The grading and hydrology for Alternative 3 is described in more detail later in this section.

Ballona Creek Oxbow-Shaped Channel

Channel depths would be similar to existing depths, ranging from approximately 2 to 8 feet below MLLW (channel bed invert elevation of approximately -2 to -8 feet NAVD 88). The restored oxbow-shaped channel would have a top width of approximately 250 feet. The channel banks would be graded to slopes of approximately 5:1 H:V to provide mudflat and low marsh habitat. Two banks of culverts would be installed in Ballona Creek channel levee to connect the creek to the oxbow-shaped channel (Figure 2-52, *Alternative 3: Proposed Habitats*).

Once constructed, the majority of the earthen oxbow-shaped channel would not be confined to a rigid alignment. Some gradual channel migration and localized erosion and sedimentation would occur. The overall channel location would be guided by the sloping restored marsh plain and adjacent upland habitats. The restoration and water culverts would allow for full tidal and stormwater inundation. The culverts also would have adjustable tide gates to allow for that management of flows and circulation patterns within restored wetlands.

Area A

Area A restoration would include construction of a perimeter levee and excavation down to marsh plain elevations. Tidal channels would be excavated within the restored marsh to convey tidal flows and provide foraging habitat. Slopes between the marsh and levee would be graded to provide fringe salt pan and seasonal wetland habitats as wells as upland and transition habitat between uplands and wetlands. Salt pan habitat would be created to provide functions similar to the existing Area B salt pan habitat. The excavated soil would be used to build the levees. Excess soil would be exported off-site.

Revegetation of Graded and Disturbed Areas (Alternative 3, Phase 2)

Revegetation activities during restoration would include invasive plant species controls and the planting and seeding of native vegetation as in Alternative 1. Invasive plant species would be removed or treated per the Invasive Plant Material Treatment description in Section 2.2.2.5, *Alternative 1: Implementation and Restoration Process*. Additional revegetation procedures would follow the Revegetation of Disturbed Areas description therein.

2.2.4.2 Alternative 3: Flood Risk and Stormwater Management

Alternative 3 would install two water control structures with multiple culverts in each, including tide gates, within the north Ballona Creek channel levee and construction of a levee along Fiji Way in Area A for supplemental flood risk management. The existing old, outdated, and non-compliant levees along Ballona Creek would remain in place. The proposed levee would be engineered to meet or exceed current flood risk management standards. Detailed descriptions of flood risk and stormwater management features are described below.

Flood Risk Management Features

New Levee

In Area A, construction of a new perimeter levee would maintain or improve the level of flood risk management protection provided by the existing Ballona Creek channel levee. This new levee would be the same as the Area A levee described in Alternative 1 and further detail is included in Section 2.2.1.2, *Alternative 1 Flood Risk and Stormwater Management*.

Water-Control Structures

Two new water-control structures with multiple culverts in each would be installed in the existing north Ballona Creek channel levee to connect Ballona Creek to the oxbow shape and floodplain. The culverts would be sized to provide tidal flows from Ballona Creek to Area A. Each of the two banks of culverts in the levee would consist of multiple culverts and gates (e.g., six 5-foot-diameter culverts with gates). The gates would be adjustable and allow for management of flows in and out of the two structures and management of water levels (e.g., for seasonal habitat management and to limit extreme water levels).

Culver Boulevard Stormwater Management

As described for Alternatives 1 and 2, Culver Boulevard stormwater management would be improved by creating a low area down to approximately 4 feet NAVD 88 in West Area B. This storage basin would be sized to accommodate the local area drainage (Figure 2-15, *Stormwater Basin and Emergency and Bus Access Routes*). This basin would also function as a water quality treatment measure to address the minor increase in pollutant load from the proposed paved emergency and bus access road to be constructed in the Ballona Reserve immediately behind the commercial properties (Figure 2-15, *Stormwater Basin and Emergency and Bus Access Routes*), as well as a portion of the runoff from the existing paved area of Culver Boulevard.

2.2.4.3 Alternative 3: Public Access and Visitor Facilities

Improvements to public access, recreation, environmental education, and interpretative opportunities within Area A and Area C would be comparable to those described for Alternative 1 (Figure 2-54, *Alternative 3: Public Access Plan*), as well as in West Area B in relationship to the West Culver Parking Lot improvements. These would include construction of three primary entrances into the Ballona Reserve with adjacent parking, new trails, new interpretive features, and amenities (e.g., benches).

The primary access difference in Alternative 3 would be that a new pedestrian and bicycle path would not be created within Area B along Culver Boulevard. The existing bicycle and pedestrian access would remain along the north side of existing Ballona Creek channel, with a new access loop around the new Area A perimeter levee. All other public access and visitor facilities improvements would be as described in Section 2.2.2.3, *Alternative 1: Public Access and Visitor Facilities*.

2.2.4.4 Alternative 3: Infrastructure and Utility Modification

Some modification of infrastructure and utilities would be required to implement the restoration under Alternative 3. As with Alternative 1, modification of the existing public roads and power utilities is not anticipated.

Gas Well Decommissioning

Alternative 3 would decommission existing gas wells within the Ballona Reserve and abandon or modify gas pipelines as in Alternative 2 (or Alternative 1, Phase 1). In Area B, well abandonment and the relocation of gas line 1167 would not be required for Alternative 3; however, abandonment of the remaining wells would still be desired in all cases as part of the overall restoration and improvement of the Ballona Reserve. SoCalGas would proceed with well abandonment per their decommissioning plans as described under Alternative 1 in Section 2.2.2.4, *Alternative 1: Infrastructure and Utility Modification*; however, the specific timing of the remaining SoCalGas activities would not be driven by the restoration.

Sewer and Water Infrastructure

The City of Los Angeles–abandoned 36-inch reinforced concrete pipe would be removed and capped where any excavation down to this pipe are planned for the restoration.

Roads and Storm Drainage

Existing public roads running through the Ballona Reserve (Culver Boulevard, Lincoln Boulevard, and Jefferson Boulevard) would remain in place and would not be altered by the proposed wetland restoration activities.

2.2.4.5 Alternative 3: Implementation and Restoration Process

Restoration activities would be sequenced as shown in Table 2-27, *Alternative 3 Restoration Sequence Stages*. In Alternative 3, utilities would be relocated within the Ballona Reserve, Area A would be graded, and new levees would be constructed. The vast majority of the soil excavated from Area A would be transported off-site. Tide gates would be installed at two locations in the northern Ballona Creek channel levee and Area A would be revegetated.

TABLE 2-27
ALTERNATIVE 3 RESTORATION SEQUENCE STAGES

Sequence #	Project Area(s)	Activity Description
1	B	Southeast Area B gas line removal—remove existing inactive gas line
2	B	South Area B creation of stormwater detention basins, treatment swales, and wetlands.
3	A	Area A gas line removal—remove existing inactive gas line, cut and cap gas line at Fiji Way
4	B	North gas line relocation and well abandonment reestablish upland vegetation and remove existing pipelines.
5	B	Abandon Area B wells (abandon and plug Vidor 1, 2, 3, 5, 14, 18 and Del Rey 4, 5, 9, 11) and remove existing pipelines.
6	B	Remove vegetation from around wells in Area B.
7	B	Finish grading and habitat establishment in Area B.
8	A	Remove and clear vegetation, trash from Area A and stockpile.
9	A	Remove 36” concrete pipe from Area A, excavate old fill, and dig below future levees.
10	A	Grade and construct new levee around Area A.
11	A	Excavate Ballona Creek Channel in Area A.
12	A & C	Excavate Area A and export off-site.
13	C	Remove invasives from Area C North and South and reestablish upland vegetation.
14	A & B	Construct bike and pedestrian paths on levees, construct the LACFCD Parking Structure Foundation, and construct the LACFCD Parking Structure.
15	A	Install culverts on existing north Ballona Creek levee in Area A.
16	A	Export final excess dirt quantity in Area A.

Earthwork Quantity Estimates

Table 2-28, *Alternative 3 Earthwork Soil Volume*, summarizes overall earthwork quantity estimates for Alternative 3. Levee dimensions would be refined during final design as needed to meet Corps requirements (e.g., Section 408 requirements for modifications to Corps-approved flood risk management systems). The final volume of fill placement for levee construction would depend on the final design and the actual conditions during restoration (e.g., the compatibility of excavated soils). A range of fill volumes is therefore estimated for levee construction in Alternative 3.

TABLE 2-28
ALTERNATIVE 3 EARTHWORK SOIL VOLUME

Area	Estimated Earthwork Volumes (cubic yards)			Notes	Compared to Alt 1 and 2
	Cut	Fill	Cut/Fill Balance Transport (Cut-Fill)		
Area A	1,420,000	(189,000 – 205,000)	1,215,000 - 1,231,000	Excavation for wetland restoration Placement for levee construction	Less cut and less fill than in Alts 1 and 2
North Area B	—	—	—	No work done south of Ballona Creek	Less than Alts 1 and 2
East Area B	—	—	—	No fill placed	Less than Alts 1 and 2
South/ Southeast Area B	—	—	—	No work done south of Ballona Creek	Less than Alts 1 and 2
Area C	—	—	—	No fill placed	Less than Alts 1 and 2
Total	***1,420,000***	***(189,000 – 205,000)***	***1,215,000 – 1,231,000***	***Off-site export of 1,230,000 cubic yards***	***Less cut and less fill than in Alts 1 and 2- most material to offhaul***

NOTE: Fill placement volumes account for compaction of lower-density soil excavated from Area A when it is placed and compacted to a higher density in a fill placement area. Note that with projects that have levee fill volumes of several hundred thousand cubic yards, slight changes in the degree of slope or the width of the levees could greatly affect the amount of excess soil that would be created.

SOURCE: ESA, 2014.

Stockpiling and Disposal of Excess Fill

Excess soil not needed for the new Area A perimeter levee would be exported off site (see description for "Off-Site Soil Export" in Section 2.2.2.5, *Alternative 1: Implementation and Restoration Process*).

Restoration Sequencing and Schedule

Alternative 3 would be implemented over approximately 5 years. Table 2-29, *Alternative 3 Restoration Schedule*, presents a preliminary construction schedule. The baseball fields may remain open during construction.

TABLE 2-29
ALTERNATIVE 3 RESTORATION SCHEDULE

Start Date	End Date
July–November 2017 or later	March–July 2022 or later

Restoration Methods

Restoration methods for soil transport, clearing and grubbing, nonnative plant material treatment, revegetation of graded and disturbed areas, and gas well abandonment and replacement would be as described in Section 2.2.2.5, *Alternative 1: Implementation and Restoration Process*.

2.2.4.6 Alternative 3: Monitoring and Adaptive Management

Monitoring program development, performance criteria, and adaptive management approaches would be similar under Alternative 3 as those described for Alternative 1 in Section 2.2.1.6, *Alternative 1: Monitoring and Adaptive Management*. The 10-year monitoring program would evaluate the progress toward achieving restoration goals and inform the need for adaptive management during the lifespan of the restoration. Performance criteria would be open to revision based on improvements in understanding of habitat development or species requirements, including lessons learned from the restoration or other similar restoration projects being conducted in the area. Alternative 3 would not be dependent on the habitat performance in order to complete the restoration as in Alternative 1.

2.2.4.7 Alternative 3: Operations and Maintenance

Under Alternative 3, the restoration intent would be to restore a wetland and creek habitat and flood risk management system that is sustained by natural processes and requires minimal O&M activities similar to that proposed under Alternative 1. O&M activities for the Ballona Creek channel would not change; however, the new Area A water-control structures would require O&M as described for water-control structures in Alternative 1. A new long-term O&M Agreement (between LACFCD and CDFW) would need to be established identifying all new operation and maintenance responsibilities that address: (1) habitat and vegetation, (2) trash removal, (3) water-control structures, (4) parking facilities, (5) baseball fields, and (6) other ongoing and routine maintenance as described for Alternative 1. The new long-term O&M Agreement would identify those responsible for flood risk management and non-flood-risk management aspects of the restored Ballona Reserve. No changes to existing O&M activities in North Area B, West Area B, East Area B, Southeast Area B, South Area B, North Area C, or South Area C would occur. For example, under Alternative 3, the existing West Area B self-regulating tide gates would continue to be operated and maintained by LACFCD, which inspects and checks the gates weekly and removes obstructions typically twice per year. LACFCD would continue to do so under Alternative 3. Other O&M activities that occur outside Area A under existing conditions (and which would continue to occur under Alternative 3) are described in Appendix B5, Preliminary Operations and Maintenance Plan.

2.2.5 Alternative 4: No Federal Action/No Project

Under Alternative 4, the No Federal Action/No Project Alternative, the proposed Federal action would be withdrawn or denied, and state and local permits and other authorizations necessary for the Project also would be denied. No substantial changes would be made to the physical or human environment within the Ballona Reserve and new, large-scale wetlands restoration would not take place, although the continuation of previously-permitted restoration activities would be allowed, such as the small-scale control of invasive plant species by hand-tools only and the planting and seeding of native species. SoCalGas activities on the portion of its property within the Project site would continue in accordance with existing permits and approvals.

2.2.5.1 Alternative 4: Ecosystem Restoration

Over half of the vegetated areas within the Ballona Reserve are heavily infested with invasive species (nonnative species that are invasing as defined by Cal-IPC). Under Alternative 4, no substantial restoration changes would occur and, thus, invasive species would continue to thrive on the Project site. Previously-permitted restoration activities would continue to take place within Ballona Reserve. Specifically, the small-scale control of invasive species would continue to occur within the Project site. This type of restoration would include the planting and seeding of native plant species using hand tools only. The existing levees would remain and no large-scale excavation would occur under this alternative.

2.2.5.2 Alternative 4: Flood Risk and Stormwater Management

Most of the Ballona Creek channel network consists of storm drains, underground culverts, and open concrete channels to provide drainage and flood management. Under Alternative 4, the existing flood risk management and stormwater management would remain unchanged from current conditions. No new storm drains, culverts, or tide gates would be constructed and the existing armored levees channelizing Ballona Creek would remain unchanged. In addition, under this alternative, Ballona Creek would not be modified to reconnect with the wetland floodplain. Management of existing tide gates to provide some acclimation to sea level rise would be possible temporarily, but the tide gates eventually would have to be closed permanently to avoid flooding in West Area B and behind Culver Boulevard that would result from projected higher sea levels. As a result, the tidal wetland habitats would be cut off from the estuary and would convert to mudflat or subtidal habitat.

2.2.5.3 Alternative 4: Public Access and Visitor Facilities

Existing access to the Ballona Reserve would continue to be restricted to individuals or organizations for managed access where authorized by CDFW for such uses as educational tours and wildlife viewing trips, scientific research and monitoring, bicycling (only on the existing Area A levee bicycle path), fishing and boating (only in the Ballona Creek channel), habitat restoration, and baseball (in South Area C) under applicable agreements. All the gates to the Ballona Reserve would remain locked under this alternative and no new visitor or recreational improvements or amenities would be provided, no parking structure would be constructed or operated, and no improvements to existing parking areas would be made. The Ballona Creek Bike Path would continue to operate along the north side of the Ballona Creek channel and the

Marvin Braude Bike Path, which is adjacent to Admiralty Way and Fiji Way, would continue to operate near the west end of the Project site.

2.2.5.4 Alternative 4: Infrastructure and Utility Modification

Currently, there are several public utilities and infrastructure that occur within the Ballona Reserve. These public utility providers include SoCalGas, the City of Los Angeles Department of Water and Power (LADWP), LADWP Bureau of Sanitation, Los Angeles County Waterworks District, the General Telephone Company, Southern California Edison, and the LACFCD. Under Alternative 4, these utilities would not be modified and would continue to operate as they currently do.

SoCalGas currently operates several gas wells and associated pipelines within the Ballona Reserve that are used to monitor the underground natural gas storage facility that is on the property adjacent to the Ballona Reserve to the south. In addition, in some instances, these gas wells are used to pump natural gas into and out of the natural gas storage facility. SoCalGas's longer-term plan is to consolidate gas infrastructure within its facility along the southern portion of the Westchester Bluffs by abandoning gas wells in the wetlands and installing replacement wells within their facilities to the extent possible. Under Alternative 4, SoCalGas would continue to manage the existing gas wells and pipelines within the Ballona Reserve. The seven sites within the SoCalGas property that were chosen as potential relocation sites would remain in their current use. However, SoCalGas would independently pursue gas well and pipeline abandonment and/or relocation based on facility priorities.

2.2.5.5 Alternative 4: Operations and Maintenance

O&M activities under the No Federal Action/No Project Alternative would continue as they currently do and no new O&M Agreement between LACFCD and CDFW would be required. As described above under Alternative 1, current O&M activities are minimal and consist of: limited vegetation maintenance; the removal of trash and debris, removal of homeless encampments and the monitoring and enforcing of other unauthorized or illegal activities by CDFW; maintenance of existing flood channel and levees; maintenance and monitoring of existing parking lots; vector control activities; and the O&M activities involved in the upkeep and maintenance of SoCalGas gas wells and pipelines. Under Alternative 4, these O&M activities would continue uninterrupted.

2.3 Potential Alternatives Considered but Not Carried Forward for More Detailed Consideration

The Lead Agencies initially considered nine additional potential alternatives (Alternatives 5 through 12), but elected not to carry them forward for more detailed review because they did not satisfy one or more of the screening criteria discussed in Section 2.1.3, *Screening Criteria for Alternatives to the Proposed Action*, which included NEPA's reasonableness factors, Section 404's practicability considerations, and state requirements under CEQA. Alternatives 5 through 12 are described and the rationale for not carrying them forward are summarized below.

TABLE 2-30
SUMMARY OF ALTERNATIVES NOT CARRIED FORWARD RELATIVE TO SCREENING CRITERIA

Screening Criteria	Alt. 5	Alt. 6	Alt. 7	Alt. 8	Alt. 9 Option 1	Alt. 9 Option 2	Alt. 9 Option 3	Alt. 10	Alt. 11	Alt. 12
a. Is the alternative reasonable (i.e., not too remote, speculative, impractical, or ineffective)?	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
b. Would the alternative meet the purpose and need and overall project purpose?	No	No	Yes	Yes	Yes	Yes	Yes	No	No	No
c. Would the alternative meet most of the basic objectives of Alternative 1?	No	No	No	No	No	No	Yes	No	No	No
d. Would the alternative be practicable in terms of cost for a tidal habitat restoration project?	Yes	Yes	No	No	No	No	No	No	No	No
e. Would the alternative be practicable to implement, operate, and maintain (logistics)?	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
f. Would the alternative be practicable construct using existing technology?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
g. Would the alternative be more environmentally damaging than Alternative 1?	No	No	No	No	No	No	No	No	Yes	No
h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?	Yes	Yes	No	No	No	No	No	No	Yes	Yes
i. Would the alternative be feasible for purposes of CEQA?	No	Yes	No	No	No	No	No	No	No	Yes

2.3.1 Alternative 5: Enhance Existing Habitat with Minimal Grading

Description

No large-scale earthmoving would be allowed within the Ballona Reserve under this potential alternative, which is similar to a prior alternative from the 2008 Ballona Wetland Feasibility Report (Feasibility Report Alternative 1, shown in Figure 2-55) (PWA et al. 2008). In the Feasibility Study, Alternative 1 identified the maximum amount of habitat improvement possible without modifying the site elevations or hydrologic connections. This potential alternative would concentrate on weeding non-native and invasive species and planting of a limited amount of native species on the site through volunteer programs. Minor changes in the operation of the existing tide gates could be considered as well as minor improvements to public access and visitor amenities. Without large-scale earthmoving, existing levees could not be moved away from the creek and the creek would not be reconnected to its floodplain in any meaningful way; wetland restoration efforts (increased size or improved quality) would be limited because substantial freshwater or tidal influence could not be introduced into Area A or Area B; the elevation of Area A could not be lowered to restore wetlands, removing deposited fill; and the Ballona Reserve property would remain fragmented and isolated by Ballona Creek, berms, roads, and levees. Because of the limited hydrologic influences due to existing topography, the habitats occurring after implementation would be similar to those occurring under the existing condition.

Ecosystem restoration work would be limited. Existing upland habitats (e.g., coastal sage scrub and grassland habitats) would be enhanced through weeding and planting and require significant long term maintenance. Existing dune habitat, the existing Freshwater Marsh, and recreational facilities in Area C would remain. There would be no improvement to flood risk and stormwater management. The operation of existing tide gates could be modified to increase the muted tidal waters entering the southwest portion of Area B; however, without changing the site topography there would be very limited potential to enhance tidal circulation due to risk of flooding. No new water-control structures would be installed and no levee removal or replacement would occur. Management of the existing Area B tide gates to provide some acclimation to sea-level rise would be possible temporarily; however, eventually, the tide gates would have to be closed permanently and the tidal wetland habitats would be cut off from the estuary due to projected sea-level rise.

Visitor amenities would include public access trails, gateway entrances, overlooks, and formal parking in Areas A, B, and C. The parking for the baseball fields in Area C would remain.

Screening

a. Is the alternative reasonable (i.e., not too remote, speculative, impractical, or ineffective)?

This potential alternative would not be reasonable because its implementation would be speculative and impractical and also is likely to be ineffective. Removal of the non-native pampas grass in South Area B would not be effective without the use of heavy equipment or mechanical means due to the extensive amount of biomass and risk of seed dispersal. As described for Alternative 4, management of existing tide gates to provide some acclimation to sea level rise would be possible temporarily, but the tide gates eventually would have to be closed permanently to avoid flooding in West Area B and behind Culver Boulevard that would result from higher sea levels. As a result, the tidal wetland habitats would be cut off from the estuary and would convert to mudflat or subtidal habitat. Therefore, this potential alternative would not be reasonable.

b. Would the alternative meet the purpose and need and overall project purpose?

This potential alternative would not meet the purpose and need and overall project purpose because only a very limited increase in tidal influence could be achieved and predominantly estuarine wetland conditions would not occur. Therefore, the first of the two components of the purpose and need/overall project purpose would not be met. The second component of the overall project purpose relating to the LACDA project components and flood risk management would be met.

c. Would the alternative meet most of the basic objectives of Alternative 1?

CDFW has determined that the “most basic” project objectives for purposes of CEQA are the restoration, enhancement, and creation of estuarine and associated habitats; protection and avoidance of impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management and limiting the need for significant modification to regionally important infrastructure; and not adversely impacting the LACDA project. Although adverse impacts to existing infrastructure and LACDA project facilities would be minimized, this potential alternative would not meet these basic objectives because ecosystem restoration work would be limited.

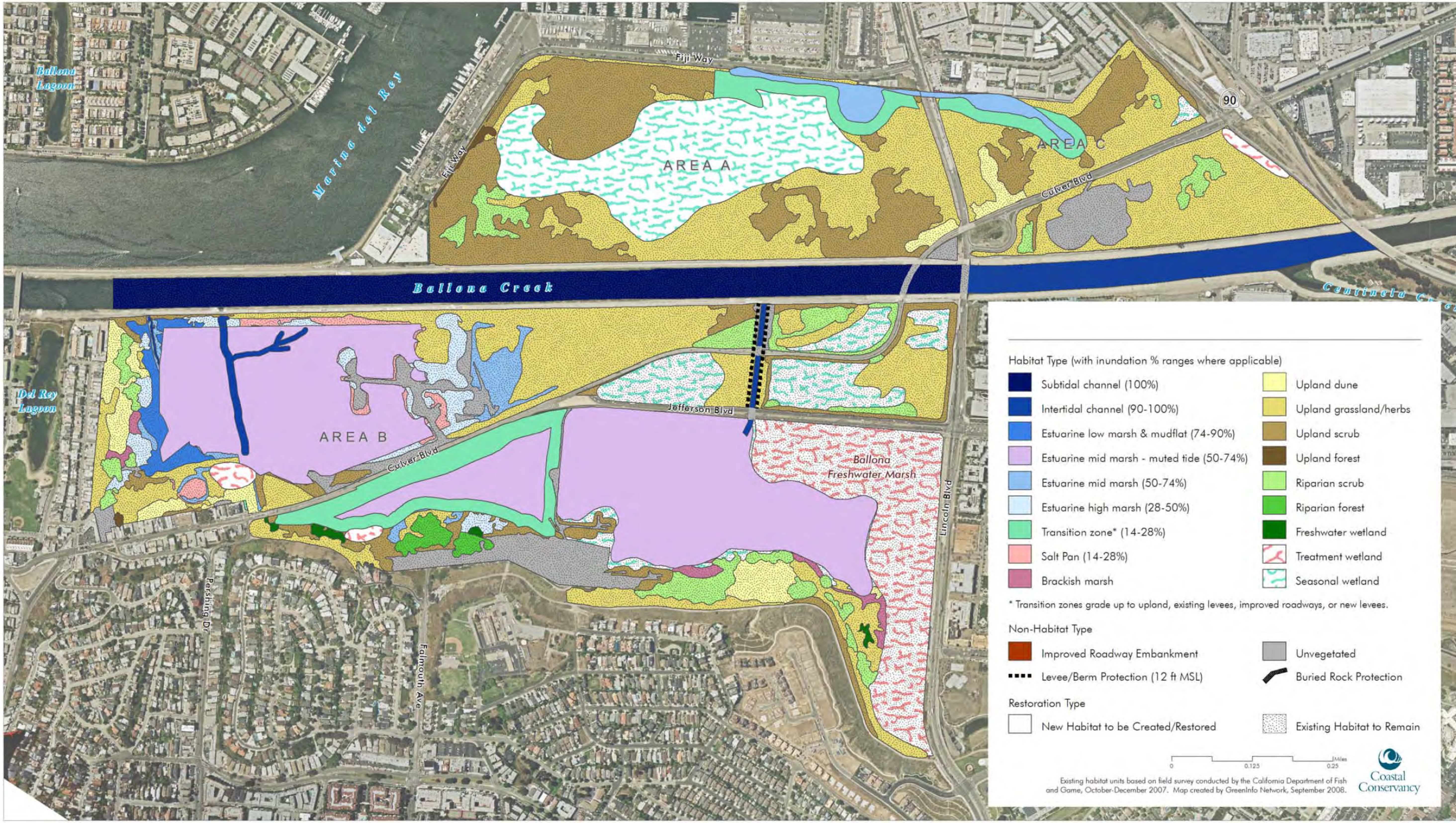
d. Would the alternative be practicable in terms of cost for a tidal habitat restoration project?

A detailed cost estimate has not been prepared for this alternative because other criteria are relied upon as the rationale not to carry it forward for more detailed review. This analysis assumes that the cost of Alternative 5 would be practicable for a tidal habitat restoration project.

e. Would the alternative be practicable to implement, operate, and maintain (logistics)?

This alternative would not be practicable to implement, operate, and maintain. To the contrary, it would be an unreasonable approach to a large-scale restoration effort. Approximately 2.8 to 3.5 million cubic yards of soil were dumped on the site during construction of the Marina del Rey harbor and the Ballona Creek channel. Without the use of heavy equipment, moving the amount of soil that would be required to restore tidal elevations in Area A would require approximately 27.9 million wheel barrow loads[32] to other areas of the Project site. This would present an impracticable logistical challenge, especially without the ability to construct bridges to move soil across roads and/or Ballona Creek. Restoring tidal connections to Ballona Creek also would require modifying the existing levees and/or installing new or modified water control structures, all of which would require heavy earthwork equipment.

[32] Assuming 3 cubic feet wheel barrows and 3.1 million cubic yards of soil.



ESA

Ballona Wetlands Restoration Project

Figure 2-55
Alternative 5: Enhance Existing Habitat with Minimal Grading

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f. Would the alternative be practicable to construct using existing technology?

Yes, it would be practicable to perform some grading under Alternative 5 using existing technology (e.g., shovels and wheel barrows to move soil).

g. Would the alternative be more environmentally damaging than Alternative 1?

A detailed analysis of the potential environmental consequences of this alternative has not been undertaken because other screening criteria are relied upon as the rationale for not carrying this potential alternative forward for more detailed consideration. Briefly, however, Alternative 5 would reduce adverse environmental impacts relative to Alternative 1 because large-scale earthmoving would not be allowed, thereby reducing exhaust emissions of construction equipment, including attendant air quality and GHG emissions as well as the truck trips that otherwise would be needed to off-haul soil for offsite disposal. Earthmoving equipment-related noise also would be reduced relative to Alternative 1. Beneficial effects of Alternative 1 also would not be realized. For example, negligible habitat benefits would accrue under Alternative 5 and sea level rise resiliency would be limited. Overall, the impacts of Alternative 5 would not be more environmentally damaging than Alternative 1.

h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?

As noted above, a detailed analysis of the potential environmental consequences of this alternative has not been undertaken because other screening criteria are relied upon as the rationale for not carrying this potential alternative forward for more detailed consideration. It is assumed for purposes of this analysis that Alternative 5 would reduce potential significant impacts relative to Alternative 1 relating to Air Quality, GHG emissions, and Traffic associated with a reduction in restoration- and construction-related exhaust emissions relative to Alternative 1. Earthmoving equipment-related noise also would be reduced relative to Alternative 1.

i. Would the alternative be feasible for purposes of CEQA?

Alternative 5 has been determined to be infeasible because the proposed restoration could not be completed in a reasonable amount of time without the use of heavy equipment.

In summary, Alternative 5 would be practicable in terms of cost for a tidal habitat restoration project; would be practicable to construct using existing technology; would not be more environmentally damaging than Alternative 1, and would avoid or substantially lessen significant impacts of Alternative 1. However, Alternative 5 has not been carried forward for more detailed review because it would not be reasonable; would not meet the purpose and need and overall project purpose; would not meet most of the basic objectives of Alternative 1; would not be logistically practicable; and would not be feasible for purposes of CEQA.

2.3.2 Alternative 6: Smaller Area Tidal Wetland Restoration

Description

This potential alternative would excavate fill to create new fully tidal channels, low marsh, and mid-high salt marsh in Area A. Southeast Area B would be enhanced as muted tidal marsh by replacing the existing Freshwater Marsh culvert with a daylighted tidal channel that connects to Ballona Creek or by installing a new culvert and channel. This potential alternative is comparable to Feasibility Report Alternative 2, shown in Figure 2-56 (PWA et al. 2008).

The existing Ballona Creek levees and channel alignment would be maintained. Area A would be excavated to marsh elevations connected to Marina del Rey by expanding the existing culvert under Dock 52 to Fiji Ditch to create a larger open culvert connection with a cross-sectional area of 100 square feet. By expanding the culvert and excavating the site, approximately 37 acres of new tidal wetland could be created. The Fiji Ditch in Area C would be deepened and extended beneath Lincoln Boulevard to create a fully tidal channel. The remainder of Area A would be converted to enhanced upland habitats (e.g., coastal sage scrub and native grassland).

The southeast portion of Area B would be enhanced by opening up the existing Freshwater Marsh drainage pipe and modifying the existing flap gate to allow muted tidal flow onto the site. Southeast Area B would be enhanced to include fully tidal channels, low and mid-high marsh and associated transition zone habitats. In West Area B, operation of the existing tide gates would be modified to increase the muted tidal inundation.

New trails would be constructed and public access to the Project site would be enhanced in Areas A, B, and C. Parking would continue to be provided in Area C and Area B.

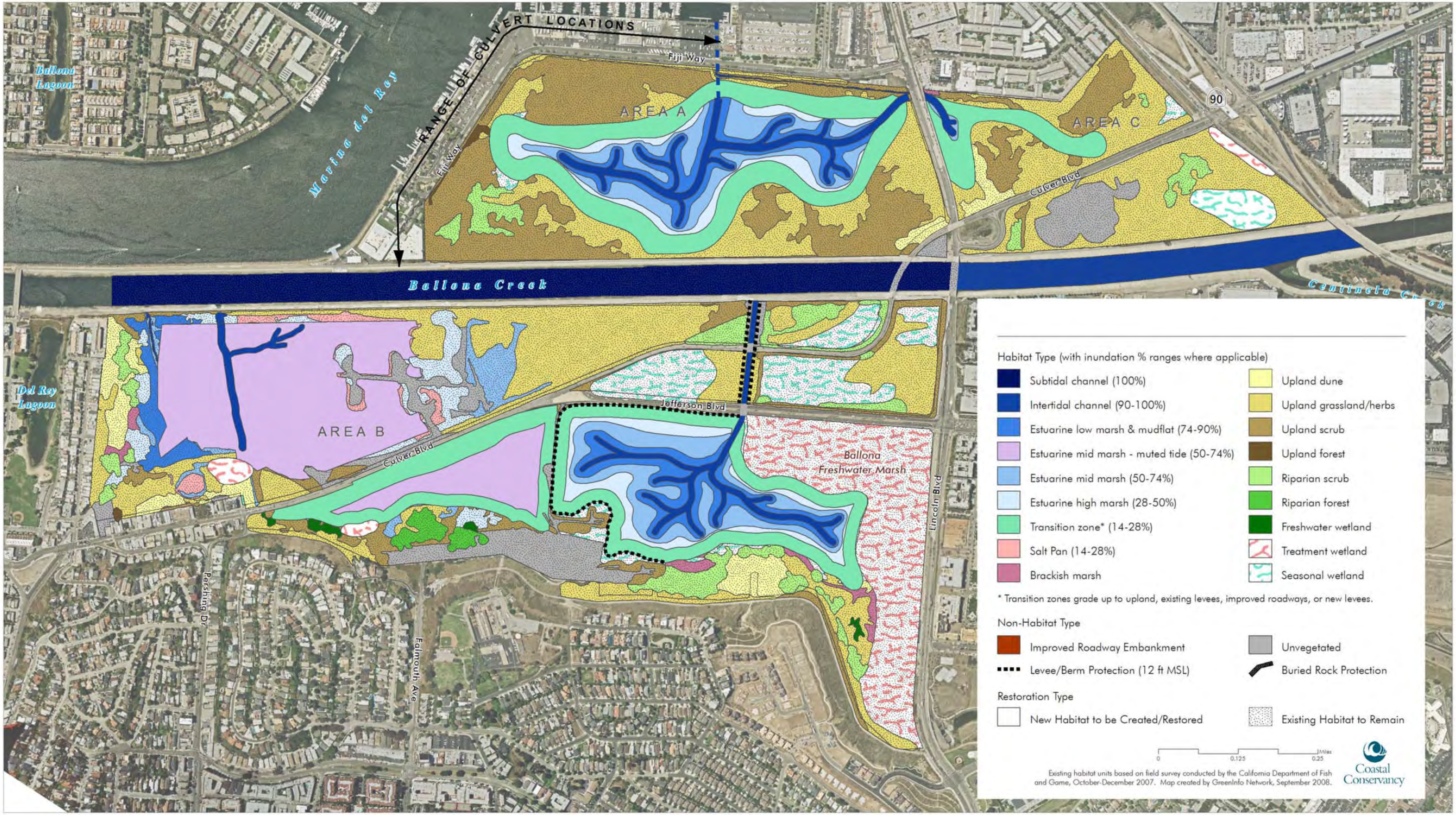
Screening

a. Is the alternative reasonable (i.e., not too remote, speculative, impractical, or ineffective)?

The implementation of this alternative would be reasonable because its implementation would not be remote, speculative, impractical, or ineffective.

b. Would the alternative meet the purpose and need and overall project purpose?

This potential alternative does not meet the purpose and need and overall project purpose because it would not substantially restore ecological functions and services within the Ballona Reserve by increasing tidal influence to achieve predominantly estuarine wetland conditions: this alternative would restore only approximately 30% of the tidally-influenced area relative to Alternative 1. Therefore, the first of the two components of the purpose and need/overall project purpose would not be met. The second component, purpose relating to the LACDA project components and flood risk management, would be met because the existing Ballona Creek levees and channel alignment would be maintained.



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Ballona Wetlands Restoration Project

Figure 2-56
Alternative 6: Tidal Wetland Restoration

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c. Would the alternative meet most of the basic objectives of Alternative 1?

CDFW has determined that the “most basic” project objectives for purposes of CEQA are the restoration, enhancement, and creation of estuarine and associated habitats; protection and avoidance of impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management and limiting the need for significant modification to regionally important infrastructure; and not adversely impacting the LACDA project. As discussed in the Feasibility Report and the Ballona Wetlands Science Advisory Committee (SAC)[33] memorandum reviewing the Feasibility Report (Ballona Wetlands SAC 2008), this potential alternative would create small, isolated areas of estuarine and muted tidal habitats. The expanded culverts would be approximately 400 feet long and the flow velocity through the culvert would be approximately two to three times higher than in natural tidal wetland channels, which would constrain or preclude access by fish and wildlife. Also, this potential alternative would not create a dynamic interaction between the restored wetlands in Area A and the estuarine portion of the Ballona Creek channel. In the upland portion of Area A that is not restored to wetlands, this potential alternative would enhance upland habitats without lowering the ground elevations. The tidal connections in this potential alternative would be through culverts or tide gates at fixed elevations giving the alternative limited capacity to adapt to sea-level rise. As sea-level rises, tidal areas would convert to muted tidal systems. This potential alternative would create less transition zone and upland habitat that could convert to wetland habitat in the future with sea-level rise. Expanding the existing culvert under Dock 52 would require constructing new culverts and crossing and modifying existing infrastructure along Fiji Way and the northern boundary of Area A, and could include the Marina del Rey sea wall and multiple underground utilities (PWA 2011).

Furthermore, new culvert construction from Marina del Rey Harbor to Area A under Fiji Way is significantly constrained by potential impacts to the Marina del Rey Harbor sea wall, underground utilities, and navigation. Based on discussion with the LACDBH and preliminary assessment of the condition of the existing Marina del Rey sea wall, culvert construction would require completely removing and replacing a section of the existing sea wall at the culvert location which would be very expensive and could create liability for the Project. A gravity sanitary sewer line runs underground along the Project site at the elevation of the proposed culverts. This line would have to be relocated during construction and may have to be entirely redesigned if it is to continue to function after the culverts are installed. Modification to the sewer line would require agreement with and approval by the Los Angeles County sewer district. Future maintenance and refurbishment of the culverts also would be required. Ultimately, this potential alternative would not meet the basic CEQA objectives because of the comparatively very limited restoration that would result despite the modifications to infrastructure.

[33] Over a series of meetings between 2005 and 2008, the SAC provided advice on science-based objectives for restoration and on the evaluation of restoration alternatives.

d. Would the alternative be practicable in terms of cost for a tidal habitat restoration project?

A detailed cost estimate has not been prepared for this alternative because other screening criteria are relied upon as the rationale for not carrying it forward for more detailed review. This analysis assumes that the cost of Alternative 6 would be reasonable and practicable for a tidal habitat restoration project.

e. Would the alternative be practicable to implement, operate, and maintain (logistics)?

Yes, this alternative would be practicable to implement, operate, and maintain.

f. Would the alternative be practicable to construct using existing technology?

Yes, this alternative would be practicable because it would be possible to construct it using existing technology.

g. Would the alternative be more environmentally damaging than Alternative 1?

A detailed analysis of the potential environmental consequences of this alternative has not been undertaken because other screening criteria are relied upon as the rationale for not carrying it forward for more detailed review. Briefly, however, because the existing Ballona Creek levees and channel alignment would be maintained, impacts of Alternative 1 relating to the creation of a more meander-shaped channel (including equipment related emissions and the generation of equipment and other noise closer to existing structures) would be avoided under Alternative 6. Other impacts, including impacts to wildlife and habitat resources, public access, and recreation would be comparable to Alternative 1. This analysis assumes that the impacts of Alternative 6 would not be more environmentally damaging than Alternative 1.

h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?

As noted above, a detailed analysis of the potential environmental consequences of this alternative has not been undertaken because other screening criteria are relied upon as the rationale for not carrying this potential alternative forward for more detailed consideration. Briefly, however, it is unclear whether, on balance, Alternative 6 would avoid or substantially lessen any of Alternative 1's significant effects. Impacts of Alternative 1 relating to the creation of a more meander-shaped channel and the removal and reestablishment of levees would be avoided. However, instead of impacts related to the creation of a more meander-shaped channel, there would be impacts from expanding culverts approximately 440 feet, constructing new culverts and crossing and modifying existing infrastructure along Fiji Way and the northern boundary of Area A. More specifically, culvert construction would require completely removing and replacing a section of the existing sea wall at the culvert location. There would also be impacts related to relocating a gravity sanitary sewer line that runs underground along the Project site at the elevation of the proposed culverts. Because these impacts have not been quantified, CDFW conservatively has determined that Alternative 6 would avoid or substantially lessen Alternative 1's significant impacts.

i. Would the alternative be feasible for purposes of CEQA?

Alternative 6 would be feasible for purposes of CEQA because it would be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

In summary, Alternative 6 would be reasonable; would be practicable in terms of cost for a tidal habitat restoration project; would be practicable to implement, operate, and maintain; would be practicable to construct using existing technology; would not be more environmentally damaging than Alternative 1, would avoid or substantially lessen significant impacts of Alternative 1, and would be feasible under CEQA. However, Alternative 6 has not been carried forward for more detailed review because it would not meet the purpose and need and overall project purpose, would not meet most of the basic objectives of Alternative 1.

2.3.3 Alternative 7: Larger Area Tidal Wetland Restoration

Description

This potential alternative would increase the areas of fully tidal channels, low and mid-high marsh, and associated transition zone habitats compared to the potential alternative described above. It is comparable to Feasibility Report Alternative 3, shown in Figure 2-57 (PWA et al. 2008). Culver Boulevard, Jefferson Boulevard, and the SoCalGas access road would be improved and raised on levees or a causeway to create an open connection to approximately 20 to 25 acres of enhanced wetlands in south Area B. Approximately 18 to 20 acres of existing wetland would be impacted by raising the Gas Company Road and building a new Gas Company levee, resulting in the net gain of approximately 7 acres of restored habitat if the roadway improvements occur. The Project site would remain fragmented and isolated by Ballona Creek. The connection to Area A would be modified to increase the tidal connection under Dock 52 to create an open air culvert with a cross-sectional area of 160 square feet, creating approximately 70 acres of full tidal marsh (PWA 2011). The Fiji Ditch in Area C would be deepened and extended beneath Lincoln Boulevard to create a fully tidal channel. In West Area B, this potential alternative would increase the degree of tidal influence in the southwest wetland by replacing the existing culverts and tide gates with a 100-foot wide breach. Southeast Area B would be enhanced as muted tidal marsh by replacing the existing Freshwater Marsh culvert with a daylighted tidal channel that connects to Ballona Creek or by installing a new culvert and channel.

Coastal sage scrub and grassland habitat would be retained and small areas of seasonal wetland and treatment wetlands would be created in Area C. Recreational facilities would be retained in Area C. The parking lots in Area A and Area B would be constructed and/or upgraded under this potential alternative. In addition, new trails would be constructed and public access to the Project site would be enhanced.

Screening

a. Is the alternative reasonable (i.e., not too remote, speculative, impractical, or ineffective)?

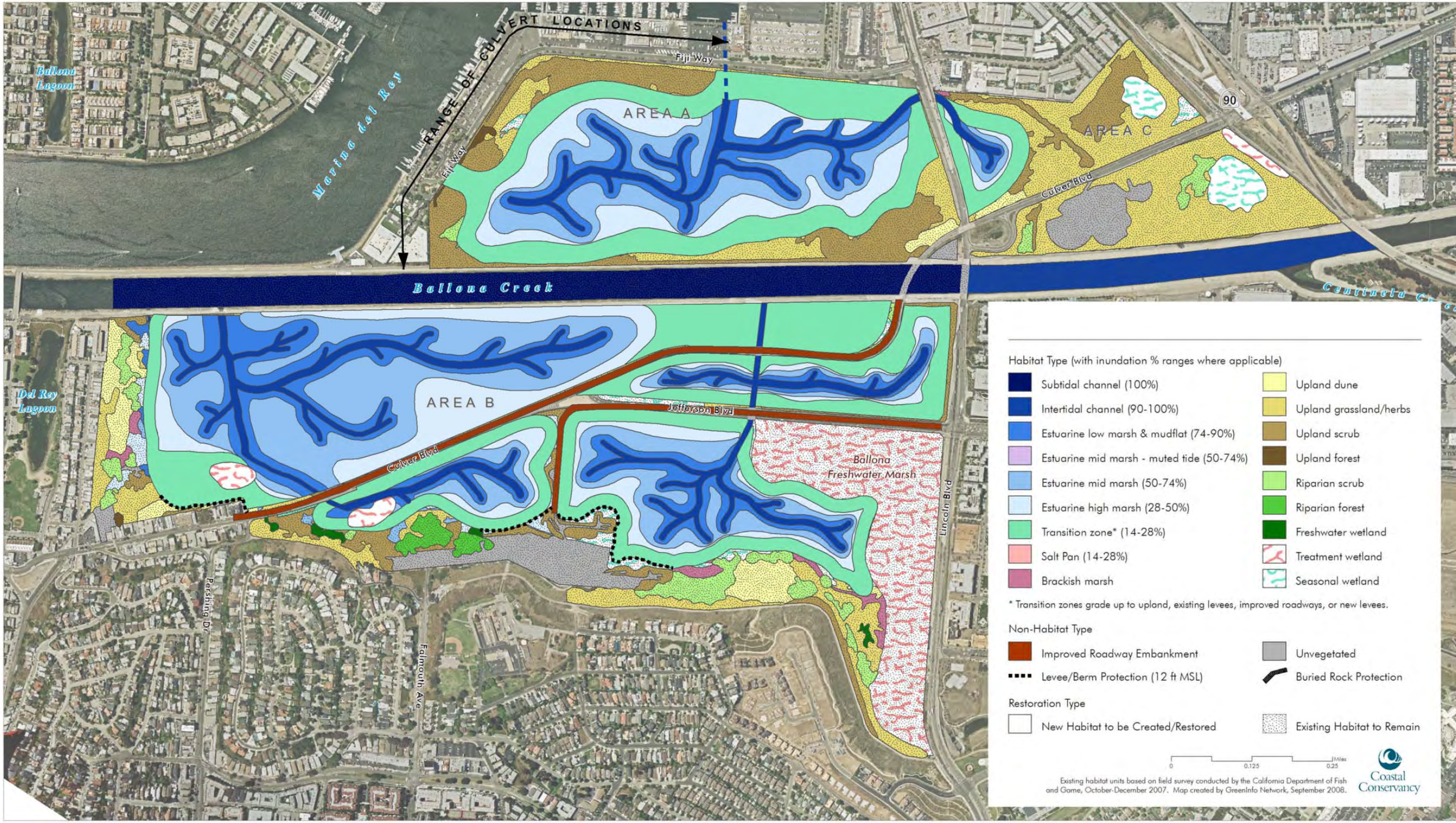
The implementation of this alternative would be reasonable because it would not be remote, speculative, impractical, or ineffective.

b. Would the alternative meet the purpose and need and overall project purpose?

This potential alternative meets the purpose and need and overall project purpose because it would restore ecological functions and services within the Ballona Reserve, in part by increasing tidal influence to achieve predominantly estuarine wetland conditions and because it would ensure that any alteration/ modification to the LACDA project components within the Ballona Reserve would maintain the authorized LACDA project levels of flood risk management. Additionally, the alternative would restore approximately 15% more tidally-influenced area relative to Alternative 1.

c. Would the alternative meet most of the basic objectives of Alternative 1?

CDFW has determined that the "most basic" project objectives for purposes of CEQA are the restoration, enhancement, and creation of estuarine and associated habitats; protection and avoidance of impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management and limiting the need for significant modification to regionally important infrastructure; and not adversely impacting the LACDA project. This potential alternative would not meet these basic objectives because, as discussed more below, it would not avoid impacts to existing and planned roadways, utilities, adjacent properties and uses and the raising of Culver Boulevard and Jefferson Boulevard onto levees or a causeway would involve significant modification of regionally important infrastructure. As discussed in the Feasibility Report and the Ballona Wetlands SAC memorandum (Ballona Wetlands SAC 2008), this potential alternative would not create contiguous habitats across Areas A and B. The expanded culverts would be approximately 400 feet long and the flow velocity through the culvert would be approximately two to three times higher than in natural tidal wetland channels, which constrains access by fish and wildlife. Also, this potential alternative would not create a dynamic interaction between the restored wetlands in Area A and the estuarine portion of the Ballona Creek channel. Moreover, installing new culverts under Dock 52 or another location along the northern boundary of Area A would require crossing and modifying existing infrastructure along Fiji Way and the northern boundary of Area A (PWA 2011). New culvert construction from Marina del Rey Harbor to Area A under Fiji Way is significantly constrained by potential impacts to the Marina del Rey Harbor sea wall, underground utilities, and navigation. Future maintenance and refurbishment of the culverts also would be required.



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Ballona Wetlands Restoration Project

Figure 2-57
Alternative 7: Larger Area Tidal Wetland Restoration

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d. Would the alternative be practicable in terms of cost for a tidal habitat restoration project?

This potential alternative also could not be implemented for a cost that would be reasonable when compared to other tidal habitat restoration projects. The costs of raising the roadways onto a causeway and to complete the extensive utility relocation that would be required (i.e., between $143,000,000 and $200,000,000) in addition to the cost of restoration would not be offset by the approximately 7 additional acres of restored habitat that would result under this alternative. Details and assumptions considered in the conceptual cost analysis of raising Culver and Jefferson boulevards are provided in Appendix B10, Conceptual Cost Analysis to Raise Culver and Jefferson Boulevards.

By comparison, assuming that raising Culver and Jefferson boulevards would increase the number of acres restored by approximately 7 acres, the cost of Alternative 1 would be between $1,564,197 and $1,837,841 per restored acre; Alternative 2 would cost between $1,849,391 and $2,215,715 per restored acre; and Alternative 3 would cost between $4,671,866 and $5,628,242 per restored acre. Averaging the two estimated increases for each alternative, raising the roads would still be an approximately 50% increase per restored acre for each of the three alternatives (an approximately 53% increase for Alternative 1, approximately 48% increase for Alternative 2, and an approximately 50% increase for Alternative 3). In Appendix B9, see Table 1f, *Calculation of Per-Acre Costs - Ballona Wetlands Restoration Project Alternatives With Raised Roads*.

e. Would the alternative be practicable to implement, operate, and maintain (logistics)?

Yes, this alternative would be practicable to implement, operate, and maintain.

f. Would the alternative be practicable to construct using existing technology?

Yes, this alternative would be practicable because it would be possible to construct it using existing technology.

g. Would the alternative be more environmentally damaging than Alternative 1 impacts?

Alternative 7 would not be more environmentally damaging than Alternative 1 (and would substantially lessen significant environmental effects relative to Alternative 1) because the hazards-related impacts associated with the closure of a designated evacuation route, and air quality- and noise-related impacts of causeway construction and existing roadway demolition described under h), immediately below, have not been quantified.

h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?

Alternative 7 would not avoid or substantially lessen significant environmental effects of Alternative 1 and instead would cause new or more significant impacts that would not result from Alternative 1. Alternative 7's implementation would require the closure of Lincoln Boulevard and/or Culver Boulevard for at least as long as necessary to cut over traffic from the existing roadways to the new elevated causeway. As explained in Section 3.8, Hazards and Hazardous Materials, Lincoln Boulevard is listed as a designated disaster route by LACFCD and Culver Boulevard is a tsunamic evacuation route. Although Alternative 1 would result in temporary closures and obstructions on Culver Boulevard, Alternative 1 would maintain emergency access to and through the area at all times. That would not be possible under this proposed alternative, resulting in a significant unavoidable impact under threshold of significance HAZ-6, relating to impairment of the implementation of or physical interfere with an adopted emergency response plan or emergency evacuation plan. By comparison, Alternative 1 would result in no significant unavoidable impacts. Assuming existing roadways would not be closed until construction of the new causeway would be complete, the footprint of the new causeway and subsequent demolition of the existing roads would create new or more severe significant impacts than Alternative 1 relating to traffic (associated with construction equipment and workers' trips), construction-related air emissions and noise (which could affect nesting birds or other species in areas that Alternative 1 would not), and additional fill in jurisdictional waters.

i. Would the alternative be feasible for purposes of CEQA?

Alternative 7 would not be feasible for purposes of CEQA because it would not be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social and other factors (CEQA Guidelines §15364). See Section 2.3.5 for details about costs and the new and more severe significant environmental impacts that would result from a road-raising alternative that would not result from Alternative 1.

Alternative 7 also would not be feasible for social or other reasons. CDFW's mission "is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public" (CDFW 2016). Consistent with this mission, CDFW would not dedicate the substantial resources that would be required to implement this alternative knowing that the Project site would remain fragmented and isolated by Ballona Creek following restoration when greater diversity of habitats and the species that depend on them could be accomplished via the implementation of a different alternative.

In summary, Alternative 7 would be reasonable; would meet the purpose and need and overall project purpose; would be practicable to implement, operate, and maintain; would be practicable to construct using existing technology; and would not be more environmentally damaging than Alternative 1. However, Alternative 7 has not been carried forward for more detailed review because it would not meet most of the basic objectives of Alternative 1; would not be practicable in terms of cost for a tidal habitat restoration project; would not avoid or substantially lessen significant impacts of Alternative 1; and would not be feasible.

2.3.4 Alternative 8: Large Area Tidal Wetland Restoration and Subtidal Basin

Description

This potential alternative would establish a new tidal connection to Marina del Rey and create new shallow subtidal and intertidal habitats in Area A. It is comparable to Feasibility Report Alternative 4, shown in Figure 2-58 (PWA et al. 2008). Culver Boulevard, Jefferson Boulevard, and the SoCalGas access road would be improved and raised on levees or a causeway to create an open connection to approximately 20 to 25 acres of enhanced wetlands in south Area B. Approximately 18 to 20 acres of existing wetland would be impacted by raising the Gas Company Road and building a new Gas Company levee, resulting in the net gain of approximately 7 acres of restored habitat if the roadway improvements occur. This potential alternative would involve excavation of the northwest portion of Area A to create a shallow subtidal basin and increased intertidal mudflats. New tidal culverts to Marina del Rey would be installed linking the western part of Area A to the Marina. This connection would draw water out of the main inlet to the Marina. The tidal connection under Dock 52 would be an open culvert with a cross-sectional area of 500 square feet that would be approximately 400 feet long. A narrow, linear strip adjacent to Ballona Creek would be converted to enhanced coastal sage scrub habitat. This potential alternative would create a broad expanse of subtidal habitat connected to mudflats and wetlands.

Recreational facilities would be retained in Area C. The parking lots in Area A and Area B would be constructed and/or upgraded under this potential alternative. In addition, new trails would be constructed and public access to the Project site would be enhanced. Public access along the existing Ballona Creek trail would remain unchanged.

Screening

a. Is the alternative reasonable (i.e., not too remote, speculative, impractical, or ineffective)?

The implementation of this alternative would be reasonable because its implementation would not be remote, speculative, impractical, or ineffective.

b. Would the alternative meet the purpose and need and overall project purpose?

Alternative 8 meets the purpose and need and overall project purpose because it would restore ecological functions and services at the Ballona Reserve, at a similar level compared to Alternative 1. It would restore functions in part by increasing tidal influence to achieve predominantly estuarine wetland conditions, and because it would ensure that any alteration or modification to the LACDA project components within the Ballona Reserve would maintain the authorized LACDA project levels of flood risk management.

c. Would the alternative meet most of the basic objectives of Alternative 1?

CDFW has determined that the “most basic” project objectives for purposes of CEQA are the restoration, enhancement, and creation of estuarine and associated habitats; protection and avoidance of impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management and limiting the need for significant modification to regionally important infrastructure; and not adversely impacting the LACDA project. Potential Alternative 8 would not meet these basic objectives because it, as discussed more in screening criteria c), d), and g) in Section 2.3.3, Alternative 8 would not avoid impacts to existing and planned roadways, utilities, adjacent properties and uses; and the raising of Culver Boulevard and Jefferson Boulevard onto levees or a causeway would involve significant modification of regionally important infrastructure.

d. Would the alternative be practicable in terms of cost for a tidal habitat restoration project?

Because Alternative 8 involves raising portions of roadways within the Ballona Reserve (including Culver Boulevard and Jefferson Boulevard), the overall cost would not be practicable for a tidal habitat restoration project. As discussed in Section 2.3.3 in the context of screening criterion d), raising these two roadways onto a causeway would add between $143,000,000 and $200,000,000 to the cost of restoration, depending on the width of the proposed causeway, and would add approximately 7 additional acres of restored habitat. Details and assumptions considered in the conceptual cost analysis of raising Culver and Jefferson boulevards are provided in Appendix B10, Conceptual Cost Analysis to Raise Culver and Jefferson Boulevards.

By comparison, Alternative 1 would cost between $1,564,197 and $1,837,841 per restored acre if raising Culver and Jefferson boulevards were included to increase the number of acres restored by 7 acres; Alternative 2 would cost between $1,849,391 and $2,215,715 per restored acre if raising Culver and Jefferson boulevards were included to increase the number of acres restored by 7 acres; and Alternative 3 would cost between $4,671,866 and $5,628,242 per restored acre if raising Culver and Jefferson boulevards were included to increase the number of acres restored by 7 acres. Averaging the two estimated increases for each alternative, raising the roads would still be an approximately 50% increase per restored acre for each of the three alternatives (an approximately 53% increase for Alternative 1, approximately 48% increase for Alternative 2, and an approximately 50% increase for Alternative 3). With these types of price increases relative to other tidal habitat restoration projects, this potential alternative would not be practicable in terms of cost. In Appendix B9, see Table 1f, *Calculation of Per-Acre Costs - Ballona Wetlands Restoration Project Alternatives With Raised Roads.*

e. Would the alternative be practicable to implement, operate, and maintain (logistics)?

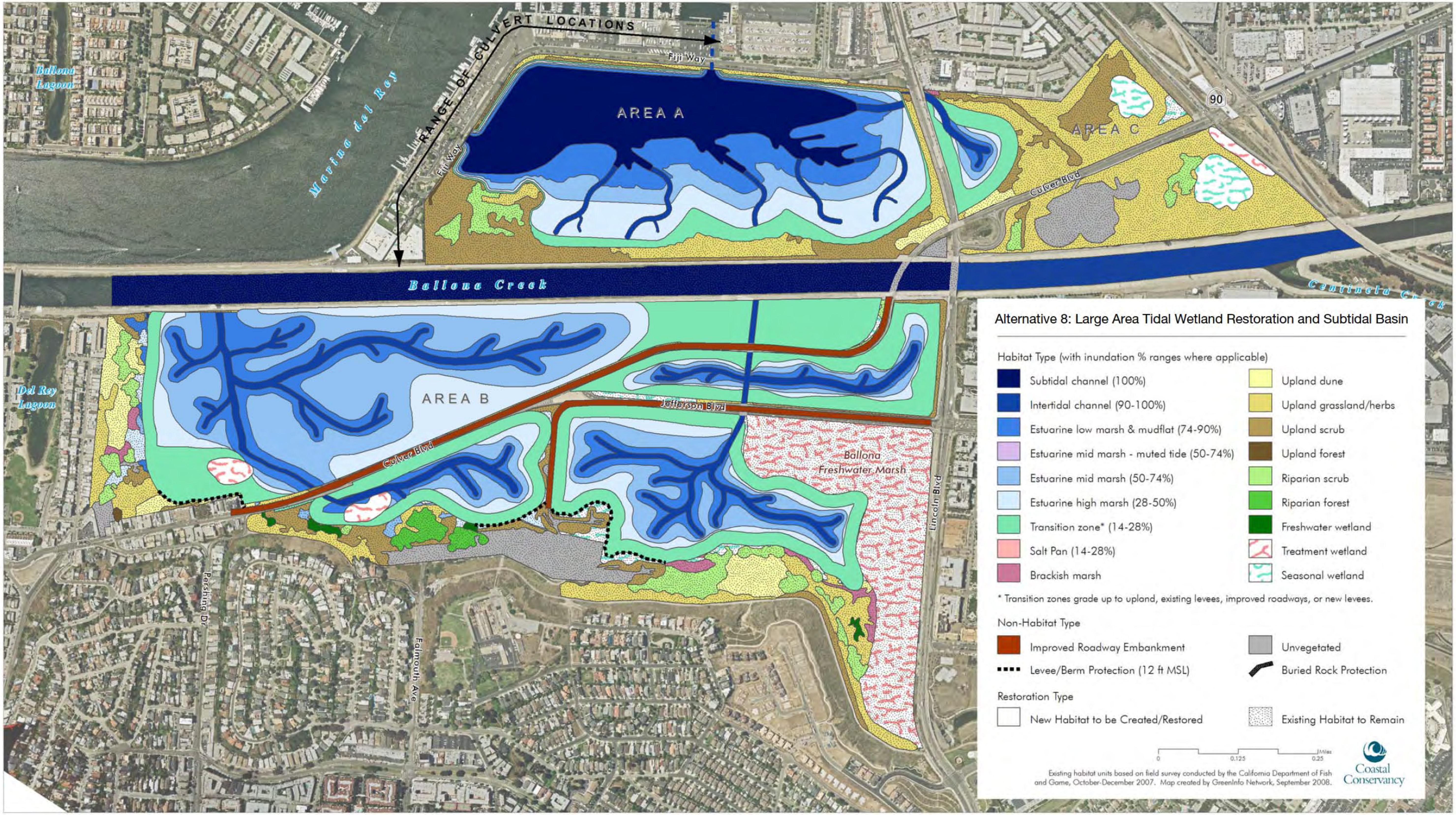
It would be possible to implement, operate, and maintain Alternative 8.

f. Would the alternative be practicable to construct using existing technology?

Alternative 8 would be practicable to construct using existing technology.

g. Would the alternative be more environmentally damaging than Alternative 1?

Because Alternative 8 has not been carried forward on the basis of cost, environmental impacts have not been quantified.



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Ballona Wetlands Restoration Project

Figure 2-58
Alternative 8: Large Area Tidal Wetland Restoration and Subtidal Basin

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h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?

As discussed in screening criteria c), d), h), and i), Alternative 8 would not avoid or substantially lessen significant effects of Alternative 1. See Section 2.3.3 regarding screening criterion h) for details.

i. Would the alternative be feasible for purposes of CEQA?

Alternative 8 would not be feasible for purposes of CEQA because it would not be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic and environmental factors (CEQA Guidelines §15364). See the discussions of screening criteria c), d),)), g), and h) in Section 2.3.3 for details about costs and the new and more severe significant environmental impacts that would result from a road-raising alternative that would not result from Alternative 1. For these reasons, Alternative 8 has been determined to be infeasible for purposes of CEQA.

In summary, Alternative 8 would be reasonable; would meet the purpose and need and overall project purpose; would be practicable to implement, operate, and maintain; would be practicable to construct using existing technology; and, would not be more environmentally damaging than Alternative 1. However, Alternative 8 has not been carried forward for more detailed review because it would not meet most of the basic objectives of Alternative 1; would not be practicable in terms of cost for a tidal habitat restoration project; would not avoid or substantially lessen Alternative 1's significant effects; and would be infeasible for purposes of CEQA.

2.3.5 Alternative 9: Realignment of Ballona Creek Including Relocation or Raising of Key Roads

Description

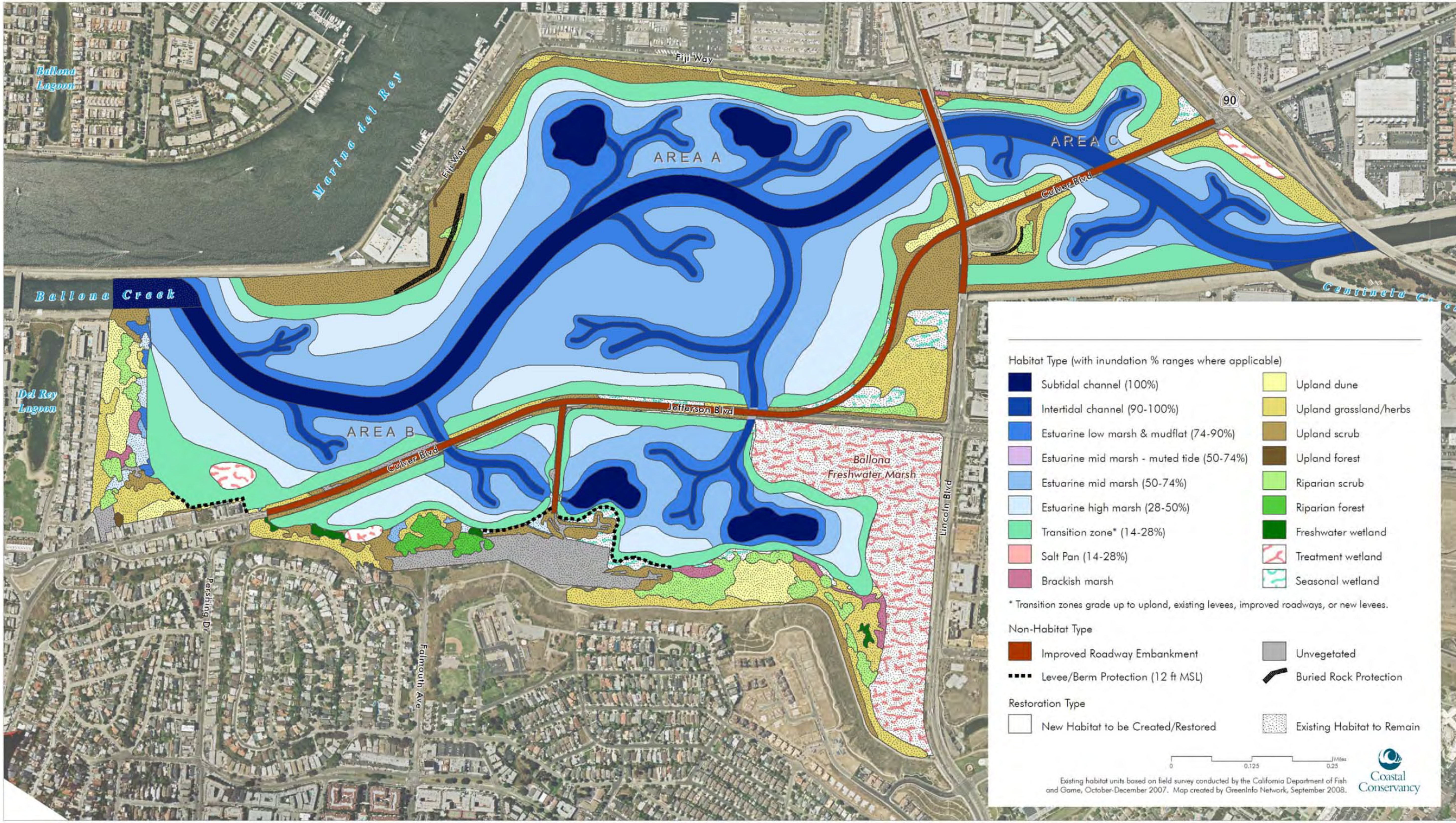
This potential alternative would include the removal of the Ballona Creek flood control channel levees, the creation of a sinuous natural creek and associated tidal basins, and a connection of all areas of the Project site. It is comparable to Feasibility Report Alternative 5, shown in Figure 2-59 (PWA et al. 2008). Connection across all areas would allow for subtidal, mudflats, marsh, and higher wetland-upland transition habitats. The channel would be free to migrate across the tidal floodplain, limited where necessary by buried rock protection. The existing Ballona Creek channel would be filled where necessary. The intersection of Culver Boulevard and Jefferson Boulevard would be moved to the east, closer to Lincoln Boulevard. Culver Boulevard and Lincoln Boulevard would be raised on pilings above the fully tidal marshlands. The gas/oil monitoring facilities in Area A and recreational facilities in Area C would be minimized and converted to fully-tidal channel, low, and mid-high marsh, transition zone and enhanced coastal sage scrub. The constructed Freshwater Marsh and existing dunes would be retained. Implementation of this potential alternative would be phased.

Areas A, B, and C would be modified to include the reengineered fully-tidal Ballona Creek, two shallow tidal ponds, tidal channels, low salt marsh, mid-high marsh and associated transition zone habitats. The northern breakwater of Ballona Creek would be lowered to allow flood flows to spill into Marina del Rey. Buried rock protection would be provided along the south east edge to prevent the channel meandering too far west. A narrow, linear strip in the north and west portions of the area would be converted to enhanced coastal sage scrub habitat.

A perimeter trail would be constructed along Fiji Way and gateway entrances located at the existing parking area near Fisherman's Village and along Fiji Way. A boardwalk containing an overlook would link the two gateway entrances as well as overlooks located at both gateway entrances. A vehicular pullout would be located along Culver Boulevard and also would provide an overlook. Linkages within Area A would be provided through two pedestrian crossings located along Lincoln Boulevard. A formal parking/staging area would be developed at the gateway entrance near Fisherman's Village. Area B gateway entrances would be located at the West Culver Parking Lot, along the southern bank of Ballona Creek, along Lincoln Boulevard, and along Jefferson Boulevard at the entrance to the Freshwater Marsh. Boardwalk spur trails leading to overlooks would be located along the Freshwater Marsh Trail and at a vehicular pullout along Culver Boulevard. Overlooks also would be located at the existing overlook platform, at the gateway entrance along the south levee, and along the Cabora Drive trail at Pershing Drive. Linkages throughout Area B would be provided by three pedestrian crossings located on Culver Boulevard. An upland area along Lincoln Boulevard provides for a possible visitor center location. Formal parking areas would be located at the West Culver Parking Lot, and along Jefferson Boulevard at the Freshwater Marsh.

Public access features in Area C would include a perimeter trail from the La Villa Marina gateway entrance to the Lincoln Boulevard pedestrian crossing to Area A. Regional trail connectivity would be preserved by connecting the Ballona Creek Bike Path (previously located on the north levee) to a dual pedestrian and bicycle trail along the southern boundary of Area C. This trail would continue both to the north along Lincoln Boulevard and to the south along Culver Boulevard. Since both roads would be improved within this restoration alternative, improved bicycle lanes would facilitate this regional connection. A pedestrian bridge would cross Ballona Creek connecting this new trail alignment to the existing Ballona Creek Bike Path. An overlook would be located at the La Villa Marina gateway entrance.

Storm drains for Jefferson Boulevard, Lincoln Boulevard, and Playa Vista drain into the Freshwater Marsh, which is the low point where stormwater in these storm drains flows to by gravity. Rainfall runoff from these storm drains flows into the Freshwater Marsh, which provides stormwater detention and flood storage. Stormwater can then drain out of the Freshwater Marsh outlet water control structure to Ballona Creek, but for storm events greater than the average annual maximum storm event (i.e., 1-year storm event) stormwater flows into Southeast Area B over the broad-crested weir in the Freshwater Marsh berm. Southeast and South Area B therefore also provide flood storage for storm drainage from the Freshwater Marsh, Jefferson Boulevard, Lincoln Boulevard, and Playa Vista. The Freshwater Marsh is designed to have a maximum water level of 10.4 ft NAVD 88 during a 50-year storm event, during which stormwater overflows into Southeast Area B (Psomas 2016). If an open connection were restored between Ballona Creek and Southeast Area B as would occur under this Alternative 9, stormwater flowing down Ballona Creek into Southeast Area B would increase the Southeast Area B water level to above 10.4 ft NAVD 88. Ballona Creek stormwater would flow from Southeast Area B into the Freshwater Marsh and cause the water level in the Freshwater Marsh to increase above 10.4 ft NAVD 88. Pumps would be introduced within the Ballona Reserve to address the potential for this alternative to increase flood risk relative to existing conditions.



Ballona Wetlands Restoration Project

Figure 2-59
Alternative 9: Realignment of Ballona Creek Including Relocation or Raising of Roads

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Three options for this Alternative 9 were considered by the Lead Agencies.

Option 1: Raising the Freshwater Marsh Berm and Overflow Weir

One option explored within this alternative was to raise the Freshwater Marsh berm and overflow weir so that water from Ballona Creek could not flow into the Freshwater Marsh.

Screening: Option 1

a. Is the alternative reasonable (i.e., not too remote, speculative, impractical, or ineffective)?

The implementation of Alternative 9 Option 1 would be reasonable because its implementation would not be remote, speculative, impractical, or ineffective.

b. Would the alternative meet the purpose and need and overall project purpose?

Alternative 9 Option 1 would meet the purpose and need and overall project purpose because it would restore ecological functions and services at the Ballona Reserve in part by increasing tidal influence by approximately 25% more than under Alternative 1 to achieve predominantly estuarine wetland conditions: As with each of the three options considered under Alternative 9, Option 1 would include the removal of the Ballona Creek flood control channel levees, creation of a sinuous natural creek and associated tidal basins, and connection of all areas of the Project site to allow for subtidal, mudflats, marsh, and higher wetland-upland transition habitats. Thus, the first of the two components of the purpose and need/overall project purpose would be met. The second component, relating to the LACDA project components and flood risk management, also would be met via the introduction of mechanical pumps.

c. Would the alternative meet most of the basic objectives of Alternative 1?

CDFW has determined that the “most basic” project objectives for purposes of CEQA are the restoration, enhancement, and creation of estuarine and associated habitats; protection and avoidance of impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management and limiting the need for significant modification to regionally important infrastructure; and not adversely impacting the LACDA project. Alternative 9 Option 1 would not meet these basic objectives because it would not avoid impacts to existing and planned roadways, utilities, adjacent properties and uses; and the raising of Culver Boulevard and Jefferson Boulevard onto levees or a causeway would involve significant modification of regionally important infrastructure. For example, raising the weir would prevent water from overflowing into Southeast Area B, causing flooding of Jefferson Boulevard. Therefore, a new pump station would be required to pump the stormwater overflow from the Freshwater Marsh into Southeast Area B. In some years, the pump station would only be activated once per year. Pump stations that are activated this infrequently are, in CDFW’s perspective, unreliable for flood control because there is a chance that the pump will not function due to inactivity. Therefore, CDFW has determined that adding mechanical pumps into a system that does not now include them would introduce a level of flood risk in the event of pump failure that does not now exist. Additionally, future sea level rise would be expected to gradually convert the restored habitats under Alternative 9, Option 1, to lower elevation habitats through transgression (e.g., from vegetated wetland to mudflat or from mudflat to subtidal habitats). This potential alternative would lack suitable transition and upland habitats where wetland transgression could occur, and as a result vegetated wetlands and mudflat would be lost at a faster rate than in Alternative 1. For these reasons, CDFW has determined that Alternative 9 Option 1 does not meet most of the basic objectives of Alternative 1.

d. Would the alternative be practicable in terms of cost for a tidal habitat restoration project?

The cost of Alternative 9 Option 1 would not be practicable for a tidal habitat restoration project. The major cost associated with Alternative 9 would result from raising roads. As discussed in Section 2.3.3 in the context of screening criterion d), raising these two roadways onto a causeway would add between $143,000,000 and $200,000,000 to the cost of restoration, depending on the width of the proposed causeway, and would add approximately 7 additional acres of restored habitat. Details and assumptions considered in the conceptual cost analysis of raising Culver and Jefferson boulevards are provided in Appendix B10, Conceptual Cost Analysis to Raise Culver and Jefferson Boulevards.

By comparison, Alternative 1 would cost between $1,564,197 and $1,837,841 per restored acre if raising Culver and Jefferson boulevards were included to increase the number of acres restored by 7 acres; Alternative 2 would cost between $1,849,391 and $2,215,715 per restored acre if raising Culver and Jefferson boulevards were included to increase the number of acres restored by 7 acres; and Alternative 3 would cost between $4,671,866 and $5,628,242 per restored acre if raising Culver and Jefferson boulevards were included to increase the number of acres restored by 7 acres. Averaging the two estimated increases for each alternative, raising the roads would still nearly double the cost per restored acre for each of the three alternatives. In Appendix B9, see Table 1f, *Calculation of Per-Acre Costs - Ballona Wetlands Restoration Project Alternatives With Raised Roads.* With these types of price increases relative to other tidal habitat restoration projects, this potential alternative would not be practicable in terms of cost.

The additional cost of raising roads is relied upon in determining that Alternative 9 Option 1 would not be practicable in terms of cost for a tidal habitat restoration project. Qualitatively, CDFW also notes that the installation, operation, and maintenance of a pump station also would increase costs relative to Alternative 1.

e. Would the alternative be practicable to implement, operate, and maintain (logistics)?

It would be practicable to implement, operate, and maintain Alternative 9 Option 1.

f. Would the alternative be practicable to construct using existing technology?

It would be practicable to construct Alternative 9 Option 1 using construction equipment, vehicles, and pumps, and other existing technology.

g. Would the alternative be more environmentally damaging than Alternative 1?

The cost associated with Alternative 9 Option 1 would be increased substantially when compared to Alternative 1. Therefore, the Corps did not consider the difference in the level of environmental impact between this alternative and Alternative 1 as a major factor in determining this alternative was infeasible.

h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?

Alternative 9 Option 1 would not avoid or substantially lessen significant environmental effects relative to Alternative 1 and instead would result in new significant or more significant impacts than Alternative 1 primarily because of the inclusion of raised roadways. As discussed in criterion h) of Section 2.3.3, potential hazards relating to impairment of or physical interference with an adopted emergency response plan or emergency evacuation plan, demolition and construction-related air emissions and noise (which could affect nesting birds or other species in areas that Alternative 1 would not), and additional fill in jurisdictional waters would be either new or more severe relative to the impacts of Alternative 1. Additionally, potential significant unavoidable impacts also could result from a need to export all excess soil off-site.

i. Would the alternative be feasible for purposes of CEQA?

Alternative 9 Option 1 would not be feasible for purposes of CEQA because it would not be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic and environmental factors (CEQA Guidelines §15364). See the discussion in this Section 2.3.5 of screening criterion d) for this Option 1 regarding costs and screening criterion g) regarding why Alternative 9 Option 1 would not avoid or substantially lessen significant environmental impacts of Alternative 1. The California Legislature has decreed that "it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects...." *South County Citizens for Smart Growth v. City of Nevada* (2013) 221 Cal.App.4th 316, 326.

In summary, Alternative 9 Option 1 would be reasonable; would meet the purpose and need and overall project purpose; would be practicable to implement, operate, and maintain; and would be practicable to construct using existing technology. However, Alternative 9 Option 1 has not been carried forward for more detailed review because it would not meet most of the basic objectives of Alternative 1, would not be practicable in terms of cost for a tidal habitat restoration project; would not avoid or substantially lessen Alternative 1's significant effects; and would be infeasible.

Option 2: Divert High Flows from the Storm Drains Draining to the Freshwater Marsh

Another option considered in this alternative was to divert high flows from the storm drains that drain to the Freshwater Marsh. Southeast Area B currently serves as a holding basin for overflow from the Freshwater Marsh. If, as anticipated under Alternative 9, an open connection were restored between Ballona Creek and Southeast Area B, Southeast Area B no longer would serve as a holding basin and construction of a diversion structure and new holding basin would be required outside of the Ballona Reserve adjacent to the Freshwater Marsh.

Screening: Option 2

a. Is the alternative reasonable (i.e., not too remote, speculative, impractical, or ineffective)?

The implementation of Alternative 9 Option 2 would be reasonable because its implementation would be neither remote, speculative, impractical, nor ineffective.

b. Would the alternative meet the purpose and need and overall project purpose?

Alternative 9 Option 2 would meet the purpose and need and overall project purpose because it would restore ecological functions and services at the Ballona Reserve, in part by increasing tidal influence by approximately 25% more than under Alternative 1, to achieve predominantly estuarine wetland conditions, and would ensure any change to the LACDA project components within the Ballona Reserve would maintain the authorized LACDA project levels of flood risk management. For example, Alternative 9, Option 2 would result in the connection of all areas of the Project site within the Ballona Reserve to allow for subtidal, mudflats, marsh, and higher wetland-upland transition habitats and the construction, operation, and maintenance of a new holding outside the Ballona Reserve adjacent to the existing Freshwater Marsh would offset the loss of the existing function of Southeast Area B as a holding basin.

c. Would the alternative meet most of the basic objectives of Alternative 1?

CDFW has determined that the “most basic” project objectives for purposes of CEQA are the restoration, enhancement, and creation of estuarine and associated habitats; protection and avoidance of impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management and limiting the need for significant modification to regionally important infrastructure; and not adversely impacting the LACDA project. Alternative 9 Option 2 would not meet these basic objectives because it would not avoid impacts to existing and planned roadways, utilities, adjacent properties and uses; and the raising of Culver Boulevard and Jefferson Boulevard onto levees or a causeway would involve significant modification of regionally important infrastructure. As discussed in screening criteria c) for Alternative 9 Option 1, adding mechanical pumps into a system that does not now include them would introduce a level of flood risk in the event of pump failure that does not now exist. Additionally, vegetated wetlands and mudflat would be lost at a faster rate than in Alternative 1. Moreover, CDFW would need to acquire property outside the Reserve and adjacent to the Freshwater Marsh to construct the holding basin for diversion of stormwater from the Freshwater Marsh. Therefore, CDFW has determined that Alternative 9 Option 2 does not meet most of the basic objectives of Alternative 1.

d. Would the alternative be practicable in terms of cost for a tidal habitat restoration project?

The cost of Alternative 9 Option 2 would not be practicable for a tidal habitat restoration project. The major cost associated with Alternative 9 would result from raising roads. As discussed in Section 2.3.3 in the context of screening criterion d), raising these two roadways onto a causeway would add between $143,000,000 and $200,000,000 to the cost of restoration, depending on the width of the proposed causeway, and would add approximately 7 additional acres of restored habitat. Details and assumptions considered in the conceptual cost analysis of raising Culver and Jefferson boulevards are provided in Appendix B10, Conceptual Cost Analysis to Raise Culver and Jefferson Boulevards.

By comparison, Alternative 1 would cost between $1,564,197 and $1,837,841 per restored acre if raising Culver and Jefferson boulevards were included to increase the number of acres restored by 7 acres; Alternative 2 would cost between $1,849,391 and $2,215,715 per restored acre if raising Culver and Jefferson boulevards were included to increase the number of acres restored by 7 acres; and Alternative 3 would cost between $4,671,866 and $5,628,242 per restored acre if raising Culver and Jefferson boulevards were included to increase the number of acres restored by 7 acres. Averaging the two estimated increases for each alternative, raising the roads would approximately double the cost per restored acre for each of the three alternatives. In Appendix B9, see Table 1f, *Calculation of Per-Acre Costs - Ballona Wetlands Restoration Project Alternatives With Raised Roads.* With these types of price increases relative to other tidal habitat restoration projects, this potential alternative would not be practicable in terms of cost.

e. Would the alternative be practicable to implement, operate, and maintain (logistics)?

It would be practicable to implement, operate, and maintain Alternative 9 Option 2.

f. Would the alternative be practicable to construct using existing technology?

Alternative 9 Option 2 would be practicable to construct using existing technology, such as excavators and standard construction equipment.

g. Would the alternative be more environmentally damaging than Alternative 1?

Because Alternative 9 Option 2 has not been carried forward on the basis of cost, the environmental impacts have not been quantified.

h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?

Alternative 9 Option 2 would not avoid or substantially lessen significant environmental impacts of Alternative 1 (and instead would result in new or more significant impacts than Alternative 1), primarily because of the inclusion of raised roadways. As discussed in criterion h) of section 2.3.3, potential hazards relating to impairment of the implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan, demolition and construction-related air emissions and noise (which could affect nesting birds or other species in areas that Alternative 1 would not), and additional fill in jurisdictional waters would be either new or more severe relative to the impacts of Alternative 1.

i. Would the alternative be feasible for purposes of CEQA?

Alternative 9 Option 2 would not be feasible for purposes of CEQA because it would not be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic and environmental factors (CEQA Guidelines §15364). See the discussion in this Section 2.3.5 of screening criteria c), d),)), and g) regarding why Alternative 9 Option 2 would not avoid or substantially lessen significant environmental impacts of Alternative 1. As noted above, "it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects...." *South County Citizens for Smart Growth v. City of Nevada* (2013) 221 Cal.App.4th 316, 326.

In summary, Alternative 9 Option 2 would be reasonable; would meet the purpose and need and overall project purpose; would be practicable to implement, operate, and maintain; and would be practicable to construct using existing technology. However, Alternative 9 Option 2 has not been carried forward for more detailed review because it would not meet most of the basic objectives of Alternative 1, would not be practicable in terms of cost for a tidal habitat restoration project; would not avoid or substantially lessen Alternative 1's significant impacts; and would be infeasible.

Option 3: Raise Specified Roadways within the Ballona Reserve

A third option considered in this alternative was to raise a segment of Culver Boulevard within the Ballona Reserve onto a causeway with water control structures. The Gas Company Road also would be raised to maintain flood storage in Southeast Area B and a new levee would be required along the southern edge of South Area B to protect the Gas Company from flooding. This option would create an open connection to approximately 20 to 25 acres of enhanced wetlands in South Area B and would impact approximately 18 to 20 acres of existing wetland by raising the Gas Company Road and building a new Gas Company levee (an impact that is avoided in Draft EIS/EIR Alternatives 1 to 3). See Figure 2-60. The water control structures would (as in Alternative 1) convey tidal flows between Ballona Creek and South Area B, but would limit the amount of water flowing into Southeast Area B from Ballona Creek during storm events and thereby maintain the required flood storage in Southeast Area B for the Freshwater Marsh overflow. These water control structures could allow for some degree of fish passage and allow line-of-sight connectivity in the area to be maintained for terrestrial wildlife. This option also could potentially provide a wildlife passage route through West Area B, South Area B, and over the raised Gas Company Road, which would have minimal traffic (Figure 2-60); however, the likelihood that wildlife using adjacent fully tidal wetland habitats would be able to find and follow this convoluted pathway to avoid crossing through traffic on Culver Boulevard and Jefferson Boulevard is expected to be low.

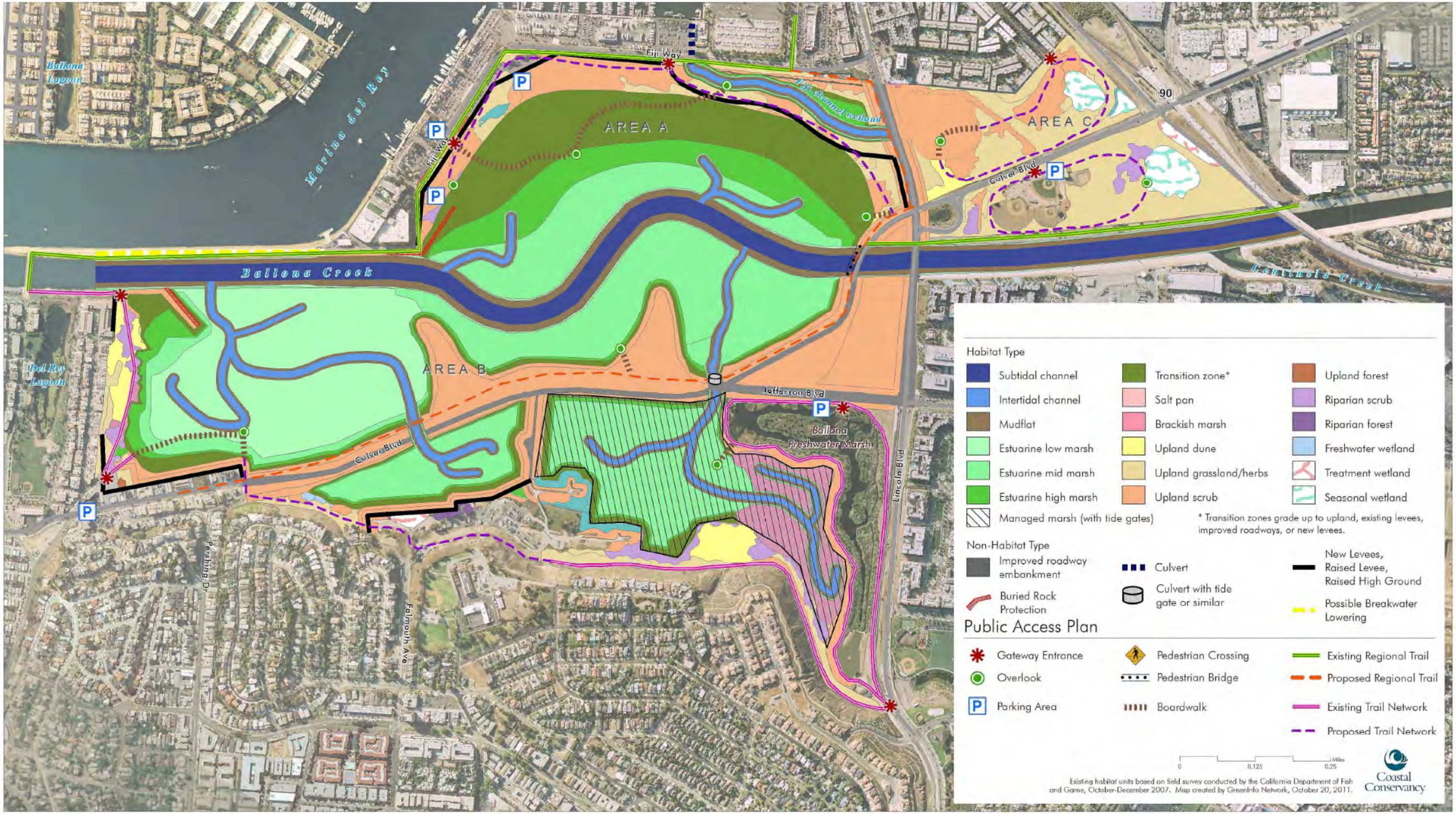
Screening: Option 3

a. Is the alternative reasonable (i.e., not too remote, speculative, impractical, or ineffective)?

The implementation of Alternative 9 Option 3 would be reasonable because neither uncertainty about the identity of a project sponsor nor a lack of funding renders an alternative too speculative for the purposes of NEPA. If Culver Boulevard and Jefferson Boulevard are not raised onto causeways as part of the Ballona Wetlands Restoration Project this would not preclude or affect the ability to do so in the future.

b. Would the alternative meet the purpose and need and overall project purpose?

Alternative 9 Option 3 would meet the purpose and need and overall project purpose because it would restore ecological functions and services within the Ballona Reserve, in part by increasing tidal influence at a level comparable to Alternative 1, to achieve predominantly estuarine wetland conditions, and because it would ensure that any change to the LACDA project components within the Ballona Reserve would maintain the authorized LACDA project levels of flood risk management.



ESA

Ballona Wetlands Restoration Project

Figure 2-60
Alternative 9 Option 3: Raise Specified Roadways within the Ballona Reserve

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c. Would the alternative meet most of the basic objectives of Alternative 1?

CDFW has determined that the “most basic” project objectives for purposes of CEQA are the restoration, enhancement, and creation of estuarine and associated habitats; protection and avoidance of impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management and limiting the need for significant modification to regionally important infrastructure; and not adversely impacting the LACDA project. Alternative 9 Option 3 would not meet these basic objectives because it would not avoid impacts to existing and planned roadways, utilities, adjacent properties and uses; and the raising of Culver Boulevard and Jefferson Boulevard onto levees or a causeway would involve significant modification of regionally important infrastructure. As discussed in screening criteria c) for Alternative 9 Option 1, adding mechanical pumps into a system that does not now include them would introduce a level of flood risk in the event of pump failure that does not now exist. Additionally, vegetated wetlands and mudflat would be lost at a faster rate than in Alternative 1. Furthermore, there is an existing high-voltage power transmission line (“Scattergood-Olympic Line 2”) that is buried along the shoulder of Culver Boulevard for the entire length of the Project area. This power transmission line would have to be moved in order to move Culver Boulevard.

d. Would the alternative be practicable in terms of cost for a tidal habitat restoration project?

The cost of Alternative 9 Option 3 would not be practicable for a tidal habitat restoration project. The major cost associated with Alternative 9 would result from raising roads. As discussed in Section 2.3.3 in the context of screening criterion d), raising these two roadways onto a causeway would add between $143,000,000 and $200,000,000 to the cost of restoration, depending on the width of the proposed causeway, and would add approximately 7 additional acres of restored habitat. Details and assumptions considered in the conceptual cost analysis of raising Culver and Jefferson boulevards are provided in Appendix B10, Conceptual Cost Analysis to Raise Culver and Jefferson Boulevards.

By comparison, Alternative 1 would cost between $1,564,197 and $1,837,841 per restored acre if raising Culver and Jefferson boulevards were included to increase the number of acres restored by 7 acres; Alternative 2 would cost between $1,849,391 and $2,215,715 per restored acre if raising Culver and Jefferson boulevards were included to increase the number of acres restored by 7 acres; and Alternative 3 would cost between $4,671,866 and $5,628,242 per restored acre if raising Culver and Jefferson boulevards were included to increase the number of acres restored by 7 acres. Averaging the two estimated increases for each alternative, raising the roads would approximately double the cost per restored acre for each of the three alternatives. In Appendix B9, see Table 1f, *Calculation of Per-Acre Costs - Ballona Wetlands Restoration Project Alternatives With Raised Roads.* With these types of price increases relative to other tidal habitat restoration projects, this potential alternative would not be practicable in terms of cost.

The additional cost of raising Culver Boulevard and Jefferson Boulevard alone is relied upon in determining that Alternative 9 Option 3 would not be practicable in terms of cost for a tidal habitat restoration project. Nonetheless, the Lead Agencies note that Alternative 9 Option 3 would accrue additional costs associated with reconfiguring the Gas Company Road and to relocate existing utility infrastructure, such as the existing high-voltage power transmission line

("Scattergood-Olympic Line 2") that is buried along the shoulder of Culver Boulevard for the entire length of the Project area.

e. Would the alternative be practicable from a logistics perspective to implement, operate, and maintain (logistics)?

It would be practicable to implement, operate, and maintain Alternative 9 Option 3.

f. Would the alternative be practicable to construct using existing technology?

Alternative 9 Option 3 would be practicable using standard construction equipment, methods, and related existing technology.

g. Would the alternative be more environmentally damaging than Alternative 1?

Because Alternative 9 Option 3 has not been carried forward on the basis of cost, environmental impacts have not been quantified.

h. Would the alternative fail to avoid or substantially lessen any of Alternative 1's significant impacts?

Alternative 9 Option 3 would not avoid or substantially lessen significant environmental effects relative to Alternative 1 (and instead would result in new or more significant impacts) primarily because of the inclusion of raised roadways. As discussed in criterion h) of Section 2.3.3, potential hazards relating to impairment of or physical interference with an adopted emergency response plan or emergency evacuation plan, and demolition and construction-related air emissions and noise (which could affect nesting birds or other species in areas that the Alternative 1 would not). Furthermore, additional impacts to 18 to 20 acres of existing wetlands would be either new or more severe relative to the impacts of Alternative 1.

i. Would the alternative be feasible for purposes of CEQA?

Alternative 9 Option 3 would not be feasible for purposes of CEQA because it would not be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors (CEQA Guidelines §15364). See the discussion in this Section 2.3.5 of screening criterion d) for details about costs; see the discussion of screening criterion g) for details about the new and more severe significant environmental impacts that would result for purposes of CEQA.

In summary, Alternative 9 Option 3 would be reasonable, would meet the purpose and need and overall project purpose; would be practicable to implement, operate, and maintain; and would be practicable to construct using existing technology. However, Alternative 9 Option 3 has not been carried forward for more detailed review because it would not meet most of the basic objectives of Alternative 1; would not be practicable in terms of cost for a tidal habitat restoration project; would not avoid or substantially lessen Alternative 1's significant impacts; and would be infeasible.

2.3.6 Alternative 10: Manipulated Wetlands Alternatives

Description

Alternatives that would enhance and create wetlands by the use of significant and ongoing management were recommended during scoping and considered during the alternatives screening process. Several scoping comments suggested alternatives that would require this type of management, including alternatives referred to as “process-oriented historical treatment,” “contiguous habitats,” etc. What these potential alternatives had in common was the need to continuously manage the way water moved through the wetlands.

Without removing the existing Ballona Creek levees or the many cubic feet of fill that have been deposited in the Ballona Reserve over the past decades, these potential alternatives would pump water from upstream, downstream, or groundwater into upland areas in order to create fresh and brackish wetlands and seasonal wetland habitats. These types of alternatives would manipulate gates and other water structures for the purposes of providing scour, sediment control, first-flush bypass, and seasonal closures.

One condition that many of these potential alternatives were attempting to create was a greater amount of freshwater and brackish marsh. Compared to the Ballona Reserve today and the habitats that would be restored in this EIS/EIR Alternatives 1 through 3, which are analyzed in detail, the historic Ballona Lagoon wetlands in the late 1800s included a larger area of freshwater, brackish, and tidally affected saltmarsh habitats that transitioned into a more alkaline/freshwater system approximately 1.5 miles inland from the coast (Dark et al. 2011). The mouth of Ballona Creek often was closed to the ocean by a sand berm along the beach, causing perching of water within the Ballona Lagoon (Jacobs et al. 2010). During wet weather periods when stream flow discharge was high enough to overflow and/or scour a channel to the ocean, the Ballona Creek mouth was open to the ocean (Jacobs et al. 2010) and likely experienced some degree of tidal influence until the sand berm reformed across the mouth, causing it to close.

In contrast to historic conditions, the Ballona Creek channel was designed to have a permanent opening between Ballona Creek and the ocean and, as a result, the historic water regime is no longer available to make large amounts of freshwater and brackish marsh self-sustaining. Many of the suggested alternatives therefore rely on mechanical means to create and maintain them. The suggested alternatives also include raising at least portions of roadways throughout the Ballona Reserve (e.g., Culver Boulevard and Jefferson Boulevard), allowing for more connections between wetlands and for animal movement under the roadways.

Screening

a. Is the alternative reasonable (i.e., not too remote, speculative, impractical, or ineffective)?

Alternative 10 would be reasonable because its implementation would not be remote, speculative, impractical, or ineffective.

b. Would the alternative meet the purpose and need and overall project purpose?

Alternative 10 would not meet the first of the two components of the purpose and need and overall project purpose because it would not increase tidal influence within the Ballona Reserve. Therefore, even though Alternative 10 could be implemented such that changes to the LACDA project components could maintain the authorized LACDA project levels of flood risk management, it would not meet the purpose and need and overall project purpose.

c. Would the alternative meet most of the basic objectives of Alternative 1?

CDFW has determined that the "most basic" project objectives for purposes of CEQA are the restoration, enhancement, and creation of estuarine and associated habitats; protection and avoidance of impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management and limiting the need for significant modification to regionally important infrastructure; and not adversely impacting the LACDA project. Alternative 10 would not meet these basic objectives because it would not maintain or improve flood protection and storm water management and would not limit the need for significant modification to regionally important infrastructure (i.e., Culver and Jefferson boulevards). CDFW has determined that this alternative's reliance on mechanical means to create and maintain the system introduces a level of risk associated with mechanical failure that is not present within the Ballona Reserve under existing conditions and that would not be required for Alternative 1, 2, or 3. A major goal of the Project is to create self-sustaining habitats. Because potential manipulated wetlands alternatives would depend on significant managed infrastructure to maintain the wetlands (e.g., pumps), operation and maintenance efforts and costs would be significantly greater than Alternatives 1 through 3. Pumps or other actively managed infrastructure would involve staff time and costs to operate, adjust, and maintain infrastructure on a frequent basis, whereas Alternatives 1 through 3 would not include pumps or other infrastructure that would require frequent operations and maintenance. In addition, construction and reconfiguration could be required during the life of the potential manipulated wetlands alternatives to accommodate sea level rise. In contrast, Alternatives 1 through 3 have been designed to account for sea level rise by allowing for wetland transgression into transition and upland habitat areas, without requiring additional construction. This is important not just from an ecological standpoint, but also because it allows the wetlands to survive even if limited funding is available to maintain them.

d. Would the alternative be practicable in terms of cost for a tidal habitat restoration project?

Because Alternative 10 involves raising portions of roadways within the Ballona Reserve (including Culver Boulevard and Jefferson Boulevard), the overall cost would not be practicable for a tidal habitat restoration project. As discussed in Section 2.3.3 in the context of screening criterion d), raising these two roadways onto a causeway would add between $143,000,000 and $200,000,000 to the cost of restoration, depending on the width of the proposed causeway. Details and assumptions considered in the conceptual cost analysis of raising Culver and Jefferson boulevards are provided in Appendix B10, Conceptual Cost Analysis to Raise Culver and Jefferson Boulevards. Further, because Alternative 10 would not remove the existing Ballona Creek levees or the many cubic feet of fill that have been deposited in the Ballona Reserve over the past decades, fewer restored acres would result than under Alternative 1, Alternative 2, or Alternative 3. By comparison, raising the roads under Alternative 1, 2, and 3 would result in the restoration of an additional approximately 7 acres. With the roads raised and restoration of the approximately 7 additional acres, Alternative 1 would cost between $1,564,197 and $1,837,841 per restored acre; Alternative 2 would cost between $1,849,391 and $2,215,715 per restored acre; and Alternative 3 would cost between $4,671,866 and $5,628,242 per restored acre. In Appendix B9, see Table 1f, *Calculation of Per-Acre Costs - Ballona Wetlands Restoration Project Alternatives With Raised Roads*, for details. For this road-raising-cost-related reason, the cost of Alternative 10 would not be practicable.

This analysis relies on the costs of raising the roadways alone to determine that the relative costs of an alternative that includes raising Culver and Jefferson boulevards would not be practicable in terms of cost for a tidal habitat restoration project. Nonetheless, it is noted that Alternative 10's need to operate and maintain managed infrastructure to maintain the wetlands (e.g., additional tide gates relative to existing conditions as well as the introduction of pumps into the system) would incrementally add to costs.

e. Would the alternative be practicable to implement, operate, and maintain (logistics)?

Alternative 10 would be practicable to implement, operate, and maintain. The mechanical means necessary to manage and move water through the wetlands would include the pumping of water from upstream, downstream, or groundwater into upland areas to create fresh and brackish wetlands and seasonal wetland habitats. The manipulation of gates and other water control structures also would be needed to provide scour, sediment control, first-flush bypass, and seasonal closures. All of this would be practicable to implement, operate, and maintain.

f. Would the alternative be practicable to construct using existing technology?

Alternative 10 would be practicable to construct using existing technology because only common types of equipment and mechanics would be required.

g. Would the alternative be more environmentally damaging than Alternative 1?

Because Alternative 10 has not been carried forward on the basis of cost, environmental impacts have not been quantified.

h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?

As discussed in screening criteria c), d), h), and i) of Section 2.3.3, Alternative 10 would not avoid or substantially lessen significant environmental effects relative to Alternative 1.

i. Would the alternative be feasible under CEQA?

Alternative 10 would not be feasible for purposes of CEQA because it would not be capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, and social factors (CEQA Guidelines §15364). See the discussions of screening criteria c), d), g), and h) in Section 2.3.3 for details about costs and the new and more severe significant environmental impacts that would result from a road-raising alternative that would not result from Alternative 1. Regarding legal and social factors, CDFW notes that South and Southeast Area B provide flood storage for runoff and overflow from the 26-acre Freshwater Marsh, which was constructed as mitigation for the Playa Vista development and which serves water quality and flood control functions for the surrounding community by mitigating the impacts of urban runoff and stormwater (Neighborhood Council of Westchester/Playa 2017; U.S. EPA 2012). Restoring an open connection between this area and Ballona Creek as would occur under Alternative 10 would preclude these mitigation functions, resulting in a violation of legally enforceable obligations associated with the Playa Vista development. For these reasons, Alternative 10 has been determined to be infeasible for purposes of CEQA.

In summary, Alternative 10 would be reasonable; would be practicable to implement, operate, and maintain; and would be practicable to construct using existing technology. However, Alternative 10 has not been carried forward for more detailed review because it would not meet the purpose and need and overall project purpose; would not meet most of the basic objectives of Alternative 1, would not be practicable in terms of cost for a tidal habitat restoration project;, would not avoid or substantially lessen Alternative 1's significant impacts; and would be infeasible.

2.3.7 Alternative 11: 19th Century Wetlands

Description

During public scoping, an alternative was suggested that would design the wetlands to replicate the conditions present between approximately the 1820s and 1930s. These conditions are documented in the Ballona Creek Watershed Historical Ecology Project (Dark et. al 2011), which was completed in January 2011, and the final report from this study provides information about the configuration of the historic Ballona Wetlands and its surrounding watershed in the period of 1850-1890, after the Los Angeles River had migrated its outlet away from Ballona Wetlands but before extensive human development had occurred.

Prior to 1825, the Los Angeles River flowed through the Ballona watershed and into the Ballona Lagoon (Dark et al. 2011). Following a period of several years of heavy rains and a series of earthquakes, the Los Angeles River outlet moved to its current location near San Pedro. The migration of the Los Angeles River had a significant impact on the form and function of the historic Ballona Wetlands.

After the Los Angeles River moved to the south, Ballona Wetlands became a coastal bar built estuary system with extensive tidally affected saltmarsh and brackish habitats that transitioned into a more alkaline/freshwater system 1.5 miles inland from the coast. Without the inflow from the Los Angeles River, the wetlands were often closed to the ocean by a sand berm along the beach, causing perching of water within the lagoon wetlands (Jacobs et al. 2010). During wet weather periods when Ballona Creek stream flow discharge was high enough to overflow and/or scour a channel to the ocean, the Ballona Creek mouth was open to the ocean (Jacobs et al. 2010) and likely experienced some degree of tidal influence until the sand berm reformed across the mouth, causing it to close.

To return conditions to a seasonally closed lagoon would require modification of hydrological conditions within the Ballona Reserve and the larger Ballona Creek watershed, including removal of the Ballona Creek Flood Control Channel and the Marina del Rey harbor, to cut new channels from Fisherman's Village and Del Rey Lagoon, and to alter the highly modified nature of the watershed that supports the Ballona Reserve today. Returning conditions within the Ballona Reserve to those of 200 years ago would require similar amounts of earthwork within the Ballona Reserve as needed for Alternative 1 and substantial additional earthwork outside the Ballona Reserve to connect the Ballona Creek Channel to the ocean.

Screening

a. Is the alternative reasonable (i.e., not too remote, speculative, impractical, or ineffective)?

Restoring Ballona Creek to a seasonally closed lagoon (as would occur under Alternative 11) is not reasonable. The hydrological conditions of the Ballona Reserve and the Ballona Creek watershed are very different today than those present in the late 19th century, especially due to the construction and maintenance of the Ballona Creek Flood Control Channel, Marina del Rey harbor, and the highly modified nature of the watershed supporting the Ballona Reserve today. Returning to the conditions of 200 years ago would require similar amounts of earthwork needed for Alternative 1, the impacts of which are analyzed in detail in Chapter 3. Simply cutting new channels from Fisherman's Village and Del Rey Lagoon would not be sufficient for improving tidal circulation because of the millions of cubic yards of dirt that has been dumped on the Ballona Reserve. Also, such channels would require the acquisition of occupied property and displacement of existing land uses. For these reasons, Alternative 11 has been determined to be remote, speculative, impractical, and ineffective.

b. Would the alternative meet the purpose and need and overall project purpose?

Alternative 11 would not meet the first component of the purpose and need and overall project purpose because it would restore ecological functions and services at the Ballona Reserve by increasing tidal influence only seasonally. While Alternative 11 could be implemented so as to ensure that changes to the LACDA project components within the Ballona Reserve would maintain the authorized LACDA project levels of flood risk management, the alternative would have to meet both components of the overall project purpose to be carried forward for detailed review.

c. Would the alternative meet most of the basic objectives of Alternative 1?

CDFW has determined that the "most basic" project objectives for purposes of CEQA are the restoration, enhancement, and creation of estuarine and associated habitats; protection and avoidance of impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management and limiting the need for significant modification to regionally important infrastructure; and not adversely impacting the LACDA project. This potential alternative would not meet these basic objectives because it would not protect and avoid impacts to existing and planned roadways, utilities, and adjacent properties between the Ballona Reserve and the ocean, and would not limit the need for significant modification to regionally important infrastructure.

d. Would the alternative be practicable in terms of cost for a tidal habitat restoration project?

The cost of Alternative 11 would not be practicable for a tidal habitat restoration project primarily because it would necessitate the acquisition of occupied property and displacement of existing land uses in the Fisherman's Village and Del Rey Lagoon areas. Queries of all available properties in Marina del Rey and Playa del Rey conducted January 19, 2017 and June 14, 2017 identified five properties sufficiently close enough to the area that would be needed to implement Alternative 11 to provide meaningful data. The price per square foot for these properties ranged from $37 per square foot for a multi-family property in Playa del Rey to $1,593 per square foot for a low-rise in Marina del Rey. The price per square foot averaged $681 across the five properties. In Appendix B9, see Table 1f, Land Acquisition Costs, for details. Calculating the area within polygon drawn in Google Earth, the area of the existing Ballona Creek Channel between the southwestern edge of the Ballona Reserve and the ocean is approximately 13.91 acres. Assuming that roughly the same area would be required for the new channels and acknowledging that there are 43,560 square feet in an acre, the cost to acquire the necessary real estate would be approximately $412,749,683. Considering that the total cost of restoration under Alternative 1 is only $182,822,316, the additional costs associated with land acquisition would be wholly out of scale for a tidal habitat restoration project.

The analysis relies exclusively on the costs of acquiring the necessary real estate to implement Alternative 11 to determine that the alternative would not be practicable in terms of cost for a tidal habitat restoration project. Nonetheless, it is noted that the demolition of existing structures, displacement and relocation of residents and businesses, and engineering and construction of the new channels would add costs that are not considered in this analysis.

e. Would the alternative be practicable to implement, operate, and maintain (logistics)?

Alternative 11 would be practicable to implement, operate, and maintain from a logistics perspective.

f. Would the alternative be practicable to construct using existing technology?

Alternative 11 would be practicable to construct because existing technologies readily could accomplish the earthwork, channel cutting, and other activities that would be required.

g. Would the alternative be more environmentally damaging than Alternative 1?

Alternative 11 would be more environmentally damaging than Alternative 1 because the demolition work necessary to remove structures from newly-acquired occupied properties would generate greater construction emissions, traffic on local roadways, and demand on landfill capacity, and would have the potential to require disposal of hazardous building materials and to result in the generate of noise and emissions closer to residences and other sensitive receptors. The construction of new channels would create surface disturbance in areas that are potentially sensitive from a cultural resources perspective and would permanently alter the local transportation network. Existing hydrology in the relevant area would be greatly affected relative to existing conditions.

h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?

Alternative 11 would not avoid or substantially lessen any of Alternative 1's significant impacts and instead would cause new significant or more significant impacts than would result from Alternative 1. As discussed immediately above in the discussion of criterion g), necessary demolition work would generate substantial air and GHG emissions, traffic on local roadways, and demand on landfill capacity; could require disposal of hazardous building materials depending on the structures to be demolished; and would result in the generation of noise and emissions closer to residences and other sensitive receptors. The construction of new channels would create surface disturbance in areas that are potentially sensitive from a cultural resources perspective, would permanently alter the local transportation network, and substantially alter existing hydrology in the relevant area.

i. Would the alternative be feasible for purposes of CEQA?

Restoring Ballona Creek to a seasonally closed lagoon system is not feasible because the Ballona Creek channel is designed to have a permanent opening between Ballona Creek and the ocean. Furthermore, the Marina del Rey boat harbor is designed and maintained for navigation, with a jetty and breakwater system and maintenance dredging program at the harbor entrances. In conjunction with the Ballona Creek channel and jetty system, the harbor entrance configuration and maintenance dredging prevent longshore coastal sand transport from closing the mouth of Ballona Creek. For these reasons, creating a closed system at Ballona would conflict with existing flood risk management and corresponding public safety needs, as well as existing navigational needs.

In summary, Alternative 11 would be practicable to implement, operate, and maintain; and would be practicable to construct using existing technology. However, Alternative 11 has not been carried forward for more detailed review because it would not be reasonable; would not meet the purpose and need and overall project purpose; would not meet most of the basic objectives of Alternative 1; would not be practicable in terms of cost for a tidal habitat restoration project; would be more environmentally damaging than Alternative 1; would not to avoid or substantially lessen significant impacts of Alternative 1; and would not be feasible.

2.3.8 Alternative 12: Acquisition Rather Than Restoration

Description

During public scoping several comments suggested that the Project should focus on acquisition of additional land to increase the size of the Ballona Reserve, rather than restoring the existing sites. The areas suggested for acquisition included the following:

1. Properties adjacent to Del Rey Lagoon.
2. Railway right-of-way at the western end of the Marina Freeway (currently owned by an auto dealership).
3. The land between the eastbound and westbound lanes of the Marina Freeway, including the existing retail nursery adjacent to Mindanao Way.

4. The land currently used for the Marina Freeway (dismantling the freeway)

Screening

a. Is the alternative reasonable (i.e., not too remote, speculative, impractical, or ineffective)?

Alternative 12 is not reasonable because the purchase of additional lands would be ineffective in restoring the existing Ballona Wetlands Ecological Reserve.

b. Would the alternative meet the purpose and need and overall project purpose?

Alternative 12 does not meet the purpose and need and overall project purpose because acquiring additional lands would not restore ecological functions and services at the Ballona Reserve and would not ensure any changes to the LACDA project components within the Ballona Reserve would maintain the authorized LACDA project levels of flood risk management.

c. Would the alternative meet most of the basic objectives of Alternative 1?

CDFW has determined that the "most basic" project objectives for purposes of CEQA are the restoration, enhancement, and creation of estuarine and associated habitats; protection and avoidance of impacts to existing and planned roadways, utilities, adjacent properties and uses by maintaining or improving flood protection and storm water management and limiting the need for significant modification to regionally important infrastructure; and not adversely impacting the LACDA project. This potential alternative would not meet these basic objectives because the mere acquisition of land is not sufficient to restore, enhance, or create habitat. In addition, many of the lands suggested for acquisition do not have any hydrological connection at this time to the Ballona Reserve and they are separated by roadways, neighborhoods, and other infrastructure. Therefore, adding them to the Reserve would not avoid impacts to existing roadways or adjacent properties and uses. Instead, it would require significant modification to regionally important infrastructure.

d. Would the alternative be practicable in terms of cost for a tidal habitat restoration project?

As shown in Appendix B9's Table 1f, Land Acquisition Costs, the average price per square foot of the properties near Del Rey Lagoon that were available for sale as of June 2017 (i.e., the properties in Playa del Rey) was approximately $453. See Section 2.3.7 with respect to criteria d) for more information. The properties between Del Rey Lagoon and the Ballona Reserve consist of a total of approximately 12 acres. Acknowledging that there are 43,560 square feet in an acre, the cost to acquire the necessary real estate would be approximately $236,880,485. The land between the eastbound and westbound lanes of the Marina Freeway, including the existing retail nursery adjacent to Mindanao Way, consists of approximately 14 acres; acquisition costs would be approximately $276,360, 565. Considering that the total cost of restoration under Alternative 1 is only $182,822,316, the additional costs associated with land acquisition based on these two examples would be wholly out of scale for a tidal habitat restoration project. Section 2.3.7 subsection c). This alternative is considered impracticable in terms of cost for a tidal habitat restoration project.

e. Would the alternative be practicable to implement, operate, and maintain (logistics)?

It would be practicable to purchase the suggested lands and thereafter to operate and maintain them as open space.

f. Would the alternative be practicable to construct using existing technology?

It would be practicable to purchase the suggested lands, which would not require any new technology; therefore, Alternative 12 would be practicable in terms of existing technology.

g. Would the alternative be more environmentally damaging than Alternative 1?

Purchasing the suggested lands would not be more environmentally damaging than Alternative 1; however, it also would not result in any of the restoration or other benefits of the Project.

h. Would the alternative avoid or substantially lessen any of Alternative 1's significant impacts?

Purchasing the suggested lands would avoid or substantially lessen Alternative 1's significant impacts because none of the significant impacts of Alternative 1 would result; however, Alternative 12 would not result in any of the restoration or other benefits of the Project.

i. Would the alternative be feasible for purposes of CEQA?

Alternative 12 would not be feasible for purposes of CEQA because purchasing the suggested properties could not be accomplished in a successful manner within a reasonable period of time taking into account economic, environmental, legal, social, and technological factors (CEQA Guidelines §15364). It is too speculative to know if any landowners would be willing to sell, and state law prohibits the acquisition of land for an ecological reserve through eminent domain (Pub. Res. Code §1582). Moreover, as discussed in criteria b) and c), the mere acquisition of land would not restore ecological functions. And as discussed in criteria d), even if CDFW were to find willing sellers, the cost to acquire the land would be wholly out of scale for a tidal habitat restoration project.

In summary, Alternative 12 would be practicable to implement, operate, and maintain; would be practicable to construct using existing technology; would not be more environmentally damaging than Alternative 1; and would avoid or substantially lessen significant impacts of Alternative 1. However, Alternative 12 has not been carried forward for more detailed review because it would not be reasonable; would not meet the purpose and need and overall project purpose; would not meet most of the basic objectives of Alternative 1; would not be practicable in terms of cost for a tidal habitat restoration project; and is not feasible for purposes of CEQA.

2.3.9 Off-site Alternatives

NEPA, Section 404(b)(1) Guidelines, and CEQA all contemplate situations where the consideration of potential alternatives include one or more offsite options; however, each also recognizes that some actions may be so site-specific as to not require consideration of an off-site option (Corps 2014; *Jones v. Regents of University of California* (2010) 183 Cal. App. 4th 818).

2.3.10 Suggestions Not Included in Alternatives

Some public scoping comments suggested additional items to be included in the Project alternatives. For purposes of CEQA, an EIR need not consider alternatives to components of a project and instead should focus on alternatives to the project as a whole. *California Native Plant Society v. City of Santa Cruz* (2009) 177 Cal. App. 4th 957, 993. For this and the other reasons explained below, these were not included.

2.3.10.1 Removing Parking Area in Area B

Some comments suggested removing the West Culver Parking Lot at the southwestern corner of Area B and returning it to natural habitat. This was not considered because the existing parking lot serves an ongoing need for parking by visitors to the Ballona Reserve and one of the objectives is to increase public access and compatible recreation through development of appropriate facilities.

2.3.10.2 Changes to Roadways in the Ballona Reserve

Several commenters requested changes to the existing roadways in the Ballona Reserve, including Culver Boulevard, Jefferson Boulevard, and Lincoln Boulevard. Early in the alternatives screening process, major changes were studied for these streets, including horizontal and vertical realignment (PWA et al., 2008). However, as discussed in Section 2.3.3, the cost of such major infrastructure improvements and the limited amount of improvement to the wetlands made such major reconstruction infeasible.

Making significant changes to the traffic patterns on Culver Boulevard, such as eliminating lanes, was also suggested by some commenters. However, any reduction of vehicular lanes for Culver Boulevard would result in significant impacts to traffic, and secondary impacts to air quality and greenhouse gases. Culver Boulevard is a major commute route and a tsunami evacuation route and reducing lanes or eliminating Culver Boulevard therefore would be expected to have potential significant and unavoidable impacts to traffic and emergency services. Removal of street lighting, as suggested by a few comments, would not be appropriate because it is necessary for the safe operation of the local roadways.

2.3.10.3 Creating an Upstream Treatment Wetland

Some public scoping comments suggested acquiring land upstream of the Ballona Reserve and constructing a treatment wetland to clean up the water in Ballona Creek before it enters the site. The Bay Foundation, the Santa Monica Bay Restoration Commission, and their partners already have multiple programs aimed at improving water quality through the Ballona Creek Watershed, based on the Ballona Creek Watershed Hydrology Study. See, for example, the Culver City Rain Garden, which treats 22 acres of commercial and residential stormwater runoff before it enters Ballona Creek (The Bay Foundation 2015, 2012) and the Enhanced Watershed Management Program (EWMP), which is designed to reduce urban runoff and pollutant loading to the creek (City of LA et. al 2015). Further, ongoing and continued implementation of the total maximum daily load (TMDL) program will further enhance water quality within Ballona Creek (see, e.g., SWRCB 2015). These programs would continue with or without the Project.

2.3.10.4 Limiting Parking to Control Access

Controlling access to Ballona Reserve by limiting the amount of parking provided, as suggested by a few comments, is contrary to the goal of the Project to enhance public access and would likely result in illegal parking by those wanting access. Therefore, this is not proposed in any of the Project alternatives.

2.3.10.5 Nesting Platforms, Rookeries, Trees, and Reintroduction of Wildlife

Some public scoping comments suggested the inclusion of nesting platforms for bald eagles and ospreys, establishment of heron rookeries, and reintroduction of some species such as roadrunner, pocket mouse, and California quail. The plants that would be introduced and encouraged under Draft EIS/EIR Alternatives 1 through 3, which are analyzed in detail, are ones that would be most appropriate for the mix of habitats proposed. Large trees are not proposed, so it is unlikely that bald eagles would nest on the site, although they would likely be occasional visitors, especially in winter. Establishing a rookery would require a density of trees that would not be compatible with the wetlands habitats being proposed. Alternatives 1, 2, and 3 (as described in Section 2.2, *Description of Alternatives Evaluated in Detail*, do not propose to reintroduce wildlife species that are not currently present, but would provide appropriate habitat for natural recolonization and would not preclude CDFW from reintroducing species in the future as part of a separate endeavor. Some species that were suggested for reintroduction are not typical inhabitants of coastal wetlands and would not be expected to inhabit the site.

Osprey nesting platforms would meet the overall project purpose and would be logistically feasible to include; they would not add unreasonable cost[34] or result in additional significant adverse environmental impacts relative to the proposal described in permit applications (i.e., Alternative 1). Plans for constructing osprey nest platforms are readily available (see, e.g., Ospery Watch, 2016; The International Osprey Foundation 2011; New Jersey Division of Fish and Wildlife [undated]). The inclusion of one or more osprey nesting platforms in the Project under Alternative 1, 2, or 3, therefore, is both possible and recommended although no potential significant adverse impact has been identified in Section 3.4, Biological Resources, that would support a requirement that they be included. See also, Martin and Michell 1986 (U.S. Army Corps of Engineers Technical Report EL-86-21, regarding osprey nest platforms).

Adding more trees for the sequestration of carbon dioxide was also suggested in comments. As discussed above, large trees are not proposed for the site, but healthy wetlands vegetation as well as wetland soils would also act as a carbon sink and, thereby, would aid in the reduction of greenhouse gases.

[34] Citizens United estimated in 2007 that osprey platforms would cost approximately $110 apiece (Citizens United 2007).

2.3.10.6 Other Off-site Improvements

Several public scoping comments suggested improvements outside of the Project site, including providing bike paths along the Marina Freeway; providing bike paths connecting to Loyola Marymount University, Venice, and other locations; and incorporating improvements to adjacent water bodies such as Marina del Rey harbor, Oxford Lagoon, Del Rey Lagoon, the Venice canals, and the Santa Monica Bay. These improvements are outside the scope of the Project, but the Project would not prevent such improvements by others. Note that a spur bike path within the Reserve has been planned to connect to the neighboring Playa Vista community. The final connection would have to be made by the neighboring property owner.

A walking trail was suggested along Cabora Drive, which is outside the Project site on land not owned by CDFW. Nothing in the proposed alternatives would prevent others from constructing such a trail.

Viewing platforms were suggested for sites outside the Ballona Reserve. Such platforms are outside the Project site, but nothing in the proposed alternatives would prevent others from constructing them.

Collaborative parking arrangements with off-site businesses and residential communities were suggested. The parking necessary for the Project alternatives would be provided on site without the need for additional off-site parking.

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2.4.2 Personal Communications

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CHAPTER 3
Environmental Consequences

3.1 Introduction

This chapter assesses environmental consequences or impacts that would result from the implementation of each of the alternatives described in Chapter 2, *Description of Alternatives*, including socioeconomic and environmental justice conditions. For each resource area evaluated, Chapter 3 includes a description of the regional and local environmental setting; summary of the applicable laws, regulations, plans, and standards; identification of relevant thresholds of significance; summary of the analytical methodology used to evaluate Project-related changes on the existing environment; an evaluation of the environmental consequences (direct, indirect and cumulative, whether adverse or beneficial) of the alternatives; identification of mitigation measures proposed to address specified effects; summary of the impacts that would remain after mitigation measures are incorporated; and full citations to the references relied upon in the analysis. The analysis documents an integrated evaluation of impacts for purposes of NEPA and CEQA. In doing so, it considers the impacts of short-term uses, such as restoration-related truck traffic, as well as the impacts that could occur over the longer-term post-restoration period or that could persist after initial occurrence, such as impacts related to increased visitor presence within the Ballona Reserve or destruction of irretrievable or irreplaceable resources.

3.1.1 Impact Terminology

This is a joint EIS/EIR, prepared under the direction of the Corps as the Federal lead agency and the CDFW as the state lead agency. Both agencies have obligations to disclose the environmental consequences of their decisions.

Under NEPA and CEQA, the terms “effects” and “impacts” may be used synonymously (40 C.F.R. §1508.8; CEQA Guidelines §15358). However, this EIS/EIR strives to make a distinction between adverse impacts and beneficial effects that would result from implementation of the proposed restoration work. Here, positive environmental change is the stated purpose that underlies the objectives of the proposed restoration.

NEPA and CEQA both require consideration of direct and indirect impacts/effects. Under CEQA, direct impacts are those caused by the project itself, and that occur at the same time and place; indirect impacts are those caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable (CEQA Guidelines §15358). Under NEPA, the Corps’ impact terminology application is slightly different. For example, the Corps’ Standard Operating Procedures, a national policy guidance document, defines “direct impacts” as “those that happen in direct response to the permitted activity” while "indirect impacts . . . are those removed in time and/or distance in relation to the permitted activity (U. S. Army Corps of Engineers, Standard Operating Procedures for the Regulatory Program (July 1, 2009), p. 17.) For example, under the Corps' procedures, the direct impact of construction of a dam is the loss of habitat within the dam footprint, while indirect impacts of dam construction include potential inundation of the area behind the dam. (Corps' Standard Operating Procedures, p. 17.) To satisfy both the Corps' and CDFW's informational and analytical needs in one document, this EIS/EIR utilizes the following format in analyzing the potentially significant impacts resulting from each of the alternatives analyzed in detail:

(a) **Direct Impacts.** The analysis of direct impacts focuses on the temporary and permanent impacts resulting from implementation of the Project and alternatives in the Project area. This analysis reflects the Corps' jurisdictional limitations required by the Corps' procedures.

(b) **Indirect/Secondary Impacts.** The analysis of indirect/secondary impacts from implementation of the Proposed Action and alternatives focuses on those reasonably foreseeable impacts that are caused by the Proposed Action or alternatives and are later in time or farther removed in distance.

3.1.2 Other Terminology

Chapter 3.0 utilizes other terminology to describe environmental consequences of the alternatives analyzed. This other terminology is described below:

(a) **Cumulative Impacts.** NEPA regulations define "cumulative impact" as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency ([f]ederal or non-[f]ederal) or person undertakes such other actions." (40 C.F.R. §1508.7). NEPA states, "[c]umulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 C.F.R. §1508.7). Under CEQA, "cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." (CEQA Guidelines §15355). CEQA requires that cumulative impacts be discussed when the "project's incremental effect is cumulatively considerable." (CEQA Guidelines §15130(a)). In this EIS/EIR, the analysis of cumulative impacts resulting from all of the alternatives analyzed in detail is included in this Chapter 3.

(b) **Impact Significance Criteria.** In the resource-specific sections of this Chapter 3, each environmental issue area lists the significance criteria used by the Corps and CDFW to determine at what level an impact would be considered significant. The significance criteria generally are derived from Appendix G of the CEQA Guidelines. The Corps is using the CEQA significance criteria for purposes of this joint EIS/EIR, supplemented as and where noted in the analysis by the application of additional federal requirements. One or more of the environmental issue areas also utilizes other impact significance criteria, in addition to those in Appendix G, based on factual or scientific information, or criteria based on regulatory standards. In the case of greenhouse gas analysis, the Corps does not adopt the CEQA thresholds and instead discloses the impacts. In the case of socioeconomics/environmental justice, the Corps adopts its own significance criteria for its NEPA analysis.

(c) **Significant Impact.** A project impact is considered significant if it would result in a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance (CEQA Guidelines §15382). In this context, a "substantial" change is one that results in an exceedance of an established significance threshold. Impact significance criteria (defined above) are identified and the significance of potential impacts of all of the alternatives is evaluated in the context of the identified significance criteria.

(d) **Less-Than-Significant Impact.** A potential impact is considered less-than-significant when it does not exceed or reach the threshold established in the relevant significance criteria; and, therefore, would not cause a substantial adverse change in the physical environment. As a result, no mitigation is required or necessary (Pub. Res. Code §§21100(b)(3), 21150).

(e) **No Impact**: A designation of no impact is given when no adverse changes to the environment are expected.

(f) **Mitigation Measures.** Mitigation measures must be feasible, practical, reasonable, and roughly proportional to the impacts of a proposed project or the alternative that would cause them. The mitigation also must avoid, minimize, rectify and/or restore, or reduce identified potential significant impacts to the physical environment.

(g) **Significant Unavoidable Impact.** A potential impact is considered significant and unavoidable if it would result in a substantial adverse change in the physical environment that cannot be feasibly/reasonably avoided or mitigated to a less-than-significant level if the selected alternative is approved and implemented. Under CEQA, a state or local agency may approve a project even though it would cause a significant unavoidable effect on the environment if it states in writing the specific reasons why the expected economic, legal, social, technological, or other benefits of the project outweigh the policy of reducing or avoiding significant environmental impacts of the project (CEQA Guidelines §§15043, 15093). The written statement is called a "Statement of Overriding Considerations." NEPA has no similar "overriding considerations" requirement.

(h) **Residual Impact**: This is the level of impact that would remain after the implementation of recommended mitigation measures.

3.1.3 Resources and Uses Not Affected or Present in the Project Area

Resources that are not present on the Project site or there is no potential for the resource to be significantly affected include: Agriculture and Forestry Resources, Land Use and Planning, Mineral Resources, Population and Housing, and Public Services. Accordingly, based on the CEQA Guidelines Appendix G thresholds and as analyzed below, there is no potential for these resources to be significantly affected by implementing any of the alternatives, and none of the alternatives would cause or contribute to any cumulative effects on these resources.

State agencies acting in their sovereign capacity are not subject to local regulations unless the California Constitution says they are, or the Legislature has consented to such regulation, or the implementation and enforcement authority for the local regulation is delegated from state law (e.g., local coastal plans, which are implemented and enforced by local governments by virtue of authority delegated by the California Coastal Commission under the Coastal Act[35]). Local coastal plans are discussed in Section 3.1.3.1, *Land Use and Planning*. Local regulations otherwise are considered in this EIS/EIR only because this analysis contemplates actions by SoCalGas outside of state property and otherwise for informational purposes. Area A (including the land where the parking garage is proposed) is within the municipal boundary of County of Los Angeles and Area B, Area C, and the seven SoCalGas well relocation sites are within the municipal boundary of the City of Los Angeles.

3.1.3.1 Land Use and Planning

There are no established communities on the Project site, and surrounding residential developments do not depend on the site for access to other neighborhoods or uses, such that a change in use on the site would cut off access to or from an established community. There have been numerous homeless encampments within the Ballona Reserve; however, these are illegal uses of the property and are subject to ongoing removal efforts by CDFW independent of the Project. Therefore, there would be no impact (direct, indirect, or cumulative) related to dividing established communities as a result of any of the alternatives; therefore, criterion a) in CEQA Guidelines Appendix G Section X is not evaluated further in this document.

None of the alternatives would conflict with an applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect, such as a policy to preserve open space. All of the Project site, except the SoCalGas Property, is a CDFW-designated State Ecological Reserve under California Fish and Game Code Sections 1580-1587, the purpose of which is to provide protection for rare, threatened, or endangered native plants, wildlife, aquatic organisms, and specialized terrestrial or aquatic habitat types. The Ballona Reserve would continue to be managed as an Ecological Reserve under any of the Project alternatives. Potential natural gas storage well relocation to the SoCalGas Property would entail no change of use of the SoCalGas Property, and no conflict with local land use or planning requirements.

The Los Angeles County General Plan covers Area A. In its Conservation and Natural Resources Element, Policies 3.6, 3.8, and 3.9 call for preserving significant ecological areas (Area A is a significant ecological area), protecting the sensitive resources within open space, and preserving biologically valuable habitats, species, wildlife corridors and linkages (Los Angeles County, 2015). Each of the alternatives would be consistent with Policies 3.6, 3.8, and 3.9.

Area B and the SoCalGas Property are located within the planning area of the Westchester-Playa Del Rey Community Plan, which is part of the City of Los Angeles's General Plan. Both Area B and the SoCalGas Property are designated as open space in the Community Plan, and the plan

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[35] When the state is conducting a sovereign activity, it is immune from local zoning and building regulations, unless the state legislature has consented to such regulation. *Hall v. City of Taft* (1956) 47 Cal.2d 177, 183. The legislature has not adopted a statute that waives the state's sovereign immunity and thereby subjects its management of ecological reserves to local planning and zoning requirements.

further indicates that the Ballona Wetlands "is a significant Open Space area that serves as an educational resource in its natural state. Use of the area should be administered in a manner that is supportive of the resources" (City of Los Angeles 2004). Policies 5-1.1 through 5-1.7 summarize the land use policies of the City of Los Angeles for open space within the Westchester-Playa Del Rey planning area. Each of the alternatives would be consistent with these policies, which focus on preserving, enhancing, and creating open space and specifically calls for the preservation and restoration of the Ballona Reserve for the enjoyment of the public. Because Area B is within the portion of the Westchester-Playa Del Rey Community Plan that is within the Coastal Zone, this area also is covered by the Playa Vista Area B Specific Plan, which along with applicable land use policies in the Community Plan constitutes the Local Coastal Program for Playa Vista Area B (City of Los Angeles 2003a). Each of the alternatives would be consistent with the provisions of the Playa Vista Area B Specific Plan.

Area C is within the Palms-Mar Vista-Del Rey Community Plan and contains open space, multi-family residential, and commercial land use designations (City of Los Angeles 1997, 2007). Policies 5-1.1 and 5-1.2 encourage the retention of passive and visual open space and encourage efforts by Federal, state, and county agencies to acquire vacant land for publicly owned open space. Each of the alternatives would be consistent with these policies. Area C also is covered by the Playa Vista Area C Specific Plan, which along with applicable land use policies in the Palms-Mar Vista-Del Rey Community Plan constitutes the Local Coastal Program for Playa Vista Area C (City of Los Angeles 2003b). Each of the alternatives would be consistent with the provisions of the Playa Vista Area C Specific Plan.

There would be no impact related to a conflict with applicable land use plans, policies, or regulations that have been adopted for the purpose of avoiding or mitigating an adverse environmental effect. The purpose of the Project is to protect and/or enhance the environmental values of the Project site (see Section 1.3, *Purpose and Need/Project Objectives*). The Project (under any of the alternatives) would not conflict with local land use policies for the reasons described above or with California Fish and Game Code Sections 1580-1587. Therefore, criterion b) in CEQA Guidelines Appendix G Section X is not discussed further in this document.

Finally, the Project site is not subject to an adopted Habitat Conservation Plan or Natural Community Conservation Plan (see Section 5.3, *Biological Resources*). Therefore, none of the alternatives would conflict with such a plan, and no impact would occur. Accordingly, criterion c) in CEQA Guidelines Appendix G Section X is not discussed further in this document.

3.1.3.2 Agriculture and Forestry Resources

Maps produced by the California Department of Conservation, Division of Land Resource Protection (DLRP) for farmland in Los Angeles County (including incorporated cities within the County) show that there is no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) within the highly urbanized areas surrounding the Project site (DLRP 2015). In addition, none of the land within the Project area is subject to a Williamson Act contract (DLRP 2013).

Agricultural activities occurred in Area B, east of the Gas Company road, from the 1930's up to 1985, and also in Area C, which was entirely in agricultural production by 1933. However, no agricultural production has occurred anywhere within the Project site within the last 10 years (USEPA 2012). Further, zoning maps for the City of Los Angeles (City of Los Angeles 2015a, 2015b) show that the portions of the Project site within the City of Los Angeles, including Areas B and C and the SoCalGas Property, contain no land zoned for agricultural use, forest land (as defined in Pub. Res. Code §12220(g)), timberland (as defined in Pub. Res. Code §4526), or timberland zoned Timberland Production (as defined in Gov't Code §51104(g)).

The portion of the Project site within Los Angeles County (Area A) is zoned A-1-1, Light Agricultural (Los Angeles County 2015). However, this area is within a designated state Ecological Reserve where agricultural production is not an allowed use (14 Cal. Code Regs. §630).

Therefore, none of the alternatives would have an impact on agriculture and forestry resources, and none of the alternatives could cause or contribute to any cumulative effects on such resources. Accordingly, the significance criteria listed in CEQA Guidelines Appendix G Section II, in addition to prime or unique farmlands as recommended by CEQ guidance (1980), are not discussed further in this document.

3.1.3.3 Mineral Resources

The Project site historically has been used for oil and gas extraction, with oil derricks and other extraction-related infrastructure installed in the wetland area between the 1920s and 1950s (USEPA 2012). However, the oil field has been depleted for several decades, and now is used for natural gas storage, including monitoring wells and associated pipelines. Although existing SoCalGas wells and associated pipelines eventually would be abandoned and/or relocated under all alternatives (including Alternative 4, *No Federal Action/No Project*), none of the alternatives would result in or necessitate a change in the current underground natural gas storage use of the depleted oil field since the same underground storage capabilities would exist before and after storage well relocation. Further, above ground impacts related to abandonment or relocation of existing gas storage wells and associated pipelines are evaluated in this EIS/EIR.

Both the Westchester-Playa Del Rey Community Plan and the Los Angeles County General Plan Conservation and Natural Resources Element do not identify any locally important mineral resource recovery site within or near the Project site (City of Los Angeles 2004, Los Angeles County 2015). The Project site is not located within an area of significant mineral deposits (mineral resource zone 2 or MRZ-2) as classified by the State Mining and Geology Board (Los Angeles County, 2012), nor are there active mines within or near the Project site (USGS, 2003; Los Angeles County, 2014b, Table 5.11-4).

Because none of the alternatives would change the current storage capacity of the existing oil field and because the site is not located within a state- or locally designated mineral resource area, none of the alternatives would result in the loss of availability of a known mineral resource, and none would result in the loss of locally important mineral resource recovery site. The Project would have no impact related to mineral resources, and could not cause or contribute to any potential cumulative impact to such resources. Accordingly, significance criteria listed in CEQA Guidelines Appendix G Section XI are not discussed further in this document.

3.1.3.4 Population and Housing

A project can induce population growth in an area directly, such as by proposing new homes or businesses, or indirectly, such as through the extension of roads or other infrastructure. Up to 122 workers would be temporarily employed during Project-related restoration and construction activities. It is expected that these jobs would be filled from the local labor force and would not cause people to move to the local area seeking employment. Therefore, restoration of the Ballona Reserve would not induce substantial population or employment growth. Additionally, none of the alternatives propose to construct housing or extend infrastructure, such as new roads or utilities that would support the future construction of housing.

No new long-term employment opportunities would be created, and no new homes or businesses and no extensions of existing roads or other infrastructure would occur under any of the alternatives. Therefore, none of the alternatives would induce population growth. No direct or indirect impact would result from any of the alternatives, and none of them could cause or contribute to any potential cumulative impact related to population growth. Accordingly, criterion a) in CEQA Guidelines Appendix G Section XIII is not discussed further in this document.

None of the alternatives would displace existing housing or substantial numbers of people, necessitating the construction of replacement housing elsewhere, because there is no existing housing or other residential use within the Project site. Therefore, none of the alternatives would result in a need to construct replacement housing elsewhere. Because no impact would result from any of the alternatives related to the displacement of substantial numbers of housing units or people, none of the alternatives could cause or contribute to any potential cumulative impact related to these issues. Accordingly, criteria b) and c) in CEQA Guidelines Appendix G Section XIII are not discussed further in this document.

While there have been numerous transient encampments (typically one to three people) within the Project site, particularly in the upland scrub habitats north of Ballona Creek, such uses are both illegal and unauthorized and are the subject of active and ongoing efforts to relocate individuals living within these encampments, independent of this Project.

3.1.3.5 Public Services

Increases in the demand for public services (such as fire protection, police protection, schools, parks, and libraries) typically are related to an increase in population. As described above under Population and Housing, none of the alternatives would result in short- or long-term population growth. Therefore, none of the alternatives would cause an increase in the requirements of any public service provider to respond to an increased resident population, such as demands related to schools, parks, or libraries.

The Ballona Reserve currently has approximately 12,000 visitors per year that come as part of organized group tours led by the Friends of Ballona and the Los Angeles Audubon Society. These programs estimate that participation would increase by up to 6,000 visitors per year following restoration. Additionally, the Ballona Reserve would be open to the public and would attract new visitors that would not be part of organized tours. While visitor use of the Project site may increase, potentially resulting in an increased demand for emergency and other police and fire services at the Project site (e.g., due to injuries or other emergency medical needs, fires, or vehicle break-ins), the number of visitors would be minor in comparison to the local population[36] served by police and fire protection services.

Most of the Project site is served by the Pacific Division of the Los Angeles Police Department. The Pacific Community Police Station is located at 12312 Culver Boulevard, approximately 1 mile from the Project site, and substations are located at Los Angeles International Airport approximately 4 miles from the Project site and at Venice Beach, approximately 5 miles from the Project site (distances are given in road miles). The Pacific Division serves a population of over 200,000 residents in Venice Beach, Oakwood, Mar Vista, Playa del Rey, Playa Vista, Palms and Westchester (Los Angeles Police Department 2015).

The Los Angeles County Sherriff's Department would respond to incidents within the County portions of the site from the Marina del Rey Station at 13851 Fiji Way, adjacent to Area A (Los Angeles County Sherriff's Department 2015). This station is staffed by 38 personnel, and a 2014 report recommended an increase of 7 personnel for this station in response to construction of housing units that will increase the local service population in Marina del Rey (Los Angeles County Chief Executive Office 2014). This station serves a resident population of approximately 9,000.

Fire protection service at the Project site would be provided by the County of Los Angeles Fire Department from Station 67 at 5451 Playa Vista Drive, just 0.5 mile from the Project site, or by the Los Angeles County Fire Department from Station 110 at 4433 Admiralty Way in Marina del Rey, approximately 2 miles from the Project site. One fire engine and three medic vehicles are housed at Station 67 (FireDepartment.net 2015a). In 2014, this station responded to 1,550 emergency medical services (EMS) incidents with an average response time of 6.3 minutes and to 691 non-EMS incidents with an average response time of 5.5 minutes (Los Angeles Fire Department 2015). Station 110 houses one engine, two rescue and fire suppression boats, and one quint truck (FireDepartment.net 2015b).

Following restoration, the number of parking spaces available to the public would remain substantially the same as under existing conditions, limiting the total number of visitors to the Ballona Reserve at any one time. Although visitors may access the Ballona Reserve on foot, by bicycle, or by public transit, many such visitors are likely to be represented already in the existing local service population.

While the Project may increase the number of visitors coming to the Ballona Reserve following restoration of the Project site, this increase in visitors would be accommodated by the newly constructed public amenities provided as a part of the Project and would not result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives. None of the alternatives would result in any potentially significant impacts to public services, and similarly would not cause or contribute to any cumulative effect to such resources. Accordingly, significance criteria listed in CEQA Guidelines Appendix G Section XIV are not discussed further in this document.

[36] The population for the greater Los Angeles Metropolitan Area was just under 13 million residents in the 2010 United States Census.

3.1.4 Cumulative Scenario

3.1.4.1 Approach to the Analysis of Cumulative Effects

This document analyzes cumulative impacts of restoration and post-restoration activities within the Ballona Reserve and SoCalGas Property. Consistent with the requirements of NEPA and CEQA, this EIS/EIR considers the direct and indirect effects of each alternative together with the effects of the other actions that could combine geographically and temporally (i.e., would be causing impacts in the same area at the same time as the restoration project under Alternative 1, 2, or 3) and, thereby, cause a cumulative effect. For each resource or issue considered in Chapter 3, the cumulative effects analysis identifies the relevant geographic area and time period within which cumulative effects could occur and then describes: i) existing conditions (which are the combination of the natural condition and the ongoing effects of past actions), and ii) the effects of other present and reasonably foreseeable future actions in combination with the effects of each alternative. The cumulative effects analysis also describes the relationship of the cumulative effects to any established thresholds. A quantitative analysis is provided where possible; where quantification is infeasible, qualitative effects are described.

If an alternative would have no direct or indirect effects on a resource, then it could not cause or contribute to potential cumulative effects on that resource. In these instances, no cumulative effects analysis has been completed. See, for example, Section 3.1.3, *Resources and Uses Not Affected or Present in the Action Area*.

3.1.4.2 Cumulative Scenario

As part of its cumulative impacts analysis, the Corps must identify area(s) in which the effects of the proposed action and alternatives would be felt; the resulting effects that are expected in those area(s); past, present, and reasonably foreseeable future actions that have or that are expected to have impacts in the same area; the impacts or expected impacts from these other actions; and the overall impact(s) that can be expected if the individual impacts are allowed to accumulate. *Fritiofson v. Alexander*, 772 F.2d 1225, 1245 (5th Cir. 1985). Consistent with this direction and with CEQA Guidelines Section 15130(b), this EIS/EIR identifies past, present, and reasonably foreseeable future actions by applying a blend of two approaches: a "list-of-projects" approach that identifies known actions that could cause similar types of environmental impacts as the alternatives analyzed in detail and a "summary of projections" approach that considers projections made in one or more local, regional, or statewide planning documents or environmental analysis that has been adopted or certified. A list of potentially cumulative projects is provided in Table 3.1-1, *Existing and Reasonably Foreseeable Future Projects*. Figure 3.1-1, *Cumulative Projects*, shows the projects that, because of their size or proximity to the Project site, have the potential to contribute to cumulative impacts. This list was not developed on the basis of any preconceived geographic limitation but rather on the basis of input received from a variety of agencies in the regional area. Requests for input were sent to the Corps, CDFW, SoCalGas, Los Angeles County Department of Public Works, Los Angeles County Department of Planning, Los Angeles County Department of Beaches and Harbors, California Coastal Commission, California State Lands Commission, California Environmental Protection Agency, Loyola Marymount University, Santa Monica Bay Restoration Commission, and the City of Los Angeles Planning Department.

1 Boat Central/Pacific Marina Development (Parcel 52)
2 The Boatyard (Parcel 53)
3 Pier 44/Pacific Marina Venture (Parcel 44)
4 Proposed Hotel on (northern half of Parcel 9U)/ Wetland Park Restoration Plan (southern half of Parcel 9U)
5 Neptune Marina (Parcels 10 and 14/FF)
6 Marina West Shopping Center (Parcel 95/LLS)
7 Oceana Retirement Facility (Parcel 147/OT)
8 Marina City Club (Parcel 125)
9 Holiday Harbor Courts (Parcel 21)
10 Marina del Rey Hotel (Parcel 42/43)
11 Fisherman's Village (Parcel 55/56/W)
12 Villa del Mar (Parcel 13)
13 AMLI Residential (Parcel 15)
14 Mariners Bay
15 Mariner's Village
16 Del Rey Shores and Del Rey Shores North (Parcels 100/101)
17 4090 Del Rey Avenue Project
18 4210 Del Rey Project
19 138 Culver Boulevard Project (Legado del Mar)
20 West Aircraft Maintenance Area Project
21 LAX Runway 7L/25R Runway Safety Area Project and Associated Improvements
22 Admiralty Way at Via Marina Roadway Project
23 Fiji Way Roadway Improvement Project
24 Via Marina Street Improvement Project
25 Ballona Creek Sediment Removal
26 18-inch Water Line Replacement Phase III-B Project
27 Oxford Retention Basin Multi-use Enhancement Project
28 Seawall Refurbishment Project
29 Burton Chace Park Transient Dock Replacement Project
30 Anchorage 47 Dock Replacement Project
31 Del Rey Lagoon Water Quality Improvement Project
32 Ballona Creek Water Quality and Beach Improvement and Beneficial Use Project
33 Milton Street Park and Green Street Project
34 Westchester Stormwater Infiltration
35 Marvin Braude Bike Trail Improvements
36 Scattergood-Olympic Transmission Line Project
37 Playa Vista Tract 52092 Studio Office and Production Support Project
38 The Village at Playa Vista Project Phase II
39 Marina Del Rey Local Coastal Program Amendment Project (LCP)
40 LAX Northside Development Project
41 Low Flow Diversions on Ballona Creek
42 Venice Dual Force Main Project
43 Del Rey 12 Access Road
44 PDR Wet Gas Compressor Upgrade
45 Bluff Repair
46 Switch Gear Installation

Cumulative Project Locations
Project Boundary

ESA

Ballona Wetlands Restoration Project

Figure 3.1-1
Cumulative Projects

TABLE 3.1-1
EXISTING AND REASONABLY FORESEEABLE FUTURE PROJECTS

Cumulative Project No.	Project Name	Location	Distance	Description	Acreage	Status
1	Boat Central/Pacific Marina Development (Parcel 52)	13483 Fiji Way, Marina del Rey	North side of Fiji Way across from the Project site's northern border.	5,300 square foot (sf) County Boatwright facility and boat storage, including a 345-vessel dry stack storage facility and a 30-vessel mast up storage space.	4.2 ac	Approved 2015
2	The Boatyard (Parcel 53)	13555 Fiji Way, Marina del Rey	North side of Fiji Way across from the Project site's northern border. Adjacent to Parcel 52.	New 921 sf ADA Restroom; New 3,916 sf carport with 14 garage spaces and boater storage; and improvements including new landscaping, hardscape, and waterside walkway.	N/A	Conceptual approval August 2013. Final approval hearing Spring 2015. Current status unknown.
3	Pier 44/Pacific Marina Venture (Parcel 44)	4637 Admiralty Way, Marina del Rey	0.3 miles northwest of Project site	Build five new commercial and dry storage buildings totaling approximately 91,000 sf; 141 slips and 5 end ties; 57 dry storage spaces; and 387 at-grade parking spaces.	N/A	Approved 2008; project revised and currently in Draft EIR process.
4	Proposed Hotel on (northern half of Parcel 9U)/Wetland Park Restoration Plan (southern half of Parcel 9U)	4101 Admiralty Way, Marina del Rey	0.71 miles northwest of Project site	Proposed dual building hotel, 6-story, 72 foot-high Marriott Residence Inn, and, 5-story, 61'-high Courtyard Marriott; New promenade improvements, restaurants and amenities; Wetland public park project.	1.46 acres	Approved 2010; Appealed 2011; Hotel redesigned 2014; awaiting final approval.
5	Neptune Marina (Parcels 10 and 14/FF)	14100 Marquesas Way, Marina del Rey	0.82 miles northwest of Project site	Demolish existing facilities and construct 526 apartments; 161-slip marina + 7 end-ties; 28 foot-wide waterfront promenade; Replacement of public parking.	N/A	Approved January 2015
6	Marina West Shopping Center (Parcel 95/LLS)	404-408 Washington Boulevard, Marina del Rey	1.10 miles northwest of Project site	Exterior renovations and demolition of existing office space and replacement with ground floor retail.	N/A	Approved 2012
7	Oceana Retirement Facility (Parcel 147/OT)	4220 Admiralty Way, Marina del Rey	1.06 miles northwest of Project site	Project would include a 114-unit senior accommodation units plus ancillary uses; 3,500 sf of retail; and replacement of 92 public parking spaces.	N/A	Approved
8	Marina City Club (Parcel 125)	4333 Admiralty Way, Marina del Rey	0.90 miles northwest of Project site	Project would include a reconstructed 282 slip marina (approximately 1,400 sf); waterfront promenade; fire access improvements; and pedestrian amenities.	Water area – 11.1 acres; Promenade area – 0.3 acres	Approved. Completion of construction expected in May 2015.
9	Holiday Harbor Courts (Parcel 21)	14025 Panay Way, Marina del Rey	0.73 miles northwest of Project site	Five-story, 29,300 sf mixed-use building (health club, yacht club, retail, marine office); 92 slip marina; 28 foot-wide waterfront promenade and pedestrian plaza. A six-story parking structure would be constructed with the capacity for 447 parking spaces and boat parking.	N/A	Approved 2012. Construction commenced in 2014
10	Marina del Rey Hotel (Parcel 42/43)	13534 Bali Way, Marina del Rey	0.40 miles northwest of Project site	Complete renovation of existing 154-room hotel and new 277-slip marina.	N/A	Approved. Construction expected to be completed in early 2015
11	Fisherman's Village (Parcel 55/56/W)	13755 Fiji Way, Marina del Rey	On Project site (northern end)	132-room hotel; 65,700 sf restaurant/retail space; new 30 slip marina; and 28 foot-wide waterfront promenade.	N/A	Entitlement phase in progress
12	Villa del Mar (Parcel 13)	Villa del Mar	0.68 miles northwest of Project site	Complete refurbishment of 198 apartments; Existing 209-slip anchorage will be renovated commencing no later than 2029; Improved pedestrian promenade and public amenities will be renovated.		Approved June 2014
13	AMLI Residential (Parcel 15)	Marina del Rey, Waterfront Parcel 15 on Via Marina between Panay Way and Marquesas Way.	0.85 miles northwest of Project site	Demolish existing facilities and build 585 apartments; New 8,000 s.f. commercial space; New 241 boat slip marina; New 1,271-parking space garage		On 10/9/01 the CCC issued permit No. 5-01-0143 for 241-slip marina. Original DCB approval on 2/21/02 and 3/21/02. On 2/19/14, DCB approved final redesign of project. On June 30, 2014, demolition of the site commenced.
14	Mariners Bay	Mariners Bay	0.62 miles northwest of Project site	Complete leasehold refurbishment of 379 apartments; New bicycle depot for public use; Improvements to existing promenade and dock gates and public amenities; Replacement of existing docks within 6 months of completed of landside renovation.		DCB conceptual approval obtained on 11/20/13.
15	Mariner's Village	Mariner's Village	0.43 miles west of Project site	Complete leasehold refurbishment of 981 apartments; Retail space increase from 2,070 s.f. to 9,000 s.f.; New 92-slip anchorage will be constructed; New 28 foot-wide pedestrian promenade and public amenities		EIR under preparation
16	Del Rey Shores and Del Rey Shores North (Parcels 100/101)	4201 Via Marina, Marina del Rey	0.85 miles northwest of Project site	544-unit apartment complex (12, 5-story residential buildings), 10 new public parking spaces	N/A	Construction complete
17	4090 Del Rey Avenue Project	4086-4108 South Del Rey Avenue, Marina Del Rey	0.86 miles northwest of Project site	Construction of a 51-unit apartment building with 6,020 sf of open space and 710 sf of additional amenities as part of a mixed use development including existing office buildings and an apartment building under construction.	0.584 ac	Application withdrawn 7/9/14.

TABLE 3.1-1 (Continued)
EXISTING AND REASONABLY FORESEEABLE FUTURE PROJECTS

Cumulative Project No.	Project Name	Location	Distance	Description	Acreage	Status
18	4210 Del Rey Project	4210 South Del Rey Avenue, Marina del Rey	0.77 miles northwest of Project site	Project originally on parcel at 4210 South Del Rey Avenue. Expanded to include 4220 South Del Rey Avenue. Modified project will construct 134 residential condominiums, 14,929 sf of commercial office space, and 359 parking spaces.	0.93 ac	City of Los Angeles Planning Commission approved revised project in January 2014.
19	138 Culver Boulevard Project (Legado del Mar)	138 Culver Boulevard, Playa del Rey	0.16 miles southwest of Project site	Mixed use development with 72 residential units and 15,000 sf of commercial.	1.825 ac	MND adopted September 2014, presently seeking CDP
20	West Aircraft Maintenance Area Project	Los Angeles International Airport	1.84 miles southeast of Project site	Provide facilities and areas for aircraft maintenance and maintenance hangars	N/A	Final EIR completed 2014, certified by the Board of Airport Commissioners (BOAC) on 3/18/14, NEPA approved reevaluation of 2005 EIS on 6/20/14.
21	Los Angeles International Airport Runway 7L/25R Runway Safety Area Project and Associated Improvements	Los Angeles International Airport	1.84 miles southeast of Project site	Runway improvements; lighting improvements; pavement improvements.	N/A	Approved February 2014.
22	Admiralty Way at Via Marina Roadway Project	Admiralty Way at Via Marina, Marina del Rey	1.01 miles northeast of Project site	To improve traffic flow and reduce traffic delay at the intersection of Via Marina and Admiralty Way. Reconfigure the existing 'T' intersection to create additional left-turn pockets. Work will include reconstruction of medians, sidewalks, curbs, gutters; relocation of catch basins, street lights, and two bus pads; traffic signal upgrade, and striping.	N/A	Construction Start Date: August 2017
23	Fiji Way Roadway Improvement Project	Fiji Way, Marina del Rey	Adjacent to Project site – On Fiji Way from Lincoln Boulevard to 4,698 feet west of Admiralty Way	Roadway resurfacing, curb, gutter, sidewalk repair, and new landscaping in medians. Roadway resurfacing and median improvements will be from Lincoln Blvd to the end of Fiji Way. Existing Class II bicycle lanes within project limits will be restored.	N/A	Construction Start Date: December 2016
24	Via Marina Street Improvement Project	Via Marina, Marina del Rey	0.71 miles northwest of Project site	Roadway resurfacing, curb, gutter, sidewalk repair, and new landscaping in medians. Roadway resurfacing and median improvements will be from Panay Way to the end of City Limit.	N/A	Construction Start Date: May 2019
25	Ballona Creek Sediment Removal	Ballona Channel	Roughly from Centinella Channel to Lincoln Blvd.	Remove sediment to restore the design capacity of Ballona Creek.	N/A	Construction Start Date: 2016 or 2017
26	18-inch water line replacement Phase III-B project	Between Bora Bora Way and NW passage, Marina del Rey	0.60 miles northwest of Project site	Improve the Marina Del Rey Water System to meet domestic and fire protection water demands. Phase III-B consists of the installation of approximately 6,000 linear feet of 18-inch diameter steel pipeline along Via Marina from Marquesas Way to Bora Bora Way and along Fiji Way to replace the existing, aged, and undersized 14-inch diameter water mains.	N/A	Under construction
27	Oxford Retention Basin Multi-use enhancement project	W. Washington Blvd, north of Marina City Drive, Marina del Rey	1.07 miles northwest of Project site	Enhance flood protection, reduce runoff pollution, and significantly improve the quality of plant and wildlife habitat within the facility, as well as its aesthetic appeal. Diseased trees and non-native plants will be replaced with more native, drought-tolerant species. The project will also provide new recreational and safety amenities, including a walking path, observation areas, wildlife-friendly lighting, and more attractive tubular fencing.	N/A	Under construction
28	Seawall Refurbishment Project	100 various locations within the marina	Capital Project	To ensure the prolonged integrity of the Marina by performing crucial maintenance, inspection, and as-needed repair services on the seawall (approx. 7.3 miles in length) at 100 various locations.	N/A	Under construction
29	Burton Chace Park Transient Dock Replacement Project	Burton Chace Park, Marina del Rey	0.21 miles northwest of Project site	Removal of the existing dock system and replacement with a new dock system consisting of 44 new reconfigured transient boat slips, including long side-ties, a 4-hour transient berthing, and repair and upgrade of the landside utilities (water, fire protection, power, and sewer) for the new dock system.	N/A	Completed
30	Anchorage 47 Dock Replacement Project	North of Burton Chace Park, Marina del Rey	0.25 miles northwest of Project site	Removal of the existing dock system and replacement with a new dock system consisting of 11 newly reconfigured docks with 253 new slips and repair and upgrade of the landside utilities (water, fire protection, power, and sewer) for the new reconfigured dock system	N/A	Under construction

TABLE 3.1-1 (Continued)
EXISTING AND REASONABLY FORESEEABLE FUTURE PROJECTS

Cumulative Project No.	Project Name	Location	Distance	Description	Acreage	Status
31	Del Rey Lagoon Water Quality Improvement Project	Del Rey Lagoon	0.09 miles northwest of Project site	This project will improve water quality by reducing the amount of pathogen generating bacteria in the Del Rey Lagoon and surrounding waterbodies, such as the Santa Monica Bay and Dockweiler Beach. Project components include vegetated swales, irrigation system retrofits, and drainage modifications. Vegetated swales are grassed drainage channels that are used to convey stormwater and induce infiltration—a process that cleanses polluted water. They are designed to capture, retain, and treat runoff from adjacent residential, transportation, and landscaping uses. Existing irrigation systems will be retrofitted with a smart irrigation system to reduce excessive irrigation runoff, thereby conserving water and reducing flow. Catch basins and storm drains will be installed to capture and divert excess wet-weather flow into the sewer system. The project also includes a nature viewing deck and educational displays that explain local flora and fauna. Education and outreach to the public be included in the project	N/A	Project began in 2012, current status unknown.
32	Ballona Creek Water Quality and Beach Improvement and Beneficial Use Project	Ballona Creek	0.53 miles southwest of Project site	This project will construct a low-flow diversion structure that diverts this polluted water away from main waterways so that it can be treated and disinfected before being discharged out to the ocean. The low-flow diversion system will treat all dry-weather urban runoff and some stormwater runoff that flows through the Ballona Creek watershed and would otherwise contaminate our beaches and oceans. Treatment by the low-flow diversion structure will include coarse screens, sedimentation, filtration, and disinfection. The result will be cleaner water, cleaner beaches, and better public health	N/A	Seeking grant funding as of 2014.
33	Milton Street Park and Green Street Project	Ballona Creek	0.53 miles southwest of Project site	The Milton Street Park and Green Street Project will convert a conventional street, adjacent to the Ballona Creek Bike Path and a middle school, into a park and pedestrian-friendly avenue that will aid in stormwater management. The project will add vegetated stormwater curb extensions to both sides of Milton Street, and plant 50 native shade trees and a variety of shrubs. The planted areas will remove trash, bacteria, sediments, and oil from street runoff before it enters Ballona Creek. The park will also make the area more community-friendly with pedestrian paths and stairs, an ADA-access ramp, gateways, an outdoor classroom, native plants, overlooks, seating, bike racks, and shade structures	1.2 acres	Under construction
34	Westchester Stormwater Infiltration	North Westchester	Clean Water, Clean Beaches Measure	This project will include the installation of various types of green infrastructure, including hydrodynamic separators, infiltration basins and underground detention tanks, to reduce bacteria and other pollutants from storm drain runoff in North Westchester. This project will assist the City in complying with the Santa Monica Bay Beaches Wet Weather Bacteria limits.		Current status unknown
35	Marvin Braude Bike Trail Improvements	850 feet south of Culver Boulevard to 38 feet north of Grand Avenue	Between Culver Boulevard and Grand Avenue	Repave and realign sections of the trail totaling 1.71 miles of improvements.		Approved 2011. Current status unknown. Assumed completed.
36	Scattergood-Olympic Transmission Line Project	Connect Scattergood generating station at 12700 Vista Del Mar to Olympic Receiving Station at 1840 Centinela Ave (crosses the Project site along Lincoln Boulevard)	From Olympic Receiving Station, north of Olympic Boulevard, crosses the Project site at Lincoln Boulevard, ends at the Scattergood Generating Station in El Segundo.	230 kV underground transmission cable designed to improve power reliability in the communities of Playa del Rey, Westchester, Marina del Rey, and West Los Angeles. Phase I of the project is expected to progress from Grand Avenue to the intersection of Grand Avenue and Vista del Mar, and then continue north on Vista del Mar.	11.8 miles	Construction started in summer of 2013 and will take about 2.5 years to complete
37	Playa Vista Tract 52092 Studio Office and Production Support Project	Bluff Creek Drive and Campus Center Drive	1.50 miles northeast of Project site	366,423 SF of studio related uses for entertainment industry	366,423 SF	Current status unknown
38	The Village at Playa Vista Project Phase II	Lincoln Blvd/W. Jefferson Blvd/Bluff Creek Drive		Residential, Office, Commercial, 40,000 sf of community serving uses The Village at Playa Vista consists of the following two components: (1) a mixed-use community ("the Urban Development Component"); and (2) a Riparian Corridor and restoration and maintenance of a portion of the Westchester Bluffs adjacent to the Riparian Corridor (the "Habitat Creation/Restoration Component".		Began construction 2013

TABLE 3.1-1 (Continued)
EXISTING AND REASONABLY FORESEEABLE FUTURE PROJECTS

Cumulative Project No.	Project Name	Location	Distance	Description	Acreage	Status
39	Marina Del Rey Local Coastal Program Amendment Project (LCP)	Marina del Rey		The LCP Amendment project is intended to aggregate five pipeline projects within Marina del Rey Harbor. This project also considers parking, open space, environmental protection, and circulation improvements.		Current status unknown
40	Los Angeles International Airport Northside Development Project	Los Angeles International Airport	1.84 miles southeast of Project site	Redevelopment of office, research and development, community, mixed use, recreation, and open space on 340 acres north of the Los Angeles International Airport.	340 acres	Preparing EIR
41	Low Flow Diversions on Ballona Creek	Ballona Creek	0.53 miles southwest of Project site	Low flow treatment facilities are proposed as part of the Ballona Creek TMDL Implementation Plan which would provide water quality benefits by reducing total recoverable metals loads		In development phase
42	Venice Dual Force Main Project	Santa Monica	See map on website	The new parallel system will operate in conjunction with the existing 48-inch force main. With the systems working together, sewage flow from the Venice pump plant can be conveyed to the Hyperion Treatment Plant in El Segundo using either or both of the force mains. The project objectives are to increase sewage capacity, create pipeline redundancy and allow for maintenance of the system.		Final EIR has been adopted
43	Del Rey 12 Access Road	North Area B		Repairing road ruts and depressions	Approximately 1.1 acre	Permit applications under development
44	PDR Wet Gas Compressor Upgrade	SoCalGas Tank Farm		Foundation installation for compressor placement	Approximately 3,300 square feet	Design phase
45	Bluff Repair	Bluff face		Repairs to prevent earth movement	Not yet determined	Design phase
46	Switch Gear Installation	At lower field entrance gate off of Falmouth Avenue		Removal of existing pole transformers and relocating/replacing with a ground-based system	Approximately 2,000 square feet	Design phase
47	Lincoln Bridge Mutli-Modal Corridor Plan proposed as an element of the Westside Mobility Plan.	Lincoln Boulevard Bridge		Widening of the bridge's surface design to improve traffic flow; may result in wider sidewalks, bicycle lanes, and potentially a transit-only lane. No encroachment into the Ballona Reserve is anticipated.		Design phase

Follow-up phone calls and/or emails were made to the jurisdictions contacted to obtain input. Not all of the projects identified by these agencies would contribute to cumulative impacts for every topical area. Some impacts of the listed projects would be very site-specific and would not compound impacts of the Project. In other cases, short-term impacts would not contribute to cumulative impacts because the construction of the listed project and the development of the Project would not occur in the same time period or be in close proximity to each other. Further, several of the projects identified by agencies were determined to not contribute to any cumulative impacts because of factors such as timing of project implementation and distance from the Project site.

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3.2 Aesthetics

3.2.1 Introduction

This section identifies and evaluates issues related to Aesthetics in the context of various restoration alternatives. This analysis describes existing conditions in Section 3.2.2, summarizes applicable laws, regulations, plans, and standards in Section 3.2.3; identifies the criteria used to evaluate the significance of potential impacts (referred to as "thresholds of significance") in Section 3.2.4; describes the methodology used to evaluate these impacts in Section 3.2.5; analyzes the direct and indirect effects in Section 3.2.6; analyzes cumulative effects in Section 3.2.7; and provides references in Section 3.2.8.

For the purpose of this analysis, key terms relating to this aesthetics setting and analysis are defined as follows:

1. Views might be discussed in terms of *foreground*, *middleground*, and *background* views. Foreground views are those immediately presented to the viewer and include objects at close range that tend to dominate the view. Middleground views occupy the center of the viewshed and tend to include objects that are the center of attention if they are sufficiently large or visually different from adjacent visual features. Background views include distant objects and other objects that make up the horizon. Objects in the background fade to obscurity with increasing distance as they approach the skyline. In a photograph, the foreground generally may be seen as the bottom third of the frame, the middleground as the middle third of the frame, and the background as the top third of the frame.

2. A *viewshed* is all of the area visible from a particular public location or sequence of locations (e.g., roadway or trail). The viewshed varies depending on the location from which it's viewed.

3. A *public view* is a view that can be seen from any public right of way.

4. *Scenic views* are views that provide visual access to valued resources, such as striking or unusual natural terrain, or unique urban or historic features.

5. *Scenic vistas* or *panoramic views* provide visual access to a large geographic area for which the field of view can be quite wide and extend into the distance. Such views may provide an outlook of one or more valued resources, including mountains, valleys, cityscapes, or the ocean.

6. *Visual character* broadly describes the unique combination of aesthetic elements that characterize a particular landscape, neighborhood, or city. In urban settings, the visual character is influenced primarily by the land use type and density, urban landscaping and design, topography, and background setting.

7. *Visual quality* is a qualitative assessment of the overall visual impression or attractiveness of an area as determined by the particular landscape characteristics, including landforms, water features, vegetation patterns, and built features.

3.2.2 Affected Environment

This section discusses baseline conditions related to aesthetics and visual resources from public vantage points. Such conditions include: the regional and local visual environment; sources of light and glare within the Project site; sensitive visual receptors or sensitive public viewpoints (i.e., individuals or groups of individuals who have views of a site afforded by a publicly-accessible scenic vista or scenic highway, or public recreation area); visual quality of the study area; and views from key observation points (KOPs). KOPs were selected to represent a series of points along important travel routes, and at an existing or potential public use area, where the view of Project activities would be most perceptible. To the extent possible, views from KOPs were taken during the appropriate flowering season for vegetation to capture the different types of plants in each view (e.g. spring for upland views). However, these views may not be representative of the appearance of the vegetation throughout the entire year. For example, vegetation that flowers and dies back in an annual cycle (“annual”) would look quite different during the end of the dry season (bare twigs and dead grasses) than during its growing period (green plants and flowers). This section acknowledges annual or perennial (lives for multiple years) vegetation where appropriate, as well as whether the view is representing (in general) native or non-native vegetation species.

3.2.2.1 Study Area

For purposes of this analysis, the study area includes public viewpoints that provide views of the Project site. Public views within the Project site can be seen along adjacent and internal roadways (such as Lincoln Boulevard, Jefferson Boulevard, and Culver Boulevard), pedestrian and bicycle trails, and from public streets within and adjacent to residential areas, as discussed in Section 3.2.2.2, *Environmental Setting*.

3.2.2.2 Environmental Setting

Regional and Local Character

Scenic Vistas

As previously defined, scenic vistas provide visual access to a large geographic area that features valuable resources, including mountains, valleys, cityscapes, or the ocean. Views of the Project site itself are considered scenic vistas, as the vast undeveloped open space character of the Ballona Reserve is unique amongst the primarily urban areas surrounding the site. These scenic vistas are also characterized by the Santa Monica Mountains to the north, the San Gabriel Mountains to the northeast, and the Westchester bluffs topped with development to the southeast, which can be seen in the background rising above the Ballona Reserve and the surrounding development.

Scenic vistas which encompass portions of the Project site are available to: motorists, bicyclists, and pedestrians traveling along Culver Boulevard, Jefferson Boulevard, and Lincoln Boulevard; bicyclists and pedestrians traveling along the Ballona Creek Bike Path and the northeast and northwest exterior edges of the Freshwater Marsh (adjacent to Lincoln Boulevard and Jefferson Boulevard; trails internal to the Freshwater Marsh and between the Freshwater Marsh and the Ballona Reserve are not open to the public); individuals using the baseball fields in Area C; and from other publicly accessible areas adjacent to the Project site and atop the Westchester Bluffs.

The entire Project site can be viewed from public roads surrounding the site, including SR 90 which runs along the northeastern boundary of the site and from viewpoints atop the Westchester bluffs along Veragua Drive, Falmouth Ave, Cabora Drive, and the pedestrian pathway that surrounds the homes on the northeastern edge of the bluffs.

Views of the Pacific Ocean also are considered important scenic vistas. While there are views over the Ballona Reserve to the Pacific Ocean from several higher elevation vantage points surrounding the site, such as the Westchester Bluffs and Loyola Marymount University, these views typically have the Ballona Reserve in the foreground and the Pacific Ocean on the horizon. The effects of the Project within the Project site are not likely to affect these long distance ocean views. From within the Ballona Reserve, there are ocean views from the downstream portions of the Ballona Creek levees and distant ocean views from the Culver Boulevard Bridge on clear days.

On-site Views

The Ballona Reserve is a large open space area surrounded by development in Marina del Rey to the north, Culver City and Del Rey to the east, Playa del Rey to the south and southwest, and development atop the Westchester Bluffs to the southeast. Three major roadways (Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard) traverse the site, connecting the communities of Playa del Rey and Westchester with Marina del Rey and Del Rey, a neighborhood in the City of Los Angeles. Existing structural features within the Ballona Reserve include, but are not limited to flood and drainage management infrastructure such as the tide channels, levees, tide gates, road berms, culverts; transportation-related infrastructure such as bridges and parking lots; historical structures such as the old horse rink and the red car line bridge, abutments, and berm; the Boy Scout Platform; fencing; and recreation-related infrastructure such as the bike and pedestrian path along the northern Ballona Creek levee and baseball fields in Area C. Naturalistic features, that are man-made, include the Fiji Ditch, various agricultural drainage ditches, and the restored western dune area. Fill deposits were dumped on-site during the dredging and construction of the Ballona Creek flood risk management channel in the 1930s and construction of Marina del Rey and the SR 90 in the 1960s. Natural gas monitoring wells and access roads are located throughout Areas A and B of the Ballona Reserve, which can be seen from higher elevation viewpoints within and surrounding the site such as the Westchester Bluffs. SoCalGas owns facilities on roughly 4 acres of land within the Project site, including the largest facility located at the base of the Westchester Bluffs and a smaller office building complex located at the top of the bluffs. SoCalGas's ownership includes an office building, tanks, and other larger infrastructure and equipment. The main SoCalGas facility is visible in the distance from Jefferson Boulevard, but is not a dominant feature of the site from most viewpoints.

Ballona Creek is a channelized waterway that traverses the Project site from the northeast to southwest before emptying into the Pacific Ocean. The channel is lined with concrete and riprap, and the levees that form the sides of the channel include a secondary use as a public bicycle and pedestrian pathway on the northern levee maintenance road. There is graffiti on the side slopes and a series of buoys in the channel that serve as rowing markers and are visible from some areas.

As discussed in *Section 3.4 Biological Resources*, there are 15 habitat types identified on the Project site that fall within five general categories. Aquatic water and mudflat habitats are areas with little to no vegetation that are seen as a body of water or area of mud, and includes Ballona Creek and the confined narrow channels that drain estuarine waters, tidal waters, and runoff into the creek. The site features native and non-native wetland habitats, including muted tidal salt marsh, non-tidal wetland, unvegetated salt pan, and brackish marsh habitat types, which are relatively low-lying and feature vegetation that is typical of a wetland or disturbed wetland area, found throughout the southwestern portion of the Project site and seen from Culver Boulevard when looking east. Saltbush scrub, found on the northern end of the Project site near Lincoln Boulevard, and willow/mulefat thicket, found along the southeastern edge of the Project site, interspersed with shrubs and small trees.

Non-native annual grassland is found in some areas throughout the Project site and coastal scrub habitat is found primarily to the north of Ballona Creek upland areas. The site also includes stabilized dune habitat, which features a mix of native and non-native species and is found along the southwestern and southeastern edge of the site and near the intersection of Culver Boulevard and Lincoln Boulevard. The site also contains a eucalyptus grove, which is seen as a cluster of tall trees rising from the base of the Westchester bluffs.

Lighting Environment

Existing sources of light and glare are present throughout the surrounding urban area in Marina del Rey, Westchester, Play del Rey, Del Rey, and Playa Vista. These sources are related to the residential, commercial, office, and marina development that surround the Project site on all sides and include fixed and mobile sources of light and glare, such as exterior building-mounted and freestanding light fixtures, illuminated signage along storefronts on Lincoln Boulevard, and streetlights near the intersection of Culver Boulevard and Jefferson Boulevard. Other sources of light include cars passing through the site on Culver Boulevard, Jefferson Boulevard, and Lincoln Boulevard. The Project site does not otherwise include lighting along roads, trails, the baseball fields, or well areas.

Key Observation Points

A total of 12 KOPs are identified in this analysis. Each KOP represents a prevalent viewshed that is publicly accessible and representative of other available views of the Project site. KOPs were identified through field assessments and desktop research. The field assessments considered potential public view locations, existing vegetative conditions, area features, and topography. Photographs of the KOPs in relation to the Project were collected, and the visual characteristics of those viewpoints are described below.

The location of each KOP is provided on Figure 3.2-1, *Location of Key Viewpoints*. Photo documentation from these viewpoints as they appeared in April 2015 is available in Figure 3.2-2 through Figure 3.2-14. These figures also provide the simulated visual condition for each KOP under implementation of Alternative 1; these simulations are discussed in *Section 3.2.6 Direct and Indirect Effects*. However, the discussion below focuses on the existing setting and associated KOP photographs; while the simulations are discussed in Section 3.2.6.

View Southeast from Lincoln Boulevard at Fiji Ditch (KOP 1)

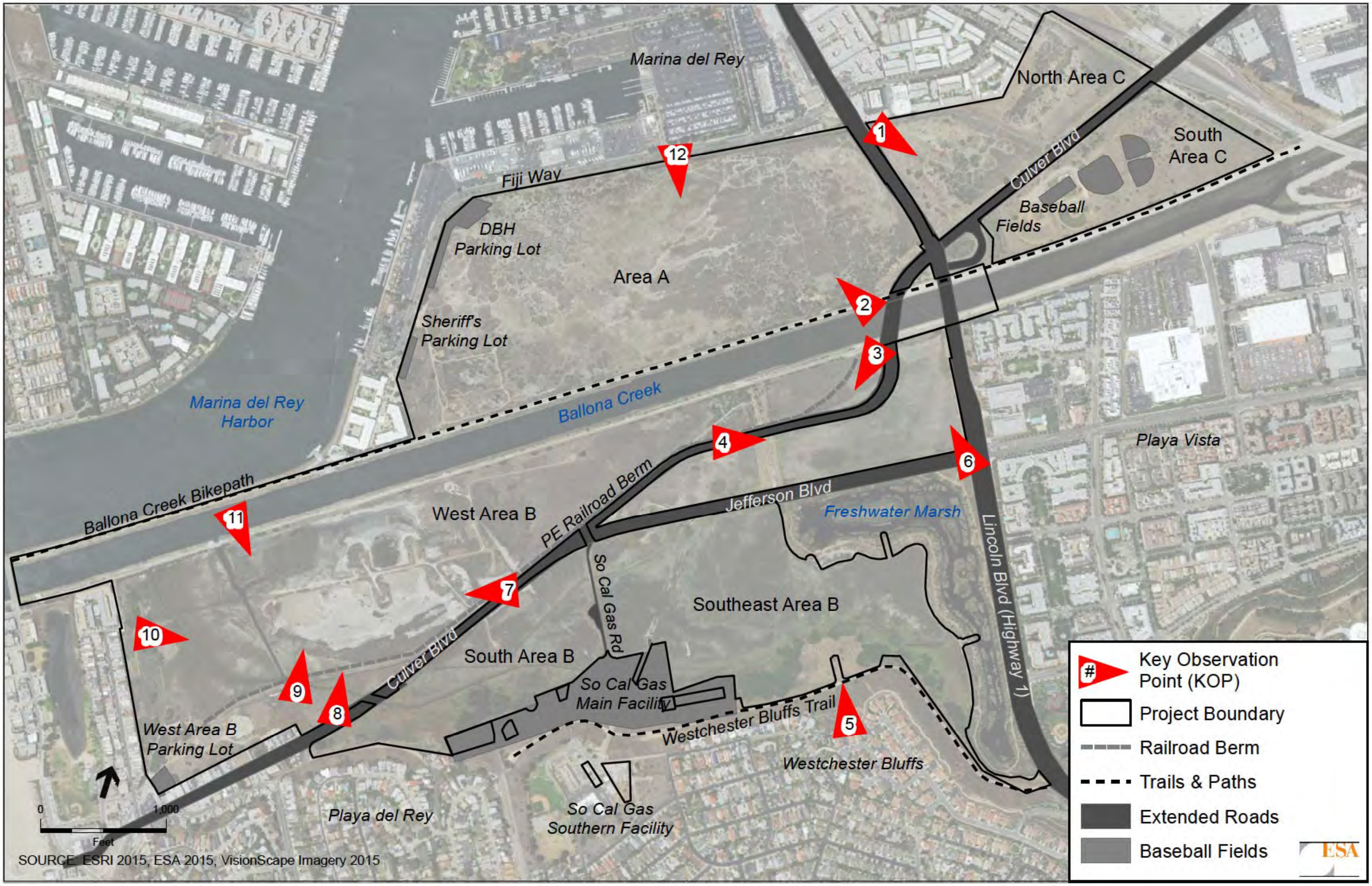
This KOP provides an oblique view across Area C north from Lincoln Boulevard. Views of the foreground are dominated by a mix of native and non-native vegetation types, including dead invasive non-native annual plants, and some native perennial coastal scrub and non-native annual grassland vegetation, with instances of soil mounding near the horizon line on the northern portion of Area C. The power lines along Culver Boulevard are visible on the horizon line and the western end of the San Gabriel Mountains can be seen rising above mature trees and shrubs to the northeast. Unauthorized dumping of trash and debris in Area C can be seen from this viewpoint as well as a chain-link fence along Lincoln Boulevard. The existing baseball fields and supporting structures are not visible.

View Northwest from the Culver Boulevard Bridge toward Area A (KOP 2)

This KOP provides views looking northwest across Area A from the southeast corner adjacent to Culver Boulevard. A walking path is located in the foreground which passes informational signage and is surrounded by dead non-native annual mustard plants. Native and non-native coastal scrub habitat is seen beyond, as well a mix of vegetation types in the middleground that occupies much of Area A. This KOP provides a view of the existing Ballona Creek channel, the chain link fence along the Ballona Creek levee, and a portion of the Ballona Creek Bike Path. Development in Marina del Rey can be seen along the horizon to the northwest, intermixed with non-native palm trees. Development in Playa del Rey is also visible to the southwest, rising above the Ballona Creek channel and southern portion of the Ballona Reserve.

View Southwest from the Culver Boulevard Bridge toward Area B (KOP 3)

The Westchester Bluffs and the power lines along Culver Boulevard are dominant visual features in this view. In the foreground, this KOP offers views of the chain-link fence and the south levee of the Ballona Creek channel to the west and Culver Boulevard can be seen to the south. Cars traveling along Culver Boulevard and Jefferson Boulevard periodically are visible as they pass through gaps in mature vegetation. There are non-native perennial shrubs and trees in the foreground, with some lower lying degraded wetlands in the middleground closer to Culver Boulevard. The residences atop the Westchester Bluffs are clearly visible in the background of this view, below which the Westchester Bluffs trail can be seen. The SoCalGas facility can be seen in the distance, sitting at the base of the Westchester Bluffs to the south, with aboveground storage tanks, oil and gas platforms, facility access roads, and other facilities visible along the horizon. The pipeline ascending the Westchester Bluffs also can be seen, as can development further west in Playa del Rey. Mature non-native trees, including palms and the eucalyptus grove, are visible near the SoCalGas facilities.



Ballona Wetlands Restoration Project

Figure 3.2-1
Location of Key Viewpoints

Existing View

Proposed View

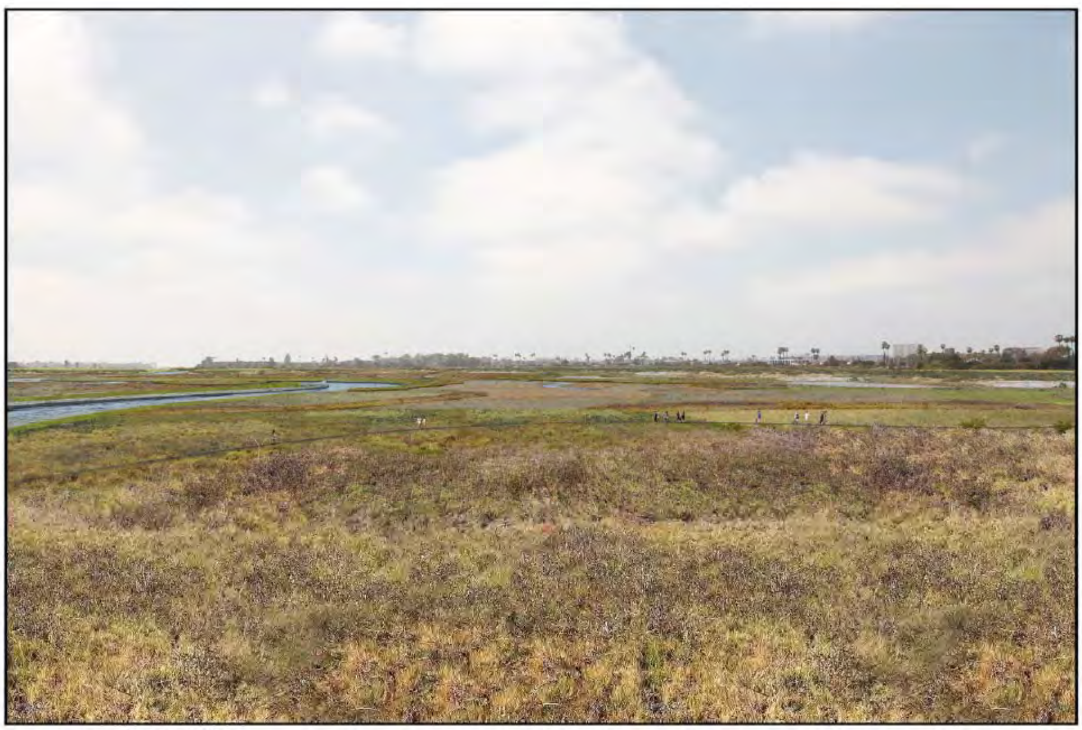
SOURCE: VisionScape Imagery

ESA

Ballona Wetlands Restoration Project

Figure 3.2-2
Alternative 1: KOP 1

Existing View



Proposed View

SOURCE: VisionScape Imagery

Ballona Wetlands Restoration Project

Figure 3.2-3
Alternative 1: KOP 2

Existing View

Proposed View

SOURCE: VisionScape Imagery

ESA

Ballona Wetlands Restoration Project

Figure 3.2-4
Alternative 1: KOP 3

View East along Culver Boulevard between North Area B and East Area B (KOP 4)

This viewpoint encompasses parts of North Area B along the north side of Culver Boulevard and East Area B along the south side of Culver Boulevard. North Area B is bisected by the berm of the abandoned Pacific Electric railroad, which runs parallel to Culver Boulevard and dominates northerly views, though the berm itself is covered in non-native annual vegetation and perennial coastal scrub habitat and is not visible. Views to the south are dominated by invasive non-native annual species such as mustard and crown daisy and mature trees and shrubs that block portions of the views to the east from this viewpoint. This area is mostly undeveloped and the areas within the Ballona Reserve appear higher than the road. Development in Playa Vista can be seen on the horizon to the east of the site, and the native perennial wetland vegetation within the Freshwater Marsh adjacent to Area B can also be seen to the southeast.

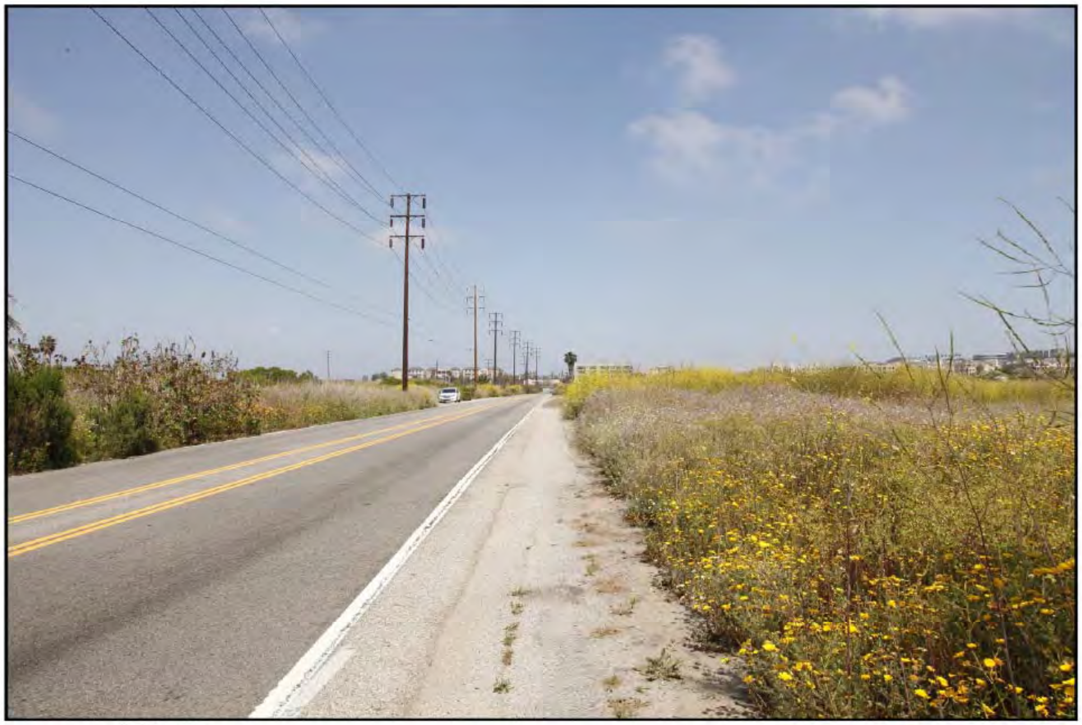
View North from the Westchester Bluffs Trail (KOP 5)

This viewpoint shows a panoramic view of most of the Project site, looking northeast from the Westchester bluffs. Perennial species such as invasive, non-native pampas grass alongside native willow and mulefat thicket habitat can be seen in the immediate foreground at the base of the bluffs, beyond which Southeast Area B, comprised of ruderal and non-tidal wetlands, also is visible in the foreground. A portion of the Freshwater Marsh and surrounding vegetation also can be seen to the north.

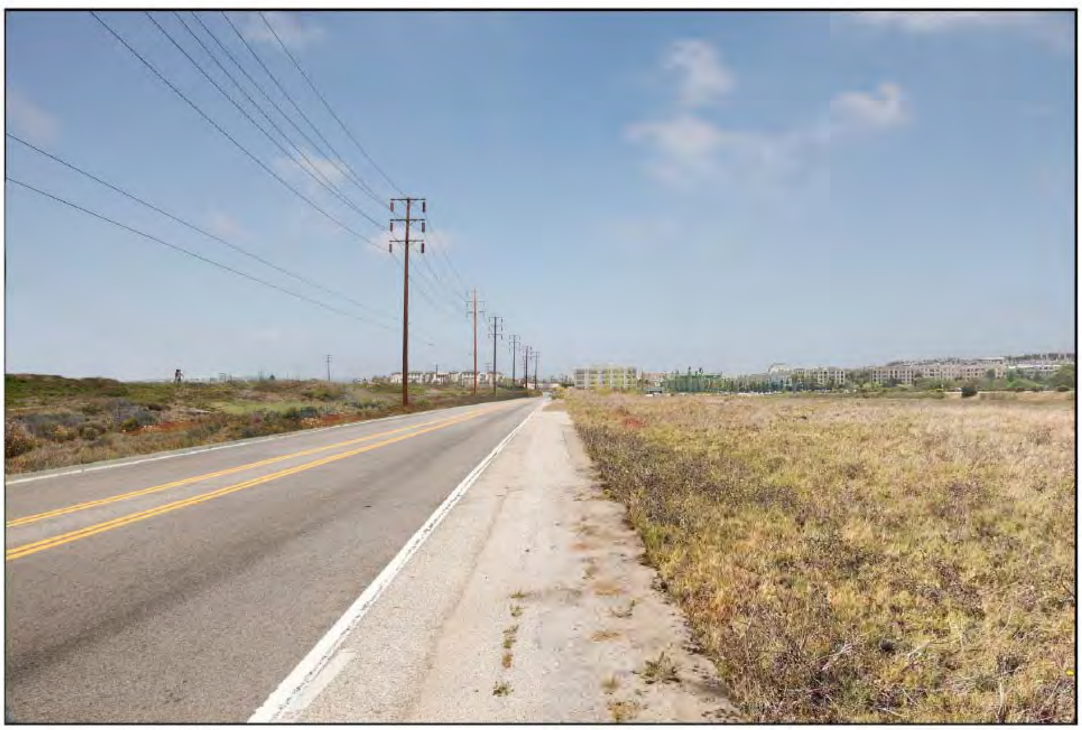
Culver Boulevard and Jefferson Boulevard are visible in the middleground, running northeast to southwest through North Area B and East Area B. The Ballona Creek levees run parallel with the horizon line and distinguish the land in Area A (above) from Area B (below). Clusters of mature native and non-native trees and shrubs can be seen throughout this viewpoint, particularly along the berms adjacent to the roadways and the Ballona Creek levees. On clear days, the horizon is dominated by views of the Santa Monica Mountains rising above multi-story commercial and residential development in Marina del Rey, Santa Monica, and Culver City beyond.

View Northwest from the Intersection of Jefferson Boulevard and Lincoln Boulevard (KOP 6)

This viewpoint encompasses the majority of East Area B, which generally includes the land north of Jefferson Boulevard and south of Culver Boulevard. The foreground of this picture is dominated by invasive, non-native annual species such as crown daisy and mustard along a berm. The middleground is dominated by invasive, non-native pampas grass (lower lying area) and the background is ruderal wetland habitat in a depressional area. Berms supporting Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard and the Culver Boulevard Bridge run east to west along the horizon line and are at a higher elevation than the adjacent wetland areas. Multi-story development in Marina del Rey is seen intermittently between clusters of mature vegetation. Views of the Playa del Rey neighborhood and large mature trees are provided in the distance to the west.



Existing View



Proposed View

SOURCE: VisionScape Imagery

ESA

Ballona Wetlands Restoration Project

Figure 3.2-5
Alternative 1: KOP 4

Existing View

Proposed View

SOURCE: VisionScape Imagery

ESA

Ballona Wetlands
Restoration Project

Figure 3.2-6
Alternative 1: KOP 5

Existing View

Proposed View

SOURCE: VisionScape Imagery

ESA

Ballona Wetlands Restoration Project

Figure 3.2-7
Alternative 1: KOP 6

View West from Culver Boulevard toward West Area B (KOP 7)

This viewpoint looks west across West Area B from Culver Boulevard, including low lying vegetated areas of ruderal and non-tidal wetland, berms with non-native upland species, and non-vegetated areas of salt pan. Invasive, non-native vegetation such as iceplant and crown daisy can be seen along the abandoned Pacific Electric railroad berm in the middleground and the SoCalGas facility access road can be seen traversing the salt pan, just below the horizon line. This viewpoint encompasses portions of the gas monitoring wells located in Area B; however, views of these features, as well as distant views along the horizon, are obscured by the access road and a tree seen in the foreground.

View North from the Open Space just Northeast of the Intersection of Culver Boulevard and Nicholson Street (KOP 8)

This viewpoint looks north and northeast across West Area B. A tidal channel is visible in the near foreground from this viewpoint, running in a generally north-south direction. Invasive, non-native iceplant can be seen in the middleground of the view intermixed with some native salt marsh vegetation. The abandoned Pacific Electric railroad berm, topped with tall, dead non-native mustard, creates areas of higher elevation that dominate the middleground of this view. The apartment buildings and mature landscape trees on the east edge of the Marina del Rey Harbor (Harbor) can be seen to the northeast, with high density development to the north and east of the Harbor and intermittent low density development also visible from this viewpoint. On the eastern end of the Project site, portions of Playa del Rey are visible to the east through gaps in the mature landscaped vegetation.

View North from the West Area B Boy Scout Platform (KOP 9)

This viewpoint looks north and northeast across West Area B. Railroad pilings from the abandoned Pacific Electric railroad are seen sticking out of the tidal channels in the immediate foreground. Low lying areas of muted tidal and non-tidal marsh with intermixed native wetland vegetation communities and some non-native grasses are visible in the foreground of this viewpoint, and the salt pan is visible as a large sand-colored and near-white swath through the middleground bisected by the gas monitoring well platforms and access roads. Development in Marina del Rey is visible rising above the lowlands from this viewpoint, with the apartment complex at the south edge of the Harbor serving as a dominant feature.

View Looking East from the Project Site’s Western Boundary (KOP 10)

This viewpoint looks east from the western boundary of the Project site, across West Area B. Most of the views of the Project site and the San Gabriel Mountains beyond are obscured by native perennial willow and mulefat thicket growing throughout the western end of the site. In this viewpoint, the low lying muted tidal and non-tidal marsh areas with mixed native wetland vegetation in West Area B are visible from this view and a portion of the salt pan surrounding the gas monitoring well platforms can be seen as a large sand-colored and near-white swath through the middleground. Playa Vista is visible directly to the east, with a portion of the Westchester Bluffs visible to the southeast and development in Marina del Rey and Culver City visible to the northeast. The San Gabriel Mountains are visible in the distance.

Existing View

Proposed View

SOURCE: VisionScape Imagery

Ballona Wetlands Restoration Project

Figure 3.2-8
Alternative 1: KOP 7

Existing View

Proposed View

SOURCE: VisionScape Imagery

ESA

Ballona Wetlands Restoration Project

Figure 3.2-9
Alternative 1: KOP 8

Existing View

Proposed View

Note: This photograph and simulation show low tide conditions

SOURCE: VisionScape Imagery

ESA

Ballona Wetlands Restoration Project

Figure 3.2-10
Alternative 1: KOP 9

Existing View

Proposed View

SOURCE: VisionScape Imagery

ESA

Ballona Wetlands Restoration Project

Figure 3.2-11
Alternative 1: KOP 10

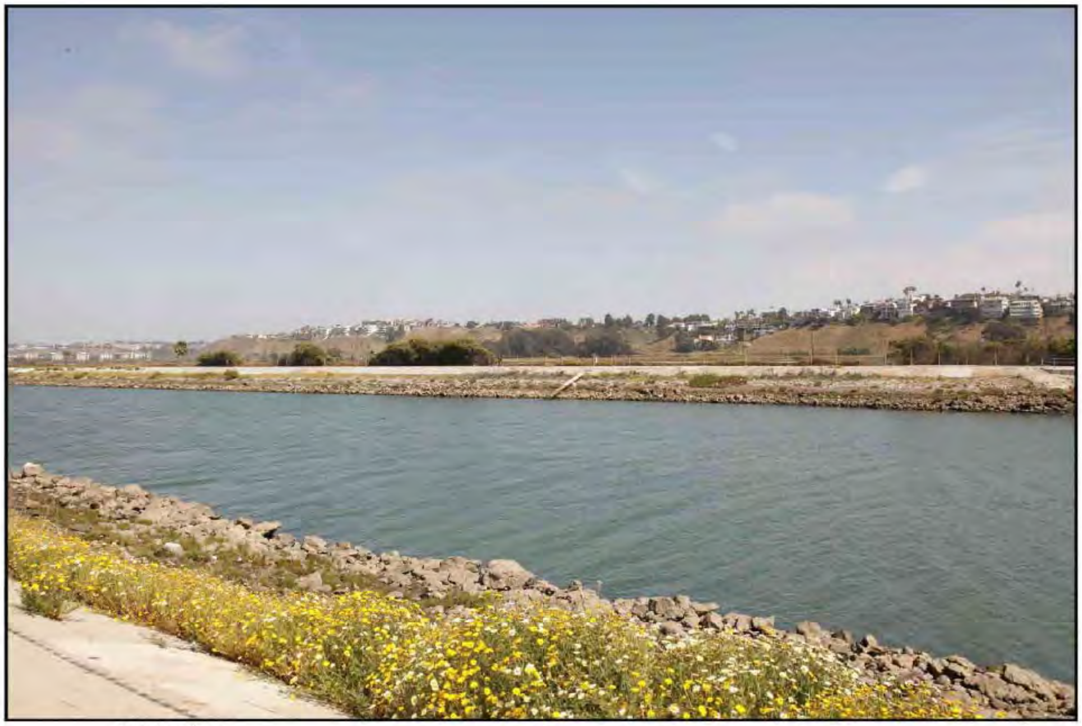
View Southeast from the Ballona Creek North Levee toward West Area B (KOP 11)

This viewpoint looks southeast across West Area B, from Marina del Rey on the northern side of Ballona Creek towards the western and southern portion of the Project site. This viewpoint illustrates the relatively flat topography across the western and southern portions of the Project site. Ballona Creek and the south Ballona Creek levee are the dominant features from this viewpoint, and the muted tidal marsh, salt pan, and areas surrounding the gas monitoring well platforms are visible in the middleground behind the levee in the distance. The Westchester Bluffs are another dominant feature of this view, rising above the South Area B and topped with residential development. Development in Playa Vista and Culver City is also visible to the southeast from this viewpoint. The berm of the abandoned Pacific Electric railroad can be seen parallel to Culver Boulevard. Views of the SoCalGas facility are mostly obscured by a cluster of mature non-native shrubs along the inside of the south Ballona Creek levee and the grove of mature eucalyptus trees located adjacent to the facility.

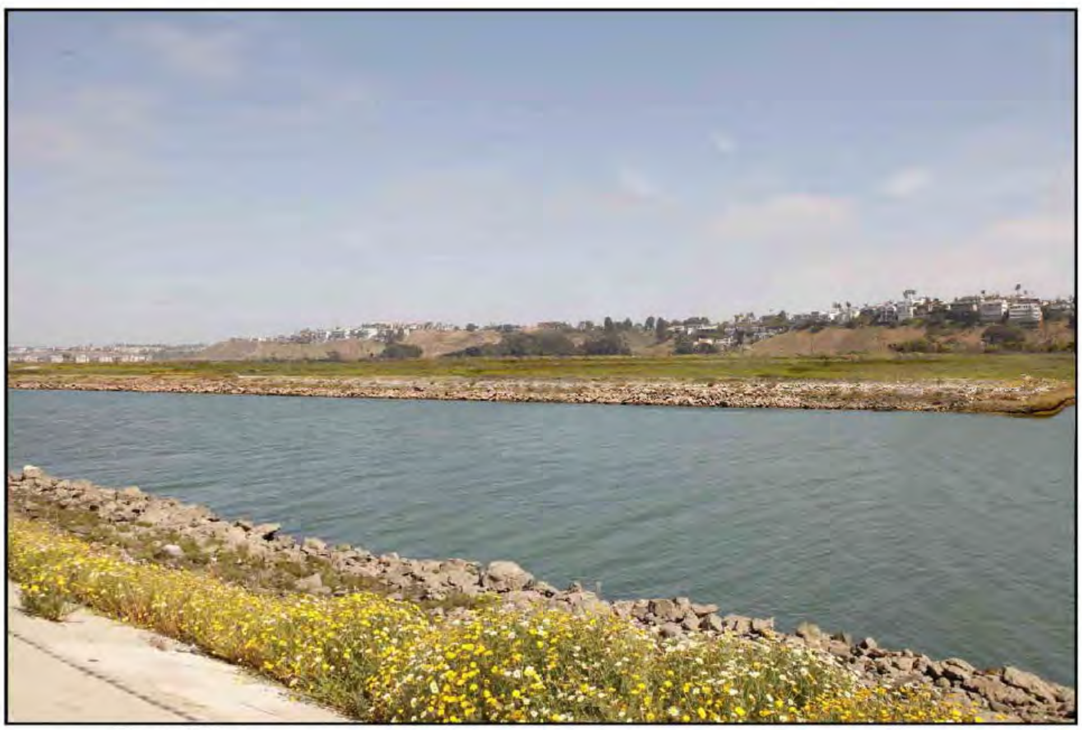
View from Fiji Way Looking Southeast (KOP 12)

This viewpoint is looking from the north side of Fiji Way outside of the Project site towards the middle portion of Area A to the southeast. From this viewpoint, the mature non-native landscape vegetation that is planted along Fiji Way outside of the Project site obscures much of the view. Small views of annual invasive plants in the middle of Area A and some native scrub vegetation along the Fiji Ditch are provided through the gap in the landscaped vegetation. The Westchester Bluffs can be seen rising above the crest of the Area A land form and development in Playa Vista can be seen to the southeast.

Figures 3.2-14 to 3.2-20 show selected KOPs with the simulated Project under Alternative 2 and Alternative 3.



Existing View



Proposed View

Note: This photograph and simulation show low tide conditions

SOURCE: VisionScape Imagery

Ballona Wetlands Restoration Project

Figure 3.2-12
Alternative 1: KOP 11

Existing View

Proposed View

SOURCE: VisionScape Imagery

Ballona Wetlands Restoration Project

Figure 3.2-13
Alternative 1: KOP 12

Existing View

Proposed View

SOURCE: VisionScape Imagery

ESA

Ballona Wetlands Restoration Project

Figure 3.2-14
Alternative 2: KOP 3

Existing View

Proposed View

SOURCE: VisionScape Imagery

ESA

Ballona Wetlands Restoration Project

Figure 3.2-15
Alternative 2: KOP 7

Existing View

Proposed View

SOURCE: VisionScape Imagery

Ballona Wetlands Restoration Project

Figure 3.2-16
Alternative 2: KOP 8

Existing View

Proposed View

Note: This photograph and simulation show low tide conditions

SOURCE: VisionScape Imagery

ESA

Ballona Wetlands Restoration Project

Figure 3.2-17
Alternative 2: KOP 9

Existing View

Proposed View

SOURCE: VisionScape Imagery

ESA

Ballona Wetlands Restoration Project

Figure 3.2-18
Alternative 2: KOP 10

Existing View

Proposed View

SOURCE: VisionScape Imagery

ESA

Ballona Wetlands
Restoration Project

Figure 3.2-19
Alternative 3: KOP 2

Existing View

Proposed View

SOURCE: VisionScape Imagery

ESA

Ballona Wetlands
Restoration Project

Figure 3.2-20
Alternative 3: KOP 12

3.2.3 Applicable Laws, Regulations, Plans, and Standards

3.2.3.1 Federal

Code of Federal Regulations

Part 325 of Title 33 of the Code of Federal Regulations, regarding the processing of Department of the Army permits, states: "The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources…including the cumulative effects thereof; among those are…aesthetics…" (33 CFR §325.3(c)).

3.2.3.2 State

California Scenic Highway Program

The California Scenic Highway Program is maintained by the California Department of Transportation (Caltrans) and identifies scenic highway corridors for preservation and protection of aesthetic value. Caltrans maintains a list of routes that are "adopted" and "eligible." There are three adopted scenic highways in Los Angeles County, all of which are more than 20 miles northeast of the Ballona Reserve. Eligible routes are those that are proposed for further study and may be officially designated when a local jurisdiction adopts a scenic corridor protection program and applies to Caltrans for scenic highway approval. State Route 1 (SR-1, Pacific Coast Highway/Lincoln Boulevard), between State Route 187 (Venice Boulevard) and Interstate 10 (U.S. 10), which begins about 1.5 miles north of the Project site and travels farther north, is listed as eligible for designation as a state scenic highway; however, no views of the Project site are available from this route due to intervening development in Marina del Rey.

California Coastal Act

The primary authority for implementing the California Coastal Management Program in the Project area is the California Coastal Commission, pursuant to the California Coastal Act of 1976. Sections of the California Coastal Act that pertain to aesthetics and scenic resources are described below. The Marina del Rey Local Coastal Program (LCP) is a component of the Los Angeles County Local Coastal Program, certified in February 2012 by the California Coastal Commission. The LCP lists important views proposed for protection. The views listed for protection in the LCP do not include any to or from the Ballona Reserve. For more information about this LCP, see Section 3.1.3.1, *Land Use and Planning*.

Section 30116 Sensitive Coastal Resource Areas

The Project site falls within the California Coastal Zone and would be considered a "Sensitive coastal resource area," which are identifiable and geographically bounded land and water areas within the coastal zone of vital interest and sensitivity. "Sensitive coastal resource areas" include the following:

a) Special marine and land habitat areas, wetlands, lagoons, and estuaries as mapped and designated in Part 4 of the coastal plan.

b) Areas possessing significant recreational value.

c) Highly scenic areas.

d) Archaeological sites referenced in the California Coastline and Recreation Plan or as designated by the State Historic Preservation Officer.

The Project site falls within: criteria “a” due to the presence of existing wetland habitat that occupies the south and west areas, criteria “b” due to its current recreational facilities and potential for expanded future recreational opportunities, and criteria “c” as the open space is a unique scenic feature of the site relative to the urban and developed areas that surround it.

Section 30251 Scenic and Visual Qualities

Under Section 30251 of the Coastal Act, the scenic and visual qualities of coastal areas are considered and protected as a resource of public importance. Under this section, permitted development surrounding the Project site would be required to be sited and designed to protect views to and along the Ballona Reserve, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas.

3.2.3.3 Local

State agencies acting in their sovereign capacity are not subject to local regulations unless the California Constitution says they are or the Legislature has consented to such regulation. However, local regulations are mentioned in this EIS/EIR because this analysis contemplates actions by SoCalGas outside of state property. Moreover, local plans and policies help inform this analysis related to Aesthetics.

Los Angeles County General Plan

Policies related to the protection of visual resources in the County’s General Plan include the following:

> ***Policy C/NR 13.2*****:** Protect ridgelines from incompatible development that diminishes their scenic value.

> ***Policy C/NR 13.4*****:** Encourage developments to be designed to create a consistent visual relationship with the natural terrain and vegetation.

In addition, the Scenic Highways Element recommends Lincoln Boulevard, Jefferson Boulevard, and Culver Boulevard as first priority routes for further study to be designated as scenic routes. First priority routes are subject to corridor studies in the future with the intention of ultimately being officially designated as a scenic highway under the Caltrans State Scenic Highways program.

City of Los Angeles General Plan

Scenic protection provisions are contained in the City of Los Angeles General Plan community plans. Policies in the General Plan that are intended to protect views apply to the development of private property. The Marina del Rey Community Plan includes Policy e.3, which proposes that parts of Fiji Way and Lincoln Boulevard be designated as a scenic byway under Section B.2.2 in the City's General Plan.

3.2.4 Thresholds of Significance

In this analysis, the Corps has elected to evaluate the context and intensity of potential environmental consequences relative to the criteria identified in CEQA Guidelines Appendix G, Section I, with consideration of additional Federal requirements by the Corps. In addition, the analysis considers where improvements of the Project would provide a net benefit relative to the conditions described in Section 3.2.2, Affected Environment.

For purposes of this analysis, Alternative 1, 2, 3, or 4 would have a significant impact related to Aesthetics if it would:

AE-1 Have a substantial adverse effect on a scenic vista;

AE-2 Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;

AE-3 Substantially degrade the existing visual character or quality of the site and its surroundings; or

AE-4 Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

3.2.5 Methodology

The analysis identifies potential temporary impacts from the proposed restoration activities and permanent post-restoration effects of the Project on aesthetic resources, as seen from publically accessible roads, recreational trails and routes, and other sensitive observer points, as identified as KOP 1 through KOP 12. Project elements are evaluated on the basis of visual simulations prepared by VisionScape (2015),[37] technical expertise, and familiarity with the site to determine their potential to result in impacts to aesthetic resources using the significance criteria provided above. Projects can result not only in direct impacts on readily identifiable scenic resources, amenities, or features, but also in indirect effects on the visual quality or character of an area. The approach to evaluating the effect of this Project under each criterion is described below:

[37] The grading and planting plans in the visual simulations are conceptual and modifications may be made as they are finalized, such as changes to the specific type of native plants to be installed. However, in all cases, plantings would consist of native species, and the site footprints and general landscaping plans would remain as presented in the EIS/EIR.

1. ***Have a substantial adverse effect on a scenic vista:*** This criterion applies only to projects that would be located on or disrupt access to a scenic vista, or result in visual changes within its viewshed. Scenic vistas may be officially recognized or designated (e.g., within local planning documents or the Caltrans scenic highway program), or they may be informal in nature (e.g., mountain peaks or coastal bluffs). A project's effect would be considered substantial if it would appreciably damage or remove the visual qualities that make the view unique, unobstructed, and/or exemplary.

2. ***Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway:*** Damage to a scenic resource is substantial when it is reasonably perceptible to affected viewers and when it appreciably degrades one or more of the aesthetic qualities that contributes to a scenic setting. The presence of and potential damage to scenic resources in this analysis is considered along with Project-related effects on the existing visual character and quality of a site or surroundings.

3. ***Substantially degrade the existing visual character or quality of the site and its surroundings:*** This criterion applies to all locations where a project would result in either temporary or permanent visual change. A project is considered to "substantially degrade" the visual character or quality of a site if it would have a strongly negative influence on the public's experience and appreciation of the visual environment. As such, visual changes always are considered in the context of a site or local's visual sensitivity. Visual changes caused by a project are evaluated in terms of their visual contrast with the area's predominant landscape elements and features, their dominance in views relative to other existing features, and the degree to which they could block or obscure views of aesthetically pleasing landscape elements. Visual changes also are evaluated in terms of potential damage to or removal of features of the natural or built environment that contribute to a scenic public setting. The magnitude of visual change that would result in a significant impact (i.e., substantial degradation) is influenced by its degree or permanence, and is inversely related to the visual sensitivity of a site.

4. ***Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area:*** This criterion applies to projects that require nighttime lighting, or that involve structures or finishes that could create substantial glare.

The analysis of impacts to visual resources is generally consistent with the Visual Resources Assessment Procedure (VRAP) for U.S. Army Corps of Engineers (1981). Consistent with the VRAP, Section 3.2.2 identifies the study area (affected environment) and regional landscape, and provides an inventory of the existing conditions at the Project site. The forecasted conditions with Project implementation are described in the analysis for Alternatives 1, 2, and 3 (see Sections 3.2.6.1, 3.2.6.2, and 3.2.6.3). Alternative 4, No Federal Action/No Project (see Section 3.2.6.4), describes the forecasted conditions at the Project site without implementation of any of the Project alternatives. Visual simulations were created to illustrate the changes that would occur to the Project site, and compare these changes across Alternatives 1, 2, and 3 from applicable viewpoints. The VRAP determines the relative change in visual conditions based on a numerical ranking of the proposed changes, relative to: water resources, landform, vegetation, land use, user activity, and special considerations. The Project alternatives would not result in substantial changes to the Project site from a visual standpoint, with respect to the criteria that are ranked in the VRAP. For example, while the Project alternatives would result in extensive revegetation of the Project site, the volume, mass, and general characteristics of the vegetation post-restoration would be described in a similar way to the pre-restoration vegetation conditions. Because the nature of the changes proposed would not register as a difference in ranking in the VRAP procedure, this analysis provides a qualitative discussion of how the alternatives would change the site's aesthetics.

3.2.6 Direct and Indirect Impacts

3.2.6.1 Alternative 1: Full Tidal Restoration/Proposed Action

Impact 1-AE-1: Alternative 1 would not have a substantial adverse effect on a scenic vista. (Less than Significant Impact)

Scenic vistas in the area include views of the Project site in the fore- and middle-ground with the Westchester Bluffs, the Santa Monica Mountains, and the San Gabriel Mountains rising in the background. The Westchester Bluffs are the dominant visual feature of views to the southeast, the Santa Monica Mountains dominate views to the north, and the San Gabriel Mountains dominate views to the northeast.

Direct Impacts

Restoration

The proposed restoration activities would change scenic vistas as seen from within and from surrounding the Project site as the earth moving equipment and materials, stockpiled soil fill, a potential for visible dust plumes, and debris piles would partially obscure scenic vistas when viewed in close proximity to Area A or Area C. Views of scenic vistas from public roads atop the Westchester Bluffs and those located to the south and southwest in Playa del Rey sit at a higher elevation than the Project site, which allows for broader panoramic views of the surrounding area. Thus, restoration activities undertaken for Alternative 1 may be seen in the foreground of views, but would not block or obscure broader views of scenic vistas. Two bridges would be constructed to provide access across Ballona Creek, running adjacent to the existing Culver Boulevard Bridge, and across Lincoln Boulevard, running adjacent to the existing Culver Boulevard overpass. The bridges would be of a similar height and appearance to the existing structures and would appear as an extension of those structures; construction of the bridges would not introduce a new visual element to any view that could obscure a scenic vista. Because restoration activities would result in temporary changes to the site[38] as restoration activities move from one area of the Ballona Reserve to another, implementation of Alternative 1 would result in a less-than-significant effect on scenic vistas during restoration activities.

[38] Alternative 1 would be implemented in two phases consisting of multiple sequences beginning in early 2017. The sequences would be grouped into two periods, with the first occurring between 2017 and 2022 and the second occurring in 2023. No mechanized activities would occur between 2022 and 2023 to facilitate habitat restoration and plant establishment within the Ballona Reserve.

Post-restoration

Implementation of Alternative 1 would permanently change the topography of the site by reconnecting the creek to its historic floodplain, creating a variety of habitat types at different elevations for greater resiliency to sea level rise, and establishing a more natural sinuous channel. However, the topography of Area A and West Area B would not be increased such that the Project would obscure views of scenic vistas from across the Project site. From KOP 6, KOP 10, and KOP 12 there would be only subtle changes to the landscape and scenic vistas would not be affected (Figures 3.2-8, 3.2-12, and 3.2-14). From KOP 2, KOP 3, KOP 4, KOP 9, and KOP 11, changes to the Project site would be discernible but there would be no obstruction of the views of scenic vistas from these viewpoints (Figures 3.2-4, 3.2-5, 3.2-6, 3.2-11, and 3.2-13). The two bridges would provide pedestrian and bicycle access across Ballona Creek, running adjacent to the existing Culver Boulevard Bridge, and across Lincoln Boulevard, running adjacent to the existing Culver Boulevard overpass. The bridges would be of a similar height and appearance to the existing structures and would appear as an extension of those structures; construction of the bridges would not introduce a new visual element to any view that could obscure a scenic vista. Operation and maintenance activities would occur throughout the site, daily to provide access to on-site parking lots, weekly to inspect the trash boom, and annually or as-needed to inspect other site facilities. Such activities would temporarily introduce vehicles and workers to the site that could be seen at a distance from some viewpoints, but would not be of the scale or magnitude to have a substantial adverse effect on a scenic vista. Thus, implementation of Alternative 1 would result in less-than-significant direct impacts on scenic vistas after restoration activities have been completed.

Indirect Impacts

Implementation of Alternative 1 would not result in any indirect impacts to scenic vistas during restoration activities. With implementation of Alternative 1, there would be an increase in visitors to the site associated with reopening the Ballona Reserve to the public; however, this post-restoration increase in activity within the Ballona Reserve would not obscure scenic vistas due to the distance from which these views are seen. Rather, implementation of the Project would provide new opportunities to view scenic vistas from within the Project site, and the scenic vistas would appear more natural and with greater habitat diversity relative to existing conditions. As such, Alternative 1 would generally have a beneficial effect on scenic vistas. Thus, implementation of Alternative 1 would result in less-than-significant indirect impacts on scenic vistas after restoration activities have been completed.

Impact 1-AE-2: Alternative 1 would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. (Less than Significant Impact)

The nearest state-designated scenic highway to the Project site is SR-1 (Pacific Coast Highway/Lincoln Boulevard), which runs northwest to southeast along California's coastline beginning in Mendocino County and ending in Orange County. The portion of Lincoln Boulevard that is designated as a state scenic highway begins at I-10 and terminates at Venice Boulevard, to the north of the Project site. The Project site is not visible from any location along this segment of Lincoln Boulevard. However, Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard are considered potential future scenic routes under the City of Los Angeles

General Plan. Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard provide scenic views of the Project site, which is one of the few large expanses of open space in the surrounding area.

Direct Impacts

Restoration

Restoration activities under Alternative 1 would temporarily change views of the Project site as the earth moving equipment and materials, stockpiled soil fill, a potential for visible dust plumes, and debris piles could be seen from most viewpoints along adjacent and internal roadways. Distant views of the Pacific Ocean from the Culver Boulevard Bridge would also be altered temporarily while restoration activities occur; however, these changes are temporary and most views would be available from various viewpoints once restoration activities are completed. The impact would be less than significant.

Post-restoration

Proposed changes to scenic resources within the Project site include the realignment of the Ballona Creek channel to a more natural sinuous shape and the excavation of Area A and Area B to create restored wetland habitat, as shown in Figure 3.2-4 at KOP 2. Other noticeable changes to the Project site that would result from the implementation of Alternative 1 include: the relocation of excavated materials to Area C to create elevated areas of upland habitat on either side of the channel, and the excavation of additional channels in West Area B and Area C. Much of the site would be revegetated to replace the existing non-native vegetation with a variety of vegetation and habitat types at different elevations that would increase resiliency to sea level rise. The existing eucalyptus grove would remain in place and would not be altered as a result of Alternative 1. While existing scenic resources would be altered or removed; Alternative 1 would replace or restore those scenic resources so that the character, color, and landforms of the setting would be similar to existing conditions (as described in Section 3.2.2, Affected Environment) and, post-restoration, Alternative 1 would result in visual conditions that are similar to existing conditions, but improved by the establishment of more natural looking features and removal of trash and debris that is currently located on the site. As such, Alternative 1 would generally result in beneficial effects relative to existing conditions. Operation and maintenance activities would occur throughout the site that would temporarily introduce vehicles and workers to inspect project facilities and conduct repairs as needed; however, such activities would not affect any scenic resources onsite. Although scenic resources within the Project would be changed, the site would maintain the existing open space character and quality under implementation of Alternative 1 and impacts to scenic resources along state scenic highways would be less than significant.

Indirect Impacts

Implementation of Alternative 1 would not result in any indirect impacts to scenic resources within a state scenic highway during restoration activities or after restoration activities have been completed.

Impact 1-AE-3: Alternative 1 would not substantially degrade the existing visual character or quality of the site and its surroundings. (Less than Significant Impact)

The Project site consists of undeveloped land with an open space character and is a unique scenic resource in the otherwise urban and developed area that immediately surrounds the Project site.

Direct Impacts

Restoration

As discussed above, Alternative 1 would be implemented in two phases and consist of large scale restoration-related grading and excavation activities, the transportation and placement of fill, the temporary stock piling of fill, the export of excavated materials off-site and the construction of two new bridges, a three story parking structure and new bicycle and pedestrian facilities. These activities would result in impacts to the visual character of the site from within and surrounding the Project site as the earth moving equipment and materials, stockpiled soil fill, a potential for visible dust plumes, and debris piles would be visible from all KOPs. Two bridges would be constructed to provide access across Ballona Creek, running adjacent to the existing Culver Boulevard Bridge, and across Lincoln Boulevard, running adjacent to the existing Culver Boulevard overpass. The bridges would be of a similar height and appearance to the existing structures and would appear as an extension of those structures; construction of the bridges would not introduce a new visual element that would degrade the visual character of the surrounding area. The existing SoCalGas natural gas storage wells and associated gas lines would be decommissioned and/or relocated. The area around the wells would be restored with native vegetation after they are decommissioned and the visual character of the natural gas well area would not be substantially altered. Restoration and decommissioning activities would be visible from the three roadways that cross the site, adjacent sidewalks and bicycle and pedestrian paths, and the residential and commercial areas surrounding the site. Such temporary construction activity is not out of character for a typical urban environment, such as that which surrounds the site; however, these activities would be out of character for the undeveloped open space character of the Ballona Reserve. These impacts would be temporary as restoration activities move between each work area, with much of the major restoration activity occurring during Phase 1 (see footnote 1). Short-term impacts on the visual character and quality of the site and its surroundings would be less than significant.

Post-restoration

Implementation of Alternative 1 would result in changes to the visual character of the Project site. The most significant visual change to the Project site would be the realignment of the Ballona Creek channel to a natural form (thereby replacing views of hard structures associated with the existing channel with lower-profile bank armoring) and the excavation of Area A and Area B to create restored wetland habitat. Other noticeable changes to the landscape include the relocation of excavation materials to Area C to create elevated areas of upland habitat on either side of the channel, and the excavation of additional channels in West Area B and Area C. In addition, much of the site would be revegetated to replace the existing non-native vegetation with a variety of vegetation and habitat types at different elevations that would increase resiliency to sea level rise. New walking and biking trails would be constructed throughout the site, and pedestrians and bicyclists would be seen atop the new levees. While Alternative 1 would change the existing topography of the site substantially, the character, color, and landforms of the setting would be similar to existing conditions. Where visible, the Project-related change would not substantially alter the visual character or quality of the area; rather Alternative 1 would result in visual conditions that are similar to existing conditions, but improved by the establishment of more natural looking features and removal of trash and debris that is currently located on the site. As such, Alternative 1 would generally result in beneficial effects over existing conditions. Although Alternative 1 involves the construction of a new parking structure in the northwest corner of Area A, the structure would be located near other development in Marina del Rey and would not substantially alter the visual quality or character of the larger Project site. The two bridges would provide pedestrian and bicycle access across Ballona Creek and Lincoln Boulevard. The bridges would be of a similar height and appearance to the existing structures and would appear as an extension of those structures; construction of the bridges would not introduce a new visual element that would degrade the visual character of the surrounding area. Ongoing operation and maintenance activities would occur throughout the site that would introduce vehicles and workers to the site; however, such activities would be temporary and would not be of the scale or magnitude to substantially degrade the visual character or quality of the site or its surroundings. Thus, impacts related to degradation of the existing visual character or quality of the site and surrounding areas would be less than significant.

Indirect Impacts

With implementation of Alternative 1, there would be an increase in visitors to the site associated with reopening the Ballona Reserve to the public; however, this increase in activity would not substantially change the existing visual character or quality of the Project site. The impact would be less than significant.

Impact 1-AE-4: Alternative 1, if mitigated, would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Restoration

Restoration activities associated with implementation of Alternative 1 would create new sources of light or glare, as lighting would be used during early morning and evening work activities. Work would occur Monday through Friday between the hours of 7:00 a.m. and 9:00 p.m. and could occur on Saturdays and holidays between the hours of 8:00 a.m. and 6:00 p.m. Construction (except bridge construction) would not occur during nighttime after 9:00 p.m. on weekdays, after 6:00 p.m. on Saturdays, or anytime on Sundays. Construction of the bridges over Lincoln Boulevard and Culver Boulevard would occur at night (between 10 p.m. and 4 a.m.) 5 days a week over a 3- to 4-week period. Thus, construction lighting would be limited to a few hours a day, with most lighting use occurring during hours when the sites are partially lighted by natural dusk conditions. Further, given the topography of the area, with most adjacent land uses at higher elevation than the Project site, it is unlikely that construction lighting would directly enter adjacent areas. Construction lighting would be aimed toward the activity and would be mostly contained within the area where work would be occurring; however, construction lighting still could result in substantial light and glare during the evening on areas with direct views of the site if lighting is not controlled and directed appropriately.

Construction lighting would be required for a limited number of hours in the early evening. While it is unlikely, should construction lighting be directed at adjacent areas, substantial light and glare effects could occur. This is a potentially significant effect. Mitigation Measure AE-1a would ensure that Project construction lighting would be shielded such that it would not result in substantial light and glare effects on adjacent areas. Implementation of this mitigation measure would reduce potential light and glare impacts during restoration phase activities to a less-than-significant level.

Mitigation Measure

Mitigation Measure AE-4a: *Construction Lighting*. Construction contractors shall ensure that all temporary construction lighting shall be designed and installed to be fully shielded (full cutoff) and to minimize glare and obtrusive light by limiting outdoor lighting that is misdirected, excessive, or unnecessary. Construction lighting shall be oriented away from nearby land use areas that are not being affected by construction.

Level of Significance after Mitigation

With implementation of the construction lighting measures, light and glare spillover to adjacent areas would be minimal and this impact would be less than significant.

Post-restoration

Following restoration, security lighting at the proposed three story parking structure and the West Culver Parking Lot could result in substantial light and glare during hours of darkness on areas with direct views of the Project site. In addition, the bridges could provide lighting along the pathway for safety and security that would be similar to the lighting provided along the existing vehicular bridges. Mitigation Measure AE-1b would ensure that all exterior lighting would be directed downward and focused away from adjacent sensitive uses and habitats and, thereby, would provide for security-related illumination while reducing potential light and glare impacts during the post-restoration phase to a less-than-significant level. While other ongoing operation and maintenance activities would occur that would temporarily introduce workers and vehicles to the site, such activities would occur during daylight and would not introduce substantial new sources of light or glare to the site.

Mitigation Measure

Mitigation Measure AE-4b: *Lighting Plan*. Prior to implementing any changes to the existing parking areas, a lighting plan shall be developed and implemented that requires all exterior lighting to be directed downward and focused away from adjacent sensitive uses and habitats to encourage way-finding and provide security and safety for individuals walking to and from parking areas.

Level of Significance after Mitigation

With implementation of the lighting plan, light and glare spillover to adjacent areas would be minimal and this impact would be less than significant.

Indirect Impacts

No indirect impacts related to light or glare would result during restoration activities associated with implementation of Alternative 1. However, implementation of Alternative 1 would result in an increase of visitors to the site post restoration, including pedestrians and bicyclists using the pathways, which could indirectly generate a new source of light in the Project area. Although bicyclists may use bicycle lighting in the early morning and evening, this additional light source would be fleeting and would not appear as a significant new light source from the surrounding areas. The impact would be less than significant.

TABLE 3.2-1
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
AE-1: Have a substantial adverse effect on a scenic vista? See Impact 1-AE-1.	☐	☐	☒	☐
AE-2: Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? See Impact 1-AE-2.	☐	☐	☒	☐
AE-3: Substantially degrade the existing visual character or quality of the site and its surroundings? See Impact 1-AE-3.	☐	☐	☒	☐
AE-4: Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area? See Impact 1-AE-4.	☐	☒	☐	☐

3.2.6.2 Alternative 2: Restored Partial Sinuous Creek

Impact 2-AE-1: Alternative 2 would not have a substantial adverse effect on a scenic vista. (Less than Significant Impact)

Scenic vistas in the area include views of the Project site in the fore- and middle-ground with the Westchester Bluffs, the Santa Monica Mountains, and the San Gabriel Mountains rising in the background. The Westchester Bluffs are the dominant visual feature of views to the southeast, the Santa Monica Mountains dominate views to the north, and the San Gabriel Mountains dominate views to the northeast.

Direct Impacts

Restoration

As with Alternative 1, Alternative 2 would temporarily change views surrounding the Project site as the earth moving equipment and materials, stockpiled soil fill, a potential for visible dust plumes, and debris piles would partially obscure scenic vistas when viewed in close proximity to Area A and Area C. Views of scenic vistas from public roads atop the Westchester Bluffs and those located to the west in Playa del Rey sit at a higher elevation than the Project site, which allows for broader panoramic views of the surrounding area. Thus, restoration activities may be seen in the foreground of views, but would not block or obscure such views. These impacts would be temporary[39] as restoration activities move between work areas. Like Alternative 1, two bridges would be constructed to provide access across Ballona Creek and Lincoln Boulevard, running adjacent to the existing Culver Boulevard overpasses. The bridges would be of a similar height and appearance to the existing structures and would appear as an extension of those structures; construction of the bridges would not introduce a new visual element to any view that could obscure a scenic vista.

Alternative 2 would require less restoration-related construction activity in West Area A than Alternative 1 and minor activity in South Area B, with changes to the site occurring primarily in Area A, North Area B, East Area B, and Area C. Restoration activities would be visible from the three roads running across the site, adjacent sidewalks and bicycle and pedestrian paths, and other public areas surrounding the site. However, these impacts would be temporary, as much of the major restoration-related construction activity would occur during the first few years following Project approval, after which visual impacts from the proposed restoration work would be reduced. The impact would be less than significant.

Post-restoration

Implementation of Alternative 2 would change the topography of the site permanently by reconnecting the creek to its historic floodplain, creating a variety of habitat types at different elevations for greater resiliency to sea level rise, and establishing a more natural sinuous channel. However, these changes would not affect scenic vistas. The topography of the site under Alternative 2 would be similar to that of Alternative 1, except that no changes would occur in West Area B as shown in Figures 3.2-15, 3.2-16, 3.2-17, 3.2-18, and 3.2-19, which show views of Alternative 2 from KOPs 3, 7, 8, 9, and 10 respectively. Views from the other KOPs would be the same and those under Alternative 1. There would be only subtle changes to scenic vistas from KOP 6, KOP 11 and KOP 12 (Figures 3.2-8, 3.2-13 and 3.2-14). From KOP 2 and KOP 4 changes to the Project site would be discernable but there would be no obstruction of the views of scenic vistas from these viewpoints (Figures 3.2-4 and 3.2-6). As with Alternative 1, new upland habitat areas in Area C would entirely obscure distant views of Playa Vista to the southeast from KOP 1 (Figure 3.2-3); however, views to the east would remain relatively unchanged and these mounds would decrease in visibility at further distances. In general, Alternative 2 would result in fewer changes to scenic vistas than Alternative 1 as a result of the preservation of West Area B in its current state. The overall effect of Alternative 2 on scenic vistas is most clearly illustrated from KOP 5 (Figure 3.2-7), which looks north and northwest across the site from the Westchester bluffs. Similar to Alternative 1, physical changes to the site would be discernible; however, the changes in topography from this distance would not obscure views of these scenic vistas. The two bridges would provide pedestrian and bicycle access across Ballona Creek and Lincoln Boulevard. The bridges would be of a similar height and appearance to the existing structures and would appear as an extension of those structures; construction of the bridges would not introduce a new visual element to any view that could obscure a scenic vista. Operation and maintenance activities would occur throughout the site, daily to provide access to on-site parking lots, and periodically to inspect site facilities. Such activities would temporarily introduce vehicles and workers to the site that could be seen at a distance from some

[39] Alternative 2 would be implemented in a single phase consisting of multiple sequences over the course of 36 months.

viewpoints, but would not be of the scale or magnitude to have a substantial adverse effect on a scenic vista. The impact would be less than significant.

Indirect Impacts

Implementation of Alternative 2 would not result in any indirect impacts to scenic vistas during restoration activities.

With implementation of Alternative 2, there would be an increase in visitors to the site associated with reopening the Ballona Reserve to the public post restoration; however, this increase would not obscure scenic vistas due to the distance from which these views are seen. Rather, implementation of the Project would provide new opportunities to view scenic vistas from within the Project site. Scenic vistas would appear more natural and with greater habitat diversity than over existing conditions. As such, Alternative 1 would generally have beneficial effects. Thus, implementation of Alternative 2 would result in less than significant indirect impacts on scenic vistas after restoration activities have been completed.

Impact 2-AE-2: Alternative 2 would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. (Less than Significant Impact)

As previously discussed, there are no views of the Project site provided from a designated state scenic highway. However, Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard are considered potential future scenic routes under the City of Los Angeles General Plan and all three roadways provide scenic views of the Project site, which is considered a scenic resource as it is one of the few large expanses of open space in the surrounding area.

Direct Impacts

Restoration

Like Alternative 1, restoration activities under Alternative 2 would change views of the Project site temporarily as the earth moving equipment and materials, stockpiled soil fill, a potential for visible dust plumes, and debris piles could be seen from most viewpoints along adjacent and internal roadways. Distant views of the Pacific Ocean from the Culver Boulevard Bridge also would be altered temporarily while restoration activities occur; however, these changes are temporary and most views would be available from various viewpoints once restoration activities are completed. The impact would be less than significant.

Post-restoration

Proposed changes to scenic resources under Alternative 2 would be similar to those under Alternative 1 and, include: the realignment of the Ballona Creek channel to a natural form and the excavation of Area A and Area B to create restored wetland habitat, as shown in Figure 3.2-4 at KOP 2. Other noticeable changes to the Project site include the relocation of excavated materials to Area C to create elevated areas of upland habitat on either side of the channel, and the excavation of additional channels in West Area B and Area C. Much of the site would be revegetated to replace the existing, non-native vegetation with a variety of vegetation and habitat types at different elevations that would increase resiliency to sea level rise. The existing eucalyptus grove would remain in place and would not be altered as a result of Alternative 2.

While existing scenic resources would be altered or removed, Alternative 2 would replace or restore those scenic resources so that the character, color, and landforms of the setting would be similar to existing conditions and the Project would result in visual conditions that are similar to or better than existing conditions. Operation and maintenance activities would occur throughout the site that would temporarily introduce vehicles and workers to inspect project facilities and conduct repairs as needed; however, such activities would not affect any scenic resources onsite. Although scenic resources within the site would be altered, the site would maintain the existing open space character and quality under implementation of Alternative 2 and impacts to scenic resources would be less than significant.

Indirect Impacts

Implementation of Alternative 2 would not result in any indirect impacts to scenic resources within a state scenic highway during or after restoration activities have been completed.

Impact 2-AE-3: Alternative 2 would not substantially degrade the existing visual character or quality of the site and its surroundings. (Less than Significant Impact)

As previously discussed, the Project site consists of undeveloped land with an open space character and is a unique scenic resource in the otherwise urban and developed area that immediately surrounds the Project site.

Direct Impacts

Restoration

Restoration activities for Alternative 2 would result in impacts to visual character of the site from within and surrounding the site as the earth moving equipment and materials, stockpiled soil fill, a potential for visible dust plumes, and debris piles would be visible from all KOPs. Like Alternative 1, two bridges would be constructed to provide access across Ballona Creek and Lincoln Boulevard, running adjacent to the existing Culver Boulevard overpasses. The bridges would be of a similar height and appearance to the existing structures and would appear as an extension of those structures; construction of the bridges would not introduce a new visual element that would degrade the visual character of the surrounding area. Temporary construction activity would not be out of character for a typical urban environment, such as that which surrounds the site; however, these activities would be out of character for the open space character of the Ballona Reserve. Because these impacts would be temporary (see footnote 2) as restoration activities move between each work area, short-term effects on the visual character and quality of the site and its surroundings from Alternative 2 would be less than significant.

Post-restoration

Implementation of Alternative 2 would result in similar changes to Project site as under Alternative 1. The most significant visual change to the Project site would be the realignment of the Ballona Creek channel to a natural form and the excavation of Area A and North Area B to create restored wetland habitat. Other noticeable changes to the landscape include the relocation of excavation materials to Area C to create elevated areas of upland habitat on either side of the channel. In addition, much of the site would be revegetated to create a variety of vegetation and habitat types. Alternative 2 would involve few changes to West Area B and South Area B, which would remain largely preserved as is. While Alternative 2 would change the existing topography of Area A and Area C substantially, the character, color, and landforms of the visual setting would be similar to existing conditions.

From KOP 3, KOP 6, KOP 7, KOP 8, KOP 9, KOP 10, KOP 11, and KOP 12 there would be only subtle changes to existing views and Alternative 2 would not alter the visual character or quality of the area (Figures 3.2-15, 3.2-8, 3.2-16, 3.2-17, 3.2-18, 3.2-19, and 3.2-14). From KOP 2, KOP 5 and KOP 4 changes to the Project site would be discernible but the overall visual character of the view would be consistent with existing conditions (Figures 3.2-4, 3.2-6 and 3.2-7). As with Alternative 1, new upland habitat areas in Area C would entirely obscure distant views of Playa Vista to the south from KOP 1 (Figure 3.2-3); however, views to the east would remain relatively unchanged. In general, Alternative 2 would result in similar effects to visual character as Alternative 1, and the overall visual quality of the site would be similar to that under existing conditions. The two bridges would provide pedestrian and bicycle access across Ballona Creek and Lincoln Boulevard. The bridges would be of a similar height and appearance to the existing structures and would appear as an extension of those structures; construction of the bridges would not introduce a new visual element that would degrade the visual character of the surrounding area. Ongoing operation and maintenance activities would occur throughout the site that would introduce vehicles and workers to the site; however, such activities would be temporary and would not be of the scale or magnitude to substantially degrade the visual character or quality of the site or its surroundings. Thus, implementation of Alternative 2 would result in less-than-significant direct impacts on visual character and quality after restoration activities have been completed.

Indirect Impacts

Implementation of Alternative 2 would not result in any indirect impacts to visual character or quality during restoration activities. With implementation of Alternative 2, there would be an increase in visitors to the site post restoration; however, this increase in activity would not substantially change the existing visual character or quality of the Project site, as some visitors can already be seen traveling along the existing Ballona Creek bike path. The site would appear more natural and with greater habitat diversity than existing conditions. As such, Alternative 1 would have beneficial effects and the impact would be less than significant.

Impact 2-AE-4: Alternative 2, if mitigated, would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 2 would create new sources of light or glare during the restoration phase, as lighting would be used during early morning and evening work, and glare from equipment could occur during the day. Restoration activities would be implemented Monday through Friday between the hours of 7:00 a.m. and 9:00 p.m. and could occur on Saturdays and holidays between the hours of 8:00 a.m. and 6:00 p.m. Construction (except for bridge construction) would not occur during nighttime after 9:00 p.m. on weekdays, after 6:00 p.m. on Saturdays, or anytime on Sundays. Construction of the bridges over Lincoln Boulevard and Culver Boulevard would occur at night (between 10 p.m. and 4 a.m.) 5 days a week over a 3- to 4-week period. Thus, construction lighting would be limited to a few hours a day, with most lighting use occurring during hours when the sites are partially lighted by natural dusk conditions. Further, given the topography of the area, with most adjacent land uses at higher elevation than the Project site, it is unlikely that construction lighting would be directly entering adjacent areas. Construction lighting would be aimed toward the activity and would be mostly contained within the area where work would be occurring; however, construction lighting could still create a nuisance during the evening for the areas with direct views of the site if lighting is not controlled and is directed away from the construction site. This is a potentially significant effect.

Mitigation Measure

Implement Mitigation Measure AE-4a.

Level of Significance after Mitigation Incorporated

Mitigation Measure AE-4a would ensure that construction lighting is shielded such that it would not result in substantial light and glare effects on adjacent areas. Implementation of this mitigation measure would reduce potential light and glare impacts during the restoration phase to a less-than-significant level.

Post-restoration

Following restoration, security lighting at the proposed three-story parking structure and the West Culver Parking Lot could result in substantial light and glare during hours of darkness on areas with direct views of the Project site. In addition, the new bridges could provide safety and security lighting that could have an adverse impact. While other ongoing operation and maintenance activities would occur that would temporarily introduce workers and vehicles to the site, such activities would occur during daylight and would not introduce substantial new sources of light or glare to the site.

Mitigation Measure

Implement Mitigation Measure AE-4b.

Level of Significance after Mitigation Incorporated

Mitigation Measure AE-4b would ensure that all exterior lighting would be directed downward and focused away from adjacent sensitive uses and habitats and, thereby, would provide for security-related illumination while reducing potential light and glare impacts during the post-restoration phase to a less-than-significant level.

Indirect Impacts

There are no indirect impacts related to light or glare that would result during restoration activities associated with implementation of Alternative 2.

Implementation of Alternative 2 would result in an increase of visitors to the site post restoration, including pedestrians and bicyclists using the pathways, which could indirectly generate a new source of light in the Project area. Although bicyclists may use bicycle lighting in the early morning and evening, this additional light source would be fleeting and would not appear as a significant new light source from the surrounding areas. The impact would be less than significant.

TABLE 3.2-2
ALTERNATIVE 2 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
AE-1: Have a substantial adverse effect on a scenic vista? See Impact 2-AE-1	☐	☐	☒	☐
AE-2: Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? See Impact 2-AE-2	☐	☐	☒	☐
AE-3: Substantially degrade the existing visual character or quality of the site and its surroundings? See Impact 2-AE-3.	☐	☐	☒	☐
AE-4: Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area? See Impact 2-AE-4.	☐	☒	☐	☐

3.2.6.3 Alternative 3: Levee Culverts and Oxbow

Impact 3-AE-1: Alternative 3 would not have a substantial adverse effect on a scenic vista. (Less than Significant Impact)

Scenic vistas in the area include views of the Project site in the fore- and middle-ground with the Westchester Bluffs, the Santa Monica Mountains, and the San Gabriel Mountains rising in the background. The Westchester Bluffs are the dominant visual feature of views to the southeast, the Santa Monica Mountains dominate views to the north, and the San Gabriel Mountains dominate views to the northeast.

Direct Impacts

Restoration

Alternative 3 would result in a significantly smaller restoration footprint than Alternatives 1 or 2. Alternative 3 would focus restoration efforts in Area A and Area C only; no Project changes would occur in Area B. As with Alternatives 1 and 2, Alternative 3 would temporarily change views surrounding the Project site as the earth moving equipment and materials, stockpiled soil fill, a potential for visible dust plumes, and debris piles would partially obscure scenic vistas when viewed in close proximity to Area A and Area C. Views of scenic vistas from public roads atop the Westchester bluffs and those located to the south and southwest in Playa del Rey sit at a higher elevation than the Project site, which allows for broader panoramic views of the surrounding area. Thus, restoration activities for Alternative 3 could be seen in the foreground of views, but would not block or obscure such views. Construction activity is not out of character for a typical urban environment, such as that which surrounds the site; however, these activities would be out of character for the open space and natural habitat character of the Ballona Reserve. However, these changes would be temporary[40] as restoration activities move from each work area. A temporary bridge would be constructed to provide access across Lincoln Boulevard

[40] Alternative 3 would be implemented in a single phase consisting of multiple sequences over the course of 36 months.

during restoration activities; however, the new bridge would run parallel with and be a similar height to the existing Culver Boulevard overpass and would not further obscure scenic vistas. The Project would have a less than significant impact.

Post-restoration

Implementation of Alternative 3 would permanently change the topography of the site; however, topographical changes would not obstruct or substantially affect scenic vistas. The topography of Area A under Alternative 3 would be similar to that of Alternatives 1 and 2, and no changes would occur in West Area B. There would be only subtle changes to scenic vistas from most KOPs. Changes to the Project site would be visible from KOP 2 and KOP 12, which would mostly be due to the changes in vegetation and lower elevation of Area A (see Figure 3.2-20). The overall effect of Alternative 3 on scenic vistas is most clearly illustrated from KOP 5 (Figure 3.2-7), which looks north and northwest across the site from the Westchester bluffs. Similar to Alternatives 1 and 2, physical changes to the site would be discernible; however, the changes in topography from this distance would not obscure views of these scenic vistas. The temporary bridge would be converted to permanent use to provide pedestrian and bicycle access across Lincoln Boulevard. The bridge would be of a similar height and appearance to the existing structures and would appear as an extension of those structures; construction of the bridges would not introduce a new visual element to any view that could obscure a scenic vista. Ongoing operation and maintenance activities would occur throughout the site, daily to provide access to on-site parking lots, and periodically to inspect site facilities. Such activities would temporarily introduce vehicles and workers to the site that could be seen at a distance from some viewpoints, but would not be of the scale or magnitude to have a substantial adverse effect on a scenic vista. Thus, effects on scenic vistas would be less than significant.

Indirect Impacts

Implementation of Alternative 3 would not result in any indirect impacts to scenic vistas during restoration activities. Once restoration is complete, there would be an increase in visitors to the site; however, this increase in activity would not obscure scenic vistas due to the distance from which these views are seen. Rather, implementation of the Project would provide new opportunities to view scenic vistas from within the Project site and the scenic vistas would appear more natural and with greater habitat diversity than under existing conditions; as such, Alternative 3 would generally have beneficial effects. Thus, implementation of Alternative 1 would result in less than significant indirect impacts on scenic vistas after restoration activities have been completed.

Impact 3-AE-2: Alternative 3 would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. (Less than Significant Impact)

As previously discussed, there are no views of the Project site provided from a designated state scenic highway. However, Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard are considered potential future scenic routes under the City of Los Angeles General Plan and all three roadways provide scenic views of the Project site, which is considered a scenic resource as it is one of the few large expanses of open space in the surrounding area.

Direct Impacts

Restoration

Restoration activities under Alternative 3 would change views of the Project site temporarily as the earth moving equipment and materials, stockpiled soil fill, a potential for visible dust plumes, and debris piles could be seen from most viewpoints along adjacent and internal roadways. Distant views of the Pacific Ocean from the Culver Boulevard Bridge would also be altered temporarily while restoration activities occur; however, these changes are temporary and most views would be available from various viewpoints once restoration activities are completed. The impact would be less than significant.

Post-restoration

Implementation of Alternative 3 would result in changes to the Project site, as seen from all three roadways. These changes would include excavation in Area A and installation of culverts to allow seawater inundation. Area A would also be revegetated to create wetland habitat areas. The existing eucalyptus grove would remain in place and would not be altered as a result of the Project. Alternative 3 would result in visual conditions that are similar to or better than existing conditions. Operation and maintenance activities would occur throughout the site that would temporarily introduce vehicles and workers to inspect project facilities and conduct repairs as needed; however, such activities would not affect any scenic resources onsite. Although scenic resources within the Ballona Reserve would be altered, the site would maintain the existing open space character and quality under implementation of Alternative 3 and impacts to scenic resources would be less than significant.

Indirect Impacts

Implementation of Alternative 3 would not result in any indirect impacts to scenic resources within a state scenic highway during or after restoration activities have been completed.

Impact 3-AE-3: Alternative 3 would not substantially degrade the existing visual character or quality of the site and its surroundings. (Less than Significant Impact)

As previously discussed, the Project site consists of undeveloped land with an open space character and is a unique scenic resource in the otherwise urban and developed area that immediately surrounds the Project site.

Direct Impacts

Restoration

Project activities associated with Alternative 3 would not result in any changes to Area B with changes to the site occurring in Area A and Area C only. A temporary bridge would be constructed to provide access across Lincoln Boulevard during restoration activities. The bridge would be of a similar height and appearance to the existing structures and would appear as an extension of those structures; construction of the bridges would not introduce a new visual element to the view that could alter the existing visual character of the site. These activities would result in impacts to visual character of the site from within and surrounding the Project site as the earth moving equipment and materials, stockpiled soil fill, a potential for visible dust plumes, and debris piles would be visible from most KOPs, though these impacts would be reduced relative to Alternatives 1 and 2. Because these impacts would be temporary as restoration activities move between each work area, short-term effects on the visual character and quality of the site and its surroundings from Alternative 3 would be less than significant.

Post-restoration

Implementation of Alternative 3 would result in significantly fewer changes to the site relative to Alternatives 1 and 2. The most significant visual change to the Project site would be the excavation of Area A and the installation of two culverts under the Ballona Creek channel levee to create wetland habitat in Area A. In addition, Area A would be revegetated. While Alternative 3 would change the existing topography of the site substantially, the character, color, and landforms of the setting would be similar to existing conditions. There would be only subtle changes to the existing view; where visible, the Project-related change would not substantially alter the visual character or quality of the area. The temporary bridge would be converted to permanent use to provide pedestrian and bicycle access across Lincoln Boulevard. The bridges would be of a similar height and appearance to the existing structures and would appear as an extension of those structures; construction of the bridges would not introduce a new visual element that would degrade the visual character of the surrounding area. Ongoing operation and maintenance activities would occur throughout the site that would introduce vehicles and workers to the site; however, such activities would be temporary and would not be of the scale or magnitude to substantially degrade the visual character or quality of the site or its surroundings. Thus, impacts related to degradation of the existing visual character or quality of the site and surrounding areas would be less than significant.

Indirect Impacts

Implementation of Alternative 3 would not result in any indirect impacts to visual character or quality of the Project site during restoration or upon completion of all restoration activities. Alternative 3 would remove existing debris from the site and involve some revegetation that would have beneficial effects for visual character. The impact would be less than significant.

Impact 3-AE-4: Alternative 3, if mitigated, would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 3 would create new sources of light or glare during the restoration phase, as lighting would be used during early morning and evening construction, and glare from equipment could occur during the day. Construction would occur Monday through Friday between the hours of 7:00 a.m. and 9:00 p.m. and could occur on Saturdays and holidays between the hours of 8:00 a.m. and 6:00 p.m. Construction (except bridge construction) would not occur during nighttime after 9:00 p.m. on weekdays, after 6:00 p.m. on Saturdays, or anytime on Sundays. Construction of the bridge over Lincoln Boulevard would occur at night (between 10 p.m. and 4 a.m.) 5 days a week over a 3- to 4-week period. Thus, construction lighting would be limited to a few hours a day, with most lighting use occurring during hours when the sites are partially lighted by natural dusk conditions. Further, given the topography of the area, with most adjacent land uses at higher elevation than the Project site, it is unlikely that construction lighting would be directly entering adjacent areas. Construction lighting would be aimed toward the activity and would be mostly contained within the area where work would be occurring; however, construction lighting could still create a nuisance during the evening for the residences with direct views of the site if lighting is not controlled and is directed away from the construction site. This is a potentially significant effect. Mitigation Measure AE-1a would ensure that Project construction lighting is shielded such that it would not result in substantial light and glare effects on adjacent areas. Implementation of this mitigation measure would reduce potential light and glare impacts during the restoration phase to a less-than-significant level.

Mitigation Measure

Implement Mitigation Measure AE-4a.

Level of Significance after Mitigation Incorporated

Mitigation Measure AE-4a would ensure that construction lighting is shielded such that it would not result in substantial light and glare effects on adjacent areas. Implementation of this mitigation measure would reduce potential light and glare impacts during the restoration phase to a less-than-significant level.

Post-restoration

Permanent sources of new light at the Project site would be associated with the construction of the three story parking structure, new fixtures installed at the West Culver Parking Lot, and the pedestrian bridge across Lincoln Boulevard. The parking garage sites would provide parking from dawn to dusk and would be locked after hours. Lighting would be installed at both the parking structure and the West Culver Parking Lot for security purposes at nighttime. Interior lighting at the parking structure also would provide security and safety for individuals using the parking facility during the daytime. The design of the parking structure would minimize ambient light spillover from the interior onto the constructed wetlands in Area A. Similarly, exterior lighting would be directed away from adjacent, sensitive habitats. There could be lighting on the bridge that would be similar to that on the adjacent roadway and that would be directed away from habitat areas. Given the topography of the area, with most adjacent land uses at higher elevation than the Project site, it is unlikely that security lighting would directly enter adjacent areas. However, lighting still could result in substantial light and glare during evening hours on areas with direct views of the site if lighting is not controlled and is directed away from the Project site. This would be a significant impact.

While other ongoing operation and maintenance activities within the Ballona Reserve would occur that would temporarily introduce workers and vehicles to the site, such activities would occur during daylight and would not introduce substantial new sources of light or glare to the site. This would result in a less-than-significant impact, and would not require mitigation.

Mitigation Measure

Implement Mitigation Measure AE-4b.

Level of Significance after Mitigation Incorporated

Mitigation Measure AE-4b would ensure that all exterior lighting would be directed downward and focused away from adjacent sensitive uses and habitats and, thereby, would provide for security-related illumination while reducing potential light and glare impacts during the post-restoration phase to a less-than-significant level.

Indirect Impacts

There are no indirect impacts related to light or glare that would result from implementation of Alternative 3, during restoration or upon completion of all restoration activities.

TABLE 3.2-3
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
AE-1: Have a substantial adverse effect on a scenic vista? See Impact 3-AE-1.	☐	☐	☒	☐
AE-2: Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? See Impact 3-AE-2.	☐	☐	☒	☐
AE-3: Substantially degrade the existing visual character or quality of the site and its surroundings? See Impact 3-AE-3.	☐	☐	☒	☐
AE-4: Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area? See Impact 3-AE-4.	☐	☒	☐	☐

3.2.6.4 Alternative 4: No Federal Action/No Project

Alternative 4 would not involve any substantial changes to the Project site; therefore, it would not change any scenic vistas. Under Alternative 4, current restoration activities would continue in their existing locations, including the small-scale control of invasive plant species by removal with hand-tools and native plant seeding. SoCalGas Company activities would continue to occur in the locations where wells exist and in accordance with existing permits. CDFW would continue to remove trash and debris and monitor and enforce unauthorized or illegal activities throughout the Ballona Reserve. No changes would be made to existing elevations within the Ballona Reserve, the existing large populations of non-native vegetation would remain in place, the operation and maintenance of existing armored levees channelizing Ballona Creek would continue in to occur in the existing locations of the levees, and Ballona Creek would not reconnect with the wetland floodplain. Additionally, no new culverts would be created; existing culverts and other LACDA project facilities would continue to be operated and maintained in accordance with current practices in the locations where those facilities are located. Existing restricted public access to the Ballona Reserve would continue. No new operation or maintenance activities would occur on the site.

As stated above, Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard provide scenic views of the site and surrounding areas. However, implementation of Alternative 4 would not result in changes to the Project site and thus no adverse impacts on scenic vistas, scenic resources, or the visual character and quality of the area would occur and no beneficial effects would occur. The visual quality of the Project site would continue to be degraded by the contribution of additional solid waste from illegal dumping activities. Further, there would be no change to existing lighting sources or other conditions within the site.

3.2.7 Cumulative Impacts

As analyzed in Section 3.2.6.4, Alternative 4 would result in no impact relating to Aesthetics. Therefore, Alternative 4 would not cause or contribute to any cumulative impact.

The geographic scope for cumulative aesthetics impacts for Alternatives 1, 2, and 3 includes all areas that would be located within the publicly accessible viewshed of the Project, and generally fall within approximately 0.5 mile of the Project site. Projects greater than 0.5 mile from the site would be obscured from onsite viewpoints by intervening topography and existing development. This analysis considers cumulative effects that could occur during restoration and post-restoration phases.

The analysis considers the ongoing impacts of past projects, which are described in Section 3.2.2.2, *Environmental Setting*, and include developments in Culver City and Del Rey to the east, Playa del Rey to the south and southwest, and atop the Westchester Bluffs to the southeast; the three major roadways (Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard) that traverse the site; and existing structural features within the Ballona Reserve including the LACDA project facilities, historical structures such as the old horse rink and the red car line bridge, the Boy Scout Platform, fencing, and recreation-related infrastructure such as the bike and pedestrian path along the northern Ballona Creek levee and baseball fields in Area C. The analysis also considers impacts that would result from the existing and reasonably foreseeable future projects within 0.5 mile of the Ballona Reserve that are identified in Table 3.1-1, *Existing and Reasonably Foreseeable Future Projects.* Table 3.1-1 identifies 46 projects in the vicinity of the Ballona Reserve; of these, 22 are located within 0.5 mile: Boat Central/Pacific Marina Development (identified as #1 on Figure 3.1-1, *Cumulative Projects*); the Boatyard (identified as #2 on Figure 3.1-1, *Cumulative Projects*); Pier 44/Pacific Marina Venture (cumulative project #3); Marina del Rey Hotel (cumulative project #10); Fisherman's Village (cumulative project #11); Mariner's Village (cumulative project #15); Legado del Mar (cumulative project #19); Fiji Way Roadway Improvement Project (cumulative project #23); Ballona Creek Sediment Removal (cumulative project #25); 18-inch Water Line Replacement Phase III-B Project (cumulative project #26); Seawall Refurbishment Project (cumulative project #28); Burton Chace Park Transient Dock Replacement Project (cumulative project #29); Anchorage 47 Dock Replacement Project (cumulative project #30); Del Rey Lagoon Water Quality Improvement Project (cumulative project #31); Scattergood-Olympic Transmission Line Project (cumulative project #36); The Village at Playa Vista Project Phase II (cumulative project #38); Marina Del Rey Local Coastal Program Amendment Project (cumulative project #39); Venice Dual Force Main Project (cumulative project #42); Del Rey 12 Access Road (cumulative project #43); PDR Wet Gas Compressor Upgrade (cumulative project #44); Bluff Repair (cumulative project #45); and Switch Gear Installation (cumulative project #46).

The cumulative project sites do not necessarily need to be visible simultaneously with the Project from one fixed vantage point; however, for an impact to occur, the sites must be visible in the same general vicinity by a viewer. The Project would result in a significant cumulative effect if its incremental effects would combine with the effects of past, present, or future development within the geographic scope and result in a substantial adverse change, and the Project's contribution to that significant cumulative effect were considered cumulatively considerable. As discussed under Section 3.2.5.2, Methodology, the analysis of cumulative effects is based on the degree of ***overall visual change*** introduced by the Project Alternatives, and projects that fall within the cumulative context. The degree of visual impact depends on how noticeable the adverse change is and the related visual sensitivity (established in the setting). The existing conditions of the site are the conditions of the site prior to restoration activities, and generally are illustrated as the "existing view" in the visual simulations shown in Figures 3.2-2 to 3.2-20.

Scenic Vistas

Cumulative impacts to scenic vistas during restoration activities would be temporary. Alternative 1 would be implemented in two phases consisting of multiple sequences that could begin as early as 2017.[41] The sequences would be grouped into two periods, with the first occurring over a five-year timeframe and the second beginning after an approximately one-year break. Alternative 2 and Alternative 3 would be implemented in a single phase consisting of multiple sequences over the course of 60 months. Following restoration activities, the site generally would appear similar to the way it does under existing conditions, if not improved by a more natural configuration for Ballona Creek and the introduction of various native habitat and vegetation types under Alternatives 1 and 2. Operation and maintenance activities within the Ballona Reserve temporarily would introduce workers and vehicles to the site, but would have a negligible impact on scenic vistas. The site would appear the most similar to existing conditions under Alternative 3, where changes would be limited to the addition of culverts below the existing northern levee that would allow water from the Ballona Creek channel to flood much of Area A. These changes would not significantly alter existing views of scenic vistas in the surrounding area. Alternative 1, 2, and 3 would result in an incremental contribution of less-than-significant impacts to cumulative conditions, which include the existing environment and the incremental impacts of the cumulative projects within 0.5 mile of the Project site that could be viewed within scenic vistas simultaneously with the Project under Alternatives 1, 2, or 3. If, combined, these past, present, and reasonably foreseeable projects could obscure scenic vistas then the Project could incrementally contribute to such an effect. However, there is no evidence of an existing significant adverse cumulative condition and the Project's less than significant impacts would not cause or contribute to a significant cumulative impact. Following restoration, the incremental contribution of the Project would be negligible or beneficial.

Scenic Resources

The portion of SR-1 that is designated as a state scenic highway terminates just north of the Project site, and the Project site is not visible from any area north of this terminus. However, Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard provide views of the Project site, which is one of the few open stretches of land in the surrounding area, and each roadway is a high priority for consideration as a future scenic route in the City of Los Angeles General Plan. While Alternatives 1, 2, and 3 would alter scenic resources within the Project site as seen from these roadways, the changes would be minimal because they would result in a similar visual quality to existing conditions, if not better. Following restoration, the incremental contribution of the Project under Alternatives 1, 2, and 3 would be negligible or beneficial. There is no

[41] The proposed construction start date may be adjusted in the Final EIS/EIR.

significant adverse cumulative condition to which Alternative 1, 2, or 3 and other present or reasonably for3eseeable future projects could contribute, and the Project's less than significant impacts would not cause or contribute to a significant cumulative impact.

Visual Character

Cumulative impacts to visual character from restoration activities would be temporary under Alternatives 1, 2, and 3. Implementation of Alternatives 1, 2, or 3 would result in a visual character and quality that is highly similar to that under existing conditions, if not improved, and views of the Project site would be relatively unchanged. Ongoing operation and maintenance activities within the Ballona Reserve temporarily would introduce workers and vehicles to the site potentially in new locations relative to existing conditions; however, such activities would have a negligible impact on visual character. Table 3.1-1 includes development projects in the vicinity of the Project that could be viewed simultaneously with the Project. If cumulative projects affected the visual quality of the area then the Project could incrementally contribute to such an effect. However, there is no evidence of an existing significant adverse cumulative condition, and the Project's less than significant impacts would not cause or contribute to a significant cumulative impact in this regard. Following restoration, the incremental contribution of Alternatives 1, 2, and 3 would be negligible or beneficial.

Light and Glare

For cumulative effects involving light and glare during the restoration phase, the incremental impacts of the various restoration alternatives in combination with other projects that could include nighttime lighting are considered. As discussed previously, restoration-related impacts from construction lighting would be less than significant with implementation of Mitigation Measure AE-4a, which would require a construction lighting plan to ensure the lighting is directed downward and focused away from adjacent sensitive uses and habitats. Operation and maintenance activities would occur during daylight and would not introduce substantial new sources of light or glare to the site. Post-restoration, Alternatives 1, 2, and 3 would provide a minimal amount of security lighting at the proposed parking structure; however, implementation of Mitigation Measure AE-4b would ensure all proposed security lighting is directed downward and focused away from adjacent sensitive uses and habitats to ensure impacts remain less than significant. Table 3.1-1 includes development projects that could generate light or glare that could combine with light or glare caused by the Project or by motorists traveling through the 0.5 mile study area. If cumulative projects include nighttime lighting, cumulative light and glare effects could occur and the Project could incrementally contribute to such an effect. However, there is no evidence of an existing significant adverse cumulative condition, and the Project's less than significant restoration-related lighting impacts would not cause or contribute to a significant cumulative impact. Following restoration, the incremental contribution of the Project would be negligible.

3.2.8 References

Environmental Science Associates, 2014. Site Visit to Survey Existing Conditions. Multiple Dates.

Environmental Science Associates, 2015. Google Earth Survey.

Los Angeles County, 2015. County of Los Angeles General Plan, Scenic Resources Element. Approved March 24, 2015. [http://planning.lacounty.gov/assets/upl/project/gp_draft-march2015.pdf] Accessed September 15, 2015.

Philip Williams & Associates, et al. The Ballona Wetlands Ecological Reserve Baseline Assessment Program 2010-2011 Final Report. Prepared for State Coastal Conservancy, June 2012.

3.3 Air Quality

3.3.1 Introduction

This section identifies and evaluates issues related to Air Quality in the context of various restoration alternatives. It describes existing conditions in Section 3.3.2; summarizes applicable laws, regulations, plans, and standards in Section 3.3.3; identifies the criteria used to evaluate the significance of potential impacts (referred to as "thresholds of significance") in Section 3.3.4; describes the methodology used to evaluate these impacts in Section 3.3.5; analyzes direct and indirect effects in Section 3.3.6, cumulative effects in Section 3.3.7; and provides references in Section 3.3.8.

3.3.2 Affected Environment

3.3.2.1 Study Area

The Project site is located within the South Coast Air Basin (SCAB) approximately 1.5 miles west of Interstate 405 and 0.25 mile southeast of Santa Monica Bay. An aerial map illustrating the Project site and its immediate surrounding uses is presented in Figure ES-2, *Project Site* (p. ES-5). With respect to this air quality analysis, there are two study areas, the SCAB (against which regional emission levels are compared) and the immediate vicinity of the Project site in which localized emission levels are compared. This section refers to the SCAB as the "regional study area" and the immediate vicinity of the Project site as the "local study area."

3.3.2.2 Environmental Setting

Air quality is affected by both the rate and location of pollutant emissions and by meteorological conditions that influence movement and dispersal of pollutants. Atmospheric conditions, such as wind speed, wind direction, and air temperature gradients, along with local topography, provide the link between air pollutant emissions and air quality. This section describes regional climate in the study areas, identifies key pollutants of concern, provides monitoring data on existing air quality conditions, and identifies receptors that may be sensitive to increasing levels of air pollution.

Climate and Atmospheric Conditions

Regional Context

The SCAB covers approximately 6,745 square miles and is bounded by the Pacific Ocean to the west and south, with the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The air basin includes all of Orange County; the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties; and the San Gorgonio Pass area in Riverside County. The terrain and geographic location determine the distinctive climate of the SCAB, which is a coastal plain with connecting broad valleys and low hills.

The regional study area lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild and tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the SCAB is a function of the area's natural physical characteristics (weather and topography), as well as human-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and dispersion of pollutants throughout the SCAB, making it an area of high pollution potential.

The worst air pollution conditions in the SCAB occur from June through September. These are generally attributed to the large amount of pollutant emissions, light winds, and shallow vertical atmospheric mixing. These conditions frequently reduce pollutant dispersion and, thereby, cause elevated air pollution levels. Pollutant concentrations in the SCAB vary with location, season, and time of day. Ozone concentrations, for example, tend to be lower along the coast, higher in the near inland valleys, and lower in the far inland areas of the SCAB and adjacent desert.

Local Context

Data from the closest climate monitoring station closest to the Project site—Western Regional Climate Center's Los Angeles Weather Station Office (WSO) Airport (COOPID 045114)—was used to characterize climate conditions in the local study area. Over the period of record (1944-2013), average annual temperatures in this area range from a low of 55.3 to a high of 70.1 degrees Fahrenheit (^{o}F). Summer (August) high and low temperatures were 76.3°F and 63.8°F, respectively. The average winter (January) high and low temperatures were 65.2°F and 47.2°F, respectively, while temperatures rarely drop below 32°F. Rainfall varies widely from year to year, with an annual average of 12.02 inches (WRCC 2015a).

Wind patterns in the local study area arise primarily from the west-southwest, with seasonal and diurnal variations resulting in east (during Santa Ana events) and southerly winds (before and during winter storms) (WRCC 2015b). Over the period of record (1996-2006), winds at the Los Angeles Airport station averaged a speed of 2.23 meters per second (7.8 miles per hour) (WRCC 2015c).

Air Pollutants of Concern

Air quality at a given location can be characterized by the concentrations of various pollutants in the air. Units of concentration generally are expressed as parts per million by volume or micrograms per cubic meter ($\mu g/m^3$) of air. The significance of a pollutant concentration is determined by comparing the concentration to an appropriate national or state ambient air quality standard. These standards represent the allowable atmospheric concentrations at which the public health and welfare are protected. They include a reasonable margin of safety to protect the more sensitive individuals in the population.

Pollutants for which ambient air quality standards have been adopted are known as criteria pollutants. These pollutants can harm human health and the environment, and cause property damage. These pollutants are called "criteria" air pollutants because they are regulated by development human health-based and/or environmentally based criteria (science-based guideline) for setting permissible levels. The set of limits based on human health is called primary standards. Another set of limits intended to prevent environmental and property damage is called secondary standards. To protect human health and the environment, the United States

Environmental Protection Agency (USEPA) has set primary and secondary maximum ambient limits for each of the criteria pollutants. Primary standards were set to protect human health, particularly sensitive receptors such as children, the elderly, and individuals suffering from chronic lung conditions such as asthma and emphysema. Secondary standards were set to protect the natural environment and prevent damage to animals, crops, vegetation, and buildings. The air pollutants for which Federal and state standards have been promulgated and that are most relevant to air quality planning and regulation in the air basins include ozone (O_3), carbon monoxide (CO), suspended particulate matter (PM), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb).

The pollutants of concern within the SCAB and for the Project are O_3 (including oxides of nitrogen [NO_X] and reactive organic gases [ROG]), CO, and PM. Principal characteristics surrounding these pollutants are discussed below. Toxic Air Contaminants (TACs) also are discussed, although no air quality standards exist for these pollutants.

Ozone

Ozone, or smog, is photochemical oxidant that is formed when ROG and NO_X (both by-products of the internal combustion engine) react with sunlight. Ozone poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Additionally, ozone has been tied to crop damage, typically in the form of stunted growth and premature death. Ozone also can act as a corrosive, resulting in property damage such as the degradation of rubber products and is a respiratory irritant that can cause severe ear, nose, and throat irritation and increased susceptibility to respiratory infections. It is also an oxidant that causes extensive damage to plants through leaf discoloration and cell damage.

Reactive Organic Gases

Reactive organic gases are compounds made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of ROG are emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROG but rather by reactions of ROG that form secondary pollutants such as ozone.

Volatile Organic Compounds

Since volatile organic compounds (VOC) are not classified as criteria pollutants, there are no Federal or state ambient air quality standards for these compounds. VOC are regulated, however, because limiting VOC emissions reduces the rate of photochemical reactions that contribute to the formation of ozone. As a precursor to ozone, VOC contribute to regional air quality impacts. In addition, VOC also transform into organic aerosols in the atmosphere, contributing to higher PM_{10} and lower visibility levels. Although health-based standards have not been established for VOC, health effects can occur from exposures to high concentrations of VOC because of interference with oxygen uptake. VOC are produced by combustion, consumer products, and leaking hydrocarbons from a range of industrial processes. The South Coast Quality Management District (SCAQMD) considers VOC a subset of pollutants within ROG (SCAQMD, 2014). For the purposes of this analysis, both are recognized as ozone precursors.

Nitrogen Oxides

Nitrogen oxides are a family of highly reactive gases that are a primary precursor to the formation of ground-level ozone, and react in the atmosphere to form acid rain. The two major forms of NO_X are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown gas formed by the combination of NO and oxygen. NO_X acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens.

Carbon Monoxide

Carbon Monoxide is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. In the study area, high CO levels are of greatest concern during the winter, when periods of light winds combine with the formation of ground-level temperature inversions from evening through early morning. These conditions trap pollutants near the ground, reducing the dispersion of vehicle emissions. Moreover, motor vehicles exhibit increased CO emission rates at low air temperatures. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation.

Particulate Matter

Particulate matter consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates now are recognized: inhalable course particles of 10 microns or smaller (PM_{10}), and inhalable fine particles of 2.5 microns or less ($PM_{2.5}$). Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind on arid landscapes also contributes substantially to local particulate loading. Both PM_{10} and $PM_{2.5}$ may adversely affect the human respiratory system, especially in people who are naturally sensitive or susceptible to breathing problems.

Lead

Lead is a naturally occurring element found in small amounts in Earth’s crust. While it has some beneficial uses, it can be toxic to humans and animals causing of health effects. Lead can be found in all parts of our environment – the air, the soil, the water, and even inside our homes. Much of our exposure comes from human activities including the use of fossil fuels including past use of leaded gasoline, some types of industrial facilities, and past use of lead-based paint in homes. Lead and lead compounds have been used in a wide variety of products found in and around our homes, including paint, ceramics, pipes and plumbing materials, solders, gasoline, batteries, ammunition, and cosmetics. However, Federal and state regulatory standards have helped to reduce the amount of lead in air, drinking water, soil, consumer products, food, and occupational settings.

Toxic Air Contaminants

TACs are pollutants that may result in an increase in mortality or serious illness, or that may pose a present or potential hazard to human health. Health effects of TACs include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. In 1998, following a 10-year scientific assessment process, the California Air Resources Board (CARB) identified PM from diesel-fueled engines (DPM) as a TAC. Compared to other air toxics CARB has identified, DPM emissions are estimated to be responsible for about 79% of the total ambient air toxics risk (CARB 2009).

Existing Air Quality Conditions

Pollutant Levels at Nearby Monitoring Station

The SCAQMD has divided the SCAB into air monitoring areas and maintains a network of air quality monitoring stations. The Project site is located in the Northwest Coastal LA County Monitoring Area (Source Receptor Area 2[42]). The nearest monitoring station is the Los Angeles–Westchester Parkway (7201 Westchester Parkway), located approximately 1 mile south of the Project site.

Pollutant concentrations over the last three years (2012–2014) at the Los Angeles–Westchester Parkway station are reported in Table 3.3-1, *Air Quality Data from Los Angeles—Westchester Parkway Station (2012–2014)*. Monitoring data show that only the 1-hour and 8-hour state ozone standards were exceeded in years 2012, 2013 and 2014. No other standards were exceeded during the monitoring period (CARB 2015). The Westchester Parkway Station does not monitor for $PM_{2.5}$; therefore, the information provided herein for $PM_{2.5}$ is taken from the Compton Monitoring Station (700 North Bullis Road), which is the closest station to the Project site that has monitoring data for $PM_{2.5}$.

Existing Health Risk in the Surrounding Area

The SCAQMD completed an ambient air monitoring and evaluation study in the SCAB (i.e., the Multiple Air Toxics Exposure Study IV [MATES IV] study). MATES IV was a follow up to previous air toxics studies in the SCAB and part of the SCAQMD Governing Board's Environmental Justice Initiative.

According to SCAQMD inhalation cancer risk data (MATES IV), the study area is within cancer risk zones ranging from approximately 100 in one million to approximately 400 in one million. For comparison, the average cancer risk in the SCAB is approximately 1,200 in one million (SCAQMD 2015).

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[42] A "source receptor area" is an area in which pollutants are discharge or accumulated and are measured. The SCAQMD has divided the air district into 38 source receptor areas. The Project site is located in Source Receptor Area number 2, or the North Coastal Los Angeles County area.

TABLE 3.3-1
AIR QUALITY DATA FROM LOS ANGELES—WESTCHESTER PARKWAY STATION (2012–2014)

Pollutant and Standard	2012	2013	2014
Ozone (O_3)			
Maximum concentration 1-hour period	0.106 ppm	0.105 ppm	0.114 ppm
Maximum concentration 8-hour period	0.075 ppm	0.082 ppm	0.080 ppm
4th Highest concentration 8-hour period	0.060 ppm	0.060 ppm	0.075 ppm
Days state 1-hour standard exceeded (0.09 ppm)	1	1	1
Days state 8-hour standard exceeded (0.070 ppm)	1	1	6
Days national 8-hour standard exceeded (0.075 ppm)[1]	0	1	3
Suspended Particulates (PM_{10})			
Maximum national 24-hour concentration	31.0 μg/m^3	38 μg/m^3	46 μg/m^3
Annual average concentration	19.8 μg/m^3	20.8 μg/m^3	22.1 μg/m^3
Days state standard exceeded (50 μg/m^3)	0	0	0
Days national standard exceeded (expected) (150 μg/m^3)	0	0	0
Suspended Particulates ($PM_{2.5}$)[1]			
Maximum national 24-hour concentration	51.2 μg/m^3	52.1 μg/m^3	35.8 μg/m^3
Annual state and national average concentration	11.6 μg/m^3	11.9 μg/m^3	12.6 μg/m^3
Days national standard exceeded (expected) (35 μg/m^3)	1	1	1
Carbon Monoxide (CO)			
Maximum Concentration 8-hour Period	1.51 ppm	NA	NA
Maximum Concentration 1-hour Period	2.8 ppm	3.1 ppm	2.7 ppm
Days state 8-hour standard exceeded (9.0 ppm)	0	NA	NA
Days national 8-hour standard exceeded (9 ppm)	0	NA	NA
Days state 1-hour standard exceeded (20 ppm)	0	0	0
Days national 1-hour standard exceeded (35 ppm)	0	0	0
Nitrogen Dioxide (NO_2)			
Maximum 1-hour Concentration	77.2 ppm	77.8 ppm	87.3 ppm
Annual Average Concentration	NA	NA	12 ppm
Days exceeding state standard (0.18 ppm)	0	0	0
Days exceeding national standard (0.100 ppm)	0	0	0
Sulfur Dioxide (SO_2)			
Maximum 24-hour Concentration	0.002	0.002	*
Annual Average Concentration	*	*	*
Days state 24-hour standard exceeded (0.04 ppm)	*	*	*
Days national 24-hour standard exceeded (0.14 ppm)	*	*	*

NOTES:

ppm = parts per million; μg/m3 = micrograms per cubic meter; mg/m3 = milligrams per cubic meter; NA = data not available

* Insufficient data or no data available.

1 Days national 8-hour standard exceeded are relative to the previous standard (0.075 ppm), which was replaced on December 28, 2015.

2 The Westchester Parkway Station does not monitor for $PM_{2.5}$. Therefore the information provided herein is taken from the Compton Monitoring Station.

SOURCE: CARB 2015.

Sensitive Receptors and Locations

The SCAQMD defines sensitive receptor locations as residential, commercial, and industrial land use areas as well as other locations where sensitive populations may be located (SCAQMD 2005). Other sensitive receptor locations include schools, hospitals, convalescent homes, day care centers, and other locations where children, chronically ill individuals, or other sensitive persons could be exposed.

Figure ES-2, *Project Site* (p. ES-5), shows residential and institutional land uses near the Project site. Residential uses near the Project site include single- and multi-family homes located within 100 feet from the Project site's boundary. The nearest institutional land uses to the Project site includes the Playa Vista Elementary School (located approximately 900 feet east of the Project site). Currently, sensitive uses located in close proximity to the Project site are limited to only residential and institutional uses. Specifically, these nearby noise-sensitive uses include:

1. Multi-family residential uses located north of North Area C of the Project site, east of Lincoln Boulevard;
2. Boat slips located north of Area A of the Project site, beyond Fiji Way;[43]
3. Boat slips located west of Area A of the Project site, beyond Fiji Way;
4. Multi-family residential uses located west of Area A of the Project site and north of Ballona Creek;
5. Multi-family residential uses located west of West Area B of the Project site, fronting Vista Del Mar;
6. Multi-family residential, park, and hotel uses located along Culver Boulevard and directly south of West Area B of the Project site;
7. Single-family residences located south of West Area B and South Area B of the Project site and south of Culver Boulevard;
8. Single-family residences located along Cabora Drive and south of South Area B and Southeast Area B of the Project site;
9. Multi-family residential uses located west of Southeast Area B, across Lincoln Boulevard;
10. Multi-family residential uses located east of East Area B, across Lincoln Boulevard; and
11. Playa Vista Elementary School located east of Southwest Area B across East Pacific Coast Highway.

[43] The boat slips are considered to be sensitive receptors in this analysis due to the potential for people to reside on board the boats.

3.3.3 Applicable Laws, Regulations, Plans, and Standards

This section summarizes Federal, state, and local regulations that apply to air quality. The air quality management agencies with jurisdiction over air quality in the study areas include: the USEPA, the CARB, and SCAQMD. USEPA has established Federal air quality standards for which CARB and SCAQMD have primary implementation responsibility. CARB and SCAQMD also are responsible for ensuring that state air quality standards are met. Plans, policies, and regulations at the Federal, state, and local level relevant to the Project are discussed below.

3.3.3.1 Federal

Clean Air Act

The Clean Air Act (CAA) was enacted in 1963 and subsequently amended in 1965, 1967, 1970, 1977, and 1990. The CAA establishes National Ambient Air Quality Standards (NAAQS) and specifies future dates for achieving compliance. The CAA also mandates that the state submit and implement a State Implementation Plan (SIP) for local areas not meeting those standards. The plans must include pollution control measures that demonstrate how the standards would be met.

The 1990 amendments to the CAA identify specific emission-reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. Title I provisions were established with the goal of attaining the NAAQS for criteria pollutants. Table 3.3-2, *National and State Ambient Air Quality Standards*, shows the NAAQS currently in effect for each criteria pollutant. The California Ambient Air Quality Standards (CAAQS) (discussed below) also are provided for reference.

Local monitoring data (Table 3.3-1) are used to designate areas as nonattainment, maintenance, attainment, or unclassified for the NAAQS and CAAQS. The four designations are further defined as:

1. **Nonattainment**—assigned to areas where monitored pollutant concentrations consistently violate the standard in question.

2. **Maintenance**—assigned to areas where monitored pollutant concentrations exceeded the standard in question in the past but are no longer in violation of that standard.

3. **Attainment**—assigned to areas where pollutant concentrations meet the standard in question over a designated period of time.

4. **Unclassified**—assigned to areas were data are insufficient to determine whether a pollutant is violating the standard in question.

TABLE 3.3-2
NATIONAL AND STATE AMBIENT AIR QUALITY STANDARDS

Criteria Pollutant	Average Time	California Standards	National Standards[a]	
			Primary	Secondary
Ozone	1 hour	0.09 ppm	None	None
	8 hours	0.070 ppm	0.070 ppm[b]	0.070 ppm[b]
Particulate matter (PM_{10})	24 hours	50 μg/m^3	150 μg/m^3	150 μg/m^3
	Annual mean	20 μg/m^3	None	None
Fine particulate matter ($PM_{2.5}$)	24 hours	None	35 μg/m^3	35 μg/m^3
	Annual mean	12 μg/m^3	12.0 μg/m^3	15.0 μg/m^3
Carbon monoxide	8 hours	9.0 ppm	9 ppm	None
	1 hour	20 ppm	35 ppm	None
Nitrogen dioxide	Annual mean	0.030 ppm	0.053 ppm	0.053 ppm
	1 hour	0.18 ppm	0.100 ppm	None
Sulfur dioxide[b]	Annual mean	None	0.030 ppm	None
	24 hours	0.04 ppm	0.014 ppm	None
	3 hours	None	None	0.5 ppm
	1 hour	0.25 ppm	0.075 ppm	None
Lead	30-day average	1.5 μg/m^3	None	None
	Calendar quarter	None	1.5 μg/m^3	1.5 μg/m^3
	3-month average	None	0.15 μg/m^3	0.15 μg/m^3
Sulfates	24 hours	25 μg/m^3	None	None
Hydrogen sulfide	1 hour	0.03 ppm	None	None
Vinyl chloride	24 hours	0.01 ppm	None	None

NOTES: μg/m^3 = micrograms per cubic meter; ppm = parts per million

a National standards are divided into primary and secondary standards. Primary standards are intended to protect public health; secondary standards are intended to protect public welfare and the environment.
b This new national standard was signed into law October 1, 2015, and became effective December 28, 2015.
c The final 1-hour SO_2 rule was signed June 2, 2010. The annual and 24-hour SO_2 standards were revoked in that same rulemaking. However, these standards remain in effect until 1 year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

SOURCES: CARB 2013b; USEPA, 2016.

Table 3.3-3, *Federal and State Attainment Status for Project Area,* summarizes the attainment status[44] of the study areas with regard to the NAAQS and CAAQS.

[44] Attainment status is determined at the County level for Federal designations. For state designations, attainment status for CO, SO_2, lead, and hydrogen sulfide are determined at a County level while attainment for ozone, NO_2, PM, sulfates, and visibly reducing particles are designated at the air basin level.

TABLE 3.3-3
FEDERAL AND STATE ATTAINMENT STATUS FOR PROJECT AREA

Criteria Pollutant	Federal Designation	State Designation
O_3 (1-hour)	—	Nonattainment
O_3 (8-hour)	Extreme nonattainment	Extreme nonattainment
CO	Attainment/maintenance	Attainment
PM_{10}	Attainment/maintenance	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
NO_2	Attainment/maintenance	Attainment
SO_2	Attainment	Attainment
Lead	Nonattainment	Attainment
Sulfates	n/a	Attainment
Hydrogen sulfide	(No Federal standard)	Unclassified
Visibility	(No Federal standard)	Unclassified

NOTES:
CO = carbon monoxide; PM_{10} = particulate matter less than or equal to 10 microns; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide

SOURCE: CARB, 2013a; USEPA, 2015

General Conformity

USEPA enacted the Federal General Conformity regulation (40 CFR Part 93 subpart B) in 1993, which was modified in 2010. The purpose of the General Conformity rule is to ensure that Federal actions do not generate emissions that interfere with state and local agencies' SIPs and emission-reduction strategies to ensure attainment of the NAAQS. The General Conformity rule applies to all Federal actions located in nonattainment and maintenance areas, unless one or more of the following criteria are satisfied:

1. The project is exempt from General Conformity;
2. The project is covered by a Presumed-to-Conform approved list; and
3. Project emissions do not equal or exceed applicable rates.

If none of the above criteria applies, the project is subject to the General Conformity rule and the Federal lead agency must perform a conformity determination. The determination is made only for direct and indirect emissions associated with the Federal action; and for which a Federal permitting agency has directly caused or initiated, has continued program responsibility for, or can practically control.

Direct emissions means those emissions of a criteria pollutant or its precursors that are caused or initiated by the Federal action and originate in a nonattainment or maintenance area and occur at the same time and place as the action and are reasonably foreseeable (40 CFR §93.152).

Indirect emissions means those emissions of a criteria pollutant or its precursors:

1. That are caused or initiated by the Federal action and originate in the same nonattainment or maintenance area but occur at a different time or place as the action;
2. That are reasonably foreseeable;
3. That the agency can practically control; and
4. For which the agency has continuing program responsibility.

For the purposes of this definition, even if a Federal licensing, rulemaking or other approving action is a required initial step for a subsequent activity that causes emissions, such initial steps do not mean that a Federal agency can practically control any resulting emissions (40 CFR §93.152).

Total of direct and indirect emissions means the sum of direct and indirect emissions increases and decreases caused by the Federal action; i.e., the "net" emissions considering all direct and indirect emissions. The portion of emissions that are exempt or presumed to conform under §93.153 (c), (d), (e), or (f) are not included in the "total of direct and indirect emissions." The "total of direct and indirect emissions" includes emissions of criteria pollutants and emissions of precursors of criteria pollutants (40 CFR §93.152).

The conformity determination is made by satisfying any of the following requirements:

1. Showing that the emission increases caused by the Federal action are included in the SIP;
2. Demonstrating that the state agrees to include the emission increases in the SIP;
3. Offsetting the action's emissions in the same or nearby area;
4. Mitigating to reduce the emission increase; or
5. Utilizing a combination of the above strategies.

Non-road Diesel Rule

USEPA established a series of increasingly strict emission standards for new off-road diesel equipment, on-road diesel trucks, and harbor craft. New construction equipment used for the Project, including heavy-duty trucks, off-road construction equipment, and tugboats would be required to comply with the emission standards.

3.3.3.2 State

California Clean Air Act

In 1988, the state legislature adopted the California Clean Air Act (CCAA), which established a statewide air pollution control program. The CCAA requires all air districts in the state to endeavor to meet the CAAQS by the earliest practical date. Unlike the Federal CAA, the CCAA does not set precise attainment deadlines. Instead, the CCAA establishes increasingly stringent requirements for areas that will require more time to achieve the standards. CAAQS are generally more stringent than the NAAQS and incorporate additional standards for sulfates, hydrogen sulfide, visibility-reducing particles, and vinyl chloride. The CAAQS and NAAQS are listed together in Table 3.3-1.

The CARB and local air districts bear responsibility for achieving California's air quality standards, which are to be achieved through district-level air quality management plans that would be incorporated into the SIP. In California, USEPA has delegated authority to prepare SIPs to CARB, which, in turn, has delegated that authority to individual air districts. CARB traditionally has established state air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs.

The CCAA substantially adds to the authority and responsibilities of air districts. The CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The CCAA also emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures (TCMs).

State Tailpipe Emission Standards

To reduce emissions from off-road diesel equipment, on-road diesel trucks, and harbor craft, CARB established a series of increasingly strict emission standards for new engines (i.e., Tier 2 engines and greater). New construction equipment used for the Project, potentially including heavy duty trucks, off-road equipment, tugboats, and barges, would be required to comply with the standards.

Toxic Air Containments

California regulates TACs primarily through the Toxic Air Contaminant Identification and Control Act (Tanner Act) and the Air Toxics "Hot Spots" Information and Assessment Act of 1987 ("Hot Spots" Act). In the early 1980s, CARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act created California's program to reduce exposure to air toxics. The "Hot Spots" Act supplements the Tanner Act by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

The CARB identified DPM as a TAC in 1998 (CARB 2009). Shortly thereafter, the CARB approved a comprehensive Diesel Risk Reduction Plan to reduce emissions from both new and existing diesel-fueled engines and vehicles (CARB 2000). The goal of the plan is to reduce DPM emissions and the associated health risk by 85% by 2020. The key elements of the plan are to clean up existing engines through retrofit emission control devices, adopt more stringent standards for new diesel engines, and implement the use of lower sulfur fuels.

3.3.3.3 Local

State agencies acting in their sovereign capacity are not subject to local regulations unless the California Constitution says they are or the Legislature has consented to such regulation. However, local plans and policies are mentioned here as some may apply to a state agency or because this analysis contemplates actions by Southern California Gas (SoCalGas) outside of state property and helps to inform this evaluation of potential environmental consequences. Specifically the local Air Districts provide guidance to ensure that their jurisdiction meets, or will meet in the near future, the state requirements for emission levels.

SCAQMD Air Quality Management Plans

The SCAQMD has adopted a series of air quality management plans (AQMPs) to meet the CAAQS and NAAQS. To ensure continued progress toward clean air and to comply with state and Federal requirements, SCAQMD, in conjunction with USEPA, CARB, and Southern California Association of Governments (SCAG), updates its AQMP every 3 years. These plans require, among other emissions-reducing activities, control technology for existing sources, control programs for area sources and indirect sources, a SCAQMD permitting system designed to allow no net increase in emissions from any new or modified (i.e., previously permitted) emission sources, and transportation control measures.

The most recent AQMP is the Final 2012 AQMP, which was adopted by the SCAQMD Governing Board on February 2, 2013 (SCAQMD 2013). The 2012 AQMP addresses several Federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The document builds upon the approaches taken in the 2007 AQMP for the SCAB for the attainment of NAAQS. The 2012 AQMP addresses CAA requirements, including a 24-hour $PM_{2.5}$ Plan, 8-hour ozone additional measures and vehicle miles traveled (VMT) offset demonstration, 1-hour ozone attainment demonstration, and VMT offset demonstration. SCAQMD recently initiated development of the 2016 AQMP, which will focus primarily on addressing the ozone standards.

SCAQMD Rules and Regulations

The SCAQMD develops and adopts rules to regulate sources of air pollution in the SCAB. Rules applicable to the Project are summarized below.

1. **SCAQMD Rule 401—Visible Emissions.** This rule limits emissions that are darker in shade than No. 1 on the “Ringelmann Chart” or of such opacity as to obscure an observer’s view to a degree equal to or greater than smoke.
2. **SCAQMD Rule 402—Nuisance.** This rule prohibits discharge of air contaminants or other material that: (1) cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; (2) endanger the comfort, repose, health, or safety of any such persons or the public; or (3) cause, or have a natural tendency to cause, injury, or damage to business or property.
3. **SCAQMD Rule 403—Fugitive Dust.** This rule prohibits emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area that remains visible beyond the emission source property line.

4. **SCAQMD Rule 1901 – General Conformity.** This rule adopts the guidelines found in the Federal General Conformity regulation (40 CFR Part 93 subpart B).

SCAQMD CEQA Air Quality Handbook

The SCAQMD published the *CEQA Air Quality Handbook* (SCAQMD 1993) to help local governments analyze and mitigate project-specific air quality impacts.[45] This handbook provides standards, methodologies, and procedures for conducting air quality analyses in EIRs and was used extensively in the preparation of this air quality analysis. Thresholds for evaluating significant air quality impacts were updated in 2011 (SCAQMD 2011a). In addition, SCAQMD has published two additional guidance documents that provide guidance in evaluating localized effects from mass emissions during construction: *Localized Significance Threshold Methodology for CEQA Evaluations* (SCAQMD 2003) and *Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology* (SCAQMD 2006).

Southern California Association of Governments

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial counties. SCAG addresses regional issues related to transportation, the economy, community development, and the environment. SCAG is the Federally designated metropolitan planning organization (MPO) for the majority of the southern California region and is the largest MPO in the nation. As required by Federal and state law, SCAG develops plans pertaining to transportation, growth management, hazardous waste management, housing, and air quality. With respect to air quality planning, SCAG has prepared the *Regional Comprehensive Plan (SCAG 2008)*, which includes Growth Management and Regional Mobility chapters that support the land use and transportation components of the AQMP.

3.3.4 Thresholds of Significance

In this analysis, the Corps has elected to evaluate the context and intensity of potential environmental consequences relative to the criteria identified in CEQA Guidelines Appendix G, Section III, with consideration of additional Federal requirements by the Corps. A significance criterion, or threshold of significance, is that level at which the lead agency finds the effect of the project to be significant on a particular environmental topic area, such as air quality. In addition, the analysis considers where improvements of the Project would provide a net benefit relative to the conditions described in Section 3.3.2, Affected Environment.

For purposes of this analysis, Alternative 1, 2, 3, or 4 would have a significant impact related to Air Quality if it would:

AQ-1 (CEQA and NEPA): Conflict with or obstruct implementation of the applicable air quality plan;

[45] The SCAQMD has not provided a full update of the 1993 CEQA handbook. However, it has updated sections of the document as appropriate and the updates are posted on the SCAQMD Website (http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook). The 1993 *CEQA Air Quality Handbook* and section updates were used in the preparation of this air quality analysis.

AQ-2 (CEQA and NEPA): Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

AQ-3 (CEQA and NEPA): 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);

AQ-4 (CEQA): Expose sensitive receptors to substantial pollutant concentrations; or

AQ-5 (CEQA and NEPA): Create objectionable odors affecting a substantial number of people.

AQ-1a and b: General Conformity Applicability Rates and SCAG's Regional Comprehensive Plan (CEQA and NEPA)

AQ-1a was assessed using General Conformity applicability rates. The General Conformity applicability rates typically are applied to the preferred alternative for the purpose of assessing General Conformity determinations under the CAA. However, under AQ-1a, the General Conformity applicability rates are utilized for the purpose of comparison and disclosure of all alternatives under NEPA.

Federal regulation at 40 CFR §93.153 prescribes rates for criteria pollutants based on area attainment status. The Federal action would occur in the SCAB, which is currently in extreme nonattainment for ozone (precursors: VOC and NO_x); nonattainment for $PM_{2.5}$; maintenance for PM_{10}; nonattainment for lead; maintenance for NO_2; and maintenance for CO, and applicability rates are listed in Table 3.3-4.

TABLE 3.3-4
APPLICABILITY RATES

Pollutant	Rate (tons/year)
Ozone (precursors: VOC & NO_X)	10
Particulate Matter (PM_{10} & $PM_{2.5}$)	100
Carbon Monoxide (CO)	100
Nitrogen Dioxide (NO_2)	100
Lead (Pb)	25

SOURCE: USEPA, 2014.

To determine whether Federal conformity rule analysis is required, annual emissions from Project implementation activities were calculated for ozone precursors (VOC and NO_x), $PM_{2.5}$, PM_{10}, NOx, lead, NO_2 and CO and compared to the applicability rates.

AQ-1b was compared to the most applicable air quality management plan, which for this analysis, is the SCAG growth forecasts. Inconsistence with SCAG's policies would result in a significant impact under CEQA.

AQ-2: Regional Air Quality Significance Thresholds (CEQA and NEPA)

AQ-2 was assessed using SCAQMD-developed Regional Significance Thresholds (RSTs) for mass daily emission rates of criteria pollutants for both construction and operational sources. RSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable Federal or state ambient air quality standard in the SCAB. RSTs are presented in pounds per day. Thresholds for construction impacts are based on the maximum or peak daily emissions during the restoration and construction period, which provides a "worst-case" analysis of the construction emissions. Similarly, significance determinations for operational emissions are based on the maximum or peak daily allowable emissions during the post-restoration phase. Thresholds for the daily mass emissions of criteria pollutants and ozone precursors are shown in Table 3.3-5.

TABLE 3.3-5
SCAQMD REGIONAL AIR QUALITY SIGNIFICANCE THRESHOLDS

Pollutant	Mass Daily Thresholds (lbs/day)	
	Construction	Operation
Oxides of Nitrogen (NO_X)	100	55
Reactive Organic Gases (ROG)	75	55
Respirable Particulate Matter (PM_{10})	150	150
Fine Particulate Matter ($PM_{2.5}$)	55	55
Oxides of Sulfur (SO_X)	150	150
Carbon Monoxide (CO)	550	550
TACs (including carcinogens and non-carcinogens	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	

SOURCE: SCAQMD, 2011a.

AQ-3: Cumulative Impacts (CEQA and NEPA)

AQ-3 was assessed using RSTs. The SCAQMD typically considers projects that exceed the RSTs to be cumulatively significant. Conversely, projects that do not exceed the thresholds are generally not considered to be cumulatively significant. This analysis applies this approach to impacts under CEQA and NEPA.

AQ-4: Localized Air Quality Significance Thresholds

AQ-4 was assessed using SCAQMD-developed localized significant thresholds (LSTs) that identify daily emissions levels at a project construction site that could cause or contribute to adverse localized air quality impacts to the nearest sensitive receptors. For purposes of a CEQA analysis, the SCAQMD considers a sensitive receptor to be a receptor such as a residence, hospital, prison, and convalescent facility where it is possible that an individual could remain for 24 hours. Schools also are considered sensitive receptors. Commercial and industrial facilities are not considered sensitive receptors because employees typically do not remain on site for a full 24 hours. LSTs are developed based on the ambient concentrations of that pollutant for each of the 38 source receptor areas in the SCAB. See the discussion of Pollutant Levels at Nearby Monitoring Station in Section 3.3.2.2, *Climate and Atmospheric Conditions*, for more information about source receptor areas.

The localized thresholds, which are found in the mass rate look-up tables in the "Final Localized Significance Threshold Methodology" document prepared by SCAQMD (SCAQMD 2003), were developed for use on projects that are less than or equal to 5 acres in size and are only applicable to the following criteria pollutants: NOx, CO, PM_{10}, and $PM_{2.5}$. The mass rate look-up tables for a 5-acre site are used to provide a screening-level evaluation of the Project's localized air quality impacts. Table 3.3-6, *SCAQMD Localized Construction Significance Thresholds*, represents the screening levels for a 5-acre site. The table represents the maximum lbs/day for a given pollutant at a given distance that would be allowable. At these distances and concentrations the Project would not contribute to or exceed the air quality standards and therefore would not result in a localized impact. Where the Project emissions would exceed the LSTs for a 5-acre site, then the emissions are evaluated using dispersion modeling and are compared to the following thresholds: NOx – 0.25 ppm; CO-1hr – 20 ppm; CO-8hr – 9ppm; PM_{10} – 10 $\mu g/m^3$; and $PM_{2.5}$ 10.4 $\mu g/m^3$.

TABLE 3.3-6
SCAQMD LOCALIZED CONSTRUCTION SIGNIFICANCE THRESHOLDS

Pollutant Monitored Within Source Receptor Area 2 – Northwest Coastal Los Angeles County	5-Acre Site[a] Allowable emissions (pounds/day) as a function of receptor distance (feet) from site boundary				
	82 (ft)	164 (ft)	328 (ft)	656 (ft)	1,640 (ft)
Nitrogen Oxides (NO_x)[b]	221	212	226	250	312
Carbon Monoxide (CO)	1,531	1,985	2,762	4,383	10,467
Respirable Particulate Matter (PM_{10})	13	40	55	84	174
Fine Particulate Matter ($PM_{2.5}$)	6	8	14	29	95

NOTES:
[a] Although the size of each of the Project areas (A, B, and C) are greater than 5-acres, the LSTs for a five-acre site in Source Receptor Area 2 (Northwest Coastal Los Angeles County) are used to provide an initial screening analysis of the Project's renovation activity emissions at each area.
[b] The localized thresholds listed for NO_x in this table take into consideration the gradual conversion of NO to NO_2.This analysis of localized air quality impacts associated with NO_x emissions focuses on NO_2 levels as they are associated with adverse health effects.

SOURCE*:* SCAQMD 2009.

AQ-5: Odors (CEQA and NEPA)

To assess AQ-5, the SCAQMD CEQA Air Quality Handbook indicates that land uses likely to result in odor nuisance complaints include: agriculture, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Since the Project would not result in construction of the facilities listed above, it is assumed that odor impacts would be less than significant under both CEQA and NEPA. Brief, qualitative discussions associated with each alternative are included in Sections 3.3.6.1 through 3.3.6.4.

3.3.5 Methodology

3.3.5.1 Restoration and Construction

Implementation of the Project would result in the short-term generation of criteria pollutant and TAC emissions. Mass daily combustion exhaust, and fugitive dust (PM_{10} and $PM_{2.5}$) emissions were estimated using a combination of factors from the California Emissions Estimator Model (CalEEMod), version 2013.2.2, California Air Resources Board's EMFAC2014 model, and USEPA's AP-42 *Compilation of Air Pollutant Emission Factors*.

Modeling was conducted assuming conservative start and end dates. While it is possible that the actual dates will shift further out, the analysis as presented represents the reasonable worst case emissions that could occur. Therefore, if the dates shift further into the future, the impacts reported in the document would most likely decrease as construction fleets change and become more efficient. Alternative 1 would be implemented in two phases consisting of multiple sequences beginning as early as early 2017.[46] The sequences would be grouped into two periods, with the first five-year period occurring between 2017 and 2022 and the second occurring in 2022. Restoration activities occurring between the two periods would include the removal of the SoCalGas natural gas storage wells and associated pipelines from within the Ballona Reserve, relocation of the natural gas wells to the SoCalGas Property, and remove an abandoned sewer pipeline. No mechanized restoration activities would occur between the conclusion of the first period and the beginning of the second to facilitate habitat restoration and plant establishment within the Ballona Reserve. Alternatives 2 and 3 each would be implemented in a single phase consisting of multiple sequences.

Construction phasing information, including construction equipment, excavation quantities, and truck trips, for each alternative was obtained from the Project engineer (PSOMAS 2015). Pollutant estimates were based on a combination of Project-specific data and model defaults, as described below and in Table 3.3-7, *Construction Emissions Sources and Quantification Methodology*:

1. All off-road diesel-powered equipment used would be equipped with USEPA Tier 4 or cleaner engines, except for specialized equipment in which a USEPA Tier 4 engine is not available. In lieu of Tier 4 engines, Project equipment could incorporate retrofits such that emissions reductions achieved equal that of the Tier 4 engines. Tier 4 engines use advanced engine controls and sensors that significantly reduce engine emissions for NO_x, hydrocarbons, CO, and PM. As part of the project documentation, the restoration/ construction contractor would keep a detailed list of the equipment fleet onsite at all times along with the maintenance logs. The equipment documentation would include certification that the equipment is either Tier 4, meets the emissions reduction requirements of Tier 4 engines, or for specialty equipment, documentation that the equipment used meets the highest engine Tier standard available for that piece of equipment.

2. All equipment used onsite would be maintained as per manufacturer specifications and a maintenance log would be kept onsite.

[46] The proposed construction start date may be adjusted in the Final EIS/EIR.

TABLE 3.3-7
CONSTRUCTION EMISSIONS SOURCES AND QUANTIFICATION METHODOLOGY

Emissions Source	Location	Emission Factors	Quantification Method
Off road equipment	On site	Engine emission factors from CalEEMod User's Guide appendix	Engine emission factors, horsepower, and load factors multiplied by daily operating activity (hours)
Employee vehicles	Off site	Engine emission factors from EMFAC2014 (LDA category)	Engine emission factors multiplied by the number of daily employee trips and default trip mileage (14.7 miles)
Haul trucks	On and off site	Engine emission factors from EMFAC2014 (HHDT category)	Engine emission factors multiplied by daily vehicle mileage
Re-entrained dust	On and off site	PM_{10} and $PM_{2.5}$ emission factors from AP42	Dust emission factors multiplied by daily VMT
Earthwork and grading	On site	PM_{10} and $PM_{2.5}$ emission factors[a] from CalEEMod	Dust emission factors multiplied by daily graded acres

NOTE:

[a] Accounts for a 61% from uncontrolled levels to reflect required compliance with SCAQMD Rule 403.

3. Idling of vehicles on-site would be limited to 5 minutes or less, as required by law. Contractors would be directed to shut off all equipment as soon as possible after use or during activity down time, to minimize equipment idling to the greatest extent possible.

4. Emission factors for off-road construction equipment (e.g., loaders, cranes) were obtained from the CalEEMod User's Guide appendix (CAPCOA 2013), which provides values per unit of activity (in grams per horsepower-hour) for each calendar year. Equipment load factors and engine horsepower ratings were also obtained from CalEEMod. Emissions from off-road equipment were estimated by multiplying the CalEEMod default data by the equipment inventory provided by the Project engineer.

5. Emission factors for on-road employee commute vehicles were obtained from the CARB's EMFAC2014. Factors are based on weighted average vehicle speeds for EMFAC's LDA vehicle categories. One-way trip lengths are based on CalEEMod defaults, which are 14.7 miles per employee trip (Los Angeles County portion of South Coast, home-work trip) (CalEEMod User's Guide appendix) (CAPCOA 2013). The employees/workers average daily trips to and from the Project site were obtained from the traffic consultant (Raju Associates 2015a). Emissions generated by employee vehicles were estimated by multiplying the number of employee vehicle trips by the EMFAC2014 emission factors and default mileage.

6. Emission factors for on-road haul trucks were obtained from the CARB's EMFAC2014. Factors for on-site trucks are based on EMFAC's HHDT category for vehicles traveling at 55 miles per hour. Emission factors for on- and off-site haul trucks are based on weighted average vehicle speeds for EMFAC's HHDT vehicle category. Criteria pollutants and GHGs generated by off-site trucks were estimated by multiplying the EMFAC2014 emission factors by vehicle mileage estimates obtained from the Project engineer (PSOMAS 2015).

7. Fugitive re-entrained road dust emissions are based on USEPA's (2011) AP-42 methodology and VMT data from the Project engineer (PSOMAS 2015).

8. Fugitive PM_{10} and $PM_{2.5}$ dust emissions associated with earthwork are based daily intensity rates (acres graded per day) and fugitive dust calculation methodologies contained in the CalEEMod User's Guide Appendix A. Emissions related to restoration activities were reduced by 61% from uncontrolled levels to reflect required compliance with SCAQMD Rule 403 (SCAQMD 1993: Table A11-9-A: A11-77). The dust-control methods for the Project will be specified in a dust-control plan that would be submitted to the SCAQMD per Rule 403. Specific Rule 403 control requirements include, but are not limited to, applying water in sufficient quantities to prevent the generation of visible dust plumes, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the Project site, covering all trucks hauling soil with a fabric cover and maintaining a freeboard height of 12 inches, and maintaining effective cover over exposed areas.

Estimated emissions from each of the above sources are evaluated and compared with the SCAQMD construction thresholds and Federal applicability rates discussed above. Peak daily construction emissions were estimated by calculating emissions for the individual construction sequences and then summing emissions from overlapping activities as indicated in the proposed construction schedule (The construction schedule and a detailed list if construction equipment are provided in Appendix B4, *Construction Equipment and Sequencing*). The combination of sequences across all locations that produce the highest daily emissions in each construction year was selected as the peak day for analysis purposes. This approach is meant to result in a reasonable worst-case scenario, and is therefore not necessarily representative of emissions that would be incurred on a daily basis throughout the Project implementation period.

All emissions calculation worksheets and modeling output files are provided in Appendix C1, *Air Quality and Greenhouse Gas Calculations*.

Localized Significance Thresholds

In addition, to determine whether or not activities associated with Project implementation would create significant adverse localized air quality impacts on nearby sensitive receptors, worst-case daily emissions contribution estimated for the Project were compared to SCAQMD's LSTs. The analysis of localized air quality impacts focuses only on the on-site activities of a project, and does not include emissions that are generated off-site such as from on-road haul or delivery truck trips (SCAQMD 2003).

For the purpose of analyzing a project's localized air quality impacts, SCAQMD has developed LSTs for three project site sizes: 1-acre, 2-acre and 5-acres. The LSTs established for each of the aforementioned site acreages represent the amount of pollutant emissions that would not exceed the most stringent applicable Federal or state ambient air quality standards.

Although the Project site is greater than 5 acres, the proposed restoration activities under Alternative 1 would occur separately within Areas A, B, and C and sequentially over 4 years of active construction activities.[47] The largest of these three Areas (Area B) is approximately 363 acres; however, to provide a conservative screening analysis of Alternative 1's restoration activity emissions, this analysis applies SCAQMD's localized threshold for a 5-acre site from the "Final Localized Significance Threshold Methodology" document's mass rate look-up tables. Under conditions where the peak daily restoration emissions in each of the Areas would exceed the LSTs found in the mass rate look-up tables for a 5-acre site, dispersion modeling was conducted in accordance with SCAQMD's recommendation to evaluate the potential localized air quality impacts of the Project on surrounding off-site sensitive receptors. By contrast, under conditions where the Project's peak daily restoration emissions in each of the areas would not exceed the applicable LSTs for a 5-acre site, then no further modeling was conducted. Alternative 2 would be implemented in a single 3-year phase that would be the same as described for Alternative 1, Phase 1. Alternative 3 also would occur in a single 3-year phase similar to Alternative 1, Phase 1. However, because Alternative 3 would only focus on the restoration of Area A and Area C, no Project work would occur in Area B. The peak daily restoration emissions proposed under Alternatives 2 and 3 would not exceed the applicable LSTs for a 5-acre site; therefore, the same methodology described above for Alternative 1 is used to assess air quality impacts associated with Alternatives 2 and 3.

Regarding NO_x emissions, the two principal species of NO_x are NO and NO_2, with the vast majority (95%) of the NO_x emissions being comprised of NO. However, because adverse health effects are associated with NO_2, and not with NO, this analysis of localized air quality impacts associated with NOx emissions is focused on NO_2 levels. For combustion sources, SCAQMD assumes that the conversion of NO to NO_2 is complete at a distance of 500 meters from the source (SCAQMD 2003).

3.3.5.2 Post-restoration

Maintenance of the Ballona Reserve post-restoration would result in a long-term source of criteria pollutant emissions, albeit a relatively minor source. Several volunteers and employees (e.g., CDFW, the County, and SoCalGas) currently visit the Project site to perform operations and maintenance (O&M) work, including operation and maintenance of the LACDA project facilities pursuant to the Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) manual (Corps 2009), as well as to inspect the on-site SoCalGas natural gas storage wells. Existing baseball fields also draw visitors to the Project site (Area C) during baseball season. These activities currently generate annual operational and maintenance-related emissions. The same general nature and type of O&M activities that occur now within the Project site would continue to occur under Alternatives 1, 2 or 3 (see Appendix B5), although the frequency of O&M activities in response to the proposed increase in public access may change. To evaluate Project-related effects and impacts following restoration, this analysis focuses on changes to the physical environment that could occur relative to existing conditions (as described in Section 3.3.2, *Affected Environment*). Stated another way, the difference in operational and maintenance-related emissions between the Project and the existing land uses represents the net impact of the Project analyzed in this analysis.

[47] Alternative 1 would be implemented in two phases consisting of multiple sequences beginning in early 2017. The sequences would be grouped into two periods, with the first occurring between 2017 and2022 and the second occurring in 2023. No mechanized restoration activities would occur between 2020 and 2023 to facilitate habitat restoration and plant establishment within the Ballona Reserve.

The implementation of public access amenities proposed as part of the Project (e.g., constructing and opening pedestrian trails for public use and constructing a three-story parking structure) is expected to increase the number of visitors to the Ballona Reserve and may increase the need for related O&M activities throughout the Ballona Reserve. If O&M activities are increased, this would result in an increase in worker trips and equipment usage.

Under Alternatives 1, 2, and 3, the natural gas storage wells operated within the Ballona Reserve by SoCalGas that would be affected by the Project would be abandoned and/or relocated to the SoCalGas Property. Emissions associated with vehicle trips to monitor the natural gas wells would not differ substantially from existing conditions. Under Alternative 2, the baseball fields would be removed and would only be re-established if outside funding was obtained for this purpose. Under Alternatives 1 and 3, the Project is not expected to affect baseball field activities relative to existing conditions. Operational emissions associated with the baseball fields and SoCalGas wells are not discussed further under Alternatives 1 and 3 as there would be no change in emissions or impact to these sources with implementation of either alternative. Under Alternative 2, emissions associated with travel to and from the baseball fields would be eliminated if the baseball fields are not replaced. The reduction in emissions is discussed qualitatively in the analysis.

Mass daily operational emissions associated with Alternatives 1, 2, and 3 were estimated using a combination of Project-specific data and model defaults, as described below and in Table 3.3-8, *Operational Emissions Sources and Quantification Methodology*:

1. Motor vehicle emissions (mobile source) are based on trip rates estimates from the traffic impact analysis. Vehicle estimates account for public visitation trips, as well as employee and off-site haul truck trips required for routine O&M (Raju Associates 2015b). Vehicle estimates account for on-site truck movement. Emission factors for public visitation and employee vehicle trips are based on weighted average vehicle speeds for EMFAC's LDT vehicle category. One-way trip lengths O&M employees were based on the CalEEMod default, which is 14.7 miles per employee trip (CAPCOA 2013).

2. Emissions for on-site equipment usage required for restoration maintenance are based on activity data and emission factors obtained from the CalEEMod User's Guide appendix (CAPCOA 2013). Equipment load factors and engine horsepower ratings were also obtained from CalEEMod.

TABLE 3.3-8
OPERATIONAL EMISSIONS SOURCES AND QUANTIFICATION METHODOLOGY

Emissions Source	Location	Emission Factors	Quantification Method
O&M light trucks	Off site	Engine emission factors from EMFAC2014 (LDT category)	Engine emission factors multiplied by daily vehicle mileage
O&M off-road equipment	On site	Engine emission factors from CalEEMod User's Guide appendix	Engine emission factors, horsepower, and load factors multiplied by daily operating activity (hours)

O&M activities would begin as early as 2017 and increase overtime once more of the site is restored.[48] Emissions therefore were quantified during each year of construction between 2017 and 2023 as activities and associated emissions would change overtime. Emissions are presented at the daily and annual time scale and compared with the SCAQMD operational thresholds and federal applicability rates.

All emissions calculation worksheets and modeling output files are provided in Appendix C1, *Air Quality and Greenhouse Gas Calculations*.

Toxic Air Contaminants

TAC generators located within the SCAB are associated with intensive diesel-fueled vehicle use (such as warehouses) and specific types of facilities such as dry cleaners using perchloroethylene, gas stations, distribution centers, and ports. The Project consists of wetlands habitat restoration that would not include any of the aforementioned TAC emitter facilities nor would it be anticipated to include diesel-powered emergency backup generators. Therefore, it is not anticipated that off-site receptors would be affected by TAC emissions resulting from operation and maintenance of the Project. Therefore, this analysis discusses impacts from TACs on a qualitative basis based on guidance found in the Office of Environmental Health Hazard Assessment (OEHHA 2015).

Odors

Odor impacts are addressed in a qualitative manner based on screening distances and odor complaints, as recommend in SCAQMD guidance. This includes a discussion of whether a project would result in excessive nuisance odors, or if proposed sensitive land uses would be exposed to substantial odors.

3.3.6 Direct and Indirect Impacts

3.3.6.1 Alternative 1: Full Tidal Restoration/Proposed Action

1-AQ-1a: Alternative 1's construction-related and post-restoration emissions would not exceed the General Conformity applicability rates. (Less than Significant)

Direct Impacts

Restoration

For the purposes of this air quality analysis, direct impacts of Alternative 1-related restoration activities would be those that would occur at the Project site. On-site construction activities that would be associated with Alternative 1-related restoration activities would require the use of off-road construction equipment (such as backhoes and excavators) that would produce fuel combustion exhaust emissions. In addition, on-site demolition, excavation, and other construction

[48] Modeling was conducted assuming a conservative start date. While it is possible that the actual date could shift further out, the analysis as presented represents the reasonable worst case emissions that could occur. Therefore, if the date were to shift further into the future, the impacts reported in the document would most likely decrease as equipment and vehicle fleets change and become more efficient.

activities would cause particulate matter in the form of wind-blown dust to be entrained into the atmosphere, also referred to as “fugitive dust.” Fugitive dust includes not only PM_{10} and $PM_{2.5}$, but also larger particles that can present or result in a nuisance impact.

To determine whether a Federal General Conformity Determination analysis would be required, annual emissions from implementation activities were calculated for ozone precursors VOC and NO_x, as well as PM_{10}, $PM_{2.5}$, NO_2, and CO, and compared to the applicability rates (calculation details can be found in Appendix C1). Since the establishment of the Clean Air Act in 1963, the USEPA has issued final regulations to gradually reduce Pb in gasoline and diesel fuels. Today, these regulations have resulted in the near elimination of Pb emissions from the combustion of fossil fuels from off- and on-road vehicles. Because the use of off- and on-road vehicles and equipment used during on-site restoration activities would not emit Pb with high enough concentrations to exceed the Pb applicability rate, Alternative 1’s annual emissions of Pb are not analyzed further. Regarding NO_x emissions, the two principal species of NO_x are NO and NO_2, with the vast majority (95%) of the NOx emissions being comprised of NO. Since NO_2 is a subset of NO_x, the two are used interchangeably.

As required by law, Alternative 1 would implement the following best available control measures found in the SCAQMD’s Rule 403 during all restoration and construction activities, and these measures would reduce on-site fugitive dust emissions:

1. Stabilize backfill material when not actively handling;
2. Maintain stability of soil through pre-watering of site prior to clearing and grubbing;
3. Use of a water spray to clear forms;
4. Stabilize surface soils prior to operation of support equipment;
5. Pre-water soils prior to cut and fill activities;
6. Stabilize wind erodible surfaces to reduce dust;
7. Stabilize disturbed soil throughout the construction site; and
8. Pre-apply water to depth of proposed cuts.

Alternative1-related restoration activities would comply with all best available control measures provided in the SCAQMD’s Rule 403. Implementation of SCAQMD’s Rule 403 best available control measures would reduce fugitive dust emissions by as much as 61%. Additionally, Alternative 1 incorporates Tier 4 equipment as discussed in the methodology section.

In addition to on-site emissions, restoration activities would also generate emissions outside of the Project site (refer to *Indirect Impacts* discussion, below). The unmitigated on- and off-site emissions of ozone precursors, CO, NO_2, PM_{10}, and $PM_{2.5}$ during the restoration activities discussed above are summarized in Table 3.3-9. Construction equipment emissions were calculated for each year that construction would occur. For comparison to the General Conformity applicability rates, on-site (direct) and off-site (indirect) emissions are combined. As illustrated in Table 3.3-9, total construction emissions would not exceed the General Conformity applicability rates for any criteria pollutant. As proposed, Alternative 1 would be exempt from the General Conformity determination requirements and would have not have a potential significant adverse impact on air quality. Mitigation is not required.

TABLE 3.3-9
ALTERNATIVE 1, PROPOSED ACTION CONSTRUCTION CRITERIA POLLUTANT EMISSIONS
(tons per year)[a,b]

Year	VOC	NO_X/NO_2	CO	PM_{10}	$PM_{2.5}$
2017					
On-Site Emissions	0.43	1.86	18.73	11.08	1.41
Off-Site Emissions	0.37	6.94	5.12	0.83	0.49
Total Emissions	0.80	8.80	23.85	11.91	1.90
2018					
On-Site Emissions	0.72	3.11	32.17	11.12	1.44
Off-Site Emissions	0.31	6.03	4.41	0.79	0.45
Total Emissions	1.03	9.14	36.58	11.91	1.90
2019					
On-Site Emissions	1.75	1.49	16.41	11.07	1.39
Off-Site Emissions	0.25	5.03	3.41	0.75	0.42
Total Emissions	2.00	6.51	19.81	11.82	1.81
2023					
On-Site Emissions	0.69	3.00	28.27	11.12	1.44
Off-Site Emissions	0.04	0.76	0.51	0.39	0.17
Total Emissions	0.73	3.76	28.77	11.51	1.61
Applicability Rate	10	10/100	100	100	100
Exceed Applicability Rate?	No	No	No	No	No

NOTES:
All numbers are rounded; therefore, totals may differ slightly from tabular calculations. Construction would occur in two periods beginning as soon as between 2017 and 2019 and in 2023.On this schedule, there would be no construction emissions in 2020 through 2022. The proposed construction start date may be adjusted in the Final EIS/EIR, however the modeling dates as presented represent a conservative analysis. If the construction dates shift further into the future the emissions may decrease from what is presented as vehicle fleets and equipment become more efficient.

[a] Construction emissions were reduced by 61% from uncontrolled levels to reflect required compliance with SCAQMD Rule 403.

[b] Off-road construction emissions were estimated using Tier 4 emissions factors.

Post-Restoration

Alternative 1 would result in minimal long-term direct emissions. Post-restoration phase emissions would be generated by workers entering and exiting the Project site during on-site O&M activities and the occasional use of off-road construction equipment. On-site O&M activities would include: (1) maintenance to existing habitats and vegetation; (2) trash removal; (3) maintenance to the newly modified channel and levees; (4) operation of the water control structures; (5) maintenance of on-site parking facilities; (6) maintenance of on-site baseball fields; (7) vector control; and (8) other ongoing and routine maintenance. O&M activities under Alternative 1 would be substantially similar to the existing O&M activities at the site. See Chapter 2, *Description of Alternatives*, Section 2.3.2.7, *Alternative 1: Operation and Maintenance*, for additional details.

Most of the on-site O&M activities would not require the use of off-road equipment, although channel maintenance could require land-based equipment at accessible locations. For this analysis, if channel maintenance were required (e.g., after a significant storm event) it is assumed that a loader and excavator would be used to dredge the affected area. Dredge material would be placed either in an area of the Ballona Reserve that would not affect the proposed habitat restoration or disposed of off-site. Sediment testing would be performed prior to channel maintenance and any soil requiring special management measures would be handled and disposed of according to regulations.

The maximum annual post-restoration emissions, including direct (on-site) and indirect (off-site) emissions, are shown in Table 3.3-10 (see Appendix C1 for a summary of the restoration-phase emissions calculations). Since the establishment of the Clean Air Act in 1963, the USEPA has issued final regulations to gradually reduce Pb in gasoline and diesel fuels. Today, these regulations have resulted in the near elimination of Pb emissions from the combustion of fossil fuels from off- and on-road vehicles. Because the use of off- and on-road vehicles and equipment used during post-restoration activities would not emit Pb emissions high enough to exceed the applicability rates, the Project's annual emissions of Pb are not analyzed further. Regarding NO_x emissions, the two principal species of NO_x are NO and NO_2, with the vast majority (95%) of the NO_x emissions being comprised of NO. Since NO_2 is a subset of NO_x, the two are used interchangeably.

As shown in Table 3.3-10, the maximum annual post-restoration emissions, including direct emissions, generated during years 2023 and at build-out year 2035 would be negligible. This would result in a less-than-significant impact.

TABLE 3.3-10
ALTERNATIVE 1, PROPOSED ACTION
POST-RESTORATION CRITERIA POLLUTANT EMISSIONS (tons per year)

Year	VOC	NO_X/NO_2	CO	PM_{10}[a]	$PM_{2.5}$[a]
2023	0.2	1.2	2.9	0.6	0.2
Full Restoration (2035)	0.2	0.5	2.3	0.6	0.2
Applicability Rate	10	10/100	100	100	100
Exceed Applicability Rate?	No	No	No	No	No

NOTES:
All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
Post-restoration emissions represent new on- and off- site O&M activities and vehicle trips.

Indirect Impacts

Restoration

For the purposes of this analysis, indirect impacts that would be associated with Alternative 1-related restoration activities are those that would occur outside of the Project site. The proposed restoration activities under Alternative 1 would generate off-site indirect emissions of VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$ associated with debris and material hauling as well as worker commute trips. As mentioned above, for comparison to the General Conformity applicability rates, on-site (direct) and off-site (indirect) emissions are combined. As illustrated in Table 3.3-9, off-site construction emissions of VOC, NO_x, NO_2, CO, PM_{10}, and $PM_{2.5}$ contribute substantially less to the total emissions amount compared to the direct on-site emissions and total emissions are estimated to be below the General Conformity applicability rates as described in the *Direct Impacts* discussion above. Because the unmitigated indirect emissions are substantially less than the direct emissions, and because total emissions are below the General Conformity applicability rates, mitigation to control indirect emissions is not recommended and no conformity analysis is required.

Post-Restoration

As described above, post-restoration activities may involve disposal of dredge materials at off-site locations; however, it is likely that any dredged material would be placed in the Ballona Reserve. If dredged material would be transported off-site, soil excavation and disposal volumes would be substantially less than restoration-phase volumes. Any off-haul activities during the post-restoration phase therefore would have a shorter duration than similar restoration-phase activities. During the post-restoration phase, indirect criteria pollutant emissions also would be generated by public visitors driving to and from the Project site. Since the on-site restoration activities would not increase capacity or sustainably alter the existing on-site recreational areas, the anticipated increase in the number of people visiting the site is not expected to substantially increase mobile source emissions.[49] The maximum annual post-restoration emissions, including indirect (off-site) emissions, are shown above in Table 3.3-10 (see Appendix C1 for a summary of the post-restoration emissions calculations). This impact would be less than significant.

1-AQ-1b: Alternative 1 would not conflict with or obstruct implementation of SCAG's Regional Comprehensive Plan and Guide. (Less than Significant)

Direct Impacts

A significant air quality impact may occur if a project is not consistent with the applicable AQMP or would in some way obstruct the implementation of the policies or attainment of the goals of that plan. Since the forecasted growth in SCAQMD's AQMP for the SCAB relies on SCAG's regional growth forecasts, and because SCAG's growth forecasts are based on, among other things, land uses specified in city and county general plans, a project that is consistent with the land use designated in a city or county's general plan also would be consistent with the AQMP growth projections.

As previously discussed, Alternative 1 would restore aquatic and upland habitat within the Ballona Reserve, replace the existing concrete channelized segment of Ballona Creek with a more natural meander-shaped flow pattern, provide public access amenities (such as pedestrian and bike trails along levee tops, two bicycle/pedestrian bridges, and a new three-story parking structure), remove natural gas storage wells and associated pipelines from within the Ballona Reserve, relocate the natural gas wells to the SoCalGas Property, and remove an abandoned sewer pipeline. See Table 2-1, *Summary of Alternatives*, in Chapter 2, *Description of Alternatives*, for further details. Given these activities, implementation of Alternative 1 would not result in any additional population, employment, or housing growth that had not been

[49] Although the Corps and CDFW would not have control of the number of public visitors driving to and from the Project site, the proposed restoration activities would result in an increase in visitor trips to the Project site.

accounted for in the general plans for the City and County of Los Angeles. Consequently, no growth-inducing development or land uses would occur under Alternative 1, and implementation of Alternative 1 would not conflict with or obstruct the implementation of SCAQMD's AQMP. See also Chapter 3, *Introduction*, Section 3.1.3.4, *Population and Housing*, for additional discussion of why the Project would not induce growth.

In addition, SCAQMD regional significance thresholds were designed to assist SCAQMD in determining if a project would worsen air quality conditions in the SCAB. The determination of AQMP consistency is primarily concerned with the long-term influence of the Project on air quality in the SCAB. As discussed under *1-AQ-2* below, Alternative 1 would not result in significant regional emissions and would not interfere with the attainment of air quality standards during the restoration phase. As discussed under *1-AQ-2* below, Alternative 1 would not result in significant regional post-restoration emissions and would not interfere with the attainment of air quality standards. Therefore, implementation of Alternative 1 would not conflict with or obstruct the implementation of SCAQMD's AQMP. This would result in a less-than-significant impact. No mitigation is recommended.

Indirect Impacts

The proposed restoration activities and post-restoration conditions under Alternative 1 would not generate high enough indirect criteria pollutant emissions to result in an exceedance of an ambient air quality standard. Refer to the *Indirect Impacts* discussion under 1-AQ-2, below. The combined direct and indirect emissions under the restoration phase would not exceed the SCAQMD RSTs for any criteria pollutant (see Table 3.3-11). Because the unmitigated indirect emissions would be substantially less than the direct emissions, and because total emissions are below the SCAQMD applicability rates, mitigation to control indirect emission is not recommended.

1-AQ-2: Alternative 1's implementation-related emissions would not exceed SCAQMD's maximum daily emissions thresholds during construction years 2017, 2018, 2019, and 2023 or during the post-restoration phase. (Less than Significant)

Direct Impacts

Restoration

PM_{10} and $PM_{2.5}$ are among the pollutants of greatest localized concern with respect to on-site activities. Particulate emissions from restoration and construction activities can lead to adverse health effects and nuisance concerns, such as reduced visibility and soiling of exposed surfaces. Particulate emissions can result from a variety of activities, including restoration-related excavation, grading, vehicle travel on paved and unpaved surfaces, and vehicle and equipment exhaust.

Emissions of ozone precursors ROG and NO_X primarily are generated from mobile sources and vary as a function of vehicle trips per day associated with delivery of materials and worker commute trips, and the types and number of heavy-duty, off-road equipment used, and the intensity and frequency of their operation.

TABLE 3.3-11
PROPOSED ACTION MAXIMUM DAILY REGIONAL CONSTRUCTION EMISSIONS (lb/day)

Year	ROG[a]	NO_X[a]	CO	SO_X	PM_{10}[a,b]	$PM_{2.5}$[a,b]
2017						
On-Site Emissions	8.81	38.17	385.36	0.73	94.58	12.60
Off-Site Emissions	2.83	53.41	39.38	0.28	6.38	3.80
Total Emissions	11.63	91.58	424.75	1.01	100.96	16.40
2018						
On-Site Emissions	9.15	39.66	408.21	0.75	94.62	12.65
Off-Site Emissions	2.39	46.38	33.92	0.28	6.06	3.49
Total Emissions	11.54	86.03	442.14	1.02	100.68	16.14
2019						
On-Site Emissions	48.20	12.58	138.98	0.24	93.79	11.81
Off-Site Emissions	1.91	38.68	26.22	0.27	5.76	3.21
Total Emissions	50.10	51.27	165.21	0.50	99.55	15.02
2023						
On-Site Emissions	5.86	25.40	239.47	0.49	94.18	12.21
Off-Site Emissions	0.30	5.86	3.91	0.20	3.02	1.28
Total Emissions	6.17	31.26	243.38	0.69	97.20	13.48
SCAQMD Construction Thresholds	75	100	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

NOTES:

All numbers are rounded; therefore, totals may differ slightly from tabular calculations. Restoration would be implemented in two periods beginning as soon as between 2017 and 2019 and in 2023.On this schedule, there would be no restoration-phase emissions in 2020 through 2022. The proposed construction start date may be adjusted in the Final EIS/EIR, however the modeling dates as presented represent a conservative analysis. If the construction dates shift further into the future the emissions may decrease from what is presented as vehicle fleets and equipment become more efficient.

a ROG, NO_x, CO, and PM emissions were estimated under the assumption that Tier 4 or cleaner engines are used during construction.

b PM_{10} and $PM_{2.5}$ restoration-phase emissions were reduced by 61% from uncontrolled levels to reflect required compliance with SCAQMD Rule 403.

As required by law, the Alternative 1 (if approved) will comply with all best available control measures identified in SCAQMD Rule 403. Implementation of Rule 403's best available control measures would reduce fugitive dust emissions by as much as 61%. Additionally, Alternative 1 incorporates Tier 4 equipment as discussed in the methodology section.

The unmitigated maximum on- and off-site daily emissions during each year of the restoration phase are shown in Table 3.3-11 (refer to Appendix C1 for a detailed summary of the emissions calculations). These emission estimates are representative of the Alternative 1 restoration activities as described in Chapter 2, *Description of Alternatives*, which includes the restoration of wetlands and other habitat within the Ballona Reserve, replacement of the existing concrete channelized segment of Ballona Creek with a more natural meander-shaped flow pattern, providing public access amenities, removal of the natural gas storage wells and associated pipelines from within the Ballona Reserve and relocating them to the SoCalGas Property, and removal of an abandoned sewer pipeline. As shown in Table 3.3-11, the unmitigated combined on- and off-site maximum daily NO_x emissions generated during restoration years 2017, 2018, 2019, and 2023 would not exceed the SCAQMD's RSTs for any implementation year. Therefore, construction activities that would be associated with Alternative 1 would not be expected to generate emissions, including direct emissions, which would violate any air quality standard or contribute substantially to an existing or projected air quality violation. This would result in a less-than-significant impact and mitigation is recommended.

Post-Restoration

Alternative 1 would result in minimal long-term emissions. Post-restoration phase emissions would be generated by the use of off-road construction equipment and workers entering and exiting the Project site during on-site O&M activities. On-site O&M activities would include: (1) maintenance to existing habitat and vegetation; (2) trash removal; (3) maintenance to the newly modified channel and levees; (4) operation of the water control structures; (5) maintenance of on-site parking facilities; (6) maintenance of on-site baseball fields; (7) vector control; and (8) other ongoing and routine maintenance. O&M activities under Alternative 1 are expected to be substantially similar to the existing O&M activities. See Chapter 2, *Description of Alternatives*, Section 2.3.2.7, *Alternative 1: Operation and Maintenance*, and Appendix B5 for additional details.

Most of the on-site O&M activities would not require the use of off-road equipment, although channel maintenance could require land-based equipment at accessible locations. For this analysis, if channel maintenance were required (e.g., after a significant storm event) it is assumed that a loader and excavator would be used to dredge the affected area. Dredge material would be placed either in an area of the Ballona Reserve that would not affect the proposed habitat restoration or disposed of off-site. Off-haul options are described in Section 2.3.2.5, *Alternative 1: Implementation and Construction Process*. It is likely that any dredged material would be placed in the Ballona Reserve. However, if dredged material is to be transported off-site, soil excavation and disposal volumes would be less than restoration-phase volumes. Any off-haul activities during the post-restoration phase therefore would have a shorter duration than for restoration-phase activities. Sediment testing would be performed prior to channel maintenance and any soil requiring special management measures would be handled and disposed of according to regulations.

The maximum daily post-restoration emissions are shown in Table 3.3-12 (see Appendix C1 for a summary of the restoration-phase emissions calculations).

TABLE 3.3-12
PROPOSED ACTION MAXIMUM DAILY REGIONAL POST-RESTORATION EMISSIONS (lb/day)

Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Post-Restoration Emissions[a]						
2023	1.8	9.4	22.3	<0.1	4.7	1.5
Full Restoration (2035)	1.4	3.8	17.5	<0.1	4.5	1.3
SCAQMD Operational Thresholds	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

NOTES:
All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
Post-restoration emissions represent new on- and off- site O&M activities and vehicle trips.

As shown in Table 3.3-12, the maximum daily post-restoration emissions generated during years 2023 and at buildout year 2035 would not exceed SCAQMD's daily significance thresholds for criteria pollutants (i.e., ROG, CO, NO_x, SO_x, PM_{10}, and $PM_{2.5}$). As emissions of all the pollutants would be below SCAQMD's applicable thresholds, Alternative 1 would not likely result in or contribute to an exceedance of an air quality standard and the regional air quality impacts associated with these pollutants would be less than significant, requiring no mitigation.

Indirect Impacts

Restoration

The proposed restoration activities under Alternative 1 would generate indirect emissions of VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$ associated with off-site debris and material hauling and worker commute trips. As shown in Table 3.3-11, off-site emissions (i.e., indirect emissions) during each of the restoration years would not exceed the SCAQMD RST's. Therefore, construction activities that would be associated with Alternative 1 would not be expected to generate indirect emissions, which would violate any air quality standard or contribute substantially to an existing or projected air quality violation. The combined direct and indirect emissions generated during the restoration phase would not exceed the SCAQMD RST for any criteria pollutant, as described in the *Direct Impacts* discussion above. Because the unmitigated indirect emissions are substantially less than the direct emissions, and because total emissions are below the SCAQMD applicability rates, mitigation to control indirect emission is not recommended.

Post-Restoration

As described above, post-restoration activities may involve disposal of dredge materials at off-site locations; however, it is likely that any dredged material would be placed in the Ballona Reserve. If dredged material would be transported off-site, soil excavation and disposal volumes would be substantially less than restoration-phase volumes. During the post-restoration phase, indirect criteria pollutant emissions would also be generated by public visitors driving to and from the Project site. Since the on-site restoration activities would not increase capacity or sustainably alter the existing on-site recreational areas, the anticipated increase in the number of people visiting the site is not expected to substantially increase mobile source emissions. The maximum daily post-restoration emissions, including indirect (off-site) emissions, are shown above in Table 3.3-12 (see Appendix C1 for a summary of the post-restoration emissions calculations). This impact would be less than significant.

1-AQ-3: Alternative 1 would result in net increases in $PM_{2.5}$ PM_{10}, VOCs, and NO_x, which are criteria pollutants or precursors to a criteria pollutant for which the region is non-attainment under applicable federal and/or state ambient air quality standards; however, these increases in emissions would not be cumulatively considerable. (Less than Significant)

Direct Impacts

As indicated in Table 3.3-2, *Federal and State Attainment Status for Project Area*, the Los Angeles portion of the SCAB is classified under Federal law as a non-attainment area for ozone (8-hour), Pb (3-month rolling average), and $PM_{2.5}$ (24-hour). Under state law it is designated as a non-attainment area for ozone (1-hour and 8-hour), $PM_{2.5}$ (annual mean), and PM_{10} (24-hour and annual average). Alternative 1's emissions of VOC, NO_x, $PM_{2.5}$, and PM_{10}, in combination with past, other present, and reasonably foreseeable future projects in the SCAB, could worsen an existing adverse environmental condition relating to these criteria pollutants and ozone precursors.

According to SCAQMD, if an individual project results in air emissions of criteria pollutants or ozone precursors that exceed the SCAQMD's recommended daily thresholds for project-specific impacts, then it also would result in a cumulatively considerable net increase of these criteria pollutants for which the Project region is in non-attainment under an applicable Federal or state ambient air quality standard. As described above and as shown in Table 3.3-11, *Proposed Action Maximum Daily Regional Construction Emissions (lb/day)*, the combined on- and off-site maximum daily emissions generated during restoration years 2017, 2018, 2019, and 2023 would not exceed the SCAQMD's RSTs. Therefore, Alternative 1's emission of criteria pollutants and ozone precursors would not result in a cumulatively considerable contribution to a significant cumulative air quality impact, and so would be less than significant and no mitigation is recommended.

Indirect Impacts

The proposed restoration and post-restoration activities under Alternative 1 would result in the off-site generation of emissions of criteria pollutants related to debris and material hauling as well as construction worker commutes. Maximum total indirect (off-site) daily restoration and post-restoration emissions would not exceed the SCAQMD's significance thresholds (see Tables 3.3-11 and 3.3-12). As such, the Project would not generate high enough indirect emission of criteria pollutants or ozone precursors that would result in a cumulatively considerable contribution to the existing significant cumulative air quality impact. As described in the *Direct Impacts* discussion above, emissions associated with the restoration phase are below the SCAQMD RST's. Because the unmitigated indirect emissions are substantially less than the direct emissions, and because total emissions are below the SCAQMD RST's, mitigation to control indirect emission is not recommended.

1-AQ-4a: Alternative 1 would not expose sensitive receptors to substantial localized concentrations of criteria air pollutants. (Less than Significant)

CO concentration is a direct function of motor vehicle activity (e.g., idling time and traffic flow conditions); particularly during peak commute hours and certain meteorological conditions. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels with respect to local sensitive land uses such as residential areas, schools, and hospitals. As a result, SCAQMD recommends analysis of CO emissions at a local and regional level.

Implementation of Alternative 1 would result in a temporary increase in restoration-phase traffic and increase the number of visitor trips following restoration. These increases in vehicular trips to the Project site would expose sensitive receptors to increased CO concentrations. However, according to the Project-specific traffic analysis (see Appendix H) none of the signalized intersections that were analyzed would experience an increase in traffic volumes exceeding 5% or more over existing volumes as a result of Alternative 1. Additionally, none of the existing LOS at the study intersections analyzed in the traffic analysis (both signalized and un-signalized) would experience a worsening in LOS as a result of Alternative 1. As such, impacts associated with CO hotspots resulting from implementation of Alternative 1 would be less than significant. The daily construction emissions generated on-site during the implementation of Alternative 1 were evaluated against SCAQMD's LSTs for a 5-acre site as a conservative screening analysis to determine whether the emissions would cause or contribute to adverse localized air quality impacts.[50] Currently, the nearest off-site sensitive receptors to the Project site include the existing single-family residential uses located to the west, single-family residential uses located to the south and west, and multi-family residential north of the Project boundaries. The nearest receptors are located within 35 feet of the Project site.

The mass rate look-up tables provided by SCAQMD, lists LSTs in the form of maximum emissions (given in pounds per day) that are not expected to cause or contribute to an exceedance of the most stringent applicable Federal or state ambient air quality standards. The LSTs are provided for receptor distances of 82, 164, 328, 656, and 1,640 feet. Since SCAQMD does not provide LSTs for receptors located less than 82 feet from a project boundary, a LST distance of 82 feet is used to evaluate the potential localized air quality impacts associated with Alternative 1's implementation activities. Table 3.3-13 identifies daily localized on-site exhaust emissions that are estimated to occur during the implementation of Alternative 1. As shown in Table 3.3-13, Alternative 1's daily construction activity emissions would not exceed the applicable SCAQMD LSTs for NO_x (in the form of NO_2), CO, PM_{10}, and $PM_{2.5}$ for a 5-acre site in Source Receptor Area 2. Therefore, this would result in a less-than-significant impact and no mitigation is recommended.

TABLE 3.3-13
ALTERNATIVE 1 LOCALIZED ON-SITE DAILY CONSTRUCTION EMISSIONS

Year	Estimated Maximum Daily Emissions (lbs/day)[a,b]			
	NO_X	**CO**	**PM_{10}**	**$PM_{2.5}$**
2017	38.2	385.4	7.5	1.9
2018	39.7	408.2	7.6	1.9
2019	12.6	139.0	6.8	1.1
2023	25.4	239.5	7.1	1.5
Maximum Emissions	39.7	408.2	7.6	1.9
Localized Significance Thresholds[b]	*221*	*1,531*	*13*	*6*
Exceeds Threshold?	No	No	No	No

NOTES:
[a] NOx, CO, and PM emissions assume the use Tier 4 or cleaner engines.
[b] LSTs for a 5-acre site in Source Receptor Area 2 at a receptor distance of 82 feet.

[50] According to SCAQMD's LST methodology, LSTs are only applicable to the on-site construction emissions that are generated by a project and do not apply to emissions generated off-site such as mobile emissions on roadways from worker, vendor, and haul truck trips.

1-AQ-4b: Alternative 1 would not expose sensitive receptors to substantial localized concentrations of Toxic Air Contaminants. (Less than Significant Impact)

Direct Impacts

The implementation of Alternative 1 would result in short-term emissions of diesel PM, which is a TAC. Diesel PM poses a carcinogenic health risk that is measured using an exposure period of 30 years. The exhaust of off-road heavy-duty diesel equipment would emit diesel PM during restoration-related grading and the excavation of materials that were placed on the Project site during the construction of Marina del Rey and Ballona Creek; materials transport and handling; and other miscellaneous activities.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., the potential exposure to be compared to applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA 2015), carcinogenic health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 30-year exposure period; however, such assessments should be limited to the period or duration of activities associated with proposed site restoration.

The construction/restoration period for Alternative 1 would be approximately 4 years,[51] which is much less than the 30-year period used for risk determination. Because off-road heavy-duty diesel equipment would be used only for short time periods, implementation activities associated with Alternative 1 would not expose sensitive receptors to substantial emissions of TACs. Therefore, this impact would be less than significant during the restoration phase.

This impact also would be less than significant during the post-restoration phase for Alternative 1. The proposed restoration would not introduce any new stationary sources of TACs, such as diesel-fueled backup generators that are more commonly associated with large commercial and industrial uses. Implementation of Alternative 1 would result in the construction of a three-story parking garage within the footprint of an existing parking lot, bridges over Culver Boulevard and Lincoln Boulevard, gateway entrances, trails and paths on top of the levees, and educational signage. None of these public access amenities would generate substantial pollutant concentrations. Therefore, Alternative 1 would not expose surrounding sensitive receptors to substantial pollutant and TAC emissions during the post-restoration phase such that health risks could result. As such, this impact would be less than significant.

Indirect Impacts

The use of haul trucks to transport material to, and debris from, the Project site during the implementation of Alternative 1 would result in short-term emissions of TAC in the form of

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[51] As noted above, Alternative 1 would be implemented from 2017 through 2023; however, no mechanized activities would occur between 2021 and 2022.

DPM. As previously discussed, dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Since indirect emissions of TAC (i.e., DPM associated with off-site hauling) during Alternative 1 would occur over a period much less than the 30-year period used for risk determination and would be dispersed over a large area within the air basin, off-site emissions associated with Alternative 1 would not be expected to expose sensitive receptors to substantial emissions concentrations of TACs. Therefore, this impact would be less than significant during the restoration phase.

With the possible exception of limited diesel fuel combustion emissions associated with periodic hauling of debris related to maintenance activities, there would be no indirect TAC emissions during the post-restoration phase under Alternative 1. The only indirect emissions that would be generated during post-restoration phase would be by public visitors driving to and from the Project site. Since the on-site restoration activities would not increase capacity or sustainably alter the existing on-site recreational areas, the number of people visiting the site is not expected to increase enough to result in an increase in mobile source emissions that would expose surrounding sensitive receptors to substantial pollutant and TAC emissions. As such, this impact would be less than significant.

1-AQ-5: The implementation of Alternative 1, if not mitigated, could create objectionable odors that could affect a substantial number of people. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Restoration

Sources of odor during the implementation of restoration-phase activities include diesel exhaust from equipment and excavated organic matter from the removal of fill materials. Odors from equipment exhaust would be localized and generally confined to the immediate area surrounding the Project site. Alternative 1 would utilize typical construction techniques, and resulting equipment odors would be typical of most construction sites and temporary in nature. Odors from paving of the Area B parking facility would be minimized through mandatory compliance with SCAQMD Rule 1108.

Alternative 1 would remove fill materials that were placed in Area A during the development of Marina del Rey and would expose organic materials that could generate odors (including from hydrogen sulfide) as they decompose. Hydrogen sulfide gas is commonly described as having a foul or “rotten egg” smell (OSHA 2005). Accordingly, receptors adjacent to the Project site temporarily may be exposed to objectionable odors during restoration-related excavation and stockpiling of soils. This impact would be significant without mitigation.

Mitigation Measure

> **Mitigation Measure AQ-1:** ***Odor Management Plan.*** In order to reduce odors from the decomposition of organic materials during excavation and stockpiling activities, contractors shall submit and implement, for and upon CDFW approval, an odor management plan to limit hydrogen sulfide levels to 20 parts per billion at the site perimeter. This concentration is below the state 1-hour standard of 30 parts per billion. The plan shall be reviewed and approved by the CDFW and include the following elements:

a) Monitoring and recording of hydrogen sulfide at the perimeter of the Ballona Reserve to ensure compliance and implementation of the plan. Monitoring shall occur periodically during the days when fill in Area A is being removed. Monitoring shall occur along the perimeter with the closest off-site receptors in addition to the perimeter that is most directly downwind from the removal activities;

b) Procurement and local storage of an oxidizer that can be applied in liquid form to treat stock piles of sediment or particularly odorous excavation areas; however, the use of such an oxidizer shall be approved by the CDFW, in advance, to ensure that it would not be harmful to aquatic organisms or cause long-term adverse effects in the aquatic environment (Ventana 2010); and

c) Posting of signage at entrances to the Ballona Reserve (including at the Fiji Way entrance to the CDFW trailer, the Culver Boulevard entrance to the baseball fields, and the West Culver Parking Lot) listing the contact information for odor complaints.

Level of Significance after Mitigation

Implementation of Mitigation Measure AQ-1 would ensure that odors emitted during excavation would be contained and, thereby, not affect a substantial number of people. This would reduce impacts to less than significant.

Post-Restoration

Long-term post-restoration-related activities do not include any uses identified by CARB or SCAQMD as being associated with odors; however, Alternative 1 would restore aquatic and upland habitats, both of which can generate odors from natural processes. Foul odors from wetlands typically are caused as a result of organic decomposition that releases hydrogen sulfide gas. Similar reactions take place in mudflats and salt marshes due to the presence of anaerobic bacteria (NOAA 2008). While a restored Ballona Reserve would have the potential to generate natural odors, such odors would be similar in origin and magnitude to existing odors within the Project site. Accordingly, odor-related impacts associated with Alternative 1 following the implementation of restoration activities would be less than significant, and no mitigation measures are required.

Indirect Impacts

The proposed restoration activities under Alternative 1 would generate limited indirect odor emissions of diesel exhaust and excavated organic matter related to the removal and transport of fill materials. Since these off-site odor sources would be mobile and dispersed over a large area within the air basin, the associated odorous emissions concentrations at sensitive receptor locations would be relatively low. As such, this impact would be less than significant.

The post-restoration activities under Alternative 1 would only potentially generate direct odor emissions from haul truck diesel exhaust and associated transport of excavated organic matter from the removal of fill materials during O&M activities. Since these off-site odor sources would be periodic, mobile, and dispersed over a large area within the air basin, the associated odorous emissions concentrations at sensitive receptor locations would be relatively low. As such, this impact would be less than significant.

TABLE 3.3-14
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
AQ-1: Conflict with or obstruct implementation of the applicable air quality plan?				
Relating to General Conformity, see Impact 1-AQ-1a.	☐	☐	☒	☐
Relating to SCAG's AQMP, see Impact 1-AQ-1b.	☐	☐	☒	☐
AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation? See Impact 1-AQ-2	☐	☐	☒	☐
AQ-3: 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)? See Impact 1-AQ-3.	☐	☐	☒	☐
AQ-4: Expose sensitive receptors to substantial pollutant concentrations?				
Relating to carbon "hotspots" and criteria pollutants see Impact 1-AQ-4a.	☐	☐	☒	☐
Relating to toxic air contaminants, see Impact 1-AQ-4b.	☐	☐	☒	☐
AQ-5: Create objectionable odors affecting a substantial number of people? See Impact 1-AQ-5	☐	☒	☐	☐

3.3.6.2 Alternative 2: Restored Partial Sinuous Creek

2-AQ-1a: Alternative 2's construction-related and post-restoration emissions would not exceed the General Conformity applicability rates. (Less than Significant)

Direct Impacts

For the purposes of this analysis, restoration-related direct impacts are those that would occur at the Project site. Alternative 2 would be implemented in a single 3-year phase that would be similar as described for Alternative 1, Phase 1, but with a smaller footprint of habitat restoration and levee construction. On-site construction activities would require the use of off-road construction equipment, such as backhoes and excavators that would produce fuel combustion exhaust emissions. In addition, on-site demolition, excavation, and other construction activities would cause fugitive dust to be entrained into the atmosphere.

To determine whether Federal General Conformity Determination analysis would be required, annual emissions from Project implementation activities were calculated for direct emissions of ozone precursors VOC and NO_x, as well as PM_{10}, $PM_{2.5}$, NO_2, and CO and compared to the applicability rates (calculation details can be found in Appendix C1). Because the use of off- and on-road vehicles and equipment used during on-site restoration activities would not emit Pb emissions high enough to exceed the Pb applicability rate, annual emissions of Pb are not analyzed further. Regarding NO_x emissions, the two principal species of NO_x are NO and NO_2, with the vast majority (95%) of the NOx emissions being comprised of NO. Since NO_2 is a subset of NO_x, the two are used interchangeably.

As required by law, Alternative 2would include implementing the following best available control measures found in the SCAQMD's Rule 403 during all restoration and construction activities to reduce on-site fugitive dust emissions:

1. Stabilize backfill material when not actively handling;
2. Maintain stability of soil through pre-watering of site prior to clearing and grubbing;
3. Use of a water spray to clear forms;
4. Stabilize surface soils prior to operation of support equipment;
5. Pre-water soils prior to cut and fill activities;
6. Stabilize wind erodible surfaces to reduce dust;
7. Stabilize disturbed soil throughout the construction site; and
8. Pre-apply water to depth of proposed cuts.

Implementation of SCAQMD's Rule 403 best available control measures would reduce fugitive dust emissions by as much as 61%. Additionally, Alternative 1 incorporates Tier 4 equipment as discussed in the methodology section.

In addition to on-site emissions, restoration activities under Alternative 2 also would generate emissions outside of the Project site (refer to *Indirect Impacts* discussion below). For comparison to the General Conformity applicability rates, on-site (direct) and off-site (indirect) emissions are combined. The on-site and off-site emissions of ozone precursors, CO, NO_x/NO_2, $PM_{10,}$ and $PM_{2.5}$ during these restoration activities are summarized in Table 3.3-15. As shown in Table 3.3-15, total construction emissions of VOC, NO_x/NO_2, CO, $PM_{10,}$ and $PM_{2.5}$ are not anticipated to exceed the General Conformity applicability rates. Alternative 2 would, therefore, be exempt from the General Conformity determination requirements and would not have an adverse impact on air quality.

Post-Restoration

Alternative 2 would result in minimal long-term emissions. Long-term O&M activities would be substantially similar to existing O&M activities, and would include: (1) maintenance of habitats and vegetation, (2) trash removal, (3) operation of the newly modified channel and levees, (4) operation of the water control structures, (5) maintenance of the parking facilities, and (6) other ongoing and routine maintenance as described for Alternative 1. See Chapter 2, *Description of Alternatives*, Section 2.3.2.7, *Alternative 2: Operation and Maintenance*, for additional details.

As previously stated, most of the on-site O&M activities would not require the use of off-road equipment. However, channel maintenance may require land-based equipment at accessible locations. The maximum annual emissions following restoration are shown in Table 3.3-16 (see Appendix C1 for a detailed summary of emissions calculations).

TABLE 3.3-15
ALTERNATIVE 2 CONSTRUCTION CRITERIA POLLUTANT EMISSIONS (tons per year)

Year	VOC	NO_X/NO_2	CO	PM_{10}[a]	$PM_{2.5}$[a]
2017					
On-Site Emissions	0.34	1.48	14.91	11.07	1.39
Off-Site Emissions	0.37	6.94	5.12	0.83	0.49
Total Emissions	0.71	8.42	20.03	11.90	1.89
2018					
On-Site Emissions	0.60	2.58	26.86	11.10	1.43
Off-Site Emissions	0.31	6.03	4.41	0.79	0.45
Total Emissions	0.91	8.61	31.27	11.89	1.88
2019					
On-Site Emissions	1.58	0.77	7.74	11.05	1.37
Off-Site Emissions	0.25	5.03	3.41	0.75	0.42
Total Emissions	1.83	5.80	11.15	11.80	1.79
Applicability Rate	10	10/100	100	100	100
Exceed Applicability Rate?	No	No	No	No	No

NOTES: All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Emissions were reduced by 61% from uncontrolled levels to reflect required compliance with SCAQMD Rule 403.
Alternative 2 would be implemented between 2017 and 2022(see Section 2.3.3.5, *Alternative 2: Implementation and Construction Process*).

TABLE 3.3-16
ALTERNATIVE 2, PROPOSED ACTION
POST-RESTORATION CRITERIA POLLUTANT EMISSIONS (tons per year)

Year	VOC	NO_X/NO_2	CO	PM_{10}	$PM_{2.5}$
2020	0.3	1.9	3.3	0.6	0.2
2023	0.2	1.2	2.9	0.6	0.2
Full Restoration (2035)	0.2	0.5	2.3	0.6	0.2
Applicability Rates	10	10/100	100	100	100
Exceed Applicability Rates?	No	No	No	No	No

NOTES:

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
Post-restoration emissions represent new on- and off- site O&M activities and vehicle trips.

As shown in Table 3.3-16, the maximum annual post-restoration emissions generated during years 2020, 2023, and at build-out year 2035 would be negligible. This would result in a less-than-significant impact.

Indirect Impacts

For the purposes of this analysis, indirect restoration-related impacts are those that would occur outside of the Project site. The restoration activities under Alternative 2 would generate off-site indirect emissions of VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$ associated with debris and material hauling as well as worker commute trips. As mentioned above, for comparison to the General Conformity applicability rates, on-site (direct) and off-site (indirect) emissions are combined. As illustrated in Table 3.3-15, indirect (off-site) construction emissions of VOC, NO_x, NO_2, CO, PM_{10} and $PM_{2.5}$ contribute substantially less compared to the direct on-site emissions, and total emissions are estimated not to exceed the General Conformity applicability rates, as described in the *Direct Impacts* discussion above. Because the unmitigated indirect emissions would be substantially less than the direct emissions, and because total emissions are below the General Conformity applicability rates, mitigation to control indirect emission is not recommended.

As described above, post-restoration activities under Alternative 2 may involve disposal of dredge materials at off-site locations; however, it is likely that any dredged material would be placed in the Ballona Reserve. If dredged material would be transported off-site, soil excavation and disposal volumes would be substantially less than restoration-phase volumes. During the post-restoration phase under Alternative 2, criteria pollutant emissions would be generated by public visitors driving to and from the Project site. Since the on-site restoration activities would not increase capacity or sustainably alter the existing on-site recreational areas, the number of people visiting the site is not expected to increase enough to result in an increase in mobile source emissions.[52] The maximum annual post-restoration emissions, including direct (on-site) and indirect (off-site) emissions are shown above in Table 3.3-16. This impact would be less than significant.

2-AQ-1b: Alternative 2 would not conflict with or obstruct implementation of SCAG's Regional Comprehensive Plan and Guide. (Less than Significant)

Direct Impacts

Alternative 2 would be similar to Alternative 1, but would have a smaller footprint of habitat restoration and levee construction. The restoration activities proposed under Alternative 2 include the construction of a parking structure, two bicycle/pedestrian bridges, visitor amenities and the abandonment and/or relocation of the natural gas wells and associated pipelines within the Ballona Reserve. See Table 2-1, *Summary of Alternatives*, in Chapter 2, *Description of Alternatives*, for further details. Given these activities, implementation of Alternative 2 would not result in any additional population, employment, or housing growth that had not been accounted for in the general plans for the City and County of Los Angeles. Consequently, as no growth-inducing development or land uses would occur under the Project, implementation of Alternative 2 would not conflict with or obstruct the implementation of SCAQMD's AQMP. See also Chapter 3, *Introduction*, Section 3.1.3.4, *Population and Housing*, for additional discussion of why the Project would not induce growth.

In addition, SCAQMD regional significance thresholds were designed to assist SCAQMD in determining if a project would worsen air quality conditions in the Basin. The determination of AQMP consistency is primarily concerned with the long-term influence of the Project on air quality in the SCAB. As discussed under *2-AQ-2 below*, Alternative 2 would not result in significant regional emissions and would not interfere with the attainment of air quality standards during the restoration phase, or following restoration. Therefore, implementation of Alternative 2 would not

52 Although the Corps and CDFW would not have control over the number of public visitors driving to and from the Project site, the proposed restoration activities would result in an increase in visitor trips to the Ballona Reserve.

conflict with or obstruct the implementation of SCAQMD's AQMP. This would result in a less-than-significant impact and no mitigation is recommended.

Indirect Impacts

The restoration and post-restoration activities under Alternative 2 would not generate high enough indirect criteria pollutant emissions that contribute to an exceedance of an ambient air quality standard. Refer to the Indirect Impacts discussion under 2-AQ-2, below. The combined direct and indirect emissions under the restoration phase would not exceed the SCAQMD RSTs for any criteria pollutant, as described in 2-AQ-2. Because the unmitigated indirect emissions would be substantially less than the direct emissions, and because total emissions are below the SCAQMD applicability rates, mitigation to control indirect emission is not recommended.

2-AQ-2: Alternative 2's implementation-related emission would not exceed SCAQMD's maximum daily emissions thresholds during construction years 2017, 2018, and 2019 or during the post-restoration phase. (Less than Significant)

Direct Impacts

Restoration

Restoration-phase activities associated with Alternative 2 would occur between 2017 and 2022 and would have similar characteristics as Alternative 1 Phase 1. Alternative 2 would have a substantially similar footprint when compared to Alternative 1 (approximately 355 acres relative to Alternative 1's 346 acres). Under Alternative 2, the existing armored levees on the Ballona Creek channel within the Ballona Reserve would be removed and Ballona Creek would be realigned to flow in a natural meander-shaped pattern as described for Alternative 1 except that under Alternative 2 the southern levee of the Ballona Creek channel adjacent to West Area B would not be breached, and the existing water control structures would remain. As a result, Alternative 2 would restore a mix of fully tidal wetlands and managed wetlands in the Ballona Reserve while retaining existing habitats in West Area B (see Figure 2-43, *Alternative 2: Proposed Habitats* [p. 2-159]). Alternative 2 would include the first restoration phase described in Alternative 1, but not the second and final restoration phase and would not include stockpiled fill along the Culver Boulevard levee and East Area B. Restoration-phase work would occur only between 2017 and 2022.

As required by law, the Project (if approved) will comply with all best available control measures identified in SCAQMD Rule 403. Implementation of Rule 403 best available control measures would reduce fugitive dust emissions by as much as 61%.

The maximum daily on- and off- site emissions during each year of Alternative 2's implementation are shown in Table 3.3-17 (refer to Appendix C1 for a detailed summary of emissions calculations). These emission estimates are representative of the Alternative 2 restoration activities as described in Chapter 2, *Description of Project and Alternatives*, which includes the construction of a parking structure, two bicycle/pedestrian bridges, visitor amenities, and the abandonment and/or relocation of the SoCalGas natural gas wells and associated pipelines. As shown in Table 3.3-17, the combined on- and off-site maximum daily emissions generated during years 2017, 2018, and 2019 would not exceed the SCAQMD's RTS for any criteria pollutant. Therefore, construction activities that would be associated with Alternative 2 would not be expected to generate emissions, including direct emissions, which would violate any air quality standard or contribute substantially to an existing or projected air quality violation. This would result in a less-than-significant impact and no mitigation is recommended.

TABLE 3.3-17
ALTERNATIVE 2
MAXIMUM DAILY REGIONAL CONSTRUCTION EMISSIONS (lb/day)

Year	ROG[a]	NO_X[a]	CO[a]	SO_X	PM_{10}[a,b]	$PM_{2.5}$[a,b]
2017						
On-Site Emissions	8.81	38.17	385.36	0.73	94.58	12.60
Off-Site Emissions	2.83	53.41	39.38	0.28	6.38	3.80
Total Emissions	11.63	91.58	424.75	1.01	100.96	16.40
2018						
On-Site Emissions	9.15	39.66	408.21	0.75	94.62	12.65
Off-Site Emissions	2.39	46.38	33.92	0.28	6.06	3.49
Total Emissions	11.54	86.03	442.14	1.02	100.68	16.14
2019						
On-Site Emissions	48.23	12.58	138.98	0.24	93.79	11.81
Of-Site Emissions	1.91	38.68	26.22	0.27	5.76	3.21
Total Emissions	50.14	51.27	165.21	0.50	99.55	15.02
SCAQMD Construction Thresholds	75	100	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

NOTES:
All numbers are rounded; therefore, totals may differ slightly from tabular calculations. The implementation of Alternative 2 would occur between 2017 and 2019.

[a] ROG, NOx, CO, and PM emissions assume the use of Tier 4 or cleaner engines.
[b] PM_{10} and $PM_{2.5}$ emissions were reduced by 61% from uncontrolled levels to reflect required compliance with SCAQMD Rule 403.

Post-restoration

The restoration intent of the Alternative 2 is to restore wetland and other habitat and flood risk management system that is sustained by natural processes and requires minimal O&M activities. Long-term on-site O&M activities would be substantially similar to existing O&M activities, and would include: (1) maintenance of the existing habitat and vegetation, (2) trash removal, (3) operation of the newly modified channel and levees, (4) operation of water control structures, (5) maintenance of the parking facilities, and (6) other ongoing and routine maintenance as described for Alternative 2.

As previously stated, most of the on-site O&M activities would not require the use of off-road equipment. However, channel maintenance may require land-based equipment at accessible locations. The maximum daily emissions following restoration are shown in Table 3.3-18 (see Appendix C1 for a detailed summary of emissions calculations).

TABLE 3.3-18
ALTERNATIVE 2
MAXIMUM DAILY REGIONAL ON-SITE POST-RESTORATION EMISSIONS (lb/day)

Year	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2020	2.3	14.3	25.6	<0.1	4.9	1.7
2023	1.8	9.4	22.3	<0.1	4.7	1.5
Full Restoration (2035)	1.4	3.8	17.5	<0.1	4.5	1.3
SCAQMD Operational Thresholds	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

NOTE: All numbers are rounded; therefore, totals may differ slightly from tabular calculations. Post-restoration emissions represent ongoing on- and off- site O&M activities.

As shown in Table 3.3-18, the maximum daily emissions generated following implementation of the restoration activities under Alternative 2 would not exceed SCAQMD's daily significance thresholds for criteria pollutants (i.e., ROG, CO, NO_x, SO_x, PM_{10}, and $PM_{2.5}$). As emissions of all the pollutants would be below SCAQMD's applicable thresholds, the regional air quality impacts associated with these pollutants would be less than significant. If an outside funding source is not secured, then the baseball fields would not be replaced under Alternative 2. If this occurs, emissions associated with the long-term operational activities would be reduced from what is identified in Table 3.3-18 because traffic associated with the use of the baseball fields would not occur. However, as there is no distinction within the traffic analysis as to the trips that would be related to the baseball fields as opposed to those that would occur with respect to the existing use of the Project site for other recreational activities; a quantitative reduction in emissions was not calculated. As emissions of all the pollutants would be below SCAQMD's applicable thresholds, post-restoration activities under Alternative 2 would not likely result in or contribute to an exceedance of an air quality standard and the regional air quality impacts associated with these pollutants would be less than significant and no mitigation would be required.

Indirect Impacts

The restoration activities under Alternative 2 would generate indirect emissions of VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$ associated with off-site debris and material hauling and worker trips. As shown in Table 3.3-17, off-site emissions (i.e., indirect emissions) during each of the restoration years would not exceed the SCAQMD RTS's. Therefore, restoration and construction activities that would be associated with Alternative 2 would not be expected to generate indirect emissions which would violate any air quality standard or contribute substantially to an existing or projected air quality violation. The combined direct and indirect emissions generated during the restoration phase would exceed not the SCAQMD RST, as described in the *Direct Impacts* discussion above. Because the unmitigated indirect emissions would be substantially less than the direct emissions, and because total emissions are below the SCAQMD applicability rates, mitigation to control indirect emission is not recommended.

As described above, post-restoration activities under Alternative 2 may involve disposal of dredge materials at off-site locations; however, it is likely that any dredged material would be placed in the Ballona Reserve. If dredged material would be transported off-site, soil excavation and disposal volumes would be substantially less than restoration-phase volumes. During the post-restoration phase under Alternative 2, indirect emissions of criteria pollutants would also be generated by public visitors driving to and from the Project site. Since the on-site restoration activities would not increase capacity or sustainably alter the existing on-site recreational areas, the number of people visiting the site is not expected to increase enough to result in an increase in mobile source emissions that would cause total emissions to exceed the SCAQMD's RSTs. As such, this impact would be less than significant.

2-AQ-3: Alternative 2 would result in net increases in $PM_{2.5}$, PM_{10}, VOCs, and NO_x, which are criteria pollutants or precursors to a criteria pollutant for which the region is non-attainment under applicable Federal and/or state ambient air quality standards; however, these increases in emissions would not be cumulatively considerable. (Less than Significant)

Direct Impacts

As previously discussed above, the Los Angeles County portion of the SCAB is classified as a non-attainment area for state ozone and $PM_{2.5}$ standards and Federal ozone, Pb, and $PM_{2.5}$ standards. Alternative 2's emissions of VOC, NO_x, $PM_{2.5}$, and PM_{10}, in combination with past, other present, and reasonably foreseeable future projects in the SCAB, could worsen an existing adverse environmental condition relating to these criteria pollutants and ozone precursors.

According to SCAQMD, if an individual project results in air emissions of criteria pollutants or ozone precursors that exceed the SCAQMD's recommended daily thresholds for project-specific impacts, then it also would result in a cumulatively considerable net increase of these criteria pollutants for which the Project region is in non-attainment under an applicable Federal or state ambient air quality standard. As describe above, and shown in Tables 3.3-17, the unmitigated combined on- and off-site maximum daily emissions generated during restoration would not exceed the SCAQMD's RSTs for any implementation year. Additionally, as shown in Table 3.3-18, post-restoration emissions would be below the applicable SCAQMD thresholds. Therefore, Alternative 2's emission of criteria pollutants and ozone precursors would not result in a cumulatively considerable contribution to a significant cumulative air quality impact, and so would be less than significant. No mitigation is recommended

Indirect Impacts

Restoration and post-restoration activities under Alternative 2 would result in the off-site generation of emissions of criteria pollutants related to debris and material hauling as well as construction worker commutes. Maximum total indirect (off-site) daily restoration and post-restoration emissions would not exceed the SCAQMD's significance thresholds (see Tables 3.3-17 and 3.3-18). As such, the Project would not generate high enough indirect emissions of criteria pollutants or ozone precursors that would result in a cumulatively considerable contribution to the existing significant cumulative air quality impact. The combined direct and indirect emissions generated during the restoration phase would not exceed the SCAQMD RST for any criteria pollutant, as described in the *Direct Impacts* discussion above. Because the indirect emissions would be substantially less than the direct emissions, and because total emissions are below the SCAQMD RST's, mitigation to control indirect emission is not recommended.

2-AQ-4a: Alternative 2 would not expose sensitive receptors to substantial localized concentrations of criteria air pollutants. (Less than Significant)

Implementation of Alternative 2 would result in a temporary increase in traffic during the restoration phase and increase the number of post-restoration visitor trips. This increase in vehicular trips to the Project site would expose sensitive receptors to increased CO concentrations. However, the analysis of traffic impacts for Alternative 2 (see Appendix H) indicates that none of the signalized intersections that were analyzed would experience an increase in traffic volumes exceeding 5% or more over existing volumes as a result of the Project. Additionally, none of the existing LOS at the study intersections analyzed in the traffic analysis (both signalized and un-signalized) would experience a worsening in LOS as a result of the Project. As such, impacts associated with CO hotspots resulting from implementation of Alternative 2 would be less than significant.

The daily construction exhaust emissions generated on-site during the implementation of Alternative 2 were also evaluated against SCAQMD's LSTs for a 5-acre site as a conservative screening analysis to determine whether the emissions would cause or contribute to adverse localized air quality impacts.[53] Table 3.3-19 identifies the daily localized on-site exhaust emissions that are estimated to occur during the implementation of Alternative 2.

As shown in Table 3.3-19, Alternative 2's daily construction activity emissions would not exceed the applicable SCAQMD LSTs for NOx (in the form of NO_2), CO, PM_{10}, and $PM_{2.5}$ for a 5-acre site in Source Receptor Area 2. Therefore, this would result in a less-than-significant impact and no mitigation is recommended.

TABLE 3.3-19
ALTERNATIVE 2
LOCALIZED DAILY ON-SITE CONSTRUCTION EMISSIONS

Year	Estimated Maximum Daily Emissions (lbs/day)[a,b]			
	NO_X[a]	CO	PM_{10}	$PM_{2.5}$
2017	38.2	385.4	7.5	1.9
2018	39.7	408.2	7.6	1.9
2019	12.6	139.0	6.8	1.1
Maximum Emissions	39.7	408.2	7.6	1.9
Localized Significance Thresholds[b]	*221*	*1,531*	*13*	*6*
Exceeds Threshold?	No	No	No	No

NOTES:
a NOx, CO and PM emissions assumes the use Tier 4 or cleaner engines.
b LSTs for a 5-acre site in Source Receptor Area 2 at a receptor distance of 82 feet.

53 According to SCAQMD's LST methodology, LSTs are only applicable to the on-site construction emissions that are generated by a project and do not apply to emissions generated off-site such as mobile emissions on roadways from worker, vendor, and haul truck trips.

2-AQ-4b: Alternative 2 would not expose sensitive receptors to substantial localized concentrations of Toxic Air Contaminants. (Less than Significant Impact)

Direct Impacts

Similarly to Alternative 1, the implementation of Alternative 2 would result in short-term emissions of DPM, which is a TAC, during restoration. Diesel PM poses a carcinogenic health risk that is measured using an exposure period of 30 years. The exhaust of off-road heavy-duty diesel equipment would emit diesel PM during restoration-related grading and excavation; materials transport and handling; and other miscellaneous activities.

Restoration activities associated with Alternative 2 would be implemented over a period of approximately 3 years, which is much less than the 30-year period used for risk determination. Because off-road heavy-duty diesel equipment would be used only for short time periods, the implementation of Alternative 2 would not expose sensitive receptors to substantial emissions of TACs. This impact would be less than significant.

This impact also would be less than significant following restoration for Alternative 2. As discussed under Alternative 1, post-restoration activities associated with Alternative 2 would not introduce any new stationary sources of TACs, such as diesel-fueled backup generators that are more commonly associated with large commercial and industrial uses. Alternative 2 would result in the construction of levees; a new three-story parking structure, West Culver Parking Lot upgrades, two bicycle/pedestrian bridges, and other visitor amenities; the SoCalGas natural gas wells and associated pipelines within the Ballona Reserve would be abandoned and/or relocated to the SoCalGas Property. None of these additional amenities are uses that would be expected to generate substantial pollutant concentrations. Therefore, Alternative 2 would not expose surrounding sensitive receptors to substantial pollutant and TAC emissions such that health risks could result. As such, this impact would be less than significant.

Indirect Impacts

The use of haul trucks to transport material to and from the Project site during the implementation of Alternative 2 would result in short-term emissions of TAC in the form of DPM. As previously discussed, dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Since indirect emissions of TAC (i.e., DPM associated with off-site hauling) during Alternative 2 would occur over a period much less than the 30-year period used for risk determination and would be dispersed over a large area within the air basin, off-site emissions associated with Alternative 2 would not be expected to expose sensitive receptors to substantial emissions of TACs. Therefore, this impact would be less than significant during the restoration phase.

With the possible exception of limited diesel fuel combustion emissions associated with periodic hauling of debris related to maintenance activities, there would be no indirect TAC emissions during the post-restoration phase under Alternative 2. The only indirect emissions that would be generated during post-restoration phase would be by public visitors driving to and from the Project site. Since the on-site restoration activities would not increase capacity or sustainably alter the existing on-site recreational areas, the number of people visiting the site is not expected to increase enough to result in an increase in mobile source emissions that would expose surrounding sensitive receptors to substantial pollutant and TAC emissions. As such, this impact would be less than significant.

2-AQ-5: The implementation of Alternative 2 would, unless mitigated, create objectionable odors that could affect a substantial number of people. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Odor generating sources and the potential for significant odor impacts during restoration under Alternative 2 would be similar to Alternative 1. Temporary odors could be generated by diesel-powered equipment, although these would be localized to active restoration areas and would dissipate quickly. Odors from paving of the West Culver Parking Lot would be minimized through mandatory compliance with SCAQMD Rule 1108. Alternative 2 would result in removal of fill that was placed in Area A during the development of Marina del Rey and therefore would expose organic materials that could generate odors as they decompose. Accordingly, receptors adjacent to the Project site temporarily may be exposed to objectionable odors during restoration-related excavation and stockpiling of soils. This impact would be significant without mitigation.

Mitigation Measure

Implementation of Mitigation Measure AQ-1: *Odor Management Plan.*

Level of Significance after Mitigation

Implementation of Mitigation Measure AQ-1 would ensure that odors emitted during excavation would be contained and, thereby, not affect a substantial number of people. This would reduce impacts to less than significant.

Post-Restoration

Long-term post-restoration-related activities do not include any uses identified by ARB or SCAQMD as being associated with odors; however, Alternative 2 would restore estuarine wetland and upland habitats, both of which can generate odors from natural processes. Foul odors from wetlands typically are caused as a result of organic decomposition that releases hydrogen sulfide gas. Similar reactions take place in mudflats and salt marshes due to the presence of anaerobic bacteria (NOAA 2008). While the biological function of the Ballona Reserve has the potential to generate natural odors, the emissions that would be generated by Alternative 2 would be similar in origin and magnitude to existing conditions. Accordingly, post-restoration odor-related impacts associated with Alternative 2 would be less than significant, and no mitigation measures are required.

Indirect Impacts

The restoration activities under Alternative 2 would not result in the generation of indirect odorous emissions. As such, there would be no indirect odor impacts.

The post-restoration activities under Alternative 2 would only generate direct odor emissions from equipment diesel exhaust. Since post-restoration activities would not generate indirect odors, there would be no indirect odor impacts.

TABLE 3.3-20
ALTERNATIVE 2 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
AQ-1: Conflict with or obstruct implementation of the applicable air quality plan?				
Relating to General Conformity, see Impact 2-AQ-1a.	☐	☐	☒	☐
Relating to SCAG's AQMP, see Impact 2-AQ-1b.	☐	☐	☒	☐
AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation? See Impact 2-AQ-2.	☐	☐	☒	☐
AQ-3: 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)? See Impact 2-AQ-3.	☐	☐	☒	☐
AQ-4: Expose sensitive receptors to substantial pollutant concentrations?				
Regarding carbon "hotspots" and criteria pollutants, see Impact 2-AQ-4a.	☐	☐	☒	☐
Regarding toxic air contaminants, see Impact 2-AQ-4b.	☐	☐	☒	☐
AQ-5: Create objectionable odors affecting a substantial number of people? See Impact 2-AQ-5	☐	☒	☐	☐

3.3.6.3 Alternative 3: Levee Culverts and Oxbow

3-AQ-1a: Alternative 3's construction-post-restoration related emissions would not exceed the General Conformity applicability rates. (Less than Significant Impact)

Direct Impacts

Restoration

Alternative 3 would be implemented in a single 3-year phase similar to Alternative 2, but with a substantially smaller restoration footprint and less levee construction. Restoration activities proposed under Alternative 3 include the construction of a one bicycle/pedestrian, 3-story parking structure. Improvements would also be made to the West Culver Parking Lot, gateway entrances. Educational signage would still be constructed and the natural gas wells and pipelines within the Ballona Reserve would still be abandoned and/or relocated to the SoCalGas Property. See Table 2-1, *Summary of Alternatives*, in Chapter 2, *Description of Project and Alternatives*, for further details.

As noted above, the SCAQMD is currently designated as extreme non-attainment for the Federal 8-hour ozone standard, nonattainment for the Federal $PM_{2.5}$ standard, and as an attainment/maintenance area with respect to the Federal PM_{10} and CO standard. The emissions of VOC, NO_x, CO, $PM_{10,}$ and $PM_{2.5}$ during these restoration activities, discussed above, are summarized in Table 3.3-21. Alternative 3 would implement all best available control measures identified in the SCAQMD's Rule 403. Implementation of SCAQMD's Rule 403 best available control measures would reduce fugitive dust emissions by as much as 61%. Additionally, Alternative 1 incorporates Tier 4 equipment as discussed in the methodology section.

As shown in Table 3.3-21, the combined on- and off-site emissions of NO_x for Alternative 3 are not estimated to exceed the General Conformity applicability rates, and would be exempt from the General Conformity determination requirements. Not mitigation is required.

TABLE 3.3-21
ALTERNATIVE 3
CONSTRUCTION CRITERIA POLLUTANT EMISSIONS (tons per year)

Year	VOC	NO_X/NO_2	CO	PM_{10}[a]	$PM_{2.5}$[a]
2017					
On-Site Emissions	0.22	0.94	9.59	8.02	0.87
Off-Site Emissions	0.34	6.84	3.66	0.74	0.46
Total Emissions	0.56	7.78	13.26	8.76	1.32
2018					
On-Site Emissions	0.14	0.63	6.88	8.01	0.86
Off-Site Emissions	0.29	5.94	3.11	0.70	0.42
Total Emissions	0.43	6.56	9.99	8.71	1.28
2019					
On-Site Emissions	1.48	0.34	3.43	8.00	0.85
Off-Site Emissions	0.23	4.97	2.46	0.66	0.38
Total Emissions	1.72	5.31	5.89	8.66	1.23
Applicability Rate	10	10/100	100	100	100
Exceed Applicability Rate?	No	No	No	No	No

NOTES:

All numbers are rounded; therefore, totals may differ slightly from tabular calculations. The implementation of Alternative 3 would occur between 2017 and 2022.

[a] Emissions were reduced by 61% from uncontrolled levels to reflect required compliance with SCAQMD Rule 403.

Post-Restoration

Post-restoration conditions under Alternative 3 would require minimal O&M activities. O&M activities for the Ballona Creek channel would not change; however, the new Area A water control structures would require O&M as described for water control structures in Alternative 1. Long-term O&M activities associated with Alternative 3 would be substantially similar to existing O&M activities, and would consist of: (1) habitat and vegetation; (2) trash removal; (3) water control structures; (4) parking facilities; (5) baseball fields (if they are replaced); and (6) other ongoing and routine maintenance as described for under Alternative 1. See Chapter 2, *Description of Project and Alternatives*, Section 2.3.2.7, *Alternative 3: Operation and Maintenance*, for additional details.

As previously stated, most of the on-site O&M activities would not require the use of off-road equipment. However, channel maintenance may require land-based equipment at accessible locations. The maximum annual emissions following restoration are shown in Table 3.3-22 (see Appendix C1 for a detailed summary of emissions calculations).

TABLE 3.3-22
ALTERNATIVE 3
POST-RESTORATION CRITERIA POLLUTANT EMISSIONS (tons per year)

Year	VOC	NO_X/NO_2	CO	PM_{10}[a]	$PM_{2.5}$[a]
2020	0.3	1.9	3.3	0.6	0.3
2023	0.2	1.2	2.9	0.6	0.2
Full Restoration (2035)	0.2	0.5	2.3	0.6	0.2
Applicability Rates	10	10/100	100	100	100
Exceed Applicability Rates?	No	No	No	No	No

NOTES:

All numbers are rounded; therefore, totals may differ slightly from tabular calculations. Post-restoration emissions represent ongoing on- and off- site O&M activities.
Violations of the SCAQMD's thresholds are shown in underline.

As shown in Table 3.3-22, the maximum annual post-restoration emissions generated during years 2020, 2023, and at build-out year 2035 would be negligible. This would result in a less-than-significant impact.

Indirect Impacts

For the purposes of this analysis, indirect impacts that would be associated with restoration activities under Alternative 3 are those that would occur outside of the Project site. The restoration activities under Alternative 3 would generate off-site indirect emissions of VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$ associated with debris and material hauling as well as worker commute trips. As mentioned above, for comparison to the General Conformity applicability rates, on-site (direct) and off-site (indirect) emissions are combined. As illustrated in Table 3.3-21, total indirect (off-site) annual construction emissions of VOC, NO_x, NO_2, CO, PM_{10} and $PM_{2.5}$ contribute substantially less compared to the direct on-site emissions. Total emissions are not estimated to exceed the General Conformity applicability rates, as described in the *Direct Impacts* discussion above. Because the indirect emissions would be substantially less than the direct emissions, and because total emissions are below the General Conformity applicability rates, mitigation to control indirect emission is not recommended.

Post-restoration activities under Alternative 3 may involve disposal of limited dredge materials at off-site locations; however, it is likely that any dredged material would be placed in the Ballona Reserve. If dredged material would be transported off-site, soil excavation and disposal volumes would be substantially less than restoration-phase volumes. During the post-restoration phase under Alternative 3, criteria pollutant emissions would be generated by public visitors driving to and from the Project site. Since the on-site restoration activities would not increase capacity or sustainably alter the existing on-site recreational areas, the number of people visiting the site is not expected to increase enough to result in an increase in mobile source emissions.[54] The maximum annual post-restoration emissions, including direct (on-site) and indirect (off-site) emissions are shown above in Table 3.3-22. This impact would be less than significant.

3-AQ-1b: Alternative 3 would not conflict with or obstruct implementation of SCAG's Regional Comprehensive Plan and Guide. (Less than Significant Impact)

Direct Impacts

As previously discussed, Alternative 3 is similar to Alternatives 1 and 2, but with a substantially smaller footprint of restoration and levee construction. One bicycle/pedestrian bridge would be constructed instead of two. The three-story parking structure, improvements to West Culver Parking Lot, gateway entrances, and educational signage would still be constructed and the natural gas wells and pipelines within the Ballona Reserve would still be abandoned and/or relocated to the SoCalGas Property. See Table 2-1, *Summary of Alternatives*, in Chapter 2, *Description of Alternatives*, for further details. Given that the Project (including Alternative 3) is predominantly a wetlands restoration project, implementation of Alternative 3 would not result in any additional population, employment, or housing growth that had not been accounted for in the general plans for the City and County of Los Angeles. Consequently, as no growth-inducing development or land uses would occur under the Project, implementation of Alternative 3 would not conflict with or obstruct the implementation of SCAQMD's AQMP.

In addition, SCAQMD regional significance thresholds were designed to assist SCAQMD in determining if a project would worsen air quality conditions in the Basin. The determination of AQMP consistency is primarily concerned with the long-term influence of the Project on air quality in the Basin. As discussed under *3-AQ-2*, Alternative 3 would not result in significant regional emissions during the restoration phase or post-restoration period and would not interfere with the attainment of air quality standards. Therefore, implementation of Alternative 3 would not conflict with or obstruct the implementation of SCAQMD's AQMP. This would result in a less-than-significant impact and no mitigation is recommended.

Indirect Impacts

The proposed restoration activities and post-restoration conditions under Alternative 3 would not generate high enough indirect criteria pollutant emissions to result in an exceedance of an ambient air quality standard. Refer to the Indirect Impacts discussion under 3-AQ-2, below. The combined direct and indirect emissions under the restoration phase would not exceed the SCAQMD RSTs for any criteria pollutant, as described in 3-AQ-2. Because the indirect emissions would be substantially less than the direct emissions, and because total emissions are below the SCAQMD applicability rates, mitigation to control indirect emission is not recommended.

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54 Although the Corps and CDFW would not have control over the number of public visitors driving to and from the Project site, the proposed restoration activities would result in an increase in visitor trips to the Project site.

3-AQ-2: Alternative 3's implementation-related emission would not exceed SCAQMD's maximum daily emissions thresholds during construction or during the post-restoration phase. (Less than Significant Impact)

Direct Impacts

Restoration

The unmitigated on- and off-site maximum daily emissions that would be generated during the implementation of Alternative 3 are shown in Table 3.3-23 (see Appendix C1 for a detailed summary of emissions calculations). These emission estimates are representative of the Alternative 3 restoration activities discussed above, which includes the construction of levees, one bicycle/pedestrian bridge, 3-story parking structure, West Culver Parking Lot upgrades, gateway entrances, and other public access amenities; and abandonment and/or relocation of the SoCalGas natural gas wells and pipelines. As shown in Table 3.3-23, the combined maximum on-site and off-site daily NO_X emissions generated during years 2017, 2018, and 2019 would not exceed the SCAQMD's RST thresholds. Therefore, construction activities that would be associated with Alternative 3 would not be expected to generate emissions, including direct emissions, which would violate any air quality standard or contribute substantially to an existing or projected air quality violation. This would result in a less-than-significant impact and no mitigation is recommended.

TABLE 3.3-23
ALTERNATIVE 3
MAXIMUM DAILY REGIONAL CONSTRUCTION EMISSIONS (lb/day)

Year	ROG[a]	NO_X[a]	CO[a]	SO_X	PM_{10}[a,b]	$PM_{2.5}$[a,b]
2017						
On-Site Emissions	6.63	28.72	294.24	0.54	68.57	7.99
Off-Site Emissions	2.60	52.61	28.18	0.24	5.69	3.52
Total Emissions	9.23	81.33	322.42	0.78	74.26	11.50
2018						
On-Site Emissions	2.45	10.61	117.17	0.20	68.01	7.43
Off-Site Emissions	2.21	45.67	23.93	0.24	5.37	3.21
Total Emissions	4.66	56.27	141.10	0.44	73.38	10.64
2019						
On-Site Emissions	47.01	7.28	81.42	0.14	67.91	7.33
Off-Site Emissions	1.79	38.21	18.90	0.23	5.08	2.93
Total Emissions	48.80	45.49	100.32	0.37	72.99	10.25
SCAQMD Construction Thresholds	75	100	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

NOTES: All numbers are rounded; therefore, totals may differ slightly from tabular calculations. The implementation of Alternative 3 would occur between 2017 and 2022.

[a] ROG, NOx, CO, and PM emissions were estimated assuming use Tier 4 or cleaner engines.

[b] PM emissions were reduced by 61% from uncontrolled levels to reflect required compliance with SCAQMD Rule 403.

Post-Restoration

The type and nature of O&M activities for the Ballona Creek channel (consistent with the OMRR&R and Appendix B5) under Alternative 3 would not change; however, the new Area A water control structures would require O&M as described for water control structures in Alternative 1. Long-term O&M activities associated with Alternative 3 would be substantially similar to existing O&M activities, and would consist of: (1) maintenance of the existing habitats and vegetation; (2) trash removal; (3) operations of the water control structures; (4) maintenance of the parking facilities; (5) maintenance of the baseball fields (if they are replaced); and (6) other ongoing and routine maintenance as described for under Alternative 3.

The maximum daily post-restoration emissions estimated for Alternative 3 are shown in Table 3.3-24 (see Appendix C1 for a detailed summary of the emissions calculations). As shown in Table 3.3-24, the maximum daily post-restoration emissions would not exceed SCAQMD's daily significance thresholds for criteria pollutants (i.e., ROG, CO, NOx, SOx, PM_{10}, and $PM_{2.5}$). As emissions of all the pollutants would be below SCAQMD's applicable thresholds, Alternative 3 would not likely result in or contribute to an exceedance of an air quality standard and the regional air quality impacts associated with these pollutants would be less than significant requiring no mitigation.

TABLE 3.3-24
ALTERNATIVE 3
MAXIMUM DAILY REGIONAL POST-RESTORATION EMISSIONS (lb/day)

Year	ROG	NO_X	CO	SO_X	PM_{10}[a]	$PM_{2.5}$[a]
2020	2.3	14.3	25.6	<0.1	4.9	1.7
2023	1.8	9.4	22.3	<0.1	4.7	1.5
Full Restoration (2035)	1.4	3.8	17.5	<0.1	4.5	1.3
SCAQMD Operational Thresholds	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

NOTES:

All numbers are rounded; therefore, totals may differ slightly from tabular calculations. Post-restoration emissions represent ongoing on- and off- site O&M activities.

Indirect Impacts

The restoration activities under Alternative 3 would generate indirect emissions of VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$ associated with off-site debris and material hauling and worker trips. As shown in Table 3.3-23, off-site emissions (i.e., indirect emissions) during each of the restoration years would not exceed the SCAQMD RTS's. Therefore, construction activities that would be associated with Alternative 3 would not be expected to generate indirect emissions, which would violate any air quality standard or contribute substantially to an existing or projected air quality violation. The combined direct and indirect emissions generated during the restoration phase would not exceed the SCAQMD RST, as described in the *Direct Impacts* discussion above. Because the indirect emissions would be substantially less than the direct emissions, and because total emissions are below the SCAQMD applicability rates, mitigation to control indirect emission is not recommended.

As described above, post-restoration activities under Alternative 3 may involve disposal of dredge materials at off-site locations; however, it is likely that any dredged material would be placed in the Ballona Reserve. If dredged material would be transported off-site, soil excavation and disposal volumes would be substantially less than restoration-phase volumes. In addition, indirect emissions of criteria pollutants would also be generated by public visitors driving to and from the Project site. Since the on-site restoration activities would not increase capacity or sustainably alter the existing on-site recreational areas, the number of people visiting the site under Alterative 3 would not be expected to increase enough to result in an increase in mobile source emissions that would cause total emissions to exceed the SCAQMD's RSTs. As such, this impact would be less than significant.

3-AQ-3: Alternative 3 would result in net increases in $PM_{2.5}$, PM_{10}, VOCs, and NO_x, which are criteria pollutants or precursors to a criteria pollutant for which the region is non-attainment under applicable federal and/or state ambient air quality standards; however, these increases in emissions would not be cumulatively considerable. (Less than Significant Impact)

Direct Impacts

As previously discussed above, the SCAB is classified as a non-attainment area for state ozone and $PM_{2.5}$ standards and Federal ozone, Pb and $PM_{2.5}$ standards. Emissions from cumulative projects including past, present, and reasonably foreseeable future projects in the SCAB could combine with emissions of the Project causing a violation of an air quality standard or contributing to an existing or projected air quality violation. This would be considered a significant cumulative impact.

According to SCAQMD, if an individual project results in air emissions of criteria pollutants or ozone precursors that exceed the SCAQMD's recommended daily thresholds for project-specific impacts, then it also would result in a cumulatively considerable net increase of these criteria pollutants for which the Project region is in non-attainment under an applicable Federal or state ambient air quality standard. As describe above, and shown in Table 3.3-23, the combined on- and off-site maximum daily emissions generated during restoration years 2017, 2018 and 2019 would not exceed the SCAQMD's RSTs for any implementation year. Therefore, Alternative 3's emission of criteria pollutants and ozone precursors would not result in a cumulatively considerable contribution to a significant cumulative air quality impact, and so would be less than significant and no mitigation is recommended.

Indirect Impacts

The restoration and post-restoration activities under Alternative 3 would result in the off-site generation of emissions of criteria pollutants related to debris and material hauling as well as construction worker commutes. Maximum total indirect (off-site) daily restoration and post-restoration emissions would not exceed the SCAQMD's significance thresholds (see Tables 3.3-23 and 3.3-24). As such, Alternative 3 would not generate high enough indirect emissions of criteria pollutants or ozone precursors that would result in a cumulatively considerable contribution to the existing significant cumulative air quality impact. Combined direct and indirect emissions generated during the restoration phase would not exceed the

SCAQMD RST for any criteria pollutant, as described in the *Direct Impacts* discussion above. Because the indirect emissions would be substantially less than the direct emissions, and because total emissions are below the SCAQMD RST's, mitigation to control indirect emission is not recommended.

3-AQ-4a: Alternative 3 would not expose sensitive receptors to substantial localized concentrations of criteria air pollutants. (Less than Significant Impact)

Implementation of Alternative 3 would result in a temporary increase in construction traffic and increase the number of visitor trips following restoration. These increases in vehicular trips to the Project site would expose sensitive receptors to increased CO concentrations. However, the analysis of traffic impacts of Alternative 3 (see Appendix H) indicates that none of the signalized intersections that were analyzed would experience an increase in traffic volumes exceeding 5% of existing volumes as a result of the Project. Additionally, none of the existing LOS at the study intersections analyzed in the traffic analysis (both signalized and un-signalized) would experience a worsening in LOS as a result of the Project. As such, impacts associated with CO hotspots resulting from implementation of Alternative 3 would be less than significant.

The daily construction exhaust emissions generated on-site during the implementation of Alternative 3 were also evaluated against SCAQMD's LSTs for a 5-acre site as a conservative screening analysis to determine whether the emissions would cause or contribute to adverse localized air quality impacts.[55]

Table 3.3-25 identifies the daily localized on-site exhaust emissions that are estimated to occur during the implementation of Alternative 3. As shown in Table 3.3-25, Alternative 3's unmitigated daily restoration and construction activity emissions would not exceed the applicable SCAQMD LSTs for NOx (in the form of NO_2), CO, PM_{10}, and $PM_{2.5}$ for a 5-acre site in Source Receptor Area 2. Therefore, this would result in a less-than-significant impact and no mitigation is recommended.

3-AQ-4b: Alternative 3 would not expose sensitive receptors to substantial localized concentrations of Toxic Air Contaminants. (Less than Significant Impact)

Direct Impacts

The implementation of Alternative 3 would result in short-term emissions of DPM, which is a TAC, during restoration. DPM poses a carcinogenic health risk that is measured using an exposure period of 30 years. The exhaust of off-road heavy-duty diesel equipment would emit DPM during site grading and excavation; materials transport and handling; and other miscellaneous activities.

55 According to SCAQMD's LST methodology, LSTs are only applicable to the on-site construction emissions that are generated by a project and do not apply to emissions generated off-site such as mobile emissions on roadways from worker, vendor, and haul truck trips.

TABLE 3.3-25
ALTERNATIVE 3
LOCALIZED DAILY ON-SITE CONSTRUCTION EMISSIONS

Year	Estimated Maximum Daily Emissions (lbs/day)[a,b]			
	NO_X	CO	PM_{10}	$PM_{2.5}$
2017	28.7	294.2	7.2	1.6
2018	10.6	117.2	6.7	1.0
2019	7.3	81.4	6.6	0.9
Maximum Emissions	28.7	294.2	7.2	1.6
Localized Significance Threshold[b]	*221*	*1,531*	*13*	*6*
Exceeds Threshold?	No	No	No	No

NOTES:

[a] NOx, CO, and PM emissions assume use Tier 4 or cleaner engines.
[b] LSTs for a five-acre site in Source Receptor Area 2 at a receptor distance of 82 feet.

The implementation of Alternative 3 would occur over approximately 3 years, which is much less than the 30-year period used for risk determination. Because off-road heavy-duty diesel equipment would be used only for short time periods, activities associated with the implementation of Alternative 3 would not expose sensitive receptors to substantial emissions of TACs. This impact would be less than significant.

This impact would also be less than significant following the restoration phase for Alternative 3. Post-restoration activities would not introduce any new stationary sources of TACs, such as diesel-fueled backup generators that are more commonly associated with large commercial and industrial uses. Alternative 3 would result in the construction of levees; one bicycle/pedestrian bridge, a new three-story parking structure, West Culver Parking Lot upgrades, gateway entrances, and other public access amenities; the natural gas wells and associated pipelines within the Ballona Reserve would be abandoned and/or relocated to the SoCalGas Property. None of the improvements would generate substantial pollutant concentrations. Therefore, Alternative 3 would not expose surrounding sensitive receptors to substantial pollutant and TAC emissions such that health risks could result. As such, this impact would be less than significant.

Indirect Impacts

The use of haul trucks to transport material to and from the Project site during the implementation of Alternative 3 would result in short-term emissions of TAC in the form of DPM during restoration. As previously discussed, dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Since indirect emissions of TAC (i.e., off-site haul trips) that would occur during Alternative 3 restoration activities would last for much less than the 30-year period used for risk determinations and would be dispersed over a large area in the air basin, such activities would not expose sensitive receptors to substantial emissions of TACs. Therefore, this impact would be less than significant.

With the possible exception of limited diesel fuel combustion emissions associated with periodic hauling of debris related to maintenance activities, there would be no indirect TAC emissions generated during the post-restoration phase under Alternative 3. The only indirect emissions that would be generated during post-restoration phase would be by public visitors driving to and from the Project site. Since the on-site restoration activities would not increase capacity or sustainably alter the existing on-site recreational areas, the number of people visiting the site is not expected to increase enough to result in an increase in mobile source emissions that would expose surrounding sensitive receptors to substantial pollutants and TAC emissions. As such, this impact would be less than significant.

3-AQ-5: The implementation of Alternative 3 would not create objectionable odors that could affect a substantial number of people. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Odor generating sources and the potential for significant odor impacts would be similar to Alternatives 1 and 2 during restoration under Alternative 3.Temporary odors could be generated by diesel-powered equipment, although these would be localized to active restoration areas would dissipate quickly. Odors from paving of the West Culver Parking Lot would be minimized through mandatory compliance with SCAQMD Rule 1108. Alternative 3 would result in removal of fill that was placed in Area A during the development of Marina del Rey and therefore would expose organic materials that could generate odors as they decompose. Accordingly, receptors adjacent to the Project site temporarily may be exposed to objectionable odors during restoration-related excavation and stockpiling of soils. This impact would be significant without mitigation.

Mitigation Measure

Implementation of Mitigation Measure AQ-1: *Odor Management Plan.*

Level of Significance after Mitigation

Implementation of Mitigation Measure AQ-1 would ensure that odors emitted during excavation would be contained and, thereby, not affect a substantial number of people. This would reduce impacts to less than significant.

Post-Restoration

Because the wetlands in Area B would not be restored under Alternative 3, there would be no post-restoration odor-related impacts. Long-term post-restoration activities do not include any uses identified by CARB or SCAQMD as being associated with odors; however, Alternative 3 would restore estuarine wetland and upland habitats, both of which can generate odors from natural processes. Foul odors from wetlands typically are caused as a result of organic decomposition that releases hydrogen sulfide gas. Similar reactions take place in mudflats and salt marshes due to the presence of anaerobic bacteria (NOAA 2008). While biological functions within the Ballona Reserve have the potential to generate natural odors, the emissions that would be generated under Alternative 3 would be similar in origin and magnitude to odors generated under existing conditions. Accordingly, odor-related impacts associated with Alternative 3 following the implementation of restoration activities would be less than significant.

Indirect Impacts

The restoration activities under Alternative 3 would generate direct odor emissions only from equipment diesel exhaust and paving activities. The restoration activities would not generate indirect odors. As such, there would be no indirect impact.

The post-restoration activities that would occur under Alternative 3 would not generate indirect odors. As such, there would be no indirect impact.

TABLE 3.3-26
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
AQ-1: Conflict with or obstruct implementation of the applicable air quality plan?				
Relating to General Conformity, see Impact 3-AQ-1a.	☐	☐	☒	☐
Relating to SCAG's AQMP, see Impact 3-AQ-1b.	☐	☐	☒	☐
AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation? See Impact 3-AQ-2.	☐	☐	☒	☐
AQ-3: 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)? See Impact 3-AQ-3.	☐	☐	☒	☐
AQ-4: Expose sensitive receptors to substantial pollutant concentrations?				
Regarding carbon "hotspots" and criteria pollutants see Impact 3-AQ-4a.	☐	☐	☒	☐
Regarding toxic air contaminants, see Impact 3-AQ-4b.	☐	☐	☒	☐
AQ-5: Create objectionable odors affecting a substantial number of people? See Impact 3-AQ-5	☐	☒	☐	☐

3.3.6.4 Alternative 4: No Federal Action/No Project

Because no mechanized restoration or construction activities would occur under Alternative 4, no related emissions would be generated that could conflict with or obstruct implementation of the applicable air quality plan, create or contribute substantially to an air quality violation, increase emissions of any criteria pollutant, exceed established quantitative thresholds for ozone precursors, expose sensitive receptors to substantial pollutant concentrations, or create objectionable odors affecting a substantial number of people. There would be no changes to the existing O&M activities at the Project site under Alternative 4 that would result in an increase in criteria pollutant or TAC emissions over existing conditions. Therefore, Alternative 4 would result in no impact with respect to Air Quality.

3.3.7 Cumulative Impacts

As analyzed in Section 3.3.6.4, Alternative 4 would result in no impact to Air Quality. Therefore, Alternative 4 could not cause or contribute to any cumulative impact.

The geographic context for changes in the air quality environment due to development of the Project would be the same as the area described in Section 3.3.2.1, *Study Area* (i.e., the SCAB) because this is the extent of the area within which emissions generated by the Project could combine with the emissions of past, other present, or reasonably foreseeable future projects to cause or contribute to potential cumulative impacts. Cumulative impacts could begin at the moment that the first Project-related emissions are generated and continue until the last Project-related emissions are generated.

This analysis evaluates whether the incremental impacts of the Project (under Alternatives 1, 2, or 3) when combined with the emissions of past, present or reasonably foreseeable future projects would cause or contribute to an adverse cumulative impact. The ongoing impacts of past projects are described in Section 3.3.2, *Affected Environment*, because, collectively, the emissions of past projects have resulted in the existing condition. Of the potential cumulative projects identified in Table 3.1-1, *Existing and Reasonably Foreseeable Future Projects*, 46 projects in the vicinity of the Ballona Reserve could generate emissions that would combine with those of the Project. As described in Section 3.3.6, because the SCAB is classified as a state non-attainment area for ozone, NO_2, PM_{10}, and $PM_{2.5}$ and Federal non-attainment area for ozone, $PM_{2.5}$ and Pb, cumulative development consisting of the Project along with other past, present, and reasonably foreseeable future projects in the SCAB as a whole could violate an air quality standard or contribute to an existing or projected air quality violation. As such, this is considered to be a significant cumulative impact.

3.3.7.1 Cumulative Increases in Criteria Pollutant Emissions

With respect to determining the significance of the three restoration alternatives' contribution to regional emissions, SCAQMD recommends that if an individual project results in air emissions of criteria pollutants (ROG, CO, NOx, SOx, PM_{10}, and $PM_{2.5}$) that exceed the SCAQMD's recommended daily thresholds for project-specific impacts, then it also would result in a cumulatively considerable net increase of these criteria pollutants for which the Project region is in non-attainment under an applicable Federal or state ambient air quality standard. As depicted in Tables 3.3-11, 3.3-17, and 3.3-22, each of the restoration alternatives would result in criteria pollutant and precursor emissions during restoration and construction activities that would not exceed the applicable regional significance thresholds of the SCAQMD. Therefore, neither Alternative 1, nor 2, nor 3 would have a considerable contribution and each would result in a less-than-significant cumulative impact. In addition, the post-restoration emissions associated with the restoration alternatives would not exceed the SCAQMD's thresholds of significance for any of the criteria pollutants (see Tables 3.3-12, 3.3-18, and 3.3-23, respectively). Thus, each of the action alternatives would have a less than significant cumulative impact with respect to post-restoration emissions.

3.3.7.2 Cumulative Increases in Pollutant Concentrations

Particulates (fugitive dust and DPM), CO, and TACs would not result in localized impacts as depicted in Tables 3.3-13, 3.3-19, and 3.3-24, none of the restoration alternatives would result in on-site NO_x, CO, PM_{10} or $PM_{2.5}$ emissions that would exceed the SCAQMD RST's. Therefore, neither Alternative 1, nor 2, nor 3 would have a considerable contribution to localized impacts and each of these alternatives would result in a less-than-significant cumulative impact.

3.3.7.3 Cumulative Odor Impacts

The odor-related impacts of past projects have not resulted in an existing significant adverse cumulative condition. As analyzed in Section 3.3.6, *Direct and Indirect Impacts*, the incremental odor impacts of the Project (under any of the restoration alternatives) would be less-than-significant with the incorporation of Mitigation Measure AQ-1. None of the potentially cumulative projects identified in Table 3.3-1 would result in a substantial contribution to cumulative odor impacts that could combine with the less-than-significant impacts of the Project. No significant cumulative impact would result.

3.3.8 References

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3.4 Biological Resources

3.4.1 Introduction

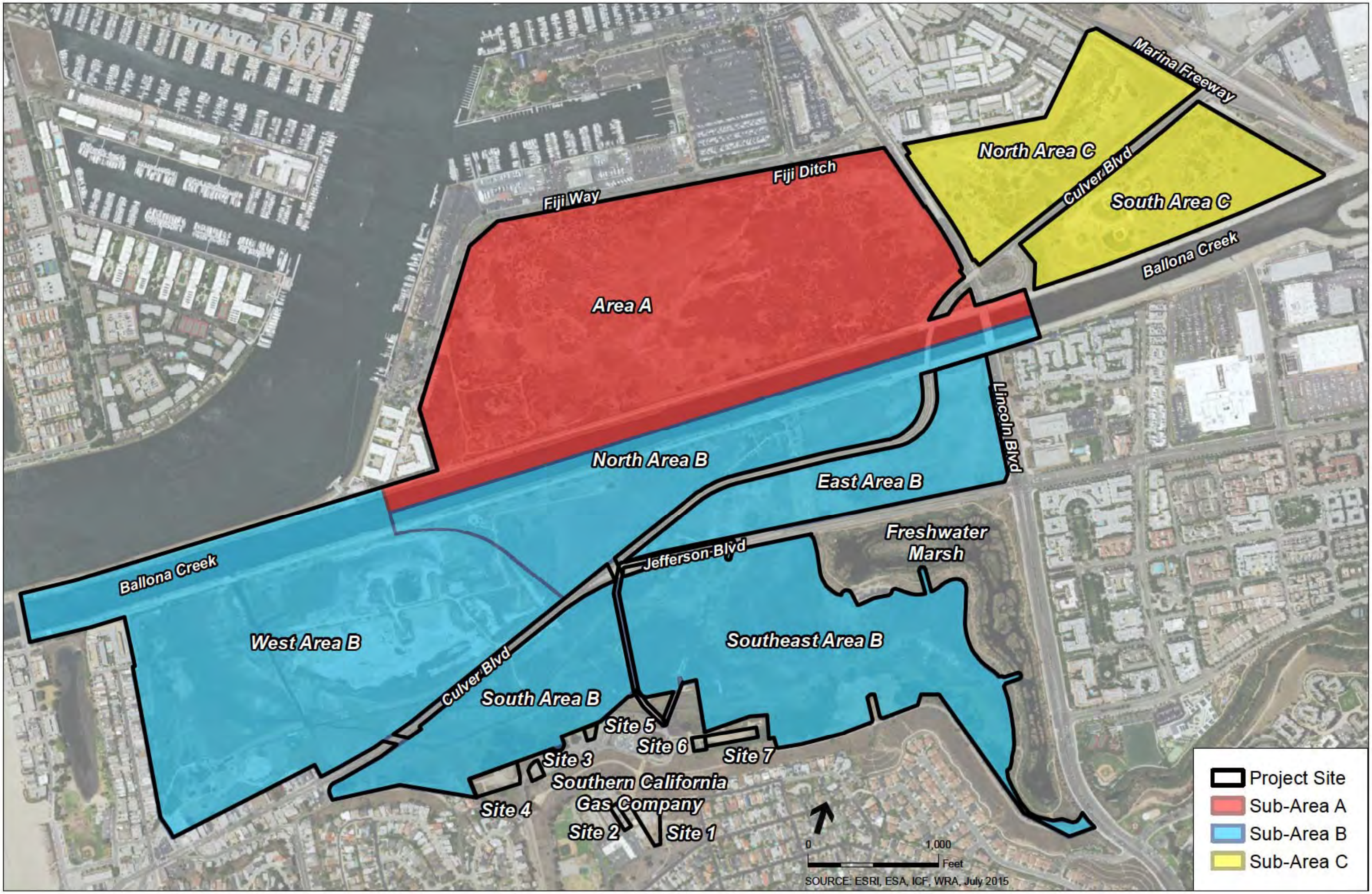
This section identifies and evaluates issues related to biological resources in the context of various restoration alternatives, including, but not limited to, potential changes relating to candidate, sensitive, or special-status species; wetlands and upland habitat; and migratory and resident fish and wildlife species. It describes existing conditions in Section 3.4.2, summarizes applicable laws, regulations, plans, and standards in Section 3.4.3; identifies the criteria used to evaluate the significance of potential impacts (referred to as "thresholds of significance") in Section 3.4.4; describes the methodology used to evaluate these impacts in Section 3.4.5; analyzes direct and indirect impacts in Section 3.4.6; analyzes cumulative impacts in Section 3.4.7; and provides references in Section 3.4.8.

3.4.2 Affected Environment

The historical wetlands ecosystem in the vicinity of the Ballona Reserve once spanned more than 2,100 acres and supported a great diversity of wetland types that stretched from Playa del Rey to Venice and inland to the Baldwin Hills (Dark et al. 2011; LACDPW 2013). By the mid-1900s, the Ballona wetlands were greatly reduced in extent and ecological function through the loss of most of its tidal salt marsh and freshwater marsh (Cooper 2008). The USEPA has determined that all wetland habitats within the Ballona Reserve are impaired (USEPA 2012). Furthermore, a portion of the Ballona Reserve has been identified as "among the most degraded wetlands in California" using standardized wetland condition protocols (Johnston et al. 2015a). Therefore, CDFW proposes a large-scale restoration of the Ballona Reserve that would entail restoring, enhancing, and establishing native coastal wetland and upland habitats within the Ballona Reserve. Long term effects following completion of restoration activities would be beneficial, and result in measureable improvements in the functions and values of habitat resources compared to existing conditions.

3.4.2.1 Study Area

The biological resources study area consists of those areas that could be directly or indirectly impacted by the Project. Areas that could be directly impacted include the Ballona Reserve, a portion of Ballona Creek, and the SoCalGas Property. Regarding the Ballona Reserve (including its division into areas and subareas) and the SoCalGas Property, see Figure 3.4-1, *Project Site and Sub-Areas*, and Figure ES-2, *Project Site*. The portion of Ballona Creek within the Project site includes the reach between Lincoln Boulevard and the west end of Area B (approximately 40 acres). No Project-related activities would be conducted within Ballona Creek upstream of Lincoln Boulevard. The portion of the study area that could be indirectly impacted by the Project include the Pacific Ocean, beaches, Marina del Rey Harbor and associated jetties and breakwaters, the Freshwater Marsh and associated Playa Vista riparian corridor, Del Rey Lagoon, Ballona Lagoon, and Westchester Bluffs.



Ballona Wetlands Restoration Project

Figure 3.4-1
Study Area and Sub-Areas

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Biological resources in this general area, and particularly within the Ballona Reserve and Ballona Creek channel, are well documented. For instance, the Freshwater Marsh and associated Playa Vista riparian corridor are studied annually as part of ongoing monitoring efforts, rookeries sites around the Marina del Rey Harbor periodically are inventoried, and the local birding community has been documenting bird occurrences in the area for decades.

The following primary sources of biological information were used in preparing this section:

1. Ballona Wetlands Existing Conditions Final Report. Prepared for the California State Coastal Conservancy (PWA 2006a).
2. The Use of Historical Data in the Restoration of the Avifauna of the Ballona Wetlands, Los Angeles County, California (Cooper 2008).
3. Historical Ecology of the Ballona Creek Watershed (Dark et al. 2011).
4. Protocol Rare Plant Surveys: 2010–2011 Ballona Wetlands Ecological Reserve Marina del Rey, Los Angeles County, California (WRA 2011a).
5. Ballona Creek Wetlands Ecological Reserve Preliminary Delineation of Wetlands and Non-Wetland Waters, Los Angeles County, California (WRA 2011b).
6. The Ballona Wetlands Ecological Reserve Baseline Assessment Program: 2009–2010 Final Report (Johnston et al. 2011).
7. The Ballona Wetlands Ecological Reserve Baseline Assessment Program: 2010–2011 Final Report (Johnston et al. 2012).
8. California Least Tern Foraging Study Marina Del Rey Dredging Project (KBC 2013).
9. Ballona Wetlands Ecological Reserve Vegetation Alliance and Habitat Crosswalk (Medel et al. 2014).
10. Technical Memorandum: Patterns of Vehicle-Based Vertebrate Mortality in the Ballona Wetlands Ecological Reserve, Los Angeles, CA (Johnston et al. 2014).
11. Condition Assessment of the Wetland Habitats in the Ballona Wetlands Ecological Reserve, Los Angeles, CA (Johnston et al. 2015a).
12. Ballona Wetlands Ecological Reserve Comprehensive 5-Year Monitoring Report (Johnston et al. 2015b).
13. Lower Ballona Creek Fish Sampling Final Report (Merkel 2009).
14. Fall 2014 Bat Surveys (ESA 2015).

This section summarizes information from these reports and other sources cited in the text as they apply to the analysis of potential environmental adverse impacts and beneficial effects of the Project.

3.4.2.2 Environmental Setting

Botanical Resources

A variety of botanical surveys have been conducted over the years in the study area, particularly within the Ballona Reserve, including rare plant surveys, plant inventories, vegetation monitoring, general habitat mapping, and detailed vegetation mapping. Appendix D1, *Botanical Survey Summary*, provides a summary of the botanical surveys conducted on the Project site.

Habitat Types

Habitat types represent functionally distinct ecological communities and are differentiated by a number of characteristics, such as soil, hydrology, topography, and/or dominant vegetation. As summarized in Table 3.4-1, *Habitat Categories, Types, Descriptive Characteristics, and Existing Acreage*, a total of 15 distinct habitat types have been identified on the Project site (modified from The Bay Foundation 2013). Figure 3.4-2, *Study Area Habitat Types,* depicts the locations of these habitat types.

Formal mapping of habitat types was limited to areas within the Project site. Although two of the seven potential well relocation sites on the southern end of the SoCalGas Property were not included in The Bay Foundation vegetation mapping, they have been characterized in accordance with habitat types based on the vegetation data provided in the Jurisdictional Delineation Report – Potential Well Sites, Playa Del Rey Storage Facility (ICF 2013). Although most adjacent lands are developed, some areas adjacent to the Project site support natural and/or wetland conditions. Adjacent lands of particular interest include the Freshwater Marsh to the southeast and Westchester Bluffs to the south.

Plant community descriptions were characterized in the field in accordance with *A Manual of California Vegetation*, Second Edition (Sawyer et al. 2009) and based on the California Department of Fish and Game *List of Vegetation Alliances and Associations* (CDFG 2010); however, dominant species were used to characterize the habitat when neither of these plant descriptions accurately reflected the habitat type or function. Appendix D2, *Vegetation Alliance and Association Acreages by Habitat Type*, provides a list of the vegetation alliances and associated habitat types. The habitat types were combined or grouped into the 15 habitats identified in Table 3.4-1 to reduce the number of habitat types where appropriate (i.e., pampas grass stand, iceplant stand, and non-native “tall” herbaceous were grouped into “invasive monoculture”). Habitat types also were changed to reflect the name of a CDFW sensitive natural community when appropriate (i.e., mudflat was renamed to southern mud intertidal).

The following discussion summarizes the characteristics associated with the 15 habitat types that occur within the Project site. These descriptions have been adapted from The Bay Foundation (2013) and recategorized in some instances for purposes of this analysis. Corresponding vegetation alliances/associations in the Project site are presented in Appendix D2, *Vegetation Alliance and Association Acreages by Habitat Type*.

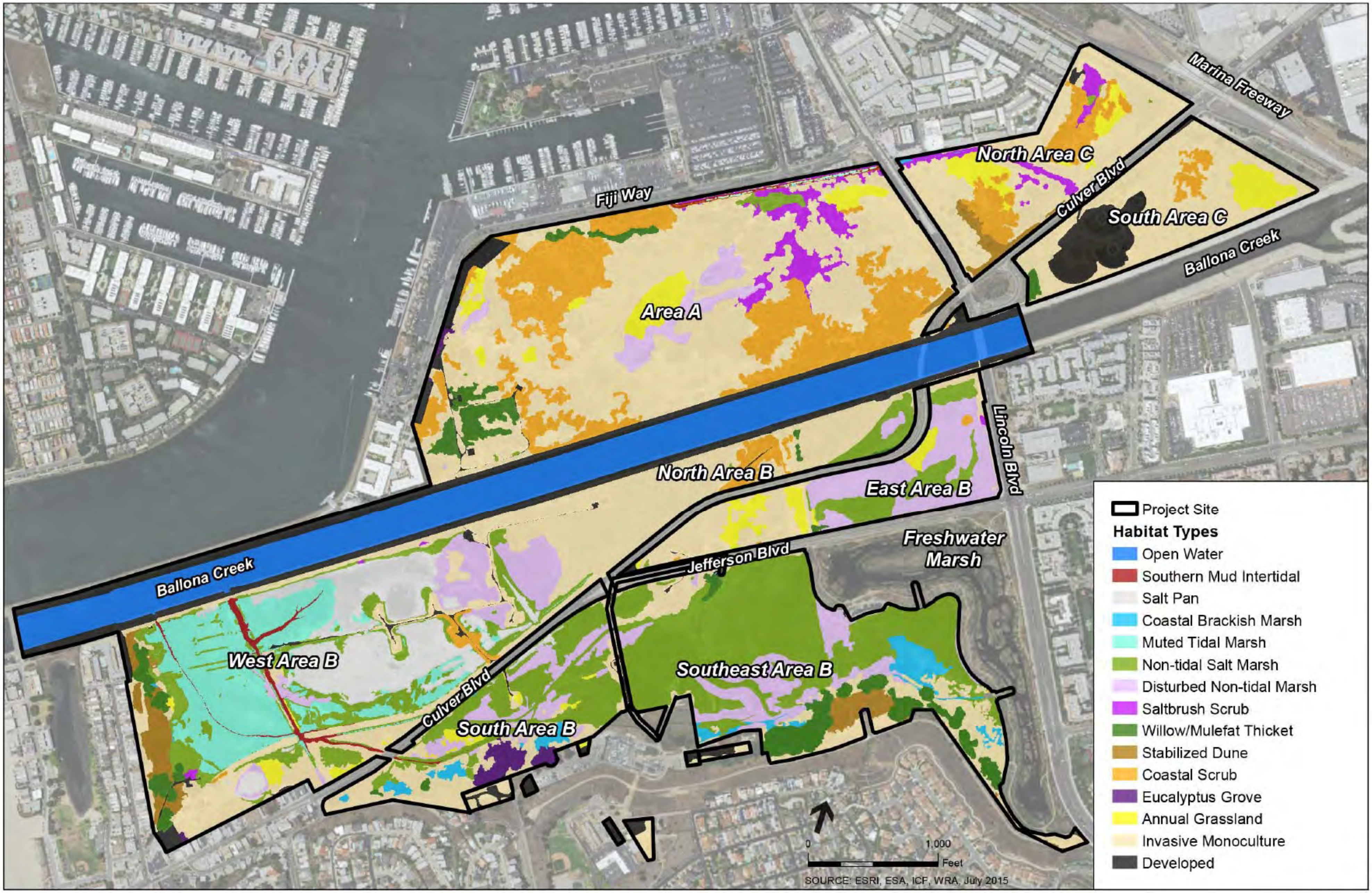
TABLE 3.4-1
HABITAT CATEGORIES, TYPES, DESCRIPTIVE CHARACTERISTICS, AND EXISTING ACREAGE

Habitat Type	Area	Location	Hydrology	Soil	Dominant Vegetation	Nativity	Primary Defining Parameter(s)	Approx. Acreage
Open Water	A, B, C	Ballona Creek; Fiji Ditch	Submerged; fully tidal; estuarine	Silt/s and (high compaction)	N/A	N/A	Hydrology	40.3
Southern mud intertidal	A, B	West Area B; Fiji Ditch	Tidal flows; freshwater inputs from Creek and stormwater runoff	Clay/silt	Submerged aquatic vegetation; algae; *Ulva* spp.	Low to Med	Hydrology	8.8
Salt pan	B	West Area B	Low-gradient, unvegetated, hypersaline flats that typically receive tidal inundation only at the most extreme high tides	Hard-packed clay; poorly draining	Generally none; small patches of *Salicornia pacifica* and *Arthrocnemum subterminale*	N/A	Soil, Hydrology	22.8
Tidal salt marsh	A, B	West Area B	Tidal influence directly or in soil infiltration	Clay/silt;	*Jaumea carnosa*, *Salicornia pacifica*, *Cressa truxillensis*, *Arthrocnemum subterminale*	High	Vegetation, Hydrology	18.2
Coastal brackish marsh	B, C	South Area B and Southeast Area B; small portion of North Area C	Stormwater runoff; water retention through freshwater ponding	Poorly draining	*Euthamia occdentalis*, *Anemopsis californica*	High	Vegetation, Hydrology	6.4
Nontidal salt marsh	A, B, C	South Area B; small portions of Area A and North Area C; Fiji Ditch	Stormwater runoff; water retention through freshwater ponding	Clay/silt	*Salicornia pacifica*, *Cressa truxillensis*, *Malvella leprosa*	Med to High	Vegetation, Hydrology	85.0
Disturbed nontidal marsh	A, B	Area A; Area B	Water retention through freshwater ponding	Clay/silt	*Helminthotheca echioides*, *Atriplex prostrata*, *Bassia hyssopifolia*	None to Med	Vegetation, Hydrology	38.6
Willow/mulefat thicket	A, B, C	Interspersed throughout Areas A, B, and C; mostly in Southeast Area B	Water retention through freshwater ponding; some connectivity through drainage ditch	Variable	*Salix* spp.	High	Vegetation	13.8
Eucalyptus grove	A, B	South Area B; small portion of Area A	Bluff stormwater runoff; direct rainfall	Variable	*Eucalyptus* spp. with leaf litter understory	None to Low	Vegetation	2.8
Annual grassland	A, B, C	Interspersed throughout Areas A, B, and C	Direct rainfall	Coarse grained; well-draining	*Brome* spp., *Avena* spp., *Festuca perennis*	None to Low	Vegetation	19.4
Saltbush scrub	A, B, C	Interspersed throughout Area A and North Area C	Water retention through freshwater ponding	Clay/silt; poorly draining	*Atriplex lentiformis*	High	Vegetation, Soil	10.5
Coastal scrub	A, B, C	Interspersed throughout Areas A, B, and C	Direct rainfall	Coarse grained; well-draining	*Baccharis pilularis*, *Artemisia californica*, *Malosma laurina*; non-native grass understory	Low to High	Vegetation	41.7

TABLE 3.4-1 (Continued)
HABITAT CATEGORIES, TYPES, DESCRIPTIVE CHARACTERISTICS, AND EXISTING ACREAGE

Habitat Type	Area	Location	Hydrology	Soil	Dominant Vegetation	Nativity	Primary Defining Parameter(s)	Approx. Acreage
Stabilized dune	A, B, C	West Area B; South Area B; North Area C; and a small portion of Area A	Bluff stormwater runoff; direct rainfall	Sandy; well drained	*Camissoniopsis* spp., *Lupinus chamissonis*, *Acmispon glaber*, *Croton californica*	None to High	Vegetation, Soil	9.3
Invasive monoculture	A, B, C	Widespread in Areas A, B, and C	Bluff stormwater runoff; direct rainfall	Variable	*Carpobrotus* spp., *Cortaderia* spp., *Glebionis coronaria, Raphanus sativus, Ricinus communis, Euphorbia terracina, Mesembryanthemum* spp., *Malephora crocea*	None to Low	Vegetation	200.2
Developed	A, B, C	Interspersed throughout Areas A, B, and C	Direct rainfall	Gravel, concrete, or compacted loam	N/A	N/A	N/A	47.7

SOURCE: Adapted from The Bay Foundation 2013



Ballona Wetlands Restoration Project

Figure 3.4-2
Study Area Habitat Types

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Open Water

Open water habitat within the Project site occurs in the Ballona Creek channel, and a small segment of Fiji Ditch in North Area C. The Ballona Creek channel is a concrete and rip-rap channelized system that has a soft sediment bottom within the Project site boundaries and is bisected by roadway bridges. Open water habitat is generally unvegetated, although a narrow fringe of herbaceous vegetation is occasionally present along the banks of Ballona Creek. Within the Project site, the Ballona Creek channel is oriented approximately east to west and separates Area A and Area C from Area B. As shown in Table 3.4-1, open water habitat comprises 40.3 acres of the Project site.

Southern Mud Intertidal

Southern mud intertidal habitat, or mudflat, is a special aquatic site per 40 CFR § 230.42. Mudflats are subject to some degree of mixed semidiurnal tidal fluctuations. Mudflats also may have significant freshwater inputs during the wet season or with dry weather runoff from urban areas. Mudflats provide foraging habitat for birds and mammals and are typically composed of fine-grained substrates. Types of vegetation and along the edges of mudflats include both nonvascular algae (e.g., phytoplankton, diatoms, [*Ulva* spp.]) and vascular plants (e.g., surfgrasses [*Phyllospadix* spp.], ditch grass [*Ruppia* spp.]). Terrestrial vascular plants (e.g., pacific pickleweed [*Salicornia pacifica*], fleshy jaumea [*Jaumea carnosa*], and shore grass [*Distichlis littoralis*]) also are found at higher elevations on the edges of mudflats.

Within the Project site, southern mud intertidal habitat is confined to narrow channels. The largest area of mudflat habitat is found in West Area B. This area receives tidal inputs up to 3.6 feet in elevation above mean sea level from Ballona Creek through two self-regulating tide gates. Water exits the wetlands through the same two gates and one additional flap gate on a western branch channel. A small ditch also persists in northeast Area A (Fiji Ditch), which receives tidal flows from Basin H in Marina del Rey Harbor through an open culvert under Dock 52. As shown in Table 3.4-1, southern mud intertidal habitat comprises 8.8 acres of the Project site.

Salt Pan

The salt pan habitat consists of low-gradient, unvegetated (less than 5% total cover), hypersaline (greater than 100 ppt) flats that typically receive tidal inundation at the most extreme high tides (e.g., king tides). These habitats typically exist at the highest elevations between the high marsh and transition zones. They are sufficiently flat and compacted to promote prolonged ponding and evaporation of both tidal inundation and stormwater accumulation. Occasional subshrubs such as Parish’s glasswort also are present.

Within the Ballona Reserve, salt pan habitat is located in West Area B. Only the northeastern arm, adjacent to a branch channel, receives tidal influence. Most of this habitat type receives freshwater input and exhibits ponding during the wet season. As shown in Table 3.4-1, salt pan comprises 22.8 acres of the Project site.

Tidal Salt Marsh

Within the Project site, tidal salt marsh habitat includes vegetated salt marsh floodplain surfaces that receive tidal flows through culverts and tidal gates. In the Project area more generally, low marsh areas are dominated by fleshy jaumea, Pacific pickleweed, dodder (*Cuscuta* spp.), and shore grass, which can tolerate relatively greater frequency and duration of inundation. Higher elevation areas of the Project site are dominated by Parish's glasswort (*Arthrocnemum subterminale*), Pacific pickleweed, alkali heath (*Frankenia salina*), and alkali plant (*Cressa truxillensis*); interspersed shore grass and alkali plants in areas of higher elevation; and some mixed non-native grasses in areas lacking tidal inundation.

Within the Ballona Reserve, the largest area of tidal marsh habitat is found in West Area B. A small area also persists along the Fiji Ditch in northeast Area A. As shown in Table 3.4-1, tidal marsh comprises 18.2 acres of the Project site.

Coastal Brackish Marsh

Coastal brackish marsh habitats form in areas with saline soils and high levels of freshwater influence and typically are found in areas lacking direct tidal influence. Within the Project site these areas generally receive seasonal freshwater inputs from stormwater flows and contain residual soil salts that have accumulated in concentrations capable of reducing non-native propagation. Native species common to these areas include herbaceous vegetation comprising both halophytes and nonhalophytes such as yerba mansa (*Anemopsis californica*) and western goldenrod (*Euthamia occidentalis*). Brackish marsh habitat occurs in South Area B and Southeast Area B, at the base of the bluffs. As shown in Table 3.4-1, coastal brackish marsh comprises 6.4 acres of the Project site.

Nontidal Salt Marsh

Nontidal salt marsh habitat is defined by the persistence of primarily native, mostly halophytic salt marsh vegetation in areas where hydrology is not directly influenced by tides. This habitat typically is located in depressional or historical salt marsh areas where remnant accrued salts remain in high enough concentrations within soils to sustain salt-tolerant vegetation. Due to their landscape positions, these areas typically are influenced by ponded water from overland flows following rain events. High soil salinity concentrations, periodic freshwater inundation, and a strong native seed bank within these areas have helped to promote the continued dominance of primarily native salt marsh species over non-native species.

Within the Project site, the largest nontidal salt marsh is in Southeast Area B to the south of Jefferson Boulevard. Other, smaller nontidal salt marsh habitats are scattered throughout the site, mostly in Area B. Plant species commonly found within the nontidal salt marsh include Pacific pickleweed, alkali plant, alkali mallow (*Malvella leprosa*), and alkali heath. Non-native plant species are more prevalent in nontidal salt marsh than in tidal marsh but are not usually considered to be co-dominant with native plant species. Common non-native plant species include black mustard (*Brassica nigra*), Italian rye grass (*Festuca perennis*), rabbit's foot grass (*Polypogon monspeliensis*), and brome grass (*Bromus* spp.). As shown in Table 3.4-1, nontidal salt marsh comprises 85.0 acres of the Project site.

Disturbed Nontidal Marsh

The disturbed nontidal marsh habitat areas are similar to the nontidal salt marsh habitat, but experience lower soil salinities, which increases their vulnerability to invasion by non-native species. This habitat is dominated by low diversity stands of non-native and invasive species such as bristly ox-tongue (*Helminthotheca echioides*), fat-hen (*Atriplex prostrata*), and fivehook bassia (*Bassia hyssopifolia*). Other common invasive species in disturbed wetland habitats at the Ballona Reserve include black mustard, mixed iceplants, and non-native annual grasses (e.g. *bromes, Festuca* spp.). Disturbed nontidal marsh habitat is most common in Area B, but small areas also are present in Area A. As shown in Table 3.4-1, disturbed nontidal marsh comprises 38.6 acres of the Project site.

Willow/Mulefat Thicket

Willow/mulefat thickets are characterized by the dominance of either willows (*Salix* spp.) or mulefat (*Baccharis salicifolia).* These areas support primarily native cover but may include some non-native species such as palms (Canary Island date palm [*Phoenix canariensis*] and Mexican fan palm [*Washingtonia robusta*]), pampas grass (*Cortaderia* spp.), and acacias (*Acacia* spp.).

This habitat generally occurs in mesic areas with lower landscape positions relative to the surrounding upland habitats. These areas generally, but do not always, meet the hydrology and soils criteria necessary to be considered wetlands. Willow/mulefat thicket areas are most common on the Project site in Southeast Area B and West Area B at the base of well-drained bluffs. Additional areas exist in the western portion of Area A. As shown in Table 3.4-1, willow/mulefat thicket comprises 13.8 acres of the Project site.

Eucalyptus Grove

Eucalyptus groves are characterized by a stand of eucalyptus (*Eucalyptus* spp.) trees. The largest grove of eucalyptus is located at the base of the bluffs in South Area B. The understory within eucalyptus groves is sparsely vegetated and composed primarily of leaf litter and detritus. Although this habitat type is dominated by non-native, invasive eucalyptus species (red gum [*E. camaldulensis*] and blue gum [*E. globulus*]), these areas have provided overwintering habitat for monarch butterfly (*Danaus plexippus*) populations and nesting habitat for raptors. As shown in Table 3.4-1, eucalyptus grove comprises 2.8 acres of the Project site.

Annual Grassland

Annual grassland habitat areas are characterized by the dominance of non-native grasses but retain some of the functions of native annual California grassland habitats. These areas typically have well-drained soils but may include a broad spectrum of soil characteristics due to the range of naturalized species and their tolerances. Common grass species within these habitat areas include *bromes,* wild oats (*Avena* spp.), and Italian rye grass. This habitat occurs primarily within Area A and Area C, but also occurs in Area B. As shown in Table 3.4-1, annual grassland comprises 19.4 acres of the Project site.

Saltbush Scrub

Saltbush scrub habitat is defined by the presence of halophytic shrubs, primarily big saltbush (*Atriplex lentiformis*). This habitat typically is found in lower elevation, coastal areas and exhibits poorly drained soils, as compared to the surrounding upland habitats within Area A and Area C. Native monocultures tend to form within these areas; however, non-native annual grasses also may be present in higher-elevation clearings and along habitat margins. As shown in Table 3.4-1, saltbush scrub comprises approximately 10.5 acres of the Project site.

Coastal Scrub

Coastal scrub habitat areas are characterized by native shrub-dominated plant communities on well drained soils in upland areas. While the majority of shrubs are native, these areas generally also support a co-dominant, non-native understory of herbs and grasses, primarily *bromes*, carnation spurge (*Euphorbia terracina*), and black mustard. Coyote brush (*Baccharis pilularis*) is by far the most common shrub species in this community, with limited densities of other coastal scrub species such as California sagebrush (*Artemisia californica*). Upland scrub areas are common in higher elevation areas within Area A and Area C, and also occur in smaller stands within Area B. As shown in Table 3.4-1, coastal scrub comprises 41.7 acres of the Project site.

Stabilized Dune

Stabilized dune habitat was mapped in areas with coarse-grained, well-drained sandy soils, some of which support native dune indicator species such as evening-primrose (*Camissoniopsis* spp.), dune lupine (*Lupinus chamissonis*), deerweed (*Acmispon glaber*), and California croton (*Croton californica*). These areas have either naturally resisted the invasion of non-natives or have undergone active, hands-on restoration by local volunteer groups. The largest and highest quality area of stabilized dune habitat is located in West Area B and is actively maintained by the Friends of Ballona Wetlands, a nonprofit organization.

The understory contains a moderate to high abundance (co-dominant) of non-native herbs in the understory, particularly by ripgut brome (*Bromus diandrus*) and filaree (*Erodium* spp.). Stabilized dune habitats also include some areas with non-native species such as black mustard, wild radish (*Raphanus sativus*), and iceplant species (e.g., *Carpobrotus* spp. and *Mesembryanthemum* spp.).

The stabilized dune habitats in West Area B and Southeast Area B are remnants of historical sand dune systems that have been affected by coastal development. Due to the surrounding development, these remnant dunes no longer can migrate in response to natural aeolian processes and are considered to be stabilized. The stabilized dune habitat in Area A and Area C occurs on sandy fill soils that were excavated from the area to the north during the construction of the Marina del Rey Harbor. As shown in Table 3.4-1, stabilized dune comprises 9.3 acres of the Project site.

Invasive Monoculture

Invasive monoculture habitat types are defined by monocultures or very low-diversity assemblages of invasive herbs and shrubs including black mustard, crown daisy (*Glebionis coronaria*), wild radish, iceplants, pampas grass, carnation spurge, and castor bean (*Ricinus communis*). In addition, small, fragmented groups of non-native trees, primarily thorntree and lollypop tree (*Myoporum laetum*), are included in this habitat type. Invasive monocultures are common across the Ballona Reserve in many upland habitat types, but are most often located in areas with introduced fill (e.g., berms and upland fill areas). As shown in Table 3.4-1, invasive monoculture habitat type comprises 200.2 acres of the Project site.

Developed

Developed areas within the Project site include existing paved surfaces or areas of fill/dirt associated with existing parking lots, the baseball fields in South Area C, and SoCalGas well pads or staging areas. As shown in Table 3.4-1, developed areas comprise 47.7 acres of the Project site.

Wildlife

The following subsections summarize the wildlife resources associated with the above habitat types in the Project site, including aquatic and terrestrial invertebrates, fish, reptiles and amphibians, birds, and mammals. As with plants, for the most part, detailed surveys and analyses of microfauna are not included in this analysis; larger organisms are used as proxies for overall functional assessment analyses. This includes detailed studies of most groups of insects and other invertebrates that are not well-studied.

Benthic and Terrestrial Invertebrates

Several benthic (aquatic) and terrestrial invertebrate surveys have been performed within the Project site since 1980. Additionally, between 2009 and 2014, biologists with The Bay Foundation conducted benthic and terrestrial invertebrate studies as part of a Baseline Assessment Program for the Ballona Reserve.

Appendix D4, *Benthic Invertebrate Studies*, summarizes the benthic invertebrate studies conducted in the Project site, sample locations, and results. Most of the benthic invertebrate studies have been conducted within the Ballona Reserve and included sampling of tidal channels in Area B and the Fiji Ditch. The Project site supports approximately 49 acres of benthic habitat (40 acres of subtidal and 9 acres of intertidal channel). Benthic organisms have been identified in the Project site to date, as listed in Appendix D5, Table D5-1, *Summary of Benthic Invertebrate Organisms Found in the Project Site*. Special-status invertebrates are discussed in the *Special-Status Wildlife Species* section. Appendix D6, *Terrestrial Invertebrate Studies*, provides a summary of the terrestrial invertebrate studies conducted in the Project site, sample locations, and results. The majority of the terrestrial invertebrate studies conducted in the Project site were located within the Ballona Reserve. Butterfly surveys conducted by Friends of Ballona Wetlands between 2008 and 2016 yielded 39 butterfly species (Friends of Ballona Wetlands and Psomas 2016). A list of these species is provided in Appendix D5 Table D5-2, *Butterfly Species Observed in the Salt Marsh of Area B, Riparian and Freshwater Marsh Habitats During Surveys by the Friends of Ballona Wetlands*. Studies conducted by The Bay Foundation from 2009-2015 show a range of productivity by habitat type. The salt pan habitat had the lowest average aerial arthropod productivity. The nontidal salt marsh (prior to 2013, this area was categorized as seasonal wetland) had the highest average total aerial arthropod productivity and the highest level of variability between transects. Several special-status terrestrial invertebrate species are associated with tidal wetland, eucalyptus grove, and dune habitat types found in the Project site.

Fish

Since 1980, several fish surveys have been performed within the Project site (see Appendix D7 *Summary of Fish Studies*). Fish surveys were conducted in the tidal channels in the Ballona Reserve, Ballona Creek, and Marina del Rey Harbor. Between 1981 and 2011, 18 fish species were found within the Ballona Reserve's tidal channels and 49 fish species were documented in the larger Project site that includes Ballona Creek and Marina del Rey Harbor (see Appendix D5 Table D5-4, *Fish Species Identified From Marina del Rey Harbor and/or Ballona Creek*). The most common native fish include arrow gobies (*Clevelandia ios*), California killifish (*Fundulus parvipinnis*), longjaw mudsucker (*Gillichthys mirabilis*), Pacific staghorn sculpin (*Leptocottus armatus*), striped mullet (*Mugil cephalus*), and topsmelt (*Atherinops affinis*) (Johnston et al 2012; Merkel 2009). The western mosquitofish (*Gambusia affinis*), a non-native species, is abundant in Fiji Ditch and less common in the tidal channels. Although two southern California steelhead (*Oncorhynchus mykiss irideus*) individuals have been observed in Ballona Creek (upstream of the Ballona Reserve) in 2008 (Johnston et al. 2011), this creek and its tributaries are heavily urbanized and provide no spawning conditions. In total, the Project site supports approximately 49 acres of habitat capable of supporting fish (40 acres of subtidal and 9 acres of intertidal channel). Special-status fish are discussed in the *Special-Status Wildlife Species* section.

Reptiles and Amphibians

Appendix D8, *Summary of Reptile and Amphibian Studies*, describes the focused amphibian and reptile surveys that have been performed in the Ballona Reserve and/or in the adjacent Freshwater Marsh. As presented in Appendix D5 Table D5-5, *Reptile and Amphibian Species in the Project Site*, these include four amphibian species (California toad [*Anaxyrus boreas halophilus*], Baja California treefrog [*Pseudacris hypochondriaca*], and garden slender salamander [*Batrachoseps major*]) and nine reptile species (Southern California legless lizard [*Anniella stebbinsi*], western side-blotched lizard [*Uta stansburiana elegans*], San Diego alligator lizard [*Elgaria multicarinata webbii*], Great Basin fence lizard [*Sceloporus occidentalis longipes*], San Bernardino ring-necked snake [*Diadophis punctatus modestus*], Southern Pacific rattlesnake [*Crotalus oreganus helleri*], San Diego gopher snake [*Pituophis catenifer annectens*], and California kingsnake [*Lampropeltus californiae*]. The red-eared slider [*Trachemys scripta elegans*] and American bullfrog [*Lithobates catesbeianus*], both non-native species, were not identified on the Project site due to the lack of preferred habitat, but were found in the adjacent Freshwater Marsh. Special-status reptiles and amphibians are discussed in the *Special-Status Wildlife Species* section.

Birds

Birds within the Project site have been particularly well documented. The early ornithological literature contains numerous references to "Ballona" and the "Venice Marshes" (the name of the wetlands that historically occurred north of the present-day Ballona Reserve prior to the construction of Marina del Rey Harbor) (Grinnell 1898; Willet 1912, 1933; Grinnell and Miller 1944). In addition, comprehensive annotated checklists of the birds of the Ballona Reserve have been produced at regular intervals (Dock and Schreiber 1981; Corey 1992; Cooper 2006). Appendix D9, *Summary of Bird Studies*, summarizes the bird studies conducted within the Project site. Special-status birds are discussed in the *Special-Status Wildlife Species* section.

During baseline surveys conducted within the Ballona Reserve and along lower Ballona Creek, a total of 154 bird species were recorded between 2009 and 2010 and 135 bird species were recorded between 2010 and 2011 (Johnston et al. 2012). The two most abundant bird species reported by The Bay Foundation during Ballona Reserve-wide surveys between 2009 and 2011 were house finch and white-crowned sparrow. The three most numerous species averaged across the Ballona Reserve during two seasons were three species of shorebirds: willet, black-bellied plover, and least sandpiper (Johnston et al. 2011). Supplemental surveys targeted in the salt marsh habitat areas in 2013-14 identified 62 bird species as present (Johnston et al. 2015b). In total, over 240 species of birds have been observed on the Project site (Appendix D5 Table D5-6, *Bird Species Documented in the Project Site*).

Area A Birds

Area A is predominantly upland habitat dominated by invasive monoculture, although small salt pan areas, nontidal salt marsh, coastal scrub, and willow/mulefat thicket also are present (see Figure 3.4-2). The upland habitats of Area A contain bird species such as mourning dove (*Zenaida macroura*), rock dove *(Columba livia*), Anna's hummingbird (*Calypte anna*), black phoebe (*Sayornis nigricans*), bushtit (*Psaltriparus minimus*), American crow (*Corvus brachyrhynchos*), Northern mockingbird (*Mimus polyglottos*), European starling (*Sternus vulgaris*), Brewer's blackbird (*Euphagus cyanocephalus*), song sparrow (*Melospiza melodia*), lesser goldfinch (*Spinus psaltria*), house finch (*Haemorhous mexicanus*), and house sparrow (*Passer domesticus*). Belding's savannah sparrow formerly nested within Area A, but the quality of potential habitat for this species has declined in Area A over time due to the leaching of residual salts, and no nesting has been recorded in Area A since 1987 (Massey 1987; Cooper 2010b).

Some raptors observed foraging in Area A include the red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), and white-tailed kite (*Elanus leucurus*). Burrowing owl (*Athene cunicularia*) regularly has been recorded in Area A during the winter, and northern harrier (*Circus cyaneus*) also has been observed wintering in Area A. Great blue heron (*Ardea herodias*) and great egret often use Area A for roosting, and great blue heron, which nest in trees around Marina del Rey Harbor (Hamilton 2011), use Area A for gathering nesting materials (PWA 2006).

Area B Birds

Area B is primarily dominated by salt pan, tidal marsh, nontidal salt marsh, disturbed nontidal marsh, and invasive monoculture, with smaller amounts of coastal brackish marsh, willow/mulefat thicket, eucalyptus grove, annual grassland, coastal scrub, saltbush scrub and stabilized dune (see Figure 3.4-2). Examples of bird species that can be observed nearly year-round in and adjacent to tidal channels in Area B include great blue heron, black-crowned night heron (*Nycticorax nycticorax*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), killdeer (*Charadrius vociferous*), and willet (*Tringa semipalmata*). Western meadowlark (*Sturnella neglecta*) nests in the pickleweed habitat of the western portion of Area B. Belding's savannah sparrow, a state endangered bird, breeds in pickleweed salt marsh habitat in the west Area B and a portion of south Area B (see the discussion below of Special-Status Biological Resources, for details about the status and distribution of this species in the Project site). Examples of wintering species of the Area B tidal salt marsh, tidal channels, and saltflats include black-bellied plover (*Pluvialis squatarola*), whimbrel (*Numenius phaeopus*), Western sandpiper (*Calidris mauri*), and least sandpiper (*Calidris minutilla*). Western snowy plover have been documented as a regular migrant and rare winter visitor (Cooper 2005b). California brown pelicans (*Pelecanus occidentalis* *californicus*) occasionally are observed flying over Area B but more frequently over Ballona Creek (the tidal channels of Area B are generally too shallow for foraging). Less commonly observed bird species of Area B include brant (*Branta bernicla*), northern shoveler (*Anas clypeata*), and gadwall (*Anas strepera*). These species typically are observed in tidal channels and on flooded salt pans following heavy rains. Gull species observed on the Area B salt pan include California gull (*Larus californicus*), ring-billed gull (*Larus delawarensis*), western gull (*Larus occidentalis*), and Bonaparte's gull (*Chroicocephalus philadelphia*). During early spring months, flocks of elegant terns (*Thalasseus elegans*), Caspian terns (*Hydroprogne caspia*), and black-bellied plovers are observed on the Area B salt pan. Species observed in the spring in Area B include Northern rough-winged swallow (*Stelgidopteryx serripennis*), barn swallow (*Hirundo rustica*), cliff swallow (*Petrochelidon pyrrhonota*), Bullock's oriole (*Icterus bullockii*), and both Caspian and elegant terns roosting on the salt pan.

The salt pan of Area B historically may have supported nesting by the California least tern *(Sternula antillarum browni*). One pair unsuccessfully nested in Area B in 2001 and nine pairs unsuccessfully nested in Area B salt pan habitat in 2014 (all were predated by American crow; Brody, R. Pers. comm. 2014). During the late summer, several species of sandpiper and plover that arrive in southern California from breeding grounds in Canada and Alaska occasionally make use of Area B tidal channels and salt pan subject to tidal inundation. The most commonly observed bird species in the upland habitats of Area B are American crow, European starling, common yellowthroat (*Geothlypis trichas*), and house finch; other species include birds such as mourning dove, Anna's hummingbird, Western kingbird (*Tyrannus verticalis*), black phoebe, bushtit, Northern mockingbird, Western scrub-jay (*Aphelocoma californica*), red-winged blackbird (*Agelaius phoeniceus*), song sparrow, California towhee (*Melozone crissalis*), lesser goldfinch, and house sparrow. In the winter months, Say's phoebe (*Sayornis saya*), blue-gray gnatcatcher (*Polioptila caerulea*), ruby-crowned kinglet (*Regulus calendula*), yellow-rumped warbler (*Setophaga coronata*), and white-crowned sparrow (*Zonotrichia leucophrys*) have been observed foraging in the uplands of Area B. Great-tailed grackles (*Quiscalus mexicanus*) also have been observed recently in Area B. Loggerhead shrike (*Lanius ludovicianus*) also was observed south of Culver Boulevard in 2001, 2003, and 2004 (for a full discussion of this species' status and distribution on the Project site, see the discussion below of Special-Status Biological Resources). Common raptors of Area B include American kestrel, red-tailed hawk, which roosts and possibly nests in the eucalyptus trees in the southwestern end of Area B, red-shouldered hawk (*Buteo lineatus*), Cooper's hawk (*Accipter cooperii*), white-tailed kite, northern harrier, and occasionally great horned owl (*Bubo virginianus*). Peregrine falcons (*Falco peregrinus*) frequently are observed foraging over Area B (PWA 2006). A light-footed Ridgway's rail [(light-footed clapper rail) (*Rallus longirostris levipes (R. longirostris l.)*] was observed in West Area B during fish surveys conducted in 2008. The rail was observed foraging in the pickleweed along the east shore of the tidal channel (Merkel 2009); however, this species was not detected during protocol surveys conducted at the Project site (Ryan 2011). Light-footed Ridgway's rail also was observed as recently as April 2016 in the Freshwater Marsh (Sterba 2016).

Area C Birds

Area C consists primarily of invasive monoculture but also includes smaller areas of open coastal brackish marsh, willow/mulefat thicket, annual grassland, stabilized dune, coastal scrub, and saltbush scrub. This Area supports a lower species richness of birds as compared to Area A and

Area B. In addition, it is subject to higher levels of human disturbance than Area B. Bird species typically observed in Area C include American kestrel, mourning dove, rock dove, killdeer, Anna's hummingbird, American crow, black phoebe, northern mockingbird, song sparrow, California towhee, house finch, and house sparrow. Peregrine falcon is occasionally observed foraging over Area C (PWA 2006). Coastal California gnatcatcher (*Polioptila californica californica*) also has been observed foraging in Area C (for a full discussion of this species' status and distribution on the Project site, see the discussion below of Special-Status Biological Resources).

Mammals

Since the early 1960s, many mammal inventories and surveys have been performed within the Project site. Additionally, beginning in 2009, several mammal surveys were conducted as part of a Baseline Assessment Program for the Ballona Reserve. Appendix D10, *Summary of Mammal Studies*, summarizes the mammal surveys conducted within the Project site. Special-status mammals are discussed in the *Special-Status Wildlife Species* section.

Marine Mammals

Marine mammals have been seen on occasion in the Ballona Creek channel within the Ballona Reserve, such as California sea lion (*Zalophus californianus*) and harbor seal (*Phoca vitulina*) but generally do not occur at the Ballona Reserve. However, several briefly come ashore along the beaches near the wetlands, including northern fur seal (*Callorhinus ursinus*), California sea lion, harbor seal, and Northern elephant seal (*Mirounga angustirostris*) (Friesen et al. 1981). In 2009, a harbor seal was recorded in Ballona Creek near the western tide gate (Johnston et al. 2011).

Bats

Bat surveys were conducted in the late fall of 2014, in three separate locations (Freshwater Marsh, eucalyptus grove, and West Area B), to capture the winter migration period and to provide preliminary data on bat use. Surveys in 2014 resulted in the identification of four species: silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), Yuma myotis (*Myotis yumanensis*) and Mexican free-tailed bat (*Tadarida brasiliensis*) (ESA 2015). The majority of bat detections took place at the Freshwater Marsh location, and the most commonly detected species were Mexican free-tailed bats.

Terrestrial Mammals

Surveys of the Project site since the 1980s have yielded a recent inventory of 18 mammal species, two of which are designated California Species of Special Concern: Southern California salt marsh shrew (*Sorex ornatus salicornicus*) and South Coast marsh vole (*Microtus californicus stephensi*). Common species have included Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Otospermophilus beecheyi*), coyote (*Canis latrans*), desert cottontail (*Sylvilagus audubonii*), domestic cat (*Felis catus*; non-native), domestic dog (*Canis lupus familiaris*; non-native), eastern fox squirrel (*Sciurus niger*; non-native), house mouse (*Mus musculus*; non-native), black rat (*Rattus rattus*; non-native), Norway rat (*Rattus norvegicus*; non-native), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*; non-native), and western harvest mouse (*Reithrodontomys megalotis*). Additionally, red fox (*Vulpes vulpes*; non-native) and gray fox (*Urocyon cinereoargenteus californicus*) historically have been identified on site, but not in recent years.

Special-Status Biological Resources

All plant and wildlife species and natural vegetation communities in California that have special regulatory or management status were evaluated for potential to occur within and adjacent to the Project site. Those that include the Project site within their currently known range and for which suitable conditions exist or may exist in the Project site, or that otherwise may be impacted by the Project alternatives, are listed in Appendix D11, *Special-Status Plants*, and in Appendix D12, *Special-Status Wildlife*. These appendices also summarize the current status, habitat requirements, and a judgment of the potential for the species to occur in the Project site. Those species deemed to have a less than reasonable potential for occurrence and impact are shaded in gray, and no further discussion is provided unless otherwise stated. These appendices were developed from a database and literature review using the following resources:

1. The California Natural Diversity Database (CNDDB) (CDFW 2015) and the California Native Plant Society's (CNPS) Electronic Inventory (CNPS 2015) within the U.S. Geological Survey (USGS) 7.5-minute Venice, California quadrangle (which includes the Project site) and six surrounding quadrangles (Topanga, Beverly Hills, Hollywood, Inglewood, Torrance, and Redondo Beach, California). These quadrangles are defined as the "*region*" (or Project region) in this analysis.

2. Species were added to these inventories, as appropriate, based on personal knowledge, experience with prior projects in the area, internal expert/consultant databases, and published and unpublished references.

3. A review was performed of key publications on regulatory status and/or distribution for species relevant to the region (e.g., Cooper, D.S. 2006. *Annotated Checklist of Birds of Ballona Valley, Los Angeles County, California*), along with miscellaneous recent publications (e.g., Federal Register), and frequent communications with other professionals.

4. Additionally, to help simplify the impact analysis, all special-status species with potential to occur in the Project area have been categorized into guilds of closely related and/or functionally similar species including mammals, birds (raptor, upland, shore, marsh), reptiles and amphibians, invertebrates (dune, marsh), and plants. See Appendix D13, *Special-Status Species Organized by Guild*, for more information.

Special Status Botanical Resources

This section summarizes special-status botanical resources known to occur (currently and/or historically) or considered to potentially occur within the Project site based on the resources present in the Project site.

Special-Status Natural Vegetation Communities

Special-status natural vegetation communities are of limited distribution statewide or within a county or region. These communities may or may not contain special-status species or their habitat. To account for special-status natural vegetation communities within the Project site, two sources of information, both maintained by CDFW, were reviewed: CNDDB (CDFW 2015) and the most current version of California Terrestrial Natural Communities (CDFG 2010).

The CNDDB special-status natural vegetation communities generally are based on a classification system developed by Holland (1986). Five special-status natural vegetation communities are present in the Project site, along with their corresponding vegetation alliances/associations (Table 3.4-2, Figure 3.4-3).

TABLE 3.4-2
CDFW SPECIAL-STATUS NATURAL VEGETATION COMMUNITIES ON THE PROJECT SITE

CDFW Sensitive Communities Occurring in the Reserve	Total Acres
Southern Mud Intertidal	8.8
Southern Coastal Salt Marsh[1]	99.5
Coastal Brackish Marsh	6.4
Southern Willow Scrub[2]	6.2
Southern Dune Scrub[3]	4.2

NOTES:
1 Subset of Muted-Tidal Salt Marsh (23.91 acres) and Subset of Non-Tidal Salt Marsh (75.57 acres) (includes areas dominated or co-dominated by pickleweed)
2 Subset of Willow Thickets (includes area along former stream channel)
3 Subset of Stabilized Dune

SOURCES: CDFW 2010, CDFW 2014, WRA 2015

The list of California Terrestrial Natural Communities maintained by CDFW (2010) was developed using the Manual of California Vegetation, 2nd Edition (Sawyer et al. 2009). This list categorizes vegetation communities at a much finer scale, and labels them as *alliances or associations*. These alliances and associations are often a subset of the CNDDB Holland-based vegetation communities.

Based on vegetation categorization and mapping conducted by The Bay Foundation in 2013, there are 12 CDFW special-status alliances or associations in the Project site (CDFG 2010):

1. *Arthrocnemum subterminale* (Parish's glasswort) alliance (S2);
2. *Anemopsis californica* (yerba mansa) alliance (S2);
3. *Bolboschoenus maritimus* (salt marsh bulrush) alliance (S3);
4. *Elymus* (=*Leymus*) *triticoides* (creeping wild rye) alliance (S3);
5. *Encelia californica—Artemisia californica* (California brittle bush – California sagebrush) association (S3);
6. *Frankenia salina* (alkali heath) alliance (S3);
7. *Lupinus chamissonis* (silver dune lupine) alliance (S3);
8. *Lupinus chamissonis—Ericameria ericoides* (silver dune lupine – mock heather) association (S3);
9. *Rhus integrifolia* (lemonade berry scrub) alliance (S3);
10. *Salicornia pacifica* (pickleweed) alliance (S3);

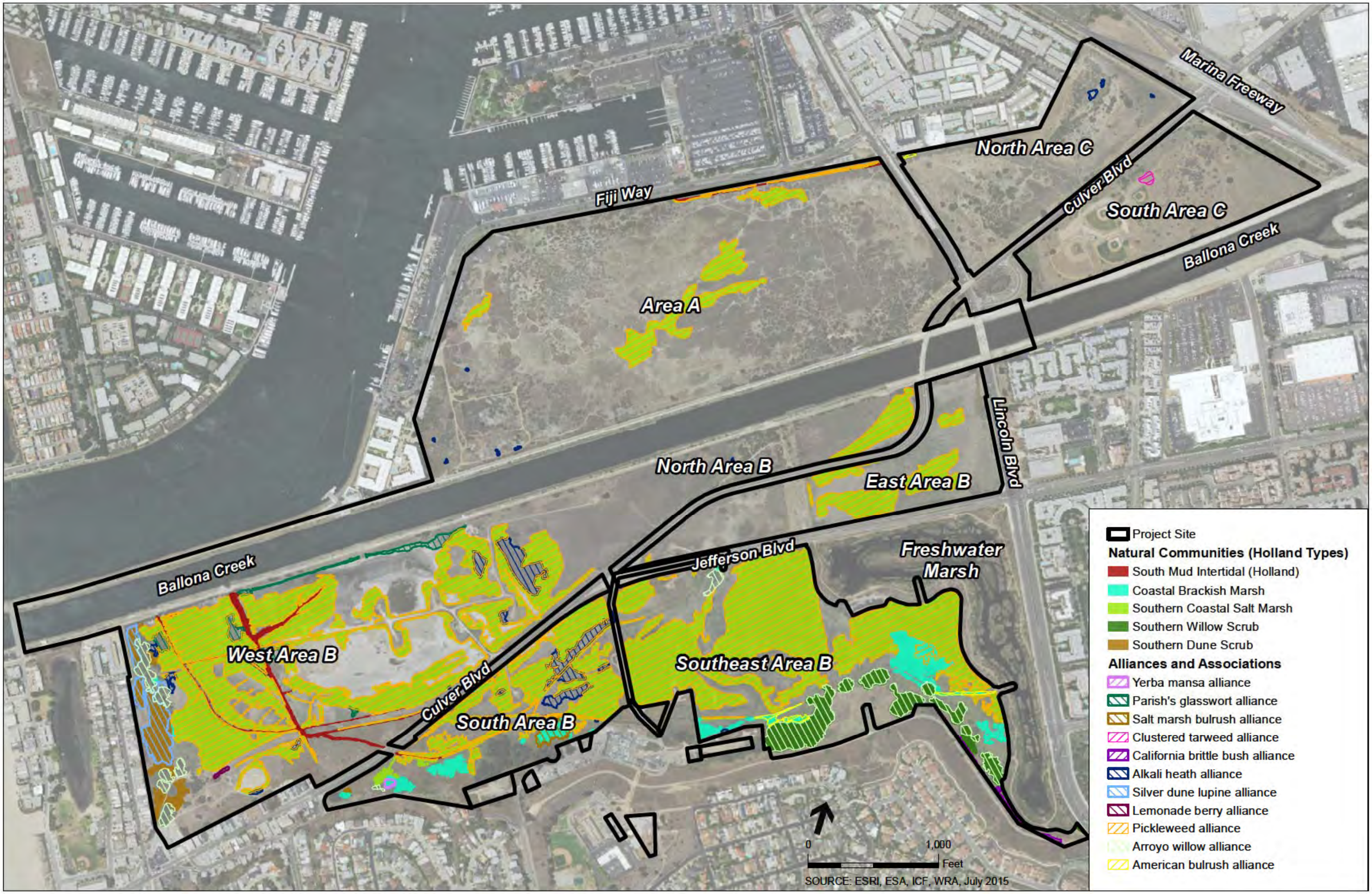

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Figure 3.4-3
CDFW Special-Status Natural Vegetation Communities

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11. *Salix lasiolepis* (arroyo willow) alliance (high priority); and,
12. *Schoenoplectus americanus* (American bulrush) alliance (S3).

These special-status alliances or associations occur almost exclusively within the special-status communities shown in Table 3.4-2 and depicted in Figure 3.4-3, and are not analyzed separately from the communities in which they occur. The *Rhus integrifolia* alliance is a notable exception and does not occur within a designated special-status community. However, the total area of this alliance within the Ballona Reserve (0.06 acre) is below the typical minimum mapping unit used to map rare vegetation (CNPS 2011); therefore, it is not included on Figure 3.4-3.

Special-Status Plant Species

Special-status plant species are legally protected under the California Endangered Species Act (CESA) (Fish and Game Code §2050 et seq.), the Native Plant Protection Act (Fish and Game Code §1900 et seq.) and/or the federal Endangered Species Act (FESA), other regulations, or considered sufficiently rare by the scientific community to qualify for such a listing. Special-status plant species include the following categories:

1. Officially listed by California or the federal government as endangered, threatened, or rare;
2. A candidate for state or federal listing as endangered, threatened, or rare;
3. Taxa that meet the criteria for listing, even if not currently included on any list, as described in CEQA Guidelines Section 15380;
4. Taxa listed in the CNPS Inventory of Rare and Endangered Plants of California (note that all California Rare Plant Rank (CRPR) 1 and 2 species and some CRPR 3 and 4 species fall under CEQA Guidelines Section 15380);
5. Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
6. Population(s) in California that may be peripheral to the major portion of a taxon’s range but are threatened with extirpation in California;
7. Taxa closely associated with a habitat that is declining in California at a significant rate (e.g., wetlands, riparian, vernal pools, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats); and
8. Taxa that are locally rare based on the opinion of a recognized expert or that are listed in a locally maintained list (e.g., recognition by the Los Angeles-Santa Monica Mountains chapter of CNPS) as rare.

Based on the database search and literature review, 60 special-status plant species are reported as having occurred (historically and/or recently) in the Project region. Appendix D11 lists each of these plant species along with regulatory status, species requirements, and an evaluation of the species’ potential to occur in the Project site. However, of the 60 special-status plant species reported in the region with the potential to occur, only five species have been detected in the Project site during 2011 focused surveys, and are shown in Table 3.4-3 and discussed further below.

TABLE 3.4-3
SPECIAL-STATUS PLANT SPECIES KNOWN TO OCCUR OR POTENTIALLY OCCURRING IN THE PROJECT SITE

Special-Status Plant Species	Rarity Ranking	Habitat Requirements
Confirmed Present		
Lewis' evening primrose *Camissoniopsis lewisii* =*Camissonia lewisii*	California Rare Plant Ranking 3	Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland on sandy or clay soils. Elevation range: 0 – 975 feet. Blooms: March – May, sometimes June. (CNPS 2014)
Orcutt's pincushion *Chaenactis glabriuscula* var. *orcuttiana*	California Rare Plant Ranking 1B.1	Coastal bluff scrub, coastal dunes. Located on sandy soils. Elevation range: 0 – 330 feet. Blooms: January – August. (CNPS 2014)
South Coast branching phacelia *Phacelia ramosissima* var. *austrolitoralis*	California Rare Plant Ranking 3.2	Chaparral, coastal dunes, coastal scrub, coastal salt marshes. Located on sandy, sometimes rocky soils. Elevation range: 20 – 975 feet. Blooms: March – August. (CNPS 2014)
Suffrutescent wallflower *Erysimum suffrutescens*	California Rare Plant Ranking 4.2	Coastal bluff scrub, coastal scrub, valley and foothill grassland. Located on coastal dunes and bluffs. Elevation range: 0 – 490 feet. Blooms: January – July. (CNDDB 2014; CNPS 2014)
Woolly seablite *Suaeda taxifolia*	California Rare Plant Ranking 4.2	Coastal bluff scrub, coastal dunes, margins of coastal salt marshes. Elevation range: 0- 165 feet. Blooms: January – December. (CNDDB 2014; CNPS 2014)

California Rare Plant Rank
1A. Presumed extinct in California
1B. Rare or Endangered in California and elsewhere
2A. Presumed extinct in California, extant and more common elsewhere
2B. Rare or Endangered in California, more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list

Threat Ranks
.1 - Seriously endangered in California
.2 – Fairly endangered in California
.3 – Not very endangered in California

SOURCE: CNPS 2014; WRA 2011a

State and Federally Listed Special-Status Plants

Nine federally-listed and nine state-listed endangered or threatened plants are reported by CDFW in the Project region. An additional 48 rare plants are reported by CNPS in the Project region. However, all are presumed to be absent from the study area because the study area is outside of the species' range, potentially suitable habitat is absent, and/or multiple surveys of the Project site during the past 30 years have not found the species. Therefore, no Federally-listed or state-listed threatened or endangered plant species occur within the Project site.

Although currently considered to have a low potential to occur within the Project site, three federally-endangered plant species, two federal candidate plant species, and five state-listed plant species have been historically observed in or near the Project site [beach spectaclepod (*Dithyrea maritima*) (state threatened), Brand's phacelia (*Phacelia stellaris*) (federal candidate), coastal dunes milk-vetch (*Astragalus tener* var. *titi*) (federally endangered and state endangered), salt marsh bird's-beak (*Chloropyron maritimum* ssp. *maritimum*) (federally endangered and state endangered), San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) (federal candidate and state endangered), Ventura marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*) (federally endangered and state endangered)]. None of these plants were detected during floristic rare plant surveys last conducted at the Project site in April 2011. The nearest and most recent documented occurrence of Ventura marsh milk-vetch was in 1951 within the historic Ballona wetlands. Salt marsh bird's beak was observed in 1981, less than 4 miles north of the

Ballona Reserve, and Brand's phacelia, coastal dunes milk-vetch and San Fernando Valley spineflower were last detected in the early 1900s, between 1 to 3 miles from the Ballona Reserve (WRA 2011a). The distribution, habitat, and other information on these species are provided in Appendix D11.

California Rare Plant Ranked Plants

Forty-eight CRPR special-status plant species are reported in the region. Of these, 43 species are presumed to be absent from the Project site or have a low potential to occur on-site because the study area is outside of the species' range, potentially suitable habitat is absent, and/or multiple surveys of the Project site during the previous 30 years have not found the species (see Appendix D11). Five of these CRPR special-status plant species (Lewis' evening primrose [*Camissoniopsis lewisii =Camissonia lewisii*], Orcutt's pincushion [*Chaenactis glabriuscula* var. *orcuttiana]*, South Coast branching phacelia [*Phacelia ramosissima* var. *austrolitoralis]*, suffrutescent wallflower [*Erysimum suffrutescens*], and woolly seablite [*Suaeda taxofolia*]) were confirmed within the Project site during 2010 to 2011 focused surveys. These species are discussed in detail below.

Lewis' evening primrose (*Camissoniopsis lewisii =Camissonia lewisii*): CRPR 3. Lewis' evening primrose is an annual forb within the evening primrose family (*Onagraceae*) that blooms from March to May. It typically occurs on sand or clay substrate in coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland habitat at elevations ranging from 0 to 975 feet (CNPS 2014). Observed associated species are not reported in the literature; however, observations by WRA (2011) include coyote brush, black mustard, crown daisy, California suncup (*Camissoniopsis bistorta*), miniature suncup (*C. micrantha*), long-beak filaree (*Erodium cicutarium*), common Mediterranean grass (*Schismus barbatus*), and big saltbush.

Lewis' evening primrose is known from fifteen USGS 7.5-minute quadrangles in Los Angeles, Orange, and San Diego counties (CNPS 2014) with six specimen records in the Project region (CCH 2014). Lewis' evening primrose originally was documented from Ballona Harbor in 1889 and 1891, and additional collections from Playa del Rey and El Segundo were documented between 1932 and 1986 (CCH 2014). Lewis' evening primrose was observed during several floristic surveys of the site within Area B, most recently by WRA (2011). Approximately 12,300 individuals of Lewis' evening primrose were observed in the southern dune scrub habitat in the southern edge of Area B, the eastern edge of coastal scrub habitat of Area A, and coastal scrub habitat in Area C (WRA 2011a). Figure 3.4-4, *Special-Status Plant Species*, depicts the distribution of known populations of Lewis' evening primrose in the Project site.

Orcutt's pincushion (*Chaenactis glabriuscula* var. *orcuttiana*): CRPR 1B.1. Orcutt's pincushion is an annual herb within the sunflower family (*Asteraceae*) that blooms from January to August. It typically occurs on sandy sites in coastal bluff scrub and coastal dune habitats at elevations ranging from 10 to 330 feet (CNPS 2014). Observed associated species include California buckwheat (*Eriogonum fasciculatum*), beach primrose (*Oenothera elata*), silver beach weed (*Ambrosia chamissonis*), wire lettuce (*Stephanomeria* sp.), dune bush lupine (*Lupinus chamissonis*), and sand verbena species (*Abronia* spp.) (CDFW 2014).

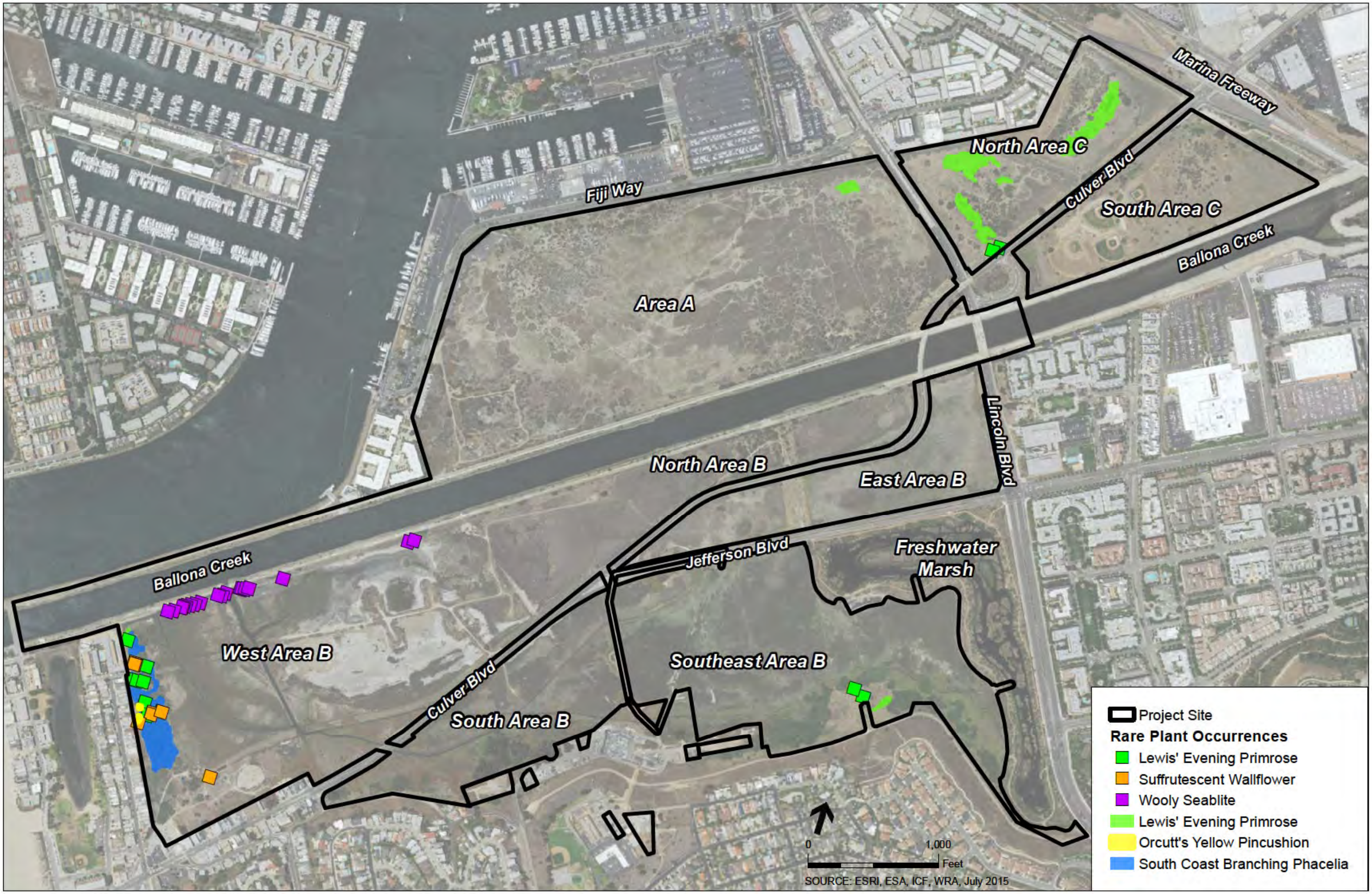

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Figure 3.4-4
Special-status Plant Species

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Orcutt's pincushion is known from 15 USGS 7.5-minute quadrangles in Los Angeles, San Diego, and Ventura counties (CNPS 2014). Orcutt's pincushion was first documented at the Ballona Reserve in 1980, although there are records from Playa del Rey from as early as 1918 (CCH 2014). Another occurrence in the Project region is at Manhattan Beach (CDFW 2014). Approximately 350 individuals of Orcutt's pincushion were observed in the restored coastal dune habitat in the western edge of Area B in 2011 (WRA 2011a). Figure 3.4-4 depicts the distribution of known populations of Orcutt's pincushion in the Project site.

South Coast branching phacelia (*Phacelia ramosissima var austrolitoralis*): **CRPR List 3.2**. South Coast branching phacelia is a perennial forb in the borage family (*Boraginaceae*) that blooms from March to August. It typically occurs in sandy or well-drained substrate in chaparral, coastal dune, coastal scrub, and coastal salt marsh habitat at elevations ranging from 20 to 975 feet (CNPS 2014). Associated species include dune bush lupine, suffrutescent wallflower, pink sand verbena, California suncup, beach suncup (*Camissonia cheiranthifolia*), miniature suncup (*Camissonia micrantha*), and Madrid brome (*Bromus madritensis* ssp. *rubens*) (WRA 2011a). Approximately 600 individuals of South Coast branching phacelia were observed in the coastal dune habitat in the western portion of Area B during the April 2011 surveys (WRA 2011a). Figure 3.4-4 depicts the distribution of known populations of South Coast branching phacelia in the Project site.

Suffrutescent wallflower (*Erysimum suffrutescens*): CRPR 4.2. Suffrutescent wallflower is a perennial herb in the mustard family (*Brassicaceae*) that blooms from January to July. It typically occurs on sandy substrate in coastal bluff scrub, maritime chaparral, coastal dunes, and coastal scrub habitats at elevations ranging from 0 to 490 feet (CNPS 2014). Observed associated species include dune lupine, beach primrose, coastal goldenbush (*Ericameria ericoides)*, wire lettuce, silver beach weed, and pink sand verbena (WRA 2011a). This species is present in Los Angeles, Santa Barbara, San Luis Obispo, and Ventura counties (CNPS 2014), with 52 records from Los Angeles County in the area between Venice and Palos Verdes (CCH 2014). Approximately 29 individuals were observed in the coastal dune habitat in the western portion of Area B during the July 2010 and April 2011 rare plant surveys (WRA 2011a). Figure 3.4-4 depicts the distribution of known populations of suffrutescent wallflower in the Project site.

Woolly seablite (*Suaeda taxifolia*): CRPR 4.2. Woolly seablite is an evergreen shrub in the goosefoot family (*Chenopodiaceae*) that blooms from January to December. It typically occurs in coastal bluff scrub and coastal dunes and within the margins of coastal salt marshes and swamps at elevations ranging from 0 to 165 feet (CNPS 2014). Observed associated species include pickleweed species, chrysanthemum (*Chrysanthemum* sp.), slender leaf iceplant (*Mesembryanthemum nodiflorum*), and acacias (WRA 2011a).

This species is known to occur in Los Angeles, Orange, Santa Barbara, San Diego, and San Luis Obispo Counties in 15 USGS 7.5-minute quadrangle maps (CNPS 2014). The CNDDB does not provide records of List 4 species; however, there are 11 collection records from Los Angeles County in the area between Santa Monica and Palos Verdes, including collections made from Playa del Rey and Ballona Reserve between 1901 and 1981 (CCH 2014). Approximately 85 individuals of woolly seablite were observed on the edge of coastal brackish marsh habitat in the northwestern portion of Area B during the April 2011 rare plant surveys (WRA 2011a). Figure 3.4-4 depicts the distribution of known populations of woolly seablite in the Project site.

Special-Status Wildlife Species

Special-status wildlife species that are known to occur or may potentially occur within the Project site are presented in Table 3.4-4. These species are legally protected under CESA, FESA, or other regulations or are considered sufficiently rare by the scientific community to qualify for such a listing. Special-status wildlife species include:

1. Officially listed by the state or the Federal government as endangered, threatened, or rare;
2. A candidate for State or Federal listing as endangered, threatened, or rare;
3. Taxa designated by the Legislature as Fully Protected under Fish and Game Code Sections 3511 (birds), 4700 (mammals), and 5050 (reptiles and amphibians);
4. Taxa designated by the CDFW as California Species of Special Concern;
5. Taxa that meet the criteria for listing, even if not currently included on any list, as described in CEQA Guidelines Section 15380;
6. Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation (includes species with a CNDDB state rank of S1, S2, or S3);
7. Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California;
8. Taxa closely associated with a habitat that is declining in California at a significant rate (e.g., wetlands, riparian, vernal pools, old growth forests, desert aquatic systems, native grasslands, and valley shrubland habitats).
9. Taxa that are locally or regionally rare based on the opinion of a recognized expert or that are listed in a locally maintained list (e.g., Los Angeles County Sensitive Bird Species List) as rare.

Special-Status Invertebrates

Based on the database search and literature review, 21 special-status invertebrate species are reported as having occurred (historically and/or recently) in the Project region. Appendix D12 identifies each of these invertebrate species along with regulatory status, species requirements, and an evaluation of species potential to occur in the Project site.

State and Federally Listed Special-Status Invertebrates

Based on the database and literature review, five listed special-status invertebrate species have been reported in the vicinity of the Project site. Of these five, four listed special-status invertebrates (Palos Verdes blue butterfly, Quino checkerspot butterfly, Riverside fairy shrimp, and San Diego fairy shrimp) have a low potential to occur on-site because the study area is outside of the species' range, potentially suitable habitat is absent, and/or multiple surveys of the Project site during the previous 30 years have not found the species. Information on these species can be found in Appendix D12. El Segundo blue butterfly is the only listed invertebrate species that has been discovered in the Project site; this species is discussed further below.

**TABLE 3.4-4
SPECIAL-STATUS WILDLIFE SPECIES KNOWN TO OCCUR OR
POTENTIALLY OCCURRING WITHIN THE PROJECT SITE**

Species Name	Status	Potential to Occur/Habitat Requirements
Special-Status Invertebrates		
El Segundo blue butterfly *Euphilotes battoides allyni*	FE; S1	Confirmed Present. Historically ranged over the entire Los Angeles/ El Segundo Dunes and the northwestern Palos Verdes Peninsula in southwestern LA County. Currently distributed on three remnant habitats within its former range supporting coastal sand dunes with coast buckwheat (*Eriogonum parvifolium*). All life stages depend on coast buckwheat and possibly loose sand.
Monarch Butterfly *Danaus plexippus*	S2S3	Confirmed Present. Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (e.g., eucalyptus, Monterey pine, and cypress). (CNDDB 2014).
Wandering skipper *Panoquina errans*	S2	Confirmed Present. Distributed along a narrow coastal strip from Santa Barbara and Ventura to San Diego County. Often associated with host plant, saltgrass (*Distichlis spicata*) (CNDDB 2014).
Belkin's dune tabanid fly *Brennania belkini*	S1S2	Low Potential. Found in exposed sandy substrates within southern foredune and southern dune scrub plant communities. Adults fly from late May to early July and breed only on coastal sand dunes (CNDDB 2014).
Dorothy's El Segundo dune weevil *Trigonoscuta dorothea dorothea*	S1	Moderate Potential. Distributed only along coastal southern California from Point Dume to Point Fermin and is associated with southern dune scrub plant community.
Globose dune beetle *Coelus globosus*	S1S2	Moderate Potential. Inhabitant of coastal sand dune habitat, typically foredunes and sand hummocks, from Bodega Head in Sonoma County, south to Ensenada, Mexico.
Henne's eucosman moth *Eucosma hennei*	S1	Low Potential. Endemic to the Los Angeles/El Segundo Dunes in Los Angeles County. Species has been collected from and identified at the dunes in 1984. Larvae are stem and root borers of *Phacelia ramosissim* (CNDDB 2014).
Lange's El Segundo dune weevil (*Onychobaris langei)*	S1	Moderate Potential. Occurs in southern foredune and southern dune scrub plant communities. Possible food plant is an evening primrose (Oenothera sp.) (CNDDB 2014).
Western tidal flat tiger beetle *Cicindela gabbii*	S1	Low Potential. Found in salty coastal habitats including salt marshes, tidal flats, and beaches. Species burrows in or uses soil.
Western S-banded tiger beetle *Cicindela trifasciata sigmoidea*	SNR	Low Potential. Salty coastal habitats including salt marshes, tidal flats, beaches.
Special-Status Fish		
Southern California Steelhead *Oncorhynchus mykiss irideus*	FE; CSC; S1	Low Potential. Migrate into fresh water streams when sandbars breach during winter and spring rains. Occur in coastal streams with water temperatures < 15°C. Need cool, clear water with in-stream cover. Spawn in tributaries to large rivers or streams directly connected to the ocean. Spawning habitat consists of gravel substrates free of excessive silt. In 2008, observed in Ballona Creek approximately 2.5 miles upstream of the Marina Freeway overpass; however, focused aquatic surveys from 2009-2011 have not detected this species on the Project site (Johnston et al. 2012; 2015b). No spawning habitat available in Ballona Creek.
Special-Status Reptiles		
Green sea turtle *Chelonia mydas*	FT; S1	Low Potential. Inhabits coastal areas for benthic feeding and beaches for nesting. In the eastern North Pacific, green sea turtles have been sighted from Baja California to southern Alaska. While Pacific greens commonly occur from San Diego southward, they have an established population at the Los Cerritos Wetlands, 30 miles to the south. Rare sightings are reported in Ballona Creek.

TABLE 3.4-4 (Continued)
SPECIAL-STATUS WILDLIFE SPECIES KNOWN TO OCCUR OR POTENTIALLY OCCURRING WITHIN THE PROJECT SITE

Species Name	Status	Habitat Requirements
Special-Status Reptiles (cont.)		
Silvery legless lizard *Anniella stebbinsi* [=*Anniella pulchra pulchra*]	CSC; S3	Confirmed Present. Occurs in moist warm loose soil with plant cover; sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Leaf litter under trees and bushes in sunny areas and dunes stabilized with bush lupine and mock heather often indicate suitable habitat. Found under surface objects such as rocks, boards, driftwood, and logs. Sometimes found in suburban gardens in Southern California. Soil characteristics, as well as requirements for soil moisture and relatively cool microclimates (about 93° F maximum) limit distribution.
San Bernardino ring-necked snake (*Diadophis punctatus modestus*)	S2	Confirmed Present. Elevation range for the species as a whole is from sea level to about 7000 feet (2100 m). Prefers moist, open, rocky areas within valley-foothill, mixed chaparral, and annual grassland habitats where it preys on salamanders, frogs, lizards, snakes, and earthworms.
Special-Status Birds		
Belding's savannah sparrow *Passerculus sandwichensis beldingi*	SE; S3	Confirmed Present as Breeder and Forager. Locally common non-migratory resident of coastal saltmarsh. It is an obligate breeder in middle elevation saltmarsh, nearly always characterized by pickleweed (*Salicornia* spp.), either in tidal situations or non-tidal alkaline flats nearby. Although the majority of its subsistence stems from the saltmarsh and closely adjacent mudflat, individuals, particularly post-breeding birds, can be found foraging in a wide variety of habitats including upper marsh, adjacent ruderal and ornamental vegetation, open beach and mudflat, and even dirt and gravel parking lots.
California least tern *Sternula antillarum browni*	FE; SE; CFP; S2	Low Potential as Breeder; Low Potential as Forager. Nests on sandy upper ocean beaches, open barren sites, and occasionally uses mudflats. Forages on adjacent surf line, estuaries, or the open ocean. Colonies are located near the ocean shoreline (within 0.5 miles [about 800 meters]), typically on nearly flat, loose sandy substrates with lightly scattered short vegetation and debris, although some colonies have been located on hard-packed surfaces, even unused asphalt. Colony sites must provide access to the shoreline for juveniles, and must be relatively free of predators or the colony may abandon breeding efforts before completion. This species attempted to breed onsite in 2014, but was unsuccessful.
Coastal California gnatcatcher *Polioptila californica californica*	FT; CSC; S2	Low Potential as Breeder and Confirmed Present as Forager. Generally prefers open sage scrub with California sagebrush (*Artemisia californica*) as a dominant or co-dominant species. Nest placement typically in areas with less than 40 percent slope gradient. Monogamous pairs tend to stay in the same locale. Both parents build nest, incubate, and care for young.
Least Bell's vireo *Vireo bellii pusillus*	FE; SE; S2	Confirmed Present as Breeder and Forager. Nesting elevation ranges from below sea level to at least 4,100 feet. The subspecies winters in southern Baja California. Least Bell's Vireos select dense vegetation low in riparian zones for nesting.
Light-footed Ridgway's Rail *Rallus longirostris levipes*	FE; SE; CFP; S1	High Potential as Breeder. Confirmed Present as Forager. This subspecies of the large and widespread light-footed Ridgway's rail is restricted to the lower elevations of coastal marshes with active tidal flow and dense pickleweed and/or cordgrass thickets from Hueneme, Ventura County (formerly to Santa Barbara County) south to Bahia de San Quintin, Baja California, Mexico. No substantial seasonal movements occur, although rare individuals wander away from known breeding locales.
Burrowing owl *Athene cunicularia*	CSC; S3	Low Potential as Breeder; Confirmed Present as Forager. Level, open, dry, heavily grazed or low grassland or desert vegetation with available burrows. In coastal Southern California, a substantial fraction of Burrowing Owls are found in microhabitats highly altered by humans, including flood risk management and irrigation basins, dikes, banks, abandoned fields surrounded by agriculture, and road cuts and margins. Several factors in combination probably explain the species' distribution on local scales: vegetation density, availability of suitable prey, availability of burrows or suitable soil, and disturbance.

TABLE 3.4-4 (Continued)
SPECIAL-STATUS WILDLIFE SPECIES KNOWN TO OCCUR OR POTENTIALLY OCCURRING WITHIN THE PROJECT SITE

Species Name	Status	Habitat Requirements
Special-Status Birds (cont.)		
Least bittern *Ixobrychus exilis*	CSC; S2	Confirmed Breeder and Forager. This cryptic bird inhabits a variety of dense emergent wetlands, especially favoring extensive bulrush, but also occurring in cattail and even salt cedar when inundated or along the immediate edge of waterways. Both fresh, brackish, and occasionally salt water are used in coastal southern California. Principal food is said to be small fish, but it also takes crustaceans, amphibians, small mammals, and arthropods. It is rare and local in coastal southern California during the breeding season, and is even more rarely found in winter due to an uncertain combination of migration, increased secretiveness, and/or decreased vocalization. Noted to breed in the Freshwater Marsh from 2005 through 2010 (Read and Strecker 2010).
California towhee *Melozone crissalis*	LAC	Confirmed Present as Breeder and Forager. Found in dense chaparral scrub that lines coastal slopes and foothills of California and southern Oregon. They also occur along streams and canyon bottoms adjacent to desert slopes, where they live amid manzanita, buckthorn, madrone, foothill pines, and a variety of oaks. As cities and suburbs sprang up in California, towhees moved right in to shrubby backyards and city parks.
Western meadowlark *Sturnella neglecta*	LAC; SBBW	Confirmed Present as Breeder and Forager. A common resident throughout most of the state, except in higher mountains. Occurs in herbaceous and cropland habitats with sufficient ground cover for concealment. Where such habitats form understory open wooded and brushy habitats also used. Among cultivated crops, particularly favors alfalfa. Feeds in open, grassy areas, gleaning food from ground or low plants; also turns over objects and probes in soft earth. Requires relatively dense, grassy habitat with vegetation tall enough to provide cover, along with a few low perches. Scattered trees and shrubs may be present, but not required.
Common ganule *Gallinula galeata*	SBBW	Confirmed Present as Breeder and Forager; Moderate Potential as Forager. Breeds principally in permanently flooded, nontidal, deep marshes and slightly brackish or freshwater tidal marshes, where robust emergent grasslike plants about 1–4 m tall are interspersed with pools and channels that have floating-leaved and submerged plants, or with mudflats. Uncommon transient with recent breeding at the Freshwater Marsh.
Cooper's hawk *Accipiter cooperii*	WL (Nesting); S4	High Potential as Breeder; Confirmed Present as Forager. This medium sized hawk specializing in hunting small birds in closed quarters. This species is now a locally common breeder throughout the Los Angeles Basin in residential and even urban habitats if tall trees are present.
Loggerhead Shrike *Lanius ludovicianus*	CSC; S4	Low Potential as Breeder; High Potential as Forager. It forages in open country of many types (including non-intensive agricultural areas) and nests in small trees and large shrubs, often at the edges of such open areas. Like most birds of prey, this species generally occur in low densities. The species is widely distributed in southern California.
Tricolored blackbird *Agelaius tricolor*	CSC; S1S2	Low Potential as Breeder and Forager. Range is restricted to the Central Valley and surrounding foothills, throughout coastal and some inland localities in southern California, and scattered sites in Oregon, western Nevada, central Washington, and western coastal Baja California. Breed in dense colonies and may travel several kilometers to secure food for their nestlings; males defend small territories within colonies and mate with 1 to 4 females. They are itinerant breeders, nesting more than once at different locations during the breeding season.
Virginia rail *Rallus limicola*	LAC	Moderate Potential as Breeder; High Potential as Forager. Secretive freshwater marsh bird that is more often heard than seen. A habitat generalist, this species probes mudflats and shallow water with its long, slightly decurved bill searching for invertebrates, small fish, and the occasional seed. Vagrancy and generalist habits allow it to exploit a highly ephemeral niche.

TABLE 3.4-4 (Continued)
SPECIAL-STATUS WILDLIFE SPECIES KNOWN TO OCCUR OR POTENTIALLY OCCURRING WITHIN THE PROJECT SITE

Species Name	Status	Habitat Requirements
Special-Status Mammals		
Pacific pocket mouse *Perognathus longimembris pacificus*	FE; CSC; S1	Low Potential. It is an obligate resident of fine-grained sandy soils of Coastal Strand, Coastal Dunes, River and Marine Alluvium, and Coastal Sage Scrub in close proximity to the ocean, and has never been collected more than 2 miles (about 3 kilometers) from the coast or above 600 feet (about 180 meters) elevation. It appears that occurrences are closely associated with loose or friable soils that permit burrowing.
Townsend's big-eared bat *Corynorhinus townsendii pallescens*	Candidate as State Threatened; CSC; S2	Low Potential. Occurs throughout the drier portions of California. It is non-migratory, and hibernates from approximately October through April. They take a variety of prey, but primarily larger insects, especially moths. Known roost sites have been in caves, lava tubes, mines, tunnels, buildings and other man-made structures. Foraging habitats include coniferous forests and pinyon-juniper woodlands, deciduous riparian woodlands, and desert lands.
South Coast marsh vole *Microtus californicus stephensi*)	CSC; S1S2	Confirmed Present. Occurs in the area of tidal marshes in Los Angeles, Orange, and southern Ventura Counties.
Southern California salt marsh shrew *Sorex ornatus salicornicus*	CSC; S1	Moderate Potential. Occurs in coastal marshes in Los Angeles, Orange and Ventura counties. Based on other studies of shrews, may require dense ground cover, nesting sites above mean high tide and free from inundation.

NOTES:

Federal
FE = Endangered
FT = Threatened
FC = Candidate

State
SE = Endangered
ST = Threatened
CSC = Species of Special Concern
CFP = Fully Protected Species
WL= California Watchlist (formerly a Species of Special Concern; limited protection)

Local
LAC= Los Angeles County Bird Species of Special Concern (may include species categorized as "Part 1", "Part 2", or "Watchlist"- Los Angeles County Sensitive Bird Species Working Group 2009)
SBBW = Special-status Bird Species of the Ballona Wetlands. Cooper, D.S. 2005.
Important note by Cooper, D.S.: The information is based on dozens of sources compiled by the author since 2003, including the unpublished field notes of Kimball Garrett, Art Pickus, Robert Shanman, and many others; the Los Angeles Audubon Society newsletter "The Western Tanager"; the "Southern California" section of North American Birds/Audubon Field Notes; historical publications (e.g. von Bloeker 1943); consulting reports (prepared by Keane Biological Consultants, among others), and 3000+ combined field hours (since 2003) of a network of c. 10 birders active in the Ballona Valley on a daily basis.

Other
ABC:WLBCC = American Bird Conservancy: United States Watchlist of Birds of Conservation Concern

Note: The California Natural Diversity Database (CNDDB) uses the same ranking methodology originally developed by The Nature Conservancy and now maintained and recently revised by NatureServe. The state rank (S-rank) refers to the imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represent a letter + number score that reflects a combination of Rarity, Threat, and Trend factors, with weighting being heavier on Rarity than the other two.

S1 = Critically Imperiled - Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.
S2 = Imperiled - Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.
S3 = Vulnerable - Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.
S4 = Apparently Secure - Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.
S5 = Secure - Common, widespread, and abundant in the state.
SH = All sites are historical; the element has not been seen for at least 20 years, but suitable habitat still exists.
SX = All sites are extirpated.

Uncertainty about the rank of an element is expressed in two major ways:
- By expressing the ranks as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3.
- By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less certainty than S2.

SNR – Unranked, but considered special-status in The Ballona Wetlands Ecological Reserve Baseline Assessment Program: 2010–2011 Final Report (Johnston et al. 2012).

SOURCE: WRA

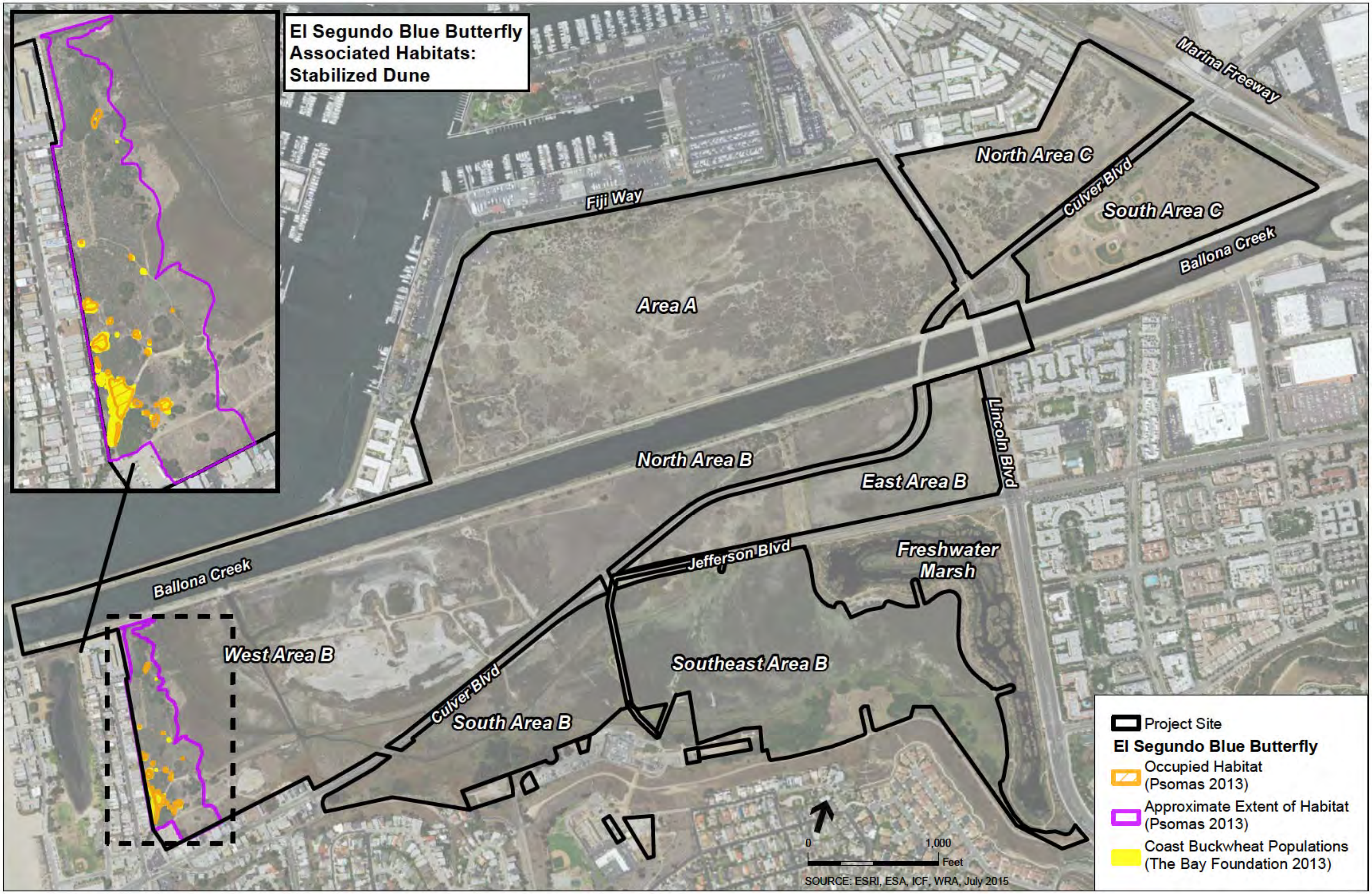
El Segundo blue butterfly (*Euphilotes battoides allyni*): Federally listed as Endangered; State Rank= S1. The El Segundo blue butterfly (ESB), in the family Lycaenidae, is part of the insect community of the El Segundo sand dunes ecosystem. The life cycle of the ESB is tied intimately to coast buckwheat (*Eriogonum parvifolium*), as survival of each of its four life stages (i.e., egg, larva, pupa, and adult) all depend on this plant. The adult stage typically ranges from 4 days to 2 weeks and normally commences in mid-June and lasts until early September. Adults consume coast buckwheat pollen and nectar, and mate and lay eggs on coast buckwheat flowers. Eggs hatch within 3 to 5 days, and larvae undergo four developmental stages prior to pupation (change from larval to pupal stage). During the larval ("caterpillar") stage, individuals remain concealed within flower heads and feed primarily on coast buckwheat seeds. Upon pupation, individuals fall to the ground and remain buried either underground or in the leaf litter at the base of the coast buckwheat until they emerge as adult butterflies. The pupal ("cocoon") stage lasts for 1 year or more (PSOMAS 2015).

The Friends of Ballona Wetlands have been actively restoring a small portion of the Ballona Reserve for over 35 years. Their efforts have been focused on the dune habitat areas at the western terminus of the Reserve. Due to the significant restoration efforts, the site contains primarily native coastal dune vegetation species and riparian thickets that intergrade with the marsh vegetation. Plant community mapping in 2013 identified 12.6 acres of restored dunes that support eight plant communities and nine buckwheat areas. Focused butterfly surveys by the Friends of Ballona Wetlands have identified El Segundo blue butterfly in the Ballona saltwater marsh from 2011 to 2016 (Friends of Ballona Wetlands and PSOMAS, 2016). In other focused surveys, a total of 199 butterflies were observed in 2013 and 504 were observed in 2015 (PSOMAS 2013; PSOMAS 2015). Figure 3.4-5, *El Segundo Blue Butterfly Habitat*, depicts the distribution of 12.6 acres of potentially suitable ESB habitat, including coast buckwheat, within the Project site.

Non-listed Special-Status Invertebrates

Based on the database and literature review, 16 nonlisted special-status invertebrate species are reported in the Project region. Of these, seven are likely absent because the study area is outside of the species' range, potentially suitable habitat is absent, and/or multiple surveys of the Project site during the previous 30 years have not found the species. Of the remaining nine species (discussed below), two are confirmed as present (Monarch butterfly [wintering] and wandering skipper [*Panoquina errans*]) and seven species are considered to have a potential to occur based on historical occurrences and the presence of suitable conditions in the Project site: Belkin's dune tabanid fly (*Brennania Belkini*), Dorothy's El Segundo dune weevil (*Trigonoscuta dorothea dorothea*), Globose dune beetle (*Trigonoscuta dorothea dorothea),* Henne's eucosman moth (*Eucosma Hennei),* Lange's El Segundo dune weevil (*Onychobaris Langei*), Western tidal flat tiger beetle (*Cicindela gabbii*), and Western S-banded tiger beetle (*Cicindela trifasciata sigmoidea*).

Monarch butterfly (*Danaus plexippus*): State Rank= S2S3. An estimated 1,000 individual Monarch butterflies were observed roosting in Area B in December 1997 (CDFW 2014). This species also was reported by Nagano et al. (1981), Mattoni (1991), and Johnston et al. (2011, 2012, 2015b). Monarch butterflies were the most commonly seen of all insects, although populations varied, with at least 500 in mid-October 1990 until the end of February 1991, and a maximum of 5,000 in January 1991 (Mattoni 1991). Fall/winter roosting habitat for this species is closely associated with the eucalyptus grove in Area B (Mattoni 1991) and individuals may forage throughout the Project site (Johnston et al. 2011, 2012). Area C supports narrowleaf milkweed (*Asclepias fascicularis*), which is used as a larval host plant (PWA 2006).



Ballona Wetlands Restoration Project

Figure 3.4-5
El Segundo Blue Butterfly Habitat

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Figure 3.4-6, *Monarch Butterfly Habitat*, depicts eucalyptus stands that support wintering habitat, and other suitable non-wintering habitat for Monarch butterflies.

Wandering skipper (*Panoquina errans*): State Rank= S2. Wandering skipper were reported in Area A and Area B during surveys in 1995, 1991, and 1981 (PSOMAS and Lockhart 2001, Hawks Biological Consulting 1996, Mattoni 1991, and Nagano 1981). Johnston et al. (2011, 2012) reported ancillary observations of wandering skipper in the lower marsh habitat of western Area B during vegetation surveys. Figure 3.4-7, *Wandering Skipper Habitat*, depicts the distribution of potentially suitable habitat for wandering skipper.

Belkin's dune tabanid fly (*Brennania Belkini*): State Rank= S1S2. Belkin's dune tabanid fly inhabits coastal sand dunes of Southern California (CDFW 2014). In 1980, one adult was taken on the sand dunes and larvae were collected below the soil surface (CDFW 2014), but the species not been found in the Project region since the 1980s (Mattoni 1991). The distribution of potentially suitable habitat for this species is depicted on Figure 3.4-8, *Habitat Potentially Occupied by Special-Status Terrestrial Invertebrates Associated with Dunes*.

Dorothy's El Segundo dune weevil (*Trigonoscuta dorothea dorothea*): State Rank= S1. Dorothy's El Segundo dune weevil was found in Area B in 1995 and more recently in the dune system immediately west of Area B (Hawks Biological Consulting 1996, PSOMAS and Lockhart 2001). It was the fifteenth most common insect collected by pitfall traps in 1991 and one of the most abundant weevils on the dunes (Mattoni 1991). The distribution of potentially suitable habitat for this species is depicted on Figure 3.4-8.

Globose dune beetle (*Coelus globosus*): State Rank= S1S2. The globose dune beetle was found in Area B in 1995, and more recently in the dune system immediately west of Area B (Hawks Biological Consulting 1996, PSOMAS and Lockhart 2001). It also occurs at the Los Angeles Airport dunes (Mattoni 1991). The distribution of potentially suitable habitat for these species is depicted on Figure 3.4-8.

Henne's eucosman moth (*Eucosma Hennei*): State Rank= S1. Henne's eucosman moth is endemic to the El Segundo Dunes (type locality), Los Angeles County. Its larval food plant is *Phacelia ramosissima* var *austrolitoralis*, which is present in the dune system in West Area B. The distribution of potentially suitable habitat for these species is depicted on Figure 3.4-8.

Lange's El Segundo dune weevil (*Onychobaris Langei*): State Rank= S1. Lange's El Segundo dune weevil was found to inhabit the dune system immediately west of Area B (PSOMAS and Lockhart 2001). It was also collected by Nagano et al. 1981 and Mattoni 1991. The distribution of potentially suitable habitat for these species is depicted on Figure 3.4-8.

Western tidal flat tiger beetle (*Cicindela gabbii*): State Rank= S1. Western tidal flat tiger beetle inhabits estuaries and mudflats along the coast of Southern California. This species generally is found on dark-colored mud in the lower zone and occasionally found on dry saline flats of estuaries (CDFW 2014). Figure 3.4-9, *Habitat Potentially Occupied by Special-Status Terrestrial Invertebrates Associated with Salt Marsh*, depicts the distribution of potentially suitable habitat for this tiger beetle.

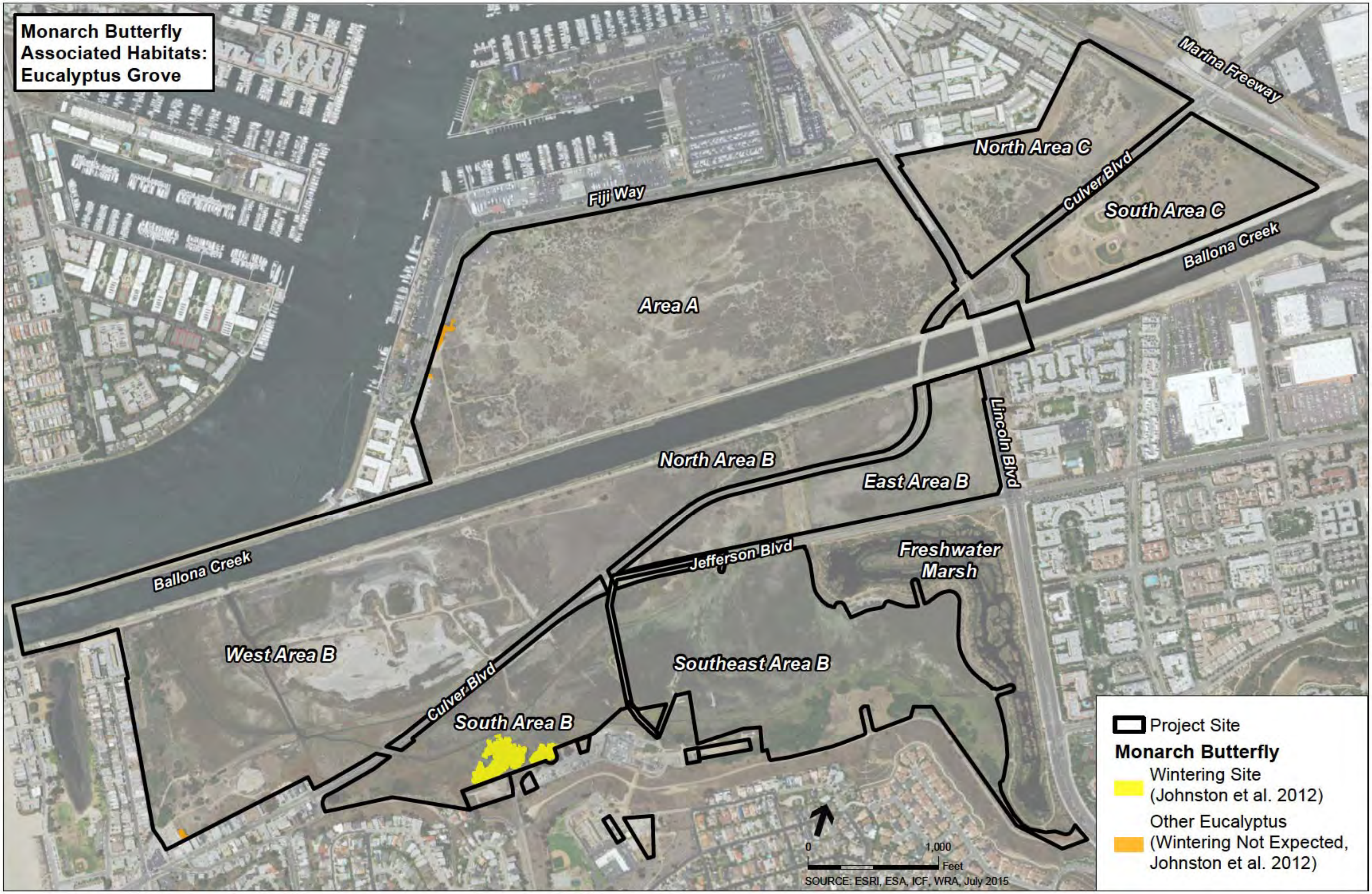

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Figure 3.4-6
Monarch Butterfly Wintering Site

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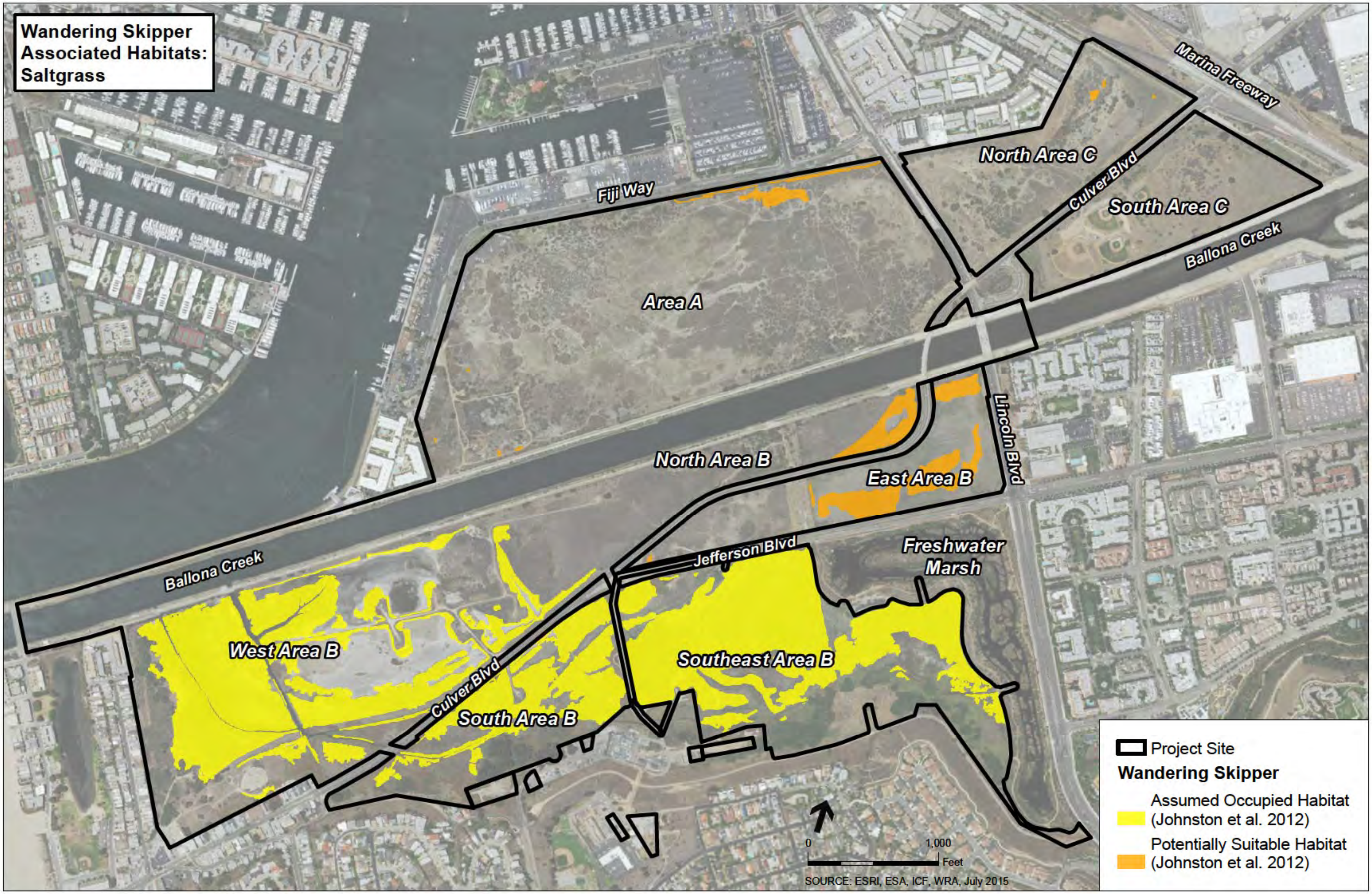

Ballona Wetlands Restoration Project

Figure 3.4-7
Wandering Skipper Habitat

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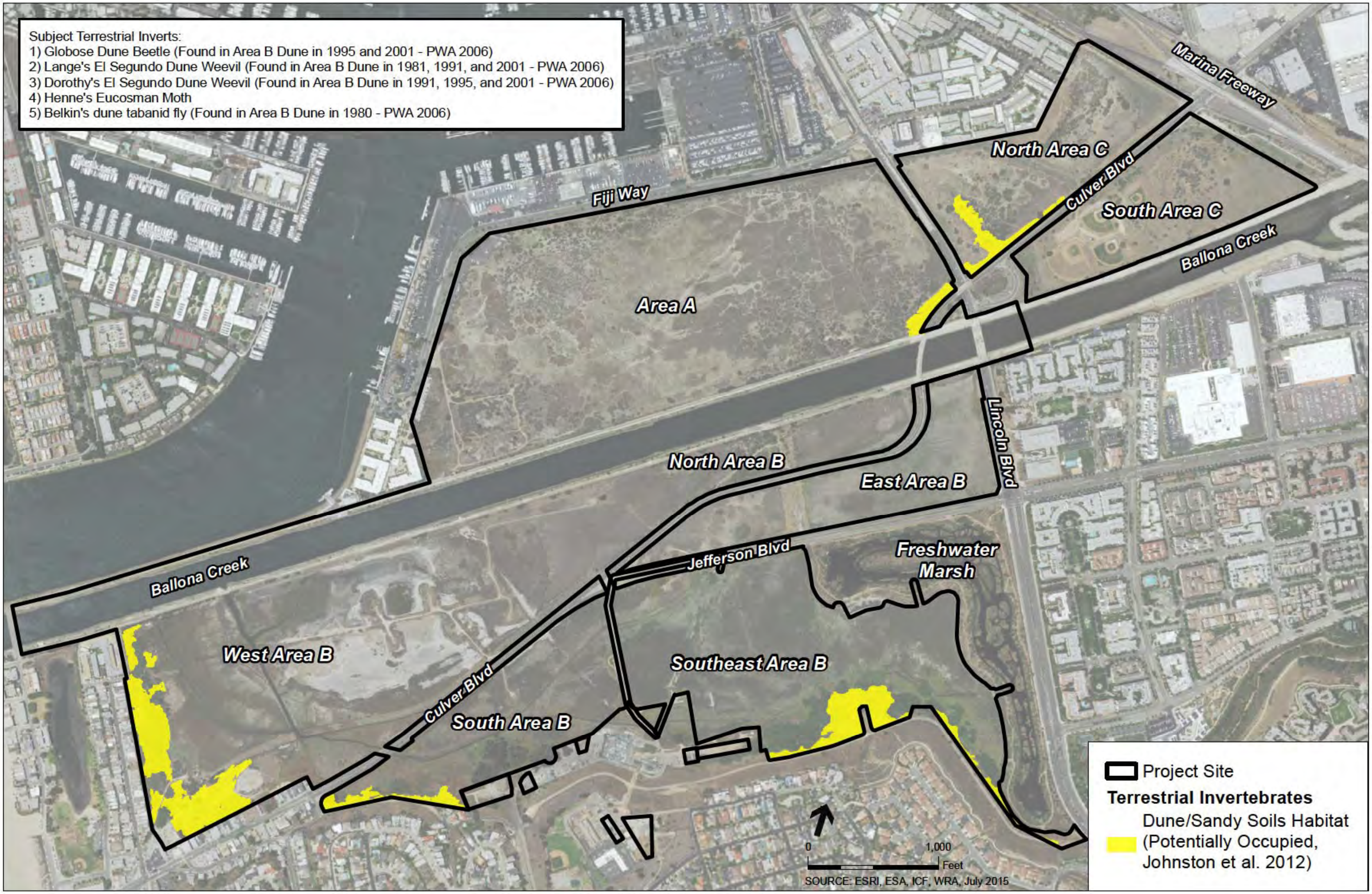

Ballona Wetlands Restoration Project

Figure 3.4-8
Habitat Potentially Occupied by Special-Status Terrestrial Invertebrates Associated with Dunes

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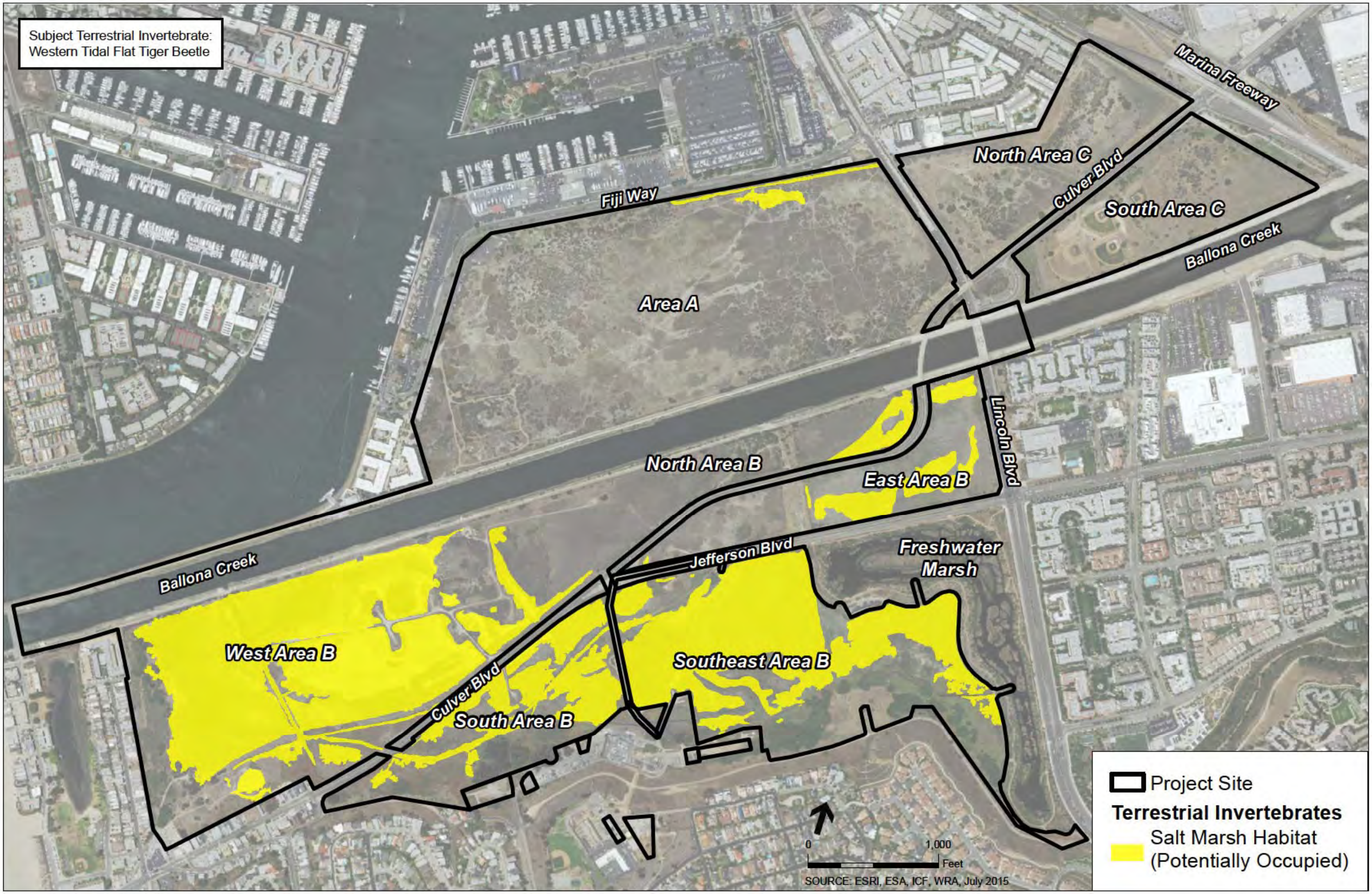

Ballona Wetlands Restoration Project

Figure 3.4-9
Habitat Potentially Occupied by Special-Status Terrestrial Invertebrates Associated with Salt Marsh

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Western S-banded tiger beetle (*Cicindela trifasciata sigmoidea*): State Rank= SNR. Western S-banded tiger beetle was found in Area A and Area B in 1995 (Hawks Biological Consulting 1996). Figure 3.4-8 depicts the distribution of potentially suitable habitat for this tiger beetle. Potentially suitable habitat was defined to include areas underlain by sandy soils, which includes areas mapped as "dune" or "non-native dune" by The Bay Foundation (2014).

Special-Status Fish

Based on the database search and literature review, seven special-status fish species are reported from the regional area. Appendix D12 names each of these species along with regulatory status, habitat requirements, and an evaluation of the potential for the species to occur within the Project site.

State and Federally Listed Special-Status Fish

Of the seven special-status fish species identified during the database and literature review, five species are listed as federally endangered or threatened: Santa Ana sucker (*Catostomus santaanae*), tidewater goby (*Eucyclogobius newberryi*), unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), Southern California steelhead (*Oncorhynchus mykiss irideus*), and Mohave tui chub (*Siphateles bicolor mohavensis*). Unarmored threespine stickleback is also a state-listed endangered species and fully protected by CFDW. The seven special-status fish species are deemed to have a less than reasonable likelihood of occurring because the study area is outside of the species' range, potentially suitable habitat is absent, and/or multiple surveys of the Project site have not found the species, and are therefore not further discussed in this analysis.

Southern California Steelhead (*Oncorhynchus mykiss irideus*): Federally listed as Endangered; California Species of Special Concern; State Rank = S1. On March 12, 2008, two steelhead were observed upstream of the Project site in Ballona Creek, underneath the Overland Avenue overpass in Culver City, approximately 2.5 miles upstream of the Marina Freeway overpass (Johnston et al. 2011). There is no high quality foraging habitat for steelhead in Ballona Creek due to concrete-lined channels upstream of Culver Boulevard. Further, the limited amount of habitat in upstream areas would not support steelhead spawning or rearing. Several focused aquatic surveys conducted between 2009-2011 did not detect steelhead within the Project site (Johnston et al. 2012; Johnston et al. 2015b); however, this species is expected to have a less than reasonable likelihood of occurring due to the lack of suitable conditions, the species not being detected during recent surveys, and/or the Project site being outside their known range, and therefore are not further discussed in this analysis.

Non-listed Special-Status Fish

Of the seven special-status fish species identified during the database and literature review, two are nonlisted: arroyo chub (*Gila orcutti*) and Santa Ana speckled dace (*Rhinichthys osculus*). Both of these species are deemed to have a less than reasonable likelihood of occurring because the study area is outside of the species' range, potentially suitable habitat is absent, and/or multiple surveys of the Project site have not found either species, and are therefore not further discussed in this analysis.

Special-Status Reptiles and Amphibians

Eleven special-status reptile and amphibian species are reported in the Project region. Appendix D12 lists each of these species along with regulatory status, species requirements, and an evaluation potential occurrence within the Project site.

State and Federally Listed Special-Status Reptiles and Amphibians

Based on the database and literature review, no listed special-status reptiles are reported as occurring within the Project site; however, one listed reptile and two listed amphibian species are reported in the regional vicinity of the Project site: green sea turtle (*Chelonia mydas*), and arroyo toad (*Anaxyrus californicus*) and California red-legged frog (*Rana draytonii*), respectively.

Green sea turtles, except during migration, can be found in the shallow waters of inlets and bays with lush seagrass and algae for foraging. Gradually sloped, undisturbed beaches are required for sea turtle nesting. Thermal selection seems to be a contributing factor for turtle foraging aggregations in San Diego Bay and Long Beach/Seal Beach (Crear et al. 2016). Green sea turtles have been documented year-round in San Diego County and in the San Gabriel River, which offer warm water temperatures. A relatively smaller population of green sea turtles can be found in Orange County and southern Los Angeles County in such areas as Seal Beach National Wildlife Refuge, Bolsa Chica, Alamitos Bay, Anaheim Bay, and 7th Street Basin, as well as occasionally in the Los Angeles River (Crear et al. 2016). Green sea turtles have been known to forage for seagrass in the waters as far north as Long Beach; however, there are recent, albeit uncommon, green sea turtle sightings reported in Santa Monica Bay owing to the somewhat unusual general warming of coastal waters (Bearzi 2014). However, due to lack of required water temperatures, food sources, and nesting habitat within Ballona Creek and the Ballona Reserve, these areas generally do not offer suitable foraging or nesting habitat for green sea turtles. In brief, the Ballona Reserve does not provide lagoons and shoals with an abundance of marine grass and algae (foraging habitat) or open beaches with a sloping platform and minimal disturbance (nesting habitat). Also, unlike at San Diego Bay and Long Beach/Seal Beach, the Ballona Reserve is not a thermal hot spot where turtles are expected to aggregate. Also, green sea turtles have strong nesting site fidelity and often make long distance migrations between feeding grounds and nesting beaches (Crear et al. 2016). Such turtle nesting and foraging has not been observed at the Ballona Reserve. Hence, while an individual green sea turtle could swim into Ballona Creek, such behavior is not expected.

The arroyo toad and California red-legged frog have no potential to occur and are considered absent from the Project site. The study area is outside of these species' described ranges and potentially suitable habitat is absent from the site. Therefore, these species are not further discussed in this analysis.

Nonlisted Special-Status Reptiles and Amphibians

Eight nonlisted special-status reptile and amphibian species occur in the Project region. Of these, the western pond turtle (*Actinemys marmorata*), is considered to have a less than reasonable likelihood of occurring due to the lack of suitable conditions, the species not being detected during surveys, and/or the Project site being outside its known range. Five species are determined to have a low potential to occur based on marginal or minimal suitable habitat and/or this species has not been detected in the Project site for at least several decades: coastal whiptail (*Aspidoscelis tigris stejnegeri*), coast horned lizard (*Phrynosoma blainvillii*), western spadefoot toad (*Spea* *hammondii*), two-striped garter snake (*Thamnophis hammondii*), and south coast garter snake (*Thamnophis sirtalis* ssp.). Therefore, these five species are not further discussed in this analysis. The remaining two species, **s**ilvery legless lizard and San Bernardino ring-necked snake, are confirmed as present within the Project site and are discussed below.

Silvery legless lizard (*Anniella stebbinsi* [=*Anniella pulchra pulchra*]): California Species of Special Concern; State Rank = S3. The silvery legless lizard (= Southern California legless lizard, *Anniella stebbinsi*) occurs in moist, warm, loose soil with plant cover, sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Leaf litter under trees and bushes in sunny areas and dunes stabilized with bush lupine and mock heather often indicate suitable habitat. This species often is found under surface objects such as rocks, boards, driftwood, and logs. Soil characteristics and requirements for soil moisture and relatively cool microclimates (about 93°F maximum) limit distribution. Silvery legless lizards regularly have been observed in the restored, stabilized dune habitat in West Area B (Johnston et al. 2011) and was documented in the stabilized dune habitat of Southeast Area B in 2010 (Johnston et al. 2011). It has not been observed in the stabilized dune habitat of Area C despite repeated surveys, and it is presumed absent in this area. See Figure 3.4-10, *Silvery Legless Lizard Habitat*, which depicts the distribution of potentially suitable habitat for Southern California legless lizard within the Project site.

San Bernardino ring-necked snake (*Diadophis punctatus modestus*): State Rank = S2. The San Bernardino ring-necked snake occurs in open, rocky areas often associated with moist microhabitats near intermittent streams. It avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous vegetation (CDFW 2014). This species was observed in central Area B in 2011(Johnston et al. 2012). Figure 3.4-11, *Potentially Suitable Habitat for San Bernardino Ring-necked Snake*, identifies the distribution of potentially suitable habitat for San Bernardino ring-necked snake within the Project site.

Special-Status Birds

One-hundred thirteen special-status bird species occur in the Project region. Appendix D12 identifies these species along with their regulatory status, habitat requirements, and an evaluation of the potential for the species to occur in the Project site.

State and Federally Listed Special-Status Birds

Eighteen listed special-status bird species are reported in the vicinity of the Project site. Of these, 11 are deemed to have a less than reasonable likelihood of occurring in a breeding or foraging role because the study area is outside of the species' range, potentially suitable habitat is absent, and/or multiple surveys of the Project site have not found the species, and are therefore not further discussed in this analysis. As a species that formerly bred and recently was observed in the Project site, light-footed Ridgway's rail is discussed further in this section.

Of the remaining seven species, two (discussed below) are known to breed in the Project site (Belding's savannah sparrow and least Bell's vireo). The other five are considered to have a potential to occur in a foraging role in and/or adjacent to the Project site and include the following: California least tern, coastal California gnatcatcher, western snowy plover (*Charadrius alexandrinus nivosus*), white-tailed kite (*Elanus leucurus*). Willow flycatcher (*Empidonax traillii*) could pass through the site in a transient capacity during migration, but has

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Figure 3.4-10
Silvery Legless Lizard Habitat

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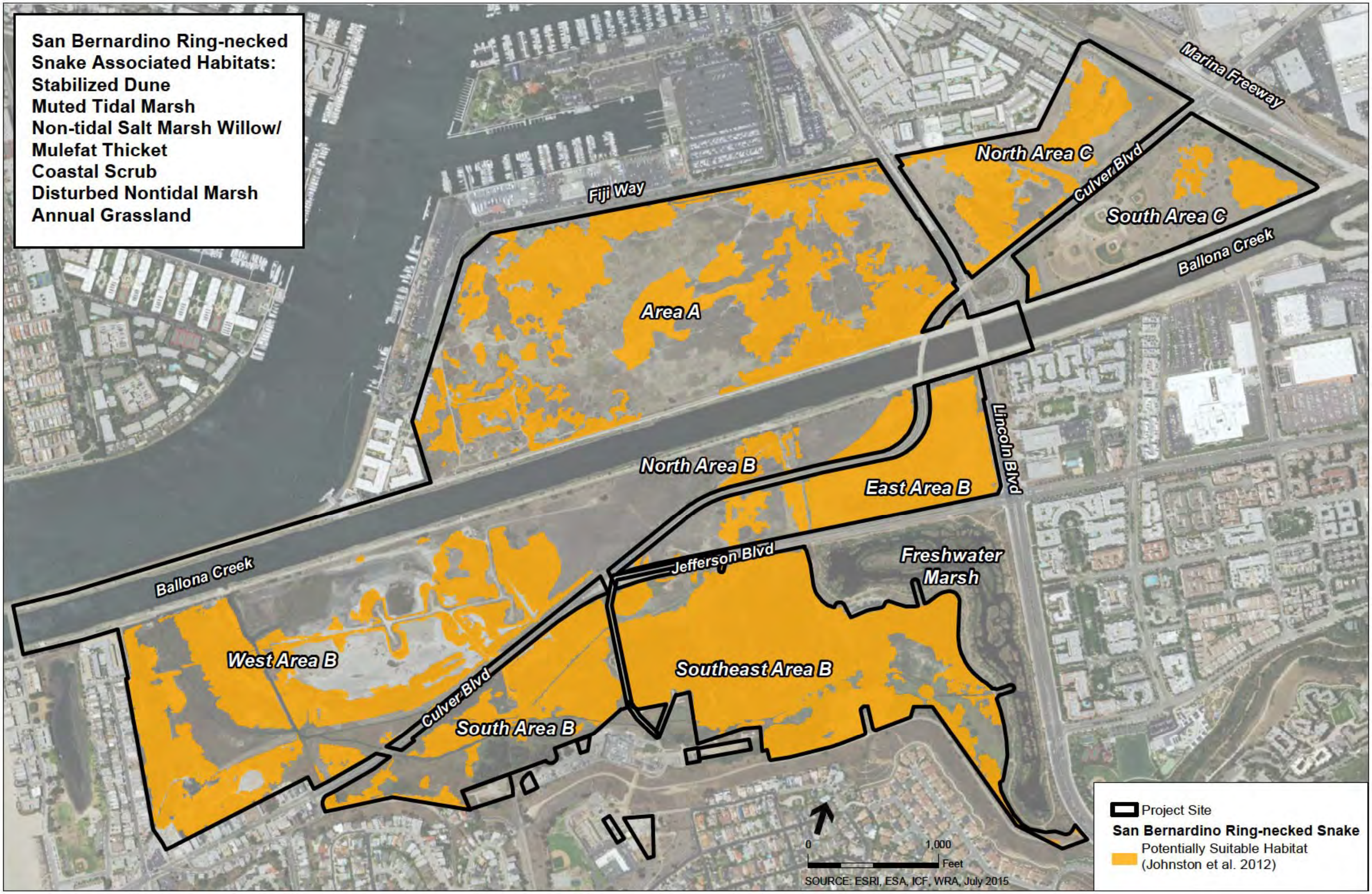

Ballona Wetlands Restoration Project

Figure 3.4-11
Potentially Suitable Habitat for San Bernardino Ring-necked Snake

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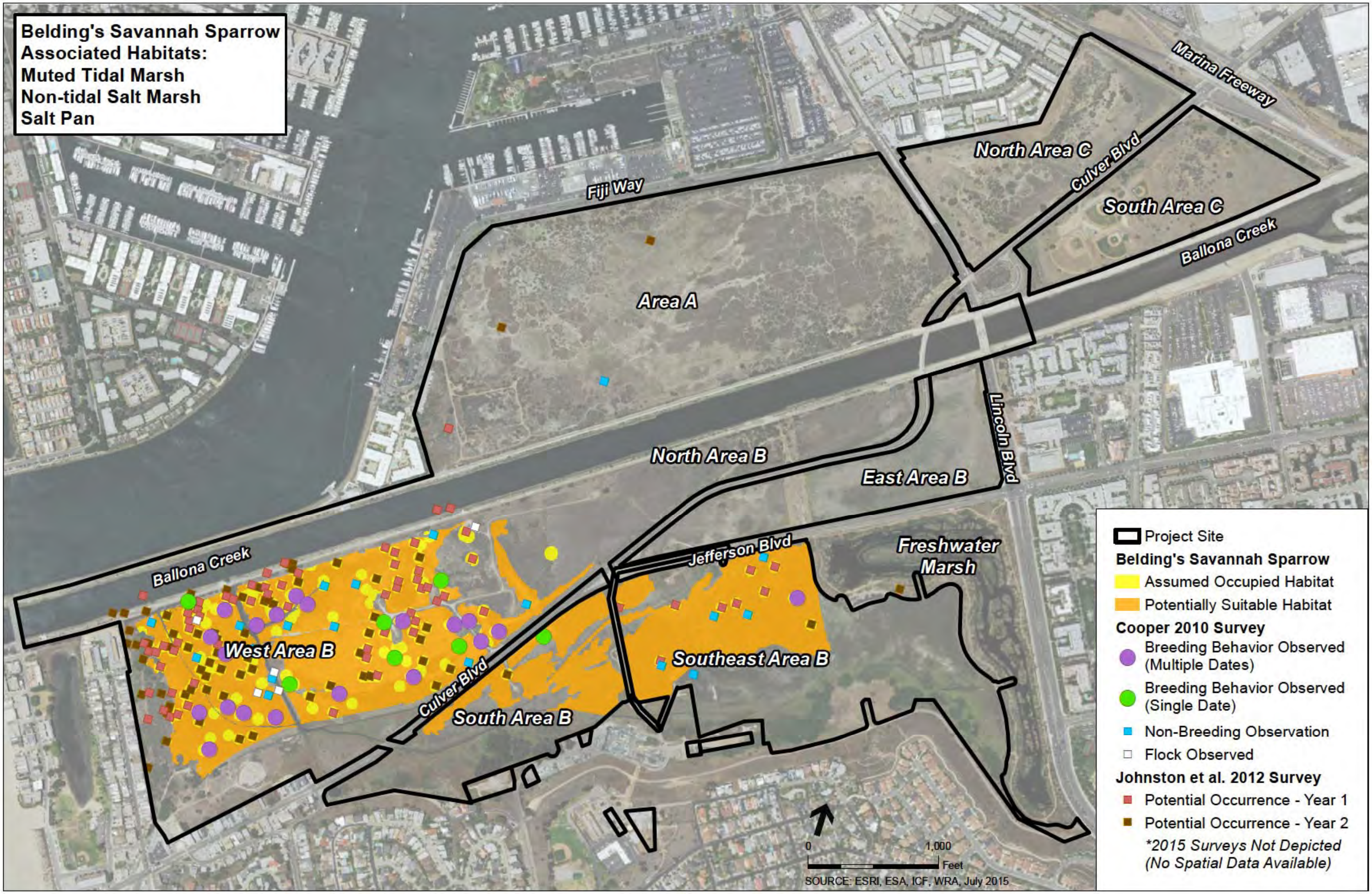
not been observed at the Ballona Reserve. Appendix D12 identifies each of these species along with regulatory status, species requirements, and an evaluation of the potential for the species to occur within the Project site.

Belding's savannah sparrow (*Passerculus sandwichensis beldingi*): California listed as Endangered; State Rank = S3. The Belding's savannah sparrow ranges from Morro Bay south to El Rosario, Baja California (Wheelwright and Rising 1993) and nests at the Ballona Reserve and several other coastal salt marshes in Southern California (PWA 2006). This species occurs in large coastal salt marshes and estuaries where pickleweed is dominant. They eat a variety of crustaceans as well as seeds of pickleweed and may forage in other nearby habitats. Surveys suggest that that the recent population in Area B appears to be steadily increasing, with 11 to 22 pairs from 1998 to 2010, likely as a result of the installation of the self-regulating tide gates in 2003 (see Appendix D5, Table D5-10). Forty-eight pairs were observed in 2015 (Johnston et al. 2015b).

Area A historically supported nesting Belding's savannah sparrows through the mid-1980s when the non-tidal salt marsh vegetation habitats were significantly larger in size. However, Dock and Schreiber (1981) noted that the quality of pickleweed habitat in Area A appeared to decline over their study period from 1979 to 1981. Even at that time, salt marsh habitat in Area A was not subject to tidal influence, and pickleweed was present only because of leaching by winter rains of residual salt in dredged spoils left from construction of Marina del Rey Harbor. Dock and Schreiber (1981) predicted that the health of the pickleweed habitat in Area A would continue to decline to the point where Belding's savannah sparrows may no longer nest there. As predicted, Massey (1990) found no breeding pairs in Area A in 1989 or 1990, stating that "the habitat did not look healthy; the ground was very dry and there were many invasive upland weeds in the pickleweed." Corey (1991) noted up to seven individuals in Area A during the fall/winter months of 1990 and 1991, occasionally in mixed flocks with the migrant sub-species of savannah sparrow, but did not record any breeding pairs, and none have been observed in Area A during focused surveys in 1995, 1998, and 2001 (PWA 2006). Between 2009 and 2012, a few Belding's savannah sparrows were documented in Area A, but no breeding behavior was observed and the extent of pickleweed continues to decline (Johnston et al. 2011, 2012, 2015b; Cooper 2010a).

Figure 3.4-12, *Potentially Suitable Belding's Savannah Sparrow Habitat and Occurrences*, depicts the distribution of suitable and occupied habitat for Belding's savannah sparrow in the Project site. Occupied habitat was estimated based on survey data collected between 2008 and 2012. During these surveys, signs of breeding and/or foraging behavior were noted and the locations of the observations were noted onto aerial images. Breeding sites were mapped separately from foraging areas in Figure 3.4-12. In some cases, sufficient detail was lacking to accurately determine whether points were associated with breeding or foraging behavior; in these cases, the data were conservatively included and identified as breeding observations. In total, 245 observation points collected over five years were included in our analysis. Data collected during surveys were then digitalized into ArcGIS and a 15-meter buffer was placed around each point. The buffer distance was selected as a conservative estimate of the average Belding's savannah sparrow territory size. Based on peer-reviewed literature, Belding's savannah sparrow territory size is estimated to range from approximately 80 to 936 m^2 with a median of 447 m^2 (Powell 1993, Powell and Collier 1998). A 15-meter buffer results in a territory size of approximately 707 m^2, which is well above the reported median for Belding's savannah sparrow (Powell 1993, Powell and Collier 1998).



Ballona Wetlands Restoration Project

Figure 3.4-12
Potentially Suitable Belding's Savannah Sparrow Habitat and Occurrences

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California least tern (*Sternula antillarum browni*): Federally listed as Endangered; California listed as Endangered; California Fully Protected Species; State Rank = S2. The California least tern is a migratory species that nests from April through August along the coast of California from San Francisco south to Baja California, on sparsely vegetated sandy beaches, salt flats, and dredged spoil in colonies of up to several hundred nesting pairs. It presumably winters in Central America or northern South America, although the specific location of its wintering range is unknown (PWA 2006).

The salt flats of Area B, just east of the main drainage channel, were used by 10 to 22 nesting pairs of least terns from 1973 through 1976 (Dock and Schreiber 1981, PWA 2006). Flooding of the salt flats due to rain early in the 1977 nesting season apparently prompted birds to nest for the first time on the beach (the "Venice Beach" site) north of the Marina del Rey channel. A small group also nested in 1977 along a channel at the end of Beethoven Street (north of Area C) but this area has not been used since. Approximately 25 pairs of terns used the salt flats of Area B in 1978 and 1979 (PWA 2006). Dock and Schreiber (1981) reported 17 pairs in 1979. Terns continued to nest on the salt flats in 1980 and 1981, although flooding both years precluded the production of any fledglings (PWA 2006). One pair unsuccessfully nested in Area B in 2001 and nine pairs unsuccessfully nested in Area B salt pan habitat in 2014 (all were predated by American crow; R. Brody, personal communication, November 25, 2014).

Appendix D5 Table D5-11, *History of California Least Tern Nesting in the Vicinity of Ballona Wetlands, 1973–2011*, summarizes least tern nesting activity and productivity in the vicinity of the Ballona Reserve from 1973 to 2011.

Studies of least tern foraging behavior in 1980 and 1981 included potential foraging habitat in the vicinity of the Venice Beach least tern nesting site just north of Ballona Creek (Atwood and Minsky 1983). The tidal channels of Area B supported up to 13% of the total foraging of a given survey date in 1980, but foraging at Area B was less frequent in 1981. In 1995, 1998, and 2001, KBC conducted foraging surveys for least terns at the tidal channels of Area B and Fiji Ditch in Area A. Foraging was documented in Area B tidal channels on three of seven survey dates in 1995, on 3 of 14 survey dates in 1998, and on 7 of 17 survey dates in 2001 (PWA 2006).

Most recently in 2012, a least tern foraging study for the Venice Beach nesting site was conducted during Corps-contracted dredging activities taking place at the Marina del Rey entrance channel. During this study, individuals were observed foraging immediately along the coast and in the entrance channel for Marina del Rey Harbor, north of the Ballona Creek channel. The report considered Ballona Creek as potential least tern foraging habitat; however, active foraging was not described (Keane 2013).

Based on recent observations, it is unlikely that California least terns would nest successfully again within the Ballona Reserve without an effective predator management plan that includes adequate and well-maintained fencing to reduce the impact of land-based predators and adaptive management to reduce the impact of American crows. As colonial nesters, California least terns may require larger numbers to effectively reduce predation and to successfully nest in this area.

Coastal California gnatcatcher (*Polioptila californica californica*): Federally listed as Threatened; California Species of Special Concern; State Rank = S2. Prior to 2010, the

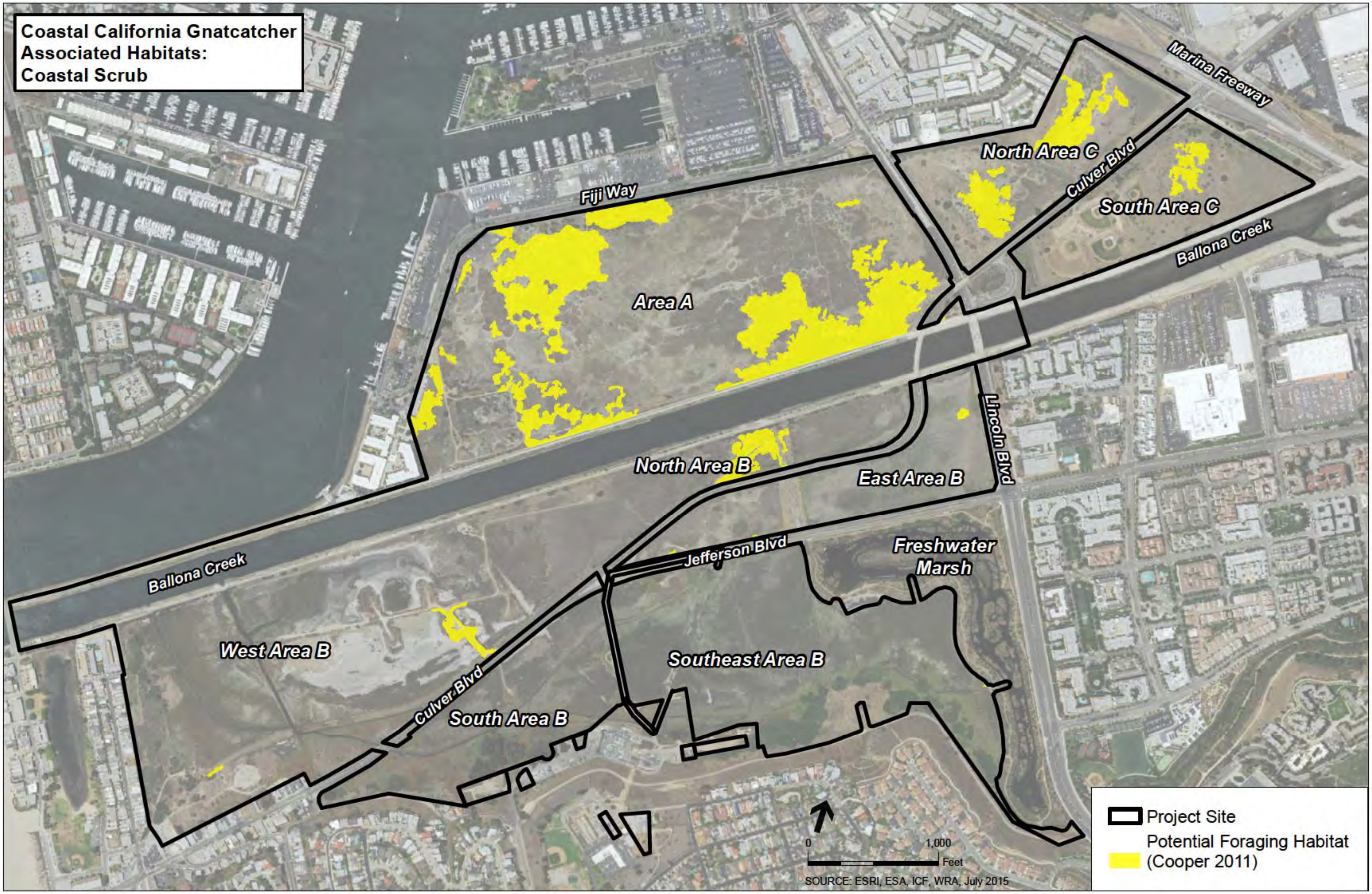
California gnatcatcher was known from the vicinity of the Project site only from a single specimen from "Port Ballona" collected in 1888 (Cooper 2011). During a quarterly Ballona Reserve-wide bird survey conducted as part of an ongoing baseline biological survey initiated in 2009, two California gnatcatchers were observed foraging in Area C on October 23, 2010. At least one of these birds subsequently was observed in Area C intermittently through February 14, 2011 during protocol surveys conducted in Area A and Area C, but not after this date (Cooper 2011). Area B was not surveyed in 2011 because coastal scrub habitat in Area B was deemed unlikely to support gnatcatcher (Cooper 2011). Subsequently, an individual was observed foraging in Area A during focused surveys for the species on March 18, 2011. It was presumed to be one of the two birds that wintered in Area C, as the two locations are approximately 500 meters apart, and no birds were observed in Area A on several visits during the winter of 2010–2011 or prior to this season (Cooper 2011).

An approximately 20-meter patch of California sagebrush, surrounded by larger coyotebush and laurel sumac in Area A that held the single California gnatcatcher on March 18, 2011 is the largest occurrence of this habitat type known within the Project site (Cooper 2011). Because of the limited distribution of this habitat on-site, and the preponderance of non-native, invasive plant species within this habitat, it is unlikely that the gnatcatcher could breed on-site. More extensive sagebrush has been planted to the south of the Project site on the slopes of the Westchester Bluffs, but this area has not been surveyed (Cooper 2011). Figure 3.4-13, *Potentially Suitable Habitat for Coastal California Gnatcatcher*, depicts the distribution of potentially suitable foraging habitat for the species in the Project site.

Least Bell's vireo (*Vireo bellii pusillus*): Federally listed as Endangered; California Endangered; State Rank = S2. Least Bell's vireo is an obligate riparian breeder that typically inhabits structurally diverse woodlands along watercourses (USFWS 1998). Commonly associated vegetation includes cottonwood-willow woodlands, oak woodlands, and mule fat scrub (USFWS 1998). Within the Project site, active nesting has been identified in association with willow habitat in 2010 (Cooper 2010a).

In April of 2010, several territorial least Bell's vireos were detected within the Project site and in riparian habitat at nearby Playa Vista to the east of the Project site. A single nesting pair of least Bell's vireo was observed, and their nest was discovered in a willow clump in the far southeastern corner of the Ballona Reserve. Two young fledged, and all four birds (two adults and two juveniles) were observed on multiple subsequent visits (Cooper 2010a). Just east of the survey area, along the Playa Vista riparian corridor, a pair of least Bell's vireo made two nesting attempts in spring/summer 2010, the latter successful, and a single unmated male was detected on territory during the same time period. Therefore, it appears that the Freshwater Marsh and adjacent Playa Vista area (outside of the Ballona Reserve) supported two successful breeding pairs of least Bell's vireo during summer 2010. However, only one pair was within the Project site (Cooper 2010a).

Figure 3.4-14, *Potentially Suitable Least Bell's Vireo Habitat and Observations*, depicts the distribution of potentially suitable habitat for least Bell's vireo. Those willow thickets that are contiguous with the Freshwater Marsh and Playa Vista riparian corridor were considered to be suitable habitat. This determination also matches closely with the recorded observations of least Bell's vireo on the Project site, which were restricted to the far southeast corner of Area B.



Ballona Wetlands Restoration Project

Figure 3.4-13
Potentially Suitable Habitat for Coastal California Gnatcatcher

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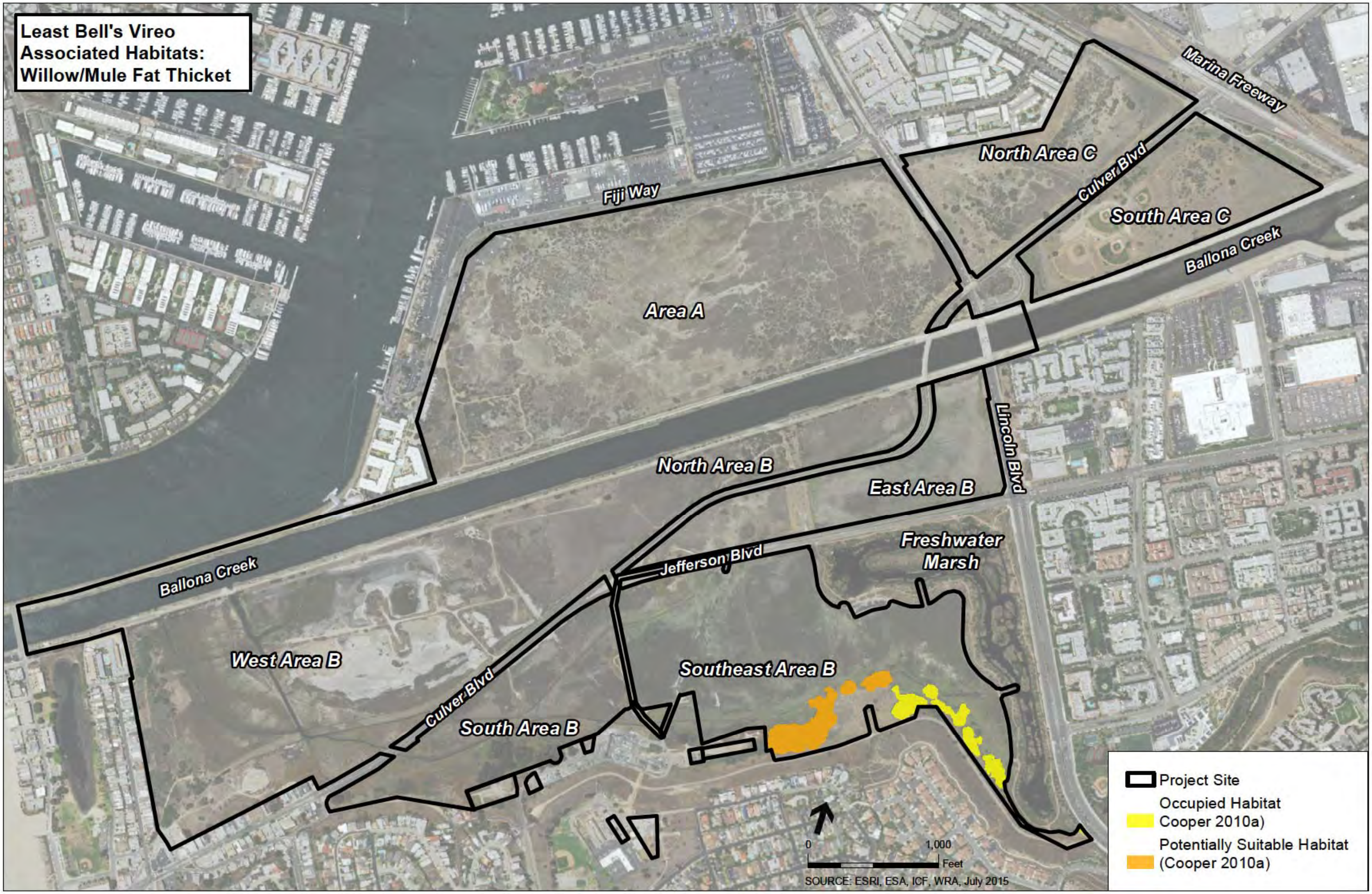

Ballona Wetlands Restoration Project

Figure 3.4-14
Potentially Suitable Least Bell's Vireo Habitat and Observations

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Light-footed Ridgway's Rail (*Rallus longirostris levipes, formerly known as the light-footed clapper rail*): Federally listed as Endangered; California listed as Endangered; California Fully Protected Species; State Rank= S1. The light-footed Ridgway's rail occurs in coastal salt marshes from Santa Barbara County to Northern Baja California (USFWS 1985, Ryan 2011). It prefers salt marsh with both pickleweed and cordgrass, and appears to require large contiguous areas of cordgrass. It benefits from emergent vegetation in upstream inlets that include freshwater marshes (Ryan 2011). Nests typically are built on the ground under clumps of pickleweed or elevated in stands of cordgrass (Ryan 2011). Nesting takes place from mid-March to late August (Ryan 2011).

The light-footed Ridgway's rail was a resident breeding species within the Ballona Reserve until the 1950s (Cooper 2006). Since the 1960s, there have been four records of presumed dispersing individuals from either the Ventura or Orange county populations (Ryan 2011). The closest recently observed populations of light-footed Ridgway's rails were located at the Los Alamitos Wetlands/Seal Beach National Wildlife Refuge (Orange County) and Mugu Lagoon (Ventura County) (Ryan 2011). In addition, incidental observations of an individual light-footed Ridgway's rail were reported in 2008 and in 2016 within the Ballona Reserve, but for each observation, the rail individual was determined to be a transient, as there is little to no breeding habitat within the Ballona Reserve (Johnston et al. 2011; Sterba 2016).

USFWS protocol-level surveys for the light-footed Ridgway's rail were conducted within the Ballona Reserve between March and April 2011 with negative survey findings. The Project site included the areas deemed as potentially suitable foraging habitat: Ballona Creek levee (south), tidal channels north of Culver Boulevard, the base of Westchester Bluffs, tidal channels and tidal salt marsh south of Culver Boulevard, and the Fiji Ditch. Overall habitat conditions for the species were noted as poor. Most of the salt marsh supports low-growing pickleweed. Pickleweed is good foraging habitat, but is considered lower quality nesting habitat.

The Ballona Reserve is listed as a potential area to reestablish light-footed Ridgway's rail in the Recovery Plan developed for species (USFWS 1985). Potential management actions identified for Ballona Wetlands in the Recovery Plan include improving/restoring tidal action, and developing a freshwater marsh to enhance cordgrass vigor. Tall cordgrass is considered highly desirable, though this habitat is lacking in Ballona Reserve (see Table 3.4-1). While freshwater marsh has since been established, there are few areas where freshwater marsh intergrades into the salt marsh, notably in Area B. These areas could provide future foraging and high-tide shelter should a population become established locally. Finally, the intertidal channels were noted as important for foraging, cover, and movement by rails (Ryan 2011).

Non-listed Special-Status Birds

Based on the database and literature review, 95 non-listed special-status bird species are reported in the vicinity of the Project site. Of these, 35 are deemed to have a less than reasonable likelihood of occurring due to the lack of suitable conditions, the species not being detected during surveys, and/or the Project site being outside known range. Several nonlisted special-status bird species are known to breed and forage in the Project site (California towhee**,** western meadowlark) and another several others are potential breeders and foragers in the Project site (common gallinule**,** Cooper's hawk**,** least bittern, loggerhead shrike, tree swallow, and Virginia rail).

The remaining 53 bird species are considered to potentially occur in the Project site, but largely in a foraging role (see Appendix D12 for more information, including scientific name, status, and potential to occur). One such species that occurs in the Project site as a forager but not a breeder is the burrowing owl, which, due to its specific habitat needs is discussed separately from the other nonlisted special-status birds.

Burrowing owl (*Athene cunicularia*): California Species of Special Concern; State Rank = S3. Burrowing owls breed throughout much of western North America and in California are most common in desert areas. They are nearly extirpated as a nesting species from many areas of coastal Southern California, but a small influx of burrowing owls generally arrives each winter (PWA 2006). Burrowing owls forage primarily at night but also are relatively active in daytime hours compared to most other owls. They primarily use burrows of California ground squirrels (*Otospermophilus beecheyi*), enlarging and modifying them as needed. Dock and Schreiber (1981) reported that two pairs of burrowing owls nested in Area A, and that owls were observed occasionally in Area B and along bluffs south of the agricultural area, where they probably nest. Corey (1991) mentions burrowing owl at the Westchester Bluffs in April 1990, but nesting was not confirmed. Burrowing owl surveys were conducted by KBC in 1995, but no burrowing owls were observed during surveys; a pellet that may have been discarded by a burrowing owl was located in Area A on June 8, 1995. California ground squirrels and their burrows were noted in some locations, and the habitat required by burrowing owls appears to remain on the site (PWA 2006).

Several burrowing owl observations have been reported (Cooper 2005c), and at least one wintering owl occupied a burrow in Area B, but this individual did not remain to breed in 2006 (PWA 2006). As recently as January 2014, a wintering burrowing owl was reported near the Ballona Creek levee in Area A, and one wintering owl was observed in Area B as recently as February 2015 (eBird 2015; K. Johnston, personal communication, January 19, 2016). Figure 3.4-15, *Potential Burrowing Owl Habitat*, depicts potentially suitable burrowing owl foraging habitat and burrow sites in the Project site.

Least bittern (*Ixobrychus exilis*): California Species of Special Concern; State Rank = S2. The least bittern, the smallest member of the heron family, is among the most inconspicuous of North American marsh birds. Suitable habitats for the least bittern include fresh and brackish water marshes with tall, dense emergent vegetation and clumps of woody plants over deep water. Their nests, elevated platforms with overhead canopies, are built of emergent aquatic vegetation and sticks (BNA 2014). This species was confirmed as a breeder in the Freshwater Marsh from 2005 through 2010 (Read and Strecker 2010).

California towhee (*Melozone crissalis*): Los Angeles County Bird Species of Special Concern. The California towhee is found in dense chaparral scrub that lines coastal slopes and foothills of California and southern Oregon. They also occur along streams and canyon bottoms adjacent to desert slopes, where they live amid manzanita, buckthorn, madrone, foothill pines, and a variety of oaks. This species is a fairly common perennial resident in areas supporting scrub as a breeder and forager, and has been confirmed present in the Ballona Reserve.

Western meadowlark (*Sturnella neglecta*): Los Angeles County Bird Species of Special Concern; Special-Status Bird Species of the Ballona Wetlands. The Western meadowlark is a common resident throughout most of the state, except in higher mountains. This species requires

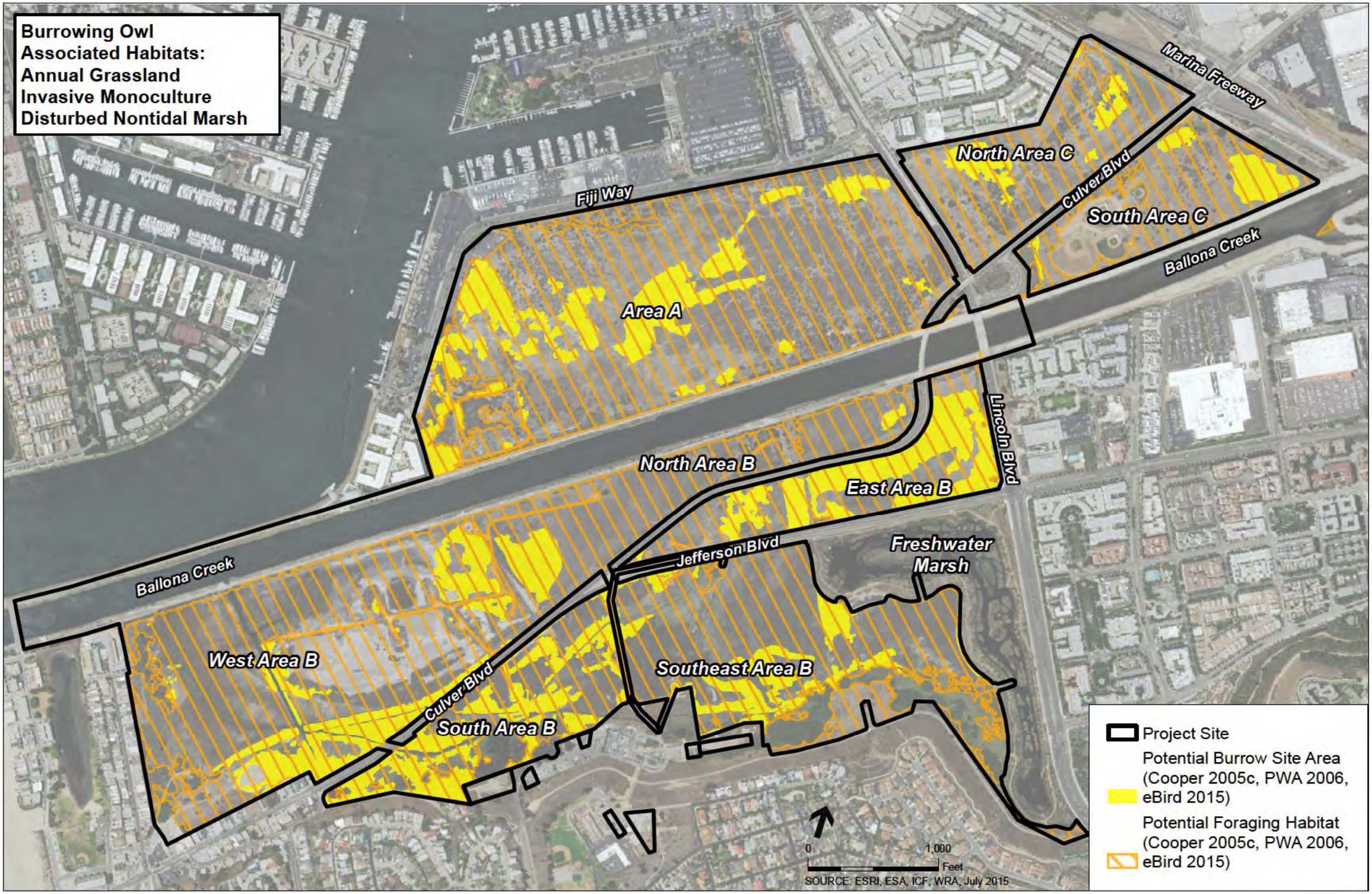

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Figure 3.4-15
Potential Burrowing Owl Habitat

relatively dense, grassy habitat with vegetation tall enough to provide cover, along with a few low perches. The western meadowlark has been confirmed present as a forager in the Ballona Reserve, as this species is a common winter resident. A breeding population consisting of three to five pairs persists in the Ballona Reserve (Cooper 2005b).

Common ganule (*Gallinula galeata*): Special-Status Bird Species of the Ballona Wetlands. The common ganule nests principally in permanently flooded, nontidal, deep marshes and slightly brackish or freshwater tidal marshes, where robust emergent grasslike plants approximately 1 to 4 meters tall are interspersed with pools and channels that have floating-leaves and submerged plants, or with mudflats. While there is low breeding potential for the common ganule on the Project site, they have been confirmed as a breeder adjacent to the Freshwater Marsh. There is moderate potential for the species as a forager in the Ballona Reserve, as the species is reestablished as an uncommon transient with recent breeding at the Freshwater Marsh.

Cooper's hawk *(Accipiter Cooperii):* (Nesting) WL; State Rank = S4. Cooper's hawk is a medium sized hawk specializing in hunting small birds in closed quarters. This species is a locally common breeder throughout the Los Angeles Basin in residential and even urban habitats if tall trees are present. This species is of high potential as a known local breeder, particularly in the residential areas. Cooper's hawk is confirmed present as a forager, and while they are a fairly common fall transient and winter visitor in the Ballona Reserve, they are an uncommon summer resident and local breeder in residential areas.

Loggerhead Shrike (*Lanius ludovicianus*): California Species of Special Concern; State Rank = S4. The loggerhead shrike is a resident of grasslands and other open habitats in the Project region. This small avian predator hunts from perches and impales its prey on sharp objects such as thorns and barbed-wire fences (BNA 2014). The loggerhead shrike no longer breeds in the Project site, but is an uncommon summer, fall, and winter migrant (June to March). Shrikes last successfully nested at the Ballona Reserve in the mid-1990s. Aggression or courtship displays were observed at the eastern end of the Playa Vista property on June 14, 1998, and another was observed in April 2000, but no evidence of breeding was documented (Cooper 2006). An exceptionally early adult accompanied by a juvenile was present for 1 day near the Freshwater Marsh on May 16, 2004, but not seen afterward (Cooper 2006). This species was observed in the Ballona Reserve in 2009 and 2010 (Cooper 2009; Johnston et al. 2011, 2012).

Tricolored blackbird (*Agelaius tricolor*): California Candidate as Endangered; California Species of Special Concern; State Rank = S1S2. The geographic range of the tricolored blackbird is restricted to the Central Valley and surrounding foothills, throughout coastal and some inland localities in Southern California, and scattered sites in Oregon, western Nevada, central Washington, and western coastal Baja California. Breeding colonies may attract thousands of birds to a single site. Colonies require nearby water, a suitable nesting substrate, and open-range foraging habitat of natural grassland, woodland, or agricultural cropland. They are itinerant breeders, nesting more than once at different locations during the breeding season (BNA 2014). This species has been documented in the Freshwater Marsh, but only in a foraging role (Read and Strecker 2010). Aside from a regular wintering flock of several dozen birds in the vicinity of Westchester Park near Manchester Boulevard and Lincoln Boulevard, this species is only a casual visitor to the Ballona Valley (Cooper 2006).

Virginia rail (*Rallus limicola*): Los Angeles County Bird Species of Special Concern. Virginia rail is an elusive freshwater marsh bird that is more often heard than seen. A habitat generalist, this species probes mudflats and shallow water with its long, slightly decurved bill searching for invertebrates, small fish, and the occasional seed. Vagrancy and generalist habits allow it to exploit a highly ephemeral niche (BNA 2014). This species was confirmed as a breeder in the Freshwater Marsh in 2009 and 2010 (Read and Strecker 2010).

Special-Status Mammals

Thirteen special-status mammal species are reported in the Project region. Appendix D12 identifies each of these mammal species along with regulatory status, species requirements, and an evaluation of the potential for the species to occur in the Project site. Of these, only the South coast marsh vole (*Microtus californicus stephensi*) and Southern California salt marsh shrew (Sorex ornatus salicornicus) are known as resident species in the Reserve. In addition, several species of non-listed special status bats forage within the Reserve and are discussed below. Several other special-status mammal species that have been identified near, but not within the Ballona Reserve are discussed below as well.

State and Federally Listed Special-Status Mammals

The Pacific pocket mouse and Townsend's big-eared bat are reported near the Project site and are described below.

Pacific pocket mouse (*Perognathus longimembris pacificus*): Federally listed as Endangered; California Species of Special Concern; State Rank = S1. The Pacific pocket mouse is a small burrowing rodent that primarily feeds on seeds and is associated with fine-grain, sandy substrates in coastal strand, coastal dunes, river alluvium, and coastal sage scrub habitats near the ocean in Southern California. Historically, it was documented from near El Segundo in Los Angeles County to the vicinity of the Mexican border in San Diego County. Following 20 years with no reports of the subspecies, USFWS emergency listed the Pacific pocket mouse in February of 1994, following the rediscovery of a single population at the Dana Point Headlands in the City of Dana Point. Since its listing, the Pacific pocket mouse has been found at three additional sites, all within the bounds of Marine Corps Base Camp Pendleton. All known populations are threatened by habitat fragmentation and small size, and two of the populations are within military training areas (USFWS 2010).

Pacific pocket mouse has not been observed or captured within the Project site since 1938 (CDFW 2014). None were recovered or observed during focused trapping efforts (Impact Sciences 1996, Friesen et al. 1981). In 2000, Area C and portions of Area B designated for freshwater marsh restoration and residential development were evaluated and the pocket mouse was found to be absent (PWA 2006). Furthermore, Pacific pocket mouse has not been captured during subsequent trapping efforts within suitable habitat in 2007, 2009, 2010, and 2011 (Johnston et al. 2011, 2012). Because Pacific pocket mouse has not been captured in the Project site since 1938, despite numerous trapping efforts, this species is judged to have a less than reasonable potential to occur, and is therefore not further analyzed in this section.

Townsend's big-eared bat (*Corynorhinus townsendii pallescens*): California Candidate as Threatened; California Species of Special Concern; State Rank = S2. The Townsend's big-eared bat is a candidate for listing under CESA. They occur throughout California in a wide variety of habitats and are a colonial species. Females aggregate in the spring at nursery sites and give birth to one young in late spring or early summer. These nursery colonies, comprising adult females and their young, remain intact until the young become independent in late summer or early fall. During the summer months, adult males are generally found roosting alone. Although Townsend's big-eared bat generally is viewed as a cave dwelling species, they also are found in human-made structures (e.g., old mine workings and buildings), especially buildings along the coast. Unlike many species that take refuge in crevices, Townsend's big-eared bat only roosts in the open, hanging from walls and ceilings, where it is relatively easily detected and particularly vulnerable to disturbance (Pierson and Rainey 1994).

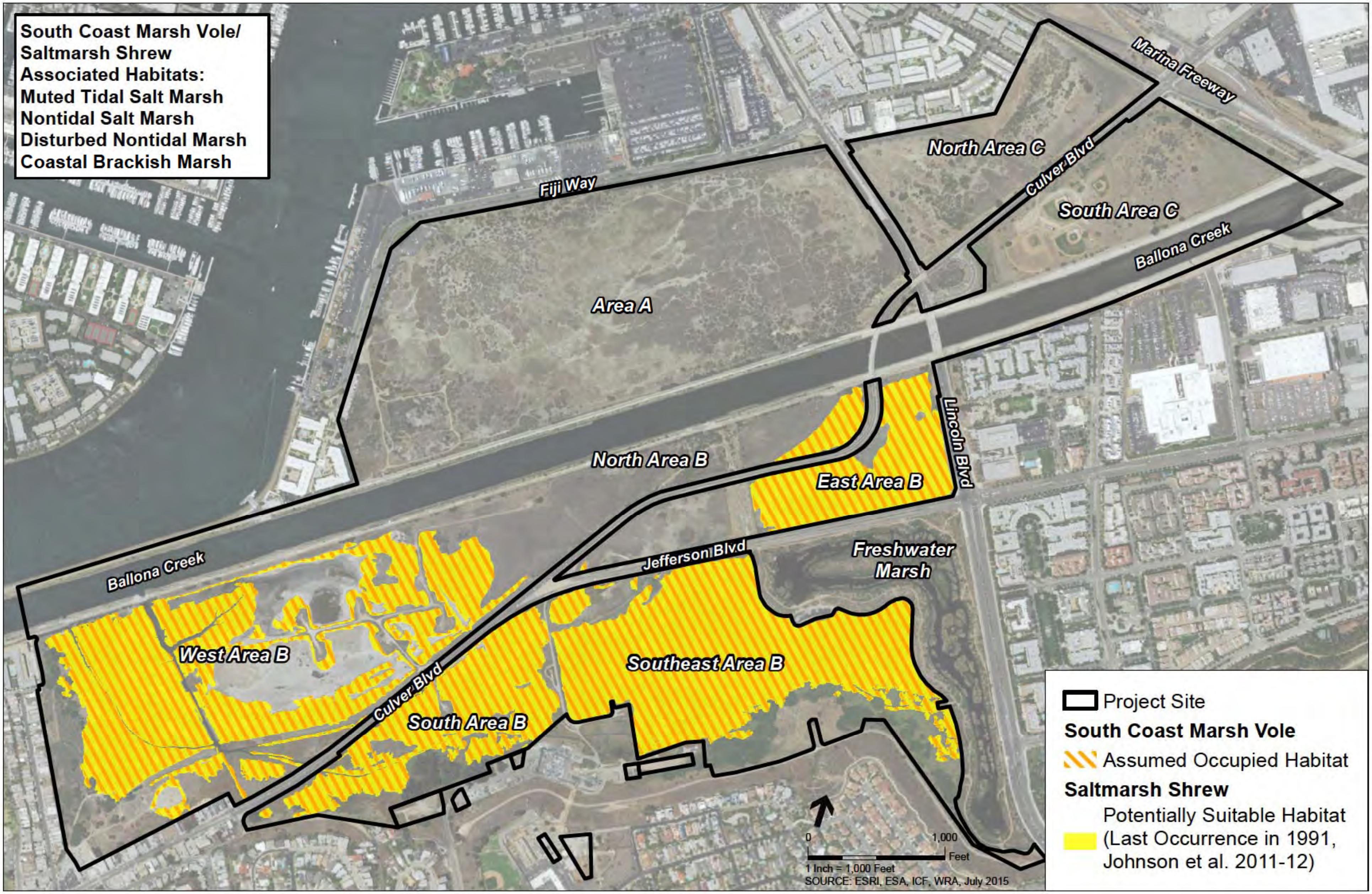
A focused bat survey in 1996 found no evidence of bats in Area A, Area B, or Area C (Impact Sciences 1996). As previously discussed, four bat species were detected within or adjacent to the Ballona Reserve during 2014 bat surveys (ESA 2015). Townsend's big-eared bat was not detected during 1996 or 2014 surveys, and roosting is not expected due to the lack of suitable structures; however, the species may occur on the Project site as a forager.

Non-listed Special-Status Mammals

Based on the database and literature review, 11 nonlisted special-status mammal species are reported in the Project region. Two nonlisted special-status rodents are confirmed present: South coast marsh vole and Southern California salt marsh shrew (discussed below). In addition, the following seven nonlisted special-status bat species are judged to potentially occur on and/or adjacent to the Project site, but largely in a foraging role: big free-tailed bat (*Nyctinomops macrotis*), California leaf-nosed bat (*Macrotus californicus*), hoary bat, pallid bat (*Antrozous pallidus*), silver-haired bat, western mastiff bat (*Eumops perotis californicus*), and western yellow bat (*Lasiurus xanthinus*) (see Appendix D12 for more information, including status). Two non-listed mammal species, American badger (*Taxidea taxus*) and San Diego black-tailed jackrabbit (*Lepus californicus bennetti*) are likely absent because the study area is outside of the species' range, potentially suitable habitat is absent, and/or multiple surveys of the Project site have not found the species, and are therefore not further discussed in this analysis.

South Coast marsh vole (*Microtus californicus stephensi*): California Species of Special Concern; State Rank = S1S2. South coast marsh vole occurs in vegetated tidal marshes in Los Angeles, Orange, and southern Ventura counties (CDFW 2014). The species was captured during small mammal surveys in marsh habitats containing saltgrass. It was recorded in Area A and Area B in 1981, 1991, 1996, and 2001. Subsequently, it was captured only in Area B in 2010 and visually observed in salt marsh habitat in Area B in 2011, despite survey efforts in Areas A and C; therefore, this species is considered present within the Project site and assumed to occupy Area B (Johnston et al. 2011, 2012). Figure 3.4-16, *South Coast Marsh Vole and Southern California Saltmarsh Shrew Habitats*, depicts the distribution of occupied habitat for south coast marsh vole within the Project site.

Southern California salt marsh shrew (*Sorex ornatus salicornicus*): California Species of Special Concern; State Rank = S1. Southern California salt marsh shrew occurs in coastal marshes in Los Angeles, Orange and Ventura counties and requires dense vegetation and woody debris for cover (CDFW 2014). The species was last captured within the Project site in Area B in 1991. Although recent trapping efforts in the Ballona Reserve have not yielded additional



Ballona Wetlands Restoration Project

Figure 3.4-16
South Coast Marsh Vole and Southern California Saltmarsh Shrew Habitats

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captures, suitable habitat remains present and as targeted surveys for this species were not conducted, it remains likely to be present on site (Johnston et al. 2011, 2012). Figure 3.4-16, *South Coast Marsh Vole and Southern California Saltmarsh Shrew Habitats*, depicts the distribution of potentially suitable habitat for Southern California salt marsh shrew within the Project site.

Critical Habitat

Critical habitat is a term defined in FESA as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. No Critical Habitat has been designated within or immediately adjacent to the Project site (USFWS 2016).

Essential Fish Habitat

Essential fish habitat (EFH) is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." 16 U.S.C. §1802(10). This habitat is under the jurisdiction of, and regulated by, the National Marine Fisheries Service (NMFS). Any adverse impacts from projects on EFH must be disclosed in an Essential Fish Habitat Assessment, which is submitted to NMFS for approval as a stand-alone assessment, or such impacts can be evaluated in the NEPA document. The impact analysis section discusses why the Project alternatives would result in short-term adverse impacts to EFH during construction with long-term beneficial effects.

The NMFS web site identifies EFH in the Project site as groundfish EFH (NMFS 2016) within Ballona Creek. Groundfish are fish such as rockfish, sablefish, flatfish, and Pacific whiting that are often (but not exclusively) found on or near the ocean floor or other structures (PFMC 2013). NMFS interprets EFH in its regulations as follows: "waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means "the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem"; and "spawning, breeding, feeding, or growth to maturity" covers the full life cycle of a species (PFMC 2005a).

The extent of groundfish EFH is identified as all waters and substrate with depths less than or equal to 3,500 meters (1,914 fathoms) to mean higher high water level (MHHW) or the upriver extent of saltwater intrusion, defined as upstream and landward to where ocean-derived salts measure less than 0.5 ppt during the period of average annual low flow (PFMC 2005a). Groundfish EFH is mapped along the entire California coastline, including waters and substrate adjacent to the Project site such as Marina Del Rey and Santa Monica Bay (NMFS 2016).

In addition to EFH, the Project site is also within a Habitat Area of Particular Concern (HAPC). HAPCs are areas within EFH that are considered "high priority areas for conservation, management, or research due to their rare, sensitive, stressed by development, or important to ecosystem function" (NMFS 2010). The HAPC in the Project site is defined as an estuary (NMFS 2016).

Wildlife Movement Corridors

Corridors provide opportunities for individual animals or groups of animals to disperse or migrate among areas of suitable habitat. These areas of suitable habitat may be extensive but are otherwise partially or wholly separated by unsuitable habitat. Appropriate cover, minimum physical dimensions, and tolerably low levels of disturbance and mortality risk (e.g., limited night lighting and noise, low vehicular traffic levels) are common requirements for corridors. Resources and conditions in corridors may be quite different than in the areas they connect, but if used by the wildlife species of interest, the corridor would still provide an important function. Corridors adequate for one species may be inadequate for others. In evaluating corridors, it is important to consider the biology of those species to be addressed (Beier and Loe 1992).

There are no designated or major wildlife movement corridors within or adjacent to the Project site as identified by Los Angeles County Department of Regional Planning (2014) or South Coast Wildlands (2008). The Project site, including adjacent areas of open space associated with the Freshwater Marsh, Westchester Bluffs, and riparian corridor east of Lincoln Boulevard, is surrounded by dense urban development. Terrestrial wildlife corridors between the Project site and other areas of open space are extremely constrained; perhaps limited to the Playa Vista inlet beneath Highway 1 southeast of the Project site. Terrestrial wildlife movement within the Project site is currently impeded by Ballona Creek and three major roadways (i.e., Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard).

Three high-use roadways traverse or run adjacent to the Reserve, including Culver Boulevard, West Jefferson Boulevard, and Lincoln Boulevard. The movement of vehicles on these thoroughfares provides a source of wildlife mortality within the Reserve that has been recognized and studied for several years. Between 2010 and 2013, the Bay Foundation examined vehicle-based mortality on these roads to identify which wildlife species were most vulnerable to collisions and identify locations with a greater frequency of collisions (Johnston et al. 2014; Appendix D16). The three-year study identified 654 wildlife mortality incidents and a significantly higher number of kills found along Culver and Jefferson boulevards, and relatively fewer along Lincoln Boulevard-(Johnston et al. 2014). The vertebrate species which were found to be most vulnerable to vehicle mortality were desert cottontail (29.4% of mortalities) and California ground squirrel (8.7% of total). These species have a rapid growth rate and produce many offspring, each of which has a relatively low likelihood of surviving to adulthood. The identification categories of “unknown” (23.9% of total) and “small animal” (17% of total) were likely also predominantly cottontail, ground squirrel, or other small mammals, but were unidentifiable to species. Birds comprised a total of 5.7% of mortalities (2.8% small birds, 1.8% medium birds, 1.1% pigeon, as well as lower percentages of crow and duck); though a small portion of the “unknown” and “small animal” categories could have been birds (Johnston et al. 2014). The report did not compare wildlife mortality rates within the Ballona Reserve to other off-site areas; however, it clarified that the Reserve has an existing high baseline for vehicle-based wildlife mortality relative to regional survey kill rates.

Ballona Creek and tidal channels provide movement for marine fish species into and out of the Project site; however, marine mammals have not been reported in the Ballona Reserve because the size of the tide gates restrict their movement into the Ballona Reserve. One observation of a harbor seal occurred near the western tide gate in 2014 (R. Brody personal communication, February 16, 2016); however, harbor seals and other marine mammals in the Project vicinity are likely not to be capable of entering the Reserve as a general rule.

The Ballona Reserve is regionally important as a stopover site for both resident and migratory birds. Numerous resident species such as coastal California gnatcatcher and Cooper's hawk have been observed foraging onsite, while a number of birds including burrowing owl and western snowy plover have been observed overwintering. The state of California, including the Ballona Reserve, is located within the Pacific Flyway, a major north-south flyway for migratory birds in America, extending from Alaska to Patagonia. Each year at least a billion birds migrate along the Pacific Flyway (Audubon 2016). During early spring months, flocks of migratory birds such as elegant terns, Caspian terns, and black-bellied plovers are regularly observed roosting on the salt pan habitats in Area B. During the late summer, several species of sandpiper and plover that arrive in southern California from breeding grounds in Canada and Alaska occasionally make use of Area B tidal channels and salt pan subject to tidal inundation.

Raptor Nesting and Foraging

Raptor species regularly reported within the Project site include red-tailed hawk, red-shouldered hawk, Cooper's hawk, white-tailed kite, northern harrier, osprey (*Pandion haliaetus*), American kestrel, burrowing owl, and great-horned owl; but Cooper's hawk is the only raptor species with a high likelihood of breeding at the Project site. Potential raptor nest sites on and adjacent to the Project site include palm trees, willows, eucalyptus and numerous other species of mature ornamental trees. With few expansive areas of open space in the vicinity, the Project site represents an exceedingly important foraging area for raptors. A variety of habitats on the Project site could serve as raptor foraging habitat, including coastal scrub, non-tidal salt marsh, and annual grassland.

Waters of the U.S. and Waters of the State

Various regulatory agencies may have regulatory authority over wetlands, other waters of the U.S. and waters of the State. The characteristics defining waters of the U.S., including wetlands, and waters of the State vary by the different agencies who maintain jurisdiction, as explained below.

Preliminary Wetland Jurisdictional Determinations

The Ballona Reserve has been subject to multiple jurisdictional delineations, most recently in August 2011 (Appendix D14, *WRA Delineation Report*). A jurisdictional delineation also was conducted for the SoCalGas Property in 2013 (ICF 2013).

A Preliminary Jurisdictional Determination[56] was issued by the Corps for the Project site (Corps 2012). Table 3.4-5, *Wetland and Nonwetland Potential Jurisdictional Resources*, summarizes the potential aquatic features within the Project site under the jurisdiction of the Corps. Table 3.4-5 also summarizes the potential resources under the jurisdiction of the RWQCB and the California Coastal Commission (CCC).

[56] Preliminary Jurisdictional Determinations (JDs) are non-binding ". . . written indications that there may be waters of the United States, including wetlands, on a parcel or indications of the approximate location(s) of waters of the United States or wetlands on a parcel. Preliminary JDs are advisory in nature and may not be appealed." (33 C.F.R. §331.2.)

TABLE 3.4-5
WETLAND AND NONWETLAND POTENTIAL JURISDICTIONAL RESOURCES

Jurisdictional Resource	Agency With Jurisdiction		
	Corps	**RWQCB**	**CCC**
Wetlands	151.7 acres	151.7 acres	195.8 acres
Other Waters of the U.S.[1]	68.3 acres	69.0 acres[2]	83.0 acres
Total Potential Jurisdiction	***220.0 acres***	***220.7 acres***	***278.8 acres***

NOTES:
1 Includes mudflats
2 0.7 acre of the 69.0 acres is considered non-federal waters of the U.S. and will need to be verified by RWQCB for regulation under the Porter Cologne Water Quality Control Act.

SOURCES: WRA 2011b and ICF 2013

Wetlands and Other Waters of the U.S. under Corps Jurisdiction

Within the Project site, 220 acres of Corps-defined wetlands[57] and other waters of the U.S. were identified as being potentially[58] subject to the jurisdiction of the Corps pursuant to Section 404 of the Clean Water Act (which includes 151.7 acres of wetland and 68.3 acres of non-wetland waters of the U.S.; and excludes the 16-acre non-wetland portion of Ballona Creek that is outside of the reserve) (Figure 3.4-17). The non-wetland waters of the U.S. are made up of areas of unvegetated, open water such as Ballona Creek, the mudflats and tidal channels of West Area B, and Fiji Ditch, as well as features that exhibit an Ordinary High Water Mark (OHWM), but do not meet all three of the parameters required to be considered a Corps wetland (WRA 2011b).

Under Section 10 of the Rivers and Harbors Act, navigable waters of the U.S. include all tidally-influenced waters up to the mean high water mark (MHW) in their natural, unobstructed state. For purposes of this analysis, it is assumed that areas below the MHW are subject to the Corps' jurisdiction under Section 10 of the Rivers and Harbors Act[59] and comprise 119.9 acres (see Figure 1-1, *Existing Topography, Tidal Inundation*, and Section 10 Waters).

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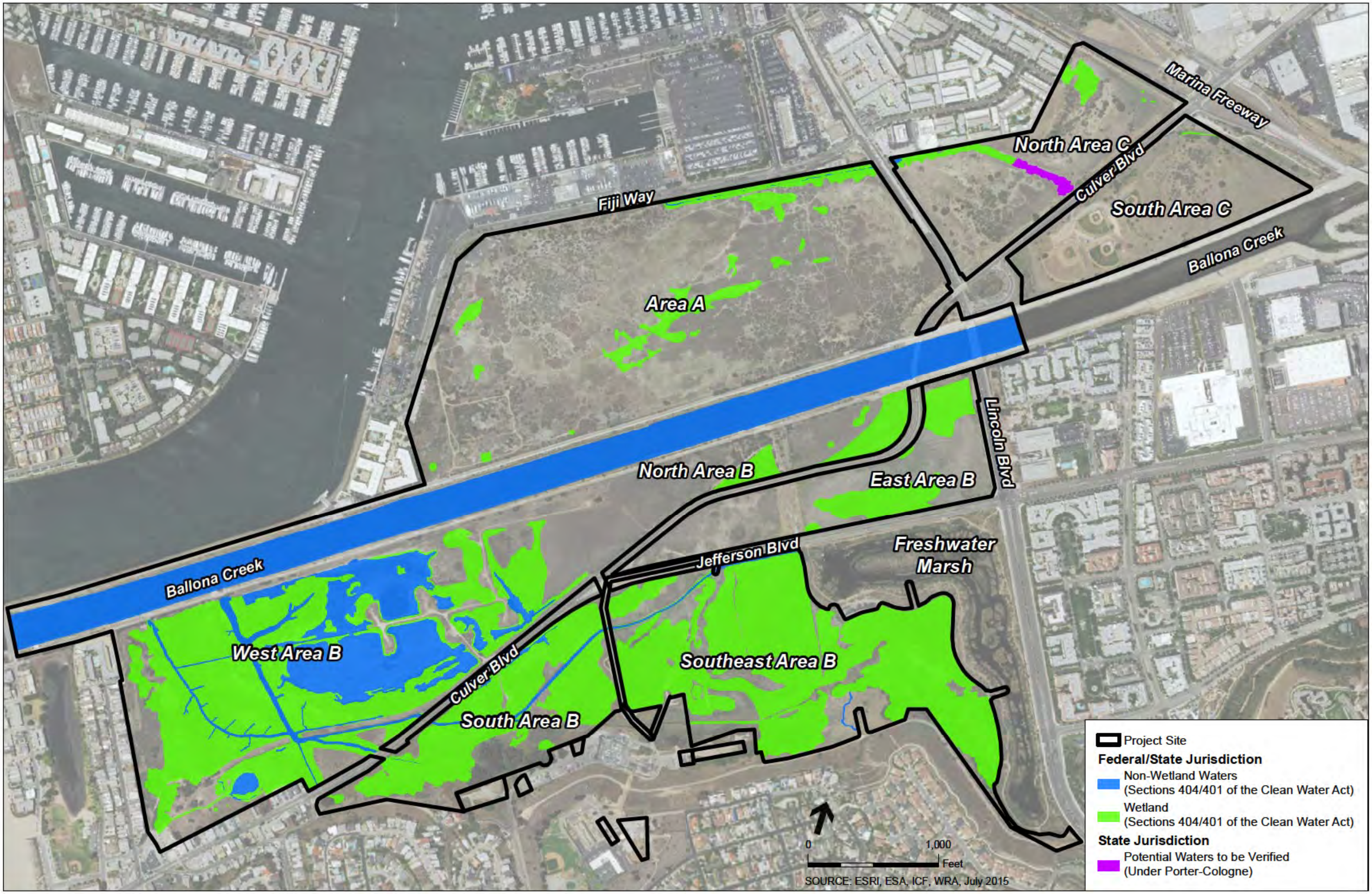
57 The Corps and the USEPA jointly define wetlands as: "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 C.F.R. Part 328; 40 C.F.R. §232.2). The Corps uses three characteristics of wetlands when making wetland determinations: vegetation, soil, and hydrology. Unless an area has been altered or is a rare natural situation, wetland indicators of all three characteristics must be present during some portion of the growing season for an area to be a wetland.

58 Consistent with RGL 08-02, the Corps identified potential waters within the Project site. Although a preliminary jurisdictional determination does not provide a legally binding determination of jurisdiction over particular water bodies or wetlands, it is suitable for the purpose of permit evaluation under CWA Section 404. For convenience, potentially jurisdictional waters are referred to throughout this document as waters of the U.S. or navigable waters of the U.S.

59 The extent of the Corps' Section 10 jurisdiction may be refined in the Final EIS/EIR.



Ballona Wetlands Restoration Project

Figure 3.4-17
Potential Waters of the U.S./State

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Wetlands and Waters of the State under RWQCB Jurisdiction

The 220 acres of Corps-defined wetlands and non-wetland waters of the U.S. potentially regulated under Section 404 of the Clean Water Act are also potentially subject to the jurisdiction of the Los Angeles Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the Clean Water Act. In addition, other habitats within the Project site could also be subject to RWQCB jurisdiction pursuant to the Porter-Cologne Water Quality Control Act[60], including disturbed nontidal marsh and/or southern willow scrub. In total, the Project site contains the potential for 220.7 acres of waters of the State subject to RWQCB jurisdiction (Figure 3.4-17).

Wetlands and Waters of the State under CCC Jurisdiction

The CCC plans and regulates the use of land and water in the coastal zone, including wetlands. The term "coastal zone" means "that land and water area of the State of California from the Oregon border to the border of the Republic of Mexico, specified on the maps identified and set forth in Section 17 of that chapter of the Statutes of the 1975-76 Regular Session enacting this division, extending seaward to the state's outer limit of jurisdiction, including all offshore islands, and extending inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine, habitat, and recreational areas it extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less, and in developed urban areas the zone generally extends inland less than 1,000 yards. The coastal zone does not include the area of jurisdiction of the San Francisco Bay Conservation and Development Commission, established pursuant to Title 7.2 (commencing with Section 66600) of the Government Code, nor any area contiguous thereto, including any river, stream, tributary, creek, or flood risk management or drainage channel flowing into such area." Pub. Res. Code §30103. Coastal Act Section 30121 defines the term "wetland" as: "[L]ands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens." The CCC uses a one-parameter wetland definition, which requires the presence of only one of three parameters (hydrophytic vegetation, hydric soils, or wetland hydrology) to be considered a wetland. Therefore, the area of CCC jurisdiction is larger than the Corps jurisdiction, which requires that all three parameters are present to be considered a wetland.

Specifically, 195.8 acres of CCC wetlands and 83 acres of CCC non-wetland waters (open water) were identified during the jurisdictional delineation conducted on the Project site and verified by CCC, for a total of approximately 279 acres subject to CCC jurisdiction (WRA 2011b; ICF 2013) (Figure 3.4-18).

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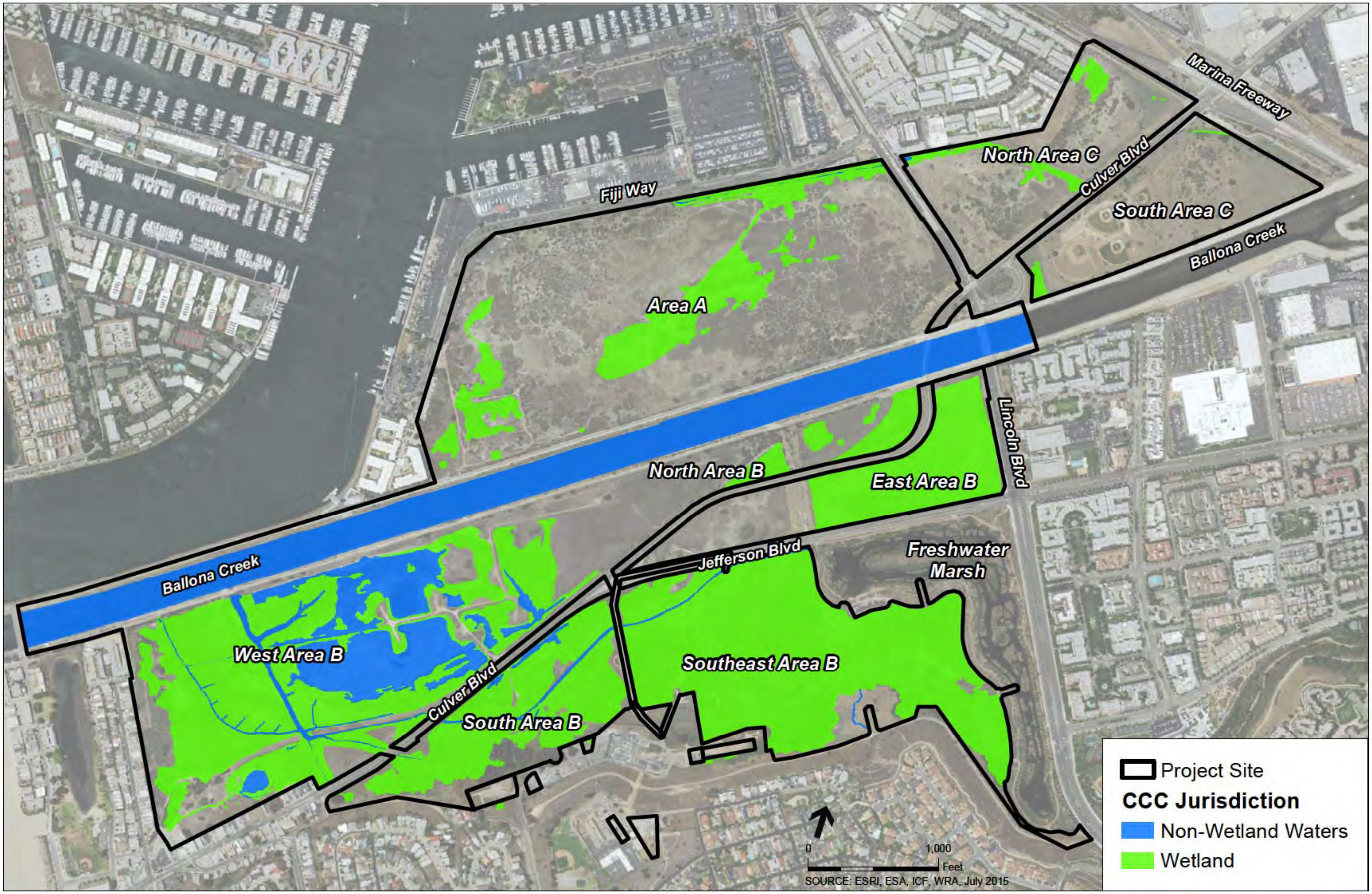
60 The RWQCB regulates activities pursuant to California's Porter-Cologne Water Quality Control Act (California Water Code §§13000-16104). The Porter-Cologne Act applies to surface waters, wetlands, and ground water and to both point and nonpoint sources of pollution. Discharges are regulated under the Porter-Cologne Act primarily through issuance of National Pollutant Discharge Elimination System (NPDES) permits for point source discharges and waste discharge requirements (WDRs) for non-point source discharges.



Ballona Wetlands Restoration Project

Figure 3.4-18
California Coastal Commission Jurisdiction

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California Rapid Assessment Method (CRAM) Assessments

The existing condition of wetland habitats in the Ballona Reserve was quantitatively examined in 2012 and 2014 using the California Rapid Assessment Method (CRAM) "estuarine" module as a baseline to compare with future site conditions (Johnston et al. 2015b), and supplemental CRAM data were collected in 2015 in two additional delineated wetland areas in North Area B and East Area B.

Based on the assessment, several patterns were noted based on the CRAM condition assessment data. The CRAM scores showed that the delineated wetland habitats at the Ballona Reserve experienced slowly deteriorating conditions from 2012 to 2014. Declining CRAM scores were primarily attributed to several sub-metrics, including a decrease in biotic structure characteristics and an influx of annual, non-native plants (Johnston et al. 2015b). The assessment evaluated the wetland habitats across the site, finding that Area A, North Area B, and East Area B were the most degraded sub-areas on site, comparable with the lowest scores in the state of California. The seasonal wetland habitats of Area B exhibited higher scores, and the tidally influenced portion of Area B exhibited the highest condition scores. The highest scores were still significantly lower than healthy reference wetlands in Southern California. The assessment found that the most significant impact was a lack of hydrological connection to an estuarine water source. The relatively homogeneous monocultures of invasive vegetation also contributed to the low scores.

While most coastal wetlands in California have been exposed to various degrees of impacts and exist in a semi-natural state, wetland habitats of the Ballona Reserve still had condition scores 30 to 50 points below healthy reference wetlands (Johnston et al. 2015b).

Invasive and Nuisance Species

Invasive species can adversely affect natural areas that support native ecosystems, including ecological reserves and wildlife areas. This section summarizes the invasive species reported as occurring on the Project site.

Invasive and Other Non-native Vegetation

Invasive non-native plants are defined by the Cal-IPC as those that "are not native to, yet can spread into, wildland ecosystems and that displace native species, hybridize with native species, alter biological communities, or alter ecosystem processes (Cal-IPC 2016).

Appendix D3 identifies the non-native plant species that are described from the Project site. Many of these species are adversely impacting habitat quality by excluding or out-competing native species. The non-native plant species in the Project site include both perennial and annual weed species. Some of the more problematic perennial species, most of which are considered to be noxious and/or invasive, include terracina spurge (*Euphorbia terracina*), Australian saltbush (*Atriplex semibaccata*), pampas grass, Brazilian pepper tree (*Schinus terebinthifolius*), at least three species of wattle/acacias (*Acacia* spp.), castor bean, ice plants (e.g., *Carpobrotus* spp. and *Malephora crocea*), myoporum (*Myoporum laetum*), giant reed (*Arundo donax*), and fennel (*Foeniculum vulgare*). The wetland also has extensive populations of annual weed species, including mustards (*Brassica* spp.), garland chrysanthemum (*Chrysanthemum coronarium*), wild radish, Russian thistle (*Salsola tragus*), sweet clovers (*Melilotus* spp.), tocalote (*Centaurea melitensis*), brome grasses, and ryegrass (*Festuca* spp.). Approximately 59% of the vegetated habitats within the Project site are dominated by non-native vegetation, of which 45% is comprised of invasive monoculture(s). Table 3.4-6, *Summary of Acres of Land Dominated by Non-native Plant Species*, summarizes the approximate acreage of lands dominated by non-native plant species.

TABLE 3.4-6
SUMMARY OF ACRES OF LAND DOMINATED BY NON-NATIVE PLANT SPECIES

Habitat Type	Acres
Annual grassland	19.4
Invasive monoculture	200.2
Disturbed nontidal marsh	38.6
Total	**258.2**

SOURCE: WRA 2015

Non-native Wildlife

Table 3.4-7 presents a few of the more common non-native wildlife species that occur within the Project site. These species occur in various habitat types within the Project site. While not all of these species currently present a problem to native wildlife, many of these species are adversely impacting native wildlife populations through predation, competition for resources, and in other negative ways.

TABLE 3.4-7
COMMON NON-NATIVE WILDLIFE SPECIES WITHIN OR ADJACENT TO THE PROJECT SITE

Invertebrates	Fish	Amphibians	Birds	Mammals
Argentine ant, Honey bee, African land snail, Japanese mussel	Mosquitofish	American bullfrog, red-eared slider	European starling, House sparrow, Mandarin duck, mute swan, nutmeg manikin, orange bishop, rock pigeon	Black rat, domestic cat, domestic dog, eastern fox squirrel, house mouse, Norway rat, Virginia opossum,

3.4.3 Applicable Laws, Regulations, Plans, and Standards

3.4.3.1 Federal

Federal Clean Water Act

The Clean Water Act was enacted as an amendment to the Federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the U.S. The Act serves as the primary Federal law protecting the nation's surface waters, including lakes, rivers, and coastal wetlands, and provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. The primary regulatory tool of the Act is permit review. The Act operates on the principle that all discharges of pollutants, including discharges of dredged or fill material, into waters of the U.S. are unlawful unless specifically authorized by a permit.

Clean Water Act Section 404: Permits for Discharges of Dredged or Fill Material

Pursuant to Section 404 of the Clean Water Act, the Corps regulates the discharge of dredged or fill material into waters of the U.S. Corps-regulated activities under Section 404 include, but are not limited to, grading, placing of riprap for erosion control, pouring concrete, laying sod, and stockpiling excavated material into waters of the U.S.

Waters of the U.S. include, but are not limited to: (1) interstate waters, (2) waters that are used, were used, or are susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide, and (3) other waters such as lakes, rivers, intermittent and perennial streams, mudflats, sandflats, natural ponds, wetlands, wet meadows, and other aquatic habitats that could affect interstate or foreign commerce. Tributaries to these features and adjacent wetlands are also waters of the U.S.[61]

The landward limits of the Corps' Section 404 jurisdiction in tidal waters of the U.S.:

(1) Extends to the high tide line, or

(2) When adjacent non-tidal waters of the U.S. are present, the jurisdiction extends to the limits identified below.

The limits of Corps' Section 404 jurisdiction in non-tidal waters of the U.S.:

(1) In the absence of adjacent wetlands, the jurisdiction extends to the OHWM, or

(2) When adjacent wetlands are present, the jurisdiction extends beyond the OHWM to the limit of the adjacent wetlands.

(3) When the water of the United States consists only of wetlands the jurisdiction extends to the limit of the wetland.

The term OHWM is defined as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris." 33 C.F.R. §328.3(e).

The Corps regulations define wetlands as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. 33 C.F.R. §328.3(b).

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61 The USEPA and the Corps signed a final rule on May 27, 2015 that redefines the scope of waters protected under the Clean Water Act (80 Fed.Reg. 37054, 37055–37056, Clean Water Rule: Definition of "Waters of the United States"). This rule presently is stayed pending resolution of legal challenge (In re: ENVIRONMENTAL PROTECTION AGENCY and Department of Defense Final Rule; "Clean Water Rule: Definition of Waters of the United States," 80 Fed.Reg. 37,054 (June 29, 2015). State of Ohio, State of Michigan, and State of Tennessee (15–3799); State of Oklahoma (15–3822); State of Texas, State of Louisiana, and State of Mississippi (15–3853); State of Georgia, State of West Virginia, State of Alabama, State of Florida, State of Indiana, State of Kansas, Commonwealth of Kentucky, North Carolina Department of Environment and Natural Resources, State of South Carolina, State of Utah, and State of Wisconsin (15–3887) v. United States Army Corps of Engineers, et al., 803 F.3d 804 (6th Cir. 2015)).

The Project site contains waters of the U.S. subject to Corps jurisdiction under Section 404 as described above in Section 3.4.2.

The Section 404(b)(1) Guidelines, promulgated by the USEPA, govern the issuance of permits authorizing the placement or discharge of fill material into waters of the U.S., and state that:

> . . . no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. (40 C.F.R. §230.10(a))

Under the Section 404(b)(1) Guidelines, an applicant must demonstrate avoidance or minimization of impacts to waters of the U.S. to the maximum extent practicable. Under the above requirements, the Corps can only issue a Department of the Army permit for the "least environmentally damaging practicable alternative" (LEDPA). In addition, the Corps is prohibited from issuing a permit that is contrary to the public interest. (33 C.F.R. § 320.4).

The Section 404(b)(1) Guidelines also extend additional protection to certain rare and/or sensitive aquatic habitats. These are termed "special aquatic sites," and include six categories: sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle/pool complexes. (40 C.F.R. §§ 230.40-230.45). For proposed activities involving discharges into special aquatic sites, the Section 404(b)(1) Guidelines require consideration of whether the activity is dependent on access or proximity to, or siting within, a special aquatic site in order to fulfill its basic project purpose. If an activity is determined not to be water dependent, the Section 404(b)(1) Guidelines establish the following two presumptions (40 C.F.R. §230.10(a)(3)), which the applicant is required to rebut in addition to satisfying the alternatives analysis requirements:

(1) That practicable alternatives not involving discharges of fill material into special aquatic sites are presumed to be available; and

(2) That all practicable alternatives to the proposed discharge not involving a discharge into a special aquatic site are presumed to have less adverse impacts on the aquatic ecosystem.

For non-water-dependent projects, the applicant must rebut these presumptions in order to demonstrate compliance with the Section 404(b)(1) Guidelines.

Of the six categories of special aquatic sites, only wetlands are at issue with respect to this Project.

Clean Water Act Sections 401 and 402: Water Quality Certification, SWPPP, and NPDES

In California, before the Corps can issue a Department of the Army permit, an applicant must apply for and receive a Section 401 water quality certification or waiver from one of the nine Regional Water Quality Control Boards (RWQCBs) or the State Water Resources Control Board (SWRCB).

The National Pollutant Discharge Elimination System (NPDES) under Section 402 of the Clean Water Act established a permit program to control water pollution by regulating the discharge of pollutants into waters of the U.S. Initially, NPDES permits focused on regulating point source pollution, which originates from a definite source, such as industrial facilities, and discharges at a specific point. However, USEPA and the state of California increasingly have focused on controlling discharges from diffuse, non-point sources. As part of California's program to limit non-point source pollution (urban runoff), non-point source discharges (cities, counties) must obtain an NPDES permit to control the discharge of pollutants to the storm drain system. In association with the NPDES, the Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) and monitoring plan. A SWPPP must list Best Management Practices (BMPs) the discharger will use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body.

The Project site contains features subject to RWQCB and SWRCB jurisdiction. Because the Project involves restoration and construction activities that could result in water quality impacts to waters of the State, permits from the RWQCB or SWRCB must be obtained.

Rivers and Harbors Act of 1899

Section 10 of the RHA (33 U.S.C. § 403) requires authorization from the Corps for work or structures in or affecting navigable waters of the U.S.

The term "*navigable waters of the U. S.*" generally includes those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity (33 C.F.R. §329.4).

The term "*structure*" includes, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other obstacle or obstruction (33 C.F.R. §322.2).

The term *"work"* includes, without limitation, any dredging or disposal of dredged material, excavation, filling, or other modification of a navigable water of the United States (33 C.F.R. §322.2).

The geographic and jurisdictional limits of the Corps' Section 10 jurisdiction in rivers and lakes:

(a) ***Jurisdiction over entire bed.*** Federal regulatory jurisdiction, and powers of improvement for navigation, extend laterally to the entire water surface and bed of a navigable waterbody, which includes all the land and waters below the ordinary high water mark. Jurisdiction thus extends to the edge (as determined above) of all such waterbodies, even though portions of the waterbody may be extremely shallow, or obstructed by shoals, vegetation or other barriers. Marshlands and similar areas are thus considered navigable in law, but only so far as the area is subject to inundation by the ordinary high waters.

(1) The OHWM of non-tidal rivers is the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas.

(2) Ownership of a river or lake bed or of the lands between high and low water marks will vary according to state law; however, private ownership of the underlying lands has no bearing on the existence or extent of the dominant Federal jurisdiction over a navigable waterbody.

(b) ***Upper limit of navigability.*** The character of a river will, at some point along its length, change from navigable to non-navigable. Very often that point will be at a major fall or rapids, or other place where there is a marked decrease in the navigable capacity of the river. The upper limit will therefore often be the same point traditionally recognized as the head of navigation, but may, under some of the tests described above, be at some point yet farther upstream.

The geographic and jurisdictional limits of Corps jurisdiction in oceanic and tidal waters of the U.S.:

(a) ***Ocean and coastal waters.*** The navigable waters of the U.S. over which Corps regulatory jurisdiction extends include all ocean and coastal waters within a zone three geographic (nautical) miles seaward from the baseline (The Territorial Seas). Wider zones are recognized for special regulatory powers exercised over the outer continental shelf. 33 C.F.R. § 322.3(b).

(1) *Baseline defined.* Generally, where the shore directly contacts the open sea, the line on the shore reached by the ordinary low tides comprises the baseline from which the distance of three geographic miles is measured. The baseline has significance for both domestic and international law and is subject to precise definitions. Special problems arise when offshore rocks, islands, or other bodies exist, and the baseline may have to be drawn seaward of such bodies.

(2) *Shoreward limit of jurisdiction.* Corps regulatory jurisdiction in coastal areas extends to the line on the shore reached by the plane of the mean (average) high water. Where precise determination of the actual location of the line becomes necessary, it must be established by survey with reference to the available tidal datum, preferably averaged over a period of 18.6 years. Less precise methods, such as observation of the "apparent shoreline" which is determined by reference to physical markings, lines of vegetation, or changes in type of vegetation, may be used only where an estimate is needed of the line reached by the mean high water.

(b) ***Bays and estuaries.*** Corps regulatory jurisdiction extends to the entire surface and bed of all waterbodies subject to tidal action. Jurisdiction thus extends to the edge (as determined by paragraph (a)(2) above) of all such waterbodies, even though portions of the waterbody

> may be extremely shallow, or obstructed by shoals, vegetation, or other barriers. Marshlands and similar areas are thus considered "navigable in law," but only so far as the area is subject to inundation by the mean high waters. The relevant test is therefore the presence of the mean high tidal waters, and not the general test described above, which generally applies to inland rivers and lakes.

Structures or work outside the limits defined above for navigable waters of the U.S. require a Department of the Army permit pursuant to Section 10 of the RHA if the structure or work affects the course, location, or condition of the water body in such a manner as to impact on its navigable capacity (33 C.F.R. § 322.3).

The Project site contains potential navigable waters of the U.S. subject to Corps jurisdiction under Section 10 of the RHA as described in Section 3.4.2 above.

Section 14 of the RHA of 1899 (33 U.S.C. § 408), commonly referred to as "Section 408," authorizes the Corps to grant permission to alter, occupy, or use a Corps civil works project if the Secretary determines that the activity will not be injurious to the public interest and will not impair the usefulness of the project. The levees currently enclosing Ballona Creek are part of the LACDA project and changes to them would require a Section 408 permit from the Corps prior to modification.

Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) establishes national policy to preserve, protect, develop, and, where possible, restore or enhance the resources of the nation's coastal zones. In accordance with Section 307(c) of the CZMA, after approval by the Secretary of Commerce of a state's management program, any applicant for a required Federal license or permit to conduct an activity in or outside of the coastal zone affecting any land or water use or natural resource of the coastal zone of that state shall provide in the application to the licensing or permitting agency a certification that the proposed activity complies with the enforceable policies of the state's approved program and that such activity will be conducted in a manner consistent with the program. The Federal government certified the California Coastal Management Program (CCMP) in 1977. The enforceable policies of that document are Chapter 3 of the California Coastal Act of 1976. All consistency documents are reviewed for consistency with these policies.

For all of the California Coast, except San Francisco Bay,[62] the state agency responsible for implementing the CZMA is the California Coastal Commission (CCC). The CCC is responsible for reviewing proposed Federal and Federally-licensed or permitted activities to assess their consistency with the approved CCMP.

The majority of the Project site is located within the coastal zone as described in Section 3.4.2; therefore, the Project is subject to the CZMA.

[62] In San Francisco Bay the administering agency is the San Francisco Bay Conservation and Development Commission.

Federal Endangered Species Act

Species listed as endangered, threatened, or candidate (proposed for listing) by the USFWS or NMFS under the FESA are protected under Section 9 of the FESA, which forbids any person to "take" an endangered or threatened species. "Take" is defined in FESA Section 3 as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The term "harm" includes destruction or modification of habitat. FESA Sections 7 and 10 authorize "incidental take" for an otherwise lawful activity if it is determined that the activity would not jeopardize the species' survival or recovery. Under Section 7, Federal agencies are to consult with the USFWS or NMFS, as applicable, if their Federal actions may affect a Federally-listed species or result in the destruction or adverse modification of designated critical habitat. Section 10 applies when a Federally-listed species is present but no Federal nexus is present. The general take prohibition and Section 7 take authorization process are relevant to the Project because the Project site is known to support Federally-listed species' and their habitats. There is no designated critical habitat within or adjacent to the Project site (USFWS 2016).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (16 U.S.C. §§703–711) (MBTA) makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations. The MBTA effectively requires that Project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (February 1 through August 31, annually). Disturbance that causes nest abandonment or loss of reproductive effort (e.g., killing or abandonment of eggs or young) is considered "take" and is potentially punishable by fines and/or imprisonment. The MBTA protects over 800 species, including geese, ducks, shorebirds, raptors, songbirds, and many relatively common species. Most bird species found within the vicinity of the Project site are protected under the MBTA.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Act provides for the conservation and management of the nation's fishery resources through the preparation and implementation of fishery management plans (FMPs). The Magnuson-Stevens Act calls for NMFS to work with regional Fishery Management Councils to develop FMPs for each fishery under their jurisdiction.

One of the required provisions of FMPs specifies that EFH be identified and described for the fishery, adverse fishing impacts on EFH be minimized to the extent practicable, and other actions to conserve and enhance EFH be identified. The act also mandates that NMFS coordinate with and provide information to Federal agencies to further the conservation and enhancement of EFH. Federal agencies must consult with NMFS on any action that might adversely affect EFH. When NMFS finds that a federal or state action would adversely affect EFH, it is required to provide conservation recommendations. The Magnuson-Stevens Act applies to the Project since there is groundfish EFH within Ballona Creek.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act, as amended in 1964, requires that all Federal agencies consult with NMFS, USFWS, and state wildlife agencies (i.e., CDFW) when proposed actions might result in modification of a natural stream or body of water. Federal agencies must consider effects that these projects would have on fish and wildlife development and provide for improvement of these resources. The Fish and Wildlife Coordination Act allows NMFS, USFWS and CDFW to provide comments to the Corps during review of projects under Section 404 of the Clean Water Act (concerning the discharge of dredged materials into navigable waters of the U.S.) and Section 10 of the RHA (obstructions in navigable waterways). NMFS comments provided under the Fish and Wildlife Coordination Act are intended to reduce environmental impacts to migratory, estuarine, and marine fisheries and their habitats. Since the Project involves the modification of waters of the U.S., consultation with NMFS, USFWS and CDFW is required.

3.4.3.2 State

California Coastal Act of 1976

The California Coastal Act of 1976 (Coastal Act) (Pub. Res. Code §30000 et seq.) was enacted to establish policies and guidelines that provide direction for the conservation and development of the California coastline. The Coastal Act established the CCC and created a state and local government partnership to ensure that public concerns regarding coastal development are addressed. The basic goals of this program are to:

1. Protect, maintain, and, where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources;
2. Ensure orderly, balanced utilization and conservation of coastal zone resources, taking into account the social and economic needs of the people of the state;
3. Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resource conservation principles and constitutionally protected rights of private property owners;
4. Ensure priority for coastal-dependent and coastal-related development over other development on the coast; and
5. Encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

The CCC serves as the coastal management and regulatory agency with jurisdiction over the Coastal Zone (Pub. Res. Code §30103). The CCC is responsible for assisting in the preparation, review, and certification of Local Coastal Programs/Local Coastal Plans (LCPs), which are developed by municipalities for that portion of their jurisdiction that falls within the coastal zone. Following certification of the LCP, regulatory responsibility then is delegated to the local jurisdiction, although the CCC retains jurisdiction over the immediate shoreline. The majority of the Project site is within the coastal zone and supports features potentially subject to the jurisdiction of the CCC.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act is the principal law governing water quality regulation in California (California Water Code §13000 et seq.). It establishes a comprehensive program to protect water quality and the beneficial uses of water. The Porter-Cologne Act applies to surface waters, wetlands, and groundwater and to both point and nonpoint sources of pollution. Pursuant to the Porter-Cologne Act, the policy of the state is as follows:

> "That the quality of all the waters of the State shall be protected;
>
> That all activities and factors affecting the quality of water shall be regulated to attain the highest water quality within reason; and
>
> That the State must be prepared to exercise its full power and jurisdiction to protect the quality of water in the State from degradation."

The RWQCB regulates discharges under the Porter-Cologne Act primarily through issuance of NPDES permits for point source discharges and waste discharge requirements (WDRs) for non-point source discharges. Anyone discharging or proposing to discharge materials that could affect water quality (other than to a community sanitary sewer system regulated by an NPDES permit) must file a report of waste discharge. The Porter-Cologne Act applies to the Project since grading, filling, and other construction-related activities could affect the water quality of waters of the State.

California Fish and Game Code

CDFW is the state's trustee for fish and wildlife resources, and is responsible for administering and enforcing the Fish and Game Code. With jurisdiction over the conservation, protection, and management of fish, wildlife, plants, and their habitat, CDFW is also responsible for protecting, conserving, and perpetuating native fish, plants, and wildlife, for their aesthetic, intrinsic, ecological, educational, and economic values. Sections of the Fish and Game Code that CDFW is responsible for administering and enforcing include Section 1600 et seq. (Lake and Streambed Alteration Program), Section 2050 et seq. (California Endangered Species Act, CESA), and Section 1580 et seq. (Ecological Reserves). Select aspects of each are summarized below.

Lake and Streambed Alteration Program (Section 1600 et seq.)

Section 1602 of the Fish and Game Code requires an entity to notify CDFW before it will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake." If CDFW determines and informs the entity that the activity will not substantially adversely affect any existing fish or wildlife resources, the entity may commence the activity. If, however, CDFW determines that the activity may substantially adversely affect an existing fish or wildlife resource, the entity may be required to obtain from CDFW a Streambed Alteration Agreement, which will include reasonable measures necessary to protect the affected resource(s), before the entity may conduct the activity.

California Endangered Species Act (Section 2050 et seq.)

The CESA prohibits the import, export, take, possession, purchase, or sale within California of any CESA-listed or candidate species. The California Fish and Game Commission is responsible for listing or delisting a species under CESA and CDFW acts as the Commission's scientific advisor during that process. CDFW also is responsible for regulating the take of listed and candidate species through various provisions of the Fish and Game Code. See e.g., §2081(a) for scientific, educational, or management purposes; §2081(b) (incidental take); §2086 et seq. (Voluntary Local Program); §2089.2 et seq. (California State Safe Harbor Agreement Program Act); and §2800 et seq. (Natural Community Conservation Planning Act).

Ecological Reserves (Section 1580 et seq.)

California Fish and Game Code Section 1580 et seq. provide for the establishment of ecological reserves "to protect threatened or endangered native plants, wildlife, or aquatic organisms or specialized habitat types, both terrestrial and nonmarine aquatic, or large heterogeneous natural gene pools for the future use of mankind." The 577-acre portion of the Ballona Reserve was listed as a State Ecological Reserve (Ballona Wetlands Ecological Reserve) in 2005. Pursuant to Section §1580, CDFW may "maintain, use, and administer land, or land and nonmarine water, or land and nonmarine water rights, suitable for the purpose of establishing ecological reserves."

3.4.3.3 Local

State agencies acting in their sovereign capacity are not subject to local regulations unless the California Constitution says they are or the Legislature has consented to such regulation. However, local regulations are mentioned in this EIS/EIR because this analysis contemplates actions by SoCalGas outside of state property. Moreover, local plans and policies help inform this analysis of Biological Resources.

Los Angeles County General Plan Significant Ecological Area Program

The Significant Ecological Area (SEA) Program is a component of the Los Angeles County Conservation and Natural Resources Element. A SEA designation is given to land that contains irreplaceable biological resources. The purpose of the SEA Program is to "provide a process that allows balanced development within the SEAs and reconciles potential conflicts between conservation and development within the SEAs" (SEA Ordinance Update Draft 6, released September 25, 2014). The objective of the SEA Program is to "preserve the genetic and physical diversity of the County by designating biological resource areas capable of sustaining themselves into the future" (Los Angeles County Department of Regional Planning Preliminary Draft SEA Program Guide 2013).

Designated Coastal Resource Areas (CRAs) that are included in current maps have ecological significance equivalent to SEAs, but CRAs are within the California Coastal Zone and so are not subject to the SEA Program because they are preempted by the California Coastal Act.

The portions of the Ballona Reserve within the County's jurisdiction previously were identified as a SEA and have been included as a CRA in new mapping prepared for the Los Angeles County General Plan: Technical Appendix E.

City of Los Angeles

City of Los Angeles General Plan

The City of Los Angeles General Plan provides a comprehensive long-range view of the city and includes a Land Use Element comprising 35 community plans and 10 technical elements. The technical elements include a Conservation Element and an Open Space Element.

City of Los Angeles General Plan: Conservation Element

The Conservation Element primarily addresses preservation, conservation, protection and enhancement of the City’s natural resources. The natural resources or processes that should be or are subject to preservation, conservation, protection, and/or enhancement efforts include endangered species such as the Belding’s savannah sparrow, which lives within the Project site; erosion, including beach erosion; fisheries; habitats, including coastal wetlands; and open space/parks. In addition, the Conservation Element identifies applicable regulations and the Conservation Element policies with regard to each type of resource.

City of Los Angeles General Plan: Open Space Element

The Open Space Element consists of an Open Space Plan that serves to guide the identification, preservation, conservation, and acquisition of open space within the City of Los Angeles. The Open Space Plan was adopted in 1973; an update is pending. Areas B and C reflect several of the characters used to define “Open Space” in the Open Space Element of the City’s General Plan. Specifically, they provide “opportunities for recreation and education” and conserve or preserve “natural resources or ecologically important areas.”

City of Los Angeles General Plan: Land Use Element

Coastal Bluffs Specific Plan

The purposes of the Coastal Bluffs Specific Plan include, but are not limited to, implementing the policies and objectives of specific portions of the City of Los Angeles General Plan; protecting, maintaining, enhancing, and where feasible, restoring the overall quality of the coastal environment and its natural and cultural resources; ensuring that maximum public access to the coast and public recreation is provided; preparing specific development and environmental regulations tailored to the particular conditions and circumstances of the Westchester Bluffs consistent with the general policies of the adopted Los Angeles General Plan and Westchester-Playa del Rey Community Plan; and ensuring that development in areas adjacent to environmentally sensitive habitat areas are sited and designed to prevent impacts that would significantly degrade such areas, and to be compatible with the continuation of such habitat areas. The upper area of the SoCalGas Property is within the Coastal Bluffs Specific Plan area.

3.4.4 Thresholds of Significance

In this analysis, the Corps has elected to evaluate the context and intensity of potential environmental adverse impacts relative to the criteria identified in CEQA Guidelines Appendix G, Section IV. In addition, the analysis considers where improvements of the Project would provide a net beneficial effect relative to the conditions described in Section 3.4.2, Affected Environment.

For purposes of this analysis, Alternative 1, 2, 3, or 4 would result in a significant impact related to Biological Resources if it would:

BIO-1 Have a substantial long-term, adverse impact, either directly or via 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 CDFW, USFWS, or NMFS;

BIO-2 Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS;

BIO-3 Result in a substantial adverse impact on waters of the U.S. as defined by Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, or state protected wetlands and waters defined by the California Water Code and California Coastal Act through direct removal, filling, hydrological interruption, loss of functions or services, or other means; or

BIO-4 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.

CEQA Guidelines Appendix G, Section IV criterion e suggests that a project would have a significant adverse impact to Biological Resources if it would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Because no such policy governs the Project site, no impact would result and this potential criterion is not analyzed in detail in Section 3.4.6, *Direct and Indirect Resources*.

CEQA Guidelines Appendix G, Section IV criterion f suggests that a project would have a significant impact to Biological Resources if it would conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Communities Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan. Because no such plan governs the Project site, no impact would result and this potential criterion is not analyzed in detail in Section 3.4.6, *Direct and Indirect Impacts*.

3.4.5 Methodology

Potential adverse impacts and beneficial effects on species and natural communities were evaluated according to the likelihood of occurrence while taking into account the biology and/or life history of each resource potentially impacted by the Project alternatives. Several considerations were made in determining the potential for each considered special-status species to occur on the Project site, and the distribution of potential habitat on the site. In cases where the species is known or expected to occur on-site, the analysis undertook a conservative approach in identifying the extent of potential habitat on the site (i.e., evaluated the maximum possible impact area). For example, in the case of Belding's savannah sparrow, this species has been widely described as occurring and breeding in Area B. The assessment of occupied habitat for this species relied on data collected during surveys with an accompanying GIS estimate based on the Belding's savannah sparrow territory size reported in the scientific literature. In addition, a much larger estimate of potential habitat was generated based on the distribution of potentially suitable habitat on the Project site, and including a wider buffer than is reported in the scientific literature. It is unlikely that Belding's savannah sparrow uses all potentially suitable habitat on the site; therefore, the estimate of potential habitat likely overestimates area that is actively used by this species. This conservative approach was used for each species considered in this section, such that potential habitat for each species is likely overestimated in the EIS/EIR.

Occurrence within the Project site alone may not expose a resource to any reasonable potential for adverse impacts. For example, a species might be confirmed in the Project site during its migration period but may be a broad habitat generalist at that time. If the known cause of decline or population limitation for that species occurs at life stages other than migration (e.g., during breeding), minor habitat removal due to the Project during that migration period may not be likely to cause significant adverse impacts on that species.

Potential impacts of sea-level rise are evaluated in this analysis using the best available estimates of projected future sea-level rise. Although understanding the potential impacts of global climate change is limited, as discussed in the Project's Conceptual Plan (Appendix B3), Bergquist et al. (2012) prepared an extensive analysis of the implications of climate change for the Project's proposed restoration within the Ballona Reserve. Their analysis focused on the impacts of rising sea levels and increases in major storm events on two restoration alternatives, including Alternative 1, the largest-scale restoration alternative.

Their analysis indicated that the Ballona Reserve would be particularly vulnerable to sea level rise due to its low-lying coastal position and that the impacts of rising sea levels are likely to outweigh the impacts of increased frequency and severity of major storm events. To accommodate rising sea levels, the Project proposes gentle slopes in tidal wetland and transition habitats with the intent that such slopes would allow tidal marsh habitat to move landward as sea levels rise. As sea levels rise, it is expected that the sequence of tidal marsh, transition, and upland habitat would shift upslope. This would result in a decrease in upland habitat, but would enhance the ability of tidal marsh habitat and its associated wildlife to persist. This use of broad transitional slopes between wetland and upland habitats is consistent with the State Coastal Conservancy's Climate Change Policy (SCC 2011). The timeframe under which such changes may occur is uncertain. Other potential impacts of climate change, such as changes in temperature and species response, are more difficult to analyze and estimate than sea-level rise. As such, the use of adaptive management strategies would play an important part in managing the Ballona Reserve in response to climate change. See Section 3.7, *Greenhouse Gas Emissions*, for additional discussion of climate change as it relates to the various restoration alternatives.

The types of potential adverse impacts and beneficial effects on biological resources considered in the following analysis include both direct and indirect impacts. The potential impacts described in Section 3.4.6, *Direct and Indirect Impacts*, apply to multiple resources evaluated in this section; therefore, they are described generally where possible to avoid redundancy, and then in detail with respect to specific thresholds.

3.4.6 Direct and Indirect Impacts

Direct impacts are those that can be anticipated during activities associated with habitat enhancement, habitat restoration, and operations and maintenance (O&M). Examples of direct impacts include mortality of individuals by construction-related activities and permanent loss of habitat. Direct impacts to biological resources associated with the Project include both permanent (e.g., trails, SoCalGas well sites) and temporary impacts (e.g., enhancement areas).

The characterization of impacts is resource-dependent, and a permanent impact to one species or habitat could result in a beneficial effect for another. For example, restoration activities that would create tidal wetlands by removing fill material and restoring tidal influence would have a beneficial effect for wetland habitats and wetland dependent species, but would result in a permanent impact to certain upland habitat types and upland-dependent species. For the purposes of this analysis, activities that result in the permanent conversion of habitats from one type to another generally are considered to be permanent impacts to the habitat that is being lost and the species that depend on such habitat. For example, a conversion from wetland habitat to upland habitat would be considered a permanent impact to wetlands, while the restoration of upland habitat to wetland habitat would be considered a permanent impact to upland habitat.

Temporary impacts occur when the function of a habitat is temporarily reduced during or immediately following habitat enhancement, but there is no conversion and no permanent loss of function. Temporary impacts could occur during habitat enhancement related to site access and staging, or grading and earthwork associated with restoring hydrology to wetland habitats. In each case, full habitat function would be restored or improved after the completion of habitat enhancement activities, although temporary effects could last for the duration of the 10-year post-restoration monitoring period. Most temporary impacts associated with the Project's enhancement activities would be due to construction activities and would be detrimental. Long-term effects following completion of construction ultimately would be beneficial, and result in measureable improvements in the functions and values of habitat resources compared to existing conditions.

Direct impacts of restoration activities generally are divided into two categories: mechanical and non-mechanical. Mechanical impacts would occur as a result of the use of heavy machinery and include activities such as site grading, levee construction, and temporary filling. Non-mechanical impacts would occur as a result of hydrological changes and/or minor potential impacts associated with habitat enhancement such as weed abatement, plantings, and/or biological studies. Under Alternative 1, as an example, approximately 75% of the Project site would be affected mechanically and the remaining 25% would remain available for enhancement activities such as invasive species removal.

Indirect impacts are those that result from an alternative, but can occur later in time or are farther removed in distance while still reasonably foreseeable and related to the Project. Indirect impacts could occur both during and following restoration. For example, restoration could result in temporary hydrological alteration and water quality impacts, erosion, dust, equipment-related noise, vibration, lighting, and increased human activity. Each of these impacts could indirectly impact biological resources by disrupting or interfering with wildlife behavior and natural ecosystem processes. Post-restoration indirect impacts could occur as a result of landscape-level changes including habitat fragmentation and isolation, altered wildfire regimes, altered hydrology, and the spread of invasive plant species. Post-restoration indirect impacts also could occur as a result of operations activities and increased human activity, which could result in vegetation trampling, trash, lighting, noise, and vehicle collisions. These indirect impacts could increase mortality, reduce productivity, and/or reduce the value and functions of natural open space for the native species that inhabit it. The distance at which potential indirect impacts were evaluated varies by element and the same standard was not used for all sensitive biological resources. For plants, indirect effects are limited, but often relate to factors such as dust accumulation on leaves. With the implementation of mitigation measures (e.g., dust suppression), such impacts often never materialize; thus, specifying an indirect impact area could occur is misleading. A qualitative approach was used for some resources such as wetlands, where the potential indirect impacts were evaluated relative to changes in habitat quality. For example, many birds are sensitive to indirect impacts related to equipment vehicle movement and increased noise that are often associated with project implementation. CDFW has not adopted formal guidance for determining potential indirect impacts to birds, but generally considers a distance of 250-feet for passerine birds and 500-feet for raptors as the area in which activities could affect nesting birds.

3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action

Alternative 1 would restore aquatic resources and upland habitat within the Ballona Reserve, replace the existing concrete channelized segment of Ballona Creek with a more natural meander-like flow pattern, provide visitor amenities (such as pedestrian and bike trails along levee tops, two bicycle/pedestrian bridges, and a new three-story parking structure), remove natural gas monitoring wells and associated pipelines from within the Ballona Reserve, relocate the natural gas monitoring wells to the SoCalGas Property, and remove an abandoned sewer pipeline. See Table 2-1c, *Summary of Alternatives*, in Chapter 2, *Description of Alternatives*, for further details. As noted therein, Alternative 1 would be implemented in two phases, with the proposed work to be allocated as follows:

1. **Phase 1**: Restoration of Area A and North Area B, enhancement of the existing managed wetlands in South/Southeast Area B, construction of new perimeter flood protection levees and an interim levee along West Area B, realignment of the Ballona Creek channel, and enhancement of upland habitats in Area C. Phase 1 would only decommission the natural gas wells that would be directly impacted by the Phase 1 restoration. Other wells, including the wells in Area A and West Area B, would be maintained until decommissioned in Phase 2. Portions of the site would be planted (e.g., upland, transition zone, high marsh, and low marsh), while other marsh areas may rely on natural recruitment of salt marsh vegetation (e.g., mid marsh).

2. **Phase 2**: Full tidal restoration of West Area B would occur and new West Area B perimeter flood protection levee would be completed. Remaining gas wells would be decommissioned and the well removal areas would be restored. Portions of the site would be planted (e.g., upland, transition zone, high marsh, and low marsh), while other marsh areas may rely on natural recruitment of salt marsh vegetation (e.g., mid marsh).

3. **Post-restoration:** Post-restoration activities include ongoing existing and future operations and maintenance of the Ballona Reserve, including the LACDA project facilities within the Project site and long-term habitat management Reserve-wide. Such activities are described in detail in Appendix B5, Preliminary Operation and Maintenance Plan.

FESA Species Effect Determinations to Support Section 7 Consultation

Following completion of a biological assessment (Appendix D17), the Corps has made a determination that implementation of Alternative 1 may affect, but is not likely to adversely affect, the following Federally-listed species: El Segundo blue butterfly, light-footed Ridgway's rail, coastal California gnatcatcher, California least tern, and least Bell's vireo. As such, Section 7 consultation with USFWS is required.[63] In addition, the Corps has made a no effect determination regarding the following species: coastal dunes milk-vetch, salt marsh bird's beak, Ventura marsh milk-vetch, Pacific pocket mouse, steelhead, green sea turtle, blue whale, fin whale, humpback whale, sei whale, sperm whale, gray whale, Guadalupe fur seal, leatherback turtle, loggerhead turtle, olive ridley sea turtle, and the scalloped hammerhead shark. As such, Section 7 consultation is not required for these species. The basis for each no effect determination is provided below. Table 3.4-8 summarizes the impact determinations for Federally-listed species that could occur within the Project area, and the location of the analysis within this document.

El Segundo blue butterfly: No direct impacts to suitable or occupied habitat for El Segundo blue butterflies would occur. There is a limited potential for butterfly collisions with equipment during the flight season, and potential indirect impacts related to accumulation of fugitive dust, vibration, trail maintenance, and increased human activity. However, with implementation of Project Design Features and mitigation measures, Alternative 1 may affect, but is not likely to adversely affect El Segundo blue butterfly or its habitat.

Light-footed Ridgway's rail: This species has been observed foraging on the Project site, and has the potential to breed within the Project site. If site activities commence during the avian nesting season, the breeding success of light-footed Ridgway's rail could be impacted. Temporary disturbance of marsh habitat would occur during restoration activities. However, with implementation of Project Design Features and mitigation measures, Alternative 1 may affect, but is not likely to adversely affect light-footed Ridgway's rail or its habitat.

Coastal California gnatcatcher: This species is not expected to breed or forage on the Project site considering the habitat conditions onsite and the lack of recent observations of this species. However, since focused surveys for this species have not been conducted at the Ballona Reserve since 2011, although unlikely, potential impacts to nesting could occur if this species is confirmed present onsite. However, with implementation of Project Design Features and mitigation measures, Alternative 1 may affect, but is not likely to adversely affect coastal California gnatcatcher or its habitat.

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63 Section 7(a)(2) of the FESA requires each federal agency to "insure that any action authorized, funded, or carried out by such agency. . . is not likely to jeopardize the continued existence of any endangered species of threatened species or result in the destruction or adverse modification of [critical] habitat of such species." 16 U.S.C. §1536(a)(2). An "action" includes all "activities or programs of any kind authorized, funded, or carried out, in whole or in party, by Federal agencies" that are within the agencies' discretionary control. 50 C.F.R. §§402.02, 402.03. A Federal agency must consult with the appropriate wildlife agency under section 7 whenever it takes an action that "may effect" a listed species or designated critical habitat. 50 C.F.R. §402.14(a). In this case, the "action" includes all activities as part of Alternative 1 for which CDFW and LACFCDLACDPW have requested permits from the USACE.

TABLE 3.4-8
SPECIES EFFECT DETERMINATIONS TO SUPPORT SECTION 7 CONSULTATION – ALTERNATIVE 1

Species	Federal Listing Status	Location of Effects Analysis	Effect Determination
El Segundo blue butterfly	Endangered	1-BIO-1c	May Affect, Not Likely to Adversely Affect
California least tern	Endangered	1-BIO-1o	May Affect, Not Likely to Adversely Affect
Coastal California gnatcatcher	Threatened	1-BIO-1j	May Affect, Not Likely to Adversely Affect
Least Bell's vireo	Endangered	1-BIO-1k	May Affect, Not Likely to Adversely Affect
Light-footed Ridgway's rail	Endangered	1-BIO-1p	May Affect, Not Likely to Adversely Affect
Coastal dunes milk-vetch	Endangered	3.4.2.2 Environmental Setting, Special-Status Plant Species	No Effect
Salt marsh bird's-beak	Endangered	3.4.2.2 Environmental Setting, Special-Status Plant Species	No Effect
Ventura marsh milk-vetch	Endangered	3.4.2.2 Environmental Setting, Special-Status Plant Species	No Effect
Pacific pocket mouse	Endangered	3.4.2.2 Environmental Setting, Special-Status Mammals	No Effect
Steelhead	Endangered	3.4.2.2 Environmental Setting, Special-Status Fish	No Effect
Green sea turtle	Threatened	3.4.2.2 Environmental Setting, Special-Status Reptiles and Amphibians	No Effect
Blue whale	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Fin whale	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Humpback whale	Threatened	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Sei whale	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Sperm whale	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect

TABLE 3.4-8 (Continued)
SPECIES EFFECT DETERMINATIONS TO SUPPORT SECTION 7 CONSULTATION – ALTERNATIVE 1

Species	Federal Listing Status	Location of Effects Analysis	Effect Determination
Gray whale, Western North Pacific DPS	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Guadalupe fur seal	Threatened	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Leatherback turtle	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Loggerhead turtle, North Pacific Ocean DPS	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Olive ridley sea turtle	Threatened	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Scalloped hammerhead shark	Threatened	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect

California least tern: This species is not expected to breed or forage on the Project site considering the habitat conditions onsite and the lack of recent observations of this species. This species unsuccessfully attempted to breed in Area B in 2014, so potential impacts to nesting could occur if this species attempts to nest onsite again. However, with implementation of Project Design Features and mitigation measures, Alternative 1 may affect, but is not likely to adversely affect California least tern or its habitat.

Least Bell's vireo: This species is known to breed and forage in Southeast Area B. Potential impacts to nesting could occur if this species attempts to nest onsite again. However, with implementation of Project Design Features and mitigation measures, occupied habitat for this species would be avoided. Alternative 1 may affect, but is not likely to adversely affect least Bell's vireo or its habitat.

Coastal dunes milk-vetch, salt marsh bird's beak, and Ventura marsh milk-vetch: None of these plants were detected during floristic rare plant surveys last conducted at the Project site in April 2011. Coastal dunes milk-vetch and salt marsh bird's beak were last detected in the early 1900s and 1981, respectively, between 1 to 4 miles from the Ballona Reserve. The nearest and most recent documented occurrence of Ventura marsh milk-vetch was in 1951 within the historic

Ballona wetlands (WRA 2011a). Therefore, Alternative 1 would have no effect on coastal dunes milk-vetch, salt marsh bird's beak or Ventura marsh milk-vetch.

Pacific pocket mouse: This species has not been observed on-site since 1938, despite surveys conducted in 1996, 2000, 2007, 2009, 2010, and 2011. Given the lack of any recent observations, Alternative 1 would not affect the Pacific pocket mouse.

Steelhead: Steelhead have only been observed once near the Project site; a 2008 sighting of two individuals upstream of the Project site. Furthermore, the existing Ballona Creek would provide only limited spawning habitat for this species. Therefore, given the lack of regular or recent observations, coupled with the limited ability of Ballona Creek to support steelhead reproduction, Alternative 1 would not affect steelhead.

Green sea turtle: This species has not been observed onsite. Given the lack of suitable habitat elements and in combination with Project Design Feature BIO-8: Biological Monitoring and Safety Zones to Protect Marine Mammals and Sea Turtles[64], Alternative 1 would not affect green sea turtles.

In addition, in consideration of the Project's potential inclusion of offshore disposal of dredged material, the Corps has made a determination that implementation of the Project would not affect the following Federally-listed species: blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), sei whale (*Balaenoptera borealis*), sperm whale (*Physeter macrocephalus*), gray whale [Western North Pacific distinct population segment (DPS) (*Eschrichtius robustus*)], Guadalupe fur seal (*Arctocephalus townsendi*), leatherback turtle (*Dermochelys coriacea*), loggerhead turtle [North Pacific Ocean DPS (*Caretta caretta*)], olive ridley sea turtle (*Lepidochelys olivacea*), green turtle (*Chelonia mydas*), scalloped hammerhead shark (*Sphyrna lewini*). These species are highly mobile and unlikely to be affected by slow-moving dredge material transport vessels as they haul material to the LA-2 offshore disposal site. In addition, in the original site designation for LA-2 and the accompanying EIS which was prepared by EPA and the Corps, Section 1.1.3 of the General Introduction Chapter 1 describes the proposed action: designation of the site for offshore disposal, including transport to and discharge of dredged material at the LA-2 site (see 1.1.3: dredging operations). Furthermore, the EIS includes correspondence from NMFS providing a list of species that may be affected by the proposed action (same species listed above), and a subsequent letter from NMFS concurring with a determination those species would not be adversely affected. Although the EIS was finalized in 1987, no operational changes in the transport and discharge of dredged material to/from/at LA-2 have been identified that would require re-initiation of Section 7 consultation for these species by the Corps. In addition, the USEPA prepared a final site designation for LA-3 in July 2005 that included a re-evaluation of LA-2. The Final EIS also concluded no effect to listed species.

64 See Table 2-2, Project Design Features Incorporated into the Ballona Wetlands Restoration Project for Alternatives 1, 2, and 3 for the complete text of Project Design Feature BIO-8 and all other Project Design Features.

Essential Fish Habitat

1-BIO-1a: Alternative 1 would have a substantial adverse short-term impact either directly or indirectly through habitat modifications, as well as some long-term, permanent impacts, on Essential Fish Habitat; however, following the Phase 2 restoration effort, Alternative 1 would result in a long-term net beneficial effect related to improved habitat quality. (Less than Significant with Mitigation Incorporated)

Areas that contain mapped EFH that may be impacted by a project are required to provide an assessment of the level of impact that may occur. This assessment includes a description of the proposed action, an analysis of the potential adverse effects on EFH, the Corps conclusions regarding the effects of the action on EFH, and proposed mitigation if applicable (50 C.F.R. §600.920(e)(3). The EFH for Pacific coast groundfish is defined as the aquatic habitat necessary to allow for groundfish production to support long-term sustainable fisheries for groundfish and for groundfish contributions to a healthy ecosystem, which includes suitable substrate for spawning, breeding, and growth to maturity. Descriptions of groundfish EFH for each of the 83 species and their life stages result in more than 400 EFH identifications. When these EFHs are taken together, the groundfish EFH includes all waters from the mean higher high water line, and the upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon and California seaward to the boundary of the U.S. Exclusive Economic Zone (EEZ) (NMFS 2016).

Analysis of the Potential Adverse Effects on EFH

Within the Project site, Alternative 1 would result in temporary and permanent impacts to the groundfish EFH mapped along Ballona Creek associated with the installation of limited areas of rock (armoring) or dirt fill and levee removal. During grading of the new channel banks associated with the realignment of Ballona Creek, the existing EFH would remain intact and would not be impacted. During creek realignment, the existing Ballona Creek channel would be permanently filled between the created meander shapes by burying four rock dikes across the soft bottom channel to form two enclosed areas for dirt fill placement. Permanent rock armoring within the channel also would occur between the Lincoln Boulevard and Culver Boulevard bridges, which could impact the suitability of groundfish EFH by altering existing substrate conditions.

Upon completion of the creek realignment, the existing levees would be removed to increase and restore tidal flows within the Project site. The removal of the existing levees would result in temporary, short-term water quality impacts (i.e., increased sedimentation) within an approximately 4,300-linear foot segment of Ballona Creek containing EFH habitat, along North Area A and North Area B of the Project site. Increased sedimentation could impact the suitability of groundfish EFH by altering the type and/or extent of substrate; however, channel dimensions such as depths and widths, would be remain similar to existing conditions.

The geographic extent of the EFH impacts near the Project site would primarily occur within a 4,300-linear-foot portion of Ballona Creek with temporary downstream water quality impacts resulting from sediment that could move from the Project site towards Ballona Creek's confluence with Santa Monica Bay, approximately 1 mile downstream. The nature of these impacts would be temporary and short-term (6 months anticipated). The long-term effects of restoration to EFH through realignment of Ballona Creek would increase the amount of tidal habitat that could be considered EFH habitat, as well as increase the quality and suitability of the existing EFH for marine species.

Potential temporary impacts to EFH and water quality in the Los Angeles and Long Beach Harbors would occur during any offshore disposal of soil from the Project site to existing ocean disposal sites LA-2 and LA-3. Under Alternative 1, the maximum amount of excavated soils that would be exported via barge would be 110,000 cubic yards, representing approximately 15% of the volume of dredged or excavated material currently discharged at LA-2 since 2015 and approximately 3% of the combined annual capacity of LA-2 and LA-3, which is a relatively small contribution (Corps 2017). Further, LA-2 and LA-3 are existing ocean disposal sites comprised of dredged fine sediments that are regularly used for disposal and thus subject to ongoing disturbance.

In addition, the fish species and life-history stages that may be impacted by the proposed restoration include species that occur within the Estuarine composite, which consists of those waters, substrates and associated biological communities within bays and estuaries of the EEZ, from mean higher high water level (MHHW, which is the high tide line) or extent of upriver saltwater intrusion to the respective outer boundaries for each bay or estuary as defined in 33 C.F.R. §80.1 (Coast Guard lines of demarcation). However, according to the list of federally managed groundfish species, none of these groundfish species have been documented at the Ballona Reserve (CDFW 2016, Johnston et al. 2015b).

Restoration

Phases 1 and 2 Direct Impacts

During Phases 1 and 2, direct impacts to EFH and species dependent on EFH would occur within Ballona Creek and potentially within tidal portions of the Ballona Reserve during channel realignment or levee removal. It is possible that benthic organisms and/or groundfish such as rockfish, sablefish, flatfish, and Pacific whiting, or other fish species described in Section 3.4.2 may be intermittently present in Ballona Creek or intertidal habitats when active restoration is in progress, resulting in the possible mortality of fish or benthic organisms.

Phases 1 and 2 Indirect Impacts

During Phase 1, restoration activities would remove levees that separate Area A and North Area B from Ballona Creek. Levee removal would immediately increase the area of flooded tidal marsh habitat that is available to Ballona Creek fish species and aquatic species and would enhance available habitat and food chain for these species. As described in Impact 1-BIO-2a, Alternative 1 would result in a substantial increase in southern mud intertidal habitat. Short-term impacts would occur to water quality both during and following site restoration while the marsh equilibrates.

Grading in Area A and North Area B would occur prior to levee breaching and would therefore not directly impact water quality in Ballona Creek during construction. As discussed in Section 3.9, *Hydrology and Water Quality*, Alternative 1 would deliver some sediment-laden runoff and associated constituents to Ballona Creek. Constituents associated with these sediments could then settle out into the channel and marsh at concentrations that may result in impairment based on Sediment Quality Objectives for biological resources/beneficial uses. Mitigation measures identified in Section 3.9 were developed to ensure additional sediment sampling is conducted prior to construction to identify any contamination that may have been missed in previous sampling efforts (e.g., Mitigation Measure WQ-1a-ii, *Sampling and Analysis Plan*). Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan) would implement measures to minimize sedimentation such as the installation of a 500-foot floating boom and turbidity curtain prior to the start of construction; the removal of floating debris upstream of the boom; use of sediment mats downstream of the work area; use of geotextile roads/mats; and use of gravel construction entrances.

In addition, the Monitoring and Adaptive Management Plan (MAMP) (Mitigation Measure WQ-1a-i) identified in Section 3.9 analysis provides an adaptive framework to assess water quality issues stemming from Alternative 1 and watershed using the TMDL targets as assessment metrics, and provide protocols for any further measures to meet TMDLs and dredging requirements. The MAMP shall use both Project monitoring and the sediment and water quality data gathered from the TMDL monitoring conducted by the Permittees to determine if impairment conditions exist and provide protocols for any further measures to meet TMDLs. This approach would ensure that potential impacts on tidal and marine habitat used by EFH fish species would be minimal.

Post-Restoration

As discussed in Section 3.9, *Hydrology and Water Quality,* the realignment and restoration of Ballona Creek under Alternative 1 may result in post-restoration erosion that could result in localized and downstream siltation; however, under tidal conditions, Alternative 1 is not expected to experience substantial erosion. In a stable estuary, mature marshes remain in a dynamic equilibrium between erosional and depositional processes. The marsh vegetation and its root structures would help hold sediments in place. For Alternative 1, the tidal channels within the marsh have been designed using the tidal hydraulic geometry relationships. The appropriate sizing of the channel, as well as naturally recruited or planted vegetation, is expected to keep the marsh in a dynamic equilibrium, where any erosion during typical tides would be minor. Therefore, Alternative 1 is not expected to degrade water quality of on-site or downstream tidal and marine habitat used by EFH fish species.

In total, the Project site supports approximately 49 acres of habitat capable of supporting fish (40 acres of subtidal and 9 acres of intertidal channel). As discussed in Impact 1-BIO-2a, Alternative 1 would create 4.7 acres of southern mud intertidal habitat; resulting in a net habitat increase of 6.4 acres during Phase 1 and a total of 13.5 acres during Phase 2. Additionally, subtidal habitat would increase by 11.4 acres to 51.7 acres in Phase 2, thus resulting in a potential net beneficial effect. This expansion of tidal wetlands adjacent to Ballona Creek would substantially improve habitat functions and quality of existing habitat in the creek. Each successive phase would improve the functions and values of aquatic habitat in the Ballona Reserve by improving hydrology and associated ecosystem services. In addition, both phases would allow for larger areas of tidal wetland habitats in the Ballona Reserve to gradually move landward and adapt as sea levels rise. Therefore, Alternative 1 would result in long-term beneficial effects.

Corps' conclusions regarding the effects of the action on EFH: As described above, Alternative 1 would have a substantial adverse short-term construction impact either directly or through habitat modifications on EFH; however, even in consideration of permanent impacts identified above, following the Phase 2 restoration effort, Alternative 1 would result in a long-term net beneficial effect related to improved habitat quality.

Mitigation Measures

Implement Mitigation Measures WQ-1a-i (Monitoring and Adaptive Management Plan) and WQ-1a-ii (Sampling and Analysis Plan).

Level of Significance after Mitigation

Implementation of best management practices to reduce sedimentation, as required by PDF BIO-4 (Water Pollution and Erosion Control Plan), along with the mitigation measures identified above which require sediment and water quality sampling and monitoring to identify water quality impairment within EFH, would reduce Impact 1-BIO-1a to a less-than-significant level. The expansion of tidal wetlands adjacent to Ballona Creek would substantially improve EFH functions and quality of existing habitat in the creek without the need for compensatory mitigation.

Special-Status Plants

1-BIO-1b: Alternative 1 would, if not mitigated, result in a substantial adverse impact, either directly or through habitat modifications, on rare and special-status plants. (Less than Significant with Mitigation Incorporated)

Restoration

Lewis' evening primrose

Phase 1 Direct Impacts

The majority of the Lewis' evening primrose population center within the Ballona Reserve (approximately 11,763 of 12,200 plants) could be permanently impacted by restoration activities in Areas A and C. Direct impacts could occur due to ground-disturbing activities such as vegetation clearing, grubbing, and re-grading. Further, since the most recent protocol-level rare plant surveys were conducted in 2010-2011, it is possible that the existing population has expanded and/or migrated over time, leading to the potential for unforeseen direct impacts to this species during restoration activities. Even following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance) and BIO-3 (Habitat Restoration and Monitoring Plan), the loss of special-status plants would constitute a potentially significant impact. However, the implementation of Mitigation Measures BIO-1b-i (Special-Status Plants) and BIO-1b-ii (Biological Monitoring) would ensure direct impacts to this species are avoided to the extent feasible, provide identification of any new individual rare plants, and provide mitigation and monitoring for direct impacts to populations of special-status plants in restored habitat on-site at a minimum ratio of 1:1 (number of plants established: number of plants impacted). In light of geographic constraints, CRPR ranking, and distribution, CDFW would ensure no net loss of individual rare plants. Nevertheless, plantings would target a higher ratio than 1:1, to ensure successful establishment at a minimum 1:1 ratio. As a result of these actions, direct impacts would be short-term and reduced to less than significant.

Phase 1 Indirect Impacts

The remaining 437 plants would be at risk from indirect impacts, unless appropriate avoidance and minimization measures are implemented. Indirect impacts to the preserved populations in Area B could occur and the potential introduction and proliferation of invasive plants. Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan) would eliminate potential impacts due to the accumulation of fugitive dust related to restoration. The remaining indirect impacts could be reduced to a less-than-significant level via the implementation of, and Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Phase 2 Direct Impacts

Lewis' evening primrose is located outside of the Phase 2 limits of disturbance and would not be directly impacted by restoration activities during Phase 2.

Phase 2 Indirect Impacts

Lewis' evening primrose is located outside of the Phase 2 limits of disturbance and would not be indirectly impacted by restoration activities during Phase 2.

Woolly seablite

Phase 1 Direct Impacts

Woolly seablite populations occur outside of the limits of disturbance and would not be directly impacted by restoration activities during Phase 1.

Phase 1 Indirect Impacts

Woolly seablite populations occur outside of the limits of disturbance and would not be indirectly impacted by restoration activities during Phase 1.

Phase 2 Direct Impacts

All 85 woolly seablite plants would be directly impacted by ground-disturbing activities associated with the breaching and lowering of the south Ballona Creek channel levee along West Area B. Direct impacts could occur due to ground-disturbing activities such as vegetation clearing, grubbing, and re-grading. Further, since the most recent protocol-level rare plant surveys were conducted in 2010-2011, it is possible that the existing population has expanded and/or migrated over time, leading to the potential for unforeseen direct impacts to this species during restoration activities. This would remain a significant impact following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance) and BIO-3 (Habitat Restoration and Monitoring Plan). However, the implementation of Mitigation Measures BIO-1b-i (Special-Status Plants) and BIO-1b-ii (Biological Monitoring) would ensure direct impacts to this species are avoided to the extent feasible, identification of any new individual rare plants, and mitigation and monitoring for direct impacts to populations of special-status plants in restored habitat on-site at a minimum ratio of 1:1 (number of plants established: number of plants impacted). In light of geographic constraints, CRPR ranking, and distribution, CDFW would ensure no net loss of individual rare plants. Nevertheless, plantings would target a higher ratio than 1:1, to ensure successful establishment at a minimum 1:1 ratio. Direct impacts would be short-term and reduced to less than significant.

Phase 2 Indirect Impacts

Since all 85 woolly seablite plants would be directly impacted by Phase 2 ground-disturbing activities, no indirect impacts to this plant species would occur during Phase 2.

Orcutt's pincushion, South Coast branching phacelia, and suffrutescent wallflower

Phase 1 Direct Impacts

Populations of Orcutt's pincushion, South Coast branching phacelia, and suffrutescent wallflower occur exclusively within the restored stabilized dune habitat on the western edge of Area B (see Figure 3.4-4). These species are located outside of the limits of disturbance and would not be directly impacted by restoration activities during Phase 1.

Phase 1 Indirect Impacts

Populations of Orcutt's pincushion, South Coast branching phacelia, and suffrutescent wallflower occur outside of the limits of disturbance and would not be indirectly impacted by restoration activities during Phase 1.

Phase 2 Direct Impacts

These species are located outside of the limit of disturbance and would not be directly impacted by restoration activities.

Phase 2 Indirect Impacts

While these species are located outside of the limit of disturbance, restoration activities in West Area B are in close proximity to these plant populations, and could result in indirect impacts to these species. Following the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), indirect impacts and mitigation would be similar to those discussed under Lewis' evening primrose Phase 1 indirect impacts, and would be reduced to a less-than-significant level through the implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Post-Restoration

Potential direct and/or indirect impacts associated with post-restoration operations and maintenance activities could occur (a Preliminary Operation and Maintenance Plan that describes such activities is provided in Appendix B5). Post-restoration activities, such as weed control and trail maintenance, could result in minimal direct and/or indirect impacts to Lewis' evening primrose, woolly seablite, Orcutt's pincushion, South Coast branching phacelia, and suffrutescent wallflower. Following the completion of restoration activities, temporary activities such as the establishment and maintenance of a buffer zone between the trail and upper edge of restored habitats could result in an adverse indirect impact to special-status plants. Improper installation or maintenance of fencing, or improper habitat restoration signage that would otherwise restrict people and dogs to designated trails could result in adverse direct impacts to restored habitats and special-status plants. The direct and indirect impacts caused by these activities could be significant, but would be reduced via the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), which would establish procedures for avoidance and minimization of potential impacts to special-status plants and other sensitive resources. Implementation of the Habitat

Restoration and Monitoring Plan over the long term would improve the value of the Ballona Reserve for special-status plant species through restoration and monitoring of upland habitat for these species, including dune, coastal scrub, and annual grassland habitats, as well as by controlling invasive plants resulting in a potential net beneficial effect.

Mitigation Measures

Mitigation Measure BIO-1b-i: *Special-Status Plants*. Known special-status plant populations shall be flagged by a qualified biologist/botanist prior to the start of vegetation or ground-disturbing activities, and shall be avoided to the extent feasible. Prior to any vegetation or ground disturbance, a qualified biologist/botanist shall conduct rare plant surveys at the appropriate time of year to determine whether special-status plant populations have established, expanded and/or migrated on-site. If new individuals or populations are identified during the rare plant surveys, they shall be flagged for avoidance to the extent feasible.

During site restoration, qualified biologists, or experienced contractors with supervision by a qualified biologist, shall re-establish impacted species in restored habitat on site at a minimum ratio of 1:1 (number of plants established: number of plants impacted). Perennial species such as woolly seablite shall be salvaged and transplanted wherever feasible. For both perennial and annual species, seed shall be collected prior to restoration during the appropriate time of year (August/September for woolly seablite and May/June for Lewis' evening primrose). Seeds shall be propagated in a local nursery and incorporated into seed mixes for suitable habitat types (transition zone seed mix for woolly seablite and upland/dune seed mix for Lewis' evening primrose).

Re-establishment and subsequent monitoring efforts for impacted special-status plant species shall be implemented as described in the Habitat Restoration and Monitoring Plan (Habitat Restoration and Monitoring Plan), and in accordance with appropriate local, state, and Federal policies or regulations. The Habitat Restoration and Monitoring Plan shall provide methodologies covering, but not limited to, collection of seeds or other propagules, storage of salvaged materials, locations of salvaging efforts, timing of salvaging efforts, monitoring of salvaged materials, success criteria, and remedial actions, and include the mitigation requirements described in this mitigation measure.

Mitigation Measure BIO-1b-ii: *Biological Monitoring*. A qualified biologist(s) approved by USFWS and/or CDFW shall monitor restoration activities, such as ground and vegetation disturbance, for the duration of the Project to ensure that disturbance of habitat and special-status species within and adjacent to work areas is being avoided to the extent practicable. Attempts shall be made by the biologist to salvage all native wildlife species of low mobility that may be killed or injured prior to and during Project-related vegetation or ground disturbances. Salvaged species should be relocated to adjacent suitable habitat not subject to site disturbances. Any non-native flora or fauna can be abated by the biologist through any legal means available to CDFW. Additionally, ongoing monitoring and reporting shall occur for the duration of the restoration activity to ensure implementation of best management practices (BMPs).

Mitigation Measure BIO-1b-iii: ***Noxious Weed Control Plan.*** A Noxious Weed Control Plan shall be prepared by a qualified biologist for CDFW approval prior to the start of restoration. The plan shall ensure that noxious weeds do not spread or otherwise prevent the establishment of native vegetation. The plan shall also be implemented during all restoration-related activities, and shall include, but not be limited to, the following: 1) control measures for selected invasive plant species on the site (potentially including herbicide use), 2) Project-specific procedure for handling noxious/invasive plants to prevent sprouting or regrowth, 3) Project-specific equipment cleaning procedures, and 4) Project-specific transportation of vegetation debris off site. The Noxious Weed Control Plan shall be reviewed during the WEAP training.

Level of Significance after Mitigation

The implementation of the mitigation measures identified above would reduce Impact 1-BIO-1b to less than significant.

Special-Status Invertebrates

1-BIO-1c: Alternative 1 would, if not mitigated, result in a substantial adverse impact on El Segundo blue butterflies, both directly and through habitat modifications. (Less than Significant with Mitigation Incorporated)

Restoration

Phase 1 Direct Impacts

No direct impacts to suitable or occupied habitat for El Segundo blue butterflies would occur. During Phase 1, there is a limited potential for butterfly collisions with equipment during the flight season that could kill or injure adult butterflies when restoration activities are conducted adjacent to suitable or occupied habitat. However, the potential for such impacts would be low, as it is expected that adult butterflies would largely be able to move out of the way of equipment. In addition, the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance) would ensure work areas would be clearly marked and exclude sensitive habitats that have not been authorized or permitted for disturbance (such as habitat for El Segundo blue butterflies), and that workers would be made aware of the exclusion areas. No direct impacts would be anticipated.

Phase 1 Indirect Impacts

No potential indirect impacts are anticipated to occupied El Segundo blue butterfly or its habitat in West Area B. The application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan) would eliminate potential impacts related to the accumulation of fugitive dust from restoration activities. Potential impacts related to vibration and nearby increased human activity would be less than significant.

Phase 2 Direct Impacts

Similar to Phase 1, no direct impacts to suitable or occupied habitat for El Segundo blue butterflies would occur. As discussed for Phase 1, potential direct impacts to El Segundo blue butterflies resulting from butterfly collisions with equipment would be less than significant. The application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance) would ensure work areas exclude habitat for El Segundo blue butterflies, and that workers would be made aware of the exclusion areas. No direct impacts would be anticipated.

Phase 2 Indirect Impacts

During Phase 2, potential significant indirect impacts would be similar to those discussed for Phase 1. Following the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), remaining potential significant indirect impacts could be reduced to less than significant through the implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring).

Post-Restoration

Minimal direct and indirect impacts could occur during Phases 1 and 2 as a result of post-restoration activities within suitable or occupied habitat, including indirect impacts resulting from weed removal and trail maintenance, as well as increased human activity and potential direct impacts due to trampling of dune plants. Such impacts could result in direct mortality or reduced habitat quality for El Segundo blue butterflies. These potential impacts would be offset in part by certain aspects of the project design, including the proposed enhancement of portions of potentially suitable habitat in Area B via the removal of invasive weeds (e.g., iceplant) and re-planting with native dune species resulting in a potential net beneficial effect. Following the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) and Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), remaining potential impacts could be further reduced over the long term through implementation of Mitigation Measure BIO-1b-ii (biological monitoring) and Mitigation Measure BIO-1b-iii (Noxious Weed Control Plan), which would improve the value of the Ballona Reserve for El Segundo blue butterfly through restoration and monitoring of dune habitat, as well as by implementing other measures that would benefit El Segundo blue butterfly and the buckwheat habitat upon which they rely resulting in a potential net beneficial effect.

Mitigation Measures

> Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Level of Significance after Mitigation

> The implementation of mitigation measures identified above would reduce this impact to less than significant.

1-BIO-1d: Alternative 1 would not result in a substantial adverse impact on monarch butterflies both directly and through habitat modifications. (Less than Significant)

Restoration

Phase 1 Direct Impacts

No direct impacts to suitable wintering habitat for monarch butterflies would occur, and potential direct impacts to monarch butterflies would be similar to those previously discussed for El Segundo blue butterfly. The application of Project Design Features BIO-1 (WEAP) and BIO-2

(Limit of Disturbance) would ensure work areas would be clearly marked and exclude sensitive habitats that have not been authorized or permitted for disturbance (such as the eucalyptus groves in Areas A and South Area B), and that workers would be made aware of the exclusion areas. Hence, no direct impacts are anticipated to monarch butterflies.

Phase 1 Indirect Impacts

No potentially significant indirect impacts would occur to monarch butterflies from the accumulation of fugitive dust related to restoration activities in Area B due to the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan). Potential impacts from noise, vibration, and increased human activity would be less than significant.

Phase 2 Direct Impacts

Similar to Phase 1, no direct impacts would occur to suitable winter roosting habitat for monarch butterflies in Phase 2. Potential direct impacts to monarch butterflies resulting from butterfly collisions with equipment would likely be avoided; however, with application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance) would ensure work areas exclude winter roosting habitat for monarch butterflies, and that workers would be made aware of the exclusion areas. No direct impacts would be anticipated.

Phase 2 Indirect Impacts

No indirect impacts to monarch butterfly habitat are anticipated since the eucalyptus grove is situated approximately 4 to 10 feet above the marsh plain and is not expected to be impacted by altered hydrological conditions. The grove is already adjacent to a tidal slough channel, so there would be little change from existing conditions. Similar to Phase 1 indirect impacts from increased noise, vibration, and human activity are considered less than significant and do not require mitigation. No potentially significant indirect impacts would occur from accumulation of fugitive dust due to application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan).

Post-Restoration

Direct post-restoration impacts to monarch butterflies could include mortality of butterflies associated with increase human use. Indirect impacts also could occur as a result of reduced habitat quality due to operations and maintenance activities (such as weed removal and trail maintenance) within suitable habitat.

Potential direct and indirect impacts of Alternative 1 could be reduced over the long term through application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) and Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan) that would improve the value of the Ballona Reserve for monarch butterflies through enhancement of upland habitats (e.g., including milkweed in the upland seed mix) for the species, as well as by implementing other measures that specifically would benefit monarch butterfly by avoiding or reducing potential impacts to occupied winter roost sites and larval host plant communities.

Mitigation Measures

No mitigation measures are required.

Level of Significance after Mitigation

With implementation of project design features, impacts would be less than significant.

1-BIO-1e: Alternative 1 would, unless mitigated, result in a substantial adverse impact either directly or through habitat modifications, on salt marsh-associated invertebrates (i.e., wandering skipper, western S-banded tiger beetle, and western tidal flat tiger beetle). (Less than Significant with Mitigation Incorporated)

Restoration

Phase 1 Direct Impacts

An estimated 13.5 acres of potentially suitable habitat would be permanently lost due to conversion from wetland to upland habitat; however, existing habitat in Areas A and C is considered to be only marginally suitable due to general lack of intact salt marsh habitat. During Phase 1, restoration-related activities in wetland habitats in Areas A and C could result in direct, significant impacts to salt marsh-associated invertebrates due to trampling or crushing from heavy equipment, vehicles, foot traffic, and modifications to existing hydrological conditions. Following the application of Project Design Features BIO-1 (WEAP) and BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential significant direct impacts could be reduced to less than significant via implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring), which would ensure workers are aware of sensitive species that could be encountered and ensure avoidance of these species to the extent feasible.

Phase 1 Indirect Impacts

Potential significant indirect impacts to salt marsh-associated invertebrates could occur from the accumulation of fugitive dust related to restoration activities in Areas A and C, as well as from noise, vibration, and increased human activity. Following the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), remaining potential significant indirect impacts could be reduced to less than significant through the implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring).

Further, Phase 1 would result in the establishment of 114.7 acres of fully tidal salt marsh as compared to existing conditions resulting in a potential net beneficial effect.

Phase 2 Direct Impacts

An estimated 17.9 acres of potentially suitable habitat in Area B would be permanently impacted due to levee construction. However, the vast majority of existing and created/restored habitat would be avoided in Phase 2. Restoration-related activities in suitable wetland habitats in Area B could result in direct, less-than-significant impacts to salt marsh-associated invertebrates due to trampling or crushing from heavy equipment, vehicles, foot traffic, and modifications to existing hydrological conditions. Following the implementation of Project Design Features BIO-1 (WEAP) and BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential significant direct impacts could be reduced to less than significant via implementation Mitigation Measure BIO-1b-ii (Biological Monitoring), which would ensure workers are aware of sensitive species that could be encountered and ensure avoidance of these species to the extent feasible.

Phase 2 Indirect Impacts

Potential significant indirect impacts to salt marsh-associated invertebrates could occur from the accumulation of fugitive dust related to restoration activities in Area B, as well as from noise, vibration, and increased human activity. Following the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), remaining potential significant indirect impacts could be reduced to less than significant through the implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring).

Phase 2 would result in an overall net gain of approximately 153.4 acres of fully tidal salt marsh habitat from existing conditions that would be of higher quality than existing conditions. This would provide an overall beneficial effect.

Post-Restoration

Direct and indirect post-restoration impacts to salt marsh-associated invertebrates would be similar to those discussed for monarch butterflies. Following the application of Project Design Features BIO-3 (Habitat Restoration and Monitoring Plan) and BIO-4 (Water Pollution and Erosion Control Plan), remaining potential direct and indirect impacts of Alternative 1 would be reduced through implementation of Mitigation Measure BIO-1b-ii (biological monitoring) and Mitigation Measure BIO-1b-iii (Noxious Weed Control Plan) that would improve the value of the Ballona Reserve for salt marsh-associated invertebrates through the creation of new, higher quality salt marsh habitat resulting in a potential net beneficial effect.

In addition, Alternative 1 actions would increase the resiliency of salt marsh habitats to forecasted sea level rise by creating a broad transition zone that would allow habitats to slowly migrate landward as sea level rises. These would be beneficial effects.

Mitigation Measures

Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Level of Significance after Mitigation

Implementation of mitigation measures identified above would avoid and minimize impacts to salt marsh-associated invertebrates and their habitat during restoration and ensure that invasive weeds and sedimentation do not impact these invertebrates during Project activities. Collectively, the project design features and mitigation measures would reduce potential adverse impacts. Enhancement activities would further improve habitat quality for this species. Following mitigation, impacts would be less than significant.

1-BIO-1f: Alternative 1 would, unless mitigated, result in a substantial adverse impact, either directly or through habitat modifications, on dune-associated special-status invertebrates. (Less than Significant with Mitigation Incorporated)

Four species of dune-associated special-status invertebrates have been found on or adjacent to the Ballona Reserve during several surveys conducted between 1980 and 2001 (PWA 2006). These species include the following:

1. Globose dune beetle;
2. Lange's El Segundo dune weevil;
3. Dorothy's El Segundo dune weevil; and
4. Belkin's dune tabanid fly.

Restoration

Phase 1 Direct Impacts

None of these species have been detected within the Ballona Reserve outside of West Area B; additionally, there would be no direct impacts to the known occupied habitat in West Area B. Ground-disturbing activities in Area A and North Area C would result in the permanent loss of 2.3 acres of potentially suitable habitat for these species due to soil compaction and/or changes in plant community composition. However, since this habitat is not known to be occupied by dune-associated special-status invertebrates, no direct species impacts would occur.

Phase 1 Indirect Impacts

Following the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), which would reduce the potential for accumulation of fugitive dust, no indirect impacts are anticipated to dune-associated special-status invertebrates in West Area B.

Phase 2 Direct Impacts

During Phase 2, 0.1 acre of habitat would be permanently lost for the aforementioned dune-associated special-status invertebrates. The remaining 4.0 acres of existing southern dune scrub habitat in West Area B would be preserved. Further, implementation of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance) would ensure work areas would be clearly marked and exclude sensitive habitats that have not been authorized or permitted for disturbance (such as the dune habitat in West Area B), and that workers would be made aware of the exclusion areas. No direct impacts are anticipated.

Phase 2 Indirect Impacts

Similar to Phase 1, during Phase 2, following the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), which would reduce the potential for accumulation of fugitive dust related to restoration activities, no indirect impacts are anticipated to dune habitat in West Area B.

Post-Restoration

Minimal direct and indirect impacts could occur as a result of operations and maintenance activities within suitable habitat including weed removal and trail maintenance (see Appendix B5), as well as increased human activity and the potential for trampling of dune plants.

These potential direct and indirect impacts to West Area B would be minimized by habitat enhancement of Area B via the removal of invasive weeds (e.g., iceplant) and re-planting with native dune species. Enhancement activities are expected to result in improved habitat quality for dune-associated invertebrates resulting in a potential net beneficial effect. Following the application of Project Design Features BIO-3 (Habitat Restoration and Monitoring Plan) and BIO-4 (Water Pollution and Erosion Control Plan), operation and maintenance effects relating to direct mortality or reduced habitat quality for dune-associated invertebrates could be further reduced over the long term through implementation of Mitigation Measure BIO-1b-ii (biological monitoring) and Mitigation Measure BIO-1b-iii (Noxious Weed Control Plan), which would improve the value of the Ballona Reserve for dune-associated invertebrates through restoration and monitoring of dune habitat, and control of invasive plants. This would be a beneficial effect.

Mitigation Measures

> Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Level of Significance after Mitigation

> The implementation of mitigation measures identified above would minimize the area of potential impacts to dune-associated invertebrates, would avoid and minimize impacts during restoration, would ensure that invasive weeds and sedimentation do not impact special-status invertebrates during Project activities; and result in the establishment and maintenance of a buffer zone between the trail and upper edge of restored habitats and would reduce potential impacts to dune associated invertebrates during operations and maintenance activities. The mitigation measures would reduce Impact 1-BIO-1f to a less-than-significant level. Enhancement activities proposed under Alternative 1 would further improve habitat quality for this species.

Special-Status Reptiles

1-BIO-1g: Alternative 1 would, unless mitigated, result in a substantial adverse impact on silvery legless lizard, both directly and through habitat modifications; however, following the Phase 2 restoration effort, Alternative 1 would result in a beneficial effect related to improved habitat quality. (Less than Significant with Mitigation Incorporated)

Restoration

Phase 1 Direct Impacts

During Phase 1, direct impacts to potential habitat for silvery legless lizard would occur during restoration activities in Areas A and C (see Figure 3.4-10), resulting in the loss of 2.3 acre of potentially suitable habitat for silvery legless lizard. However, the stabilized dune habitat in

Area A is not known to be occupied by silvery legless lizards and is only marginally suitable for this species due to a generally high degree of soil compaction. Restoration activities requiring ground disturbance and the use of earth-moving equipment in suitable habitat could result in the direct mortality of this species. Following the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), remaining significant direct impacts would be reduced to less than significant through the implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1g-i (Pre- and Post-Restoration Surveys for Silvery Legless Lizard).

Phase 1 Indirect Impacts

No indirect impacts would occur to silvery legless lizards.

Phase 2 Direct Impacts

During Phase 2, 0.1 acre of habitat would be permanently lost for the silvery legless lizard. The remaining 4.0 acres of existing southern dune scrub habitat in West Area B would be preserved. Further, implementation of Project Design Feature BIO-2 (Limit of Disturbance) would ensure sensitive habitats are delineated and avoided to the extent feasible.

Phase 2 Indirect Impacts

No indirect impacts would occur to silvery legless lizards.

Post-Restoration

During Phase 1, direct and indirect impacts could occur as a result of operations and maintenance activities within suitable habitat including weed removal, trail maintenance, and increased human activity.

These potential impacts would be offset in part by the enhancement of portions of potentially suitable habitat in Area C via the removal of invasive weeds (e.g., iceplant) and re-planting with native dune species. The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would improve the value of dune habitats within the Ballona Reserve through restoration and monitoring of upland habitat, as well as by controlling non-native invasive plants; and other measures that would focus specifically on legless lizard habitat, such as replanting with native dune species. This would result in a beneficial effect.

Mitigation Measures

Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1g-i.

Mitigation Measure BIO-1g-i: ***Pre- and Post-restoration Survey for Silvery Legless Lizard.*** Prior to restoration in areas with suitable habitat for silvery legless lizard a qualified biologist shall conduct focused legless lizard surveys. Any legless lizards captured shall be re-located to restored or preserved dune habitats. Focused surveys shall occur yearly for a period of 5 years following restoration to monitor legless lizard populations within the dune habitats.

Level of Significance after Mitigation

The application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan) and implementation of the mitigation measures identified above would minimize the area of potential impacts to silvery legless lizards, reduce potential impacts during and following restoration (such as by limiting unauthorized access into restored habitat areas), and ensure that a comparable amount of high-quality upland habitat would be available to silvery legless lizards following restoration. The mitigation measures identified above would reduce Impact 1-BIO-1g-i to a less-than-significant level.

1-BIO-1h: Alternative 1 would, unless mitigated, result in a substantial adverse impact on San Bernardino ring-necked snakes and would result in a less-than-significant impact related to direct habitat modification for this species. (Less than Significant with Mitigation Incorporated)

Restoration

Phase 1 and Phase 2 Direct Impacts

During Phase 1, 56.0 acres of upland habitat that may provide resident or transient habitat for ring-necked snakes would be directly and permanently impacted during restoration and subsequent conversion to tidal salt marsh. Importantly, however, the habitat model used to assess potential habitat based impacts to ring-necked snakes characterized large areas as potential habitat, which was generous and overstated potential habitat for this species. With the Project, portions of the Ballona Reserve that do not currently support ring-necked snakes would be enhanced and would provide long-term habitat benefits to this species.

During Phase 2, 8.1 acres of suitable habitat would be created through construction of the West Area B levee. The result would be a reduction in the area of potentially suitable habitat by 47.9 acres between both phases. Concurrently, approximately 200 acres of “invasive monoculture” habitat would be enhanced and made available to ring-necked snakes. During each phase, direct mortality or injury to this species could occur during grading and other ground-disturbing activities. Following the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), which would reduce impacts to individual snakes, remaining potentially significant impacts related to the incidental harm to individual snakes would be reduced to less than significant with implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring).

Phase 1 and Phase 2 Indirect Impacts

During each phase, indirect impacts could occur due to noise, vibration, lighting, and increased human activity. Following the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), remaining potential impacts to individual snakes could be reduced through implementation of Mitigation Measure BIO-1b-ii (biological monitoring). With implementation of these measures, indirect impacts would be less than significant.

Post-Restoration

Minimal direct and indirect impacts to San Bernardino ring-necked snakes could occur as a result of operations and maintenance activities within suitable habitat including during weed removal, trail maintenance, and increased human activity (see Appendix B5). However, this species is known to refuge under rocks and structural or vegetative debris (i.e., boards) and would not be expected to occur within maintenance areas. Therefore, operational-related impacts to this species would be negligible. No mitigation measures recommended for implementation during the post-restoration phase of Alternative 1 relating to San Bernardino ring-necked snake.

Mitigation Measures

Implement Mitigation Measure BIO-1b-ii (Biological Monitoring).

Level of Significance after Mitigation

The application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance) and implementation of the mitigation measures identified above would minimize the area of potential impacts to this species and would avoid and minimize impact to San Bernardino ring-necked snake during restoration. Together, these measures would reduce potential impacts to less than significant, while the enhancement of approximately 200 acres of habitat characterized as "invasive monoculture" is expected to increase the overall acreage and quality of usable ring-necked snake habitat in the Reserve within the life of the Project.

Special-Status Birds

1-BIO-1i: Alternative 1 would, unless mitigated, result in a substantial adverse impact on Belding's savannah sparrows, both directly and through habitat modifications; however, following the Phase 2 restoration effort, Alternative 1 would result in a substantial beneficial effect in the quality and quantity of habitat for this species. (Less than Significant with Mitigation Incorporated)

Restoration

Belding's savannah sparrow is a year-round resident of the Ballona Reserve that generally is associated with salt marsh and salt pan habitats. Population numbers within the Ballona Reserve have increased from 11 to 48 breeding pairs between 1998 and 2015 (Johnston et al. 2015b). The vast majority of documented breeding behavior within the Ballona Reserve has been in West Area B. Limited breeding behavior also has also been documented in South Area B and Southeast Area B. Foraging activity has been observed throughout Area B, in portions of Area A, and in the Ballona Creek Channel.

Phase 1 Direct Impacts

Phase 1 would result in a direct loss of potentially suitable habitat for Belding's savannah sparrows due to restoration activities including clearing, grubbing, and grading (see Table 3.4-9). Most impacts would be temporary, but some (e.g., levee construction) would result in a permanent conversion of 10.2 acres of wetland or salt pan to upland habitat (including 1.1 acres of occupied habitat). Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance) and BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential significant direct impacts to nesting Belding's savannah sparrows would be reduced to less than significant through implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1i-i (Nesting Bird and Raptor Avoidance).

TABLE 3.4-9
EFFECTS TO BELDING'S SAVANNAH SPARROW HABITAT, ALTERNATIVE 1

Belding's Savannah sparrow Habitat Types	Habitat Area (acres)	Permanent Impact (acres)	Habitat Establishment (acres)	Post-restoration Habitat Area (acres)	Net Habitat Change (acres)
Occupied Habitat	24.3	1.1	n/a	23.2	-1.1
Potentially Suitable Habitat	101.7	9.1	77.5	170.1	+68.4
Total After Phase 1	**126.0**	**10.2**	**77.5**	**193.3**	**+67.3**
Existing Occupied Habitat After Phase 1	23.2	6.8	n/a	16.4	-6.8
Potentially Suitable Habitat	170.1	11.1	20.2	179.2	-9.1
Total After Phase 2	**193.3**	17.9	**20.2**	**195.6**	**-2.3**
				Total Net Habitat Change	**+69.6**

SOURCES: WRA, ESA

Phase 1 Indirect Impacts

In total, Phase 1 would result in a net increase of 77.5 acres of suitable breeding and foraging habitat for Belding's savannah sparrow, which would be a beneficial effect. While all occupied habitat in West Area B would be avoided in Phase 1, breeding success could be indirectly impacted by restoration activities due to noise, vibration, lighting, and increased human activity. In addition, the spread of invasive plant species onto Belding's savannah sparrow habitat through the use of vehicles and heavy equipment could reduce habitat quality. These potential significant indirect impacts would be reduced to less than significant through implementation of Mitigation Measures BIO-1b-iii (Noxious Weed Control Plan) and BIO-1i-i (Nesting Bird and Raptor Avoidance).

Phase 2 Direct Impacts

Phase 2 would result in a direct loss of potentially suitable habitat as a result of restoration activities such as the construction of new levees in West Area B. Phase 2 would permanent impact 17.9 acres of habitat (including 6.8 acres of occupied habitat) due to the construction of levees in existing wetland and salt pan habitats. Nesting habitat and breeding success could be directly impacted by restoration activities. Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance) and BIO-3(Habitat Restoration and Monitoring Plan), remaining potential significant direct impacts to nesting Belding's savannah sparrows would be reduced to less than significant through implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring), BIO-1i-i (Nesting Bird and Raptor Avoidance), and BIO-1i-ii (Belding's Savannah Sparrow Breeding Habitat).

Because Belding's savannah sparrows are known to have high site fidelity, the establishment of new habitat does not guarantee future use. Therefore, Phase 2 would not proceed until Belding's savannah sparrows' use of the newly constructed salt marsh habitat in Area A and/or South Area B has been documented and all interim success criteria have been achieved, as required in Mitigation Measure BIO-1i-ii, and in accordance with the Conceptual Habitat Restoration and

Adaptive Management Plan (Conceptual Plan) described in the discussion of Revegetation of Graded and Disturbed Areas in Section 2.3.2.5, *Alternative 1: Implementation and Construction Process*, and included as Appendix B3 to this Draft EIS/EIR. Potential direct impacts would be reduced to less than significant with a potential net beneficial effect for this species.

Phase 2 Indirect Impacts

No indirect impacts would occur to Belding's savannah sparrows during Phase 2. In total, Phase 2 would result in a slight decrease of suitable breeding and foraging habitat for Belding's savannah sparrow; however, the overall net increase in habitat upon completion of Phase 2 would be over 69 acres, which would be a beneficial effect. Further, Alternative 1, Phase 2 actions in Area B would increase the resilience of salt pan habitat to forecasted sea level rise and extend the period of time that salt pan habitat would exist before eventually becoming inundated.

Post-Restoration

Limited direct and indirect post-restoration impacts could occur to nesting Belding's savannah sparrows and disturbance of restored habitats due to a potential increase in human activity and maintenance activities. The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would improve the value of salt marsh habitats within the Ballona Reserve through restoration and monitoring, as well as by controlling invasive plants; and other measures that would focus specifically on habitat for Belding's savannah sparrows. Potential nesting impacts could be reduced to less than significant through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Further, the overall net change in habitat resulting from Alternative 1 is an increase in over 69 acres of suitable habitat for Belding's savannah sparrow. Post-restoration effects on Belding's savannah sparrow would result in substantial enhancement of breeding and foraging habitat in the Ballona Reserve for this species, which would be a beneficial effect.

Mitigation Measures

Implement Mitigation Measures BIO-1b-ii (Biological Monitoring), BIO-1b-iii (Noxious Weed Control Plan), BIO-1i-i (Nesting Bird and Raptor Avoidance), and BIO-1i-ii (Belding's Savannah Sparrow Breeding Habitat).

Mitigation Measure BIO-1i-i: *Nesting Bird and Raptor Avoidance*. A qualified biologist shall recommend approved limits of disturbance, including construction staging areas and access routes, to minimize impacts to nesting habitat for birds and raptors. To ensure the avoidance of impacts to native nesting avian species, the following measures shall be implemented pursuant to the MBTA and California Fish and Game Code. Construction and maintenance activities during operations within and adjacent to avian nesting habitat shall be limited to the non-breeding season (September 1 – December 31) to the extent feasible. If construction will occur during the avian nesting season (generally January 1 – August 31), a qualified biologist shall conduct pre-construction nesting avian surveys within five days of the initiation of construction to determine the presence or absence of active nests. If a lapse in work of 5 days or longer occurs, another survey shall be conducted prior to work being reinitiated. Surveys shall include any potential habitat, including trees, shrubs, and on the ground, or on nearby structures that might be impacted by construction or maintenance activities that may cause nest destruction or abandonment, such as vegetation or weed removal, earth work, and vector control actions.

If active nests are observed, a no-disturbance buffer marked with exclusion fencing will be established and maintained until the qualified biologist determines that the nest has fledged or failed. Fence stakes designed with bolt holes shall be plugged with bolts or other materials to avoid entrapping birds. The initial no-disturbance buffer shall extend a minimum of 500 feet in all directions for raptors and listed passerines and 300 feet in all directions for all other native passerines. A reduced buffer may be implemented at the discretion of the biologist for non-listed passerines; however, for raptors and listed passerines, the biologist will obtain approval from USFWS and/or CDFW prior to allowing work to commence within the 500-foot buffer.

Prior to construction, a qualified biologist shall prepare a site-specific Nesting Bird Management Plan for CDFW approval. The plan shall detail methodologies and definitions to enable a CDFW qualified biologist to monitor and implement nest-specific buffers based on topography, vegetation, species, and individual bird behavior. The plan shall be supported by a nest log, which tracks each nest and its outcome, and shall be submitted to CDFW at the end of each work week for the duration of the avian nesting season.

Mitigation Measure BIO-1i-ii: *Belding's Savannah Sparrow Breeding Habitat.* Only after Area A and/or South Area B meets the performance criteria outlined below may work be implemented in Area B as part of Alternative 1, Phase 2. Restoration of the full tidal range in the western portion of Area B (which would require extensive temporal loss and minor permanent loss of tidal marsh and salt pan habitats, which are currently occupied by Belding's savannah sparrow) shall not occur until it has been demonstrated that the species is actively using restored tidal marsh and salt pan habitats in Area A and/or South Area B and that the temporal and permanent loss of habitat in Area B will not have negative impacts on the species. As with other special-status species, focused monitoring efforts shall be implemented to ensure that populations of these species either remain at prerestoration levels or increase in size, and appropriate management efforts shall be implemented if populations of these species decline in size. The commencement of Phase 2 is dependent upon the following criteria:

4. Suitable breeding habitat will be created at a minimum acreage of 2:1 (created: impacted). Suitable habitat will consist of areas dominated by pickleweed with a hydrologic regime similar to that currently present in West Area B, with similar slope, inundation, and soil salinity.

5. Percent cover of pickleweed will approximate areas of West Area B, at a minimum of 60% cover.

6. At least one nesting pair of Belding's savannah sparrow will be documented in Area A prior to implementation of work in West Area B. Due to rapid fluctuations in the population observed on-site, the high site fidelity observed, and avoidance of any impacts to the majority of habitat in Area B, one nesting pair will be indicative of the successful establishment of suitable habitat for the species.

Level of Significance after Mitigation

The application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance) and BIO-3 (Habitat Restoration and Monitoring Plan), and mitigation measures identified above would minimize the area of potential impacts to nesting and foraging habitat, and allow workers to avoid inadvertent destruction of active nests or causing nest abandonment during site restoration; would reduce potential impacts during operations such as limiting unauthorized access into restored habitat areas; and would reduce potential impacts to nesting birds, including Belding's savannah sparrow, during post-restoration activities such as weed removal. Together, the implementation of these measures would reduce potential adverse impacts to a less-than-significant level. In addition, Alternative 1, Phase 1 actions in Area A would allow for larger areas of tidal wetland habitats in the Ballona Reserve to move landward as sea levels rise, thereby resisting complete inundation.

The implementation of these mitigation measures would require a demonstration that Belding's savannah sparrow is actively using restored tidal marsh and salt pan habitats in Area A and/or South Area B before Phase 2 work may proceed in Area B, monitoring and appropriate adaptive management responses in the event of a declining population within the Ballona Reserve, worker education, and limitation of work-related disturbance, and would enable workers to avoid inadvertently impacting active nests or causing nest abandonment during restoration. Together, the implementation of these measures would reduce but not eliminate Impact 1-BIO-1i. Following mitigation, these impacts would be less than significant.

1-BIO-1j: Alternative 1 would, unless mitigated, result in adverse impacts on coastal California gnatcatcher through temporary habitat modifications; further, following the Phase 2 restoration effort, Alternative 1 would result in a potential beneficial effect in the quality and quantity of habitat for this species. (Less than Significant with Mitigation Incorporated)

Restoration

Phase 1 Direct Impacts

There is no known occupied habitat for coastal California gnatcatcher in Areas A, B, or C. As such, no direct impacts to coastal California gnatcatcher or occupied habitat would occur.

Phase 1 Indirect Impacts

Restoration activities associated with Phase 1 restoration would impact potential foraging habitat for this species. However, this species is not expected to breed or forage on the Project site considering the habitat conditions onsite and the lack of recent observations of this species. Although foraging habitat would be reduced, the majority of potential habitat for this species would remain and be enhanced and/or planted (at least 75%). However, since focused surveys for this species have not been conducted at the Ballona Reserve since 2011, although unlikely, potential impacts to nesting could occur if this species is confirmed present onsite. Nesting success could be impacted indirectly though noise or visual disturbance. Therefore, potential significant indirect impacts to this species would be reduced to less than significant through implementation of Mitigation Measure BIO-1j-i (Coastal California Gnatcatcher Avoidance).

Phase 2 Direct Impacts

There is no known occupied habitat for coastal California gnatcatcher in Area B. As such, no direct impacts to coastal California gnatcatcher or occupied habitat would occur.

Phase 2 Indirect Impacts

Potential indirect impacts during Phase 2 would be similar to those discussed in Phase 1. Potential impacts would be reduced to a less-than-significant level by implementation of Mitigation Measure BIO-1j-i (Coastal California Gnatcatcher Avoidance).

Post-Restoration

No direct impacts would occur to coastal California gnatcatcher or its habitat upon completion of restoration activities. Potential indirect impacts to nesting would be reduced to a less-than-significant level by the implementation of Mitigation Measure BIO-1j-i (Coastal California Gnatcatcher Avoidance), which would require avoidance and minimization of potential impacts to nesting birds and habitat for this species. In addition, the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would improve the value of coastal scrub habitats within the Ballona Reserve through restoration and monitoring, as well as by controlling invasive plants; and other measures that would focus specifically on habitat for coastal California gnatcatchers. This would be a potential beneficial effect.

Mitigation Measures

> **Mitigation Measure BIO-1j-i: *Coastal California Gnatcatcher Avoidance.*** To avoid indirect impacts of restoration on nesting coastal California gnatcatcher, work activities within 500 feet of coastal scrub vegetation shall be timed to avoid the season when nests may be active for this species (March 15 to June 30). If avoidance of work activities within this time period is not feasible, a focused survey for coastal California gnatcatchers shall be conducted in the season prior to initiation of work activities to determine their presence or absence within suitable habitat 500 feet of work limits. In accordance with the USFWS protocol for the coastal California gnatcatcher (USFWS 1997) focused surveys shall be conducted by a permitted biologist a minimum of: a) six (6) surveys at least on week apart between March 15-June 30; or b) nine (9) surveys conducted at least two weeks apart between July 1 to March 14. The results shall be submitted in a report to the Corps, USFWS, and CDFW. If occupied habitat and/or nesting individuals are determined to be present based on the focused survey, measures to avoid take of coastal California gnatcatchers and active nests, such as the creation of suitably-sized no-work buffers, shall be implemented prior to restoration activities.
>
> Prior to construction or post-restoration maintenance activities during the breeding season, a preconstruction clearance and nest survey shall be performed by a qualified biologist within 7 days prior to work activities to determine the location of nests within 500 feet of work areas. Measures such as erecting a temporary barrier with stacked hay bales shall be implemented to reduce the amount of work noise and motion in proximity to active nests. If a nest is detected, work shall halt within 500 feet of the nest, and the nest shall be monitored on a weekly basis by a qualified biologist familiar with coastal California gnatcatchers, until he/she determines the nest is no longer active or the young have fledged.

Level of Significance after Mitigation

The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) and implementation of mitigation measure BIO-1j-i would avoid or minimize impacts to active nests during restoration, construction, and ongoing activities, and would ensure that a comparable amount of high-quality upland habitat would be available to the species following restoration. These mitigation measures would reduce but not eliminate Impact 1-BIO-1j. Following mitigation, this impact would be less than significant.

1-BIO-1k: Alternative 1 would, unless mitigated, result in a substantial adverse impact on least Bell's vireo through temporary habitat modifications; however, following the Phase 2 restoration effort, Alternative 1 would result in a substantial beneficial effect in the quality and quantity of habitat for this species. (Less than Significant with Mitigation Incorporated)

Restoration

Phase 1 Direct Impacts

As shown in Table 3.4-10, Phase 1 would result in the direct impact to approximately 0.1 acre of least Bell's vireo habitat occupied by one nesting pair, and 0.2 acre of potentially suitable habitat due to the construction of a channel connecting the Freshwater Marsh with the salt marsh habitat in Area B (see Figure 3.4-14). Potential significant direct impacts to least Bell's vireo or its habitat would be reduced to less than significant through application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), and the implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring) to ensure direct impacts to this species and its habitat are avoided and minimized to the extent practical.

TABLE 3.4-10
EFFECTS TO LEAST BELL'S VIREO HABITAT, ALTERNATIVE 1

Existing least Bell's vireo Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Vireo Occupied Habitat	2.5	0.1	2.4	-0.1
Vireo Potentially Suitable Habitat	4.1	0.2	7.1	+3.0
Total After Phase 1	6.6	0.3	9.5	+2.9
			Total Net Habitat Change	**+2.9**

SOURCES: WRA, ESA

Phase 1 would result in the net increase in the amount of suitable breeding and foraging habitat for least Bell's vireo through the establishment of a new riparian corridor along Fiji Ditch in North Area C. In total, Phase 1 would result in a net increase of 2.9 acres of suitable breeding and foraging habitat for this species, resulting in an overall beneficial effect.

Phase 1 Indirect Impacts

In the absence of mitigation, nesting success of least Bell's vireos could be impacted indirectly by noise from on-site activities. Birds have noise sensitivity at ranges as low as 0-10 dB. Noise disturbance can impact pair formation, territory defense, and communication regarding food and danger responses (FHA 2011). Typically, a 500-foot buffer for raptors or sensitive bird species, such as the least Bell's vireo, is considered a sufficient buffer from construction activities. Exact distances of construction-related noise sources from occupied or suitable habitat for least Bell's vireos are not yet known, although it is anticipated that construction activities may occur within 500 feet of an active nest in some locations. Additionally, ground vibration and lighting from parking structures or ball fields, and increased human activity from trail use can affect the quality of the habitat for nesting and foraging. In addition, the spread of invasive plant species onto least Bell's vireo habitat through the use of vehicles and heavy equipment could reduce habitat quality. Following the application of Project Design Feature BIO-1 (WEAP), remaining potential significant indirect impacts would be reduced to less than significant through implementation of Mitigation Measures BIO-1b-iii (Noxious Weed Control Plan) and BIO-1k-i (Least Bell's Vireo Avoidance), which would avoid and minimize indirect impacts to habitat and any nesting least Bell's vireos. In total, Phase 1 would result in a net increase of 2.9 acres of suitable breeding and foraging habitat for this species (a beneficial effect).

Phase 2 Direct Impacts

Phase 2 would not result in any direct impacts to potential or occupied least Bell's vireo habitat. As shown in Table 3.4-10, the overall net change in habitat resulting from Alternative 1 is an increase in 2.9 acres of suitable habitat for least Bell's vireo, which would be a beneficial effect for this species. Further, the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance) would ensure workers are aware of and avoid least Bell's vireo habitat during Phase 2.

Phase 2 Indirect Impacts

Similar to Phase 1, restoration activities in the vicinity of potential and occupied habitat could indirectly impact habitat quality and/or breeding success due to noise, vibration, lighting, and increased human activity. Following the application of Project Design Feature BIO-1 (WEAP), remaining potential significant indirect impacts would be reduced to less than significant through the implementation of Mitigation Measures BIO-1b-iii (Noxious Weed Control Plan) and BIO-1k-i (Least Bell's Vireo Avoidance), which would avoid and minimize indirect impacts to any nesting least Bell's vireos.

Post-Restoration

Limited direct and indirect post-restoration impacts could occur to nesting least Bell's vireos and disturbance of restored habitats due to a potential increase in human activity from trail use and maintenance activities. Potential nesting impacts could be reduced to less than significant through implementation of Mitigation Measures BIO-1k (Least Bell's Vireo Avoidance), which would require avoidance of nesting least Bell's vireos during post-restoration activities such as weed removal, thereby reducing human disturbance to this species. The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would improve the value of riparian habitats within the Ballona Reserve through restoration and monitoring, as well as by controlling invasive plants; and other measures that would focus specifically on habitat for least Bell's vireos. Further, the overall net change in habitat resulting from Alternative 1 is an increase in 3.0 acres of suitable breeding and foraging habitat for least Bell's vireos (a beneficial effect).

Mitigation Measures

Implement Mitigation Measures BIO-1b-ii (Biological Monitoring), BIO-1b-iii (Noxious Weed Control), and BIO-1k (Least Bell's Vireo Avoidance).

Mitigation Measure BIO-1k: *Least Bell's Vireo Avoidance*. To avoid direct impacts of restoration on occupied habitat or potentially suitable habitat for least Bell's vireos, all willow riparian habitat shall be avoided. All aspects of Project design such as the establishment of tidal channels, and any associated habitat disturbance including vegetation trimming or removal, shall avoid all willow habitat in Southeast Area B.

To avoid indirect impacts of restoration on nesting least Bell's vireos, work activities within 500 feet of riparian vegetation shall be timed to avoid the season when nests may be active for this species (March 15 to September 15). If avoidance of work activities within this time period is not feasible, a focused survey for least Bell's vireos shall be conducted in the season prior to initiation of work activities to determine their presence or absence within suitable habitat 500 feet of work limits. The focused survey shall consist of eight site visits conducted 10 days apart during the period of April 10 to July 31 in compliance with the USFWS protocol. The results shall be submitted in a report to the Corps, USFWS and CDFW. If occupied habitat and/or nesting individuals are determined to be present based on the focused survey, measures to avoid take of least Bell's vireos and active nests shall be implemented prior to restoration activities.

Prior to construction activities during the breeding season, a preconstruction clearance and nest survey shall be performed by a qualified biologist within 7 days prior to work activities to determine the location of nests within 500 feet of work areas. Measures such as erecting a temporary barrier with stacked hay bales shall be implemented to reduce the amount of work noise and motion in proximity to active nests. If a nest is detected, work shall halt within 500 feet of the nest, and the nest shall be monitored on a weekly basis by a qualified biologist familiar with least Bell's vireos, until he/she determines the nest is no longer active or the young have fledged.

Post-restoration, willow habitat in Southeast Area B shall be monitored to ensure tidal habitats are not adversely affecting the survival or health of the willow thickets. Monitoring requirements and adaptive management actions for least Bell's vireos and occupied/suitable habitat for this species during restoration and post-restoration shall be identified in the Habitat Restoration and Monitoring Plan, including measures to prevent salinity-related impacts to willow thickets and ensure persistence of this habitat.

Level of Significance after Mitigation

The application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan) and implementation of the mitigation measures described above would allow workers to avoid inadvertently impacting active nests or cause nest abandonment during ongoing activities, limit restoration-related disturbances near occupied habitat, and would ensure that a high-quality marsh habitat would be available to the species following restoration. The implementation of these design features and mitigation measures would reduce but not eliminate Impact 1-BIO-1k, which would be less than significant after mitigation.

1-BIO-1l: Alternative 1 would, unless mitigated, result in a substantial adverse impact on burrowing owl wintering habitat; however, following the Phase 2 restoration effort, Alternative 1 would provide suitable foraging habitat and may potentially expand foraging, wintering and potentially nesting habitat for this species. (Less than Significant with Mitigation Incorporated)

Restoration

Phase 1 Direct Impacts

Burrowing owls are not known to nest within the Project site but potential direct impacts to wintering owls could occur. However, due to Project phasing, a large portion of suitable breeding/wintering habitat would remain available during Phase 1 restoration. Although inactive burrows may be removed during restoration, it is anticipated that ground squirrels present within the site would readily excavate new burrows in restored upland areas. Thus, impacts to breeding/wintering burrows during Phase 1 would be temporary in nature. Nonetheless, a portion of suitable breeding/wintering habitat in the Project area would be impacted temporarily and would be unavailable during restoration. Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential significant direct impacts to breeding or wintering owls would be reduced to less than significant upon implementation of Mitigation Measure BIO-1*l*-i: (Burrowing Owl Surveys).

Phase 1 Indirect Impacts

Burrowing owls could be indirectly impacted by restoration activities due to noise, vibration, lighting, and increased human activity, and habitat quality could be reduced by the spread of invasive plants. Following the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential significant indirect impacts could be reduced to a less-than-significant level through implementation of Mitigation Measures BIO-1b-iii (Noxious Weed Control Plan) and BIO-1*l*-i: (Burrowing Owl Surveys).

Phase 2 Direct Impacts

Phase 2 would impact all potentially suitable habitat for burrowing owls. Breeding/wintering burrows may be lost in the conversion of upland areas to tidal marsh, though this impact is considered temporary as ground squirrels are anticipated to readily excavate new burrows in restored upland areas following restoration. The conversion of foraging habitat from upland to tidal marsh would likely result in no net change in foraging area; however, restoration would render a portion of potential breeding/wintering habitat within the site temporarily unavailable. Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential significant direct impacts to breeding or wintering owls would be reduced to less than significant upon implementation of Mitigation Measure BIO-1*l*-i (Burrowing Owl Surveys).

Phase 2 Indirect Impacts

Indirect impacts to burrowing owls would be similar to those discussed for Phase 1. Following the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential significant indirect impacts could be reduced to a less-than-significant level through implementation of Mitigation Measures BIO-1b-iii (Noxious Weed Control Plan) and BIO-1*l*-i: (Burrowing Owl Surveys).

Post-Restoration

Overall, Alternative 1 would result in the on-site replacement of temporarily impacted habitat for this species at a ratio of approximately 7:1. Thus, there would be no net loss of breeding/wintering habitat following restoration, rather a significant beneficial effect. Although a portion of suitable upland foraging habitat would be converted to tidal marsh, the marsh also would provide suitable foraging habitat for this species, and thus no net loss of foraging habitat is expected. Conversion of non-native tall herbaceous portions of the site may expand foraging, wintering and potentially nesting habitat for this species resulting in a beneficial effect for burrowing owls.

Limited negative indirect impacts could occur following the restoration phases due to a potential increase in human activity and the implementation of maintenance activities. Breeding or wintering burrowing owls may be impacted indirectly through noise or visual disturbances caused by ongoing activities. Following the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), these remaining limited post-restoration-related adverse impacts could be reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1*l*-ii (Burrowing Owl Habitat Maintenance).

Mitigation Measures

Implement Mitigation Measures BIO-1b-ii (Biological Monitoring), BIO-1b-iii (Noxious Weed Control), BIO-1*l*-i (Burrowing Owl Surveys), and BIO-1*l*-ii (Burrowing Owl Habitat Maintenance).

Mitigation Measure BIO-1*l*-i: *Burrowing Owl Surveys*. A qualified biologist shall conduct wintering/breeding protocol burrowing owl surveys in accordance with CDFW’s 2012 Staff Report on Burrowing Owl Mitigation to determine whether or not owls are present within the Project site. If burrowing owls are detected, a Burrowing Owl Management Plan will be prepared and approved by CDFW prior to commencement of construction. The Burrowing Owl Management Plan will be based on CDFW’s 2012 Staff Report on Burrowing Owl Mitigation and address owl specific minimization and avoidance measures, and measures to protect occupied habitat. The Burrowing Owl Management Plan will include mitigation for impacted occupied burrows at no less than a 3:1 ratio by installation of artificial burrows.

Prior to construction, pre-construction surveys shall be conducted no more than 14 days prior to the commencement of work activities. A final survey prior to disturbance of a potential owl burrow shall be conducted within 24 hours of disturbance. Surveys shall be conducted throughout suitable habitat in the Ballona Reserve to detect wintering and breeding owls, if present. Destruction of unoccupied wintering burrows is considered a temporary impact, and suitable wintering habitat shall be restored to pre-Project or better conditions in upland areas. If an occupied burrow is impacted by Project activities, mitigation for that impact shall be implemented in accordance with the Burrowing Owl Management Plan as mentioned in the prior paragraph.

Within 24 hours of post-restoration activities involving ground or vegetation disturbance within suitable burrowing owl habitat, a qualified biologist shall conduct a survey to check for signs of burrowing owl. If breeding or wintering owls are detected, burrowing owls and active burrows shall be avoided and the protective buffers established in the Burrowing Owl Management Plan shall be implemented.

Mitigation Measure BIO-1*l*-ii: *Burrowing Owl Habitat Maintenance*. During post-restoration phases, suitable breeding and wintering habitat for burrowing owl shall be maintained and detailed in the O&M Plan and Habitat Restoration and Monitoring Plan. Measures and actions to maintain suitable habitat for burrowing owl shall be in accordance with Mitigation Management Plan and Vegetation Management Goals identified in the Staff Report for Burrowing Owl Mitigation (CDFG 2012), and may include the following:

1. Manage vegetation height and density (especially in immediate proximity to burrows). Suitable vegetation structure varies across sites and vegetation types, but should generally be at the average effective vegetation height of 4.7 cm and <13 cm average effective vegetation height.

2. Promote self-sustaining populations of host burrowers by limiting or prohibiting lethal rodent control measures and by ensuring food availability for host burrowers through vegetation management.

Level of Significance after Mitigation

The application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), and implementation of the identified mitigation measures would reduce potential impacts during restoration-related activities and operations such as identification and avoidance of any occupied burrows and maintaining suitable breeding and wintering habitat during ongoing maintenance activities to ensure that high-quality upland habitat would be available to burrowing owls following restoration. These measures would reduce but not eliminate Impact 1-BIO-1*l*. Following mitigation, impacts would be less than significant and may result in an overall beneficial effect due to the increase in amount and quality of available burrowing owl breeding, foraging, and wintering habitat.

1-BIO-1m: Alternative 1 would, unless mitigated, result in a limited adverse impact, either directly or through habitat modifications, on nesting raptors. (Less than Significant with Mitigation Incorporated)

Restoration

In addition to burrowing owl, several other special-status raptor species have the potential to occur within the Project site, including merlin (*Falco columbarius*), northern harrier, osprey, peregrine falcon, sharp-shinned hawk (*Accipter striatus*), short-eared owl, turkey vulture (*Cathartes aura*), and white-tailed kite. Of these, only Cooper’s hawk has the potential to nest within the Project site - the others occur in the Project site largely in a foraging role. Within the

Project site, suitable nesting areas currently exist within the stand of eucalyptus in South Area B. In addition, potential raptor nest trees exist on properties adjacent to the site and within the Ballona Freshwater Marsh. The entire Project site has the potential to be utilized for foraging by raptors both during and outside of the nesting season.

Phase 1 and Phase 2 Direct Impacts

No direct impacts would occur to active raptor nests because construction-related disturbance impacts that could cause nest abandonment would be considered an indirect impact.

Phase 1 and Phase 2 Indirect Impacts

During restoration, a limited number of non-native trees that could be used for raptor nesting would be removed, although raptors have not been observed nesting in these trees. The eucalyptus grove in South Area B that would be suitable for raptor nesting would not be impacted by the Project. However, nesting success on-site or in adjacent areas could be indirectly impacted by work activities due to noise, vibration, lighting, and increased human activity. During Phase 1 and Phase 2 restoration, a portion of foraging habitat within the Ballona Reserve would be temporarily impacted and not available for foraging; however, the majority of the Ballona Reserve containing suitable foraging habitat would remain. Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance) and BIO-3 (Habitat Restoration and Monitoring Plan), potential indirect impacts could be further reduced to a less-than-significant level through the implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Post-Restoration

Overall, Alternative 1 would not result in the net loss of raptor breeding habitat. Although a portion of suitable upland foraging habitat would be converted to tidal marsh, the marsh also would provide raptor foraging habitat that is comparable or better than to pre-Project conditions.

Limited negative indirect impacts could occur following the restoration phases due to a potential increase in human activity and the implementation of maintenance activities. Breeding raptors may be impacted indirectly through noise or visual disturbances caused by ongoing activities. Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance) and BIO-3 (Habitat Restoration and Monitoring Plan), the remaining limited post-restoration-related adverse impacts could be reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Mitigation Measures

Implement Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Level of Significance after Mitigation

The application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance) and BIO-3 (Habitat Restoration and Monitoring Plan) and implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance) would reduce impacts to nesting raptors and habitat to a less-than-significant level. Together, these measures would reduce but not eliminate Impact 1-BIO-1m.

1-BIO-1n: Alternative 1 would, unless mitigated, result in a substantial adverse impact on special-status upland birds; however, following the Phase 2 restoration effort, Alternative 1 would provide comparable amounts of habitat and may potentially expand foraging and nesting habitat for these species resulting in an overall net beneficial effect. (Less than Significant with Mitigation Incorporated)

In addition to Belding's savannah sparrow and least Bell's vireo, a variety of other special-status bird species have the potential to utilize upland portions of the Project site, including:

1. Belted kingfisher
2. Black-headed grosbeak
3. Blue grosbeak
4. California towhee
5. Gray flycatcher
6. Hermit thrush
7. Hermit warbler
8. Lincoln's sparrow
9. Loggerhead shrike
10. MacGillivray's warbler
11. Nashville warbler
12. Olive-sided flycatcher
13. Purple martin
14. Red-breasted nuthatch
15. Ruby-crowned kinglet
16. Swainson's thrush
17. Tree swallow
18. Tricolored blackbird
19. Vaux's swift
20. Vesper sparrow
21. Virginia's warbler
22. Western meadowlark
23. Western wood-pewee
24. Wilson's warbler
25. Yellow warbler
26. Yellow-breasted chat
27. Yellow-headed blackbird

Of these species, only California towhee, loggerhead shrike, tree swallows, and western meadowlark have the potential to nest in the Project site; the others occur in the Project site largely in a foraging role. California towhee is a common resident throughout much of the state and occurs in chaparral and other shrubby habitats. It is a confirmed breeder and forager within the Project site. Loggerhead shrike is widely distributed in Southern California. It forages in open habitats of many types and nests in small trees and large shrubs. Within the Ballona Reserve it is considered to have low potential to breed, but has high potential to occasionally forage. Western meadowlark is a common resident that nests in the pickleweed habitat of West Area B. Western meadowlark is expected to nest in pickleweed and upland grassland habitats (which are more typical for this species) throughout the Ballona Reserve.

Restoration

Phase 1 and Phase 2 Direct Impacts

If site activities commence during the breeding season, native birds such as loggerhead shrike, western meadowlark, California towhee, and tree swallow and their nests could be directly impacted by habitat removal or disturbance associated with grading and levee construction. Potential adverse impacts would be fully avoided and reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Phase 1 and Phase 2 Indirect Impacts

Restoration activities would result in a temporary reduction in the extent of suitable foraging habitat for special-status upland bird species due to vegetation clearing, grubbing, and re-grading. Potential foraging habitat would be temporarily impacted; however, ground-disturbing activities would proceed in stages, leaving a majority (74%) of upland areas available for foraging throughout the restoration process. Indirect, temporary impacts to special-status upland birds through disturbance of foraging habitat would be less than significant.

Indirect impacts to breeding success could occur due to noise, vibration, lighting, and increased human activity. In addition, the spread of invasive plants by vehicles and equipment during restoration activities could result in reduced habitat quality. Following the application of Project Design Feature BIO-1 (WEAP), the remaining limited adverse impacts could be reduced to a less-than-significant level through implementation of Mitigation Measures BIO-1b-iii (Noxious Weed Control Plan) and BIO-1i-i (Nesting Bird and Raptor Avoidance).

Post-Restoration

Alternative 1 would result in the on-site enhancement of temporarily impacted habitat, and no direct impacts to special-status upland birds or associated habitat would be anticipated. There would be no net loss of nesting or foraging habitat following restoration. Although a portion of suitable upland foraging habitat would be converted to tidal marsh, the marsh also would provide suitable foraging habitat for these species, and thus no net loss of foraging habitat is expected. Enhancement of existing non-native habitats within the site also is likely to expand foraging and potentially nesting habitat for these species resulting in a potential net beneficial effect.

Limited negative indirect impacts could occur due to a potential increase in human activity and the implementation of maintenance activities. Nesting success may be impacted indirectly through noise or visual disturbances caused by ongoing activities, such as weed removal. Following the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential impacts could be reduced by the implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Mitigation Measures

Implement Mitigation Measures BIO-1b-iii (Noxious Weed Control), and BIO-1i-i (Nesting Bird and Raptor Avoidance).

Level of Significance after Mitigation

The implementation of Alternative 1, including the identified mitigation measures, would allow workers to avoid inadvertently impacting active nests or causing nest abandonment during ongoing activities, such as weed removal; would reduce potential impacts during operations such as limiting unauthorized access into restored habitat areas; and would ensure that a comparable amount of high-quality upland habitat will be available to upland bird species following restoration. Following mitigation, impacts would be less than significant.

1-BIO-1o: Alternative 1 would, unless mitigated, result in a substantial short-term, adverse impact on special-status shorebirds; however, following Phase 2 restoration, Alternative 1 would have a beneficial effect on available breeding and foraging habitat for shorebirds. (Less than Significant with Mitigation Incorporated)

Special-status shorebirds are known to use the mudflats and salt pans in the Project area as breeding habitat. American pipit, black skimmer, black-bellied plover, Bonaparte's gull, brant, California brown pelican, California gull, California least tern, Caspian tern, common loon, eared grebe, elegant tern, long-billed curlew (*Numenius americanus*), red knot (*Calidris canutus*), redhead, royal tern (*Thalasseus maximus*), spotted sandpiper (*Actitis macularius*), western snowy plover, white-faced ibis (*Plegadis chihi*), and Wilson's phalarope (*Phalaropus tricolor*) all have the potential to use the Project area as foraging habitat, and many of these species are documented migrants or winter residents within the Project area.

Restoration

Phase 1 Direct Impacts

If site activities commence during the avian nesting season, nesting special-status shorebirds could be directly impacted. Potential adverse impacts would be fully avoided and reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Phase 1 Indirect Impacts

Phase 1 would result in an indirect loss of special-status shorebird foraging habitat, as well foraging habitat for great blue heron and black-crowned night heron, through the disturbance of 0.8 acre of potentially suitable open water foraging habitat as a result of work activities including dredging of channels in Area B. Impacts to salt pan habitat in West Area B would be avoided during this phase. Most foraging habitat impacts would be temporary, but some impacts (e.g., levee construction) would result in a permanent conversion of salt pan to upland habitat. In the absence of mitigation, nesting success of special-status shorebirds could be impacted indirectly by noise from on-site activities within 500 feet. Noise disturbance can impact pair formation, territory defense, and communication regarding food and danger responses (FHA 2011). Following the application of Project Design Features BIO-1 (WEAP) and BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential impacts could be minimized with implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1i-i (Nesting Bird and Raptor Avoidance). As shown in Table 3.4-11, Phase 1 would result in a net increase of 15.1 acres of suitable shorebird habitat, which would be a beneficial effect. In addition, Alternative 1, Phase 1 actions in Area A would allow for larger areas of tidal wetland habitats in the Ballona Reserve to move landward as sea levels rise, thereby resisting complete inundation and creating an overall beneficial effect of increased resilience of the habitats to sea level rise.

TABLE 3.4-11
CHANGES IN THE EXTENT OF SHOREBIRDS HABITAT AS A RESULT OF ALTERNATIVE 1

Existing Shorebirds Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Shorebird Habitat (Phase 1)	31.6	0.8	46.7	+15.1
Shorebird Habitat (Phase 2)	46.7	5.9	45.0	-1.7
			Total Net Habitat Change	**+13.4**

SOURCE: WRA

Should special-status shorebirds nest within or adjacent to the Project site, limited negative indirect impacts, such as nest disturbance, could occur due to a potential increase in human activity and maintenance activities. These limited adverse impacts could be reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Phase 2 Direct Impacts

If site activities commence during the avian nesting season, nesting special-status shorebirds could be directly impacted. Potential adverse impacts would be fully avoided and reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Phase 2 Indirect Impacts

Phase 2 would result in indirect impacts to foraging habitat for special-status shorebirds and other shorebirds, through disturbance of 5.9 acres of potentially suitable habitat during restoration activities associated with the construction of new levees in West Area B. However, the majority of suitable habitat in West Area B would be avoided. Permanent impacts would occur due to the construction of levees in existing wetland and salt pan habitats (see Table 3.4-11). However, existing roads within the salt pan habitat would be removed, improving salt pan habitat for potential breeding efforts by colonial nesters, which would be a beneficial effect (and thus not require mitigation). Habitat impacts could be minimized with implementation of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan). As shown in Table 3.4-11, Phase 2 would result in a slight decrease of suitable shorebird habitat; however, there still would be an overall net increase of over 13 acres in the total area of suitable habitat after completion of Phase 2, which would be a beneficial effect.

Similar to Phase 1, potential indirect impacts that could result from special-status shorebirds nesting within or adjacent to the Project site could be reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Post-restoration

No direct impacts to special-status shorebirds or associated habitat would be anticipated during post-restoration. Following full implementation, Alternative 1 would increase the amount and quality of shorebird habitat by restoring tidal influence and by creating contiguous salt pan habitat by removing roads within the existing, large salt pan in West Area B (see Table 3.4-11). There still would be a net increase of over 13 acres in the total area of suitable habitat after completion of Phase 2 as compared to existing conditions, which would be a beneficial effect (see Table 3.4-11). Further, the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would require habitat mitigation and monitoring to create and restore sensitive habitats that support special-status shorebirds. In addition, upon completion of restoration activities, the existing salt pan habitat would be more resistant to inundation under sea level rise scenarios.

If improved habitat conditions allow special-status shorebirds to nest within the Project site post-restoration, limited negative indirect impacts, such as nest disturbance, could occur due to a potential increase in human activity and maintenance activities. These limited adverse indirect impacts could be reduced to less than significant through Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Mitigation Measures

Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1i-i (Nesting Bird and Raptor Avoidance).

Level of Significance after Mitigation

The implementation of Alternative 1, including the identified mitigation measures would allow workers to avoid inadvertently impacting active nests or causing nest abandonment during restoration activities, such as weed removal; would reduce potential impacts during operations such as limiting unauthorized access into restored habitat areas; and would ensure that a comparable amount of high-quality habitat will be available to shorebirds following restoration. The above mitigation measures would reduce potential impacts to nesting birds to less than significant, while the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), would maintain potential habitat impacts as less than significant.

1-BIO-1p: Alternative 1 would, unless mitigated, result in a substantial adverse impact on special-status marsh birds; however, following the Phase 2 restoration effort, Alternative 1 would expand the total area of suitable breeding and foraging habitat for marsh birds (Less than Significant with Mitigation Incorporated)

Restoration

Phase 1 and Phase 2 Direct Impacts

Special-status marsh birds that either have potential or are known to occur within the Project site include light-footed Ridgway's rail, American bittern, Clark's marsh wren, common gallinule

(*Gallinula galeata*), least bittern, sora (*Porzana Carolina*), and Virginia rail. Of these species, those with potential to breed within the Project site include light-footed Ridgway's rail, common gallinule, least bittern, and Virginia rail. Both Virginia rail and least bittern have been confirmed breeding in the freshwater marsh, and all three potentially breeding species have potential to nest and forage in marsh habitats throughout the Project site. These birds also have potential to forage on mudflats in the Project area. If site activities commence during the avian nesting season, nesting special-status shorebirds could be directly impacted. Potential adverse impacts would be fully avoided and reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Phase 1 Indirect Impacts

Phase 1 would result in indirect impacts to special-status marsh birds through disturbance of potentially suitable marsh habitat due to restoration activities, including vegetation clearing, grubbing, and grading. The Project would result in a permanent conversion of 13.5 acres of marsh to upland habitat under Phase 1 (see Table 3.4-12). These impacts could be minimized with the application of Project Design Features BIO-1 (WEAP) and BIO-3 (Habitat Restoration and Monitoring Plan), and implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1i-i (Nesting Bird and Raptor Avoidance). Phase 1 would result in a 27% increase (40.6 acres) of suitable breeding and foraging habitat for marsh birds, which would be a beneficial effect (see Table 3.4-12). In addition, Alternative 1, Phase 1 actions in Area A would allow for greater transition areas under sea level rise that would result in a beneficial effect for habitats in the Ballona Reserve capable of supporting marsh birds, as wetland habitats would be expected to transition over time into higher elevations commensurate with rising sea levels and be more resilient.

TABLE 3.4-12
CHANGES IN THE EXTENT OF MARSH BIRD HABITAT AS A RESULT OF ALTERNATIVE 1

Existing Marsh Bird Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Marsh Bird Habitat (Phase 1)	148.2	13.5	188.8	+40.6
Marsh Bird Habitat (Phase 2)	188.8	17.9	186.8	-2.0
			Total Net Habitat Change	**+38.6**

SOURCES: WRA, ESA

In addition, the breeding success of light-footed Ridgway's rail, common gallinule, least bittern, and Virginia rail could be indirectly impacted by work activities due to noise, vibration, lighting, and increased human activity. These limited adverse impacts could be reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Phase 2 Direct Impacts

If site activities commence during the avian nesting season, nesting special-status marsh birds could be directly impacted. Potential adverse impacts would be fully avoided and reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Phase 2 Indirect Impacts

Phase 2 would result in indirect impacts to special-status marsh birds through disturbance of 17.9 acres of potentially suitable marsh habitat as a result of restoration, including the construction of new levees in West Area B. Permanent impacts in Phase 2 would occur due to the construction of levees in existing marsh habitats. Habitat impacts could be minimized with application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan). As shown in Table 3.4-12, Phase 2 would result in a net decrease in the amount of suitable breeding and foraging habitat for marsh birds as compared to the quantity of habitat that would exist after the completion of Phase 1, but would increase the quality of existing habitats by restoring tidal influence.

Similar to Phase 1, potential significant indirect impacts that could result from special-status shorebirds nesting within or adjacent to the Project site could be reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Post-restoration

No direct impacts to special-status marsh birds or associated habitat would be anticipated during post-restoration. Following full implementation, Alternative 1 would increase the amount and quality of marsh habitats by restoring tidal influence, which would be a beneficial effect. There would be a net increase of 38.6 acres in the total area of marsh habitats after completion of Phase 2 as compared to existing conditions (see Table 3.4-12). Further, the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would require habitat mitigation and monitoring to create and restore sensitive habitats that support special-status marsh birds.

Mitigation Measures

Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1i-i (Nesting Bird and Raptor Avoidance).

Level of Significance after Mitigation

The implementation of Alternative 1, including the identified mitigation measures would minimize the area of potential impacts to nesting and foraging habitat and would allow workers to avoid inadvertently impacting active nests or causing nest abandonment during restoration efforts. Measures would avoid or minimize impacts during operations by limiting unauthorized access into restored habitat areas; and ensuring that a high-quality marsh habitat will be available to special-status marsh bird species following restoration. Together with the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), these measures would reduce but not eliminate Impact 1-BIO-1p. Following mitigation, this impact would be less than significant.

Special-Status Mammals

1-BIO-1q: Alternative 1 would, unless mitigated, result in a substantial adverse impact, either directly or through habitat modifications, on Southern California salt marsh shrew and South Coast marsh vole; however, following the Phase 2 restoration effort, Alternative 1 would expand the total area of suitable habitat for these species in the Ballona Reserve (Less than Significant with Mitigation Incorporated)

Restoration

Phase 1 Direct Impacts

Activities associated with restoration in Areas A and C would occur primarily in upland habitats that do not support habitat for Southern California salt marsh shrew or South Coast marsh vole. Activities that would take place in marginally suitable habitat in these areas are not likely to affect the shrew or vole because these species are presumed absent from Areas A and C based on trapping surveys and the isolation of potential habitat areas. Therefore, restoration activities would not be expected to result in the direct loss of individuals; however, implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring) would ensure that these mammals would be unharmed if encountered.

Phase 1 would result in a substantial (49%) increase in the amount of potentially suitable salt marsh habitat for these species, which would be a beneficial effect (see Table 3.4-13). In addition, Alternative 1, Phase 1 actions in Area A would allow for larger areas of tidal wetland habitats in the Ballona Reserve to move landward as sea levels rise, thereby resisting complete inundation, and maintaining suitable habitat conditions for these and other special-status species. These would be beneficial effects.

TABLE 3.4-13
SUMMARY OF CHANGES IN THE EXTENT OF SOUTHERN CALIFORNIA SALT MARSH SHREW AND SOUTH COAST MARSH VOLE HABITAT AS A RESULT OF ALTERNATIVE 1

Existing Southern California salt marsh shrew and South Coast marsh vole Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Shrew/Vole Habitat (Phase 1)	141.5	13.5	210.6	+69.1
Shrew/Vole Habitat (Phase 2)	210.6	17.9	214.8	+4.2
			Total Net Habitat Change	**+73.3**

SOURCES: WRA, ESA

Phase 1 Indirect Impacts

Restoration activities could result in indirect impacts due to noise, vibration, lighting, and increased human activity. Indirect impacts associated with reduced habitat quality could occur from the spread of invasive plants. Implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan) would ensure salt marsh shrew and south coast marsh vole are unharmed if encountered, and minimize impacts related to the spread of invasive plants, respectively.

Phase 2 Direct Impacts

Activities associated with restoration in Area B are expected to directly impact 17.9 acres of suitable habitat for these species due to the construction of levees in and adjacent to salt marsh habitats (Table 3.4-13). Work activities therefore could result in the direct mortality or injury to individual South Coast marsh voles or salt marsh shrews. However, implementation of Project Design Feature BIO-1 (WEAP) and Mitigation Measure BIO-1b-ii (Biological Monitoring) would ensure that these mammals are unharmed if encountered.

Phase 2 Indirect Impacts

As shown in Table 3.4-13, Phase 2 would result in a net decrease in the amount of suitable habitat for these species as compared to the quantity of habitat that would exist after the completion of Phase 1, but would increase the quality of existing habitats by restoring tidal influence. Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance) and BIO-3 (Habitat Restoration and Monitoring Plan), remaining habitat and species impacts would be similar to those discussed for Phase 1, and could be minimized with implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

In addition, Alternative 1, Phase 2 actions in Area B would allow for larger areas of tidal wetland habitats in the Ballona Reserve to move landward as sea levels rise, thereby resisting complete inundation, and maintaining suitable habitat conditions for these and other special-status species. This would be a beneficial effect.

Post-restoration

Following full implementation, Alternative 1 would increase the amount and quality of habitats for salt marsh shrew and south coast marsh vole by restoring tidal influence, which would be a beneficial effect. There would be a substantial net increase of 73.3 acres of suitable habitat, as compared to existing conditions (see Table 3.4-13). Further, the application of Project Design Features BIO-3 (Habitat Restoration and Monitoring Plan) would require habitat monitoring and adaptive management to ensure the creation and restoration of sensitive habitats that support **Southern** California salt marsh shrew or South Coast marsh vole.

Mitigation Measures

Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Level of Significance after Mitigation

The application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan) would ensure that high-quality salt marsh habitat would be available following restoration. Identified mitigation measures would reduce potential impacts to individual salt marsh shrew and south coast marsh vole. Together, these measures would reduce Impact 1-BIO-1q to less than significant.

1-BIO-1r: Alternative 1 would, unless mitigated, result in a limited significant adverse impact either directly or through habitat modifications, on special-status bats. (Less than Significant with Mitigation Incorporated)

Several species of special-status bats have the potential to occur in the Project site including big free-tailed bat, California leaf-nosed bat, hoary bat, pallid bat, silver-haired bat, western mastiff bat, pocket free-tailed bat, Townsend's big-eared bat, and western yellow bat. Eucalyptus and palm trees provide suitable day-roosting habitat for solitary-roosting bats, especially western yellow bats, and the road bridges and footings in the Project site provide potential day-roosting habitat for pallid bats and other colonial-roosting species of bats. Additionally, freshwater wetland and riverine habitats are important to bats because they offer a permanent water source, and because marshes often support high insect densities, they are important habitats for foraging.

Restoration

Phases 1 and 2 Direct Impacts

It is possible that breeding or nonbreeding bats may be present on-site and could be subject to harm during restoration activities. Potential roost sites may be available in many of the large palm or street trees that occur near the Ballona Reserve, or within structures that may be modified or removed by the Project. Crevices in existing bridges also could provide roosting habitat for special-status bats. Winter migration surveys have detected some bat activity, but bat roosts have not been detected on-site (ESA 2015). The appropriately-timed disturbance of a nonbreeding roost would not be considered significant; however, the loss of an active maternity roost, even of relatively common species such as the Mexican free-tailed bat, which was identified during surveys (ESA 2015), would be significant. Based on their known range and available habitat in the Project area, bat species that could be impacted by the Project potentially include the big free-tailed bat, California leaf-nosed bat, hoary bat, pallid bat, silver-haired bat, western mastiff bat, pocket free-tailed bat, Townsend's big-eared bat, Yuma myotis, Mexican free-tailed bat and western yellow bat. Following the application of Project Design Feature BIO-1 (WEAP), remaining potential direct impacts to maternity roosts for these bat species would be reduced to less-than-significant through implementation of BIO-1r (Bat Avoidance).

Phases 1 and 2 Indirect Impacts

Potential indirect impacts to bats would include temporary disturbance of foraging habitat. This indirect impact would be negligible because large areas of suitable foraging habitat would remain throughout Phase 1 and Phase 2. Indirect impacts would be less than significant.

Post-restoration

Following restoration, Alternative 1 would result in beneficial effects in the amount of foraging and roosting habitat available for special-status bats. Open water habitat would increase by approximately 15% in comparison to existing conditions, and there would be a substantial increase in the amount and quality of foraging habitat. The construction of new bridges could also increase potential roosting habitat for special-status bat species. These would be beneficial effects.

Mitigation Measures

Mitigation Measure BIO-1r: ***Bat Avoidance*.**

Avoidance of Maternity Roosts. Work within potential bat roosting habitat shall avoid the maternity roosting season (March 1 to July 31) to the extent feasible. If work must be conducted within the maternity roosting season, prior to the start of work within or near trees, bridges or other structures within the work area, a qualified bat biologist shall conduct a preconstruction survey to determine if bats are roosting within the Project work area. If bats are not roosting, no further mitigation is required.

If bats are roosting, all maternity roosts shall be avoided and an appropriate no-disturbance buffer shall be established at the discretion of a qualified biologist, based on the sensitivity of the bat species. If work within the buffer is deemed necessary, a qualified biologist shall monitor work activities to ensure no disturbance to the roost(s).

For any palm tree scheduled to be removed as part of restoration, the following procedures shall be applied before the tree is removed: 1) Trees shall be removed outside of the maternity roosting season (prior to March 1 or after July 31); 2) Under the direction of a qualified bat biologist, select fronds would be removed prior to dusk to modify the structure of the tree the day before the tree is scheduled to be removed; and 3) Noise and vibrations (e.g., striking the base of the tree) shall be scheduled 15 minutes prior to removal of the palm tree, during daylight hours.

Exclusion Outside of Maternity Roosting Season. If bats are determined by a qualified biologist to be roosting within or near bridges and other structures within the work area, bats shall be humanely evicted and excluded from those structures. The humane eviction/exclusion shall be conducted in the fall (September or October) preceding work activities that could affect roosting bats. Exclusion in the fall is recommended to avoid impacts to hibernating bats or a maternity roost (typically April through August in southern California) when flightless young are present.

To protect roosting bats, a combination of acoustic surveys of habitat around structures, structure inspection, and exit counts shall be used to survey the area that may be directly or indirectly impacted by the Project. As bats may utilize dense tree canopies, snags, or bridges over creeks/water, these habitat types should be specifically surveyed. Foraging areas should also be identified and specific flight routes to those foraging areas as well. Bats shall be identified to the most specific taxonomic level possible, and roosts shall be evaluated to determine their size and significance.

Bat surveys shall include: 1) the exact location of all roosting sites (location shall be adequately described and drawn on a map); 2) the number of bats present at the time of visit (count or estimate); 3) each species of bat present shall be named (include how the species was identified); 4) the location, amount, distribution and age of all bat droppings shall be described and pinpointed on a map; 5) the type of roost; night roost (rest at night while out feeding) versus a day roost (maternity colony) must also be clearly stated; and 6) All survey results, including field data sheets should be provided to CDFW.

During installation of humane eviction/exclusion devices, each crevice shall be inspected using flashlights or fiber optic scopes for the presence of day-roosting bats. At crevices where the absence of day-roosting bats is confirmed, the crevices immediately shall be sealed using materials such as foam backer rod or pipe insulation secured with adhesive to prevent bats from entering and using the crevices. At crevices where bats are visibly present or where absence cannot be confirmed, humane eviction devices shall be installed that would allow the bats to exit the crevice but prevent them from returning. The qualified biologist performing the humane eviction shall determine the exact type of eviction device to be installed and exclusionary device used. The eviction device shall remain in place for at least 14 days following installation to allow sufficient time for all the bats to vacate the crevice. After the exclusionary period, the eviction device shall be removed and exclusion device installed. The exclusion device shall remain in place for the duration of work activities, and shall be inspected weekly by a qualified biologist. All aspects of the humane eviction/exclusion of bats shall be supervised directly and monitored by a qualified biologist approved by CDFW. Following completion of activities that could impact roosting bats, the exclusion devices shall be removed by the contractor (under supervision of the qualified biologist) to allow bats to return to the roost crevices.

Level of Significance after Mitigation

Following the application of Project Design Feature BIO-1 (WEAP), implementation of the mitigation measure identified above would minimize potential impacts to bat species. This measure would reduce potential impacts to any roosting bats during active site restoration to a less-than-significant level.

Riparian Habitat and Other Sensitive Natural Communities

1-BIO-2a: Alternative 1 would result in a substantial increase in southern mud intertidal habitat (i.e., mud-flat), which would be a long-term beneficial effect, following short-term adverse impacts to a portion of existing on-site southern mud intertidal habitat during site restoration. (Less than Significant with Mitigation Incorporated)

Restoration

Phase 1 Direct Impacts

Phase 1 would result in primarily temporary habitat impacts, but also a direct, permanent loss of 0.3 acre of southern mud intertidal habitat as a result of restoration activities including grading and temporary filling in Area A (Table 3.4-14). The application of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), and BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat) would avoid and minimize temporary and permanent impacts to southern mud intertidal habitat.

Phase 1 restoration would result in a net habitat increase of 6.4 acres (Table 3.4-14). This would be a beneficial effect. Phase 1 would improve the function and ecological value of southern mud intertidal habitat types in the Ballona Reserve by improving hydrology and associated ecosystem services. In addition, Phase 1 actions in Area A would allow for larger areas of tidal wetland habitats in the Ballona Reserve to move landward as sea levels rise, thereby resisting full inundation.

TABLE 3.4-14
CHANGES IN THE EXTENT OF SOUTHERN MUD INTERTIDAL HABITAT AS A RESULT OF ALTERNATIVE 1

Existing Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Southern Mud Intertidal (Phase 1)	8.8	0.3	15.2	+6.4
Southern Mud Intertidal (Phase 2)	15.2	2.1	13.5	-1.7
			Total Net Habitat Change	**+4.7**

SOURCE: WRA

Phase 1 Indirect Impacts

Phase 1 restoration activities could result in indirect impacts such as the release of fugitive dust, disruptions to native seed banks from ground disturbance, the colonization of non-native, invasive plant species, and the potential increase in erosion, sedimentation and maintenance activities. Following the application of Project Design Features BIO-1 (WEAP), BIO-4 (Water Pollution and Erosion Control Plan) and BIO-6 (Culvert Installation Best Management Practices), remaining potentially significant indirect impacts could be reduced to a less-than-significant level through implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Phase 2 Direct Impacts

As shown in Table 3.4-14, Phase 2 would result in a direct loss of 2.1 acres of southern mud intertidal habitat due to restoration activities including the construction of new levees in West Area B. These impacts would be permanent due to the construction of levees through existing slough channels. Temporary and permanent impacts would be avoided or minimized to a less than significant level through application of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), and BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat).

Phase 2 Indirect Impacts

Phase 2 indirect impacts would be the same as those discussed for Phase 1. The same Project Design Features and mitigation measures would apply. In addition, Phase 2 actions in West Area B would allow for larger areas of tidal wetland habitats in the Ballona Reserve to move landward as sea levels rise, thereby resisting full inundation, which would be a beneficial effect.

Post-restoration

Alternative 1 increases the amount of southern mud intertidal habitat as compared to existing conditions, resulting in a net increase of 4.7 acres of mudflats, which would be a beneficial effect. Alternative 1 would improve the functions and values of southern mud intertidal habitat types in the Ballona Reserve by improving hydrology and associated ecosystem services.

Alternative 1, which would include replanting of native species, removal of non-native plant species, and on-going monitoring and adaptive management, would result in long-term benefits to southern mud intertidal habitat. As described in Section 2.3.2, *Alternative 1: Proposed Action*, all restored native habitats, including southern mud intertidal, would be monitored for success in achieving approved vegetative performance criteria for up to 10 years. Restored habitats would be monitored and maintained as necessary to meet required performance criteria for mudflats identified in Table 2-14, *Mudflat Performance Criteria*. However, following the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), potential limited indirect impacts due to a potential increase in sedimentation and maintenance activities would be less-than-significant. The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would further reduce post-restoration impacts by requiring habitat mitigation and monitoring to restore sensitive habitats.

Mitigation Measures

Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Level of Significance after Mitigation

The application of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), BIO-4 (Water Pollution and Erosion Control Plan), BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat), and BIO-6 (Culvert Installation Best Management Practices) would minimize the area of potential impacts to habitat and allow workers to avoid inadvertently impacting habitat, would limit the potential sediments from erosion and other debris from entering waters in the Project area, and would include establishment of adaptive management procedures including evaluation methods, periods, and success criteria. Project Design Features also would limit the potential for sediments from erosion and other debris from entering waters in the Project area and would include establishment of adaptive management procedures including evaluation methods, periods, and success criteria. The implementation of mitigation measures would address potential impacts related to disruptions to native seed banks from ground disturbance, the colonization of non-native, invasive plant species, and the potential increase in erosion, sedimentation and maintenance activities. The Project would also increase the amount of Southern Mud Intertidal habitat in the Project area by 4.7 acres compared with existing conditions. These measures would reduce Impact 1-BIO-2a to less than significant.

1-BIO-2b: Alternative 1 would result in a substantial increase in southern coastal salt marsh habitat, which would be a beneficial effect, following short-term adverse impacts to a portion of existing on-site southern coastal salt marsh habitat during site restoration. (Less than Significant with Mitigation Incorporated)

Restoration

Phase 1 Direct Impacts

Phase 1 would establish a substantial amount of southern coastal salt marsh, increasing the existing 103.2 acres of on-site habitat to 161.8 acres. Although this would be a substantial beneficial effect, during Phase 1, 13.5 acres of existing southern coastal salt marsh habitat would be permanently lost due to conversion to upland (Table 3.4-15). Impacts to this habitat, which falls under the jurisdiction of the Corps/RWQCB and CCC, could have short-term adverse impacts on plants and wildlife dependent on the habitat, including special-status species (for which potential impacts are discussed above). Following the application of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), and BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat), temporary and permanent impacts would be avoided or reduced to a less-than-significant level.

TABLE 3.4-15
SUMMARY OF CHANGES IN THE EXTENT OF SOUTHERN COASTAL SALT MARSH HABITAT AS A RESULT OF ALTERNATIVE 1

Existing Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Southern Coastal Salt Marsh (Phase 1)	103.2	13.5	161.8	58.6
Southern Coastal Salt Marsh (Phase 2)	161.8	17.9	164.2	2.4
			Total Net Habitat Change	**+61.0**

SOURCES: WRA, ESA

Phase 1 Indirect Impacts

Southern coastal salt marsh habitat could be indirectly impacted by work activities due to sedimentation and trampling. Habitat also could be indirectly impacted by work activities due to dust accumulation, disruptions to native seed banks from ground disturbance, the colonization of non-native, invasive plant species, and the potential increase in erosion, sedimentation and maintenance activities. Following the application of Project Design Features BIO-1 (WEAP), BIO-4 (Water Pollution and Erosion Control Plan), and BIO-6 (Culvert Installation Best Management Practices), remaining potentially significant indirect impacts could be reduced to a less-than-significant level through implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

However, one of the primary objectives of the Project is the restoration of southern coastal salt marsh habitat, which would include replanting of native species, removal of non-native species, restored hydrology, and the establishment of transition habitat, and, as such, would result in long-term benefits to the Ballona Reserve and its associated wetland habitats.

Phase 1 would result in a substantial net increase in the amount of southern coastal salt marsh habitat, which would be a beneficial effect (see Table 3.4-15). Post-restoration acreages of wetland habitat would be increased and the functions and values of the southern coastal salt marsh habitat, including Corps/RWQCB and CCC jurisdictional resources, would be improved as a result of implementation of Alternative 1. Therefore, effects to this habitat type are considered beneficial. In addition, Phase 1 actions in Area A would allow for greater transition areas under sea level rise that would result in a beneficial effect for habitats in the Ballona

Reserve, as wetland habitats would be expected to transition over time into higher elevations commensurate with rising sea levels.

Phase 2 Direct Impacts

Following the net addition of 58.6 acres of southern coastal salt marsh, Phase 2 would result in the loss of 17.9 acres and establishment of 2.4 acres of marsh habitat due to work activities including the construction of new levees in West Area B; a net gain of 61.0 acres compared to baseline conditions. Similar to Phase 1, the majority of permanent impacts in Phase 2 are directly related to the construction of levees (see Table 3.4-15). However, Phase 2 would improve the quality of habitat within the Ballona Reserve, and temporary and permanent impacts would be avoided or reduced to a less–than-significant level through application of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), and BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat).

Phase 2 Indirect Impacts

Phase 2 indirect impacts would be similar to those discussed for Phase 1. The same mitigation measures would apply.

Post-restoration

Following Phase 2, Alternative 1 would substantially increase the availability of southern coastal salt marsh habitat (net increase of 61.0 acres) as compared to existing conditions, and would increase the quality of existing habitats by restoring tidal influence. As both the quantity and quality of the habitat would be improved, this would be a beneficial effect. As described in Chapter 2, all restored native habitats, including southern coastal salt marsh, would be monitored for success in achieving approved vegetative performance criteria for up to 10 years. Restored habitats would be maintained, weeded, and reseeded or replanted as necessary to meet required performance criteria for tidal marsh identified in Table 2-12 in Chapter 2. Cumulative post-Project acreages of wetland habitat would be increased and the functions and values of the Southern Coastal Salt Marsh habitat, including Corps/RWQCB and CCC jurisdictional resources, would be improved as a result of implementation of Alternative 1. Therefore, effects to this habitat type are considered beneficial.

However, limited negative indirect impacts could occur due to a potential increase in sedimentation and maintenance activities, which would be reduced to a less-than-significant level through implementation of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan). The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would further reduce post-restoration impacts by requiring habitat mitigation and monitoring to create and restore Southern California salt marsh habitat.

Mitigation Measures

> Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Level of Significance after Mitigation

Following the application of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), BIO-4 (Water Pollution and Erosion Control Plan), BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat), and BIO-6 (Culvert Installation Best Management Practices), remaining impacts would be reduced to less than significant through implementation of the identified mitigation measures. These measures would reduce Impact 1-BIO-2b to less than significant.

1-BIO-2c: Alternative 1 would, unless mitigated, result in a substantial adverse impact on coastal brackish marsh habitat types. (Less than Significant Impact with Mitigation Incorporated)

Restoration

Phase 1 Direct Impacts

Phase 1 would result in direct impacts to 0.9 acre of coastal brackish marsh habitat due to restoration activities including clearing, grubbing, grading to create slough channels, and the placement of fill material to create berms (Table 3.4-16). The application of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), and BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat) would avoid or reduce potential temporary and permanent direct impacts to less than significant.

TABLE 3.4-16
SUMMARY OF CHANGES IN THE EXTENT OF COASTAL BRACKISH MARSH HABITAT AS A RESULT OF ALTERNATIVE 1

Existing Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Coastal Brackish Marsh (Phase 1)	6.4	0.9	11.7	+5.3
Coastal Brackish Marsh (Phase 2)	11.7	0.1	11.6	-0.1
			Total Net Habitat Change	**+5.2**

SOURCE: ESA

Further, one of the primary Project objectives is the restoration of habitat, which would include replanting of native species, removal of non-native species, and restored hydrology and as such would result in long-term benefits to the Ballona Reserve and its associated wetland habitats. While the acreage of coastal brackish marsh habitat would be temporarily reduced, the functions and values of coastal brackish marsh within the Ballona Reserve, including Corps/RWQCB and CCC jurisdictional resources, would be improved as a result of implementation of the Project resulting in a net beneficial effect.

Phase 1 Indirect Impacts

Coastal brackish marsh could be indirectly impacted during restoration activities due to sedimentation and trampling. Habitat also could be indirectly impacted by work activities due to dust accumulation, disruptions to native seed banks from ground disturbance, the colonization of non-native, invasive plant species, and the potential increase in erosion, sedimentation and maintenance activities. Following the application of Project Design Features BIO-1 (WEAP), BIO-4 (Water Pollution and Erosion Control Plan), and BIO-6 (Culvert Installation Best Management Practices), remaining potentially significant indirect impacts could be reduced to a less-than-significant level through implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Phase 2 Direct Impacts

Phase 2 would result in a direct loss of 0.1 acre of coastal brackish marsh due to the establishment of berms features in Area B south of Culver Boulevard. Impacts to this habitat, which falls under the jurisdiction of the Corps/RWQCB and CCC, could have a short-term adverse impact, but would increase the quality of existing habitats by creating berms to maintain or increase freshwater influence. Following the application of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), and BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat), potential temporary and permanent direct impacts would be avoided or reduced to a less than significant.

Phase 2 Indirect Impacts

Phase 2 indirect impacts would be similar to those discussed for Phase 1. The same Project Design Features and mitigation measures would apply.

Post-restoration

Following Phase 2, Alternative 1 would increase the availability of coastal brackish marsh habitat (net increase of 5.2 acres) as compared to existing conditions, and since both the quantity and quality of the habitat would be improved, this would be a beneficial effect. Following site restoration, the remaining coastal brackish marsh that has not been directly impacted during Phase 1 and Phase 2 restoration activities would mostly be converted to tidal marsh, as the primary purpose of the Project is to restore hydrology, resulting in long-term benefits to the Ballona Reserve and associated aquatic habitat. As described in Chapter 2, *Description of Alternatives*, all restored native habitats, including coastal brackish marsh, would be monitored for success in achieving approved vegetative performance criteria for up to 10 years. Restored habitats would be monitored and maintained as necessary to meet required performance criteria for brackish marsh identified in Table 2-14 of Chapter 2. Post-Project acreages of coastal brackish marsh and the functions and values of the coastal brackish marsh habitat, including Corps/RWQCB, and CCC jurisdictional resources, would be improved as a result of implementation of Alternative 1. Overall, effects to this habitat type are considered beneficial.

Following the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), indirect impacts related to potential increases in sedimentation and maintenance activities would be less than significant. The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would further reduce post-restoration impacts by requiring habitat mitigation and monitoring to create and restore coastal brackish marsh habitat.

Mitigation Measures

Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Level of Significance after Mitigation

The application of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), BIO-4 (Water Pollution and Erosion Control Plan), BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat), and BIO-6 (Culvert Installation Best Management Practices), along with implementation of the identified mitigation measures would allow workers to avoid inadvertently impacting habitat; minimize the area of potential impacts to habitat; limit the potential for fugitive dust, sediments from erosion, and other debris from entering waters in the Project area; and include establishment of adaptive management procedures including evaluation methods, periods, and success criteria. Following the application of Project Design Features, implementation of the identified mitigation measures would reduce potential impacts to coastal brackish marsh habitat to a less-than-significant level.

1-BIO-2d: Alternative 1 would result in an increase in southern willow scrub habitat, which would be a beneficial effect, following short-term adverse impacts to a portion of existing on-site southern willow scrub habitat during site restoration. (Less than Significant with Mitigation Incorporated)

Restoration

Phase 1 Direct Impacts

Phase 1 would result in net increase of 2.7 acres of southern willow scrub habitat due to the excavation of slough channels in south Area B (Table 3.4-17). Limited direct impacts (e.g., the construction of a slough channel) would result in a permanent conversion (0.3 acre) of southern willow scrub to mudflat/intertidal habitat (see Table 3.4-17). Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), potential temporary and permanent direct impacts would be avoided or minimized to less than significant.

**TABLE 3.4-17
SUMMARY OF CHANGES IN THE EXTENT OF SOUTHERN WILLOW SCRUB HABITAT
AS A RESULT OF ALTERNATIVE 1**

Existing Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-Restoration Habitat Area (acres)	Net Change (acres)
Southern Willow Scrub (Phase 1)	6.2	0.3	8.9	+2.7
Southern Willow Scrub (Phase 2)	8.9	0.0	8.9	0.0
			Total Net Habitat Change	**+2.7**

SOURCE: WRA

Phase 1 Indirect Impacts

During restoration, southern willow scrub habitat could be indirectly impacted due to sedimentation and trampling of plants as a result of increased human activity. Habitat could also be indirectly impacted by work activities due to dust accumulation, disruptions to native seed banks from ground disturbance, the colonization of non-native, invasive plant species, and the potential increase in erosion, sedimentation and maintenance activities. Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), BIO-4 (Water Pollution and Erosion Control Plan), and BIO-6 (Culvert Installation Best Management Practices), remaining potentially significant indirect impacts could be reduced to a less-than-significant level through implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Phase 2 Direct Impacts

As shown in Table 3.4-17, no direct permanent impacts to southern willow scrub would occur, and temporary impacts would be avoided or minimized to a less than significant level through implementation of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance).

Phase 2 Indirect Impacts

Phase 2 indirect impacts would be similar to those discussed for Phase 1. The same Project Design Features and mitigation measures would apply.

Post-restoration

Post-Project acreages of southern willow scrub habitat will increase from pre-Project acreages and the functions and values of biological resources within the habitat, including CCC jurisdictional resources, would be improved as a result of Alternative 1. Therefore, overall effects to this habitat type would be beneficial. As described in Chapter 2, *Description of Alternatives*, all restored native habitats, including southern willow scrub, would be monitored for success in achieving approved vegetative performance criteria for up to 10 years. Restored habitats would be monitored and maintained as necessary to meet required performance criteria for riparian habitat identified in Table 2-17 of Chapter 2. Phase 1 would increase the amount of southern willow scrub habitat present within the Project area.

Limited, negative indirect impacts could occur due to a potential increase in sedimentation and maintenance activities, as well as adjacent non-native, invasive plant species removal. Following the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), remaining potential indirect impacts would be reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1b-iii (Noxious Weed Control Plan). Implementation of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would further reduce post-restoration impacts by requiring habitat mitigation and monitoring to create and restore southern willow scrub habitat. Additionally, the removal of non-native species would be an overall beneficial effect.

Mitigation Measures

Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Level of Significance after Mitigation

The implementation of Alternative 1, including Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), BIO-3 (Habitat Restoration and Monitoring Plan), BIO-4 (Water Pollution and Erosion Control Plan), and BIO-6 (Culvert Installation Best Management Practices), and identified mitigation measures would allow workers to avoid inadvertently impacting habitat; minimize the area of potential impacts to habitat; limit the potential for fugitive dust, sediments from erosion, and other debris from entering waters in the Project area; and include establishment of adaptive management procedures including evaluation methods, periods, and success criteria. These measures also would allow the establishment of adaptive management procedures including evaluation methods, periods, and success criteria. These measures would reduce but not avoid Impact 1-BIO-2d.

1-BIO-2e: Alternative 1 would, unless mitigated, result in a substantial adverse impact on southern dune scrub habitat. (Less than Significant with Mitigation Incorporated)

Restoration

Phase 1 and Phase 2 Direct Impacts

All existing 4.2 acres of southern dune scrub habitat would be avoided during restoration activities (Table 3.4-18). No direct impacts would occur.

TABLE 3.4-18
SUMMARY OF CHANGES IN THE EXTENT OF SOUTHERN DUNE SCRUB HABITAT AS A RESULT OF ALTERNATIVE 1

Existing Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-Restoration Habitat Area (acres)	Net Change (acres)
Southern Dune Scrub (Phase 1)	4.2	N/A	4.2	0.0
Southern Dune Scrub (Phase 2)	4.2	N/A	4.2	0.0
			Total Net Habitat Change	**0.0**

SOURCE: WRA

Phase 1 and Phase 2 Indirect Impacts

Southern dune scrub habitat could be indirectly impacted by work activities due to sediment, dust, trampling, and increased human activity related to removal of non-native, invasive plant species. Following the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), remaining potentially significant indirect impacts could be reduced to a less-than-significant level through the implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Post-restoration

Post-Project acreages of southern dune scrub would be the same as existing conditions, and functions and values of this habitat would be improved as a result of implementation of Alternative 1 due to a decrease in non-native, invasive plant species. Therefore, overall effects to this habitat type under Alternative 1 would be beneficial. Following the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), potential indirect impacts from maintenance activities and increased human activity would be less-than-significant.

Mitigation Measures

> Implement Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

Level of Significance after Mitigation

> The implementation of Alternative 1, including Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), and identified mitigation measures would minimize the area of potential impacts to habitat, allow workers to avoid inadvertently impacting habitat, and establishment of adaptive management procedures including evaluation methods, periods, and success criteria. These measures would reduce but not avoid Impact 1-BIO-2e.

1-BIO-2f: Alternative 1 would not have a substantial adverse impact on benthic communities, with a long-term beneficial effect related to increased habitat and habitat quality. (Short-term Less than Significant Impact)

Restoration

Phase 1 and Phase 2 Direct Impacts

Phase 2 would reconnect Ballona Creek to the marsh in West Area B. Reconnection of the creek to the floodplain would allow additional sedimentation to occur, which could increase deposition of constituents associated with suspended particles in the marsh. Benthic organisms live in soft-bottomed habitat, such as subtidal waters and mudflats, where extensive suspended sediment is expected in the aquatic environment. The two predominant benthic organisms, grouped by feeding type, are deposit feeders and suspension-feeders, which depend upon deposited sediment or suspended sediment, respectively, as a primary food source. Although there is a potentially unrestricted supply of suspended sediment available in estuarine systems, suspension feeders (excepting many bivalves) generally have limited distribution within salt marsh ecosystems. This occurs because unstable substrate tends to impede water filtration structures, bury larvae, disturb larval settlement, and prevent many filter feeders from attaching to substratum. As a result, deposit feeders are the dominant benthic invertebrates found in muddy salt marsh habitats. Based on the benthic invertebrate studies that have been completed in the Project area, small tube-dwelling polychaete worms and amphipods are expected to rapidly colonize the approximately 11.4 acres of newly established subtidal waters and 4.7 acres of newly established southern mud intertidal habitat (Table 3.4-19), providing foraging habitat and food-chain support for a variety of marine organisms, fish, shorebirds and waterbirds. This is considered a beneficial effect of the Project.

TABLE 3.4-19
CHANGES IN THE EXTENT OF SUBTIDAL AND SOUTHERN MUD INTERTIDAL HABITAT AS A RESULT OF ALTERNATIVE 1, PHASES 1 AND 2

Existing Habitat Types	Existing Habitat Area (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Subtidal	40.3	51.7	+11.4
Southern Mud Intertidal	8.8	13.5	+4.7
		Total Net Habitat Change	**+16.1**

SOURCES: WRA, ESA

West Area B is impacted by metals and organics from both Ballona Creek in the north and stormwater runoff to the south. Alternative 1 would install a stormwater sediment basin between Culver Boulevard and the West Area B levee to provide infiltration and treatment of the runoff from the new emergency and bus access road and Culver Boulevard. The basin would limit constituents from entering the West Area B marsh and improve sediment quality by limiting continued accumulation. Additionally, in Phase 2, the levee would be breached and lowered in West Area B, reconnecting the Creek with its historic floodplain. This would increase tidal flushing and circulation of higher quality tidal flows, reducing the potential for constituents in dry weather flows from the watershed to settle in the marsh. This direct impact would be less than significant.

Phase 1 Indirect Impacts

Similar to direct effects, less than significant indirect effects could occur related to the resuspension of sediments and potential for disturbance or burial of benthic invertebrates.

Phase 2 Indirect Impacts

Similar to direct effects, less than significant indirect effects could occur related to the resuspension of sediments and potential for disturbance or burial of benthic invertebrates.

Post-restoration

As described in Chapter 2, all restored native habitats, including tidal channel and southern mud intertidal habitat, would be monitored for success in achieving approved performance criteria for up to 10 years. As part of the implementation of Alternative 1 and as part of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), restored habitats would be monitored and maintained as necessary to meet required performance criteria for macroinvertebrates identified in Table 2-14.

Functions and values of habitat for benthic communities would be improved as a result of implementation of Alternative 1; therefore, overall effects would beneficial both in quantity and quality.

Waters of the U.S. and Waters of the State

1-BIO-3a: Alternative 1 would result in an increase in the amount and quality of waters of the U.S. and wetland/waters of the State defined by the California Water Code or the California Coastal Act, with short-term adverse impacts to a portion of existing on-site waters during site restoration. (Less than Significant)

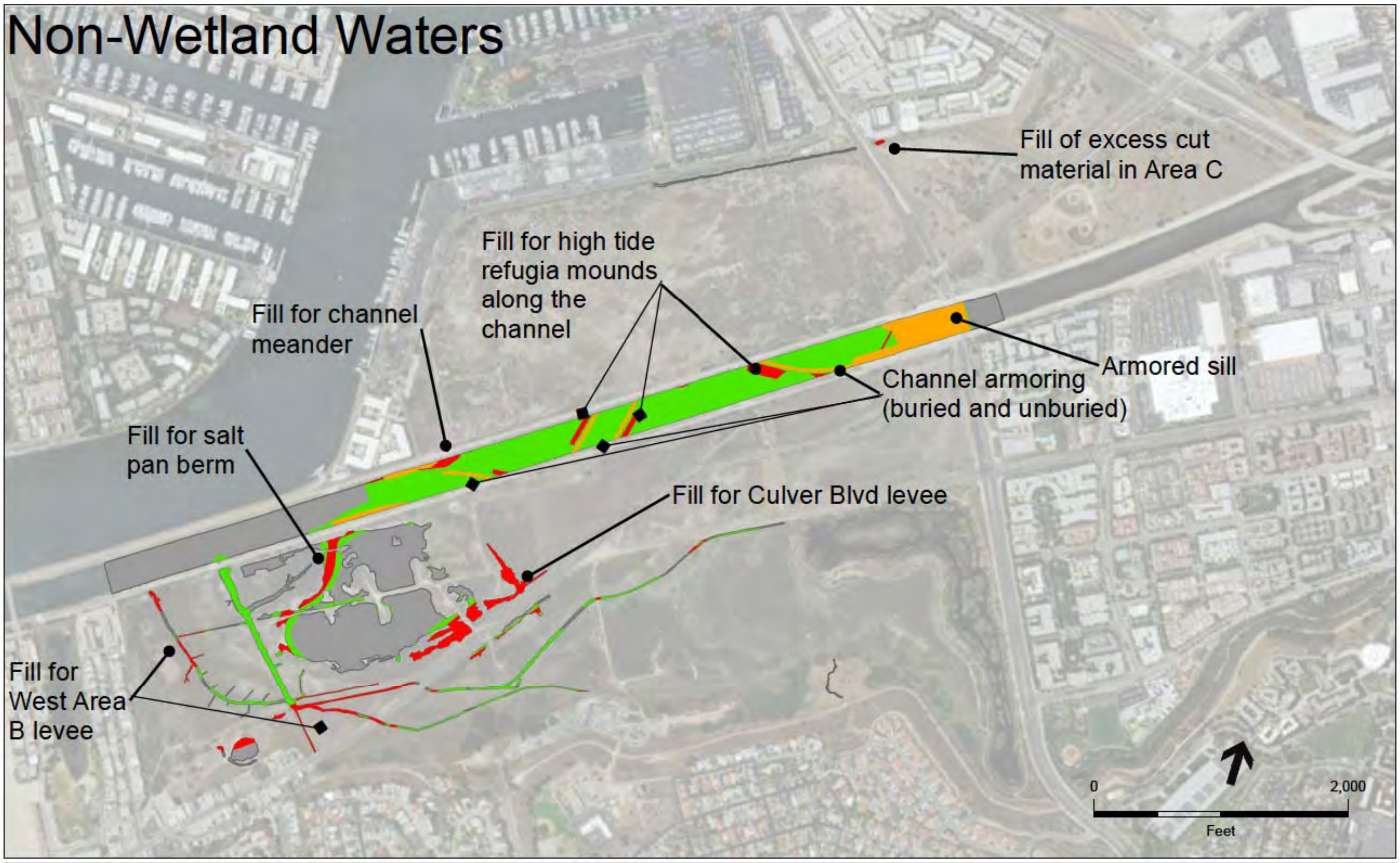
Restoration

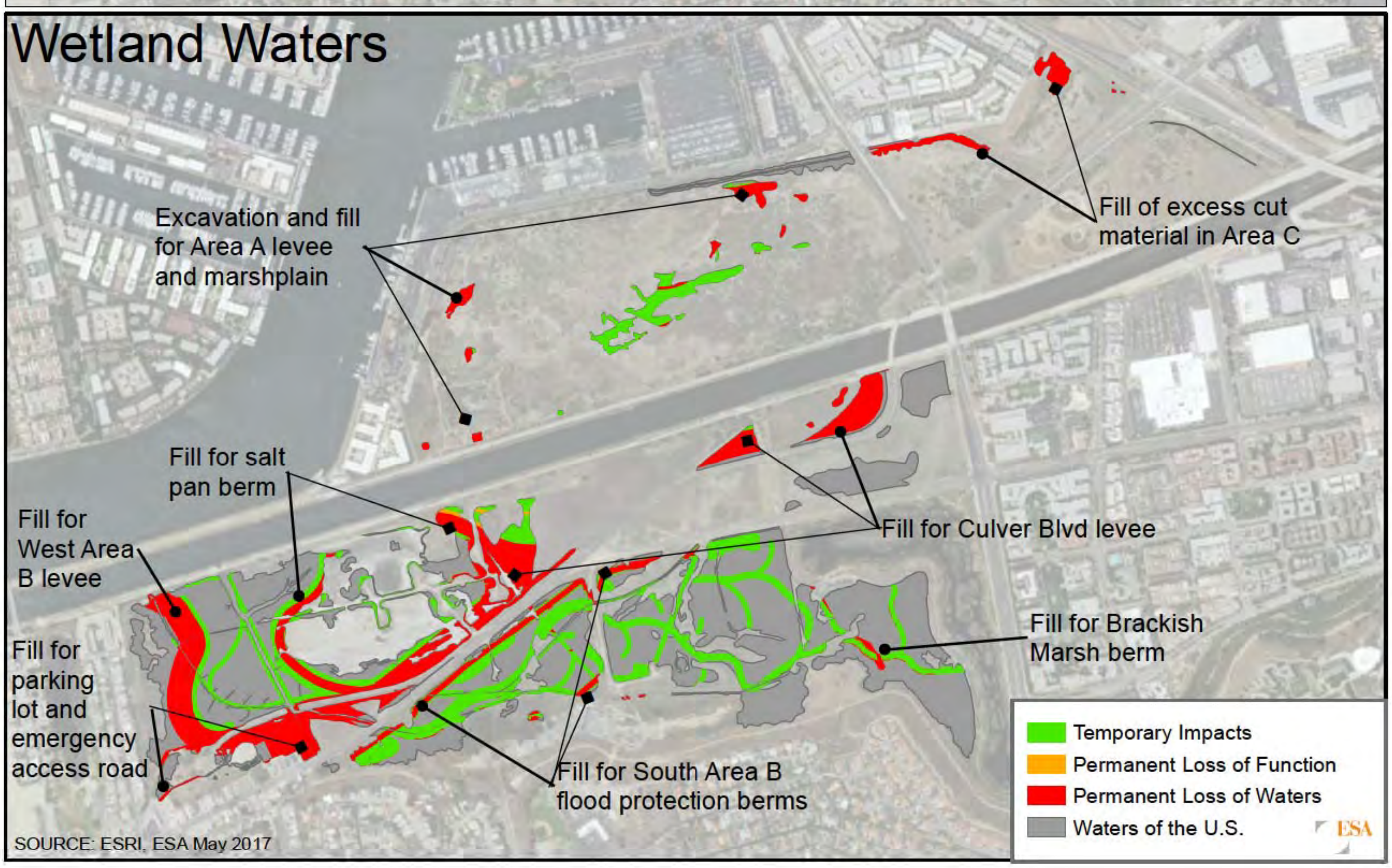
Direct Impacts[65]

Alternative 1 would result in a direct permanent loss of 31.4 acres of wetland waters of the U.S./State, 5.2 acres of non-wetland waters of the U.S./State, and 24.2 acres of wetlands/waters defined by the California Coastal Act. Alternative 1 also would result in temporary impacts to 30.2 acres of wetland waters of the U.S./State and 25.0 acres of non-wetland waters of the U.S./State; and permanent loss of function of 0.2 acre of wetland waters of the U.S./State and 5.7 acres of non-wetland waters (see Table 2-1a). Permanent loss would be caused by restoration activities, such as grading and the placement of fill material that would convert an aquatic resource type to uplands (see Figure 3.4-19). Temporary impacts would be caused by restoration activities, such as clearing, grubbing, grading, and the placement of fill material onto an existing aquatic habitat that would result in the conversion of one aquatic resource type to another where post-project functions would remain the same or increase. Such restoration activities could have short-term adverse impacts on plants and wildlife dependent on the habitat, including special-status species (for which potential impacts are discussed above). Permanent loss of function would be caused by restoration activities such as armoring, that would result in a conversion of substrate type such as riprap or soil cement. Following the application of Project Design Features BIO-1 (WEAP), BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat), and BIO-7 (Post-Restoration Functional Lift Assessments of Wetland Waters of the U.S.), potential impacts to waters of the U.S. and State waters would be less-than-significant. Because Alternative 1 is a wetland restoration project and would result in long-term restoration and enhancement of waters of the U.S. and State waters, no compensatory mitigation is proposed. The Project Design Features would offset any adverse impacts to the aquatic habitats present on-site and prevent any net loss of habitat functions or services.

Further, one of the primary Project objectives is the restoration of tidal salt marsh habitat, which would include replanting of native species, removal of non-native species, restored hydrology, and the establishment of transition habitat; as such, Alternative 1 overall would result in long-term beneficial effects to the Ballona Reserve and its associated tidal marsh habitat. Further, Phase 1 actions in Area A would allow for greater transition areas under sea level rise that would result in a beneficial effect for habitats in the Ballona Reserve, as wetland habitats would be expected to transition over time into higher elevations commensurate with rising sea levels.

65 For this subsection, the analysis of direct and indirect effects combines both phases within the restoration analysis.





Ballona Wetlands Restoration Project

Figure 3.4-19
Alternative 1 Impacts to Section 404 Waters of the U.S.

Indirect Impacts

Waters of the U.S. and waters of the State could be indirectly impacted during work activities due to erosion, sedimentation, contamination, and increased human activities. Following the application of Project Design Features BIO-1 (WEAP), BIO-4 (Water Pollution and Erosion Control Plan), BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat), and BIO-6 (Culvert Installation Best Management Practices), potential indirect impacts would be less-than-significant with no compensatory mitigation proposed.

Post-restoration

While acreages and functions of waters of the U.S. and waters of the State may be temporarily reduced from pre-Project acreages and functions during implementation of Phases 1 and 2, post-Project acreages and functions of waters of the U.S. and waters of the State within the Ballona Reserve, including Corps, RWQCB and CCC jurisdictional resources, would result in no net loss of waters of the U.S. and waters of the State (by acreage or functions). Alternative 1 would result in an overall net increase of 63.5 acres of waters of the U.S. and waters of the State regulated by the Corps/RWQCB and 59.7 acres of wetland/waters regulated by the CCC (see Tables 3.4-20A and 3.4-20B). This would be a beneficial effect. Biological resources within the Ballona Reserve, including Corps, RWQCB and CCC jurisdictional resources, would be improved as a result of implementation of Alternative 1, another beneficial effect. In addition, the functions and ecological services of these habitats would be improved as a result of implementation of Alternative 1. Therefore, effects to wetland and other aquatic habitat types as a whole would be beneficial.

TABLE 3.4-20A
SUMMARY OF CHANGES IN THE EXTENT OF WATERS OF THE U.S. AND WATERS OF THE STATE (CORPS/RWQCB) AS A RESULT OF ALTERNATIVE 1, PHASES 1 AND 2

Existing and Established Waters Habitat Types	Existing Habitat Area (acres)	Post-Construction Habitat Area (acres)	Net Change (acres)
Tidal waters	29.5	96.7	**+67.2**
Managed/tidal waters	38.8	0.0	**-38.8**
Non-tidal waters	0.0	0.0	**0.0**
Tidal wetland	0.0	153.4	**+153.4**
Managed/tidal wetland	21.7	1.5	**-20.2**
Non-tidal wetland	130.0	31.9	**-98.1**
Subtotal waters	68.3	96.7	**+28.4**
Subtotal wetlands	151.7	186.8	**+35.1**
Total	220.0	283.5	**+63.5**

SOURCE: ESA

TABLE 3.4-20B
SUMMARY OF CHANGES IN THE EXTENT OF STATE PROTECTED (CCC JURISDICTION) WETLAND/WATERS HABITAT AS A RESULT OF ALTERNATIVE 1, PHASES 1 AND 2

Existing and Established Wetland/ Waters Habitat Types	Existing Habitat Area (acres)	Post-Construction Habitat Area (acres)	Net Change (acres)
Tidal waters	54.1	61.4	7.3
Managed/tidal waters	25.6	33.3	7.7
Non-tidal waters	2.0	0.4	-1.6
Tidal wetland	0.0	118.0	118.0
Managed/tidal wetland	57.2	97.0	39.8
Non-tidal wetland	135.5	24.0	-111.5
Total	274.3	334.0	**+59.7**

SOURCE: WRA

In addition to the increased area of waters of the U.S. and waters of the State described above, a concurrent uplift is expected for hydrological and ecological conditions within the Ballona Reserve. This would be a beneficial effect. The CRAM data collected for the Ballona Reserve (discussed in the Environmental Setting above) serves as a baseline pre-restoration assessment of the condition of the site, with the tidal portions of Area B providing an indication of the lower end of potential post-restoration future site conditions in wetland habitats throughout the site. In Alternative 1, as a result of improved tidal flushing and physical site enhancement, habitat improvements expected from the project include a more developed and robust physical and biotic structure that improves the complexity of aquatic and estuarine habitats on the site, resulting in greater floral and faunal diversity within existing and expanded wetland habitats. The most significant improvements would occur in the areas on site with the poorest existing condition scores (e.g., Area A, East Area B, and North Area B). Therefore, effects to wetland and other aquatic habitat types as a whole would be beneficial.

All restored native habitats, including wetlands and other aquatic habitat, would be monitored for success in achieving approved vegetative performance criteria for up to 10 years. Restored habitats would be maintained, weeded, and reseeded or replanted as necessary to meet required performance criteria for tidal channels and wetlands identified in Chapter 2. As-needed maintenance may include channel excavation, infrastructure repairs or dredging activities as deemed necessary through inspections and monitoring data; however, the restoration goal would be for Ballona Reserve to be a passively managed ecosystem.

Limited negative indirect impacts also could occur due to a potential increase in maintenance activities and human presence (i.e., trampling of plants within restored areas). Permits and/or approvals from the Corps, RWQCB and the CCC would be required for impacts to resources under their jurisdiction. The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would identify measures for avoidance of sensitive habitats during post-restoration activities. Project Design Feature BIO-7 (Post-Restoration Functional Lift Assessments of Wetland Waters of the U.S. and State) would ensure no net loss of habitat or function.

Mitigation Measures

No mitigation is required.

BIO-1b Level of Significance after Mitigation

The implementation of Alternative 1, including Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), BIO-4 (Water Pollution and Erosion Control Plan), BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat), BIO-6 (Culvert Installation Best Management Practices), and BIO-7 (Post-Restoration Functional Lift Assessments of Wetland Waters of the U.S. and State) and the identified mitigation measure would minimize the amount of potential impacts to waters of the U.S. and waters of the State; minimize workers inadvertently impacting waters of the U.S. and waters of the State during maintenance activities, such as weed removal; and limit the potential for fugitive dust, sediments from erosion, and other debris from entering waters in the Project area. The proposed adaptive management procedures would further reduce potential impacts by including evaluation methods, periods, and performance criteria. Together, the above measures would reduce but not avoid the limited adverse indirect impacts of Impact 1-BIO-3a. Following these actions, impacts would be less than significant. As stated above, significant habitat improvements would occur in the areas on site with the poorest existing condition scores (e.g., Area A, East Area B, and North Area B). Therefore, post-mitigation effects to wetland waters of the U.S. and State as a whole would be beneficial.

1-BIO-3b: Alternative 1 would, unless mitigated, result in a substantial adverse impact to human health relating to the potential presence of disease vectors associated with wetland habitats. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

No direct impacts would occur.

Indirect Impacts

Disease vectors, primarily mosquitos, are a continual concern for restored wetlands. Other vectors, such as midges and black flies, also could rise to nuisance levels for the surrounding communities. However, an increase in aquatic or wetland habitat does not necessarily increase mosquito or other water-borne vector populations. In many cases, restoring natural hydrology and function to an ecosystem balances ecological parameters to reduce mosquito populations. West Nile Virus most frequently is discussed as the primary vector concern associated with wetland restoration. In addition to medical concerns for visitors, in North America, birds of over 100 species can be killed by West Nile Virus; for some species the death toll is substantial. Numerous regionally common rodents, including Norwegian rat, also spread disease, and are present on-site; however, these species are not expected to increase significantly with an increase of wetland habitat through restoration.

During Phase 1, Alternative 1 would increase tidal flushing within on-site wetland habitat, which could mitigate the presence of water-borne vectors such as mosquitos, midges, or black flies. It is possible that such species could breed in some pockets of the Ballona Reserve (e.g., in mud or along the edges of eutrophic water) similar to baseline conditions. Potential related effects could be reduced via the implementation of approved vector control methods. Similarly, Phase 2 activities could result in an increase in tidal flushing as a result of activities including grading to create wetland habitat within upland habitat. Following the application of Project Design Feature BIO-6 (Culvert Installation Best Management Practices), remaining potential significant indirect impacts could be reduced to a less-than-significant level through implementation of Mitigation Measure BIO-3b (Vector Management).

Post-restoration

Following restoration, Alternative 1 would result in a substantial net increase in the amount tidal flushing within on-site wetlands. In addition, improved hydrology would improve function and value of existing habitat throughout the site. It is unknown if this would substantially increase the presence of vectors within the Ballona Reserve; in some cases, healthy ecosystems have been reported to have fewer vectors (e.g., Woods Hole, 2008) (in which case Alternative 1 would result in a beneficial effect). Following Phase 2, particularly as a result of the construction of the levee in West Area B, Alternative 1 would reduce wetland area in West Area B and would create a buffer from residential and commercial property to the south, along Culver Boulevard.

If pesticide application is determined to be necessary to control mosquitoes or nuisance vectors such as midges or black flies during or following restoration, the Preliminary Operation and Maintenance Plan (Appendix B5) specifies that the least toxic effective control will be used to target the aquatic larval lifestage; adult mosquitos and related vectors would not be targeted.

Based on the best available information, this analysis assumes that Bactimos PT or another insecticide that has BTI as an active ingredient would be used in strict accordance with a pesticide application plan that is substantially similar to the Pesticide Application Plan (PAP) for Ballona Creek and Centinela Creek Vector Control Program that LACDPW submitted in support of its 2014 NPDES General Permit for Vector Control Application pursuant to Water Quality Order No. 2011-0002-DWQ for segments of the Ballona Creek channel outside the Project area (LACDPW 2014). Bactimos PT would be applied uniformly over the entire surface area of the waterbody. If complete surface coverage is not possible, then applications will be concentrated at least within 2 meters of the perimeter in <1 meter deep water. Bactimos PT would be applied using conventional ground application equipment such as hand or motorized spreaders or backpack blowers. Although actual use may vary depending on vector abundance and compliance with application directions, the expected application rate is 25 pounds per acre. The least amount of pesticide necessary to control the target pests would be used; applications would be timed carefully for maximum effectiveness to coincide with periods in the lifecycle when larvae are actively feeding, i.e., in the warmer periods of April and October each year.

The active ingredient in the proposed insecticide is *Bacillus thuringiensis, israelis* (BTI), a microbial larvicide that is a naturally-occurring, highly target-specific bacterium found throughout most areas of the world in soils and in other common environmental situations. When the bacteria produces spores, it also produces unique crystalline proteins that, when ingested in sufficient quantities, are toxic to mosquitos, aquatic midge larvae, and closely-related insects such as black flies, but not to human beings, birds, or other animals when used in accordance with its labeling (World Health Organization [WHO] 1999; see also Valent BioSciences Corporation 2012, 2015).

Bactimos PT may cause skin or eye irritation and workers are advised to avoid breathing dust by wearing a dust mask when handling; wear protective clothing and eye protection; wash hands and face thoroughly after handling and before eating, drinking, chewing gum or smoking; and prevent contaminated work clothing from leaving the workplace (Valent BioSciences Corporation 2015). Regarding environmental hazards, the label says, "Do not apply directly to treated, finished drinking water reservoirs or drinking water receptacles when the water is intended for human consumption" (Id.). The proposed application rate has been determined unlikely to have any measurable effect on water quality (LACDPW 2014) and not to affect fish, amphibians, aquatic invertebrates, or other aquatic organisms (WHO 1999; see also Valent BioSciences Corporation 2014). Overall, the product is "unlikely to pose any hazard to humans or other vertebrates" (WHO 1999) and is expected to have a low impact on the environment and other non-target organisms.

Potential adverse impacts relating to disease vectors would be reduced to a less-than-significant level via the implementation of Preliminary Operation and Maintenance Plan (Appendix B5) provisions relating to vector control and by the implementation of BMPs and other efforts to control vectors, as required by Mitigation Measure BIO-3b (Vector Management).

Mitigation Measures

> **Mitigation Measure BIO-3b: *Vector Management.*** A Vector Control Plan shall be developed in consultation with the Los Angeles County West Vector & Vector-Borne Disease Control District to ensure that there are not increases in vector-spread disease associated with restoration activities. Integrated vector management, developed as part of the Vector Control Plan, shall combine ecological management, monitoring, and limited biological and chemical control to control vectors on-site. Nevertheless, the Vector Control Plan should include the use of Bactimos PT or another insecticide that has BTI as an active ingredient. The Vector Control Plan also shall outline approved methods of control for other vectors, including rodents, without the use of rodenticides with the potential for secondary kill.

Level of Significance after Mitigation

> The implementation of this mitigation measure provides an integrated vector management as part of the Vector Control Plan that would combine ecological management, monitoring, and limited biological and chemical methods to control vectors such as mosquitoes and rodents on-site. Along with application of Project Design Feature BIO-6 (Culvert Installation Best Management Practices), this measure would reduce Impact 1-BIO-3b to less than significant.

Migratory Wildlife Movement

1-BIO-4: Alternative 1 would not result in a significant impact on migratory wildlife movement. (Less than Significant)

Restoration

There are no designated or major wildlife movement corridors within or adjacent to the Project site. The Project site, including adjacent areas of open space associated with the freshwater marsh, Westchester Bluffs, and riparian corridor east of Lincoln Boulevard, are completely surrounded by dense urban development. Terrestrial wildlife movement within the Project site is primarily localized, since the Project site is currently impeded by Ballona Creek and three major roadways (i.e., Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard). Ballona Creek and tidal channels provide movement for marine fish species into and out of the Project site. Tide gates presently do not allow for marine mammal movement into the Project site outside of the Ballona Creek channel. Nonetheless, as a voluntary precaution to avoid direct impacts to marine mammals in Ballona Creek during in-water restoration or construction, a 320-foot (100 meter) safety zone shall be maintained around in-water work areas pursuant to Project Design Feature BIO-8: Biological Monitoring and Safety Zones to Protect Marine Mammals and Sea Turtles. Terrestrial wildlife corridors between the Ballona Reserve and other areas of open space are extremely constrained; perhaps limited to the Playa Vista inlet beneath Highway 1 southeast of the Project site. This corridor likely facilitates movement of relatively small terrestrial species such as raccoon, striped skunk, Virginia opossum, red fox (*Vulpes vulpes*; non-native) and gray fox. Alternative 1 would not impede the use of this potential wildlife corridor. Lastly, the Project site facilitates movement of resident and migratory birds within the Pacific Flyway.

The baseline wildlife mortality study by the Bay Foundation (Johnston et al. 2014; Appendix D16) established existing high levels of wildlife mortality on Culver Boulevard, West Jefferson Boulevard, and Lincoln Boulevard. Much of the documented wildlife mortality stems from the movement of common terrestrial wildlife species such as California ground squirrel and desert cottontail. The cause of the observed higher mortality in some areas over others is not discussed in the report, but the hot spots may indicate areas with more concentrated wildlife populations (e.g., areas with robust ground squirrel or rabbit colonies), areas with high quality habitat for certain species, or landscape features that promote wildlife movement. The report did not document the mortality of any special-status wildlife species at Ballona Reserve. Following site restoration, vehicle mortality of common wildlife species will continue to be a management concern at the Reserve. Following Phase 1 and Phase 2, the project would not increase or decrease traffic volumes or speeds within the Reserve, or affect the continued presence of upland habitat adjacent to roadways. These conditions, combined with the rapid reproduction and consistent dispersal of some species from population centers, particularly ground squirrels and rabbits, suggest that the current mortality rate of common species will continue following project implementation. Given that future roadside conditions would be similar to existing conditions, there is no evidence to suggest that wildlife mortality would be higher or lower than existing conditions.

Direct Impacts

Construction activities associated with the realignment of Ballona Creek and installation of new bridges have been specifically designed and phased to maintain passage for fish and marine mammals throughout restoration. Alternative 1 may cause the temporary interruption of local wildlife movement in portions of the Ballona Reserve such as near the Playa Vista inlet beneath Highway 1; however, this impediment would be temporary and would not impede any terrestrial or aquatic wildlife migration or other seasonal wildlife movement. No compensatory mitigation or other mitigation measures would be required for this less than significant impact.

Indirect Impacts

Alternative 1 would result in upland, in-water, and over-water construction activities. These activities could affect native or migratory avian species that could nest in or near these work areas, as well as wintering and breeding owls and migratory bird species (e.g., Caspian tern, elegant tern, and black bellied plover) that regularly roost in the salt pan of Area B; however, the Project would not impede or otherwise hinder avian or aquatic wildlife movement. Educational signs and interactive educational art pieces would be designed in a manner that does not increase the availability of artificial perches for raptors over the marsh, and would therefore not increase raptor foraging pressure on resident wildlife species.

Temporary, less than significant indirect impacts to the movement of fish and marine mammals could occur due to noise, increased human activity, and potential for increased sedimentation following the breaching of levees during Phases 1 and 2.

Post-restoration

Following restoration, no direct or indirect impacts to wildlife corridors or wildlife movement would be expected. Alternative 1 would improve the value of the Ballona Reserve as a stopover site for migratory birds by improving both wetland and upland habitat quality and improving the resiliency of roosting habitat to sea level rise. This would result in a beneficial effect on wildlife movement and migratory corridors.

TABLE 3.4-21
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
BIO-1: Have a substantial long-term adverse impact, 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 CDFW or USFWS?				
Relating to special-status plants, see Impact 1-BIO-1b.	☐	☒	☐	☐
Relating to El Segundo blue butterfly, see Impact 1-BIO-1c.	☐	☒	☐	☐
Relating to monarch butterfly, see Impact 1-BIO-1d.	☐	☐	☒	☐
Relating to salt marsh-associated invertebrates, see Impact 1-BIO-1e.	☐	☒	☐	☐
Relating to dune-associated special-status invertebrates, see Impact 1-BIO-1f.	☐	☒	☐	☐
Relating to special-status fish and Essential Fish Habitat, see Impact 1-BIO-1a.	☐	☐	☒	☐
Relating to silvery legless lizard, see Impact 1-BIO-1g.	☐	☒	☐	☐
Relating to San Bernardino ring-necked snake, see Impact 1-BIO-1h.	☐	☒	☐	☐
Relating to Belding's savannah sparrow, see Impact 1-BIO-1i.	☐	☒	☐	☐
Relating to coastal California gnatcatcher, see Impact 1-BIO-1j.	☐	☒	☐	☐
Relating to least Bell's vireo, see Impact 1-BIO-1k.	☐	☒	☐	☐
Relating to burrowing owl, see Impact 1-BIO-1l.	☐	☒	☐	☐
Relating to nesting raptors, see Impact 1-BIO-1m.	☐	☒	☐	☐
Relating to special-status upland birds, see Impact 1-BIO-1n.	☐	☒	☐	☐

TABLE 3.4-21 (Continued)
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1 (cont.)				
Relating to special-status shorebirds, see Impact 1-BIO-1o.	☐	☒	☐	☐
Relating to special-status marsh birds, see Impact 1-BIO-1p.	☐	☒	☐	☐
Relating to Southern California salt marsh shrew and South Coast marsh vole, see Impact 1-BIO-1q.	☐	☒	☐	☐
Relating to special-status bats, see Impact 1-BIO-1r.	☐	☒	☐	☐
BIO-1B-II: Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?				
Relating to southern mud intertidal habitat, see Impact 1-BIO-1B-IIa.	☐	☒	☐	☐
Relating to southern coastal salt marsh habitat, see Impact 1-BIO-1B-IIb.	☐	☒	☐	☐
Relating to coastal brackish marsh habitat, see Impact 1-BIO-1B-IIc.	☐	☒	☐	☐
Relating to southern willow scrub habitat, see Impact 1-BIO-1B-IId.	☐	☒	☐	☐
Relating to southern dune scrub habitat, see Impact 1-BIO-1B-IIe.	☐	☒	☐	☐
Relating to benthic communities, see Impact 1-BIO-1B-IIf.	☐	☐	☒	☐
BIO-3: Have a substantial adverse impact on waters of the U.S. as defined by Section 404 of the Clean Water Act or state protected wetlands and waters defined by the California Coastal Act through direct removal, filling, hydrological interruption, loss of functions or services, or other means?				
Relating to impacts on wetland habitat, see Impact 1-BIO-3a.	☐	☐	☒	☐
Relating to the presence of disease vectors in wetland habitats, see Impact 1-BIO-3b.	☐	☒	☐	☐
BIO-4: 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? See Impact 1-BIO-4.	☐	☐	☒	☐

3.4.6.2 Alternative 2: Restored Partial Sinuous Creek

Alternative 2 would restore contiguous tidal wetlands in Area A and North Area B, while maintaining existing managed wetlands in West Area B, and enhance managed wetlands in South Area B. The proposed actions for ecosystem restoration would include three elements over several areas of the Ballona Reserve: the restoration of Ballona Creek realignment with tidal wetland restoration practices in Area A and North Area B, wetland enhancement and management to South Area B, as well as upland habitat restoration in East Area B and both North and South Area C. Flood risk and stormwater management would include a four step plan to remove the existing levees along Area A and North Area B, the installation of a new Area A perimeter levee system, new South Area B water control structure, and the construction of a Culver Boulevard stormwater detention wetland. Public access and visitors would be encouraged through the construction of levee trails and bike paths, two new public access bridges with an added artistic/educational gateway, and the construction of a new three-story parking garage to improve the current West Culver parking lot. Infrastructure modification and implementation would include gas well abandonment, the removal of abandoned sewer pipe, and gas pipeline relocation. The construction process would consist of: a large-scale grading process, the installation of two bridges for both public access and soil transport, the removal of the existing levees (except in Area B) for the realignment of Ballona Creek, and revegetation. Operations and maintenance work at the Ballona Reserve would include ongoing existing and future operations and maintenance of the Ballona Reserve, including the LACDA project facilities within the Project site and long-term habitat management. Such activities are described in detail in Appendix B5, Preliminary Operation and Maintenance Plan. See Section 2.3.3 in the Project Description for additional details about Alternative 2.

FESA Species Effect Determinations to Support Section 7 Consultation

Similar to Alternative 1, the Corps has made a determination that implementation of Alternative 2 may affect, but is not likely to adversely affect, the following Federally-listed species: El Segundo blue butterfly, light-footed Ridgway's rail, coastal California gnatcatcher, California least tern, and least Bell's vireo. As such, Section 7 consultation with USFWS is required. In addition, the Corps has made a no effect determination regarding the following species: coastal dunes milk-vetch, salt marsh bird's beak, Ventura marsh milk-vetch, Pacific pocket mouse, steelhead, green sea turtle, blue whale, fin whale, humpback whale, sei whale, sperm whale, gray whale, Guadalupe fur seal, leatherback turtle, loggerhead turtle, olive ridley sea turtle, and the scalloped hammerhead shark. As such, Section 7 consultation is not required for these species. The basis for each effect determination is provided above in the FESA Species Effect Determinations to Support Section 7 Consultation for Alternative 1.

In addition, in consideration of the potential inclusion of offshore disposal of dredged material associated with Alternative 2 (up to 10,000 cubic yards of dredged material in comparison to a maximum of 110,000 cubic yards of dredged material under Alternative 1), the Corps has made a determination that implementation of Alternative 2 would not affect the following Federally-listed species: blue whale, fin whale, humpback whale, sei whale, sperm whale, gray whale [Western North Pacific distinct population segment (DPS)], Guadalupe fur seal, leatherback turtle, loggerhead turtle [North Pacific Ocean DPS], olive ridley sea turtle, green turtle, scalloped hammerhead shark. These species are highly mobile and unlikely to be affected by slow-moving dredge material transport vessels as they haul material to the offshore disposal site.

Therefore, Alternative 2 is expected to have similar but slightly reduced effects on federally threatened and endangered species than would Alternative 1.

Essential Fish Habitat

2-BIO-1a: Alternative 2 would have a substantial adverse short-term construction impact, either directly or through habitat modifications, as well as some long-term, permanent impacts, on Essential Fish Habitat; however, following restoration efforts, Alternative 2 would result in a long-term net beneficial effect related to improved habitat quality. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

As described for Alternative 1, direct impacts to EFH and species dependent on EFH would occur within Ballona Creek and potentially within tidal portions of the Ballona Reserve. It is possible that benthic organisms and/or groundfish such as rockfish, sablefish, flatfish, and Pacific whiting, or other fish species described in Section 3.4.2 may be intermittently present in Ballona Creek or intertidal habitats when active restoration is in progress, resulting in the possible mortality of fish or benthic organisms.

Indirect Impacts

As described for Alternative 1, the realignment and restoration of Ballona Creek would result in some Project-generated sedimentation or post-restoration erosion that could result in localized and downstream siltation. In addition, potential temporary impacts to EFH and water quality in the Los Angeles and Long Beach Harbors would occur during any offshore disposal of soil from the Project site to existing ocean disposal sites LA-2 and LA-3. Under Alternative 2, the maximum amount of excavated soils that would be exported via barge would be 10,000 cubic yards, representing approximately 1.4% of the volume of dredged or excavated material currently discharged at LA-2 since 2015 and approximately 0.3% of the combined annual capacity of LA-2 and LA-3, which is a relatively small contribution (Corps 2017). Further, LA-2 and LA-3 are existing ocean disposal sites comprised of dredged fine sediments that are regularly used for disposal and thus subject to ongoing disturbance. Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan) would implement measures to minimize sedimentation such as the installation of a 500-foot floating boom and turbidity curtain prior to the start of construction; the removal of floating debris upstream of the boom; use of sediment mats downstream of the work area; use of geotextile roads/mats; and use of gravel construction entrances.

In addition, implementation of Mitigation Measures WQ-1a-i (Monitoring and Adaptive Management Plan) and WQ-1a-ii (Sampling and Analysis Plan) would provide a framework for identifying and managing water quality impairment within tidal and marine habitat that is used by EFH fish species. Potential indirect impacts would be less-than-significant with mitigation.

Post-restoration

As described for Alternative 1, the realignment and restoration of Ballona Creek may result in post-restoration erosion that could result in localized and downstream siltation; however, any erosion during typical tides would be minor (see discussion in Section 3.9, Hydrology and Water

Quality). Therefore, the Project is not expected to degrade water quality of on-site or downstream tidal and marine habitat that is used as EFH.

Operation and maintenance of the Ballona Reserve post-restoration would continue the current practice of having employees (e.g., CDFW, the County, and SoCalGas) visit the Project site to perform operations and maintenance (O&M) work, including operation and maintenance of the LACDA project facilities pursuant to the Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) manual (Corps 2009). The same general nature and type of O&M activities that occur now within the Project site would continue to occur if Alternative 2 is approved (see Appendix B5) and would result in a less-than-significant impact relating to potential degradation of the water quality of on-site or downstream tidal and marine habitat that is used as EFH.

The Project under Alternative 2 is not expected to degrade on-site or downstream tidal and marine habitat that may be used as EFH. In total, the Project site supports approximately 49 acres of habitat capable of supporting fish (40 acres of subtidal and 9 acres of intertidal channel). Alternative 2 would result in a substantial net increase in the amount of mudflat (6.6 acres) and subtidal (8.1 acres) habitat types that are available as EFH. In addition, improved hydrology would improve habitat functions and values in Ballona Creek and for existing southern mud intertidal habitat within the Ballona Reserve. The expansion of tidal wetlands adjacent to Ballona Creek would substantially improve habitat functions and quality of existing habitat in the creek. Each successive Project phase would improve the functions and values of aquatic habitat in the Ballona Reserve by improving hydrology and associated ecosystem services. In addition, Alternative 2 would allow for larger areas of tidal wetland habitats in the Ballona Reserve to gradually move landward and adapt as sea levels rise.

Corps' conclusions regarding the effects of the action on EFH: As described above, Alternative 2 would have a substantial adverse short-term construction impact either directly or through habitat modifications, on EFH; however, even in consideration of permanent impacts, following the restoration effort, Alternative 2 would result in a long-term net beneficial effect related to improved habitat quality.

Mitigation Measures

> Implement Mitigation Measures WQ-1a-i (Monitoring and Adaptive Management Plan) and WQ-1a-ii (Sampling and Analysis Plan).

Level of Significance after Mitigation

> Implementation of best management practices to reduce sedimentation, as required by PDF BIO-4 (Water Pollution and Erosion Control Plan), along with the mitigation measures identified above which require sediment and water quality sampling and monitoring to identify water quality impairment within EFH, would reduce Impact 2-BIO-1a to a less-than-significant level.

Special-Status Plants

2-BIO-1b: Alternative 2 would, unless mitigated, result in a substantial adverse impact, either directly or through habitat modifications, on rare and special-status plants. (Less than Significant with Mitigation Incorporated)

The proposed restoration and post-restoration activities under Alternative 2 would result in similar direct and indirect impacts to Lewis' evening primrose, woolly seablite, Orcutt's pincushion, South Coast branching phacelia, and suffrutescent wallflower as identified for Alternative 1, Phase 1 (see Impact 1-BIO-1b). Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential significant impacts could be reduced through the implementation of Mitigation Measures BIO-1b-i (Special-Status Plants), BIO-1b-ii (Biological Monitoring), and BIO-1b-iii (Noxious Weed Control Plan). With the implementation of these mitigation measures, impacts of Alternative 2 on rare and special-status plants would be less than significant.

Special-Status Invertebrates

2-BIO-1c: Alternative 2 would, unless mitigated, result in substantial direct and indirect adverse impacts on El Segundo blue butterfly; however, following restoration, Alternative 2 would result in a beneficial effect in the quality of habitat for this species. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Similar to Alternative 1, Alternative 2 would result in no direct restoration-related impacts to suitable or occupied habitat for El Segundo blue butterfly as shown in Figure 3.4-5. Alternative 2 could affect individuals (including mortality or injury). With the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), which includes establishment and maintenance of a buffer zone between the trail and upper edge of restored habitats, direct impacts would be less than significant.

Indirect Impacts

Potential indirect impacts to occupied El Segundo blue butterfly habitat could occur from the accumulation of fugitive dust related to work activities in West Area B, and the potential introduction and proliferation of non-native invasive plants. Following the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), remaining potential significant indirect impacts could be reduced to less than significant through the implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring). Residual impacts would be similar to those described for Alternative 1.

Post-restoration

Following restoration, Alternative 2 would result in minimal direct and indirect impacts related to operations and maintenance activities within suitable habitat, including weed removal, trail maintenance, the potential for trampling of dune plants, and increased human activity (see Appendix B5 for details about proposed operation and maintenance activities). However, portions of potentially suitable habitat in Area B would be enhanced via the removal of invasive weeds (e.g., iceplant) and re-planting with native dune species. Enhancement activities are expected to result in improved habitat quality for El Segundo blue butterfly. As discussed for Alternative 1, following the application of Project Design Features BIO-3 (Habitat Restoration and Monitoring Plan) and BIO-4 (Water Pollution and Erosion Control Plan), remaining potential impacts could be further reduced through implementation of Mitigation Measure BIO-1b-ii (biological monitoring) and Mitigation Measure BIO-1b-iii (Noxious Weed Control Plan). Residual impacts would be similar to those described for Alternative 1. This impact would be less than significant after mitigation.

2-BIO-1d: Alternative 2 would, unless mitigated, result in substantial direct and indirect impacts on monarch butterfly; however, following restoration, Alternative 2 would improve the value of the Ballona Reserve for monarch butterfly through enhancement of upland habitats. (Less than Significant)

Restoration

Direct Impacts

Under Alternative 2, no direct impacts to suitable wintering habitat for monarch butterflies would occur. Following the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), other potential direct impacts to monarch butterflies would be less than significant, similar to Alternative 1.

Indirect Impacts

No potentially significant indirect impacts would occur to monarch butterflies from the accumulation of fugitive dust related to restoration activities in Area B due to the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan). Potential impacts from noise, vibration, and increased human activity are considered less than significant.

Post-restoration

Following restoration, direct and indirect impacts to monarch butterfly could occur as a result of operations and maintenance activities within suitable habitat including weed removal, trail maintenance, and increased human activity (See Appendix B5 for details about proposed operation and maintenance activities). However, upland habitats throughout the Reserve will be enhanced as habitat for monarch butterfly through inclusion of monarch butterfly host plant, milkweed, in the upland seed mix. Potential direct and indirect impacts associated with post-restoration activities could result in minor mortality of individual monarch butterflies; however, would be less than significant. Residual impacts would be similar to those described for Alternative 1. This impact would be less than significant with no compensatory mitigation or other mitigation measures required.

2-BIO-1e: Alternative 2 would, unless mitigated, have substantial direct and indirect adverse impacts on salt marsh-associated invertebrates (i.e., Wandering skipper western S-banded tiger beetle, and western tidal flat tiger beetle). (Less than Significant)

Restoration and Post-Restoration

Direct Impacts

Restoration-related activities in wetland habitats in Areas A, B, and C could result in direct, less-than-significant impacts to salt marsh-associated invertebrates (i.e., Wandering skipper, S-banded tiger beetle, and western tiger beetle) due to trampling or crushing from heavy equipment, vehicles, foot traffic, and modifications to existing hydrological conditions. Following restoration, minimal (less than significant) direct impacts to salt marsh-associated invertebrates could occur as a result of operations and maintenance activities within suitable habitat including weed removal, trail maintenance, and increased human activity. (See Appendix B5 for details about proposed operation and maintenance activities). As with Alternative 1, Phase 1, potential less-than-significant direct impacts could be reduced via application of Project Design Features BIO-1(WEAP) and BIO-3 (Habitat Restoration and Monitoring Plan). These project design features would ensure workers are aware of sensitive species that could be encountered and ensure avoidance of these species to the extent feasible.

Indirect Impacts

Approximately 21.7 acres of potentially suitable habitat would be permanently lost due to conversion from wetland to upland habitat; however, existing habitat in Areas A and C is considered to be only marginally suitable due to general lack of intact salt marsh habitat. Potentially suitable habitat in Area B also would be impacted during restoration. Area B is considered to be higher quality habitat for these species. In addition, the majority of suitable habitat in Area B would be completely avoided during this phase.

Following restoration, minimal indirect impacts to salt marsh-associated invertebrates could occur as a result of operations and maintenance activities within suitable habitat including weed removal, trail maintenance, and increased human activity. However, Alternative 2 would result in a substantial net increase in both the quantity and quality of suitable habitat for salt marsh-associated invertebrates. Alternative 2 would result in the establishment of 124.3 acres of fully tidal wetland habitat relative to baseline conditions. Therefore, post-restoration impacts would be beneficial. In addition, Alternative 2 actions in Area A would allow for greater transition areas under sea level rise that would result in a beneficial effect for habitats in the Ballona Reserve capable of supporting special-status species, as wetland habitats would be expected to transition over time into higher elevations commensurate with rising sea levels. Following the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), potential indirect impacts from excessive fugitive dust would be less than significant.

2-BIO-1f: Alternative 2 would, unless mitigated, result in a substantial adverse impact, either directly or through habitat modifications, on dune-associated special-status invertebrates. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Under Alternative 2, direct impacts to potential habitat for dune-associated invertebrates could occur due to restoration activities in the stabilized dune habitats of North Area C and Area A. Ground-disturbing activities in these areas would result in the permanent loss of 2.3 acres of potentially suitable habitat for these species due to soil compaction and/or changes in plant community composition.

Following restoration, minimal direct and impacts to dune-associated invertebrates could occur as a result of operations and maintenance activities within suitable habitat including weed removal and trail maintenance, as well as increased human activity and the potential for trampling of dune plants. None of these species has been detected within the Ballona Reserve outside of West Area B and there would be no direct impacts would occur to occupied habitat in West Area B.

Indirect Impacts

Potential indirect impacts to West Area B could occur from the accumulation of fugitive dust related to restoration activities in West Area B, and the potential introduction and proliferation of non-native invasive plants. Following the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), this potential impact would be less than significant. Residual impacts would be similar to those described for Alternative 1.

Post-restoration

Following restoration, some indirect impacts could occur to dune-associated invertebrates as a result of reduced habitat quality. However, portions of the currently degraded potentially suitable habitat in Area B would be enhanced via the removal of invasive weeds (e.g., iceplant) and re-planting with native dune species. Enhancement activities are expected to result in improved habitat quality for dune-associated invertebrates. Potential indirect impacts associated with post-restoration activities could result in direct mortality or reduced habitat quality for dune associated invertebrates. Proposed operation and maintenance activities, including operation and maintenance of the LACDA project facilities within the Ballona Reserve, would continue the existing practice of having employees (e.g., CDFW, the County, and SoCalGas) visit the Project site to perform the functions described in Appendix B5, Preliminary Operation and Maintenance Plan. Following the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) that would improve the habitat value of the Ballona Reserve for dune-associated invertebrates through restoration and monitoring of dune habitat, and control of invasive plants, and Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), operation and maintenance effects relating to direct mortality or reduced habitat quality for dune-associated invertebrates could be reduced over the long term through implementation of Mitigation Measure BIO-1b-iii (Noxious Weed Control Plan). This would be a beneficial effect.

Special-Status Reptiles

2-BIO-1g: During restoration, Alternative 2 would, unless mitigated, result in substantial direct and indirect adverse impacts on silvery legless lizard; however, following restoration, Alternative 2 would result in a beneficial effect related to improved habitat quality. (Less than Significant with Mitigation Incorporated)

Restoration and Post-restoration

Direct Impacts

Restoration-phase activities in the stabilized dune habitat in Area A would result in the loss of 2.3 acres of potentially suitable habitat for silvery legless lizard. However, the stabilized dune habitat in Area A is not known to be occupied by silvery legless lizard and is only marginally suitable due to a generally high degree of soil compaction. Restoration activities requiring ground disturbance, such as grading, occurring in suitable habitat could have a significant impact on the legless lizard due to direct mortality. Restoration activities requiring ground disturbance and the use of earth-moving equipment in suitable habitat could result in the direct mortality of this species. Following the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), this would remain a significant impact. This impact would be reduced to less than significant by the implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1g-i (Pre- and Post-Restoration Surveys for Silvery Legless Lizard). Residual impacts would be similar to those described for Alternative 1.

Following restoration, direct impacts to silvery legless lizards could occur as a result of post-restoration activities within suitable habitat including weed removal, trail maintenance, and increased human activity. (See Appendix B5 for details about the proposed operation and maintenance activities, which would be substantially similar to the operation and maintenance activities that currently occur within the Project area). The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would reduce potential direct and indirect impacts over the long term, improve the value of dune habitats within the Ballona Reserve through restoration and monitoring of upland habitat, and control the spread of non-native invasive plants. Residual impacts would be similar to those described for Alternative 1.

Indirect Impacts

Impacts to potential silvery legless lizard habitat under Alternative 2 could occur due to restoration activities in the stabilized dune habitat of Area A. Potential indirect impacts to silvery legless lizards in Area B could occur due to noise, vibration, lighting, and increased human activity. The majority of potentially suitable habitat, including high quality occupied habitat in West Area B and Southeast Area B, is located outside of the limits of disturbance and would be preserved. This species would likely benefit from the enhancement of areas with sandy soils that have been heavily invaded by iceplant and may currently be too densely vegetated to support silvery legless lizard.

Following restoration, indirect impacts to silvery legless lizards could occur as a result of post-restoration activities within suitable habitat including weed removal, trail maintenance, and increased human activity. However, portions of potentially suitable habitat in Area B would be enhanced via the removal of invasive weeds (e.g., iceplant) and re-planting with native dune species. The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would reduce potential direct and indirect impacts over the long term. Residual impacts would be similar to those described for Alternative 1. Overall, the implementation of project design features and mitigation measures are expected to result in improved habitat quality for silvery legless lizard. Therefore, post-restoration impacts would be beneficial overall. This impact would be less than significant after mitigation.

Mitigation Measures

Implement Mitigation Measures BIO-1b-ii (Biological Monitoring), and BIO-1g-i (Pre- and Post-restoration Survey for Silvery Legless Lizard).

Level of Significance after Mitigation

The application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan) would reduce potential operational impacts while the overall enhancement activities proposed under Alternative 2 would further improve habitat quality for silvery legless lizards. Mitigation measures identified above would avoid impacts to individual lizards and ensure that a comparable amount of high-quality upland habitat would be available to silvery legless lizards following restoration. The mitigation measures would reduce Impact 2-BIO-1g to a less-than-significant level. This would be a beneficial effect.

2-BIO-1h: Alternative 2 would, unless mitigated, have a substantial adverse impact, either directly or through habitat modifications, on San Bernardino ring-necked snake. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

During restoration and subsequent conversion to tidal salt marsh under Alternative 2, 44.1 acres of upland habitat that may provide resident or transient habitat for ring-necked snakes would be directly and permanently impacted. Importantly, however, the habitat model used to assess potential habitat based impacts to ring-necked snakes characterized large areas as potential habitat, which was generous and overstated potential habitat for this species. With the implementation of Alternative 2, portions of the Ballona Reserve that do not currently support ring-necked snakes would be enhanced and would provide long-term habitat benefits to this species. Direct mortality or injury to this species could occur during grading and other ground-disturbing activities. Following the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), remaining potentially significant impacts to individual snakes could be reduced to less than significant with implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring).

Indirect Impacts

Potential indirect impacts could occur to individual snakes during restoration due to noise, vibration, lighting, and increased human activity. Following the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), remaining potential impacts could be further to less than significant through the implementation of Mitigation Measure BIO-1b-ii (biological monitoring).

Post-Restoration

Direct Impacts

Minimal direct and indirect impacts to San Bernardino ring-necked snakes could occur as a result of operations and maintenance activities within suitable habitat including during weed removal, trail maintenance, and increased human activity (see Appendix B5). However, this species is known to refuge under rocks and structural or vegetative debris (i.e., boards) and would not be expected to occur within maintenance areas. Therefore, operational-related impacts to this species would be negligible. No mitigation measures recommended for implementation during the post-restoration phase of Alternative 2 relating to San Bernardino ring-necked snake.

Special-Status Birds

2-BIO-1i: During restoration, Alternative 2 would, unless mitigated, result in a substantial adverse impact on Belding's savannah sparrow; however, following restoration, Alternative 2 would result in a substantial beneficial effect in the quality and quantity of habitat for this species. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Regarding Belding's savannah sparrow, the selection of Alternative 2 would result in a direct loss of 10.8 acres of potentially suitable foraging habitat due to restoration activities including clearing, grubbing, and grading. However, the vast majority of occupied habitat in West Area B would be avoided under Alternative 2. Some impacts (e.g., levee construction) would result in a permanent conversion of wetland or salt pan to upland habitat (see Table 3.4-22). Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance) and BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential significant direct impacts to nesting Belding's savannah sparrows would be reduced to less than significant through implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1i-i (Nesting Bird and Raptor Avoidance). Residual impacts would be similar to those described for Alternative 1. Following mitigation, this impact would be less than significant.

TABLE 3.4-22
CHANGES IN THE EXTENT OF BELDING'S SAVANNAH SPARROW HABITAT AS A RESULT OF ALTERNATIVE 2

Existing BSS Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Habitat Establishment (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Belding's Occupied Habitat	24.3	1.0	n/a	23.3	**-1.0**
Belding's Potentially Suitable Habitat	101.7	8.5	82.2	175.4	**73.7**
Total	**126.0**	**9.5**	**82.2**	**198.7**	**72.7**

SOURCES: WRA, ESA

Indirect Impacts

The nesting success of Belding's savannah sparrows could be indirectly impacted by work activities due to noise, vibration, lighting, and increased human activity. These potential significant indirect impacts would be reduced to less than significant through implementation of Mitigation Measures BIO-1b-iii (Noxious Weed Control Plan) and BIO-1i-i (Nesting Bird and Raptor Avoidance).

Post-restoration

Following restoration, Alternative 2 would result in a substantial net increase (72.7 acres) in the amount of suitable breeding and foraging habitat for Belding's savannah sparrow (see Table 3.4-22); which is slightly more than the benefit under Alternative 1 (69.6 acres; see Table 3.4-9). Although this would be a substantial beneficial effect, limited negative indirect impacts could occur due to a potential increase in human activity and maintenance activities. (See Appendix B5 for details about the proposed operation and maintenance activities, which would be substantially similar to the operation and maintenance activities that currently occur within the Project area). During the post-restoration phase, potential nesting impacts would be reduced to less than significant through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance). The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would improve the value of salt marsh habitats within the Ballona Reserve through restoration and monitoring, as well as by controlling invasive plants; and other measures that would focus specifically on habitat for Belding's savannah sparrows. This would be a beneficial effect.

2-BIO-1j: During restoration, Alternative 2 would, unless mitigated, result in a substantial adverse indirect impact on coastal California gnatcatcher through temporary habitat modifications and, following restoration, Alternative 2 would result in a substantial beneficial effect in the quality and quantity of habitat for this species. (Less than Significant with Mitigation Incorporated)

Restoration and Post-restoration

Direct Impacts

The restoration and post-restoration activities proposed under Alternative 2 would result in the same impacts to coastal California gnatcatcher as identified for Alternative 1, Phase 1; with no direct impacts to this species (see Impact 1-BIO-1j).

Indirect Impacts

Indirect impacts to this species would be similar to those discussed for Alternative 1. Potential significant indirect impacts to this species would be reduced to less than significant through implementation of Mitigation Measure BIO-1j-i (Coastal California Gnatcatcher Avoidance), which would require avoidance and minimization of potential impacts to nesting birds and habitat for this species. In addition, application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would improve the value of coastal scrub habitats within the Ballona Reserve through restoration and monitoring, as well as by controlling invasive plants; and other measures that would focus specifically on habitat for coastal California gnatcatchers. This would be a potential beneficial effect.

Mitigation Measures

Implement Mitigation Measure BIO-1j-i.

Level of Significance after Mitigation

The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) and implementation of the mitigation measure identified above would avoid or minimize impacts to active nests during restoration, construction and ongoing activities, and would ensure that a comparable amount of high-quality upland habitat would be available to the species following restoration. These mitigation measures would reduce but not eliminate Impact 1-BIO-1j. Following mitigation, this impact would be less than significant.

2-BIO-1k: During restoration, Alternative 2 would, unless mitigated, result in a substantial adverse impact on least Bell's vireo through temporary habitat modifications; however, following restoration, Alternative 2 would result in a substantial beneficial effect in the quality and quantity of habitat for this species. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Regarding least Bell's vireo, the selection of Alternative 2 would result in similar direct impacts as described for Alternative 1 (1-BIO-1k). This alternative would cause a direct impact to approximately 0.2 acre of suitable habitat due to the construction of a channel connecting the Freshwater Marsh with the salt marsh habitat in Area B. Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential significant direct impacts to least Bell's vireo would be reduced through implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring) to ensure direct impacts to this species and its habitat are avoided and minimized to the extent practical.

Indirect Impacts

Breeding success could be indirectly impacted by work activities due to noise, vibration, lighting, and increased human activity. Following the application of Project Design Feature BIO-1 (WEAP), remaining potential significant indirect impacts would be reduced to less than significant through implementation of Mitigation Measures BIO-1b-iii (Noxious Weed Control Plan) and BIO-1k-i (Least Bell's Vireo Avoidance), which would avoid and minimize indirect impacts to habitat and any nesting least Bell's vireos.

Post-restoration

Following restoration, Alternative 2 would result in the loss of 0.2 acre of potentially suitable breeding and foraging habitat for this species (see Table 3.4-23). As described in Appendix B5, Preliminary Operation and Maintenance Plan, the proposed operation and maintenance activities would be substantially similar to the operation and maintenance activities that currently occur within the Project area and so would result in a less-than-significant adverse impact relative to baseline conditions. However, limited potential significant adverse indirect impacts to nesting birds could occur due to a potential increase in human activity associated with opening the Ballona Reserve for passive recreation. Potential nesting impacts could be reduced to less than significant through implementation of Mitigation Measures BIO-1k (Least Bell's Vireo Avoidance), which would require avoidance of nesting least Bell's vireos during post-restoration activities such as weed removal, thereby reducing human disturbance to this species. Application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would improve the value of riparian habitats within the Ballona Reserve through restoration and monitoring, as well as by controlling invasive plants; and other measures that would focus specifically on habitat for least Bell's vireos.

TABLE 3.4-23
CHANGES IN THE EXTENT OF LEAST BELL'S VIREO AS A RESULT OF ALTERNATIVE 2

Existing Least Bell's Vireo Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Vireo Occupied Habitat	2.5	0.1	2.4	**-0.1**
Vireo Potentially Suitable Habitat	4.1	0.2	7.1	**+3.0**
Total	6.6	0.3	9.5	**+2.9**
			Total Net Habitat Change	**+2.9**

SOURCES: WRA, ESA

Mitigation Measures

Implement Mitigation Measures BIO-1b-ii (Biological Monitoring), BIO-1b-iii (Noxious Weed Control Plan), and BIO-1k (Least Bell's Vireo Avoidance).

Level of Significance after Mitigation

The application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), BIO-3 (Habitat Restoration and Monitoring Plan) and implementation of the mitigation measures described above would allow workers to avoid inadvertently impacting active nests or cause nest abandonment during ongoing activities, limit restoration-related disturbances near occupied habitat, and would ensure that a high-quality marsh habitat would be available to the species following restoration. The implementation of these mitigation measures would reduce Impact 2-BIO-1k to less than significant.

2-BIO-1l: During restoration, Alternative 2 would, unless mitigated, result in a substantial adverse impact on burrowing owl wintering habitat; however, following restoration, Alternative 2 would provide suitable foraging habitat and may potential expand foraging, wintering and potentially nesting habitat for this species. (Less than Significant with Mitigation Incorporated)

Restoration Direct and Indirect impacts

Under Alternative 2, direct and indirect restoration and post-restoration –related impacts to burrowing owl would be similar to those discussed for Alternative 1, Phase 1. Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential significant direct impacts to breeding or wintering owls would be reduced to less than significant upon implementation of Mitigation Measure BIO-1l-i (Pre-construction Burrowing Owl Surveys).

Post-restoration Direct and Indirect impacts

As described in Appendix B5, Preliminary Operation and Maintenance Plan, the proposed operation and maintenance activities (including those related to operation and maintenance of the LACDA project facilities within the Ballona Reserve) would be substantially similar to the operation and maintenance activities that currently occur within the Project area. Therefore, Alternative 2 would result in a less-than-significant impact during the post-restoration phase.

2-BIO-1m: Alternative 2 would, unless mitigated, result in a limited indirect adverse impact on nesting raptors. (Less than Significant after Mitigation Incorporated)

Restoration

Direct Impacts

No direct impacts would occur to active raptor nests because restoration- and construction-related disturbance impacts that could cause nest abandonment would be considered an indirect impact.

Indirect Impacts

Regarding nesting raptors, the selection of Alternative 2 would result in no impact to potential nesting trees in the Project site including, but not limited to, the eucalyptus grove in South Area B; however, breeding success could be indirectly impacted by the work activities due to noise, vibration, lighting, and increased human activity. Foraging habitat would be temporarily unavailable to raptors during site restoration. This would be a temporary but potentially significant, adverse impact. Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential indirect impacts could be further reduced to a less-than-significant level through the implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance). Residual impacts would be similar to those described for Alternative 1.

Post-restoration

Following restoration, Alternative 2 would result in a net increase in the amount of suitable breeding habitat for raptors. The establishment of a new riparian corridor in Area C could provide additional nesting habitat for raptors when the trees become large enough to serve as suitable nesting habitat. Although Alternative 2 would result in a net beneficial effect related to suitable breeding habitat for raptors, limited negative indirect impacts could occur due to a potential increase in human activity and implementation of O&M activities (see Appendix B5 for more information). Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance) and BIO-3 (Habitat Restoration and Monitoring Plan), the remaining, limited post-restoration-related adverse impacts could be reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance). Residual impacts would be similar to those described for Alternative 1. Following mitigation, this impact would be less than significant.

2-BIO-1n: During restoration, Alternative 2 would, unless mitigated, result in a substantial adverse impact on special-status upland birds; however, following restoration, Alternative 2 would provide comparable amounts of habitat and may potentially expand foraging and nesting habitat for these species resulting in an overall net beneficial effect. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

If site activities commence during the breeding season, native birds such as loggerhead shrike, western meadowlark, California towhee, and tree swallow and their nests could be directly and potentially significantly and adversely impacted. Potential adverse impacts would be fully avoided and reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Indirect Impacts

Regarding special-status upland birds, Alternative 2 would result in a temporary reduction in the extent of suitable foraging habitat due to vegetation clearing, grubbing, and re-grading during site restoration. Potential foraging habitat would be temporarily impacted during Alternative 2; however, ground-disturbing activities would proceed in stages, leaving large areas available for foraging throughout the restoration process of Alternative 2. Restoration activities could indirectly impact breeding success of upland birds due to noise, vibration, lighting, and increased human activity. Following the application of Project Design Features BIO-1 (WEAP), remaining potential significant (although limited) adverse impacts could be reduced to a less-than-significant level through implementation of Mitigation Measures BIO-1b-iii (Noxious Weed Control Plan) and BIO-1i-i (Nesting Bird and Raptor Avoidance). Residual impacts would be similar to those described for Alternative 1.

Post-restoration

Following restoration, Alternative 2 would result in the on-site replacement of temporarily impacted habitat. Thus, there would be no net loss of nesting or foraging habitat following restoration. Although a portion of suitable upland foraging habitat would be converted to tidal marsh, the marsh also would also provide suitable foraging habitat for these species, and thus no net loss of foraging habitat is expected. Conversion of non-native habitat within the site also is likely to expand foraging and potentially nesting habitat for these species. As described in Appendix B5, Preliminary Operation and Maintenance Plan, the proposed operation and maintenance activities would be substantially similar to the operation and maintenance activities that currently occur within the Project area and so would result in a less-than-significant adverse impact relative to baseline conditions.

However, potential significant (although limited) adverse indirect impacts could occur due to a potential increase in human activity associated with reopening the Ballona Reserve for passive recreation. Following the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential impacts could be reduced by the implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance). Residual impacts would be similar to those described for Alternative 1. Following mitigation, this impact would be less than significant.

2-BIO-1o: During restoration, Alternative 2 would, unless mitigated, result in a substantial adverse impact on special-status shorebirds; however, following restoration, Alternative 2 would have a beneficial effect on available breeding and foraging habitat for shorebirds. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

If site activities commence during the avian nesting season, nesting special-status shorebirds could be directly and potentially significantly impacted. Potential adverse impacts would be fully avoided and reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Indirect Impacts

Alternative 2 would result in a direct loss of 0.5 acre of potentially suitable foraging habitat due to construction activities including dredging of channels in Areas A and B. Impacts to salt pan habitat in West Area B would be avoided during Alternative 2. Some impacts (e.g., levee construction) would result in a permanent conversation of salt pan to upland habitat (see Table 3.4-24). Potential impacts would be reduced below established thresholds by the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan).

TABLE 3.4-24
SUMMARY OF CHANGES IN THE EXTENT OF SHOREBIRD HABITAT AS A RESULT OF ALTERNATIVE 2

Existing Shorebird Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Shorebird Habitat	31.6	0.5	47.2	**+15.6**

SOURCE: WRA

If habitat conditions allow special-status shorebirds to nest within the Project site post-restoration, limited negative indirect impacts, such as nest disturbance, could occur due to an increase in human activity associated with reopening the Ballona Reserve for passive recreation. These limited (although potentially significant) adverse impacts could be reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Residual impacts would be similar to those described for Alternative 1. Following mitigation, this impact would be less than significant.

Post-restoration

As described in Appendix B5, Preliminary Operation and Maintenance Plan, the proposed operation and maintenance activities would be substantially similar to the operation and maintenance activities that currently occur within the Project area. If improved habitat conditions allow special-status shorebirds to nest within the Project site post-restoration, limited negative indirect impacts, such as nest disturbance, could occur due to a potential increase in human activity and maintenance activities. These limited adverse indirect impacts could be reduced via the implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance). Further, Alternative 2 would result in a net increase of 15.6 acres in the amount of suitable foraging habitat for special-status shorebirds (see Table 3.4-24). Overall, Alternative 2 is anticipated to have a net beneficial effect on special-status shorebirds. The temporary loss of foraging habitat is considered less than significant.

2-BIO-1p: During restoration, Alternative 2 would, unless mitigated, result in a substantial adverse impact on special-status marsh birds; however, following restoration, Alternative 2 would expand the total area of suitable breeding and foraging habitat for marsh birds. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

If site activities commence during the avian nesting season, nesting special-status marsh birds could be directly impacted. Potential adverse impacts would be fully avoided and reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Alternative 2 would result in a permanent loss of 21.7 acres of potentially suitable nesting and foraging habitat for marsh birds due to restoration activities that would convert wetland to upland habitat. However, the majority of suitable habitat in West Area B would be avoided in Alternative 2. Some impacts (e.g., levee construction) would result in a permanent conversion of wetland or salt pan to upland habitat. With the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), these potential impacts would be less-than-significant with no compensatory mitigation or other mitigation measures required.

Indirect Impacts

The breeding success of common gallinule, least bittern, and Virginia rail could be indirectly impacted by work activities due to noise, vibration, lighting, and increased human activity. Following the application of Project Design Features BIO-1 (WEAP) and BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential significant impacts could be reduced to a less-than-significant level by implementing Mitigation Measures BIO-1i-i (Nesting Bird and

Raptor Avoidance) and BIO-1b-ii (Biological Monitoring). Residual impacts would be similar to those described for Alternative 1.

Post-restoration

As described in Appendix B5, Preliminary Operation and Maintenance Plan, the proposed operation and maintenance activities (including operation and maintenance of the LACDA project facilities within the Ballona Reserve) would be substantially similar to the operation and maintenance activities that currently occur within the Project area and so would result in a less-than-significant adverse impact relative to baseline conditions.

Following restoration, Alternative 2 would result in a substantial net increase of 35.0 acres in the amount of suitable breeding and foraging habitat for special-status marsh birds (see Table 3.4-25). Overall, post-restoration impacts to special-status marsh birds would be beneficial; nonetheless, potential significant (although limited) adverse indirect impacts to nesting birds could occur due to an increase in human activity associated with reopening the Ballona Reserve to passive recreation. With the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), and the implementation of Mitigation Measures BIO-1i-i (Nesting Bird and Raptor Avoidance) and BIO-1b-ii (Biological Monitoring) potential impacts would be less-than-significant. Residual impacts would be similar to those described for Alternative 1.

TABLE 3.4-25
SUMMARY OF CHANGES IN THE EXTENT OF MARSH BIRD HABITAT AS A RESULT OF ALTERNATIVE 2

Existing Marsh Bird Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Marsh Bird Habitat	148.2	21.7	183.2	**+35.0**

SOURCES: WRA, ESA

Special-Status Mammals

2-BIO-1q: During restoration, Alternative 2 would, unless mitigated, result in a significant adverse impact, either directly or through habitat modifications, on Southern California salt marsh shrew and South Coast marsh vole; however, following restoration, Alternative 2 would expand the total area of suitable habitat for these species in the Ballona Reserve. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Activities associated with restoration in Areas A and C would occur primarily in upland habitats that do not support habitat for Southern California salt marsh shrew or South Coast marsh vole. Activities that would take place in marginally suitable habitat in these areas are not likely to affect the shrew or vole because these species are presumed absent from Areas A and C based on trapping surveys and the isolation of potential habitat areas. Therefore, restoration activities would not be expected to result in the direct loss of individuals; however, the direct loss of individuals, should it occur, would be a significant adverse impact. Implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring) would reduce the potential significant impact to less than significant by ensuring that these mammals would be unharmed if encountered.

Indirect Impacts

Work activities could result in indirect impacts due to noise, vibration, lighting, and increased human activity, resulting in a direct loss of individuals and/or reduced breeding success. Indirect impacts associated with reduced habitat quality could occur from the spread of invasive plants. These impacts would be potentially significant and adverse. Implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan) would reduce the severity of this impact to a less-than-significant level by ensuring salt marsh shrew and south coast marsh vole are unharmed if encountered, and by minimizing impacts related to the spread of invasive plants, respectively.

Post-restoration

As described in Appendix B5, Preliminary Operation and Maintenance Plan, the proposed operation and maintenance activities (including operation and maintenance of the LACDA project facilities within the Ballona Reserve) would be substantially similar to the operation and maintenance activities that currently occur within the Project area and so would result in a less-than-significant adverse impact relative to baseline conditions.

Following restoration, Alternative 2 would result in a substantial net increase in the amount of suitable salt marsh habitat for salt marsh shrew and south coast marsh vole (see Table 3.4-26). Alternative 2 would result in a beneficial effect to Southern California salt marsh shrew and South Coast marsh vole; however, potential significant (although limited) adverse indirect impacts could occur due to a potential increase in human activity associated with the reopening of the Ballona Reserve for passive recreation. With the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), which would require habitat monitoring and adaptive management to ensure the creation and restoration of sensitive habitats that support Southern California salt marsh shrew or South Coast marsh vole, such potential impacts would be less than significant. No compensatory mitigation or other mitigation measures required.

TABLE 3.4-26
SUMMARY OF CHANGES IN THE EXTENT OF SOUTHERN CALIFORNIA SALT MARSH SHREW AND SOUTH COAST MARSH VOLE HABITAT AS A RESULT OF ALTERNATIVE 2

Existing Southern California salt marsh shrew and South Coast marsh vole Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Shrew/Vole Habitat	141.5	21.7	206.9	**+65.4**

SOURCES: WRA, ESA

2-BIO-1r: During restoration, Alternative 2 would, unless mitigated, result in a limited adverse impact either directly or through habitat modifications, on special-status bats. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Based on their known range and available habitat in the Project area, bat species that could be impacted by Alternative 2 are similar to those that may be impacted by Alternative 1. Following the application of Project Design Feature BIO-1 (WEAP), remaining potential direct impacts to maternity roosts for these bat species would be reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1r (Bat Avoidance).

Indirect Impacts

Under Alternative 2, potential indirect impacts to bats would include temporary disturbance of foraging habitat. This indirect impact would be negligible because large areas of suitable foraging habitat would remain throughout Phase 1 and Phase 2. Indirect impacts would be less than significant. Residual impacts would be similar to those described for Alternative 1.

Post-restoration

As described in Appendix B5, Preliminary Operation and Maintenance Plan, the proposed operation and maintenance activities (including operation and maintenance of the LACDA project facilities within the Ballona Reserve) would be substantially similar to the operation and maintenance activities that currently occur within the Project area and so would result in a less-than-significant adverse impact relative to baseline conditions. Further, following restoration, Alternative 2 would result in beneficial changes effects in the amount of foraging and roosting habitat available for special-status bats. Open water habitat would increase in comparison to existing conditions, and there would be a substantial increase in the amount and quality of foraging habitat. The construction of new bridges also could increase potential roosting habitat for special-status bat species. These would be beneficial effects.

Riparian Habitat and Other Sensitive Natural Communities

2-BIO-2a: Alternative 2 would result in a substantial increase in southern mud intertidal habitat, with short-term impacts to a portion of existing on-site southern mud intertidal habitat during site restoration. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Alternative 2 would result in direct impacts to 0.3 acre of southern mud intertidal habitat as a result of construction activities including grading and temporary filling in Area A. Impacts also would occur in the southern portion of Area B as a result of the construction of new flood risk management structures. Some of the impacts would be temporary, but many of the impacts would result in a permanent conversion to aquatic habitat. Alternative 2 would result in a substantial net increase in southern mud intertidal habitat types (see Table 3.4-27). However, restoration phase activities would result in temporary direct impacts to this habitat type.

TABLE 3.4-27
SUMMARY OF CHANGES IN THE EXTENT OF SOUTHERN MUD INTERTIDAL HABITAT AS A RESULT OF ALTERNATIVE 2

Existing Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Southern Mud Intertidal	8.8	0.3	15.4	**+6.6**

SOURCE: WRA

Table 2-12, *Tidal Marsh Performance Criteria*, of Chapter 2, *Description of Alternatives*. Potential significant adverse temporary and permanent impacts would be avoided or minimized to the extent feasible through application of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), and BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat). Residual impacts would be similar to those described for Alternative 1. Following application of the project design features, this impact would be less than significant with no compensatory mitigation or other mitigation measures required.

Indirect Impacts

During restoration, southern mud intertidal could be indirectly impacted by construction activities because of erosion, dust, and compaction. Alternative 2 would improve the function and value of southern mud intertidal habitat types in the Ballona Reserve by improving hydrology and associated ecosystem services. The Project, which would include replanting of native species, removal of non-native plant species, and on-going monitoring and adaptive management, would result in long-term benefits to these habitat types. This would result in a beneficial effect on Southern Mud Intertidal habitat types under Alternative 2. In addition, Alternative 2 actions in Area A would allow for greater transition areas under sea level rise that would result in a beneficial effect for habitats in the Ballona Reserve, as wetland habitats would be expected to transition over time into higher elevations commensurate with rising sea levels.

Post-restoration

As described in Appendix B5, Preliminary Operation and Maintenance Plan, the proposed operation and maintenance activities (including operation and maintenance of the LACDA project facilities within the Ballona Reserve) would be substantially similar to the operation and maintenance activities that currently occur within the Project area and so would result in a less-than-significant adverse impact relative to baseline conditions. Further, Alternative 2 would result in a substantial net increase in the amount of mudflat and intertidal habitat types in Area A. In addition, improved hydrology would improve function and value of existing southern mud intertidal habitat throughout the site. In total, Alternative 2 would result in a net increase of 6.6 acres of mudflat habitat (see Table 3.4-27). As described in Chapter 2, Description of Alternatives, all restored native habitats, including southern mud intertidal, would be monitored for success in achieving approved vegetative performance criteria for up to 10 years. Restored habitats would be maintained, weeded, and reseeded or replanted as necessary to meet required performance criteria for tidal marsh identified in Table 2-12, *Tidal Marsh Performance Criteria*.

2-BIO-2b: Alternative 2 would result in a substantial increase in southern coastal salt marsh habitat, with short-term impacts to a portion of existing on-site southern coastal salt marsh habitat during site restoration. (Less than Significant)

Restoration and Post-restoration

Direct Impacts

Alternative 2 would result in a direct loss of 21.7 acres of southern coastal salt marsh habitat due to restoration phase activities that would convert wetland to upland habitat. Impacts to this habitat, which falls under the jurisdiction of the Corps, RWQCB and CCC, could have short-term adverse impacts on plants and wildlife dependent on the habitat, including special-status species (for which potential impacts are previously discussed). However, one of the primary Project objectives is the restoration of southern coastal salt marsh habitat, which would include replanting of native species, removal of non-native species, restored hydrology, and the establishment of transition habitat, and as such would result in long-term benefits to the Ballona Reserve and its associated wetland habitat.

While existing acreages of southern coastal salt marsh habitat may be reduced during restoration as compared to baseline conditions, post-restoration acreages of wetland habitat would be increased and the functions and values of the biological resources within the Ballona Reserve, including Corps, RWQCB and CCC jurisdictional resources, would be improved as a result of implementation of Alternative 2. Permits and/or approvals from the Corps, RWQCB and the CCC would be required for impacts to resources under these agencies' respective jurisdiction. Some impacts (e.g., levee construction) would result in a permanent conversion of salt marsh habitat to upland habitat (Table 3.4-28, *Summary of Changes in the Extent of Southern Coastal Salt Marsh Habitat As A Result of Alternative* 2). In addition, habitat could be indirectly impacted by restoration phase activities due to sediment and trampling. Unless mitigated, these impacts would be potentially significant. Temporary and permanent impacts would be avoided or minimized to the extent feasible through implementation of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), and BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat). With implementation of project design features, this impact would be less than significant with no compensatory mitigation or other mitigation measures required.

TABLE 3.4-28
SUMMARY OF CHANGES IN THE EXTENT OF SOUTHERN COASTAL SALT MARSH HABITAT AS A RESULT OF ALTERNATIVE 2

Existing Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Southern Coastal Salt Marsh	103.2	21.7	166.9	**+63.7**

SOURCES: WRA, ESA

As described in Appendix B5, Preliminary Operation and Maintenance Plan, the proposed operation and maintenance activities (including operation and maintenance of the LACDA project facilities within the Ballona Reserve) would be substantially similar to the operation and maintenance activities that currently occur within the Project area and so would result in a less-than-significant adverse impact relative to baseline conditions.

Following restoration, Alternative 2 would result in a substantial net increase of 63.7 acres in the amount of southern coastal salt marsh habitat (see Table 3.4-28). Post-Project acreages of wetland habitat would be increased and the functions and values of the southern coastal salt marsh habitat would be improved as a result of implementation of Alternative 2. Therefore, impacts to this habitat type are considered beneficial. In addition, Alternative 2 actions in Area A would allow for greater transition areas under sea level rise that would result in a beneficial effect for habitats in the Ballona Reserve, as wetland habitats would be expected to transition over time into higher elevations commensurate with rising sea levels.

Indirect Impacts

During restoration, habitat could be indirectly (and potentially significantly) impacted by restoration phase activities due to sediment and trampling.

Following restoration, limited negative indirect impacts could occur due to a potential increase in human activity associated with reopening the Ballona Reserve for passive recreation. This potential significant impact would be avoided or minimized to a less than significant level through implementation of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan). Implementation of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would further reduce post-restoration impacts by requiring habitat mitigation and monitoring to create and restore Southern California salt marsh habitat. With implementation of project design features, this impact would be less than significant with no compensatory mitigation or other mitigation measures required.

2-BIO-2c: Alternative 2 would result in a substantial increase in coastal brackish marsh habitat, which would be a beneficial effect, following short-term potentially significant adverse impacts to a portion of existing on-site coastal brackish marsh habitat during site restoration. (Less than Significant with Mitigation Incorporated)

Restoration and Post-restoration

Direct Impacts

Alternative 2 would result in direct impacts to 0.9 acre of coastal brackish marsh habitat due to restoration phase activities including clearing, grubbing, grading to create slough channels, and the placement of fill material to create berms (Table 3.4-29). Impacts to this habitat, which falls under the jurisdiction of the Corps, RWQCB and CCC, may have a short-term adverse impact. However, one of the primary Project objectives is the restoration of habitat, which would include replanting of native species, removal of non-native species, and restored hydrology and as such would result in long-term benefits to the Ballona Reserve and its associated wetland habitat.

TABLE 3.4-29
SUMMARY OF CHANGES IN THE EXTENT OF COASTAL BRACKISH MARSH HABITAT AS A RESULT OF ALTERNATIVE 2

Existing Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Coastal Brackish Marsh	6.4	0.9	11.7	**+5.3**

SOURCE: ESA

Post-functions and values of coastal brackish marsh would be improved as a result of implementation of Alternative 2. Permits and/or approvals from the Corps/RWQCB and the CCC would be required for impacts to resources under these agencies' respective jurisdictions. Some impacts (e.g., berm construction) would result in a permanent conversion of brackish marsh to upland habitat. Temporary and permanent direct impacts would be maintained below established thresholds via the application of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), and BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat). Residual impacts would be similar to those described for Alternative 1. Following mitigation, this impact would be less than significant. As described in Chapter 2, *Description of Alternatives*, all restored native habitats, including coastal brackish marsh, would be monitored for success in achieving approved vegetative performance criteria for up to 10 years. Restored habitats would be maintained, weeded, and reseeded or replanted as necessary to meet required performance criteria for tidal marsh identified in Table 2-12, *Tidal Marsh Performance Criteria*, of Chapter 2, *Description of Alternatives*.

Indirect Impacts

During restoration, habitat could be indirectly impacted by construction activities due to sedimentation and trampling. Following the application of Project Design Features BIO-1 (WEAP), BIO-4 (Water Pollution and Erosion Control Plan), BIO-6 (Culvert Installation Best Management Practices), remaining potentially significant indirect impacts could be reduced to a less-than-significant level through implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan). Residual impacts would be similar to those described for Alternative 1. Following mitigation, this impact would be less than significant.

Post-restoration

Following Alternative 2 restoration, the amount of coastal brackish marsh habitat would increase by 5.3 acres as compared to existing conditions, and since both the quantity and quality of the habitat would be improved, this would be a beneficial effect. The proposed operation and maintenance activities, including operation and maintenance of the LACDA project facilities within the Ballona Reserve, would be substantially similar to the operation and maintenance activities that currently occur within the Project area and so would result in a less-than-significant adverse impact relative to baseline conditions. Further, Alternative 2 actions in Area A would allow for greater transition areas under sea level rise that would result in a beneficial effect for habitats in the Ballona Reserve, as wetland habitats would be expected to transition over time into higher elevations commensurate with rising sea levels.

2-BIO-2d: Alternative 2 would, unless mitigated, result in the loss of southern willow scrub habitat, with short-term impacts to a portion of existing on-site southern willow scrub habitat during site restoration. (Less than Significant)

Restoration and Post-restoration

Direct Impacts

Alternative 2 would result in the direct loss of 0.3 acre of southern willow scrub habitat due to restoration phase activities including clearing, grubbing, grading, and the excavation of slough channels in south Area B (Table 3.4-30). Impacts to this habitat, which falls under the jurisdiction of the Corps, /RWQCB and CCC, could have a short-term adverse impact.

TABLE 3.4-30
SUMMARY OF CHANGES IN THE EXTENT OF SOUTHERN WILLOW SCRUB HABITAT AS A RESULT OF ALTERNATIVE 2

Existing Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Southern Willow Scrub	6.2	0.3	8.9	**2.7**

SOURCES: WRA, ESA

While post-Project acreages of southern willow scrub habitat may be reduced from identified pre-Project acreages during implementation of Alternative 2, post-Project acreages of southern willow scrub would not change substantially and the functions and values of the biological resources within the habitat, including CCC jurisdictional resources, would be improved as a result of implementation of Alternative 2. With the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limits of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), potential temporary and permanent direct impacts would be less-than-significant. Permits and/or approvals from the Corps/RWQCB and the CCC would be required for impacts to resources under these agencies' respective jurisdiction. In addition, the vast majority of southern willow scrub would be avoided. Some impacts (e.g., slough) would result in a permanent conversion of southern willow scrub to mudflat/intertidal habitat (see Table 3.4-30).

Indirect Impacts

Southern willow scrub habitat could be indirectly (and potentially significantly) impacted by restoration phase activities due to sediment and trampling. Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would include establishment of adaptive management procedures including evaluation methods, periods, and success criteria. Non-native, invasive plant species removal would occur adjacent to this habitat type.

As described in Chapter 2, *Description of Alternatives*, all restored native habitats, including southern willow scrub, would be monitored for success in achieving approved vegetative performance criteria for up to 10 years. Restored habitats would be maintained, weeded, and reseeded or replanted as necessary to meet required performance criteria for tidal marsh identified in Table 2-12, *Tidal Marsh Performance Criteria*, of Chapter 2, *Description of Alternatives*.

Post-restoration

Post-Project acreages of southern willow scrub would be 2.7 acres more than existing conditions; however, the functions and values of the southern willow scrub habitat, including Corps/ RWQCB and CCC jurisdictional resources, would be improved as a result of implementation of the Project. The impacts of the proposed operation and maintenance activities (Appendix B5) are expected to be comparable to those that occur under baseline conditions, because the type and nature of such activities would be substantially the same.

2-BIO-2e: Alternative 2 would, unless mitigated, result in a substantial adverse impact on southern dune scrub habitat types. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Alternative 2 would not directly impact southern dune scrub habitat.

Indirect Impacts

Southern dune scrub habitat could be indirectly impacted by restoration phase activities due to sedimentation, trampling, and increased human activity and related to removal of non-native, invasive plant species. Following site restoration, Alternative 2 would not result in a net change in southern dune scrub habitat (see Table 3.4-31). Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), remaining impacts would be reduced to less-than-significant with the implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan).

TABLE 3.4-31
SUMMARY OF CHANGES IN THE EXTENT OF SOUTHERN DUNE SCRUB HABITAT AS A RESULT OF ALTERNATIVE 2

Existing Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Southern Dune Scrub	4.2	N/A	4.2	0.0

SOURCE: WRA

As described in Chapter 2, *Description of Alternatives*, all restored native habitats, including southern dune scrub, would be monitored for success in achieving approved vegetative performance criteria for up to 10 years. Restored habitats would be maintained, weeded, and reseeded or replanted as necessary to meet required performance criteria for tidal marsh identified in Table 2-12, *Tidal Marsh Performance Criteria*, of Chapter 2, *Description of Alternatives*.

Post-restoration

Post-Project acreages of southern dune scrub would be similar to baseline conditions and functions and values of this habitat would be improved as a result of implementation of Alternative 2 due to a decrease in non-native, invasive plant species. Therefore, impacts to this habitat type are considered beneficial. Limited, less than significant indirect impacts could occur due to increased human activity associated with reopening the Ballona Reserve for passive recreation. With the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) these potential impacts would be reduced to a less-than-significant level. As described in Appendix B5, Preliminary Operation and Maintenance Plan, the proposed operation and maintenance activities (including operation and maintenance of the LACDA project facilities within the Ballona Reserve) would be substantially similar to the operation and maintenance activities that currently occur within the Project area and so would result in a less-than-significant adverse impact with no compensatory mitigation or other mitigation measures required.

2-BIO-2f: Alternative 2 would not have a substantial adverse impact on benthic communities. (Less than Significant)

Restoration

Direct Impacts

As described for Alternative 1, and shown in Table 3.4-32, potential direct impacts to benthic communities and associated subtidal and southern mud intertidal habitat would be minimal and short-term. This impact would be less than significant.

TABLE 3.4-32
CHANGES IN THE EXTENT OF SUBTIDAL AND SOUTHERN MUD INTERTIDAL HABITAT AS A RESULT OF ALTERNATIVE 2

Existing Habitat Types	Existing Habitat Area (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Subtidal	40.3	48.4	**+8.1**
Southern Mud Intertidal	8.8	15.4	**+6.6**
		Total Net Habitat Change	**+14.7**

SOURCES: WRA, ESA

Indirect Impacts

In Alternative 2, West Area B would not be reconnected to Ballona Creek. The existing SRT gate limits the amount of sediment that can enter West Area B, so sedimentation would not increase due to the Project. Additionally, during large storm events when suspended sediments would increase in the creek due to the Project, the SRT gate would be closed, allowing no additional sediment into the marsh. As with Alternative 1 Phase 1, Alternative 2 also would include the construction of the stormwater sediment basin in West Area B, which would reduce the constituents entering the marsh from runoff. Therefore, water and sediment quality would be improved under Alternative 2 relative to baseline conditions for benthic communities. This impact would be less than significant.

Post-restoration

As shown in Table 3.4-32, Alternative 2 would result in a net increase of 8.1 acres of subtidal waters and 6.6 acres of southern mud intertidal habitat. As described for Alternative 1, functions and values of habitat for benthic communities would be improved as a result of implementation of Alternative 2; therefore, overall effects would be beneficial both in quantity and quality. Because operation and maintenance activities, including operation and maintenance within the Ballona Creek channel would be substantially similar to the types of activities that presently occur within the Project area, less-than-significant impacts would result, and no compensatory mitigation or other mitigation measures would be required.

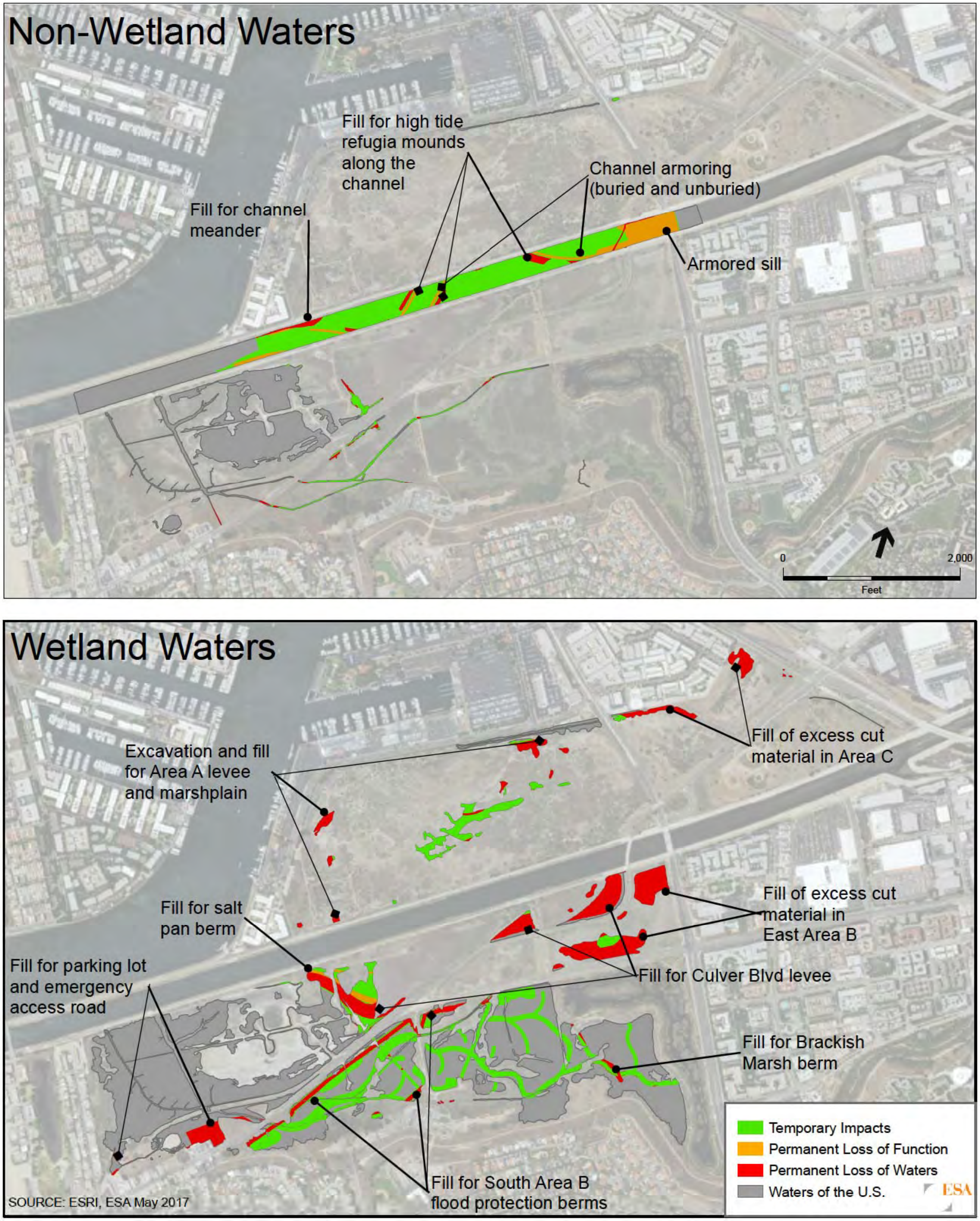
Waters of the U.S. and Waters of the State

2-BIO-3a: Alternative 2 would result in an increase in the amount and quality of waters of the U.S. and wetland/waters of the State defined by the California Water Code or California Coastal Act, a beneficial effect, following short-term restoration-related impacts to a portion of existing on-site wetland habitat. (Less than Significant)

Restoration

Direct Impacts

Alternative 2 would result in a direct permanent loss of 21.7 acres of wetland waters of the U.S./State, 1.8 acres of non-wetland waters of the U.S./State, and 45.0 acres of wetlands/waters defined by the California Coastal Act. Alternative 2 also would result in temporary impacts to 24.5 acres of wetland waters of the U.S./State and 22.4 acres of non-wetland waters of the U.S./State; and permanent loss of function of 0.7 acre of wetland waters of the U.S./State and 5.5-acres of non-wetland waters (see Table 2-1a). Permanent loss would be caused by construction activities including grading and the placement of fill material that would convert an aquatic resource type to uplands (see Figure 3.4-20). Temporary impacts would be caused by restoration activities, such as clearing, grubbing, grading, and the placement of fill material onto an existing aquatic habitat that would result in the conversion of one aquatic resource type to another where post-project functions would remain the same or increase. Permanent loss of function would be caused by restoration activities, such as armoring, that would result in a conversion of substrate type. Impacts to habitat that falls under the jurisdiction of the Corps, RWQCB and CCC, may have a short-term adverse impact; however, the Project would have an overall net positive addition of 58.8 acres of waters of the U.S. and waters of the State. The extent of Corps and RWQCB-protected wetland habitat in the Project area is presented in Table 3.4-33 and Figure 3.4-20. Following the application of Project Design Features BIO-1 (WEAP), BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat), and BIO-7 (Post-Restoration Functional Lift Assessments of Wetland Waters of the U.S. and State), potential direct impacts to waters of the U.S. and waters of the State would be less-than-significant, and no compensatory mitigation is proposed. The Project Design Features would offset any adverse impacts to aquatic habitats present on-site and prevent any net loss of habitat functions or services.



Ballona Wetlands Restoration Project

Figure 3.4-20
Alternative 2 Impacts to Section 404 Waters of the U.S.

TABLE 3.4-33
SUMMARY OF CHANGES IN THE EXTENT OF FEDERALLY AND STATE PROTECTED (CORPS/RWQCB JURISDICTION) WETLAND HABITAT AS A RESULT OF ALTERNATIVE 2

Existing Wetland Habitat Types	Existing Habitat Area (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Tidal waters	29.5	54.0	**+24.5**
Managed/tidal waters	38.8	41.6	**+2.8**
Non-tidal waters	0.0	0.0	**0.0**
Tidal wetland	0.0	124.3	**+124.3**
Managed/tidal wetland	21.7	14.4	**-7.3**
Non-tidal wetland	130.0	44.5	**-85.5**
Subtotal waters	68.3	95.6	**+27.3**
Subtotal wetlands	151.7	183.2	**+31.5**
Total	220.0	278.8	**+58.8**

SOURCE: ESA

Indirect Impacts

In addition, habitat could be indirectly impacted by restoration phase activities due to sediment and trampling. However, one of the primary Project objectives is the restoration of wetlands, which would include replanting of native species, removal of non-native species, restored hydrology, and the establishment of transition habitat, and as such would result in long-term benefits to the Ballona Reserve and its associated wetland habitat.

The functions and services of the biological resources would be increased within wetland habitat within the Ballona Reserve, including Corps, RWQCB and CCC jurisdictional resources as a result of implementation of the Project. Therefore, impacts to this habitat type are considered less-than- significant following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), BIO-5 (Avoid or Minimize Impacts to Waters) and BIO-7 (Post-Restoration Functional Lift Assessments of Wetland Waters of the U.S. and State), which would minimize the area of potential impacts to protected waters. Project Design Features BIO-3 (Habitat Restoration and Monitoring Plan), BIO-4 (Water Pollution and Erosion Control Plan), and BIO- 6 (Culvert Installation Best Management Practices) would limit the potential for fugitive dust, sediments from erosion, and other debris from entering waters in the Project area.

Permits and/or approvals from the Corps, RWQCB and the CCC would be required for impacts to resources under these agencies' respective jurisdiction. The majority of impacts would be temporary, but some impacts (e.g., levee construction) would result in a permanent conversion of salt marsh habitat to upland habitat (see Table 3.4-33). Potential indirect impacts would be less-than-significant with no compensatory mitigation proposed.

Post-restoration

Alternative 2 would result in a substantial net increase in acreage and functions of wetlands (see Table 3.4-33 and Table 3.4-34). Potential negative indirect impacts due to a potential increase in human activity associated with reopening the Ballona Reserve for passive recreation would be less than significant following the application of Project Design Features BIO-3 (Habitat Restoration and Monitoring Plan) and BIO-4 (Water Pollution and Erosion Control Plan). The proposed operation and maintenance activities described in Appendix B5, Preliminary Operation and Maintenance Plan, including operation and maintenance of the LACDA project facilities within the Ballona Reserve, would be substantially similar to the operation and maintenance activities that currently occur within the Project area and so would result in a less-than-significant adverse impact.

TABLE 3.4-34
SUMMARY OF CHANGES IN THE EXTENT OF STATE PROTECTED (CCC JURISDICTION) WETLAND HABITAT AS A RESULT OF ALTERNATIVE 2

Existing Wetland Habitat Types	Existing Habitat Area (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Tidal waters	54.1	57.4	**+3.3**
Managed/tidal waters	25.6	36.1	**+10.5**
Non-tidal waters	2.0	0.4	**-1.6**
Tidal wetland	0.0	92.2	**+92.2**
Managed/tidal wetland	57.2	129.9	**+72.7**
Non-tidal wetland	135.5	2.1	**-133.4**
Total	274.3	318.1	**+43.8**

SOURCE: WRA

Acreages of wetland habitat would be increased and the functions and services of the wetland habitat, including Corps. RWQCB and CCC jurisdictional resources would be improved as a result of implementation of Alternative 2. In addition to the increased area of waters of the U.S. and waters of the State described above, a concurrent uplift is expected for hydrological and ecological conditions within the Ballona Reserve. This would be a beneficial effect. In Alternative 2, the condition of Area B tidal wetlands would likely remain similar to existing conditions since there would be no new tidal flushing proposed in this area. As a result of new tidal channels and/or stormwater improvements, as well as physical site enhancements in Area A, North Area B, and South and Southeast Area B, improvements to wetland habitats expected from Alternative 2 include improved hydrology and a more developed and robust physical and biotic structure. These benefits would improve the complexity of aquatic and estuarine habitats on the site, resulting in greater floral and faunal diversity within these existing and expanded wetland habitats. The most significant improvements would occur in the areas on site with the poorest existing condition CRAM scores (e.g. Area A and North Area B). Therefore, effects to wetland and other aquatic habitat types as a whole would be beneficial.

2-BIO-3b: Alternative 2 would, unless mitigated, result in a substantial adverse impact to human health relating to the potential presence of disease vectors associated with wetland habitats. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

No direct impacts would occur.

Indirect Impacts

As described for Alternative 1, Alternative 2 would increase the amount of tidal flushing within on-site wetland habitat, which could mitigate the presence of water-borne vectors such as mosquitos. It is possible that mosquitos could breed in some pockets of the Ballona Reserve similar to baseline conditions. Potential related effects to humans could be reduced via the implementation of approved vector control methods. Following the application of Project Design Feature BIO-6 (Culvert Installation Best Management Practices), remaining potential significant indirect impacts could be reduced to a less-than-significant level through implementation of Preliminary Operation and Maintenance Plan (Appendix B5) provisions relating to vector control and Mitigation Measure BIO-3b (Vector Management).

Post-restoration

Following restoration, Alternative 2 would result in a substantial net increase in the amount tidal flushing within on-site wetlands. In addition, improved hydrology would improve function and value of existing habitat throughout the site. It is unknown if this would substantially increase or decrease the presence of vectors within the Ballona Reserve. If pesticide application is determined to be necessary to control mosquitoes or nuisance vectors such as midges or black flies during or following restoration, the Preliminary Operation and Maintenance Plan (Appendix B5) specifies that the least toxic effective control will be used to target the aquatic larval lifestage; adult mosquitos and related vectors would not be targeted. The low potential to result in adverse impacts to humans, water quality, and non-target biological resources would be substantially the same as for Alternative 1. Potential adverse impacts relating to disease vectors would be reduced to a less-than-significant level via the implementation of the Preliminary Operation and Maintenance Plan's vector control provisions, BMPs, and other efforts to control disease vectors, as required by Mitigation Measure BIO-3b (Vector Management).

Migratory Wildlife Movement

2-BIO-4: Alternative 2 would result in a temporary less than significant impact on migratory wildlife movement. (Less than Significant)

The implementation of Alternative 2 would result in upland, in-water, and over-water activities. Several migratory bird species (e.g., Caspian tern, elegant tern, and black bellied plover) regularly roost in the salt pan of Area B; however, restoration phase activities would be required to occur outside of the nesting season for migratory birds pursuant to Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance) and BIO-1*l*-i (Pre-construction Burrowing Owl Surveys) and therefore would not block or interfere with breeding behavior.

Restoration

Direct Impacts

Restoration phase activities associated with the realignment of Ballona Creek and construction of new bridges have been specifically designed and phased to maintain passage for fish and marine mammals throughout construction of Alternative 2. In addition, as a voluntary precaution to avoid direct impacts to marine mammals and sea turtles in Ballona Creek during in-water restoration or construction, a 320-foot (100 meter) safety zone shall be maintained around in-water work areas pursuant to Project Design Feature BIO-8: Biological Monitoring and Safety Zones to Protect Marine Mammals and Sea Turtles. Therefore, no direct impacts would occur to wildlife movement.

Indirect Impacts

Temporary, indirect impacts to the movement of fish and marine mammals could occur due noise, increased human activity, and potential for increased sedimentation following the breaching of levees. Overall, restoration impacts on wildlife movement would be less than significant, as described for Alternative 1.

Post-Restoration

The implementation of proposed operation and maintenance activities (Appendix B5) would be substantially the same as occurs under baseline conditions and would have no impact on avian and aquatic migratory wildlife corridors. Following restoration, Alternative 2 would improve the value of the Ballona Reserve as a stopover site for migratory birds by improving both wetland and upland habitat quality, improving the resiliency of roosting habitat to sea level rise, and controlling non-native predators. This would result in a beneficial effect on wildlife movement and avian migratory corridors.

TABLE 3.4-35
ALTERNATIVE 2 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
BIO-1: Have a substantial long-term adverse impact, 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 CDFW or USFWS?				
Relating to special-status fish and Essential Fish Habitat, see Impact 2-BIO-1a.	☐	☐	☒	☐
Relating to special-status plants, see Impact 2-BIO-1b.	☐	☒	☐	☐
Relating to El Segundo blue butterfly, see Impact 2-BIO-1c.	☐	☒	☐	☐
Relating to monarch butterfly, see Impact 2-BIO-1d.	☐	☒	☐	☐
Relating to salt marsh-associated invertebrates, see Impact 2-BIO-1e.	☐	☒	☐	☐
Relating to dune-associated special-status invertebrates, see Impact 2-BIO-1f.	☐	☒	☐	☐

TABLE 3.4-35 (Continued)
ALTERNATIVE 2 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2 (cont.)				
Relating to silvery legless lizard, see Impact 2-BIO-1g.	☐	☒	☐	☐
Relating to San Bernardino ring-necked snake, see Impact 2-BIO-1h.	☐	☒	☐	☐
Relating to Belding's savannah sparrow, see Impact 2-BIO-1i.	☐	☒	☐	☐
Relating to coastal California gnatcatcher, see Impact 2-BIO-1j.	☐	☒	☐	☐
Relating to least Bell's vireo, see Impact 2-BIO-1k.	☐	☒	☐	☐
Relating to burrowing owl, see Impact 2-BIO-1l.	☐	☒	☐	☐
Relating to nesting raptors, see Impact 2-BIO-1m.	☐	☒	☐	☐
Relating to special-status upland birds, see Impact 2-BIO-1n.	☐	☒	☐	☐
Relating to special-status shorebirds, see Impact 2-BIO-1o.	☐	☒	☐	☐
Relating to special-status marsh birds, see Impact 2-BIO-1p.	☐	☒	☐	☐
Relating to Southern California salt marsh shrew and South Coast marsh vole, see Impact 2-BIO-1q.	☐	☒	☐	☐
Relating to special-status bats, see Impact 2-BIO-1r.	☐	☒	☐	☐
BIO-2: Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?				
Relating to southern mud intertidal habitat, see Impact 2-BIO-2a.	☐	☒	☐	☐
Relating to southern coastal salt marsh habitat, see Impact 2-BIO-2b.	☐	☒	☐	☐
Relating to coastal brackish marsh habitat, see Impact 2-BIO-2c.	☐	☒	☐	☐
Relating to southern willow scrub habitat, see Impact 2-BIO-2d.	☐	☒	☐	☐
Relating to southern dune scrub habitat, see Impact 2-BIO-2e.	☐	☒	☐	☐
Relating to benthic communities, see Impact 2-BIO-2f.	☐	☐	☒	☐
BIO-3: Have a substantial adverse impact on waters of the U.S. as defined by Section 404 of the Clean Water Act or state protected wetlands and waters defined by the California Coastal Act through direct removal, filling, hydrological interruption, loss of functions or services, or other means?				
Relating to impacts on wetland habitat, see Impact 2-BIO-3a.	☐	☐	☒	☐
Relating to the presence of disease vectors in wetland habitats, see Impact 2-BIO-3b.	☐	☒	☐	☐
BIO-4: 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? See Impact 2-BIO-4.	☐	☐	☒	☐

3.4.6.3 Alternative 3: Levee Culverts and Oxbow

Alternative 3 is similar to Alternatives 1 and 2 but with a substantially smaller footprint of restoration and levee construction. One bicycle/pedestrian bridge would be constructed instead of two. The parking structure, gateway entrances, and educational signage would still be constructed and the natural gas monitoring wells and pipelines within the Ballona Reserve would still be abandoned and/or relocated to the SoCalGas Property. See Table 2-1, *Summary of Alternatives*, in Chapter 2, *Description of Alternatives*, for further details.

FESA Species Effect Determinations to Support Section 7 Consultation

The Corps has made a determination that implementation of Alternative 3 may affect, but is not likely to adversely affect, the following Federally-listed species: El Segundo blue butterfly, light-footed Ridgway's rail, and coastal California gnatcatcher. As such, Section 7 consultation with USFWS is required. In addition, the Corps has made a no effect determination regarding the following species: coastal dunes milk-vetch, salt marsh bird's beak, Ventura marsh milk-vetch, California least tern, least Bell's vireo, Pacific pocket mouse, steelhead, green sea turtle, blue whale, fin whale, humpback whale, sei whale, sperm whale, gray whale, Guadalupe fur seal, leatherback turtle, loggerhead turtle, olive ridley sea turtle, and the scalloped hammerhead shark. As such, Section 7 consultation is not required for these species. The basis for each effect determination is provided above in the FESA Species Effect Determinations to Support Section 7 Consultation for Alternative 1 except for California least tern and least Bell's vireo, which are provided below.

California least tern: This species is not expected to breed or forage on the Project site considering the habitat conditions onsite and the lack of recent observations of this species. Impacts to salt pan habitat in West Area B would be avoided under Alternative 3 such that no direct impacts to suitable habitat for this species would occur. Therefore, Alternative 3 would have no effect on California least tern or its habitat.

Least Bell's vireo: Alternative 3 would occur entirely within Area A, which does not support suitable habitat for least Bell's vireo. This species is known to breed and forage in Southeast Area B, which would be avoided under Alternative 3 such that no direct impacts to suitable habitat for this species would occur. Therefore, Alternative 3 would have no effect on least Bell's vireo or its habitat.

In addition, in consideration of the potential inclusion of offshore disposal of dredged material associated with Alternative 3 (up to 1,230,000 cubic yards of dredged material in comparison to a maximum of 110,000 cubic yards under Alternative 1), the Corps has made a determination that implementation of Alternative 3 would not affect the following Federally-listed species: blue whale, fin whale, humpback whale, sei whale, sperm whale, gray whale [Western North Pacific distinct population segment (DPS)], Guadalupe fur seal, leatherback turtle, loggerhead turtle [North Pacific Ocean DPS], olive ridley sea turtle, green turtle, scalloped hammerhead shark. These species are highly mobile and unlikely to be affected by slow-moving dredge material transport vessels as they haul material to the offshore disposal site.

Therefore, Alternative 3 is expected to have similar but reduced effects on federally threatened and endangered species than would Alternative 1.

Essential Fish Habitat

3-BIO-1a: Alternative 3 would not have a substantial adverse short-term construction impact, either directly or through habitat modifications, on Essential Fish Habitat ; however, following restoration efforts, Alternative 3 would result in a long-term net beneficial effect related to improved habitat quality. (Less than Significant Impact)

Restoration

Direct Impacts

Under Alternative 3, grading within Area would be isolated from Ballona Creek, and the connection of created tidal areas would have no direct impacts to EFH. Two culverts would connect Ballona Creek to the new low marsh and mid-marsh areas, which would increase the size and quality of the estuary and associated EFH. The installation of culverts would not reduce the amount or quality of existing EFH in Ballona Creek. Therefore, impacts would be less than significant.

Indirect Impacts

Under Alternative 3, the installation of new culverts and tidal flushing between Ballona Creek and restored marshlands would result in some temporary Project-generated sedimentation or post-restoration erosion that could result in localized and downstream siltation. Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan) would implement measures to minimize sedimentation such as the installation of a 500-foot floating boom and turbidity curtain prior to the start of construction; the removal of floating debris upstream of the boom; use of sediment mats downstream of the work area; use of geotextile roads/mats; and use of gravel construction entrances.

Potential temporary impacts to EFH and water quality in the Los Angeles and Long Beach Harbors would occur during any offshore disposal of soil from the Project site to existing ocean disposal sites LA-2 and LA-3. Excavated soils that would be exported via barge to LA-2 or LA-3 would represent approximately 34% of the average annual volume of dredged or excavated material currently discharged at these sites.

As discussed for Alternative 1, erosion and sedimentation hazards would be minor and less than significant. Alternative 3 is not expected to degrade on-site or downstream tidal and marine habitat that may be used by EFH fish species. Tidal aquatic habitat in Area B would not be directly impacted by Alternative 3, but could experience a short-term reduction in water quality, as described above, and long-term improvements to water quality. This impact would be less than significant.

Post-restoration

In total, the Project site supports approximately 49 acres of habitat capable of supporting fish (40 acres of subtidal and 9 acres of intertidal channel). Alternative 3 would result in a net increase of 2.4 acres of southern mud intertidal habitat and 5.0 acres of subtidal habitat in Area A; aquatic habitats in Area B would remain in their current (baseline) condition (e.g., tidal in West and South/Southeast Area B). New culvert water-control structures would be installed within the northern Ballona Creek channel levee to support full tidal restoration in Area A similar to Alternative 1. This would result in a minor net increase in the amount of mudflat and intertidal habitat types in Area A that are available to EFH fish species; however, the habitat benefit would be less than under Alternative 1. In addition, improved hydrology would improve habitat functions and values in Ballona Creek and connected southern mud intertidal habitat. As described in Appendix B5, Preliminary Operation and Maintenance Plan, the proposed operation and maintenance activities (including operation and maintenance of the LACDA project facilities within the Ballona Reserve) would be substantially similar to the operation and maintenance activities that currently occur within the Project area and so would result in a less-than-significant adverse impact.

Corps' conclusions regarding the effects of the action on EFH: As described above, Alternative 3 would not have a substantial adverse short-term construction impact either directly or through habitat modifications, on EFH. Following the restoration effort, Alternative 3 would result in a long-term net beneficial effect related to improved habitat quality.

Special-Status Plants

3-BIO-1b: Alternative 3 would, unless mitigated, result in a substantial adverse impact on rare and special-status plants. (Less than Significant with Mitigation Incorporated)

Lewis' evening primrose

Restoration and Post-restoration

Direct Impacts

A small proportion of Lewis' evening primrose population within Ballona the Reserve, approximately 500 of 12,200 plants, would be permanently impacted by Alternative 3's restoration activities in Area A. The remaining 11,500 plants are located outside of the proposed limits of disturbance. Direct impacts could occur due to ground-disturbing activities such as vegetation clearing, grubbing, and re-grading. Lewis' evening primrose is known from 29 USGS 7.5-minute quadrangles in Los Angeles, Orange, and San Diego counties; however, it is presumed extirpated from one of 29 quadrangles (CNPS 2015). Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), BIO-3 (Habitat Restoration and Monitoring Plan), and BIO-4 (Water Pollution and Erosion Control Plan), remaining impacts to Lewis' evening primrose would be reduced following the implementation of Mitigation Measures BIO-1b-i (Special-Status Plants), BIO-1b-ii (Biological Monitoring), and BIO-1b-iii (Noxious Weed Control Plan). With the implementation of these mitigation measures, impacts of Alternative 3 on rare and special-status plants would be less than significant.

Indirect Impacts

No indirect impacts are anticipated due to the substantial distance between the limits of disturbance in Area A and the preserved populations in Areas B and C.

Post-Restoration

After restoration, no substantial change in management would occur relative to baseline conditions. (See Appendix B5 for details about proposed operation and maintenance activities). Therefore, potential direct or indirect impacts associated with post-restoration activities would be less than significant.

Woolly seablite

Restoration and Post-restoration Direct and Indirect Impacts

This species is located outside of the limit of disturbance and would not be directly impacted by restoration activities proposed under Alternative 3. No direct or indirect impacts are anticipated due to the substantial distance between the limits of disturbance in Area A and the preserved population in Areas B. There would be no impact to woolly seablite.

After restoration, no substantial change in management would occur relative to baseline conditions. (See Appendix B5 for details about proposed operation and maintenance activities). Therefore, there would be a less-than-significant impact associated with post-restoration activities.

Orcutt’s pincushion, South Coast branching phacelia, and suffrutescent wallflower

Restoration and Post-restoration Direct and Indirect Impacts

This species is located outside of the limit of disturbance for Alternative 3 and would not be directly impacted by restoration activities. No indirect impacts are anticipated due to the substantial distance between the limits of disturbance in Area A and the preserved population in Area B. There would be no impact to Orcutt’s pincushion, South Coast branching phacelia, and suffrutescent wallflower.

After restoration, no substantial change in management would occur relative to baseline conditions. (See Appendix B5 for details about proposed operation and maintenance activities). Therefore, there would be a less-than-significant impact associated with post-restoration activities.

Special-Status Invertebrates

3-BIO-1c: Alternative 3 would, unless mitigated, result in substantial direct and indirect adverse impacts on El Segundo blue butterfly; however, following restoration, Alternative 3 would result in a beneficial effect in the quality of habitat for this species. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

No direct impacts would occur within suitable or occupied habitat for El Segundo blue butterfly during restoration.

After restoration, minimal direct mortality could occur as a result of O&M activities. If it occurs, mortality would be a significant adverse impact. Implementation of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), which includes establishment and maintenance of a buffer zone between the trail and upper edge of restored habitats, would reduce direct impacts to less than significant.

Indirect Impacts

Potential indirect impacts to occupied El Segundo blue butterfly habitat could occur from the accumulation of fugitive dust in West Area B from restoration activities in Area A, and the potential introduction and proliferation of non-native invasive plants. This impact would be significant unless mitigated. Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance) and BIO-4 (Water Pollution and Erosion Control Plan), remaining impacts would be reduced by the implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan). With the implementation of these mitigation measures, impacts would be less than significant.

Post-restoration

After restoration, minimal indirect impacts could occur as a result of post-restoration activities within suitable habitat including weed removal and trail maintenance, as well as increased human activity associated with reopening the Ballona Reserve for passive recreation and the potential for trampling of dune plants. These potential indirect impacts could result in reduced habitat quality for El Segundo blue butterfly. This impact would be significant without mitigation. To reduce potential indirect impacts to El Segundo blue butterfly, Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), which includes establishment and maintenance of a buffer zone between the trail and upper edge of restored habitats, would be implemented. With the implementation of these measures, impacts would be less than significant. As described in Appendix B5, Preliminary Operation and Maintenance Plan, the proposed operation and maintenance activities would be substantially similar to the operation and maintenance activities that currently occur within the Project area and so would result in a less-than-significant indirect impact to El Segundo blue butterfly habitat.

3-BIO-1d: Alternative 3 would not result in substantial direct and indirect impacts on monarch butterfly; however, following restoration, Alternative 3 would improve the value of the Ballona Reserve for monarch butterfly through enhancement of upland habitats. (Less than Significant)

Restoration

Direct Impacts

No direct impacts would occur within suitable winter roosting habitat for monarch butterfly during restoration. Potential direct impacts to monarch butterflies would be less than significant with the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), similar to Alternative 1.

After restoration, minimal direct mortality could occur as a result of increased recreational presence and continuing O&M activities. Potential impacts would be less than significant with the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), which includes establishment and maintenance of a buffer zone between the trail and upper edge of restored habitats.

Indirect Impacts

During restoration, there would be no impact to suitable winter roosting habitat and the temporary loss of foraging habitat would be less than significant with no compensatory mitigation or other mitigation measures required. No potentially significant indirect impacts would occur to monarch butterflies from the accumulation of fugitive dust related to restoration activities. Potential impacts from noise, vibration, and increased human activity are considered less than significant and do not require mitigation.

Post-restoration

Direct post-restoration impacts to monarch butterflies could include mortality of butterflies associated with increase human use. Indirect impacts also could occur as a result of reduced habitat quality due to operations and maintenance activities (such as weed removal and trail maintenance) within suitable habitat.

Potential direct and indirect impacts of Alternative 3 could be reduced over the long term through implementation of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) and BIO-4 (Water Pollution and Erosion Control Plan) that would improve the value of the Ballona Reserve for monarch butterflies through enhancement of upland habitats (e.g., including milkweed in the upland seed mix) for the species, as well as by implementing other measures that specifically would benefit monarch butterfly by avoiding or reducing potential impacts to occupied winter roost sites and larval host plant communities.

3-BIO-1e: Alternative 3 would, unless mitigated, have substantial direct and indirect adverse impacts on salt marsh-associated invertebrates (i.e., Wandering skipper western S-banded tiger beetle, and western tidal flat tiger beetle). (Less than Significant)

Restoration

Direct Impacts

Approximately 3.7 acres of potentially suitable habitat in Areas A would be permanently lost due to conversion from wetland to upland habitat; however, existing habitat in Areas A is considered to be only marginally suitable due to general lack of intact salt marsh habitat. In addition, suitable habitat in Area B would be completely avoided during this phase. Restoration-related activities in suitable wetland habitats in Areas A could result in direct impacts to salt marsh associated invertebrates due to trampling or crushing from heavy equipment, vehicles, foot traffic, and modifications to existing hydrological conditions.

After restoration, minimal direct mortality could occur as a result of O&M activities. Alternative 3 would result in a substantial net increase in both the quantity and quality of suitable habitat for salt marsh associated invertebrates. Alternative 3 would result in the establishment of 42.8 acres of fully tidal salt marsh relative to baseline conditions. Therefore, post-restoration effects would be beneficial. As with Alternative 1, Phase 1, potential direct impacts would be less than significant following the application of Project Design Features BIO-1 (WEAP) and BIO-3 (Habitat Restoration and Monitoring Plan). These measures would ensure workers are aware of sensitive species that could be encountered and ensure avoidance of these species to the extent feasible.

Indirect Impacts

Minimal indirect impacts to salt marsh associated invertebrates could occur as a result of post-restoration activities within suitable habitat including weed removal, trail maintenance, and increased human activity. In addition, Alternative 3 actions in Area A would allow for greater transition areas under sea level rise that would result in a beneficial effect for habitats in the Ballona Reserve capable of supporting special-status species, as wetland habitats would be expected to transition over time into higher elevations commensurate with rising sea levels. Potential indirect impacts could occur from the accumulation of fugitive dust related to restoration activities in West Area B. These potential indirect impacts would be less than significant following the application of Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan).

Post-Restoration

Direct and indirect post-restoration impacts to salt marsh-associated invertebrates would be similar to those discussed for monarch butterflies. Potential direct and indirect impacts of Alternative 3 would be less than significant following the application of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan) and BIO-4 (Water Pollution and Erosion Control Plan), which would improve the value of the Ballona Reserve for salt marsh-associated invertebrates through the creation of new, higher quality salt marsh habitat resulting in a potential net beneficial effect.

3-BIO-1f: Alternative 3 would, unless mitigated, result in a substantial adverse impact, either directly or through habitat modifications, on dune-associated special-status invertebrates. (Less than Significant with Mitigation Incorporated)

Restoration and Post-restoration

Direct Impacts

Direct impacts to potential habitat for dune-associated invertebrates could occur due to restoration activities in the stabilized dune habitats of Area A.

After restoration, minimal direct mortality could occur as a result of increased human presence associated with passive recreation and continuing O&M activities. Implementation of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan, which includes establishment and maintenance of a buffer zone between the trail and upper edge of restored habitats, would reduce direct impacts to less than significant.

Indirect Impacts

Ground-disturbing activities in these areas would result in the permanent loss of 0.4 acres of potentially suitable habitat for these species due to soil compaction and/or changes in plant community composition. However, these species have not been documented in the Ballona Reserve outside of West Area B and there would be no direct impacts to the known, occupied habitat. Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-4 (Water Pollution and Erosion Control Plan), this impact would remain significant. The implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan) would ensure that invasive weeds do not impact special-status invertebrates during Project activities. With the implementation of these mitigation measures, the impacts of restoration under Alternative 3 would be less than significant.

Minimal indirect impacts could occur as a result of post-restoration activities within suitable habitat including weed removal and trail maintenance, as well as increased human activity and the potential for trampling of dune plants. Potential indirect impacts associated with this phase could result in reduced habitat quality for dune associated invertebrates. With the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) potential indirect impacts to dune-associated invertebrates would be less than significant.

Special-Status Reptiles

3-BIO-1g: During restoration, Alternative 3 would, unless mitigated, result in substantial direct and indirect adverse impacts on silvery legless lizard; however, following restoration, Alternative 3 would result in a beneficial effect related to improved habitat quality. (Less than Significant with Mitigation Incorporated)

Restoration and Post-restoration

Direct Impacts

Restoration activities in the stabilized dune habitat in Area A would result in the permanent loss of 0.4 acres of potentially suitable habitat for silvery legless lizard due to soil compaction and/or changes in plant community composition. However, the stabilized dune habitats in Area A are not known to be occupied by silvery legless lizard and are only marginally suitable due to a generally high degree of soil compaction. Restoration activities requiring ground disturbance, such as grading, occurring in suitable habitat could have a significant impact on the legless lizard due to direct mortality. Following the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), remaining significant direct impacts would be reduced to less than significant by the implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1g-i (Pre- and Post-Restoration Surveys for Silvery Legless Lizard). Residual impacts would be similar to those described for Alternative 1.

Indirect Impacts

Impacts to potential silvery legless lizard habitat could occur due to restoration activities in the stabilized dune habitats of Area A. Potential indirect impacts to silvery legless lizards in Area B could occur due to noise, vibration, lighting, and increased human activity.

The vast majority of potentially suitable habitat, including high quality occupied habitat in West Area B and Southeast Area B, is located well outside of the limits of disturbance and would be preserved. This species would likely benefit from the enhancement of areas with sandy soils that have been heavily invaded by iceplant and may currently be too densely vegetated to support silvery legless lizard. Application of the Habitat Restoration and Monitoring Plan (Project Design Feature BIO-3) would ensure that a comparable amount of high-quality upland habitat would be available to silvery legless lizard following restoration under Alternative 3. Indirect impacts to silvery legless lizard would less than significant.

Indirect impacts could occur as a result of post-restoration activities within suitable habitat including weed removal, trail maintenance, and increased human activity. The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would reduce potential impacts during operations such as limiting unauthorized access into restored habitat areas. Enhancement activities are expected to result in improved habitat quality for silvery legless lizard. Therefore, post-restoration impacts would be beneficial (less than significant).

3-BIO-1h: Alternative 3 would, unless mitigated, have a substantial adverse impact, either directly or through habitat modifications, on San Bernardino ring-necked snake. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Direct mortality or injury to individual San Bernardino ring-necked snakes could occur during grading and other ground-disturbing activities. Following the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), habitat impacts would be less than significant and remaining impacts to individual ring-necked snakes could be reduced through the implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring).

Indirect Impacts

Suitable habitat for this species would be impacted during and following restoration by conversion of 54.4 acres of upland habitat to tidal salt marsh. Indirect impacts also could occur due to noise, vibration, lighting, and increased human activity. The San Bernardino ring-necked snake occurs in a wide range of habitats and has the potential to occur in non-tidal wetland, grassland, riparian, and ruderal habitats throughout the Ballona Reserve. Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance) would minimize the area of potential impacts, while Mitigation Measure BIO-1b-ii (Biological Monitoring) would reduce impacts to individual snakes to less than significant.

Indirect impacts could occur as a result of post-restoration activities within suitable habitat including weed removal, trail maintenance, and increased human activity. However, because these impacts would be either concentrated in small portions of the Ballona Reserve or occur as infrequent and short-duration activities, they would be negligible for this species. Therefore, post-restoration impacts to ring-necked snakes would be less than significant.

Post-restoration

Due to the wide range of habitats that this species occurs in, large areas of suitable habitat for this species would remain available throughout the active restoration period. As described in Appendix B5, Preliminary Operation and Maintenance Plan, the proposed operation and maintenance activities would be substantially similar to the operation and maintenance activities that currently occur within the Project area. Because no substantial change in the type or nature of activities would result, and because of the anticipated availability of suitable habitat, a less-than-significant impact would result following the restoration phase.

Special-Status Birds

3-BIO-1i: During restoration, Alternative 3 would, unless mitigated, result in a substantial adverse impact on Belding's savannah sparrow; however, following restoration, Alternative 3 would result in a substantial beneficial effect in the quality and quantity of habitat for this species. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Alternative 3 would result in no direct restoration-related impacts to suitable or occupied habitat for Belding's savannah sparrows. Alternative 3 would avoid potentially suitable nesting habitat for this species.

Indirect Impacts

Potential impacts to foraging habitat in Area A would be temporary, and the majority of suitable foraging habitat in the Project site would be available during restoration. Additionally, due to the distance of restoration activities from potential nesting habitat in Area B, it is unlikely that breeding success would be indirectly impacted by restoration activities.

Alternative 3 would result in a net increase in 42.9 acres of suitable breeding and foraging habitat for Belding's savannah sparrow in comparison with baseline conditions, which would be a beneficial effect (see Table 3.4-36). Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would minimize the limited negative indirect impacts associated with the increase in human activity by limiting unauthorized access into restored habitat areas. Remaining significant impacts would be reduced to less than significant through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance), which would reduce potential impacts to nesting birds, including Belding's savannah sparrow during post-restoration activities such as weed removal. Following mitigation, post-restoration effects on Belding's savannah sparrow would be beneficial as a result of post-restoration enhancement of breeding and foraging habitat for this species.

TABLE 3.4-36
SUMMARY OF CHANGES IN THE EXTENT OF BELDING'S SAVANNAH SPARROW HABITAT AS A RESULT OF ALTERNATIVE 3

Existing BSS Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Habitat Establishment (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Belding's Occupied Habitat	24.3	N/A	N/A	24.3	0.0
Belding's Potentially Suitable Habitat	101.7	N/A	48.0	149.7	48.0
Total	**126.0**	**N/A**	**48.0**	**174.0**	**48.0**

SOURCES: WRA, ESA

Post-Restoration

As shown in Table 3.4-36, Alternative 3 would not directly impact Belding's savannah sparrow habitat, and indirect impacts would be negligible. Post-restoration impacts, direct or indirect, resulting from increased human presence associated with reopening the Ballona Reserve for passive recreation and with continuing operation and maintenance activities also would result in negligible (less than significant) impacts to this species. As noted above, post-restoration effects on Belding's savannah sparrow would be beneficial due to the establishment and enhancement of breeding and foraging habitat for this species that would occur as a result of Project implementation.

3-BIO-1j: During restoration, Alternative 3 would, unless mitigated, result in a substantial adverse indirect impact on coastal California gnatcatcher through temporary habitat modifications; however, following restoration, Alternative 3 would result in a substantial beneficial effect in the quality and quantity of habitat for this species. (Less than Significant with Mitigation Incorporated)

Restoration and Post-Restoration

Direct Impacts

The restoration related activities proposed under Alternative 3 would result in similar impacts to coastal California gnatcatcher as identified for Alternative 1, Phase 1; with no direct impacts to this species (see Impact 1-BIO-1j). The implementation of proposed operation and maintenance activities (Appendix B5) would be substantially the same as occurs under baseline conditions; therefore, there would be little change and a less-than-significant direct impact to coastal California gnatcatcher and its habitat.

Indirect Impacts

Indirect impacts to this species would be similar to those discussed for Alternative 1. Potential significant indirect impacts to this species would be reduced to less than significant through implementation of Mitigation Measure BIO-1j-i (Coastal California Gnatcatcher Avoidance), which would require avoidance and minimization of potential impacts to nesting birds and habitat for this species. In addition, the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would improve the value of coastal scrub habitats within the Ballona Reserve through restoration and monitoring, as well as by controlling invasive plants; and other measures that would focus specifically on habitat for coastal California gnatcatchers. This would be a potential beneficial effect.

Mitigation Measures

Implement Mitigation Measure BIO-1j-i.

Level of Significance after Mitigation

The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) and the mitigation measure identified above would avoid or minimize impacts to active nests during construction and ongoing activities, and would ensure that a comparable amount of high-quality upland habitat would be available to the species following restoration. These measures would reduce but not eliminate Impact 1-BIO-1j. Following mitigation, this impact would be less than significant.

3-BIO-1k: During restoration, Alternative 3 would not result in a substantial adverse impact on least Bell's vireo. (No Impact)

Restoration

Direct Impacts

Alternative 3 would occur entirely within Area A, which does not provide habitat for this species. Therefore, there would be no direct impact to this species under Alternative 3. No additional nesting habitat is proposed for implementation under this Alternative.

Indirect Impacts

There would be no indirect impact to this species under this Alternative.

Post-restoration

Alternative 3 would occur entirely within Area A, which does not support habitat for least Bell's vireo. Therefore, there would be no post-restoration direct or indirect impacts to this species.

3-BIO-1l: During restoration, Alternative 3 would, unless mitigated, result in a substantial adverse impact on burrowing owl wintering habitat; however, following restoration, Alternative 3 would provide suitable foraging habitat and may potential expand foraging, wintering and potentially nesting habitat for this species. (Less than Significant with Mitigation)

Restoration

Direct Impacts

The restoration and post-restoration activities proposed under Alternative 3 would result in similar impacts to burrowing owl as identified for Alternative 1, Phase 1 (see Impact 1-BIO-1*l*). Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), remaining potential significant direct impacts would be minimized through the implementation of Mitigation Measure BIO-1*l*-i (Pre-construction Burrowing Owl Surveys), with similar residual impacts to this species as described for Alternative 1. Although burrows may be removed during restoration, it is anticipated that ground squirrels present within the site would readily excavate new ones in restored upland areas following restoration. Thus, impacts to wintering burrow habitat would be temporary in nature with no direct harm to individual owls. These measures would reduce but not eliminate Impact 1-BIO-1*l*. Following mitigation, impacts would be less than significant.

Indirect Impacts

A portion of suitable burrowing owl habitat within the Ballona Reserve would be directly impacted during Alternative 3. Burrowing owls are not known to breed on the site; however, although breeding has not been documented, potential impacts to wintering owls could occur. A portion of suitable wintering habitat in the work area would be impacted temporarily and would be unavailable during restoration, though due to Project phasing, a large portion of the Ballona Reserve would remain available for wintering and foraging during restoration.

Burrowing owls could also be indirectly impacted by work activities due to noise, vibration, lighting, and increased human activity associated with reopening the Ballona Reserve for passive recreation. Following the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limits of Disturbance), remaining significant impacts would be reduced to less than significant through the implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring).

Limited negative indirect impacts could occur due to a potential increase in human activity and the implementation of proposed operation and maintenance activities (Appendix B5), the type and nature of which would be substantially the same as occur under existing (baseline) conditions. Wintering burrowing owls may be impacted indirectly through noise or visual disturbances caused by ongoing activities, such as weed removal. Following the application of Project Design Feature BIO-1 (WEAP), remaining potential significant impacts would be reduced to less-than-significant through Mitigation Measure BIO-1*l*-i (Pre-construction Burrowing Owl Surveys), which would allow workers to avoid inadvertently impacting wintering burrows or causing burrow abandonment during ongoing activities, such as weed removal. Additionally, the application the Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), and the implementation of Mitigation Measure BIO-1b-iii (Noxious Weed Control) and Mitigation Measure BIO-1*l*-ii (Burrowing Owl Suitable Habitat) would ensure that a comparable amount of high-quality upland habitat will be available to burrowing owls following restoration. Impacts would be less than significant after mitigation.

Post-restoration

Alternative 3 would result in the on-site replacement of temporarily impacted habitat for this species at a ratio of approximately 7:1 provided that all restored grasslands function as designed. Thus, there would be no net loss of wintering habitat following restoration. Although a portion of suitable upland foraging habitat would be converted to tidal marsh, the marsh also would provide suitable foraging habitat for this species, and thus no net loss of foraging habitat is expected. Conversion of non-native tall herbaceous portions of the site is also likely to expand foraging, wintering and potentially nesting habitat for this species. The implementation of proposed operation and maintenance activities (Appendix B5) would be substantially the same as occurs under baseline conditions; therefore, there would be little change and a less-than-significant impact to this species and its habitat.

3-BIO-1m: During restoration, Alternative 3 would, unless mitigated, result in a limited indirect adverse impact on nesting raptors. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

No direct impacts would occur to active to raptor nests because restoration- and construction-related disturbance impacts that could cause nest abandonment would be considered an indirect impact.

Indirect Impacts

Alternative 3 would not impact potential raptor nesting trees in the Project site; however, if nesting raptors are present at the time of site activities, breeding success could be indirectly impacted due to increased noise, vibration, lighting, and human activity. Restoration activities would affect raptor foraging habitat during Alternative 3. Raptor foraging habitat would be temporarily unavailable to raptors during restoration; however, the majority of foraging habitat in the Project site would be available throughout site restoration. Following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), and BIO-3 (Habitat Restoration and Monitoring Plan), remaining potentially impacts would be reduced to less than significant with implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Post-restoration

Alternative 3 would result in the net increase in the amount of suitable breeding habitat for raptors. However, limited negative indirect impacts could occur due to a potential increase in human activity. Such impacts would be significant in the absence of mitigation but would be reduced to less-than-significant through the implementation of above-defined mitigation measures, including Mitigation Measure BIO-1m (Raptor Nest Avoidance), which would allow workers to avoid inadvertently impacting active nests or causing nest abandonment during ongoing activities, such as weed removal. The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would ensure that additional potential nesting habitat will be available to raptors following restoration. Overall, post-restoration impacts to raptor species would be beneficial.

3-BIO-1n: During restoration, Alternative 3 would, unless mitigated, result in a substantial adverse impact on special-status upland birds; however, following restoration, Alternative 3 would provide comparable amounts of habitat and may potentially expand foraging and nesting habitat for these species resulting in an overall net beneficial effect. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

If site activities commence during the breeding season, native birds such as loggerhead shrike, western meadowlark, California towhee, and tree swallow and their nests could be directly impacted. Potential significant adverse impacts would be fully avoided and reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Indirect Impacts

Restoration activities would result in a temporary reduction in the extent of suitable foraging habitat for both species due to vegetation clearing, grubbing, and re-grading. Potential foraging habitat would be temporarily impacted during Alternative 3; however, large areas throughout the Project site available for foraging throughout the restoration process of Alternative 3.

Restoration activities could indirectly impact breeding success due to noise, vibration, lighting, and increased human activity. Following the application of Project Design Feature BIO-1 (WEAP), remaining potential significant impacts would be reduced to less-than-significant through the implementation of Mitigation Measures BIO-1i-i (Nesting Bird and Raptor Avoidance) and BIO-1b-ii (Biological Monitoring), which would allow workers to avoid inadvertently impacting active nests or causing nest abandonment.

Post-restoration

Alternative 3 would result in the on-site restoration of temporarily impacted habitat for these species. Thus, there would be no net loss of nesting or foraging habitat following restoration. Although a portion of suitable upland foraging habitat would be converted to tidal marsh, the marsh would also provide suitable foraging habitat for these species, and thus no net loss of foraging habitat is expected. Conversion of non-native habitat within the site is also likely to expand foraging and potentially nesting habitat for these species.

Limited negative indirect impacts could occur due to a potential increase in human activity associated with reopening the Ballona Reserve for passive recreation; the implementation of proposed operation and maintenance activities would be substantially the same as the type and nature of activities that are being implemented under existing conditions. (See Appendix B5 for details about the proposed restoration and maintenance activities). Nesting success may be impacted indirectly through noise or visual disturbances caused by ongoing activities, such as weed removal. Following the application of Project Design Feature BIO-1 (WEAP), remaining impacts would be reduced to less-than-significant through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance), which would allow workers to avoid inadvertently impacting active nests or causing nest abandonment during ongoing activities, such as weed removal.

The application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would ensure that a comparable amount of high-quality upland habitat would be available to upland bird species following restoration. In addition, Alternative 3 actions in Area A would allow for greater transition areas under sea level rise that would result in a beneficial effect for habitats in the Reserve used for foraging by upland bird species, as wetland habitats would be expected to transition over time into higher elevations commensurate with rising sea levels.

3-BIO-1o: During restoration, Alternative 3 would, unless mitigated, result in a substantial adverse impact on special-status shorebirds; however, following restoration, Alternative 3 would have a beneficial effect on available breeding and foraging habitat for shorebirds. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Alternative 3 would result in no permanent impact to potentially suitable shorebird nesting or foraging habitat due to work activities including dredging of channels in Area A (see Table 3.4-37). Impacts to salt pan habitat in West Area B would be avoided under Alternative 3.

TABLE 3.4-37
SUMMARY OF CHANGES IN THE EXTENT OF SHOREBIRDS HABITAT AS A RESULT OF ALTERNATIVE 3

Existing Shorebirds Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Shorebirds habitat	31.6	0.0	38.6	**+7.0**

SOURCE: WRA

Indirect Impacts

Alternative 3 would result in a substantial net increase in the amount of suitable foraging habitat for special-status shorebirds. In total, restoration would result in a net increase of 7.0 acres of suitable foraging habitat for shorebirds (see Table 3.4-37).

Post-restoration

If improved habitat conditions allow special-status shorebirds to nest within the Project site post-restoration, limited negative indirect impacts, such as nest disturbance, could occur due to a potential increase in human activity. Such limited adverse indirect impacts could be reduced through Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance). Further, overall, the Project is anticipated to have a net beneficial effect related to the greater availability of special-status shorebird foraging habitat. In addition, Alternative 3 actions in Area A would allow for greater transition areas under sea level rise that would result in a beneficial effect for habitats in the Ballona Reserve capable of supporting shorebird foraging, as wetland habitats would be expected to transition over time into higher elevations commensurate with rising sea levels.

3-BIO-1p: During restoration, Alternative 3 would, unless mitigated, result in a substantial adverse impact on special-status marsh birds; however, following restoration, Alternative 3 would expand the total area of suitable breeding and foraging habitat for marsh birds. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

If site activities commence during the avian nesting season, nesting special-status marsh birds could be directly impacted. Potential adverse impacts would be fully avoided and reduced to a less-than-significant level through implementation of Mitigation Measure BIO-1i-i (Nesting Bird and Raptor Avoidance).

Indirect Impacts

Alternative 3 would result in a permanent loss of 3.7 acres of potentially suitable habitat due to restoration activities that would convert wetland to upland habitat. Some impacts (e.g., levee construction) would result in a permanent conversion of wetland or salt pan to upland habitat (Table 3.4-38). This alternative would result in a net increase in the amount of suitable breeding and foraging habitat for special-status marsh birds. This Alternative would result in a net increase of 40.9 acres of suitable breeding and foraging habitat for marsh birds (Table 3.4-38).

TABLE 3.4-38
SUMMARY OF CHANGES IN THE EXTENT OF MARSH BIRD HABITAT AS A RESULT OF ALTERNATIVE 3

Existing marsh bird Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Marsh bird habitat	148.2	3.7	189.1	**+40.9**

SOURCES: WRA, ESA

The breeding success of common gallinule, least bittern, and Virginia rail could be indirectly impacted by work activities due to noise, vibration, lighting, and increased human activity. Such disturbance could result in the loss of individuals and/or reduced breeding success due to indirect impacts. Following the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), remaining potential significant impacts would be reduced to less-than-significant through the implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1i-i (Nesting Bird and Raptor Avoidance), which would allow workers to avoid inadvertently impacting active nests or causing nest abandonment during ongoing activities, such as weed removal.

Post-restoration

Following restoration, Alternative 3 would result in a net increase of 40.9 acres in the amount of suitable foraging habitat for special-status marsh birds (see Table 3.4-22). Overall, Alternative 3 is anticipated to have a net beneficial effect on special-status marsh birds. The temporary loss of foraging habitat is considered less than significant. Potential impacts associated with the proposed operation and maintenance activities (Appendix B5) also would be less than significant because the same type and nature of activities would occur under Alternative 3 that are occurring under baseline conditions.

Special-Status Mammals

3-BIO-1q: Alternative 3 would not result in limited indirect impacts on Southern California salt marsh shrew and South Coast marsh vole. (Less than Significant)

Restoration

Direct Impacts

No direct impact to California salt marsh shrew or South Coast marsh vole would occur.

Indirect Impacts

Alternative 3 would result in negligible changes in the amount of habitat available for Southern California salt marsh shrew or South Coast marsh voles. Restoration activities associated with restoration in Area A would occur primarily in upland habitats that do not support habitat for **Southern** California salt marsh shrew or South Coast marsh voles. Activities that would take place in marginally suitable habitat in these areas are not likely to affect the shrew or vole because these species are presumed absent based on trapping surveys and the isolation of potential habitat areas. Therefore, no indirect impacts are anticipated to these species during restoration.

Post-restoration

Following restoration, limited negative indirect impacts could occur due to a potential increase in human activity. With the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), potential impacts during the post restoration phase would be less than significant.

3-BIO-1r: During restoration, Alternative 3 would, unless mitigated, result in a limited adverse impact either directly or through habitat modifications, on special-status bats. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Restoration-related activities could result in direct impacts to day-roosting bats through tree removal, which may cause injury or death. Following the application of Project Design Features BIO-1 (WEAP) and BIO-2 (Limit of Disturbance), remaining impacts would be reduced to less-than-significant through Mitigation Measures BIO-1r (Bat Avoidance), and BIO-1b-ii (Biological Monitoring), which would allow workers to avoid inadvertently impacting bat roosting sites.

Indirect Impacts

Alternative 3 would result in negligible changes in the amount of foraging and roosting habitat available for special-status bats. Installation of riparian trees and construction of bridges in the site may increase potential roosting habitat for special-status bat species. However, limited negative indirect impacts could occur due to a potential increase in human activity and maintenance activities. With the application of Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), potential impacts during the post-restoration phase would be less-than-significant.

Post-restoration

No post-restoration impacts would occur to special-status bats.

Riparian Habitat and Other Sensitive Natural Communities

3-BIO-2a: Alternative 3 would, unless mitigated, result in a substantial increase in southern mud intertidal habitat, with short-term impacts to a portion of existing on-site southern mud intertidal habitat during site restoration. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Alternative 3 would result in direct, temporary impacts to southern mud intertidal habitat within Fiji Ditch as a result of restoration activities including grading and temporary filling in Area A. Some of the impacts would be temporary, but many of the impacts would result in a permanent conversion to submerged aquatic habitat.

Alternative 3 would result in a net increase in southern mud intertidal habitat types of 2.4 acres (see Table 3.4-39). The application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), BIO-4 (Water Pollution and Erosion Control Plan), BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat), BIO-6 (Culvert Installation Best Management Practices), and BIO-7 (Post-Restoration Functional Lift Assessments of Wetland Waters of the U.S. and State) would limit the potential sediments from erosion and other debris from entering waters in the Project area. Implementation of the Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would further ensure the avoidance and minimization of impacts to riparian habitat and sensitive natural communities. Biological monitoring through the implementation of Mitigation Measure BIO-1b-ii (Biological Monitoring) would further ensure impacts associated with installation of tide gates to less-than-significant.

TABLE 3.4-39
SUMMARY OF CHANGES IN THE EXTENT OF SOUTHERN MUD INTERTIDAL HABITAT AS A RESULT OF ALTERNATIVE 3

Existing Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Southern Mud Intertidal	8.8	N/A	11.2	**+2.4**

SOURCE: WRA

As described in Chapter 2, *Description of Alternatives*, all restored native habitats, including southern mud intertidal, would be monitored for success in achieving approved vegetative performance criteria for up to 10 years. Restored habitats would be maintained, weeded, and reseeded or replanted as necessary to meet required performance criteria for tidal marsh identified in Table 2-12, *Tidal Marsh Performance Criteria*, of Chapter 2, *Description of Alternatives*.

Indirect Impacts

Southern mud intertidal habitat could be indirectly impacted during restoration activities because of erosion, dust, and compaction. With the application of Project Design Features, indirect impacts would be less than significant. Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan), would include establishment of adaptive management procedures including evaluation methods, periods, and success criteria. Project Design Feature BIO-4 (Water Pollution and Erosion Control Plan), would limit the potential for sediments from erosion and other debris from entering waters in the Project area.

Post-restoration

Alternative 3 would improve the function and services of southern mud intertidal habitat types in the Ballona Reserve by improving hydrology and associated ecosystem services. The Project, which would include replanting of native species, removal of non-native plant species, and on-going monitoring and adaptive management, would result in long-term benefits to these habitat types. This would result in a beneficial effect on southern mud intertidal habitat types. In addition, the implementation of Alternative 3 in Area A would allow for greater transition areas under sea level rise that would result in a beneficial effect for habitats in the Ballona Reserve, as wetland habitats would be expected to transition over time into higher elevations commensurate with rising sea levels.

3-BIO-2b: Alternative 3 would result in a substantial increase in southern coastal salt marsh habitat, with short-term impacts to a portion of existing on-site southern coastal salt marsh habitat during site restoration. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

Alternative 3 would result in a permanent loss of 3.7 acres of southern coastal salt marsh habitat. However, the primary Project objective is the establishment of southern coastal salt marsh habitat, which would include replanting of native species, removal of non-native species, restored hydrology, and the establishment of transition habitat in Area A, and as such would result in long-term benefits to the Ballona Reserve and its associated wetland habitat. In total, this alternative would result in a substantial net increase of 43.4 acres of habitat (see Table 3.4-40).

TABLE 3.4-40
SUMMARY OF CHANGES IN THE EXTENT OF SOUTHERN COASTAL SALT MARSH HABITAT AS A RESULT OF ALTERNATIVE 3

Existing Habitat Types	Existing Habitat Area (acres)	Permanent Impact (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Southern Coastal Salt Marsh	103.2	3.7	146.6	**+43.4**

SOURCES: WRA, ESA

Temporary and permanent impacts to southern coastal salt marsh habitat would be less than significant following the application of Project Design Features BIO-1 (WEAP), BIO-3 (Habitat Restoration and Monitoring Plan), and BIO-5 (Avoid or Minimize Impacts to Aquatic Habitat).

Indirect Impacts

Limited negative indirect impacts could occur due to a potential increase in human activity and maintenance activities, which would be minimized through implementation of mitigation measures. Following the application of Project Design Features BIO-1 (WEAP), BIO-4 (Water Pollution and Erosion Control Plan), and BIO-6 (Culvert Installation Best Management Practices), remaining potentially significant indirect impacts would be reduced to a less-than-significant level through implementation of Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan). Following mitigation, this impact would be less than significant.

Post-restoration

Post-restoration acreages of wetland habitat would be increased and the functions and services of the southern coastal salt marsh habitat, including Corps, RWQCB and CCC jurisdictional resources, would be improved as a result of implementation of Alternative 3. Therefore, effects to this habitat type are considered beneficial. In addition, the implementation of Alternative 3 in Area A would allow for greater transition areas under sea level rise that would result in a beneficial effect for habitats in the Ballona Reserve, as wetland habitats would be expected to transition over time into higher elevations commensurate with rising sea levels.

3-BIO-2c: Alternative 3 would not affect coastal brackish marsh habitat types. (No Impact)

Alternative 3 does not include the restoration of Area B or Area C, the only areas containing coastal brackish marsh habitat. Therefore, Alternative 3 would have no adverse impact on coastal brackish marsh habitat. Alternative 3 would result in a net increase of coastal brackish marsh by 2.4 acres, which would be a beneficial effect.

3-BIO-2d: Alternative 3 would not affect southern willow scrub habitat. (No Impact)

Alternative 3 does not include the restoration of Area B, the only area containing southern willow scrub. Therefore, Alternative 3 would have no adverse impact on southern willow scrub.

3-BIO-2e: Alternative 3 would not affect southern dune scrub habitat types. (No Impact)

Alternative 3 does not include the restoration of Area B, the only area containing southern dune scrub. Therefore, Alternative 3 would have no adverse impact on southern dune scrub.

3-BIO-2f: Alternative 3 would not have a substantial adverse impact on benthic communities. (Less than Significant Impact)

Restoration

Direct Impacts

No direct impacts to benthic communities would occur, as these communities do not occur in the Alternative 3 work area. Culvert installation in the Ballona Creek channel could cause a less than significant disturbance to benthic communities associated with temporary habitat disturbance. No compensatory mitigation or other mitigation measures are required for this less than significant impact.

Indirect Impacts

As in Alternative 1 Phase 1, West Area B would not be reconnected to Ballona Creek in Alternative 3. The existing SRT gate limits the amount of sediment that can enter West Area B, so sedimentation would not increase due to the Project. As in Alternative 1, Alternative 3 also would include the construction of the stormwater sediment basin in West Area B, which would reduce the constituents entering the marsh. Therefore, water and sediment quality would be improved from existing conditions for benthic communities under Alternative 3. This impact would be less than significant.

Post-restoration

No post-restoration impacts would occur to benthic communities. This community is expected to rapidly colonize lower and mid marsh portions of Area A. Functions and values of habitat for benthic communities would be improved as a result of implementation of Alternative 3; therefore, overall effects would beneficial both in quantity and quality. No compensatory mitigation or other mitigation measures would be required.

Waters of the U.S. and Waters of the State

3-BIO-3a: Alternative 3 would result in an increase in the amount and quality of waters of the U.S. and wetland/waters of the State defined by the California Water Code or the California Coastal Act, with short-term impacts to a portion of existing on-site waters of the U.S. and waters of the State during site restoration. (Less than Significant)

Restoration and Post-restoration

Direct Impacts

Alternative 3 would result in a direct permanent loss of 3.7 acres of wetland waters of the U.S./State, no impacts to non-wetland waters of the U.S./State, and 7.2 acres of wetlands/waters defined by the California Coastal Act. Alternative 3 would also result in temporary impacts to 3.5 acres of wetland waters of the U.S./State and 0.5 acre of non-wetland waters of the U.S./State; and no permanent loss of function of wetlands or non-wetland waters of the U.S. (see Table 2-1a). Permanent loss would be caused by work activities including grading and the placement of fill material that would convert an aquatic resource type to uplands (see

Figure 3.4-21). Temporary impacts would be caused by restoration activities, such as clearing, grubbing, grading, and the placement of fill material onto an existing aquatic habitat that would result in the conversion of one aquatic resource type to another where post-project functions would remain the same or increase. Impacts to aquatic habitat, which falls under the jurisdiction of the Corps, RWQCB and/or CCC, may have short-term adverse impacts on plants and wildlife dependent on the habitat, including special-status species for which potential impacts are discussed above. Potentially direct impacts to waters of the U.S. and waters of the State would be less-than-significant level following the application of Project Design Features BIO-1 (WEAP), BIO-2 (Limit of Disturbance), BIO-3 (Habitat Restoration and Monitoring Plan), BIO-4 (Water Pollution and Erosion Control Plan), BIO-5 (Avoid or Minimize Impacts to Waters), BIO-6 (Culvert Installation Best Management Practices), and BIO-7 (Post-Restoration Functional Lift Assessments of Wetland Waters of the U.S. and State), and no compensatory mitigation is proposed. Implementation of the proposed Project Design Feature BIO-3 (Habitat Restoration and Monitoring Plan) would further ensure the avoidance and minimization of impacts to waters of the U.S. and waters of the State.

Indirect Impacts

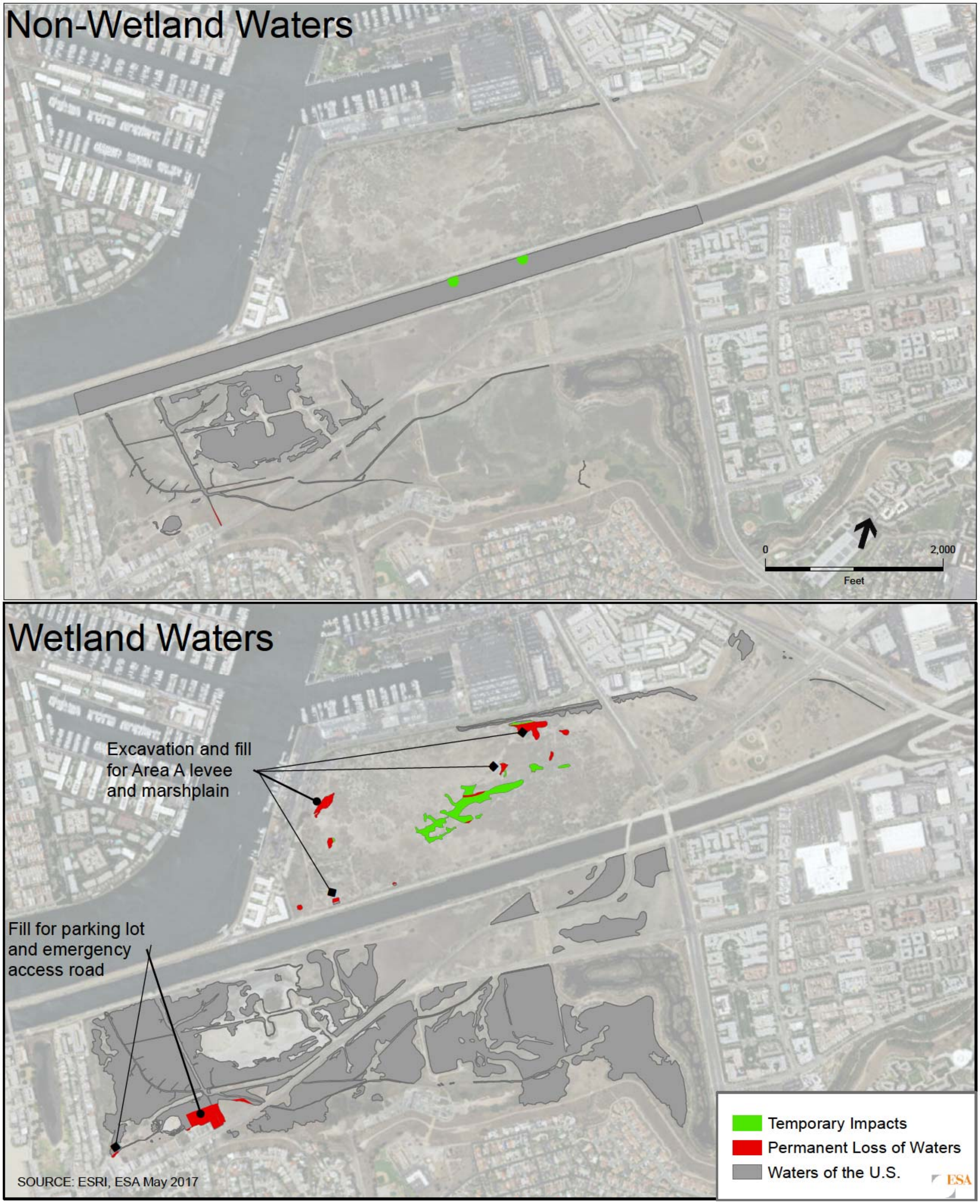
Wetland habitat could be indirectly impacted by work activities due to sedimentation and trampling. However, one of the primary Project objectives is the restoration of wetlands, which would include replanting of native species, removal of non-native species, restored hydrology, and the establishment of transition habitat, and as such would result in long-term benefits to the Ballona Reserve and its associated wetland habitat. In addition, Area B would be avoided in Alternative 3. Some impacts (e.g., levee construction) would result in a permanent conversion of salt marsh habitat to upland habitat (see Table 3.4-40).

Potential indirect impacts to wetlands and other aquatic habitat are considered less-than-significant in reliance on the design features and mitigation measures identified above, and no compensatory mitigation is proposed.

Post-restoration

The implementation of Alternative 3 in Area A would allow for greater transition areas under sea level rise scenarios that would result in a beneficial effect for habitats in the Ballona Reserve, wetland habitats would be expected to transition over time into higher elevations commensurate with rising sea levels.

Post-Project acreages of wetland habitat would be increased, and the functions and services of the wetland habitats, including Corps, /RWQCB and CCC jurisdictional resources, would be improved as a result of implementation of Alternative 3. In addition to the increased area of waters of the U.S. and waters of the State described above, a concurrent uplift is expected for hydrological and ecological conditions within the Ballona Reserve. This would be a beneficial effect. In Alternative 3, the condition of Area B tidal and non-tidal wetlands would likely remain similar to existing conditions since there would be no tidal or other hydrological improvements proposed for these areas. As a result of new tidal channels and culverts, and physical site enhancements in Area A, habitat improvements expected from Alternative 3 would include improved hydrology and a more developed and robust physical and biotic structure that improves the complexity of aquatic and estuarine habitats on the site, resulting in greater floral and faunal diversity within existing and expanded wetland habitats in Area A. Therefore, effects to wetland and other aquatic habitat types as a whole on the project site would be beneficial.



Ballona Wetlands Restoration Project

Figure 3.4-21
Alternative 3 Impacts to Waters of the U.S.

TABLE 3.4-41
SUMMARY OF CHANGES IN THE EXTENT OF FEDERALLY AND STATE PROTECTED (CORPS, RWQCB JURISDICTION) WETLAND HABITAT AS A RESULT OF ALTERNATIVE 3

Existing Wetland Habitat Types	Existing Habitat Area (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Tidal waters	29.5	41.1	**+11.6**
Managed/tidal waters	38.8	42.4	**+3.6**
Non-tidal waters	0.0	0.0	**0.0**
Tidal wetland	0.0	42.8	**+42.8**
Managed/tidal wetland	21.7	12.5	**-9.2**
Non-tidal wetland	130.0	133.8	**+3.8**
Subtotal waters	68.3	83.5	+15.2
Subtotal waters	151.7	189.1	+37.4
Total	220.0	272.6	**+52.6**

SOURCE: ESA

TABLE 3.4-42
SUMMARY OF CHANGES IN THE EXTENT OF STATE PROTECTED (CCC JURISDICTION) WETLAND HABITAT AS A RESULT OF ALTERNATIVE 3

Existing Wetland Habitat Types	Existing Habitat Area (acres)	Post-restoration Habitat Area (acres)	Net Change (acres)
Tidal waters	54.1	61.2	**+7.1**
Managed/tidal waters	25.6	25.6	**0.0**
Non-tidal waters	2.0	2.0	**0.0**
Tidal wetland	0.0	57.2	**+57.2**
Managed/tidal wetland	57.2	55.4	**-1.8**
Non-tidal wetland	135.5	118.9	**-16.6**
Total	274.3	320.2	**+45.9**

SOURCE: WRA

3-BIO-3b: Alternative 3 would, unless mitigated, result in a substantial adverse impact to human health relating to the potential presence of disease vectors associated with wetland habitats. (Less than Significant with Mitigation Incorporated)

Restoration

Direct Impacts

No direct impacts would occur.

Indirect Impacts

Alternative 3 would increase the amount of tidal flushing within on-site wetland habitat, which could mitigate the presence of water-borne vectors such as mosquitos. It is possible that mosquitos could breed in some pockets of the Ballona Reserve similar to baseline conditions. Potential related effects to humans could be reduced via the implementation of approved vector control methods. Following the application of Project Design Feature BIO-6 (Culvert Installation Best Management Practices), remaining potential significant indirect impacts could be reduced to a less-than-significant level through implementation of Preliminary Operation and Maintenance Plan (Appendix B5) provisions relating to vector control and Mitigation Measure BIO-3b (Vector Management).

Post-restoration

Following restoration, Alternative 3 would result in a substantial net increase in the amount tidal flushing within on-site wetlands. In addition, improved hydrology would improve function and value of existing habitat throughout the site. It is unknown if this would substantially increase or decrease the presence of vectors within the Ballona Reserve. If pesticide application is determined to be necessary to control mosquitoes or nuisance vectors such as midges or black flies during or following restoration, the Preliminary Operation and Maintenance Plan (Appendix B5) specifies that the least toxic effective control will be used to target the aquatic larval lifestage; adult mosquitos and related vectors would not be targeted. The low potential to result in adverse impacts to humans, water quality, and non-target biological resources would be substantially the same as for Alternative 1. Potential adverse impacts relating to disease vectors would be reduced to a less-than-significant level via the implementation of the Preliminary Operation and Maintenance Plan's vector control provisions, BMPs, and other efforts to control disease vectors, as required by Mitigation Measure BIO-3b (Vector Management).

Migratory Wildlife Movement (Avian and Aquatic)

3-BIO-4: During restoration, Alternative 3 would result in a temporary less than significant impact on avian and aquatic migratory wildlife movement. (Less than Significant)

Restoration

Direct Impacts

Under Alternative 3, direct construction-related impacts associated with the installation of new culverts would be similar to those that were identified for Alternative 1, though at a smaller scale. Therefore, no direct impacts would be expected to wildlife movement corridors; however, Mitigation Measure BIO-1b-ii (Biological Monitoring) would require avoidance of native wildlife to the extent feasible.

Indirect Impacts

The implementation of Alternative 3 would result in upland, in-water, and over-water work activities. Several migratory bird species (e.g., Caspian tern, elegant tern, and black- bellied plover) regularly roost in the salt pan of Area B; however, restoration activities under Alternative 3 would be confined to Area A. In addition, all work activities would occur outside of the breeding season for migratory birds (see Mitigation Measure BIO-1i-i, Nesting Bird and Raptor Avoidance) and therefore would not block or interfere with migration or movement.

Temporary, indirect impacts to the movement of fish and marine mammals could occur due to noise, increased human activity, and potential for increased sedimentation following the restoration of hydrologic connectivity between Ballona Creek and Area A. As discussed for Alternative 1, this would be a less than significant impact.

Post-restoration

The Project would have overall net benefits on aquatic, terrestrial, and avian species.

TABLE 3.4-43
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
BIO-1: Have a substantial long-term adverse impact, 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 CDFW or USFWS?				
Relating to special-status fish and Essential Fish Habitat, see Impact 3-BIO-1a.	☐	☐	☒	☐
Relating to special-status plants, see Impact 3-BIO-1b.	☐	☐	☒	☐
Relating to El Segundo blue butterfly, see Impact 3-BIO-1c.	☐	☒	☐	☐
Relating to monarch butterfly, see Impact 3-BIO-1d.	☐	☒	☐	☐
Relating to salt marsh-associated invertebrates, see Impact 3-BIO-1e.	☐	☒	☐	☐
Relating to dune-associated special-status invertebrates, see Impact 3-BIO-1f.	☐	☒	☐	☐
Relating to silvery legless lizard, see Impact 3-BIO-1g.	☐	☒	☐	☐
Relating to San Bernardino ring-necked snake, see Impact 3-BIO-1h.	☐	☒	☐	☐
Relating to Belding's savannah sparrow, see Impact 3-BIO-1i.	☐	☒	☐	☐
Relating to coastal California gnatcatcher, see Impact 3-BIO-1j.	☐	☒	☐	☐
Relating to least Bell's vireo, see Impact 3-BIO-1k.	☐	☐	☐	☒
Relating to burrowing owl, see Impact 3-BIO-1l.	☐	☒	☐	☐
Relating to nesting raptors, see Impact 3-BIO-1m.	☐	☒	☐	☐
Relating to special-status upland birds, see Impact 3-BIO-1n.	☐	☒	☐	☐
Relating to special-status shorebirds, see Impact 3-BIO-1o.	☐	☒	☐	☐
Relating to special-status marsh birds, see Impact 3-BIO-1p.	☐	☒	☐	☐
Relating to Southern California salt marsh shrew and South Coast marsh vole, see Impact 3-BIO-1q.	☐	☒	☐	☐
Relating to special-status bats, see Impact 3-BIO-1r.	☐	☒	☐	☐

TABLE 3.4-43 (Continued)
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3 (cont.)				
BIO-1B-II: Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?				
Relating to southern mud intertidal habitat, see Impact 3-BIO-2a.	☐	☒	☐	☐
Relating to southern coastal salt marsh habitat, see Impact 3-BIO-2b.	☐	☒	☐	☐
Relating to coastal brackish marsh habitat, see Impact 3-BIO-2c.	☐	☐	☐	☒
Relating to southern willow scrub habitat, see Impact 3-BIO-2d.	☐	☐	☐	☒
Relating to southern dune scrub habitat, see Impact 3-BIO-2e.	☐	☐	☐	☒
Relating to benthic communities, see Impact 3-BIO-2f.	☐	☐	☒	☐
BIO-3: Have a substantial adverse impact on waters of the U.S. as defined by Section 404 of the Clean Water Act or state protected wetlands and waters defined by the California Coastal Act through direct removal, filling, hydrological interruption, loss of functions or services, or other means?				
Relating to impacts on wetland habitat, see Impact 3-BIO-3a.	☐	☐	☒	☐
Relating to the presence of disease vectors in wetland habitats, see Impact 3-BIO-3b.	☐	☒	☐	☐
BIO-4: 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? See Impact 3-BIO-4.	☐	☐	☒	☐

3.4.6.4 Alternative 4: No Federal Action/No Project

Under Alternative 4, the No Federal Action/No Project Alternative, no federal, state or local approvals necessary for implementing either Alternative 1, 2, or 3 would be issued. No substantial changes to the physical or human environment within the Ballona Reserve and no new wetlands restoration would take place, although the continuation of previously-permitted maintenance activities would be allowed, such as the small-scale control of invasive plant species by hand-tools only and the planting and seeding of native species. Current O&M activities within the Ballona Reserve, including the ongoing operation and maintenance of LACDA project facilities, would occur as scheduled or needed in accordance with the OMRR&R (Corps 2009). SoCalGas Company activities would continue in accordance with the company's existing permits and approvals. See Section 2.3.5 for additional details about Alternative 4.

Under Alternative 4, there would be no direct, construction-related impacts caused by restoration such as would occur under Alternatives 1, 2, or 3 or indirect impacts (e.g., through habitat modifications) on any special-status plants, birds, mammals, reptiles, or invertebrates because no change would result in the types or intensities of activities occurring on the Project site relative to baseline conditions. Because accretion from Ballona Creek would not increase as a result of the Project and the existing stormwater basin would decrease sediment entering from runoff relative to baseline conditions, no impact to benthic communities would occur. However, because Alternatives 1, 2, and 3 are intended to restore primarily wetland habitats, it should be recognized that under Alternative 4 the ongoing invasion of non-native, invasive plant species will continue to degrade habitat on-site which will further the steady decline of native, sensitive species. Additionally, none of the beneficial effects would be realized.

Alternative 4 would have no immediate adverse impact on any riparian habitat or other sensitive natural community. No changes would be made to existing elevations within the Ballona Reserve; existing armored levees channelizing Ballona Creek would remain in place. Additionally, no new culverts would be created. Alternative 4 would result in no immediate impact to riparian habitat and other sensitive natural communities due to no new restoration activities occurring. Ongoing influence of sea level rise could inundate tidal wetlands and related habitats over time. The Ballona Reserve is particularly vulnerable to sea level rise due to its low-lying coastal position. Management of the existing tide gates would provide some acclimation to sea level rise within an approximately 50-year span, but would not provide a long-term protection strategy for riparian and wetland habitats. A discussion of sea level rise as it pertains to levee height and flood protection is provided in Section 3.9, *Hydrology and Water Quality.*

Alternative 4 would have no substantial adverse impact on potential federally protected wetland and non-wetland waters of the U.S. as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, etc.) or navigable waters of the U.S. or under Section 10 of the Rivers and Harbors Act through direct removal, temporary filling, hydrological interruption, or other means. No changes would be made to existing elevations within the Ballona Reserve; existing armored levees channelizing Ballona Creek would remain in place. Additionally, no new culverts would be created. Alternative 4 would result in no immediate impact to federally protected wetlands due to no new restoration activities occurring.

Similar to Alternatives 1, 2, and 3, Alternative 4 would not 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. Avian migratory wildlife corridors would function in the same manner as they have under existing conditions. These conditions have the potential to erode or damage habitat that facilitates movement of resident and migratory birds. Management of the existing tide gates to provide some acclimation to sea level rise would be possible temporarily, but, under Alternative 4, the tide gates eventually would have to be closed permanently which would therefore disconnect all of the tidal wetlands hydrologically from their water source. Additionally, none of the beneficial effects would be realized.

Similar to Alternatives 1, 2, and 3, Alternative 4 would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan. The Project site is not located within an HCP or NCCP area. As a state-owned property, the Ballona Reserve is not subject to local land use regulations. There and on the SoCalGas Property, ongoing activities are expected to continue substantially unchanged from current conditions.

No Project-related change would occur to biological resources relative to baseline conditions. Therefore, although no NEPA or CEQA impact would result, wetland habitats and conditions within the Ballona Reserve would continue to gradually degrade over time and none of the beneficial effects would occur.

3.4.7 Cumulative Effects

This section analyzes potential cumulative impacts to biological resources. Unlike all of the projects considered within the geographic scope of this cumulative effects analysis, the Project under Alternative 1, 2, or 3 would have an overall net beneficial effect upon biological resources within the Ballona Reserve, Ballona Creek, and ultimately within the Pacific Ocean and nearby terrestrial ecosystems. The extensive impact analysis of potential impacts for the Project stems from the great diversity of plant and wildlife species that use the Ballona Reserve and its unique condition as an undeveloped island refuge within a largely developed urban landscape. Alternative 1, 2, or 3 each would support and augment the unique ecological conditions that exist at the Ballona Reserve. Differences among these three alternatives include the scale and footprint of the proposed restoration. Because of the Project's restoration emphasis, it is intuitive to consider that the larger the restoration effort, the greater the initial Project-level impact would be upon the landscape related to various impact categories; and concurrently the greater the ultimate restoration benefit would be at the Project-level and cumulative-level. Essentially, a more ambitious restoration effort would result in a greater eventual ecological benefit. Because most of the effects are beneficial, with a key difference between the alternatives being the magnitude of the beneficial effect, the Alternatives 1, 2, and 3 are not separately discussed in this Section 3.4.7 because their negligible contribution to negative effects on biological resources would be comparable.

Consistent with the requirements of NEPA, CWA, and CEQA, this Draft EIS/EIR considers the direct and indirect effects on biological resources of each alternative together with the effects of past, present, and reasonably foreseeable projects to cause or contribute to a cumulative effect. This analysis also determines the relationship of the cumulative effects to any established significance thresholds for biological resources. Table 3.1-1, *Existing and Reasonably Foreseeable Future Projects*, identifies the cumulative scenario.

The projects listed in Table 3.1-1 fall within the 1.5-mile cumulative study boundary. Adjustments to the 1.5-mile distance were made to assure that the cumulative analysis for biological resources considers species-relevant areas and potential cumulative projects, in some cases, including the mixed-use development and runway improvements at Los Angeles International Airport (1.8 miles away) and to exclude smaller urban projects separated geographically from the Project area, such as those accessed from the other side of the Marina del Rey Harbor. No other large-scale projects were found within 5 miles of the Project that would impact comparable natural resources to those that occur at the Project area.

The time period during which the cumulative impacts of surrounding projects would be biologically relevant is based on relative project construction periods, during which most impacts are generated, together with longer-term timing of habitat restoration benefits. Because the Project has a net positive effect on biological resources, the more quickly the Project is completed, the greater the overall benefit would be. The effect would be an overall positive one at any time scale. If several of the other cumulative projects were to be constructed simultaneously, with similar effects to regulated species, habitats or wetlands, then cumulative impacts would occur. However, this is not the case because most of the cumulative projects are located within urban centers that do not support such resources. On the other hand, when benefits to wildlife are accrued through successful restoration prior to construction of other large projects in the area, then environmental benefits become available. Post-restoration effects at the Project site would be beneficial because, overall, the Project would preserve and restore or enhance biologically significant areas.

3.4.7.1 Existing and Reasonably Foreseeable Projects

The ongoing impacts of past projects are reflected in the description of the Environmental Setting in Section 3.4.2.2 (including species listings and habitat conditions). Within this context, the incremental impacts of the Project could combine with the incremental impacts of the projects listed in Table 3.1-1 to cause or contribute to significant cumulative impacts. Of the 46 future projects listed in Table 3.1-1:

1. Sixteen approved development projects are in the area, which include construction of five commercial and dry storage buildings, seven new marinas with boat slips and dry storage, two hotels, a senior center, mixed use facilities and numerous new apartments. There are also additional renovations to existing structures. Most of the projects are in Marina Del Ray, north of the Project site. Note that only a few projects are accessed from Fiji Way or Admiralty Way, and most are separated from the Project by the Marina Del Ray Harbor channel. Any ongoing adverse impacts of these projects to biological resources (including sensitive species) are considered as part of the environmental context. These projects would not result in additional incremental contributions to cumulative impacts to biological resources.

2. Ten approved development projects, (plus additional renovations) would be in the vicinity of the Project. Of them, the Fisherman's Village Project is on the northern end of the Project site and two are adjacent to the Project area, directly North across Fiji Way (projects 1 and 2) on 4.2 acres of land. The developed character of Marina Del Ray, however does not suggest potential biological impacts to sensitive species, wetlands or habitats on those parcels.

3. The Fiji Way Roadway Improvements (project 23) would make improvements to the northern perimeter of the Project area, including new paving, sidewalks, curbs and gutters, landscaping and Class II Bike lanes. This will improve the general look of the area, though would have little effect on the biological character of the site.

Of the projects on the list above, few have the potential to significantly further degrade biological resources of the Project area or the region because most of the project sites are previously disturbed or paved. Sensitive species, native botanical and wildlife resources, and aquatic habitats, such as uplands wetlands and tidal sloughs, have been all but eliminated in the region. The large number of Projects indicates that development is continuing and densities are increasing in the area. Having (or creating) native habitat in an increasingly dense urban environment provides increasingly valuable ecosystem services and an enriching contrast to the surrounding development.

Larger developments and water management projects listed in Table 3.1-1 have the most potential to affect the biological resources in the region, including:

1. Three projects at Los Angeles International Airport (Projects 20, 21 and 40) include a 340 acre development of office, Research and Development (R&D) and mixed use facilities (combined with open space buffers and recreation) plus runway improvements and aircraft maintenance hangers. These projects have been under consideration for years and there is no indication that development is imminent. The upland qualities of the airport open spaces are, in some cases similar to those currently at Ballona. If development on the north side of Los Angeles International Airport were to occur prior to the realization of biological benefits from restoration of the Project, then the resilience offered by the Project (under Alternative 1, 2, or 3) would not yet be available. On the other hand, if construction occurs at the airport after restoration successfully occurs at the Ballona Reserve then at least one viable habitat assemblage would be available.

2. Five stormwater quality improvement projects (projects 31 – 34, and 41) have the potential to improve water quality, thereby improving the qualities of aquatic habitats in the surrounding area. These could be cumulatively beneficial with the Project.

3. The Ballona Sediment Removal Project (project 25) is just upstream of the Project site and is intended to restore the design capacity of Ballona Creek. Sediment removal has the potential to stir-up sediment which could be washed downstream if not properly contained, temporarily affecting water quality, sedimentation rates and aquatic habitat in the Project area. This combined with similar activities associated with channel realignment could combine to adversely affect aquatic habitat in the Project area. Mitigation Measure BIO-1b-ii of this EIS/EIR addresses sedimentation in Ballona Creek. With mitigation measures such as this in place, sediment would not affect the qualities of aquatic habitats and the Project's incremental contribution to cumulative conditions would not be cumulatively considerable.

3.4.7.2 Incremental Impacts of the Alternatives

Overall, the Project would preserve, restore, and enhance biologically significant areas. However, there are aspects of Alternatives 1, 2, and 3 that would temporarily and/or permanently impact sensitive species, habitats, and wetlands (as described in the sections above) through the construction of bridges, levees, trails, and possible disposal of excavated materials. All of these impacts could be mitigated by various measures as well as the Project's intended purpose of enhancing habitats throughout the site.

The following residual impacts/benefits would occur with the implementation of Alternatives 1, 2, or 3:

1. Establishment of approximately 137, 121, and 37 acres of tidal marsh habitat in a region that has experienced severe loss of tidal marsh due to coastal development (96%; Stein et al. 2014).

2. Improved upland habitat quality for common native and special-status wildlife species though the conversion of invasive-dominated plant communities to native or semi-native grassland and scrubland habitats.

3. Permanent loss of upland habitat that was artificially created through the placement of fill.

4. Displacement and probable loss of non-native wildlife, and loss of almost all non-native plants (eucalyptus grove would remain).

Cumulative Impacts

a) The Project would not cause or result in a cumulatively considerable contribution to any significant cumulative impact, 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 CDFW or USFWS. (Less than Significant Impact);

The larger cumulative projects near the Los Angeles International Airport involve commercial development of undeveloped land. Based on a review of available environmental documentation, some of the proposed and reasonably foreseeable future projects cumulative study areas defined above could result in significant impacts to special-status species such as El Segundo blue butterfly. In most cases, these impacts would be associated with development of undeveloped parcels in the vicinity of the Project site at the airport (projects 20, 21 and 40). There are no proposed and reasonably foreseeable future projects within the cumulative study areas that require work within Essential Fish Habitat.

The beneficial effects of Alternatives 1, 2, and 3, however, are in contrast with, and in most respects tend to lessen, the adverse impacts resulting from the cumulative development impacts of the projects in Table 3.1-1. Overall, the Project would preserve and restore or enhance biologically significant areas. However, as discussed in the Project impact biological resources analyses under Alternatives 1, 2, and 3, the Project would have some adverse impacts on habitats for special-status species due to the construction of levees, trail construction, and other earthwork. These short-term adverse impacts to special-status species and associated habitats would be avoided (as with El Segundo blue butterfly habitat) or limited to within the Ballona Reserve. Potential significant impacts would be mitigated to a less than significant level and would be balanced by the Project's immediate and long-term conservation benefits. As a result, the Project would not cause or result in a cumulatively considerable contribution to any significant cumulative impacts on special-status species.

b) The Project would not cause or result in a cumulatively considerable contribution to any significant cumulative impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game Wildlife or U.S. Fish and Wildlife Service. (Less than Significant Impact)

The larger cumulative projects near the Los Angeles International Airport involve commercial development of undeveloped land. Most projects in the immediate vicinity of the Project focus on restoration of Ballona Creek. Based on a review of available environmental documentation, some of the proposed and probable future projects in the region are not expected to result in significant impacts to riparian habitat or other sensitive natural communities. In most cases, these impacts would be associated with development of undeveloped parcels in the vicinity of the Project site at the airport (projects 20, 21, and 40).

The effects of the proposed restoration, however, are in contrast with, and in most respects tend to lessen, the adverse impacts of cumulative commercial development. Overall, Alternatives 1, 2, and 3 would preserve and restore or enhance biologically significant areas. There are however certain aspects of these that would impact sensitive habitats due to the construction of levees, trail construction, and other earthwork. Because the Project's adverse impacts to sensitive habitats would be limited to within the Ballona Reserve and would be balanced by immediate and long-term conservation benefits, Alternatives 1, 2, and 3 would not cause or result in any cumulatively considerable contribution to any significant cumulative impacts on riparian habitat or other sensitive natural communities.

c) The Project would not cause or result in a cumulatively considerable contribution to a significant cumulative impact to waters of the U.S. as defined by Section 404 of the Clean Water Act or wetlands and waters of the State defined by the California Water Code or California Coastal Act, through direct removal, filling, hydrological interruption, loss of functions or services, or other means. (Less than Significant Impact)

Alternatives 1, 2, and 3 would temporarily and permanently impact waters of the U.S. and waters of the State during restoration, including through construction of new levees and placement of excavated materials. However, these alternatives would substantially improve both the quantity and quality of waters of the U.S. and waters of the State, particularly tidal marsh habitat, and restore the hydrologic function of the historic floodplain. Due to the historic loss of most on-site tidal wetlands in the Project site, the selection of Alternative 1, 2, or 3 would have a beneficial effect to waters of the U.S. and waters of the State. Based on a review of available environmental documentation, some of the proposed and probable future projects in the region are not expected to result in significant impacts to potential Federally- or State- protected wetlands. In most cases, these impacts would be associated with development of undeveloped parcels in the vicinity of the Project site at the Los Angeles International Airport (projects 20, 21, and 40). Because the Project's adverse impacts to wetlands would be limited to within the Ballona Reserve and would be balanced by immediate long-term conservation benefits, Alternatives 1, 2, and 3 would not cause or result in a cumulatively considerable contribution to any significant adverse cumulative impact on wetlands.

d) The Project would not cause or result in a cumulatively considerable contribution to any significant cumulative impact associated with substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedance of the use of native wildlife nursery sites. (Less than Significant Impact)

The Project site, including adjacent areas of open space associated with the freshwater marsh, Westchester Bluffs, and riparian corridor east of Lincoln Boulevard, is completely surrounded by dense urban development. Terrestrial wildlife corridors between the Project site and other areas of open space do not exist. Terrestrial wildlife movement within the Project site is currently impeded by Ballona Creek and three major roadways (i.e., Lincoln, Culver, and Jefferson

Boulevards). Therefore, the Project would not have a cumulatively considerable impact on terrestrial wildlife movement or corridors.

Ballona Creek and tidal channels provide movement for marine fish species into and out of the Project site. Marine mammals are rarely reported as entering Ballona Creek (Johnston, personal communication); however, Ballona Creek does allow for marine mammal movement into the Project site. As a voluntary precaution to avoid direct impacts to marine mammals in Ballona Creek during in-water restoration or construction, a 320-foot (100 meter) safety zone shall be maintained around in-water work areas pursuant to Project Design Feature BIO-8: Biological Monitoring and Safety Zones to Protect Marine Mammals and Sea Turtles. The Ballona Sediment Removal Project (project 25) is just upstream of the Project site and is intended to restore the design capacity of Ballona Creek. Sediment removal has the potential to stir-up sediment which could be washed downstream if not properly contained. Mitigation Measure BIO-7 (Water Pollution and Erosion Control Plan) addresses sedimentation in Ballona Creek. With mitigation measures in place, sediment would not affect the qualities of aquatic habitats and therefore would not be cumulatively considerable.

The Project site is regionally important as a stopover site for migratory birds. During early spring months, flocks of migratory birds such as elegant terns, Caspian terns, and black-bellied plovers are regularly observed roosting on salt pan in Area B. The salt pan of Area B also historically supported nesting by the California least tern. During the late summer, several species of sandpiper and plover that arrive in Southern California from breeding grounds in Canada and Alaska occasionally make use of Area B tidal channels and salt pan subject to tidal inundation.

The Project would improve the value of the Reserve as a stopover site for migratory birds by improving both wetland and upland habitat quality, improving the resiliency of roosting habitat to sea level rise, and controlling non-native predators. This would result in a cumulative beneficial effect on regional wildlife movement and migratory corridors.

Therefore, the Project would not cause or result in a cumulatively considerable contribution to any significant cumulative impact associated with interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedance the use of native wildlife nursery sites.

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3.5 Cultural and Paleontological Resources

3.5.1 Introduction

This section identifies and evaluates issues related to Cultural and Paleontological Resources in the context of various restoration alternatives on the Project site. It describes existing conditions in Section 3.5.2, summarizes applicable laws, regulations, plans, and standards in Section 3.5.3; identifies the criteria used to evaluate the significance of potential impacts (referred to as "thresholds of significance") in Section 3.5.4; describes the methodology used to evaluate these impacts in Section 3.5.5; analyzes the direct and indirect adverse impacts and beneficial effects in Section 3.5.6; analyzes cumulative effects in Section 3.5.7; and provides references in Section 3.5.8.

3.5.2 Affected Environment

3.5.2.1 Study Area and Area of Potential Effects

The Project site consists of approximately 566 acres, the majority of which is located within the Ballona Reserve and the remainder of which (approximately 4 acres) is located on portions of the Southern California Gas Company (SoCalGas) property adjacent to the Ballona Reserve (SoCalGas Property) (specifically, Sites 1 through 7, which are proposed gas well relocation sites). The Area of Potential Effects (APE) preliminarily has been defined as the maximum extent of potential Project-related ground disturbance both in areas subject to U.S. Army Corps of Engineers (Corps) jurisdiction, as well as areas outside Corps jurisdiction. The APE is shown in Figure 3.5-1, *Area of Potential Effects*. It consists of areas that will receive fill, areas of levee construction, areas of planned excavation for channels and infrastructure improvements, and the area encompassed by the maximum extent of inundation at high tide following Project completion. As currently defined, the areal extent of the APE measures 589 acres, and generally coincides with the Project site. The vertical aspect of the APE, defined as the maximum extent of disturbance below ground surface, will vary across the APE depending on the particular alternative and project component, but may reach a maximum depth of 30 feet below ground surface, primarily where the Ballona Creek channel would be modified in the vicinity of the existing channel. The APE may be refined during the consultation process pursuant to Section 106 of the National Historic Preservation Act (defined in Section 3.5.3).

SoCalGas owns and occupies property located at 8141 Gulana Avenue. The seven sites range between 0.2 and 1 acre in size and represent potential future locations for SoCalGas wells that would be relocated from the Ballona Reserve as part of the Project. The combined acreage of the seven sites is approximately 4 acres. The sites are in two main areas: the upper portion, which includes the office building and other uses, and the lower portion, which borders the Ballona Reserve and includes various wells and other uses. These sites are included in the APE.

3.5.2.2 Environmental Setting

Climate

The coastal southern California climate is classified as Mediterranean, with mild winters and dry summers. The average annual temperature is 66°F. Rain falls primarily in the winter and the average annual rainfall is approximately 15 inches (Douglas et al. 2015). The Ballona Reserve is located adjacent to Santa Monica Bay and the Pacific Ocean. The climate of the area tends to be mild with June through August being the hottest months; however, seasonal coastal fog often keeps summer temperatures down. Humidity hovers around 65% due to the marine influence. Santa Monica Bay's mixed semidiurnal tides extend into the Ballona Reserve, influencing surface water elevation to the Centinela Bridge (Bever and Chmiel 2011).

Fauna and Flora

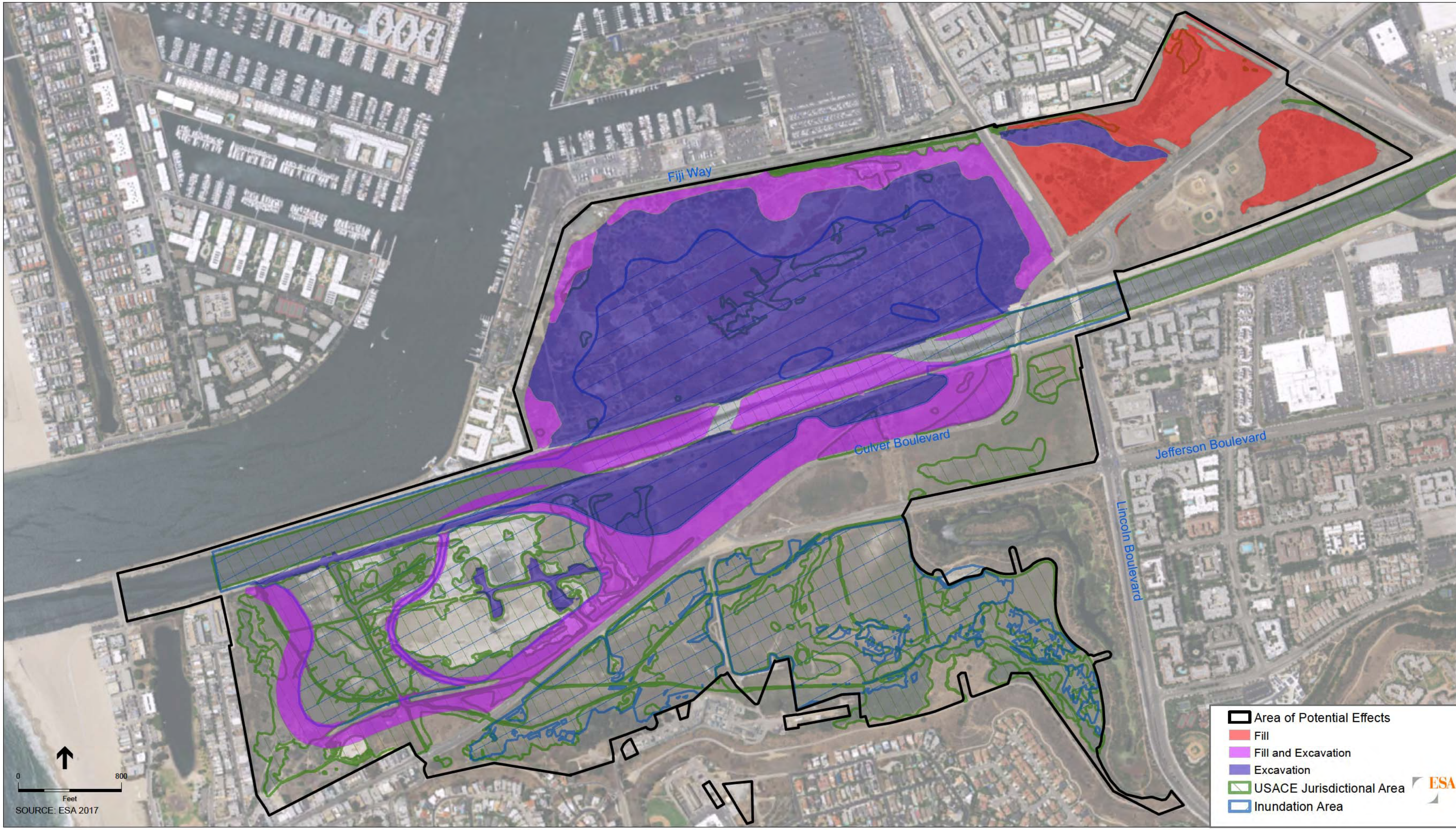
Prior to modern and historic-period development, the wetlands of the Ballona Reserve would have provided an abundance of plant and animal resources for human inhabitants, attracting Native American populations to the area throughout the thousands of years of human habitation in the region. For a detailed discussion of the modern biological setting, including flora and fauna present within the Project site, see Section 3.4, *Biological Resources*.

3.5.2.3 Prehistoric Setting

The following prehistoric chronology of the Ballona Reserve is divided into four major cultural periods occurring from 12,000 years before present (B.P.) to AD 1542: Paleocoastal Period, Millingstone Period, Intermediate Period, and Late Period. These periods correspond to changes in the archaeological record seen across the broader southern California region, but past human use of the area now known as the Ballona Reserve would have changed as well, as the landscape gradually changed over the millennia from river valley to open bay to wetland (Douglas et al. 2015). Detailed discussions of the prehistoric setting and previous archaeological research in the Ballona Reserve can be found in Altschul et al. 2005; Altschul et al. 2007; Douglas et al. 2015; Grenda and Altschul 2002; and Homburg et al. 2014. The following sections present a brief synthesis.

Paleocoastal Period (12,000–8,000 years B.P.)

Archaeological evidence from the northern Channel Islands suggests that the first people, known as Paleoindians, migrated down the California coast by as early as 12,000 years B.P. (Cassidy et al. 2004; Erlandson et al. 2007; Rick et al. 2007). At Daisy Cave, on San Miguel Island, cultural materials have been radiocarbon dated to between 11,100 and 10,950 years B.P. (Byrd and Raab 2007). Radiocarbon dates from the Arlington Springs Woman site on Santa Rosa Island indicate a human presence in the region by about 13,000 years B.P. (Glassow et al. 2007). On the southern Channel Island of San Clemente, site SCLI-43 (Eel Point) revealed evidence of boat technology dating to around 8,000 years B.P. (Cassidy et al. 2004). Site CA-ORA-64, located approximately 40 miles southeast of the preliminary APE, is one of the few mainland sites that contains an early component, also dating to about 8,000 years B.P. (Cleland et al. 2007). Data from early coastal California sites indicate a reliance on maritime resources, such as shellfish, fish, marine mammals, and birds.



Ballona Wetlands Restoration Project

Figure 3.5-1
Area of Potential Effects

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Possible evidence of a Paleocoastal occupation in the vicinity of the Ballona Reserve comes from CA-LAN-61, located on a bluff top east of Lincoln Boulevard, and CA-LAN-63, located to the west, in the form of artifact types that generally date to early periods, although no radiocarbon dates from either site confirm an early occupation (Homburg et al. 2014).

Millingstone Period (8,000–3,000 years B.P.)

Southern California coastal sites increase in number dramatically after about 8,000 years B.P. This time period, known as the Millingstone Period due to the appearance of ground stone implements, is characterized by regional differentiation in material culture and adaptation to local conditions and the intensified utilization of ground stone tools (Wallace 1955). Millingstone Period habitation sites, as compared to those of the preceding period, are characteristically more sedentary, permanent settlements located adjacent to local water sources, which supported edible plant, animal, and marine resources (Douglas et al. 2015). Settlement patterns during this time period indicate the use of residential bases surrounded by seasonal satellite camps (Glassow et al. 1988; Grenda and Altschul 2002; Koerper et al. 2002; Macko 1998). Early Millingstone sites, beginning around 8,000 years B.P., typically contain numerous handstones (manos) and millingstones (metates), while those dating later than 5,000 years B.P. often contain a mortar and pestle component as well, suggesting regional use of acorns (Vellanoweth and Altschul 2002).

The earliest confirmed human occupation of the broader region including the Ballona Reserve is associated with the Millingstone Period and dates to approximately 8,000 to 7,000 years B.P. During this time, the area was an open water embayment (Douglas et al. 2015). Site CA-LAN-64, located at the top of the Westchester Bluffs, was occupied during this time by small seasonal foraging groups subsisting on a mix of terrestrial and marine resources (Altschul et al. 2007). Data from another site, CA-LAN-62, indicates that groups moved to the lowlands, occupying the Lincoln Gap alluvial fan at the base of the Westchester Hills, around 6,500 years B.P. A gap in the archaeological record between 6,000 and 4,500 years B.P. suggests that the Project vicinity was sparsely occupied or abandoned during this time period (Homburg et al. 2014). Site CA-LAN-62 was re-occupied starting around 4,500 to 4,000 years B.P. Site CA-LAN-54, located near the intersection of Culver Boulevard and Marina Freeway, also was established at this time. Other sites within the Project vicinity that have components dating to this period include CA-LAN-59, -61A/B, -206, and -2768 (Douglas et al. 2015).

Intermediate Period (3,000–1,000 years B.P.)

Between approximately 3,500 and 3,000 years B.P., settlement patterns shifted to reflect more sedentary and territorial lifestyles as compared to preceding periods. The number of sites decreased as populations settled into residential bases near freshwater sources and seasonal camps became more infrequent (Koerper et al. 2002). Population increase led to the intensified exploitation of terrestrial and marine resources and the use of increasingly labor-intensive hunting, fishing, and processing equipment, such as the circular shell fishhook and the mortar and pestle for acorn processing (Erlandson 1994; Koerper 1979; Koerper et al. 2002; Raab et al. 1995). Use of the bow and arrow spread to the coast around 1,500 years B.P. (Homburg et al. 2014). Increasing population densities, with ensuing territoriality and resource intensification, may have given rise to increased disease and violence between 3,300 and 1,650 years B.P. (Raab et al. 1995).

Archaeological sites in the vicinity of the Project area with Intermediate Period components include CA-LAN-54, -59, -60, -62, -61, -63, -64, -193, -206, and -2768. Current data suggest that during the Intermediate Period, sites on bluff tops and lowland areas were occupied at the same time. Some permanent settlements on bluff tops (CA-LAN-63, -64, and 206A) appear to have been highly structured, with areas set aside for refuse disposal, burials, ritual activities, and food-processing. Sites in the lowland areas (CA-LAN-60, -62, -193, and -2768) appear to have been utilized primarily for resource procurement and processing. Site CA-LAN-54 is unique in that it was located within the wetlands but away from the bluffs adjacent to Ballona Creek. Recovery of numerous microblades from CA-LAN-61 and the prevalence of stone beads with a decrease in shell beads suggests the migration of desert (or non-maritime) groups in to the area (Homburg et al. 2014), or perhaps trade with other groups.

Late Period (1,000 years B.P. – A.D. 1542)

The Late Period is associated with the florescence of the Gabrielino-Tongva (Wallace 1955). The Gabrielino-Tongva occupied what is presently Los Angeles County and northern Orange County, along with the southern Channel Islands, including Santa Catalina, San Nicholas, and San Clemente (Kroeber 1925). This period saw the development of elaborate trade networks and use of shell-bead currency. Fishing became an increasingly significant part of subsistence strategies at this time, and investment in fishing technologies, including the plank canoe, are reflected in the archaeological record (Erlandson 1994; Glassow 1980; Raab et al. 1995). Settlement at this time is believed to have consisted of dispersed family groups that revolved around a relatively limited number of permanent village settlements that were located centrally with respect to a variety of resources (Koerper et al. 2002).

In contrast to other parts of southern California, occupation of the Project vicinity appears to decrease during the Late Period. Sites with Late Period components include CA-LAN-47, -61, -62, -63, and -211. Excavations from site CA-LAN-47, located on the edge of Marina Del Rey, indicate that the site was seasonally occupied from about A.D. 1050 to 1150. Faunal evidence indicates a reliance on shellfish, waterfowl, small mammals, and fish. While evidence of use of offshore resources such as deep sea fish appears in other sites in southern California dating to this period, evidence of such pelagic species is lacking at CA-LAN-47. During this time period, a formal or dedicated cemetery was established at site CA-LAN-62, which would continue in use into the Historic Period (Homburg et al. 2014).

3.5.2.4 Ethnographic Setting

The Project site is located in a region traditionally occupied by the Native American group known as the Gabrielino-Tongva. The term “Gabrielino” is a general term that refers to those Native Americans who interacted with the Spanish at the Mission San Gabriel Arcángel. Many contemporary Gabrielino identify themselves by the name “Tongva.” Prior to European colonization, the Gabrielino-Tongva occupied a diverse area that included: the watersheds of the Los Angeles, San Gabriel, and Santa Ana rivers; the Los Angeles basin; and the islands of San Clemente, San Nicolas, and Santa Catalina (Kroeber 1925). Their neighbors included the Chumash and Tataviam to the north, the Juañeno to the south, and the Serrano and Cahuilla to the east. The Gabrielino-Tongva are reported to have been second to only the Chumash in terms of population size and regional influence (Bean and Smith 1978). The Gabrielino language is part of the Takic branch of the Uto-Aztecan language family.

The Gabrielino-Tongva lived in permanent communities located near the presence of a stable food supply. Community populations generally ranged from 50 to 100 inhabitants, although larger settlements may have existed. The Gabrielino-Tongva are estimated to have had a population numbering around 5,000 in the pre-contact period, prior to the arrival of the Spanish in the late 18th century (Kroeber 1925). Villages are reported to have been the most abundant in the San Fernando Valley, the Glendale Narrows area north of downtown, and around the Los Angeles River's coastal outlets (Gumprecht 2001).

Gabrielino-Tongva society was characterized by patrilineal, non-localized clans, with each clan consisting of several lineages. The Gabrielino-Tongva inhabited large, circular, domed houses constructed of willow poles thatched with tule (Bean and Smith 1978). These houses could sometimes hold up to 50 people. Other village structures of varying sizes served as sweathouses, ceremonial enclosures, and granaries.

Subsistence consisted of hunting, fishing, and gathering. Small terrestrial game were hunted with deadfall traps, rabbit drives, and by burning undergrowth, while larger game, such as deer, were hunted using bows and arrows. Fish were taken by hook and line, nets, traps, spears, and poison (Bean and Smith 1978). The primary plant resources were the acorn, gathered in the fall and processed in mortars and pestles, and various seeds that were harvested in late spring and summer and ground with manos and metates. The seeds included chia and other sages, various grasses, and islay or holly-leafed cherry.

At the time of Spanish contact, many Gabrielino-Tongva practiced a religion that was centered around the mythological figure Chinigchinich (Bean and Smith 1978). This religion may have been relatively new when the Spanish arrived and was spreading at that time to other neighboring Takic groups. The Gabrielino-Tongva practiced both cremation and inhumation of their dead. A wide variety of grave offerings, such as stone tools, baskets, shell beads, projectile points, bone and shell ornaments, and otter skins, were interred with the deceased.

Coming ashore on Santa Catalina Island in October of 1542, Juan Rodriguez Cabrillo was the first European to make contact with the Gabrielino-Tongva; the 1769 expedition of Portolá also passed through Gabrielino-Tongva territory (Bean and Smith 1978). Native Americans suffered severe depopulation and their traditional culture was radically altered after Spanish contact. Nonetheless, Gabrielino-Tongva descendants still reside in the greater Los Angeles and Orange County areas and maintain an active interest in their heritage.

A Gabrielino-Tongva village, or "rancheria," known as Guaspet, or Guasna, was located in the Project vicinity. Based on mission baptism records, the rancheria was occupied from about 1790 to 1820 (Reddy 2015). At least 193 people are known to have lived at the rancheria and were baptized there. Records suggest that recruitment into the Mission system did not occur until native populations closer to Mission San Gabriel had been assimilated and after grazing expanded into the area, bringing native inhabitants of what is now the Ballona Reserve and surrounding areas into closer contact with Spanish-era ranchers (Stoll et al. 2009). Two archaeological sites with components dating to the Spanish-era (CA-LAN-62 and -211) are located in the Ballona Reserve area and may be the location of Guaspet, although this has not been confirmed in the historical record (Reddy 2015).

3.5.2.5 Historic Setting

The following discussion includes the regional history of the Project vicinity and is divided into periods based on the Spanish, Mexican, and American settlement of California. This regional history is followed by an in-depth history specific to the Project area.

Spanish Period (A.D. 1769 – 1821)

Although Spanish explorers made brief visits to the region in 1542 and 1602, sustained contact with Europeans did not commence until the onset of the Spanish Period. In 1769 Gaspar de Portolá led an expedition from San Diego, passing through the Los Angeles Basin and the San Fernando Valley, on its way to the San Francisco Bay (McCawley 1996). Father Juan Crespi, who accompanied the 1769 expedition, noted the suitability of the Los Angeles area for supporting a large settlement. This was followed in 1776 by the expedition of Father Francisco Garcés (Johnson and Earle 1990).

In the late 18th century, the Spanish began establishing missions in California and forcibly relocating and converting native peoples. Mission San Gabriel Arcángel was founded on September 8, 1771 and Mission San Fernando Rey de España on September 8, 1797. By the early 1800s, the majority of the surviving Gabrielino-Tongva had entered the mission system, either at San Gabriel or San Fernando. Mission life offered some degree of security in a time when traditional trade and political alliances were failing and epidemics and subsistence instabilities were increasing (Jackson 1999). This lifestyle change also brought with it significant negative consequences for Gabrielino-Tongva health and cultural integrity.

On September 4, 1781, El Pueblo de la Reina de los Angeles was established not far from the site where Portolá and his men camped during their 1769 excursion, with a land grant of 28 acres issued to California Governor Felipe de Neve in 1781 (Gumprecht 2001). The pueblo was established in response to the increasing agricultural needs of Spanish missions and presidios in Alta California. The original pueblo consisted of a central square surrounded by twelve houses and a series of agricultural fields. Thirty-six fields occupied 250 acres between the town and the river to the east (Gumprecht 2001).

By 1786, the flourishing pueblo attained self-sufficiency and funding by the Spanish government ceased. Fed by a steady supply of water and an expanding irrigation system, agriculture and ranching grew, and by the early 1800s the pueblo produced surplus wheat, corn, barley, and beans for export. A large number of livestock, including cattle and sheep, grazed in the surrounding lands (Gumprecht 2001).

Mexican Period (A.D. 1821-1848)

After Mexico gained its independence from Spain in 1821, Los Angeles became the capital of the California territory in 1835 (Gumprecht 2001). Mexico continued to promote settlement of California with the issuance of land grants. In 1833, Mexico began the process of secularizing the missions, reclaiming the majority of mission lands and redistributing them as land grants.

According to the terms of the Secularization Law of 1833 and Regulations of 1834, at least a portion of the lands would be returned to the Native populations, but this did not always occur (Milliken et al. 2009).

Many ranchos continued to be used for cattle grazing by settlers during the Mexican Period. Hides and tallow from cattle became a major export for Mexican settlers in California, known as Californios, many of whom became wealthy and prominent members of society. The Californios led generally easy lives, leaving the hard work to vaqueros (ranch hands) and Indian laborers (Pitt 1994; Starr 2007).

American Period (A.D. 1848-present)

Mexico ceded California to the United States as part of the Treaty of Guadalupe Hidalgo in 1848. California officially became one of the United States in 1850. While the treaty recognized the right of Mexican citizens to retain ownership of land granted to them by Spanish or Mexican authorities, the claimant was required to prove their right to the land before a patent was given. The process was lengthy and generally resulted in the claimant losing at least a portion of their land to attorney's fees and other costs associated with proving ownership (Starr 2007).

When the discovery of gold in northern California was announced in 1848, a huge influx of people from other parts of North America flooded into California and the population of Los Angeles tripled between 1850 and 1860. The increased population led to additional demand of the Californios' cattle. As demand increased, the price of beef skyrocketed and Californios reaped the benefits. However, a devastating flood in 1861, followed by droughts in 1862 and 1864, led to a rapid decline of the cattle industry; over 70% of cattle perished during these droughts (Dinkelspiel 2008; McWilliams 1946). These natural disasters, coupled with the burden of proving ownership, caused many Californios to lose their lands during this period. Former ranchos were subsequently subdivided and sold for agriculture and residential settlement (Gumprecht 2001; McWilliams 1946).

Los Angeles was connected to the transcontinental railroad via San Francisco on September 5, 1876, and the population again exploded. The city would experience its greatest growth in the 1880s when two more direct rail connections to the East Coast were constructed. The Southern Pacific completed its second transcontinental railway, the Sunset Route from Los Angeles to New Orleans in 1883 (Orsi 2005). In 1885, the Santa Fe Railroad completed a competing transcontinental railway to San Diego, with connecting service to Los Angeles (Mullaly and Petty 2002). The resulting fare wars led to an unprecedented real estate boom. Despite a subsequent collapse of the real estate market, the population of Los Angeles increased 350 percent from 1880 to 1890 (Dinkelspiel 2008). Los Angeles continued on its upward trajectory in the first few decades of the 20th century with the rise of tourism, automobile travel, and the movie industry (McWilliams 1946).

History of the Project Site

The Project site is part of what was once the much larger Rancho de los Quintos Spanish-era land grant given to Pio Quinto Zuñiga in 1802. The land grant was rescinded around 1808 when Zuñiga's heirs failed to confirm the grant after their father's death in 1805. The area then likely reverted to common lands belonging to El Pueblo de Los Angeles, with suitable portions used for open grazing by residents (Homburg et al. 2014; Stoll et al. 2009).

In 1819, Felipe Talamantes and Agustin Machado, who had been using the area to graze their cattle, sought and were granted a temporary concession to the previous land grant, which had become known as Rancho La Ballona. They constructed several improvements, such as dwellings and irrigation systems and planted crops and vineyards, although only Augustin ever lived on the rancho. The precise locations of these improvements are unknown. Augustin, who lived primarily at El Pueblo de Los Angeles, constructed an adobe in 1821 (near Overland Avenue) that was destroyed by floods and built a new adobe (near the intersection of Overland Avenue and Jefferson Boulevard) later in the 1820s. In 1839, a formal grant was given to Augustin and Ygnacio Machado and Felipe and Tomas Talamantes for the 13,920-acre Rancho La Ballona, which was filed with the U.S. Land Commission in 1854 and confirmed in 1873. The Talamantes family lost their share of Rancho La Ballona shortly thereafter, while the Machado family continued to prosper and add to their land holdings. Augustin Machado died in 1865, and Rancho La Ballona was professionally surveyed and subdivided among Machado's heirs (Homburg et al. 2014; Stoll et al. 2009).

In 1874, Will Tell filed a claim for 150 acres near the mouth of the Ballona Reserve and constructed Will Tell's Seashore Resort. Machado's heirs attempted to evict Tell, but allowed the process to lapse. The resort was destroyed by a storm in 1884 (Douglas et al. 2015).

In 1902, the Los Angeles Pacific (subsequently Pacific Electric Line) constructed a line from Culver City to Playa del Rey through the Ballona Reserve. The rail was a double track, narrow gauge line. The line was abandoned in 1940 (Bever and Chmiel 2011). Remnants of this line, including a partially-earthen berm and wood pilings from a bridge, are located within the Project site and are described further in the discussion of resources below.

The area west of Highway 1 (Lincoln Boulevard) remained a coastal wetland through the turn of the 20th century, and these wetlands were used recreationally for activities such as duck hunting. In 1910, an area that available information indicates probably lay to the west of the present-day intersection of Culver Boulevard and Jefferson Boulevard was developed into the Los Angeles Motordrome, a wooden racing track for automobiles and motorcycles (Bever and Chmiel 2011; Douglas et al. 2015). The track, a full mile in circumference and approximately 1,700 feet in diameter, could accommodate up to 40,000 spectators within its massive in-field; all told, the Motordrome occupied an area of approximately 50 acres within the wetlands south of Ballona Creek; see Douglas et al. (2015) for a more detailed discussion. The track had a 30-foot wide in-field apron composed of crushed granite, and the surface was coated with crushed sea shells to provide traction for the vehicles. To bring spectators to the Motordrome, the Pacific Electric Line railroad built a special purpose rail spur across the wetlands to the track. The remnant of the berm for this line currently extends roughly parallel to Culver Boulevard through Area B. The Aero Club of California also utilized the Motordrome facilities, building hangars and even a paved, 1-mile-long runway for conducting flight experiments. In 1913, a fire destroyed a portion of the track and it was subsequently dismantled. While no archaeological remains associated with the Motordrome have been discovered, substantial ground disturbance, including installation of pilings and placement of various fill materials, undoubtedly occurred (Lockwood 2015).

The Ohio Oil Company discovered oil in the Ballona Reserve and surrounding wetlands in 1929, resulting in the rapid development of wells in what became known as the Venice Oil Field (Bever and Chmiel 2011; Douglas et al. 2015). Topographic maps confirm that wells were present in at least portions of the western half of the Project site. Wells were built on low pads constructed of sand and gravel fill. These oil wells proved profitable until the 1940s when oil production ceased. In 1942, the United States government converted the oil fields into underground gas storage to establish a gas reserve during World War II (Douglas et al. 2015). In 1955, SoCalGas purchased the field and it continues in operation today (Southern California Gas Company 2008). Remnants of the oil field are located within the Project site and described further in the methodology section.

The 1920s and ‘30s also saw the rise of agricultural enterprise in the Project site and vicinity, as wetlands were drained for agricultural-related uses. Japanese farmers tilled most of the acreage until forcibly relocated to detention centers during World War II (Bever and Chmiel 2011).

Flooding from natural rivers and creeks into increasingly urbanized areas of Los Angeles led to widespread channelization efforts by the 1920s. The LACFCD initiated channelization of Ballona Creek, completing the portion east of Lincoln Boulevard by 1923 (Douglas et al. 2015). Lower Ballona Creek was channelized by the Corps in 1935. The path of the approximately 300-foot-wide channel likely intersected the former location of the Motordrome (Foster 1991), although the exact location is unknown. Spoils from dredging were placed to either side of the canal to build up the protective levees. A segment of the Ballona Creek channel is located within the Project site and described further in the methodology section. In addition, most of the on-site wetlands were filled in as a result of construction of Marina del Rey in the 1950s and 1960s, as well as State Route 90 (SR 90), which was built in stages over a five-year period ending in 1972. Dredge spoils from construction of Marina del Rey were deposited as fill across the north and northwestern portion of the Project site (Lockwood 2015), including Area A and Area C. This fill could contain displaced archaeological materials from the dredging of the marina, including materials from prehistoric archaeological site CA-LAN-47, a portion of which once occupied the present location of the marina.

Anecdotal information suggests that a portion of the Project site once may have been part of the “Dunes of the Dead,” which is reported to be marked on early maps of the area. A diseño depicting the rancho was prepared in 1852 (Calisphere 2016). The map depicts the Ballona “estero” (estuary). Hills are depicted to the east of the estero and are labeled “Lomas muertas,” which means dead hills, and was a term used often by the Spanish to describe barren hills (Gudde 1969). No maps or other information[66] could be found regarding a placename “Dunes of the Dead” in the vicinity of the Ballona Reserve. A map depicting the historical ecology in the Ballona Reserve and vicinity as it existed in 1876 indicates that historical dunes were mostly located outside the Project site to the west, but a small portion did extend into the extreme western portion of West Area B (Grossinger et al. 2011).

[66] Repositories that were accessed include the Los Angeles Times Historical Archives, Newspapers.com, the California Digital Newspaper Collection, the U.S.G.S. National Map Historical Topographic Maps Database, David Rumsey Historical Map Collection, and NETR Online.

3.5.2.6 Geological Setting

The Ballona Reserve lies within the Peninsular Ranges Geomorphic (Physiographic) Province, which is a northwest to southeast trending series of mountain ranges that extends for approximately 900 miles from lowermost Baja California to the Transverse Ranges (San Gabriel and San Bernardino Mountains) just north of the Los Angeles Basin (California Geological Survey [CGS] 2002; Harden 2004; Yerkes et al. 1965). The Project site is situated within the Los Angeles Basin, which is defined by Yerkes et al. (1965) as the area south of the Santa Monica Mountains and Elysian, Repetto, and Puente Hills; west of the Santa Ana Mountains; southwest of the San Joaquin Hills; and north and east of the Pacific Ocean (excluding the Palos Verdes Peninsula). The Los Angeles Basin has been subsiding and filling with predominantly marine sediments from the middle Miocene (ca. 13 million years ago (Ma)) to the late Pleistocene (ca. 10 thousand years ago (Ka)) (Yerkes et al. 1965).

The Project site is discussed in context of three main areas: A, B, and C, with subdivisions as discussed in Section 1.4.1. Dibblee (2007) mapped the surficial geology of the Venice Quadrangle, which includes the Project site, at a scale of 1:24,000. Geological units within the Project site include the following units from youngest to oldest (see Figure 3.6-1): Holocene (<approximately 11,000 years ago) Quaternary alluvium (Qa) and clay and sand of pre-developed marshlands (Qc), late Pleistocene (approximately 126,000-11,500 years ago) Quaternary older alluvium (Qoa), and early to late Pleistocene (approximately 2.6 million to 11,500 years ago) San Pedro Sand (Qsp). The Quaternary alluvium (Qa) within the Project site consists of unconsolidated gravel, sand, silt, and clay deposits emanating mostly from the Santa Monica Mountains and transported by small streams, and the Quaternary clay and sand of pre-developed marshlands (Qc) was deposited in a similar manner (Dibblee 2007). Quaternary alluvium (Qa) is mapped in all of Area C, and the eastern portions of Area A and Area B, while Quaternary clay and sand of pre-developed marshlands (Qc) is mapped in the western portion of Area A and Area B.

Quaternary older alluvium (Qoa) is generally lithologically indistinct from Quaternary alluvium (Qa); however, it is generally more cohesive than Quaternary alluvium, oftentimes contains abundant caliche, and is reddish-brown in color. Quaternary older alluvium (Qoa) crops out on the southern boundary of the Project site, along the bluffs of Area B, above the San Pedro Sand (Qsp).

The San Pedro Sand (Qsp) includes the Palos Verdes Sand and Inglewood Formation of Dibblee (2007), which are late Pleistocene in age and are likely the uppermost layer of the San Pedro Sand (Qsp). The San Pedro Sand (Qsp) crops out in the south portion of the Project site along the base of the bluffs in Area B. The San Pedro Sand (Qsp) is a widespread, fossiliferous geological unit that crops out in Los Angeles and Orange counties and has equivalent units in Ventura and San Diego counties (Grant and Gale 1931). Dibblee (2007) describes the unit as a fine- to coarse-grained light gray to light brown sand with fragmentary invertebrate shells and pebbles in some areas.

Artificial fill derived from dredging is present in many areas within the Project site and ranges from 0 to greater than 20 feet in depth (see Figure 3.5-2; Lockwood 2015). The depth and extent of fill varies across the Project site and within each area. Area A and Area C have the most extensive fill coverage, with depths exceeding 20 feet in most portions. Other areas, such as South and Southeast Area B, have less extensive coverage, but fill still occurs in levees, road berms, and as isolated pockets. Artificial fill has no chance of yielding significant

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Figure 3.5-2
Site Fill Thickness

paleontological resources; however, because the thickness of the fill is important when analyzing sensitive subsurface geological units, the artificial fill depths are discussed below for each area within the Project boundary.

Table 3.5-1, *Geological Units within Each Area of the Ballona Reserve*, shows the geological units within each area of the Project site.

TABLE 3.5-1
GEOLOGICAL UNITS WITHIN EACH AREA OF THE BALLONA RESERVE

Area Within Project Site	Geological Units Present
Area A	Quaternary alluvium (Qa)
	Quaternary sands and clays of Pre-developed wetlands (Qc)
North Area B	Quaternary alluvium (Qa)
	Quaternary clay and sand of Pre-developed wetlands (Qc)
South Area B	Quaternary alluvium (Qa)
	Quaternary sands and clays of Pre-developed wetlands (Qc)
	Quaternary older alluvium (Qoa)
	Quaternary San Pedro Sand (Qsp)
Southeast Area B	Quaternary alluvium (Qa)
	Quaternary sands and clays of Pre-developed wetlands (Qc)
	Quaternary older alluvium (Qoa)
	Quaternary San Pedro Sand (Qsp)
West Area B	Quaternary sands and clays of Pre-developed wetlands (Qc)
North Area C	Quaternary alluvium (Qa)
South Area C	Quaternary alluvium (Qa)

3.5.2.7 Paleontological Setting

During much of the Pleistocene (approximately 2.5 million years ago to 10,000 years ago), a large part of the Los Angeles Basin was inundated by the Pacific Ocean due to elevated sea levels, thus depositing the San Pedro Sand and Palos Verdes Sand (considered the upper part of the San Pedro Sand). Many fossil localities have been identified where this geological unit is exposed on the surface or where it is encountered subsurface during construction-related excavations. The nearest San Pedro Sand locality to the Project site, the “Lincoln Avenue deposit” in Playa del Rey, was studied first by Willet (1937), in which he described 296 mollusk species. In addition to the invertebrate remains recovered from the deposit, many fishes have been described, including at least a dozen species of sharks and rays and over 40 species of teleost (bony) fishes (Fitch 1964, 1966, 1970). The San Pedro Sand records a history of a shallow water embayment, and based on the presence of warmer-water molluscan and fish taxa now only found south of the Los Angeles Basin, was several degrees warmer than at present (Fitch 1964, 1966, 1970; Kanakoff 1956; Willet 1937).

Although not as abundant as invertebrate and fish remains, marine and terrestrial vertebrates have been reported from the San Pedro Sand and constitute an important aspect of the assemblage. Barnes and McLeod (1984) reported on a fossil gray whale (*Eschrichtius robustus*) from the San Pedro Sand collected on the back side of the Palos Verdes Peninsula between Gaffey Street and the Harbor Freeway. During the time of deposition (approximately 100,000-130,000 years ago), the Palos Verdes Peninsula was an island situated approximately 8 to 10 miles off the coast (Barnes and McLeod 1984; Larry Barnes Pers. Comm. 2009). At the time of their report, it was considered the only known fossil member of the family Eschrichtiidae; however, recent reports of fossil gray whales have been published (Tsai et al. 2014; Tsai and Boessenecker 2015). Fossil birds of 10 species, including the extinct diving "goose," have been reported from the Playa del Rey locality (Howard 1936, 1947, 1949, 1955). Other San Pedro Sand localities in San Pedro and Newport Beach also have yielded abundant, identifiable bird remains (Howard 1936, 1947, 1949, 1955; Kanakoff and Emerson 1959; Miller 1930). Miller (1971) and Jefferson (1991) list dozens of San Pedro Sand vertebrate fossil localities in Los Angeles County. Although considered a shallow marine unit and having yielded invertebrates, fishes, and marine mammals, the San Pedro Sand has also produced terrestrial vertebrates including amphibians, reptiles, birds, rodents, rabbits, sloths, bison, camels, horses, mammoths, cats, and dogs.

Overlying the San Pedro Sand along the bluffs of the southern boundary of the Project site are mapped older Quaternary alluvial deposits that are late Pleistocene (approximately 126,000 to 10,000 years ago) in age (Dibblee 1997; Douglas et al. 2015). Although no previously reported fossil localities are known from these deposits within the Project site, older Quaternary alluvial deposits within the Los Angeles Basin have produced numerous terrestrial vertebrates, including but not limited to, species of fishes, amphibians, reptiles, and ice age mammals such as mammoths, mastodons, bison, horses, saber-tooth cats, ground sloths, camels, deer, rabbits, and rodents (Jefferson 1991).

The youngest surficial deposits within the Project boundary are Quaternary alluvium and Quaternary clay and sand of predeveloped marshlands. No significant paleontological resources are known from these deposits within the Los Angeles Basin, as these geological units are considered too young to contain fossils.

3.5.3 Applicable Laws, Regulations, Plans, and Standards

3.5.3.1 Federal

Cultural Resources

Section 106 of the National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA, 54 U.S.C. §300101 *et seq.*) requires Federal agencies to consider the effects of their undertaking on historic properties. Furthermore, it requires an agency to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on any of the agency's undertakings that could affect historic properties. Federal undertakings include Federal projects, permits, grants, and loans. The purpose of Section 106 is to avoid unnecessary impacts to historic properties from Federal undertakings. The Section 106 review process is described in the ACHP regulations (36 C.F.R. Part 800, as amended August 5, 2004) and Corps regulations at 33 C.F.R. Part 325, Appendix C.

Historic properties include districts, archaeological sites, buildings, structures, and objects included in, or eligible for inclusion in, the National Register of Historic Places (National Register) (36 C.F.R. §§60.4, 60.6; 40 C.F.R. §1508.27(b)(8)). The term “eligible for inclusion in the National Register” includes both properties formally determined as such in accordance with the regulations of the Secretary of the Interior and all other properties that meet the National Register criteria (36 C.F.R. §800.16). The National Register is an inventory of historic resources in the United States maintained by the Secretary of the Interior. All historic properties are afforded consideration and protection by Section 106.

The following criteria are used to evaluate properties for the National Register:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and
>
> (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) that are associated with the lives of persons significant in our past; or
>
> (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) that have yielded, or may be likely to yield, information important in prehistory or history. [36 C.F.R. §60.4]

The Section 106 review process generally involves the following steps:

1. **Step 1: Identify and Evaluate Historic Properties.** The Federal agency identifies and evaluates historic properties that could be affected by the Federal undertaking. Information is developed by literature review, consultation with the California State Historic Preservation Officer (SHPO), and field investigations (as necessary). The eligibility of potentially affected properties for inclusion on the National Register is assessed.

2. **Step 2: Assess Effects.** The effects of the undertaking are evaluated, resulting in a determination of either "no effect," "no adverse effect," or "adverse effect." The SHPO is then consulted.

3. **Step 3: Consultation.** If an adverse effect could occur, the SHPO is consulted in order to identify methods to reduce the impacts. Other entities may be consulted, including Native Americans, the public, local government, and the ACHP. Consultation results in the development of a Memorandum of Agreement (MOA) or Programmatic Agreement (PA) that describes agreed upon measures to mitigate adverse effects.

4. **Step 4: Filing MOA or PA with ACHP.** Upon execution of the MOA or PA, the agreement is filed with the ACHP if the ACHP did not participate in developing the MOA or PA.

5. **Step 5: Proceed with Undertaking.** The federal agency proceeds with its undertaking under the terms of the MOA or PA.

Paleontological Resources

Historical Sites Act of 1935 (16 U.S.C. §§461 *et seq*.)

The Historical Sites Act declares a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States and provides the basis for the National Historic Landmark Program. The purpose of the National Historic Landmarks Program is to identify and designate National Historic Landmarks, and encourage the long-range preservation of nationally significant properties that illustrate or commemorate the history and prehistory of the United States. Under Section 462 of this Act, the Secretary of the Interior performs the following duties and functions, among others:

1. To make a survey of historic and archeological sites, buildings, and objects for the purpose of determining which possess exceptional value as commemorating or illustrating the history of the United States;

2. To make necessary investigations and researches in the United States relating to particular sites, buildings, or objects to obtain true and accurate historical and archeological facts and information concerning the same; and

3. To erect and maintain tablets to mark or commemorate historic or prehistoric places and events of national historical or archeological significance.

The National Park Service (NPS) administers the National Historic Landmarks Program on behalf of the Secretary. Though there is no specific mention of paleontological resources in the Act itself, it lays the foundation for the National Natural Landmarks Program (NNL), established in 1962, which, in part, protects geologic features and paleontological resources.

National Registry of Natural Landmarks (16 U.S.C. §§461-467)

The NNL was established in 1962, and is administered under the Historic Sites Act of 1935. Under this program, a NNL is defined as:

> [A]n area designated by the Secretary of the Interior as being of national significance to the United States because it is an outstanding example(s) of major biological and geological features found within the boundaries of the United States or its Territories or on the Outer Continental Shelf. [36 C.F.R. §62.2]

National significance is defined as:

> [A]n area that is one of the best examples of a biological community or geological feature within a natural region of the United States, including terrestrial communities, landforms,

> geologic features and processes, habitats of native plant and animal species, or fossil evidence of the development of life. [36 C.F.R. §62.2]

Federal agencies and their agents should consider the existence and the location of designated NNLs, and of areas found to meet the criteria for national significance, in assessing the effects of their activities on the environment under NEPA. (42 U.S.C. §4331(b)(4)). The NPS is responsible for providing requested information about the NNL for these assessments (36 C.F.R. §62.6(f)). It is important to note that other than consideration under NEPA, NNLs are not afforded special protection. Furthermore, there is no requirement to evaluate paleontological resources for listing as an NNL. Finally, project proponents (state and local) are not obligated to prepare an application for listing potential NNLs, should such a resource be encountered during the course of project planning.

National Environmental Policy Act of 1969 (42 U.S.C. §§4321 *et seq*.)

Under NEPA, federal agencies are directed to use all practical means to "preserve important historic, cultural, and natural aspects of our national heritage." (42 U.S.C. §4331(b)(4)). Regulations for implementing the procedural provisions of NEPA are found in 40 C.F.R. §§1500.1 through 1508.28.

If the presence of a significant environmental resource is identified during the scoping process, Federal agencies and their agents must take the resource into consideration when evaluating project impacts. Consideration of paleontological resources may be required under NEPA when a project is proposed for development on Federal land, or land under Federal jurisdiction. The level of consideration depends upon the Federal agency involved.

3.5.3.2 State

Cultural Resources

The State of California (State) implements the NHPA through its statewide comprehensive cultural resources surveys and preservation programs. The California Office of Historic Preservation (OHP), as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historic Resources Inventory. The SHPO is an appointed official who implements historic preservation programs within the State's jurisdictions. The California Native American Heritage Commission (NAHC) has multiple roles pertaining to cultural resources and tribal consultation. As specified in Public Resources Code §5097.94, the NAHC has, among others, the powers and duties to: catalog of places of special religious or social significance to Native Americans; take an active role in preventing irreparable damage to Native American cemeteries, places of worship, or other types religious or ceremonial sites; assist Native Americans in obtaining access to sacred places on public lands; and mediate disputes between landowners and known tribal descendants as to the treatment and disposition of human remains and associated items. Assembly Bill (AB) 52, which requires specific consultation procedures and consideration of tribal cultural resources, does not apply to the Project because it only pertains to projects for which an NOP was issued on or after July 1, 2015. However, CDFW policies and other applicable state and agency policies for tribal consultation were followed and are discussed in Section 3.5.5.

California Environmental Quality Act (CEQA)

CEQA is the principal statute governing environmental review of projects occurring in the state and is *codified at Public Resources Code Section 21000 et seq.* CEQA requires lead agencies to determine if a Project would have a significant effect on the environment, including significant effects on historical or archaeological resources.

Under CEQA, a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment (Pub. Res. Code §21084.1). Section §15064.5 of the CEQA Guidelines (14 Cal. Code Regs. §15000 et seq.) recognizes that a historical resource includes: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (California Register); (2) a resource included in a local register of historical resources, as defined in Public Resources Code Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of Public Resources Code §5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record. The fact that a resource does not meet the three criteria outlined above does not preclude the lead agency from determining that the resource may be an historical resource as defined in Public Resources Code §5020.1(j) or §5024.1.

If a CEQA lead agency determines that an archaeological site is a historical resource, the provisions of Section 21084.1 of CEQA and Section 15064.5 of the CEQA Guidelines apply. If a project may cause a substantial adverse change (defined as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired) in the significance of an historical resource, the lead agency must identify potentially feasible measures to mitigate these effects (CEQA Guidelines §§15064.5(b)(1), 15064.5(b)(4)).

If an archaeological site does not meet the criteria for a historical resource contained in the CEQA Guidelines, then the site may be treated in accordance with the provisions of CEQA Section 21083 for a unique archaeological resource. As defined in Section 21083.2 a "unique" archaeological resource is 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 any of the following criteria:

1. Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type; or

3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If an archaeological site meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site is to be treated in accordance with the provisions of Section 21083.2, which states that if the lead agency determines that a project would have a significant effect on unique archaeological resources, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place (Pub. Res. Code §21083.1(a)). If preservation in place is not feasible, mitigation measures shall be required.

The CEQA Guidelines note that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment (CEQA Guidelines §15064.5(c)(4)).

California Register of Historical Resources

The California Register is "an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (Pub. Res. Code §5024.1(a)). The criteria for eligibility for the California Register are based upon National Register criteria (Pub. Res. Code §5024.1(b)). Certain resources are determined by the statute to be included automatically in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

To be eligible for the California Register, a prehistoric or historical-period property must be significant at the local, state, and/or Federal level under one or more of the following four criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the 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.

A resource eligible for the California Register must meet one of the criteria of significance described above and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. It is possible that a historic resource may not retain sufficient integrity to meet the criteria for listing in the National Register, but it may still be eligible for listing in the California Register.

Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

1. California properties listed on the National Register and those formally determined eligible for the National Register;

2. California Registered Historical Landmarks from No. 770 onward; and
3. Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Commission for inclusion on the California Register.

Other resources that may be nominated to the California Register include:

1. Historical resources with a significance rating of Category 3 through 5 (those properties identified as eligible for listing in the National Register, the California Register, and/or a local jurisdiction register);
2. Individual historical resources;
3. Historical resources contributing to historic districts; and
4. Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

California Public Resources Code §5024 and §5024.5

Section 5024 provides direction to a state agency for treatment of historic resources under its jurisdiction, which requires state agencies to preserve and maintain all state-owned historic resources that are listed in, eligible, or considered potentially eligible for inclusion in the National Register. Under Section 5024(f), each state agency shall submit to the SHPO for comment documentation for any project having the potential to affect historical resources listed in or potentially eligible for inclusion in the National Register or registered as or eligible for registration as a state historical landmark. Public Resources Code Section 5024.5(f) requires state agencies to ensure that any historic resource which may qualify for listing is not unnecessarily altered.

California Health and Safety Code §7050.5

With respect to the discovery of human remains, California Health and Safety Code §7050.5 states, "Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor…." Section 7050.5 requires that in the event human remains are discovered, the County Coroner be contacted to determine the nature of the remains. In the event the remains are determined to be Native American in origin, the Coroner is required to contact the NAHC within 24 hours to relinquish jurisdiction.

California Public Resources Code §5097.9

Public Resources Code §5097.9 requires that any public agency, and private party using or occupying public property, or operating on public property, under a public license, permit, grant, lease, or contract made on or after July 1, 1977, cannot interfere with the free expression or exercise of Native American religion. Public Resources Code §5097.9 also states any such agency or party cannot cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property, except on a clear and convincing showing that the public interest and necessity so require.

California Public Resources Code §5097.98

Public Resources Code Section 5097.98, as amended by Assembly Bill 2641, provides procedures in the event human remains of Native American origin are discovered during project implementation. Public Resources Code Section 5097.98 requires that no further disturbances occur in the immediate vicinity of the discovery, that the discovery is adequately protected according to generally accepted cultural and archaeological standards, and that further activities take into account the possibility of multiple burials. Public Resources Code Section 5097.98 further requires the NAHC, upon notification by a County Coroner, designate and notify a Most Likely Descendant (MLD) regarding the discovery of Native American human remains. Once the MLD has been granted access to the site by the landowner and inspected the discovery, the MLD then has 48 hours to provide recommendations to the landowner for the treatment of the human remains and any associated grave goods. In the event that no descendant is identified, or the descendant fails to make a recommendation for disposition, or if the land owner rejects the recommendation of the descendant, the landowner may, with appropriate dignity, reinter the remains and burial items on the property in a location that will not be subject to further disturbance.

Public Resources Code §5097.991

Public Resources Code §5097.991 states that it is the policy of the State of California that Native American remains and associated grave artifacts shall be repatriated.

Paleontological Resources

The primary state law and implementing guidelines protecting fossils are CEQA and the CEQA Guidelines. Consistent with CEQA Guidelines Appendix G, this analysis considers whether "the project directly or indirectly destroy a unique paleontological resource or site." See Section 3.5.4, Thresholds of Significance, Section 3.5.6, Direct and Indirect Effects, and Section 3.5.7, Cumulative Effects.

In addition, the Society for Vertebrate Paleontology (SVP) has established standard guidelines for acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation (SVP 2010). Most practicing professional paleontologists in the nation adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically provided in its standard guidelines. Most state regulatory agencies accept the SVP standard guidelines as a measure of professional practice. A recent manuscript by Murphey et al. (2014) discusses the SVP's mitigation guidelines and describes the best practices of all phases of mitigation for paleontology in some detail.

California Department of Fish and Wildlife Tribal Communication and Consultation Policy

The CDFW has developed a Tribal Communication and Consultation Policy to ensure that CDFW works cooperatively and communicates effectively in consultation with tribes. The policy outlines effective tools for communication and a formal process for engaging in government to government consultation designed to foster collaborative relationships with the tribes. In addition to ensuring compliance with appropriate state law (as described above), the policy defines a tribal liaison, outlines training policies for CDFW staff, describes procedures to follow in initiating and conducting consultation with the tribes, and presents a grievance process for resolving any disputes.

3.5.3.3 Local

State agencies acting in their sovereign capacity are not subject to local regulations unless directed by the California Constitution or if the Legislature has consented to such regulation. However, local regulations are mentioned in this EIS/EIR because this analysis contemplates actions by SoCalGas outside of state property.

Los Angeles County General Plan

The Los Angeles County General Plan provides goals, objectives, and policies for the identification and protection of significant cultural resources. The Conservation and Natural Resources Element of the General Plan includes goals, objectives, and policies for the protection of cultural resources and scientific sites that emphasize identification, documentation, and protection of cultural resources (Los Angeles County 2015).

City of Los Angeles General Plan

The City of Los Angeles General Plan (adopted 2001) states as its objective, to “protect the city’s archaeological and paleontological resources for historical, cultural, research, and/or educational purposes” by continuing “to identify and protect significant archaeological and paleontological resources known to exist or that are identified during land development, demolition, or property modification activities.”

In addition, the City will:

> continue to protect historic and cultural sites and/or resources potentially affected by proposed land development, demolition, or property modification activities…The city's environmental guidelines require the applicant to secure services of a bona fide archaeologist to monitor excavations or other subsurface activities associated with a development project in which all or a portion is deemed to be of archaeological significance. Discovery of archaeological materials may temporarily halt the project until the site has been assessed, potential impacts evaluated and, if deemed appropriate, the resources protected, documented and/or removed (City of Los Angeles 2001).

Within Los Angeles County, the Los Angeles County Museum of Natural History, including the George C. Page Museum, provides advice concerning paleontological resources.

Los Angeles Historic-Cultural Monuments

The City of Los Angeles enacted a Cultural Heritage Ordinance in 1962, and amended in 1985, which created the City’s Cultural Heritage Commission and criteria for the designation of Historic-Cultural Monuments (LAHCM). According to the ordinance, LAHCMs are any sites (including significant trees or other plant-life located thereon), buildings, or structures of particular historic or cultural significance to the City of Los Angeles in which the broad cultural, economic, political, or social history of the nation, state, or city is reflected or exemplified.

LAHCMs are regulated by the City's Cultural Heritage Commission, which reviews permits to alter, relocate, or demolish these landmarks.

The City's Cultural Heritage Ordinance (Section 22.120, et seq. of the City of Los Angeles' Administrative Code) establishes criteria for designating local historic resources as Los Angeles Historic-Cultural Monuments. The City's criteria are sufficiently broad enough to include a wide variety of historic resources, including archaeological sites. However, a proposed resource should possess sufficient architectural, historical, and/or cultural significance to warrant designation. Though there is no age requirement for designation as a LAHCM, sufficient time to develop an accurate historical perspective and to evaluate its significance in context should be considered. A LAHCM must satisfy one or more of the City's criteria, which are defined as the following:

1. It reflects or exemplifies the broad cultural, political, economic, or social history of the nation, state, city or community;
2. It is identified with historic personages or with important events in the main currents of national, state, or local history;
3. It embodies the distinguishing characteristics of an architectural type, specimen, inherently valuable for a study of a period style or method of construction; and/or
4. It is a notable work of a master builder, designer, or architect whose individual genius influenced his age.

3.5.4 Thresholds of Significance

In this analysis, the Corps has elected to evaluate the context and intensity of potential environmental consequences relative to the criteria identified in CEQA Guidelines, Appendix G, Section V. The Corps also has applied Federal NHPA requirements as appropriate in this EIS/EIR. In addition, the analysis considers where improvements of the Project would provide a net benefit relative to conditions as they are described in Section 3.5.2, Affected Environment.

For purposes of this analysis, Alternative 1, 2, 3, or 4 would result in significant impacts to Cultural and Paleontological Resources if it would:

CUL-1 (CEQA) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5;

CUL-2 (CEQA) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5;

CUL-3 (CEQA and NEPA) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or

CUL-4 (CEQA and NEPA) Disturb any human remains, including those interred outside of formal cemeteries.

According to CEQA Guidelines §15064.5, a project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment (CEQA Guidelines §15064.5(b)). The CEQA Guidelines further state that a substantial adverse change in the significance of a resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historic resource would be materially impaired. Actions that would materially impair the significance of a historical resource are any actions that would demolish or adversely alter those physical characteristics of a historical resource that convey its historical significance and qualify it for inclusion in the California Register or in a local register or survey that meet the requirements of Public Resources Code Sections 5020.1(k) and 5024.1(g). A CEQA lead agency must also take into account impacts to unique archaeological resources.

In addition, the Corps must comply with NHPA Section 106 and assess impacts to historic properties based on its definition of adverse effect. An adverse effect is found when an undertaking alters, directly or indirectly, the characteristics that qualify the property for inclusion on the National Register in a manner that diminishes the integrity of the property. Integrity is the ability of a property to convey its significance, based on its location, design, setting, materials, workmanship, feeling, and association. Adverse effects can be direct or indirect. They include reasonably foreseeable impacts that may occur later in time, be farther removed in distance, or be cumulative (ACHP 2003). Examples of adverse effects under 36 C.F.R. §800.5 include:

1. Physical destruction of or damage to all or part of the property;

2. Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standard for the Treatment of Historic Properties (36 C.F.R. Part 68) and applicable guidelines;

3. Removal of the property from its historic location;

4. Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

5. Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

6. Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

7. Transfer, lease, or sale of property out of Federal ownership of control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

Mitigation under Section 106 of the NHPA is defined as a measure to resolve specific adverse effects to historic properties. Resolution of adverse effects is referenced in the NEPA review and documented in the PA developed in consultation with the Section 106 consulting parties, which include tribes, SHPO, City of Los Angeles, California Department of Parks and Recreation, and other interested parties.

The concept of adverse effect under the NHPA and significant impact under NEPA are similar in concept but are not equivalent terms. A broad range of impacts from very minor to major would be classified as an adverse effect but the context and intensity of these impacts may not meet the threshold of NEPA significance. NEPA requires us to consider the degree to which the action may adversely affect properties listed in or eligible for listing in the National Register. For example, a farmhouse or traditional cultural property, that is eligible under criterion A, may be adversely affected by the introduction of visual intrusions because these intrusions would diminish its integrity of location, setting, and feeling. This would be an adverse effect under NHPA but may not meet the threshold of significance under NEPA. The demolition of the property; however, would most likely constitute a significant impact because its destruction would preclude its eligibility for the National Register.

An adverse effect would be considered a significant impact under NEPA if:

CUL-5 Even after minimization and mitigation, the remaining impacts to the property would be substantial enough that implementation of the alternative would result in the loss of a property's eligibility status under criteria A-C.

CUL-6 The implementation of the alternative would result in the destruction of a site eligible under criterion D with no mitigative data recovery.

CUL-7 The implementation of the alternative would result in a major modification of a National Historic Landmark or a property meeting the criteria of a National Historic Landmark as defined in 36 C.F.R. Part 65.

3.5.5 Methodology

South Central Coastal Information Center (SCCIC) Records Search

BonTerra Psomas conducted a records search for the Project on November 10, 2014 at the SCCIC. The records search included a review of all previous cultural resource studies and previously recorded archaeological resources within a 0.25-mile radius of the Project site. In addition, the California Register, National Register, California Points of Historical Interest, California Historical Landmarks, and California State Historic Resources Inventory listings were reviewed. Two reports covering the Project site and its vicinity (not yet on file at the SCCIC) were also reviewed, and included an archaeological survey report by ICF International (ICF) (Bever and Chmiel 2011) and two of the five volumes regarding the archaeology and prehistory of the Ballona Reserve and surrounding area prepared by Statistical Research Inc. (1989-2012) (Douglas et al. 2015).

The records search and report review indicated that 61 cultural resources studies have been previously conducted within a 0.25-mile radius of the Project site. Of the 61 studies, 20 overlap with the Project site; together they cover almost the entirety of the Project site.[67]

A total of 42 cultural resources have been previously recorded within a 0.25-mile radius of the Project site. Of the 42 resources, 13 are located within or directly adjacent to the Project site, including one archaeological district (Ballona Lagoon Archaeological District [BLAD]), one prehistoric archaeological site (CA-LAN-54), six historic-period archaeological sites (CA-LAN-1970H, 3784H, -3982H, -4714H, -4715H, and -4716H), and five historic-period built resources (P-19-176734, -187805, -192323, -192324, and -192325) (Douglas et al. 2015). Each resource is described in detail below.

The **BLAD** was first conceived in 1991 (Altschul et al. 1991). The term was used to describe archaeological resources pertaining to the prehistoric occupation of the Ballona Wetlands with the intention of highlighting the importance of the resources, and emphasizing that the resources are interrelated thematically and contextually, and so should be considered together. While conceptual at the time, in that a specific boundary was not defined (rather, the boundary was arbitrarily set to coincide with the boundaries of the Playa Vista project within which the concept was developed) the BLAD was intended to encompass the entirety of the Ballona wetlands environment, including the current Project area. As described both in the original discussion of the BLAD (Altschul et al. 1991) and in the most recent published discussion (Vargas et al. 2016), the BLAD contains seven National Register-eligible archaeological sites, though only one (CA-LAN-54, discussed below) occurs in the Project area. The BLAD has not been formally documented, in that the boundaries have not been mapped, a formal resource record has not been prepared, and a CHRIS primary resource number has not been assigned; nonetheless, the concept of the BLAD is well-established and the BLAD has been treated as a district in regulatory compliance documents. Indeed, as part of a Section 106 Programmatic Agreement for a previous project in the Ballona wetlands, the BLAD was determined eligible for listing in the National Register by the Corps, with concurrence from the SHPO (Corps 1991). The BLAD is considered a National Register-eligible archaeological district for purposes of the Project. The original formulation of the BLAD recognized that additional sites could be added at a future date, should they provide data appropriate to the theme of the district. The potential to add additional sites remains unaffected by this Project.

CA-LAN-54 is a prehistoric archaeological site originally recorded in the 1950s by William Deane as a shell midden. Excavations in 2014 uncovered human burial features, ground and pecked stone artifacts, chipped stone artifacts (including dart-sized projectile points), and bone artifacts, such as barbs, awls and tubes/beads. This site was radiocarbon dated to 2,770 (+/-40) to 3,880 (+/-50) years B.P. The site was determined to be eligible for listing in the National Register by the Corps with concurrence from the SHPO on February 1, 2001 (OHP 2012a), as a contributor to the BLAD.

[67] The remaining 41 studies cover portions of the 0.25 mile radius outside of the Project site.

CA-LAN-1970H is a historic-period archaeological site consisting of an oil well complex in the Venice Oil Field dating to the 1920s to 1940s. The complex was converted to natural gas storage in the 1940s. The site originally was recorded in 1990 and was previously recommended not eligible for listing in the National Register or California Register (Foster 1991). Thirteen additional features (such as berms and concrete structures related to natural gas storage) were documented by ICF in 2011 and were also recommended not eligible for listing in the National Register or the California Register (Bever and Chmiel 2011). Resource CA-LAN-1970H was determined to be ineligible for listing in the National Register by the Corps with concurrence from the SHPO on August 29, 1991. The resource in listed in the Archaeological Determinations of Eligibility listing maintained by the OHP as National Register category 6Y - determined ineligible for the National Register by consensus through the Section 106 process (OHP 2012b).

CA-LAN-3784H is a historic-period archaeological site consisting of domestic refuse dating to the late 19th to early 20th centuries. The deposit was encountered between 7 and 9 feet below ground surface during monitoring of excavation for SoCalGas facilities in 2008. Materials recovered include glass bottles, saw-cut and butchered bone, and ceramics (McCormick 2008). The site occurs within the SoCal Gas Property. The site as recorded is adjacent to but outside the Project site, but is included within the APE for purposes of analysis. It has not been evaluated for listing in the National Register or California Register.

CA-LAN-3982H is a historic-period archaeological site consisting of a large wooden platform and several historic-period artifacts. The site was encountered 1 to 2 feet below ground surface during monitoring of ground-disturbing activities in 2002 (Bever and Chmiel 2011; Vargas and Douglass 2002). It occurs beneath the pavement of Jefferson Boulevard. This site has not been evaluated for listing in the National Register or California Register.

CA-LAN-4714H (ICF-BS-006H) is a historic-period archaeological site consisting of refuse dating to the mid-19th and early 20th centuries. The site was documented in 2011 and was interpreted as redeposited as a result of dredging activities from either channelization of Ballona Creek or construction of Marina del Rey. Materials noted include glass, ceramics, and faunal bone (Bever and Chmiel 2011). The site was re-visited in 2014, but no surface evidence of it was observed (Douglas et al. 2015). This site has not been evaluated for listing in the National Register or California Register.

CA-LAN-4715H (SR-3) is a historic-period archaeological site consisting of the remnants of a 1940s tourist attraction known as the Cox Stable. The site was documented in1990 and included a horse stable and oval riding area. Also noted were historic-period refuse and a possible prehistoric artifact (quartzite core tool) (Altschul et al. 1991). The site was re-visited in 2014, but no surface evidence of it was observed (Douglas et al. 2015). The site has not been evaluated for listing in the National Register or California Register.

CA-LAN-4716H (SR-7) is a historic-period archaeological site consisting of domestic refuse dating to the early to mid-20th century that was documented in 1990. Materials noted include ceramics, glass, metal, wood, and rubber and appeared to have been fragmented by modern plowing (Altschul et al. 1991). The site was re-visited in 2014, but no surface evidence of it was observed (Douglas et al. 2015). The site has not been evaluated for listing in the National Register or California Register.

P-19-176734 (Caltrans Bridge No. 53-118) is a historic-period built resource consisting of a bridge constructed in 1937 by the Corps. The girder and steel bridge carries Lincoln Boulevard over Ballona Creek. The bridge is listed on the Caltrans Bridge Inventory as Category 5 (not eligible for the National Register) (Douglas et al. 2015). The bridge has not been evaluated for the California Register.

P-19-187805 is a historic-period built resource consisting of the Ballona Creek channel. The Main Channel (from Washington Boulevard to the Pacific Ocean) was constructed by the Corps between 1935 and 1939 and is an open waterway. The remainder of the channel was constructed between 1939 and 1970, and largely consists of subsurface box culverts. The resource was evaluated for listing in the National Register in 2000 and found not eligible at the time; however, since most of the resource was not 50 years old when it was evaluated in 2000, the evaluator recommended that the resource be re-evaluated when it met the 50-year mark, and also recommended that the resource be evaluated as a potential contributor to a discontiguous LACFCD historic district that was determined eligible for listing in the National Register under criteria A and C in 1999 (Kane 2000).

P-19-192323 (ICF-BS-003H) is a historic-period built resource consisting of a 600-foot segment of utility line. The resource was documented in 2011. At that time, remnants of six poles and a tag with “BAXCO / CREO CEDAR / CERTIFIED” and a date nail with “B / 34” was noted, indicating the line was constructed by J.H. Baxter & Company of Long Beach, CA in the 1930s (Bever and Chmiel 2011). This resource has not previously been evaluated for listing in the National Register or California Register.

P-19-192324 (ICF-BS-010H) is a historic-period built resource consisting of a berm with a wooden bridge associated with the Pacific Electric Railroad and was recorded in 2011 (Bever and Chmiel 2011). This resource has not previously been evaluated for listing in the National Register or California Register.

P-19-192325 (ICF-BS-018H) is a historic-period built resource known as the “Fiji Ditch.” The resource was recorded in 2011 and consists of 3,245 feet of channel. The channel is primarily earthen and was constructed sometime between 1896 and 1924 (Bever and Chmiel 2011). This resource has not previously been evaluated for listing in the National Register or California Register.

Native American Consultation

CDFW Consultation Efforts

The NAHC was contacted by ICF on February 3, 2010, to request a search of the Sacred Land File (SLF). The SLF search results received on February 8, 2010, indicated that “there are numerous Native American cultural resources” within 0.5 mile of the Project site (Bever and Chmiel 2011). The results letter also included a list of Native American contacts. The NAHC has been heavily involved in the Project and has provided additional information regarding the Project site in letters dated October 12, 2010, January 3, 2011, September 19, 2011, December 22, 2011, January 18, 2012, August 2, 2012, September 5, 2012, and July 2, 2014, and by email correspondence dated October 4, 2011. Consultation has occurred between the NAHC and both the Coastal Conservancy (per CEQA) and the Corps (per Section 106 of the NHPA). In summary, the NAHC indicated that while the Ballona Reserve is not itself registered as a sacred site in the SLF, individual sacred sites are recorded within the Ballona Reserve, and the Ballona Reserve should be considered extremely sensitive for Native American resources. The NAHC also stressed the importance of consulting with local Native American contacts to identify sacred sites in the Project site to avoid impacts to such resources and recommended developing a plan that would outline treatment of sensitive cultural resources, including preservation and use for educational purposes and resolution of disagreements. The NAHC further requested the need to keep information pertaining to Native American cultural resources confidential, as required by relevant state law.

Follow-up letters were sent on February 11, 2010 to all individuals and groups indicated by the NAHC as having affiliation with the Project site. In addition, the Coastal Conservancy identified Ms. Roberta Cordero, Lawyer/Mediator and Co-Founder of the Chumash Maritime Association, as Native American representative who may also have an interest in the Project (Bever and Chmiel 2011). A letter was sent to Ms. Cordero on April 30, 2010. Follow-up phone calls were made on June 10 and 11, 2010 to each individual who did not respond to the letters. Four responses were received as a result of this Native American outreach (Bever and Chmiel 2011), as further described below.

On March 24, 2010, Mr. Andy Salas, Chairperson for the Shoshonean Gabrielino Band of Mission Indians, responded via email. Mr. Salas indicated that the Project site is very sensitive for Native American resources and requested a Native American monitor be present during any ground disturbing activities (Bever and Chmiel 2011).

On June 9, 2010, Mr. Robert Dorame, Tribal Chair of the Gabrielino Tongva Indians of California, responded via phone and requested the original information letter be resent by email. The letter was resent via email on June 10, 2010, and no additional responses were received from Mr. Dorame (Bever and Chmiel 2011).

On July 26, 2010, Ms. Cordero responded via phone and declined to participate in the Project since it is located outside her tribal area. Ms. Cordero did identify several Native American representatives that she felt would be interested in the Project, including four contacts that were not identified by the NAHC. These individuals were contacted as well; however, no responses were received (Bever and Chmiel 2011).

On July 26, 2010, Mr. John Tommy Rosas, representative of the Tongva Ancestral Territory Tribal Nation, responded via email and requested to be involved in the Project design and development of appropriate mitigation for prehistoric resources (Bever and Chmiel 2011). Additional consultation has been ongoing with Mr. Rosas, including consultation meetings in October 2011 and May 2012. Mr. Rosas also has provided input regarding field studies conducted as part of the Project, including archaeological testing conducted in December 2015. In those communications, Mr. Rosas has stressed that the Ballona Reserve is extremely sensitive for Native American resources, including archaeological sites, human remains, and sacred sites, and that project planning and implementation needs to take these sensitive resources into account, as required by state and Federal law. Further, given the potential for buried resources in the Ballona Reserve and the view that the Ballona Reserve might be considered a cultural landscape, Mr. Rosas has indicated that additional testing could be warranted and that a treatment plan for the unanticipated discovery of resources should be developed, including provisions for the monitoring of ground-disturbing activities.

Corps Consultation Efforts

On July 25, 2012, the Corps requested via fax a list of Native American groups and individuals associated with the APE vicinity from the NAHC. The NAHC provided the list via letter on July 26, 2012. The letter provided by the NAHC also included the results of a SLF search conducted for the APE and indicated that Native American cultural resources have been identified within the APE.

On August 12, 2012, the Corps mailed consultation notices to the Native American groups and individuals indicated by the NAHC. The Corps repeated this process in 2014, requesting and receiving a new NAHC list of Native American contacts on April 8, 2014.

On May 29, 2014, the Corps mailed a second-round of consultation notices to the Native American contacts indicated by the NAHC. To date, the only respondent to the Corps request for consultation has been John Tommy Rosas, Tribal Administrator of the Tongva Ancestral Territorial Nation. The following is a summary of the Corp's consultation with Mr. Rosas:

> August 21, 2012: Mr. Rosas responded via e-mail to the July 25 Corps consultation notification asking about the 30-day response time limit and Project alternatives, and discusses the boundary of a sacred site. Mr. Rosas also expressed concern regarding continuing rights violations under NEPA and NHPA, and questioned the legality of the 2001 extension of a PA established between the Corps, ACHP, and SHPO in 1991 regarding the Playa Vista project.
>
> June 9, 2014: In telephone conversation with the Corps, Mr. Rosas asked about the status of the Project regarding Area C South and the Section 404 permit.
>
> June 19-23, 2014: Mr. Rosas shared privileged and confidential information regarding the APE via ten e-mails.
>
> June 25, 2014: In an e-mail, Mr. Rosas requests a time extension on the 30-day period for Section 106 consultation to submit informational materials to the Corps. On July 8, 2014, the Corps responded that Mr. Rosas could submit materials at any time in the process and they would become part of the public record, excepting site/resource locations. Mr. Rosas responded with a thank you for the response and clarification.
>
> July 11, 2014: Mr. Rosas sent the package of informational materials referred to on June 25 to the Corps.
>
> August 7, 2014: A Section 106 consultation meeting was held with participants from CDFW, the Annenberg Foundation, the California Department of Parks and Recreation, Coastal Conservancy, the Corps, Bonterra Psomas, and Mr. Rosas. Discussion topics included jurisdiction, preparation of the EIS, Section 106, NEPA, and the PA extension.

March 10, 2015: Mr. Rosas forwarded a letter via e-mail to the Corps and the NAHC regarding possible violations concerning human remains found during the Phase II Village at Playa Vista project. In the same-email Mr. Rosas sent a copy of the 2001 PA extension and the CEQA planning process, and also expressed concern about moving the riparian corridor.

Summary of Native American Consultation

Native American consultation conducted to date strongly indicates that the Ballona Reserve should be considered sensitive for Native American resources. Consultation under CEQA, Section 106 of the NHPA, and CDFW's Tribal Communication and Consultation Policy is ongoing.

Geoarchaeological Review

Based on review of geotechnical logs, historic maps, and the locations of archaeological sites elsewhere within the Ballona Reserve and surrounding area, the portions of the Project site containing native soils with top elevations of +10 feet from the North American Vertical Datum (NAVD 88) or higher appear to have the highest potential to contain prehistoric archaeological sites (see Lockwood [2015] for a more detailed discussion of the geoarchaeological review). Compared with lower elevation areas, landforms at +10 feet NAVD 88 or higher would have been drier and more stable for human use which would have made them conducive to frequent and sustained human occupation and, thus, formation of archaeological sites. To account for the interpolation applied in this analysis, where data from individual cores were used to develop approximations for intervening areas, thereby introducing a degree of inaccuracy, portions of the Project site containing native soils with top elevations of +7 feet NAVD 88 (3 feet [or 30 percent] lower than the approximate elevation of known human occupation sites in the vicinity) are identified as "Higher Sensitivity" for prehistoric archaeological resources (Lockwood 2015).

Conversely, the portions of the Project site containing native soils with top elevations below (or deeper than) +7 feet NAVD 88 appear to possess a "Lower Sensitivity" for prehistoric archaeological resources. Low-lying areas would have been periodically to perpetually saturated, making them unsuitable for human occupation. While there is little doubt that people visited low-lying areas of the marsh to hunt and forage, they are unlikely to have lived here, and the types of subsistence activities conducted would not be expected to result in large or diverse accumulations of cultural materials. Rather, archaeological sites, if present in these areas, are expected to be small and ephemeral (Lockwood 2015).

Cultural Resources Surveys and Assessments

Archaeological Resources

An archaeological resources survey of the Project site was conducted between November 17 and November 26, 2014 by BonTerra Psomas (Douglas et al. 2015). All accessible portions of the Project site were surveyed in a systematic manner with transects spaced approximately 15 meters apart. The Project site exhibited numerous disturbances, including modern debris from dumping and demolitions, imported soils from unknown locations, and development (both historic and modern). In addition, a large majority of the Project site was covered in vegetation resulting in generally poor surface visibility. As a result of the survey, three newly identified resources were documented, including one historic-period ceramic concentration (SS-20H) located within the eastern portion of site CA-LAN-1970H, and two isolated artifacts (Isolate 1 and Isolate 2) were documented. The two isolates were recommended not eligible for the California Register and National Register (Douglas et al. 2015) and were not addressed in subsequent studies. Consultation with the SHPO and other consulting parties will be required concerning eligibility.

The CA-LAN-1970H ceramic concentration is a historic-period refuse consisting of numerous ironware ceramic and glass beverage bottle fragments. The concentration is located within the boundary of CA-LAN-1970H (the Venice Oil Field, previously determined not eligible for the National Register and recommended not eligible for the California Register). At the time, the concentration was not evaluated for listing in the National Register or California Register (Douglas et al. 2015), but was subsequently evaluated (see below).

Isolate 1 consists of a prehistoric quartzite secondary flake, and Isolate 2 consists of a prehistoric rhyolite secondary flake (Douglas et al. 2015). As isolated occurrences, these two resources were recommended not eligible for listing in the National Register or California Register (Douglas et al. 2015). Consultation with the SHPO and other consulting parties will be required concerning eligibility.

Archaeological test excavation was conducted between December 14 and 18, 2015, by ESA for purposes of evaluation for listing in the National Register and California Register at five archaeological resources within areas of the Project site that would be subject to direct impacts from the Project (Vader and Bever 2016). The five resources included four previously identified archaeological sites (CA-LAN-4714H, -4715H, -4716H, and the CA-LAN-1970H ceramic concentration, and newly identified historic-period archaeological site, CA-LAN-4713H, discovered during the fieldwork). Resource CA-LAN-4713H consists of a concentrated deposit of historic-period ceramic and glass refuse. In addition, an isolated prehistoric flaked stone projectile point (P-19-101357) was found on the modern ground surface in the vicinity of CA-LAN-1970H ceramic concentration.

At CA-LAN-4715H, identified as the prior location of the Cox Stable, two mechanical backhoe trenches were excavated in an area where structures related to the stables once stood. Aside from a few fragments of milled lumber, no subsurface cultural resources were identified, indicating that the resource does not have a buried archaeological component. Resource CA-LAN-4716H was also tested with two backhoe trenches, and while a subsurface cultural deposit was identified, with bottles and other materials dating to the mid-20th century, the deposit was mixed with more recent trash and was clearly in a disturbed, redeposited context. Resources CA-LAN-4713H and -4714H, both historic-period refuse deposits, were tested with a series of shovel test units. Both produced relatively small assemblages of household refuse—including bottle glass, ceramics, and saw-cut, domesticated animal bone (at CA-LAN-4714H)—indicative of intermittent episodes of refuse dumping into the Ballona Reserve. None of the recovered materials indicated that the sites could be linked to a particular historical theme developed in a research design prepared for the Project, and none of the materials displayed a secure context. At the CA-LAN-1970H ceramic concentration, a small scatter of ceramic and glass fragments, two surface scrape units were excavated within the scatter of debris. Both indicated that the resource does not have a subsurface component. Importantly, the testing at the ceramic concentration did not identify any prehistoric cultural materials that might be associated with the single projectile point (P-19-101357) found nearby, supporting the conclusion that the projectile point represents an isolated occurrence.

A sixth site, CA-LAN-3982H, which was discovered during monitoring of construction beneath the paved surface of Jefferson Boulevard, was not tested, but was evaluated using existing data. Because the resource was largely removed during the previous construction, and because it appears to be associated with P-19-192324 (the Pacific Electric Railway), a resource recommended as ineligible (discussed below), CA-LAN-3982H has been recommended as not eligible for listing in the National Register and California Register.

As a result of the testing and evaluation, all six of the archaeological sites (CA-LAN-3982H, -4713H, -4714H, -4715H, -4716H, and the CA-LAN-1970H ceramic concentration) were recommended as not eligible for listing in the National Register or California Register (Vader and Bever 2016). As an isolated occurrence, the projectile point also is recommended as not meeting the eligibility criteria for listing in the National Register or California Register (Vader and Bever 2016). Also, none of the six sites or the isolate meets the definition of a unique archaeological resource under CEQA.

In May 2016, the Corps sent a letter to SHPO consulting on the APE and seeking concurrence concerning the Corps' eligibility determinations on the archaeological resources that were evaluated. Thereafter, the Corps' assessment of effects will be sent to SHPO for review and comment. All documentation also will be provided to interested Native American groups and other consulting parties. If the Corps determines that the undertaking would have an adverse effect on National Register eligible properties, and the SHPO concurs, the Advisory Council will be notified per 36 C.F.R. §800.6.

Built Environment Resources

A historic resources survey of the built environment within the Ballona Reserve was conducted by Daly and Associates on September 5, 2015 (Daly 2015). As a result of the survey, a total of five historic-period built environment resources were documented or re-visited, including four previously identified resources (P-19-192323 – utility poles]; P-19-192324 – Pacific Electric berm and bridge remains; P-19-192325– Fiji Ditch; and P-19-187805 – Ballona Creek Flood Control Channel) and one newly identified resource (P-19-192326 - Pacific Electric Railway Bridge Abutments).

The four previously identified resources (P-19-187805, -192323, -192324, and -192325) were evaluated and recommended as not eligible for listing in the National Register and California Register (Daly 2015). The newly identified resource, P-19-192326 (Pacific Electric Railway Bridge Abutments), consist of two paired bridge abutments on the east and west sides of Lincoln Boulevard. The abutments, likely constructed in 1933, are manufactured from poured concrete and were designed to carry the Pacific Electric Railroad over Lincoln Boulevard. The bridge also may have served as a stop on the line. While the bridge, track, and electrical service poles no longer exist, the abutments themselves remain largely unmodified. As an example of a type of bridge construction from the 1930s, including decorative elements, the Pacific Electric Railroad Bridge Abutments have been recommended as eligible for the National Register under criterion C, as well as California Register under criterion 3, for their architectural characteristics and because they are a rare example of a partially intact Pacific Electric Railway bridge.

Consultation with the SHPO and other consulting parties will be required concerning eligibility and assessment of effects.

Summary

Table 3.5-2 summarizes the 19 cultural resources identified within the Project site, including the 13 previously recorded resources, the three resources identified by BonTerra Psomas, the two resources identified by ESA, and the one built resource identified by Daly and Associates. Of these, three resources (the BLAD, CA-LAN-54, and the Pacific Electric Railroad Bridge Abutments) have been determined or, in the case of the Pacific Electric Railroad Bridge Abutments, recommended as eligible for listing in the National Register and California Register, qualifying them as historic properties under the NHPA, and historical resources under CEQA. One additional resource (CA-LAN-3784H) occurs outside of but adjacent to the Project site, but has been included in the APE for purposes of analysis. It will be avoided and will not be impacted by the Project. The site is included in this analysis given its proximity to the Project site and APE. The resource will be assumed eligible for purposes of the Project, qualifying it as a historic property under the NHPA, and a historical resource under CEQA.

A total of 15 resources (CA-LAN-1970H; the CA-LAN-1970H ceramic scatter; CA-LAN-3982H; CA-LAN-4713H; CA-LAN-4714H; CA-LAN-4715H; CA-LAN-4716H; P-19-176734; P-19-187805; P-19-192323, -192324, -192325, and -192326; isolates 1 and 2; and isolate P-19-101357) have been determined or recommended not eligible for the National Register or California Register and, therefore, would not be considered historic properties under the NHPA or historical resources under CEQA. Consultation with the SHPO and other consulting parties will be required concerning final determinations of eligibility and assessment of effects.

Paleontological Resources

A Phase I cultural resources study was conducted by BonTerra Psomas, which included a paleontological database search from the Natural History Museum of Los Angeles County (LACM) on November 24, 2014, and a paleontological resources survey conducted between November 17 and November 26, 2014 (Douglas et al. 2015). The LACM database search revealed that no paleontological localities are located within the Project boundaries; however, one locality less than 1,000 feet from the southeast corner of the Project site has yielded invertebrates (Locality LACM 59) and vertebrates (Locality LACM 1024). In addition, the database search results indicated that excavations below 5 feet in younger Quaternary Alluvium (Qa), as well as in exposures of San Pedro Sand (Qsp), could uncover significant fossil vertebrate specimens and should be closely monitored (McLeod 2014). No paleontological resources were noted on the BonTerra Psomas survey (Douglas et al. 2015).

TABLE 3.5-2
ARCHAEOLOGICAL AND BUILT RESOURCES WITHIN THE APE

Resource	Description	National Register/California Register Eligibility Status
Districts		
BLAD	Archaeological district comprised of sites pertaining to the prehistoric occupation of the Ballona microregion	Eligible †
Archaeological Resources		
CA-LAN-54	Prehistoric shell midden and habitation site with human burials	Individually eligible; contributor to BLAD†
CA-LAN-1970H	Venice Oil Field complex	Not eligible for National Register†/ Recommended not eligible for California Register
CA-LAN-1970H ceramic concentration	Historic-period refuse scatter	Recommended not eligible
CA-LAN-3784H**	Historic-period refuse scatter	Assumed eligible
CA-LAN-3982H	Historic-period wooden platform remnants with associated refuse	Recommended not eligible
CA-LAN-4713H	Historic-period refuse scatter	Recommended not eligible
CA-LAN-4714H	Historic-period refuse scatter	Recommended not eligible
CA-LAN-4715H	Remnants of Cox Stable	Recommended not eligible
CA-LAN-4716H	Historic-period refuse scatter	Recommended not eligible
Isolate 1	Prehistoric quartzite flake	Not eligible*
Isolate 2	Prehistoric rhyolite flake	Not eligible*
P-19-101357	Prehistoric projectile point	Not eligible*
Built Environment Resources		
P-19-176734	Caltrans Bridge No. 53-118	Recommended not eligible for National Register/Not evaluated for California Register
P-19-187805	Ballona Creek Channel	Portion in Project site recommended not eligible
P-19-192323	Remnants of utility line	Recommended not eligible
P-19-192324	Pacific Electric Railroad berm and bridge remnants	Recommended not eligible
P-19-192325	Earthen channel ("Fiji Ditch")	Recommended not eligible
P-19-192326	Two paired bridge abutments on either side of Lincoln Boulevard	Recommended eligible

† determination with SHPO concurrence; * Isolated artifact not eligible; ** adjacent to Project site

3.5.6 Direct and Indirect Impacts

3.5.6.1 Alternative 1: Full Tidal Restoration/Proposed Action

1-CUL-1: Alternative 1 would, if not mitigated, cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5. (Less than Significant with Mitigation Incorporated)

Direct Impacts

There is potential for Alternative 1 to result in direct impacts to historical resources during any restoration or post-restoration activity that disturbs the ground that overlies a historical resource or the resource itself. Four historical resources have been identified within Alternative 1: the BLAD, a prehistoric archaeological district with one known contributor within the Project site (CA-LAN-54); CA-LAN-54, a prehistoric archaeological site with known human burials; CA-LAN-3784H, a historic-period archaeological site consisting of domestic refuse; and the Pacific Electric Railroad Bridge Abutments (Table 3.5-3).

TABLE 3.5-3
HISTORICAL RESOURCES IN ALTERNATIVE 1

Identifier	Description	National Register/ California Register Eligibility	Impact
BLAD	Archaeological district comprised of sites pertaining to the prehistoric occupation of the Ballona microregion	Determined eligible	Direct/Indirect
CA-LAN-54	Prehistoric archaeological site containing midden deposits, features, tools, and lithic and ground stone artifacts	Determined eligible	Direct/Indirect
CA-LAN-3784H	Historic-period archaeological site consisting of a refuse scatter	Assumed eligible	None
Pacific Electric Railroad Bridge Abutments	Two paired bridge abutments on either side of Lincoln Boulevard	Recommended eligible	Direct/Indirect

BLAD: One archaeological site associated with the BLAD (CA-LAN-54) is within the Project site. CA-LAN-54 is currently covered with between 3 and 10 feet of culturally sterile fill.[68] All alternatives of the Project would avoid impacts to the resource, including the placement of additional fill. Direct impacts to the site are not anticipated. Because it is a buried resource, and in an area not subject to inundation, it would not be impacted by post-restoration activities.

Although CA-LAN-54 is the only prehistoric archaeological resource associated with the BLAD identified within the Project site, the Ballona Reserve is considered highly sensitive for buried archaeological resources. It is recognized that the inhabitants of the known archaeological sites

68 Fill materials that do not contain archaeological materials.

would have used the estuary and lands of the Ballona Reserve for various activities including hunting, fishing, gathering, and collection of other resources. These activities likely left additional archaeological evidence as yet undiscovered. This is particularly true given the abundance of archaeological resources that have been identified within the broader area beyond the Project site (as described in Section 3.5.2.3), including resources identified as sacred sites by the NAHC. The geoarchaeological study conducted for the Project has identified areas within the Project site that should be considered more sensitive for prehistoric archaeological resources. These represent areas that, prior to modern development in the Ballona Reserve, including the deposition of dredging spoils, would have been naturally elevated exposures of land. These would have stood above the surrounding, largely inundated wetland. Known archaeological resources in the area, such as CA-LAN-54, support the assessment that these dry, elevated exposures of land probably served as foci of prehistoric human habitation. It is in these areas that prehistoric archaeological sites are most likely to be encountered during excavation for Alternative 1. If discovered, any previously unidentified cultural resources that are determined to be contributors to the BLAD would also be considered historical resources under CEQA. Impacts to such resources would constitute a significant impact to the BLAD. Mitigation Measures CR-1, CR-2, and CR-3, which outline requirements for archaeological monitoring, Native American monitoring, and treatment of unanticipated finds, respectively, would ensure that Alternative 1 would have a less than significant impact on the BLAD.

CA-LAN-54: As discussed above CA-LAN-54 is currently covered with between 3 and 10 feet of culturally sterile fill. All alternatives of the Project would avoid impacts to the resource, including the placement of additional fill. Direct impacts to the site are not anticipated. Because it is a buried resource, and in an area not subject to inundation, it would not be impacted by post-restoration activities.

CA-LAN-3784H: Site CA-LAN-3784H has not been evaluated for listing in the National Register or California Register, but is being treated as a historical resource for the purposes of the Project. The historic-period archaeological site lies partially within the APE (overlapping with property owned by SoCalGas) and is buried between 7 and 9 feet below the modern ground surface. Although the applicant has no direct control over property owned and operated by SoCalGas, the applicant will attempt to work with SoCalGas to ensure CA-LAN-3784H will not be indirectly impacted as a result of post-restoration activities (i.e., relocation of gas infrastructure).

P-19-192326 (Pacific Electric Railway Bridge Abutments): Alternative 1 proposes to reuse the Pacific Electric Railway Bridge Abutments to construct a new bridge spanning Lincoln Boulevard. The bridge would be used initially to transport earthen fill between Area A and Area C during restoration and, secondly, as a permanent structure to facilitate pedestrian traffic as part of the public access plan. Any modifications to the abutments could constitute a direct impact if those modifications constitute a substantial adverse change in the significance of a resource, which is defined as the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource is materially impaired. In this case, the significance of the resource is derived primarily from its visual characteristics (i.e., character-defining features). Pursuant to CEQA Guidelines §15064.5(b)(3), a project that complies with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (Standards), which provides a framework for assessing a project's potential to adversely impact a resource and guidance on meeting the Standards, is generally considered as mitigated to a level of less than significant. Mitigation Measure CR-4, which requires compliance with the Standards, would ensure that Alternative 1 would have a less than significant impact on the resource. Further, adherence to the Standards would ensure that there would be no post-restoration impacts.

In addition to the potential for discovery of unknown prehistoric resources that may be historical resources as contributors to the BLAD, given the historical uses of the Project site (as described in Section 3.5.2.5) there is a potential to discover buried historic-period archaeological sites that could qualify as historical resources. Mitigation Measures CR-1, CR-2, and CR-3 which would require assessment and treatment of all archaeological resources, would reduce impacts to unknown historic-period archaeological resources to less than significant.

Mitigation Measures

Mitigation Measure CR-1: ***Archaeological Monitoring*****.** A Cultural Resources Monitoring Plan (CRMP) shall be developed and implemented for the Project. The CRMP also would be a component of a Historical Properties Treatment Plan (HPTP), per Section 106 of the NHPA, should the PA or MOA prepared for the Project require an HPTP. A Secretary of the Interior Qualified archaeologist shall be retained to oversee preparation of the CRMP/HPTP, construction monitoring, and preparation of a final monitoring report. The qualified archaeologist shall develop the CRMP/HPTP based on Project design plans, the results of the archaeological and geoarchaeological studies prepared for the Project (Douglas et al. 2015; Lockwood 2015; Vader and Bever 2016), input from Native American representatives, and any other relevant information. The CRMP/HPTP shall provide measures for cultural resources construction worker sensitivity training; delineation of sensitive areas; archaeological and Native American monitoring; assessment and treatment of unanticipated discovery of archaeological resources and human remains; notification protocols; procedures for Native American coordination and input; weekly, monthly, and final reporting; and curation of cultural materials recovered during monitoring. The CRMP/HPTP shall be developed in coordination with CDFW, the Corps, and appropriate Native American representatives.

The CRMP/HPTP shall specify the roles and responsibilities of involved parties, and also shall specify the location, duration and timing of monitoring, which minimally shall occur in areas of high or moderate sensitivity, and from the time of initial ground disturbance (which could include grading, vegetation removal, brush clearance, excavation, and other activities) until a depth at which the potential to encounter buried archaeological deposits is greatly reduced. These sensitive areas will include, minimally, archaeological sites CA-LAN-54 and CA-LAN-3784H (including a suitable buffer of at least 100 feet), and areas identified as highly sensitive in the geoarchaeological study. These areas shall be identified in maps to guide monitoring. The CRMP/HPTP shall outline procedures for determining when/where monitoring may be reduced or discontinued in consultation among CDFW, the Corps (in the case of an HPTP), qualified archaeologist, and appropriate Native American representatives.

The CRMP/HPTP shall stipulate that archaeological monitoring shall be conducted by an archaeological monitor familiar with the types of resources that could be encountered and that the archaeological monitor shall keep daily logs detailing the types of activities and soils observed, and any discoveries. Monitors shall be empowered to halt and re-direct ground disturbing activities in the event of a discovery until it has been assessed for significance and treatment implemented, if necessary. The CRMP/HPTP shall state that avoidance or preservation in place shall be the preferred means of mitigating impacts to historical resources and unique archaeological resources, but will provide procedures to follow should avoidance be infeasible (see Mitigation Measure CR-3).

Mitigation Measure CR-2: *Native American Monitoring*. CDFW shall retain a Native American monitor who is traditionally and culturally affiliated with the Project site to carry out the monitoring as required by the CRMP/HPTP in Mitigation Measure CR-1. The monitor shall also be empowered to halt and re-direct work in the event of a discovery until it has been assessed for significance and treatment implemented, if necessary. The provisions of the Native American monitoring plan will be included in the CRMP/HPTP.

Mitigation Measure CR-3: *Treatment of Unanticipated Discoveries*. The CRMP/HPTP developed as part of Mitigation Measure CR-1 shall include protocols for the assessment and treatment of any unanticipated discoveries of archaeological resources during Project implementation, including procedures for assessing the significance of the resources according to the National Register and California Register. To accomplish this, the unanticipated discoveries component of the CRMP/HPTP will contain:

1. A research design to be used to guide the evaluation of cultural resources, including a regional cultural setting, appropriate regional research questions, and field methods for the testing and evaluation of cultural resources.
2. Prescribed actions to be taken in the event that unanticipated cultural resources are discovered during construction, or known resources are impacted in an unanticipated manner, consistent with Mitigation Measure CR-1, including (but not limited to):
    a. Notification procedures
    b. Establishment of buffers for resources that will be avoided
    c. Documentation of resources on DPR forms
    d. Inspection of the resource(s) by a qualified archaeologist
    e. Evaluation of the resource for listing in the California Register and National Register, or as a unique archaeological resource under CEQA, and as a contributor to the BLAD
    f. Monitoring of construction in the vicinity of the resource per Mitigation Measures CR-1 and CR-2

3. Treatment protocols for significant cultural resources that cannot be avoided, to be developed in consultation with CDFW, the Corps, the SHPO and appropriate Native American representatives, may include but not be limited to:

    a. Data recovery excavation, with preparation of an attendant data recovery plan

    b. Surface artifact collection

    c. Further site documentation, including photography, collection of oral histories, preparation of a scholarly work, or some form of public awareness or interpretation

    d. Special studies where sufficient data exists, including but not limited to radiocarbon dating, residue analysis, sourcing and other materials analysis

    e. Historical research, as appropriate, with the aim to target the recovery of important scientific or other data contained in the portion of the significant resource to be impacted by the project

    f. A report documenting the methods and results of the treatment of the resource

Mitigation Measure CR-4: *Compliance with Secretary of Interior's Standards*. CDFW shall retain a Secretary of the Interior qualified architectural historian to ensure compliance with the Secretary of the Interior's Standards regarding the re-use of the Pacific Electric Railroad Bridge Abutments. The architectural historian shall prepare a character-defining features memorandum that outlines the characteristics of the bridge that convey its significance and that must be retained. In addition, the architectural historian shall provide guidance on the types of bridge spans that would be consistent with the Standards. The architectural historian shall review and approve the preliminary and final bridge design plans to confirm that it conforms to the Standards. The architectural historian shall also monitor construction of the new bridge span to ensure that the Project does not inadvertently damage or alter the character-defining features of the bridge abutments. Further, post-restoration plans for maintenance and repair of the bridge will need to be developed with input from an architectural historian and in accordance with the Standards to ensure that post-restoration use of the bridge will not impact the resource.

Indirect Impacts

By their nature, buried archaeological resources typically are subject to only direct impacts, such as destruction or displacement caused by ground disturbing activity, and not indirect impacts, such as visual impacts or post-restoration impacts such as vandalism and inadvertent damage following Project completion. CA-LAN-54 and CA-LAN-3784H are currently buried. They will not be impacted by construction activities. CA-LAN-54 is buried between 3 and 10 feet deep, and CA-LAN-3784H is buried between 7 and 9 feet deep. Both occur above the elevation of anticipated flooding, reducing the potential for post-restoration impacts. As such, Alternative 1 will not impact the resources further, either directly or indirectly. Because CA-LAN-54 is the only known contributor to the BLAD within the Project site, Alternative 1 also will not indirectly impact the BLAD. Any previously unidentified archaeological resources that are disturbed by ground disturbing activity would be treated in accordance with Mitigation Measures CR-1, CR-2, and CR-3, thereby ensuring that no indirect impacts would occur.

The Pacific Electric Railroad Bridge Abutments constitute a built resource that derives much of its significance from its visual and design characteristics (character-defining features). Alternative 1 proposes to reuse the bridge abutments to construct a new bridge spanning Lincoln Boulevard. Inadvertent damage to the bridge abutments from maintenance, repair, or increased pedestrian visitor traffic could adversely affect the character-defining features of the bridge. In addition, the construction of a new bridge could alter the immediate surroundings of the bridge abutments. These indirect impacts could result in a substantial adverse change to characteristics of the resource that convey its historical significance. Pursuant to CEQA Guidelines §15064.5(b)(3), a project that complies with the Standards, which provides a framework for assessing a project's potential to adversely affect a resource and guidance on meeting the Standards, is generally considered as mitigated to a level of less than significant. Mitigation Measure CR-4, which requires compliance with the Standards, would ensure that Alternative 1 would have a less than significant impact on the resource, both during and after restoration.

Mitigation Measures

Implement Mitigation Measures CR-1 through CR-4, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1 through CR-4 would reduce this impact to less than significant.

1-CUL-2: Alternative 1 would, if not mitigated, cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5. (Less than Significant with Mitigation Incorporated)

Direct Impacts

There is the potential for Alternative 1 to result in direct impacts to unique archaeological resources, as described at CEQA Guidelines §15064.5, during or following restoration. CA-LAN-54 has been determined eligible for the National Register and California Register and also may be considered a unique archaeological resource given that it represents one of the very few substantial archaeological sites that have been identified within the wetland itself, rather than at the margin of the wetland or atop the surrounding bluffs. As a contributor to the BLAD, any impacts to CA-LAN-54 would constitute an impact to the district as well. Although not assessed as such, CA-LAN-3784H, an archaeological resources assumed eligible for the National Register and California Register, might also be considered a unique archaeological resources. However, as discussed above under 1-CUL-1, CA-LAN-54 and CA-LAN-3784H are both buried, CA-LAN-54 between 3 and 10 feet deep and CA-LAN-3784H between 7 and 9 feet deep, and both occur in areas that will not be subject to inundation. As such, they will not be directly impacted by the Project both during and after restoration.

In addition to known resources, any previously unidentified archaeological resources that might be encountered during implementation of Alternative 1 could also qualify as unique archaeological resources pursuant to CEQA Guidelines §15064.5. However, for the reasons discussed above under impact 1-CUL-1, implementation of Mitigation Measures CR-1, CR-2, and CR-3 would ensure that Alternative 1 would have a less than significant impact on archaeological resources pursuant to CEQA Guidelines §15064.5.

Mitigation Measures

Implement Mitigation Measures CR-1 through CR-3 as set forth above.

Indirect Impacts

By their nature, buried archaeological resources typically are subject to only direct impacts, such as destruction and disturbance caused by Project activities, and not indirect impacts, such as looting or inadvertent damage that might occur following Project completion. That said, construction-related exposure of previously unidentified resources and subsequent damage caused by increased visitation, a potential post-restoration impact, could lead to indirect impacts. As stated above, however, any previously unidentified archaeological resources that are discovered thought ground disturbing activity would be treated in accordance with Mitigation Measures CR-1, CR-2, and CR-3, thereby minimizing indirect impacts.

Mitigation Measures

Implement Mitigation Measures CR-1 through CR-3, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1 through CR-3 would reduce this impact to less than significant.

1-CUL-3: Alternative 1 could, if not mitigated, directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Less than Significant with Mitigation Incorporated)

Direct Impacts

There is a potential for Alternative 1 to result in direct impacts to paleontological resources primarily during, but to a lesser extent following, restoration. Some portions of the Project site contain or may be underlain by sensitive formations that are known to contain significant paleontological resources, such as older Quaternary Alluvium (Qoa) and San Pedro Sand (Qsp). Since Alternative 1 includes excavations up to a maximum of 30 feet, and paleontologically sensitive formations underlie the Project site at variable but unknown depths, there is the potential for impacts to paleontological resources, primarily during restoration.

Because Alternative 1 could result in excavation up to a maximum depth of 30 feet in some areas, primarily where the Ballona Creek channel will be modified in the vicinity of the existing channel, and portions of the Project site are underlain at an unknown depth by sensitive geological units (i.e., the San Pedro Sand and older Quaternary alluvium) that have yielded scientifically significant paleontological resources in the past, Alternative 1 could destroy a unique paleontological resource or site or unique geologic feature. This would be a significant impact. However, Alternative 1 would result in a less-than-significant impact to paleontological resources with the incorporation of Mitigation Measure CR-5 which requires preparation of a paleontological monitoring plan and assessment and treatment of paleontological resources.

Mitigation Measure

Mitigation Measure CR-5: *Paleontological Resources Impact Mitigation Plan.* A Paleontological Resources Impact Mitigation Plan (PRIMP) shall be prepared prior to the start of restoration. The PRIMP shall be developed by a qualified paleontologist (defined as a paleontologist meeting the SVP Standards). The PRIMP shall identify areas where depth of excavation will extend into areas that are considered moderately to highly sensitive for paleontological resources, based on the final grading plans. Paleontological resource requirements shall be incorporated as a note on the grading plan cover sheet. The PRIMP shall include, but not be limited to:

1. During excavations in areas underlain by geologic units identified as having moderate to high paleontological sensitivity per the SVP guidelines and likely to contain paleontological resources, a qualified vertebrate paleontologist, shall direct the paleontological monitoring. Areas of concern include all previously undisturbed paleontologically sensitive sediments of the fossiliferous San Pedro Sand (Qsp) and excavations beyond a depth of five feet into Quaternary alluvium (Qa). As shown in Table 3.5-1, Quaternary alluvium (Qa) underlies most areas of the Project site. San Pedro Sand (Qsp) underlies portions of South and Southeast Area B. Specific areas that will require monitoring will be developed in the PRMP based on the most current design plans. If no significant fossils are found, then, after an adequate amount of time, which the SVP (2010) considers to be 50% of the monitoring duration, the frequency of monitoring may be adjusted at the discretion of the qualified paleontologist.

2. Paleontological monitors shall be equipped to salvage fossils as unearthed to avoid construction delays, collect necessary paleontological data, and to remove samples of sediments likely to contain the remains of small fossil invertebrates and vertebrates. If it is determined by the qualified paleontologist that appropriate sediments are present that may yield significant microvertebrates, a test sample should be collected per the SVP (2010) guidelines. If scientifically significant microvertebrates are recovered from the test sample, the PRIMP shall direct the qualified paleontologist or paleontological monitor to collect and screen a standard sample per the SVP (2010) guidelines. Monitors shall be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens.

3. The PRIMP shall stipulate that the preparation of recovered specimens shall be conducted to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential in order to fully mitigate adverse impacts to the resources.

4. The PRIMP shall specify that the identification and curation of specimens into an established museum repository with permanent retrievable paleontologic storage. These procedures are also essential steps in effective paleontological mitigation and

CEQA compliance. The paleontologist should have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontological resources is not complete until such curation into an established museum repository has been fully completed and documented.

5. The PRIMP shall detail the preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, would signify completion of the PRIMP to mitigate impacts to paleontologic resources. Included in the report will be recommendations for post-restoration management protocols that might be necessary to reduce indirect impacts following Project completion. These could include management requirements for restricting access to significant paleontological resources through a combination of law enforcement, protective enclosures, land access restrictions, or other means. The final PRIMP shall be submitted to and approved by the CDFW and the Corps prior to commencement of grading in the Ballona Reserve. The qualified paleontologist also shall contribute to any construction worker cultural resources sensitivity training, either in person or via a module provided to the qualified archaeologist.

Implementation of Mitigation Measure CR-5 would reduce the significance of Impact 1-CUL-3 to a less-than-significant level by ensuring that excavations proposed in areas considered to have moderate to high sensitivity for paleontological resources would be managed and monitored in accordance with the recommendations of the PRIMP by a qualified paleontologist.

Indirect Impacts

Indirect impacts to paleontological resources may result from excavation activities exposing potentially fossiliferous sediments that are vulnerable to vandalism or illegal collecting, particularly post-restoration. Mitigation of indirect impacts includes removing the resource, or limiting access to significant paleontological resources through a combination of law enforcement, protective enclosures, and land access restrictions. Any paleontological resources encountered during Project implementation would be assessed according to Mitigation Measure CR-5, which establishes protocols for evaluating and, if necessary, removing sensitive paleontological resources. Implementation of Mitigation Measure CR-5 would ensure that indirect impacts to paleontological resource will be minimized and reduced to a less-than-significant level.

Mitigation Measures

Implement Mitigation Measure CR-5, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measure CR-5 would ensure that this impact would be less than significant.

1-CUL-4: Alternative 1 could, if not mitigated, disturb human remains, including those interred outside of formal cemeteries. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Project activities would not result in impacts to site CA-LAN-54, the only site in the Ballona Reserve known to contain human remains. However, the inadvertent discovery of as-yet-unknown human remains as a result of any restoration or post-restoration activity implemented under Alternative 1 could result in their disturbance, which would be a significant impact. In the event of inadvertent discovery of human remains, CDFW will ensure that its construction contractor abides by the requirements of Mitigation Measure CR-6, which would require compliance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5, requiring assessment of the discovery by the coroner, assignment of a Most Likely Descendant (MLD) by the NAHC, and consultation between the MLD and the landowner regarding treatment of the discovery. With implementation of this mitigation measure, impacts relating to the unanticipated discovery of human remains, both during and post-restoration, would be reduced to a less-than-significant level.

Mitigation Measure

> **Mitigation Measure CR-6: *Discovery of Human Remains*.** If human remains are encountered, the construction contractor shall immediately halt work in the vicinity (within 100 feet) of the find, notify CDFW and the Corps of the find, and unless CDFW decides to initiate contact, the construction contractor shall contact the Los Angeles County Coroner in accordance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5. If the County Coroner determines that the remains are Native American, the NAHC will be notified in accordance with Health and Safety Code Section 7050.5(c), and Public Resources Code Section 5097.98 (as amended by AB 2641). The NAHC will designate a Most Likely Descendant (MLD) for the remains per Public Resources Code Section 5097.98. Until the CDFW has conferred with the MLD and determined an appropriate course of action for protection, avoidance, or removal and disposition of the remains, CDFW and the Corps shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities take into account the possibility of multiple burials.

Indirect Impacts

Should human remains be identified during implementation of Alternative 1, they would be treated in accordance with appropriate state law, as described in Mitigation Measure CR-6. Per state law, the MLD and land owner would determine the appropriate course of action for the treatment and disposition of the remains. This could involve preservation in place or removal and reburial at a future date. Through this consultation, an appropriate course of action would be developed that would ensure that any human remains that might be encountered would not be left in a situation where they would suffer indirect impacts following completion of Alternative 1.

Mitigation Measure

Implement Mitigation Measure CR-6, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measure CR-6 would reduce this impact to less than significant.

1-CUL-5: Implementation of Alternative 1, unless mitigated, would result in the loss of a property's eligibility status under National Register Criteria A-C. (Less than Significant with Mitigation Incorporated)

Direct Impacts

One known historic property, P-19-192326 (Pacific Electric Railway Bridge Abutments), has been recommended as eligible for the National Register under criterion C. No resources have been found eligible under criterion A or B. As discussed above under 1-CUL-1, Alternative 1 proposes to reuse the property to construct a new bridge spanning Lincoln Boulevard. However, Mitigation Measure CR-4 requires adherence to the Secretary of the Interior's Standards, which will ensure that the property would not lose its eligibility status and that Alternative 1 would have a less than significant impact on the property, both during and after restoration.

It is unlikely that any other built resources that could be eligible under criteria A-C will be identified within the project area as a result of Project implementation. Regardless, currently unidentified resources that might be encountered during restoration would be subject to the requirements of Mitigation Measures CR-1 through CR-3, which would ensure that both restoration and post-restoration impacts to resources found eligible under criteria A-C would be less than significant, for the reasons discussed above under impact threshold 1-CUL-1.

Mitigation Measure

Implement Mitigation Measures CR-1 through CR-4, as set forth above.

Indirect Impacts

The Pacific Electric Railroad Bridge Abutments derive much of their significance from their visual and design characteristic. Post-restoration damage to the bridge abutments from maintenance, repair, or increased pedestrian visitor traffic could adversely affect the character-defining features of the bridge. In addition, the construction of a new bridge could alter the immediate surroundings of the bridge abutments. These indirect impacts could result in a substantial adverse change to characteristics of the resource that convey its historical significance. However, as is the case for 1-CUL-1, Mitigation Measure CR-4, which requires compliance with the Secretary of the Interior's Standards, would ensure that Alternative 1 would have a less-than-significant impact on the resource, both during and after restoration.

Though uncommon, archaeological resources encountered during construction might also qualify under criteria A-C. This would be particularly true for resources to which Native Americans ascribe sacred or religious significance. However, any previously unidentified archaeological resources that are encountered through ground disturbing activity, including those eligible under criteria A-C, would be treated in accordance with Mitigation Measures CR-1, CR-3, and especially CR-2, which provides for Native American involvement in evaluation and treatment of resources. Implementation of these measures would ensure that no indirect impacts would occur, both during and after restoration.

Mitigation Measure

Implement Mitigation Measures CR-1 through CR-4, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1 through CR-4 would reduce this impact to less than significant.

1-CUL-6: The implementation of Alternative 1, unless mitigated, would result in the destruction of a site eligible under National Register Criterion D. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Both CA-LAN-54 and the BLAD have been determined eligible for the National Register under criterion D, and CA-LAN-3784H is assumed eligible for purposes of the Project. However, as discussed under 1–CUL-1, CA-LAN-3784H is adjacent to but outside of the Project site; nonetheless, it has been included in the APE for purposes of analysis. All three of the resources would be avoided by Alternative 1.

Currently unidentified resources that might be uncovered during the implementation of Alternative 1 would be subject to the requirements of Mitigation Measures CR-1 through CR-3, which provides protocols for monitoring, evaluation and treatment such as data recovery or further documentation. These protocols would ensure that both restoration and post-restoration impacts to resources found eligible under criterion D would be less than significant, for the reasons discussed above under impact threshold 1-CUL-1.

To ensure that no historic properties eligible under criterion D would be impacted by Alternative 1, a Section 106 PA or MOA would be prepared to guide further Section 106 analysis. Requirements for post-review discovery and treatment of resources, which could include data recovery excavation or other measures as outlined in Mitigation Measures CR-1 through CR-3 would be included.

Mitigation Measure

Implement Mitigation Measures CR-1 through CR-3, as set forth above.

Indirect Impacts

By their nature, buried archaeological resources eligible under criterion D typically are subject to only direct impacts, such as destruction and disturbance caused by Proposed Action activities, and not indirect impacts, such as looting or inadvertent damage that might occur following completion of the Proposed Action. That said, construction-related exposure of previously unidentified resources and subsequent damage caused by increased visitation, a potential post-restoration impact, could lead to indirect impacts. As stated above, however, any previously unidentified archaeological resources that are discovered thought ground disturbing activity would be treated in accordance with Mitigation Measures CR-1 through CR-3, thereby minimizing indirect impacts.

Mitigation Measure

Implement Mitigation Measures CR-1, CR-2, and CR-3, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1, CR-2, and CR-3 would reduce this impact to less than significant.

1-CUL-7: The implementation of Alternative 1 would not result in a major modification of a National Historic Landmark or a property meeting the criteria of a National Historic Landmark as defined in 36 CFR Part 65. (No impact)

Direct Impacts

No National Historic Landmarks or properties meeting the criteria for a National Historic Landmark have been identified in the Project area. Consultation between the Corps and the SHPO, as required under Section 106 of the NHPA, and between the Corps and the Keeper of the National Register, if required, would ensure that Alternative 1 would not result in a major modification to a National Historic Landmark.

Mitigation Measure

None.

Indirect Impacts

For the reasons mentioned under *Direct Impacts*, above, no National Historic Landmarks or properties meeting the criteria for a National Historic Landmark would be impacted by Alternative 1.

Mitigation Measure

None.

Level of Significance after Mitigation

No impact.

TABLE 3.5-4
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
CUL-1: Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5? See Impact 1-CUL-1.	☐	☒	☐	☐
CUL-2: Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? See Impact 1-CUL-2.	☐	☒	☐	☐
CUL-3: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? See Impact 1-CUL-3.	☐	☒	☐	☐
CUL-4: Disturb any human remains, including those interred outside of formal cemeteries? See Impact 1-CUL-4.	☐	☒	☐	☐
CUL-5: Even after minimization and mitigation, remaining impacts would be substantial enough that implementation of the alternative would result in the loss of a property's eligibility status under Criteria A-C. See Impact 1-CUL-5.	☐	☒	☐	☐
CUL-6: Implementation would result in the destruction of a site eligible under Criterion D with no mitigated data recovery. See Impact 1-CUL-6.	☐	☒	☐	☐
CUL-7: Implementation would result in a major modification to a National Historic Landmark or a property meeting the criteria of a National Historic Landmark. See Impact 1-CUL-7.	☐	☐	☐	☒

3.5.6.2 Alternative 2: Partial Naturalized Creek

2-CUL-1: Alternative 2 would, if not mitigated, cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5. (Less than Significant with Mitigation Incorporated)

Direct Impacts

There is potential for Alternative 2 to result in direct impacts to historical resources during any restoration or post-restoration activity that disturbs the ground that overlies a historical resource or the resource itself. Four historical resources have been identified within Alternative 2: the BLAD, one prehistoric archaeological district with one known contributor within the Project site (CA-LAN-54); CA-LAN-54, one prehistoric archaeological site with known human burials; CA-LAN-3784H, one historic-period archaeological site consisting of domestic refuse; and the Pacific Electric Railroad Bridge Abutments (Table 3.5-5).

Though reduced in scale, Alternative 2 is similar to Alternative 1 in terms of the potential impacts to historical resources as a result of ground disturbing activities. The potential impacts to the three known historical resources (BLAD, CA-LAN-54, and the Pacific Electric Railroad Bridge Abutments), as well as CA-LAN-3784H, which is assumed eligible, are discussed under Alternative 1 and apply to Alternative 2 as well. Although the degree of excavation would be

**TABLE 3.5-5
HISTORICAL RESOURCES IN ALTERNATIVE 2**

Identifier	Description	National Register/ California Register Eligibility	Impact
BLAD	Archaeological district comprised of sites pertaining to the prehistoric occupation of the Ballona microregion	Determined eligible	Direct/Indirect
CA-LAN-54	Prehistoric archaeological site containing midden deposits, features, tools, and lithic and ground stone artifacts	Determined eligible	Direct/Indirect
CA-LAN-3784H	Historic-period archaeological site consisting of a refuse scatter	Assumed eligible	None
Pacific Electric Railroad Bridge Abutments	Two paired bridge abutments on either side of Lincoln Boulevard	Recommended eligible	Direct/Indirect

reduced under Alternative 2, there also would be the potential to impact previously unidentified archaeological resources. As with Alternative 1, Alternative 2 would result in a less than significant impact to historical resources, both during and after restoration, with the incorporation of Mitigation Measures CR-1through CR-4, which require the development of a CRMP/HPTP, archaeological monitoring, Native American monitoring, and adherence to the Secretary of the Interior's Standards, respectively.

Mitigation Measures

Implement Mitigation Measures CR-1through CR-4, as set forth above.

Indirect Impacts

By their nature, buried archaeological resources typically are subject to only direct impacts, such as destruction or displacement caused by ground disturbing activity, and not indirect impacts, such as visual impacts or vandalism and inadvertent damage following completion of Alternative 2. As discussed above under Alternative 1, any previously unidentified archaeological resources that are encountered by ground disturbing activity would be treated in accordance with Mitigation Measures CR-1 through CR-3, thereby ensuring that no indirect restoration or post-restoration impacts would occur.

The Pacific Electric Railroad Bridge Abutments constitute a built resource that derives much of its significance from its visual and design characteristics (character-defining features). As in Alternative 1, Alternative 2 proposes to reuse the bridge abutments to construct a new bridge spanning Lincoln Boulevard. Inadvertent damage to the bridge abutments from maintenance, repair, or increased pedestrian visitor traffic could adversely affect the character-defining features of the bridge. In addition, the construction of a new bridge could alter the immediate surroundings of the bridge abutments. These indirect impacts could result in a substantial adverse change to characteristics of the resource that convey its historical significance. Pursuant to CEQA Guidelines §15064.5(b)(3), a project that complies with the Standards, which provides a framework for assessing a project's potential to adversely affect a resource and guidance on meeting the Standards, is generally considered as mitigated to a level of less than significant. Mitigation

Measure CR-4, which requires compliance with the Standards, would ensure that Alternative 2 would have a less than significant impact on the resource, both during and after restoration.

Mitigation Measures

Implement Mitigation Measures CR-1 through CR-4, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1 through CR-4 would reduce this impact to less than significant.

2-CUL-2: Alternative 2 would, if not mitigated, cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5 (Less than Significant with Mitigation Incorporated)

Direct Impacts

There is potential for Alternative 2 to result in direct impacts during and following restoration to unique archaeological resources, as described pursuant to CEQA Guidelines §15064.5. This includes CA-LAN-54, an element of the BLAD, and any previously unidentified archaeological resources that might be encountered during Project implementation, as discussed under Alternative 1. However, implementation of Mitigation Measures CR-1 through CR-3, which require development of a CRMP/HPTP, archaeological monitoring, and Native American monitoring, would ensure that Alternative 2 would have a less than significant impact on archaeological resources pursuant to CEQA Guidelines §15064.5, both during and after restoration.

Mitigation Measures

Implement Mitigation Measures CR-1 through CR-3, as set forth above.

Indirect Impacts

By their nature, buried archaeological resources typically are subject to only direct impacts, such as destruction and disturbance caused by Alternative 2 activities, and not indirect impacts, such as looting or inadvertent damage that might occur following completion of Alternative 2. That said, construction-related exposure of previously unidentified resources and subsequent damage caused by increased visitation could lead to indirect impacts. Regardless, any previously unidentified archaeological resources that are disturbed by ground disturbing activity under Alternative 2 would be treated in accordance with Mitigation Measures CR-1 through CR-3, thereby ensuring that no restoration or post-restoration indirect impacts would occur.

Mitigation Measures

Implement Mitigation Measures CR-1 through CR-3, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1 through CR-3 would reduce this impact to less than significant.

2-CUL-3: Alternative 2 could, if not mitigated, directly and indirectly destroy a unique paleontological resource or site, or unique geologic feature. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Under Alternative 2, the southern levee of the Ballona Creek channel adjacent to West Area B would not be breached and the existing water control structures would remain. Because Alternative 2 could result in excavation up to a maximum depth of 30 feet in some areas and portions of the Project site are underlain at an unknown depth by sensitive geological units (i.e., the San Pedro Sand and older Quaternary alluvium) that have yielded scientifically significant paleontological resources in the past, Alternative 2 could destroy a unique paleontological resource or site or unique geologic feature. This would be a significant impact. However, Alternative 2 would result in a less than significant impact to paleontological resources with the incorporation of Mitigation Measure CR-5, which would require paleontological monitoring and assessment and treatment of paleontological resources.

Mitigation Measure

Implement Mitigation Measure CR-5, as set forth above.

Indirect Impacts

Indirect impacts to paleontological resources may result from excavation activities exposing potentially fossiliferous sediments that are vulnerable to vandalism or illegal collecting. Mitigation of indirect impacts includes limiting access to significant paleontological resources through a combination of law enforcement, protective enclosures, and land access restrictions. Any paleontological resources encountered during implementation of Alternative 2 would be assessed according to Mitigation Measure CR-5, which establishes protocols for evaluating and, if necessary, removing sensitive paleontological resources. Implementation of Mitigation Measure CR-5 would ensure that paleontological resources will not be indirectly impacted by Alternative 2, either during or following restoration.

Mitigation Measure

Implement Mitigation Measure CR-5, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measure CR-5 would reduce this impact to less than significant.

2-CUL-4: Alternative 2 could, if not mitigated, disturb human remains, including those interred outside of formal cemeteries. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 2 activities would not result in impacts, either during or following restoration, to known human remains at site CA-LAN-54, the only site in the Ballona Reserve known to contain human remains. The inadvertent discovery of as-yet-unknown human remains as a result of any activity under Alternative 2, however, could result in their disturbance, which would be a significant impact. In the event of inadvertent discovery of human remains, CDFW will assure that its construction contractor abides by the requirements of Mitigation Measure CR-6, which would require compliance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5, requiring assessment of the discovery by the coroner, assignment of an MLD by the NAHC, and consultation between the MLD and the landowner regarding treatment of the discovery. With implementation of this mitigation measure, impacts of Alternative 2 relating to the unanticipated discovery of human remains would be reduced to a less-than-significant level.

Mitigation Measure

Implement Mitigation Measure CR-6, as set forth above.

Indirect Impacts

Should human remains be identified during implementation of Alternative 2, they would be treated in accordance with appropriate state law, as described in Mitigation Measure CR-5. Per state law, the MLD and land owner would determine the appropriate course of action for the treatment and disposition of the remains. This could involve preservation in place or removal and reburial at a future date. Through this consultation, an appropriate course of action would be developed that would ensure that any human remains that might be encountered would not be left in a situation where they would suffer indirect impacts or post-restoration impacts following completion of Alternative 2.

Mitigation Measure

Implement Mitigation Measure CR-6, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measure CR-6 would reduce this impact to less than significant.

2-CUL-5: Unless mitigated, implementation of Alternative 2 would result in the loss of a property's eligibility status under National Register Criteria A-C. (Less than Significant with Mitigation Incorporated)

Direct Impacts

As with Alternative 1, reuse of P-19-192326, the Pacific Electric Railway Bridge Abutments (eligible for the National Register under criterion C), in the creation of a new bridge would be a component of Alternative 2. However, Mitigation Measure CR-4 would require adherence to the Secretary of the Interior's Standards, which would ensure that the property would not lose its eligibility status and that Alternative 2 would have a less-than-significant impact on the property, both during and after restoration.

It is unlikely that any other built resources that could be eligible under criteria A-C would be identified within the Project area as a result of the implementation of Alternative 2. Regardless, currently unidentified resources that might be encountered during restoration would be subject to the requirements of Mitigation Measures CR-1 through CR-3, which would ensure that both restoration and post-restoration impacts to resources found eligible under criteria A-C would be less than significant, for the reasons discussed above under impact threshold 1-CUL-1.

Mitigation Measure

Implement Mitigation Measures CR-1 through CR-4, as set forth above.

Indirect Impacts

Inadvertent damage to the Pacific Electric Railroad Bridge Abutments (eligible under criterion C) from maintenance, repair, or increased pedestrian visitor traffic could adversely affect the character-defining features of the bridge. In addition, the construction of a new bridge could alter the immediate surroundings of the bridge abutments. These indirect impacts could result in a substantial adverse change to characteristics of the resource that convey its historical significance. However, as would be the case for 1-CUL-1, Mitigation Measure CR-4, which would require compliance with the Secretary of the Interior's Standards, would ensure that Alternative 1 would have a less-than-significant impact on the resource, both during and after restoration.

Though uncommon, archaeological resources encountered during construction might also qualify under criteria A-C. This would be particularly true for resources to which Native Americans ascribe sacred or religious significance. However, any previously unidentified archaeological resources that are encountered through ground disturbing activity, including those eligible under criteria A-C, would be treated in accordance with Mitigation Measures CR-1, CR-3, and especially CR-2, which provides for Native American involvement in evaluation and treatment of resources. Implementation of these measures would ensure that no indirect impacts would occur, both during and after restoration.

Mitigation Measure

Implement Mitigation Measures CR-1 through CR-4, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1 through CR-4 would reduce this impact to less than significant.

2-CUL-6: The implementation of Alternative 2, unless mitigated, would result in the destruction of a site eligible under National Register Criterion D. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Two resources (CA-LAN-54 and the BLAD) have been determined eligible for the National Register under criterion D. A third resource (CA-LAN-3784H) is assumed eligible for purposes of the Project. However, as discussed under 1–CUL-1, CA-LAN-37842H is adjacent to but outside of the Project site, but has been included in the APE for purposes of analysis. All three of the resources would be avoided and none would be impacted by Alternative 2. Any currently unidentified resources that might be uncovered during the implementation of Alternative 2 would be subject to the requirements of Mitigation Measures CR-1 through CR-3, which would ensure that both restoration and post-restoration impacts to resources found eligible under criteria A-C would be less than significant, for the reasons discussed above under Impact 1-CUL-1.

To ensure that no historic properties eligible under criterion D would be impacted by Alternative 2, a Section 106 PA or MOA would be prepared to guide additional Section 106 compliance. Requirements for post-review discovery and treatment of resources, which could include data recovery excavation or other measures as outlined in Mitigation Measure CR-3, would be included.

Mitigation Measure

Implement Mitigation Measures CR-1 through CR-3, as set forth above.

Indirect Impacts

By their nature, buried archaeological resources eligible under criterion D typically are subject to only direct impacts, such as destruction and disturbance caused by Alternative 2 activities, and not indirect impacts, such as looting or inadvertent damage that might occur following completion of Alternative 2. That said, construction-related exposure of previously unidentified resources and subsequent damage caused by increased visitation, a potential post-restoration impact, could lead to indirect impacts. As stated above, however, any previously unidentified archaeological resources that are discovered thought ground disturbing activity would be treated in accordance with Mitigation Measures CR-1, CR-2, and CR-3, thereby minimizing indirect impacts.

Mitigation Measure

Implement Mitigation Measures CR-1, CR-2, and CR-3, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1, CR-2, and CR-3 would reduce this impact to less than significant.

2-CUL-7: The implementation of Alternative 2 would not result in a major modification of a National Historic Landmark or a property meeting the criteria of a National Historic Landmark as defined in 36 CFR Part 65. (No impact)

Direct Impacts

No National Historic Landmarks or properties meeting the criteria for a National Historic Landmark have been identified in the Project site. Consultation between the Corps and the SHPO, as required under Section 106 of the NHPA, and between the Corps and the Keeper of the

National Register, if required, would ensure that Alternative 2 would not result in a major modification to a National Historic Landmark.

Mitigation Measure

None.

Indirect Impacts

For the reasons mentioned under Direct Impacts, above, no National Historic Landmarks or properties meeting the criteria for a National Historic Landmark would be impacted by Alternative 2.

Mitigation Measure

None.

Level of Significance after Mitigation

No impact.

TABLE 3.5-6
ALTERNATIVE 2 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
CUL-1: Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5? See Impact 2-CUL-1.	☐	☒	☐	☐
CUL-2: Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? See Impact 2-CUL-2.	☐	☒	☐	☐
CUL-3: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? See Impact 2-CUL-3.	☐	☒	☐	☐
CUL-4: Disturb any human remains, including those interred outside of formal cemeteries? See Impact 2-CUL-4.	☐	☒	☐	☐
CUL-5: Even after minimization and mitigation, remaining impacts would be substantial enough that implementation of the alternative would result in the loss of a property's eligibility status under Criteria A-C. See Impact 2-CUL-5.	☐	☒	☐	☐
CUL-6: Implementation would result in the destruction of a site eligible under Criterion D with no mitigated data recovery. See Impact 2-CUL-6.	☐	☒	☐	☐
CUL-7: Implementation would result in a major modification to a National Historic Landmark or a property meeting the criteria of a National Historic Landmark. See Impact 2-CUL-7.	☐	☐	☐	☒

3.5.6.3 Alternative 3: Levee Culverts and Oxbow

3-CUL-1: Alternative 3 would, if not mitigated, cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5. (Less than Significant with Mitigation Incorporated)

Direct Impacts

There is potential for Alternative 3 to result in direct impacts to historical resources during any restoration or post-restoration activity that disturbs the ground that overlies a historical resource or the resource itself. Four historical resources have been identified within Alternative 3: the BLAD, one prehistoric archaeological district with one known contributor within the Project site (CA-LAN-54); CA-LAN-54, one prehistoric archaeological site with known human burials; CA-LAN-3784H, one historic-period archaeological site consisting of domestic refuse; and the Pacific Electric Railroad Bridge Abutments (Table 3.5-7).

Though further reduced in scale, Alternative 3 is similar to Alternatives1 and 2 in terms of the potential impacts to historical resources as a result of ground disturbing activities. The potential impacts to known the four known or assumed eligible resources (BLAD, CA-LAN-54, CA-LAN-3784H, and the Pacific Electric Railroad Bridge Abutments) as discussed under Alternative 1 apply to Alternative 3 as well. Although the degree of excavation would be reduced under Alternative 3, there also is the potential to impact previously unidentified archaeological resources. As with Alternative 1, Alternative 3 would result in a less than significant impact to historical resources, both during and after restoration, with the incorporation of Mitigation Measures CR-1thorugh CR-4, which require the development of a CRMP/HPTP, archaeological and Native American monitoring, and adherence to the Secretary of the Interior's Standards.

TABLE 3.5-7
HISTORICAL RESOURCES IN ALTERNATIVE 3

Identifier	Description	National Register/ California Register Eligibility	Impact
BLAD	Archaeological district comprised of sites pertaining to the prehistoric occupation of the Ballona microregion	Determined eligible	Direct/Indirect
CA-LAN-54	Prehistoric archaeological site containing midden deposits, features, tools, and lithic and ground stone artifacts	Determined eligible	Direct/Indirect
CA-LAN-3784H	Historic-period archaeological site consisting of a refuse scatter	Assumed eligible	None
Pacific Electric Railroad Bridge Abutments	Two paired bridge abutments on either side of Lincoln Boulevard	Recommended eligible	Direct/Indirect

Mitigation Measures

Implement Mitigation Measures CR-1through CR-4, as set forth above.

Indirect Impacts

By their nature, buried archaeological resources typically are subject to only direct impacts, such as destruction or displacement caused by ground disturbing activity, and not indirect impacts, such as visual impacts or vandalism and inadvertent damage following completion of Alternative 3. Both known historical resources and any previously unidentified archaeological resources encountered during ground disturbing activity would be treated in accordance with Mitigation Measures CR-1 through CR-3, thereby ensuring that no indirect effects would occur.

The Pacific Electric Railroad Bridge Abutments constitute a built resource that derives much of its significance from its visual and design characteristics (character-defining features). As in Alternative 1, Alternative 3 proposes to reuse the bridge abutments to construct a new bridge spanning Lincoln Boulevard. The bridge would be used initially to transport earthen fill between Area A and Area C during restoration and construction and, secondly, as a permanent structure after restoration to facilitate pedestrian traffic as part of the public access plan. Inadvertent damage to the bridge abutments from maintenance, repair, or increased pedestrian visitor traffic could adversely affect the character-defining features of the bridge. In addition, the construction of a new bridge could alter the immediate surroundings of the bridge abutments. These indirect impacts could result in a substantial adverse change to characteristics of the resource that convey its historical significance. Pursuant to CEQA Guidelines §15064.5(b)(3), a project that complies with the Standards, which provides a framework for assessing a project’s potential to adversely affect a resource and guidance on meeting the Standards, is generally considered as mitigated to a level of less than significant. Mitigation Measure CR-3, which requires compliance with the Standards, would ensure that Alternative 3 would have a less-than-significant impact on the resource.

Mitigation Measures

Implement Mitigation Measures CR-1 through CR-4, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1 through CR-4 would reduce this impact to less than significant.

3-CUL-2: Alternative 3 would, if not mitigated, cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5. (Less than Significant with Mitigation Incorporated)

Direct Impacts

There is potential for Alternative 3 to result in direct impacts to unique archaeological resources, as described pursuant to CEQA Guidelines §15064.5. This includes CA-LAN-54, an element of the BLAD, and any previously unidentified archaeological resources that might be encountered during Project implementation, as discussed under Alternative 1. However, implementation of Mitigation Measures CR-1 through and including CR-3, development of a CRMP/HPTP, archaeological monitoring, and Native American monitoring, would ensure that Alternative 3 would have a less than significant impact on archaeological resources pursuant to CEQA Guidelines §15064.5, both during and after restoration.

Mitigation Measures

Implement Mitigation Measures CR-1 through CR-3, as set forth above.

Indirect Impacts

By their nature, buried archaeological resources typically are subject to only direct impacts, such as destruction and disturbance caused by Alternative 3 activities, and not indirect impacts, such as looting or inadvertent damage that might occur following completion of Alternative 3. That said, construction-related exposure of previously unidentified resources and subsequent damage caused by increased visitation could lead to indirect impacts. Regardless, any previously unidentified archaeological resources that are disturbed by ground disturbing activity under Alternative 3 would be treated in accordance with Mitigation Measures CR-1 through CR-3, thereby ensuring that no indirect impacts would occur.

Mitigation Measures

Implement Mitigation Measures CR-1 through CR-3, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1 through CR-3 would reduce this impact to less than significant.

3-CUL-3: Alternative 3 could, if not mitigated, directly and indirectly destroy a unique paleontological resource or site or unique geologic feature. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 3 would limit disturbance to Area A; however, because Alternative 3 could result in excavation up to a maximum depth of 30 feet in some areas and portions of the Project site are underlain at an unknown depth by sensitive geological units (i.e., the San Pedro Sand and older Quaternary alluvium) that have yielded scientifically significant paleontological resources in the past, Alternative 3 would result in a less-than-significant impact to paleontological resources with the incorporation of Mitigation Measure CR-5, which would require paleontological monitoring, and assessment and treatment of paleontological resources.

Mitigation Measure

Implement Mitigation Measure CR-5, as set forth above.

Indirect Impacts

Indirect impacts to paleontological resources may result from excavation activities exposing potentially fossiliferous sediments that are vulnerable to vandalism or illegal collecting. Mitigation of indirect impacts includes limiting access to significant paleontological resources through a combination of law enforcement, protective enclosures, and land access restrictions. Any paleontological resources encountered during the implementation of Alternative 3 would be assessed according to Mitigation Measure CR-5, which establishes protocols for evaluating and, if necessary, removing sensitive paleontological resources. Implementation of Mitigation

Measure CR-5 would ensure that paleontological resources would not be indirectly impacted by the Project.

Mitigation Measure

Implement Mitigation Measure CR-5, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measure CR-5 would reduce this impact to less than significant.

3-CUL-4: Alternative 3 could, if not mitigated, disturb any human remains, including those interred outside of formal cemeteries. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Project activities would not result in impacts to site CA-LAN-54, the only site in the Ballona Reserve known to contain human remains. The inadvertent discovery of as-yet-unknown human remains as a result of any Alternative 3 activity; however, could result in their disturbance, which would be a significant impact. In the event of inadvertent discovery of human remains, CDFW would assure that its construction contractor abides by the requirements of Mitigation Measure CR-6, which would require compliance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5, requiring assessment of the discovery by the coroner, assignment of an MLD by the NAHC, and consultation between the MLD and the landowner regarding treatment of the discovery. With implementation of this mitigation measure, impacts of Alternative 3 relating to the unanticipated discovery of human remains would be reduced to a less-than-significant level.

Mitigation Measure

Implement Mitigation Measure CR-6, as set forth above.

Indirect Impacts

Should human remains be identified during implementation of Alternative 3, they would be treated in accordance with appropriate state law, as described in Mitigation Measure CR-6. Per state law, the MLD and land owner would determine the appropriate course of action for the treatment and disposition of the remains. This could involve preservation in place or removal and reburial at a future date. Through this consultation, an appropriate course of action would be developed that would ensure that any human remains that might be encountered would not be left in a situation where they would suffer indirect impacts or post-restoration impacts following completion of Alternative 3.

Mitigation Measure

Implement Mitigation Measure CR-6, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measure CR-6 would reduce this impact to less than significant.

3-CUL-5: Alternative 3, unless mitigated, could result in the loss of a property's eligibility status under National Register Criteria A-C. (Less than Significant with Mitigation Incorporated)

Direct Impacts

As with Alternatives 1 and 2, reuse of P-19-192326, the Pacific Electric Railway Bridge Abutments (eligible for the National Register under criterion C), in the creation of a new bridge would be a component of Alternative 3. However, Mitigation Measure CR-4 requires adherence to the Secretary of the Interior's Standards, which would ensure that the property would not lose its eligibility status and that Alternative 3 would have a less-than-significant impact on the property, both during and after restoration.

It is unlikely that any other built resources that could be eligible under criteria A-C would be identified within the Project site as a result of the implementation of Alternative 3. Regardless, currently unidentified resources that might be encountered during restoration would be subject to the requirements of Mitigation Measures CR-1 through CR-3, which would ensure that both restoration and post-restoration impacts to resources found eligible under criteria A-C would be less than significant, for the reasons discussed above under impact threshold 1-CUL-1.

Mitigation Measure

Implement Mitigation Measures CR-1 through CR-4, as set forth above.

Indirect Impacts

Inadvertent damage to the Pacific Electric Railroad Bridge Abutments (eligible under criterion C) from maintenance, repair, or increased pedestrian visitor traffic could adversely affect the character-defining features of the bridge. In addition, the construction of a new bridge could alter the immediate surroundings of the bridge abutments. These indirect impacts could result in a substantial adverse change to characteristics of the resource that convey its historical significance. However, as would be the case for Impact 1-CUL-1, Mitigation Measure CR-4, which requires compliance with the Secretary of the Interior's Standards, would ensure that Alternative 1 would have a less-than-significant impact on the resource, both during and after restoration.

Though uncommon, archaeological resources encountered during construction might also qualify under criteria A-C. This would be particularly true for resources to which Native Americans ascribe sacred or religious significance. However, any previously unidentified archaeological resources that are encountered through ground disturbing activity, including those eligible under criteria A-C, would be treated in accordance with Mitigation Measures CR-1, CR-3, and especially CR-2, which provides for Native American involvement in evaluation and treatment of resources. Implementation of these measures would ensure that no indirect impacts would occur, both during and after restoration.

Mitigation Measure

Implement Mitigation Measures CR-1 through CR-4, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1 through CR-4 would reduce this impact to less than significant.

3-CUL-6: The implementation of Alternative 3, unless mitigated, could result in the destruction of a site eligible under National Register Criterion D. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Two resources (CA-LAN-54 and the BLAD) have been determined eligible for the National Register under criterion D. A third resource (CA-LAN-3784H) is assumed eligible for purposes of the Project. However, as discussed under 1–CUL-1, CA-LAN-37842H is adjacent to but outside of the Project site, but has been included in the APE for purposes of analysis. Further, all three of the resources would be avoided and none would be impacted by Alternative 3. Any currently unidentified resources that might be uncovered during Project implementation would be subject to the requirements of Mitigation Measures CR-1 through CR-3, which would ensure that both restoration and post-restoration impacts to resources found eligible under criteria A-C would be less than significant, for the reasons discussed above under impact threshold 1-CUL-1.

To ensure that no historic properties eligible under criterion D would be impacted by Alternative 3, a Section 106 PA or MOA would be prepared to guide further Section 106 analysis. Post-review discovery and treatment of resources, which could include data recovery excavation or other measures as outlined in Mitigation Measure CR-3, would be required.

Mitigation Measure

Implement Mitigation Measures CR-1 through CR-3, as set forth above.

Indirect Impacts

By their nature, buried archaeological resources eligible under criterion D typically are subject to only direct impacts, such as destruction and disturbance caused by Alternative 3 activities, and not indirect impacts, such as looting or inadvertent damage that might occur following completion of Alternative 3. That said, restoration or construction-related exposure of previously unidentified resources and subsequent damage caused by increased visitation, a potential post-restoration impact, could lead to indirect impacts. As stated above, however, any previously unidentified archaeological resources discovered thought ground disturbing activity would be treated in accordance with Mitigation Measures CR-1, CR-2, and CR-3, thereby minimizing indirect impacts.

Mitigation Measure

Implement Mitigation Measures CR-1, CR-2, and CR-3, as set forth above.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1, CR-2, and CR-3 would reduce this impact to less than significant.

3-CUL-7: The implementation of Alternative 3 would not result in a major modification of a National Historic Landmark or a property meeting the criteria of a National Historic Landmark as defined in 36 CFR Part 65. (No impact)

Direct Impacts

No National Historic Landmarks or properties meeting the criteria for a National Historic Landmark have been identified in the Project site. Consultation between the Corps and the SHPO, as required under Section 106 of the NHPA, and between the Corps and the Keeper of the National Register, if required, would ensure that Alternative 3 would not result in a major modification to a National Historic Landmark.

Mitigation Measure

None.

Indirect Impacts

For the reasons mentioned under *Direct Impacts*, above, no National Historic Landmarks or properties meeting the criteria for a National Historic Landmark would be impacted by Alternative 3.

Mitigation Measure

None.

Level of Significance after Mitigation

No impact.

TABLE 3.5-8
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
CUL-1: Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5? See Impact 3-CUL-1.	☐	☒	☐	☐
CUL-2: Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? See Impact 3-CUL-2.	☐	☒	☐	☐
CUL-3: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? See Impact 3-CUL-3.	☐	☒	☐	☐
CUL-4: Disturb any human remains, including those interred outside of formal cemeteries? See Impact 3-CUL-4.	☐	☒	☐	☐

TABLE 3.5-8 (Continued)
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3 (cont.)				
CUL-5: Even after minimization and mitigation, remaining impacts would be substantial enough that implementation of the alternative would result in the loss of a property's eligibility status under Criteria A-C. See Impact 3-CUL-5.	☐	☒	☐	☐
CUL-6: Implementation would result in the destruction of a site eligible under Criterion D with no mitigated data recovery. See Impact 3-CUL-6.	☐	☒	☐	☐
CUL-7: Implementation would result in a major modification to a National Historic Landmark or a property meeting the criteria of a National Historic Landmark. See Impact 3-CUL-7.	☐	☐	☐	☒

3.5.6.4 Alternative 4: No Federal Action/No Project

Under Alternative 4, no substantial changes would be made to the physical or human environment within the Ballona Reserve or the SoCalGas Property. Continuation of previously-permitted restoration activities would be allowed, such as the small-scale control of invasive non-native plant species by hand-tools only and the planting and seeding of native species. Gas wells would continue to be operated and maintained within the Project site. Alternative 4 would not involve any new construction or the new use of mechanized equipment beyond existing operations (e.g., for fire-prevention fuel modification, fence repair, or other structural work), so there would be no substantial adverse change in the significance of a historical or archeological resource as defined in CEQA Guidelines §15064.5, the destruction of a unique paleontological resource or site or unique geologic feature, the disturbance of human remains, or adverse effects to a historic property under the NHPA.

Alternative 4 would continue existing activities in the same locations where they now occur, and would not result in any of the proposed restoration work or related activities. Under Alternative 4, there would be no direct or indirect impacts to historical resources, unique archaeological resources, paleontological resources, and human remains, or historic properties under the NHPA. Alternative 4 would result in no impact to Cultural and Paleontological Resources relative to any of the CEQA or NEPA significance criteria set forth in Section 3.5.4.2.

3.5.7 Cumulative Impacts

Cumulative impacts on cultural and paleontological resources take into account the incremental impacts of each alternative in combination with the ongoing impacts of past projects (which are described in Section 3.5.2, Affected Environment, and reflected in the current state of knowledge about the cultural and paleontological context and potential resource richness of the area) as well as other present and reasonably foreseeable future actions. Because Alternative 4 would cause no impact to any of the thresholds identified in Section 3.5.4, Thresholds of Significance, Alternative 4 could not cause or contribute to any significant cumulative impact. As analyzed in Section 3.5.6, Direct and Indirect Impacts, implementation of the Project (under Alternatives 1, 2, or 3) would not result in indirect impacts; therefore, the Project could not cause or contribute to any significant indirect cumulative impact to cultural or paleontological resources.

3.5.7.1 Cultural Resources

The geographic scope of analysis of potential cumulative impacts to Cultural Resources is the same as the area described in Section 3.6.2.1, *Study Area*, because this is the largest area within which the direct impacts of the Project could manifest. The Project could contribute to direct cumulative effects to cultural resources at any point during the implementation of Alternatives 1, 2, or 3 (i.e., during or following restoration) that involves ground disturbance.

A records search conducted for the Project site and a 0.25-mile radius around the Project site shows that 29 cultural resources have been recorded outside the Project site but within the search radius. These include prehistoric archaeological resources, some with Native American human remains, as well as historical period archaeological resources and built environment resources. Many of these resources have been determined eligible for the National Register or California Register, and many, including those located within the Playa Vista development to the east of the Project site and those located within the residential neighborhoods atop the bluffs to the south of the Project site, have been impacted by prior development. While detailed data on cultural resources within the broader Study Area beyond the records search area are not known, it is likely that numerous resources have been similarly impacted by a high level of urban development. Indeed, the Project site constitutes one of the few undeveloped portions of land in this broader region. In addition, the Project site falls within an archaeological district, the BLAD, and impacts to any archaeological resources within the Project site could constitute an impact on the district as a whole. It is within this context that cumulative impacts are assessed.

Table 3.1-1 provides an initial list of projects to be evaluated to determine whether they could cause impacts similar in type as those of the Project and within the same geographic area and time period as the Project. Where overlaps occur, potential impacts are considered cumulative. As analyzed in Section 3.5.6, Direct and Indirect Impacts, Alternatives 1, 2, and 3 could contribute to potential cumulative impacts due to proposed ground disturbance and other activities associated with each alternative, including various improvements and the reuse of the existing Pacific Electric Railroad Bridge Abutments. More specifically, Alternatives 1, 2, and 3 would result in a less than significant impact (following the implementation of mitigation) to known resources that have been recommended or determined eligible for the California Register and National Register (i.e., CA-LAN-54, the BLAD, and the Pacific Electric Railroad bridge abutments). None of the projects identified in Table 3.1-1 has the potential to impact these known resources; therefore, the incremental less-than-significant impact of the Project would not combine with the incremental impacts of other projects to cause or contribute to a significant adverse cumulative effect to known cultural resources.

The impacts of past projects have resulted in a wealth of information about the relevant area and, given the high level of development and other surface disturbance in the area around the Project site, it is possible that any previously unidentified resources, if present, that might be encountered during Project implementation could be among the last undisturbed resources of their kind. However, as indicated in the geoarchaeological study prepared for the Project, the likelihood of encountering substantial buried archaeological resources, and specifically those that would qualify for listing in the National Register or California Register, is low, primarily because most of the Project site has been inundated in the past and, with few exceptions, was not a suitable locale for substantial human habitation. None of the projects listed in Table 3.1-1, which provides an initial list of actions to be evaluated to determine whether they could cause beneficial effects or adverse impacts similar in type as those of the Project and within the same area and time period as the Project, would occur in the same geographic area as the Project; therefore, none of these projects would result in currently unidentified resources that could be revealed by Alternative 1, 2, or 3. Therefore, there would be no significant cumulative impact.

Given the results of investigations completed and discoveries made during the development of Playa Vista, this analysis assumes that undiscovered human remains are present within the Project site. Respectfully, the Project has been designed to avoid or limit surface disturbance in areas where discovery of human remains could be likely and, if human remains are discovered, prioritizes leaving remains in place. As none of the projects listed in Table 3.1-1 would cause impacts to undiscovered human remains within the Ballona Reserve, the incremental Project-specific less-than-significant impact to undiscovered human remains that would result from Alternative 1, 2, or 3 would not cause or contribute to a significant cumulative impact.

3.5.7.2 Paleontological Resources

Paleontology is a multidisciplinary science that combines elements of many disciplines (including geology, biology, chemistry, and physics) in an effort to understand the history of life on Earth. Fossils are paleontological resources that are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. They include mineralized, partly mineralized, or unmineralized soft tissues, bones and teeth, shells, wood, leaf impressions, footprints, burrows, and microscopic remains.

The geographic scope of analysis of potential cumulative impacts to Paleontological Resources is the same as the area described in Section 3.5.2.1, *Study Area and Area of Potential Effects*, because this is the largest area within which the direct impacts of the Project could manifest. The Project could contribute to direct cumulative effects to paleontological resources at any point during the implementation of Alternatives 1, 2, or 3 (i.e., during or following restoration) that involves ground disturbance. However, the inadvertent discovery, recovery, and documentation of any such resources would further the science in this area and in that regard could be considered a beneficial result. Regardless, as with unknown archaeological resources, none of the projects listed in Table 3.1-1, which provides an initial list of actions to be evaluated to determine whether they could cause beneficial effects or adverse impacts similar in type as those of the Project and within the same area and time period as the Project, would occur in the same geographic area as the Project; therefore, none of these projects would result in the discovery, recovery, or documentation of any of the resources, if present, that could be revealed by Alternative 1, 2, or 3. Furthermore, none of these projects would combine with the effects of the Project to cause or contribute to a beneficial effect to paleontological science. There would be no significant cumulative impact.

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3.6 Geology, Seismicity, and Soils

3.6.1 Introduction

This section identifies and evaluates issues related to Geology, Seismicity, and Soils in the context of various wetland restoration alternatives, including seismically induced hazards (i.e., fault rupture, ground shaking, liquefaction, and landslides) and non-seismically induced events (i.e., erosion, loss of topsoil, seepage/piping, slope stability, settlement, and expansive or corrosive soils). It describes the affected environment in Section 3.6.2; summarizes applicable laws, regulations, plans, and standards in Section 3.6.3; identifies the criteria used to evaluate the significance of potential impacts (referred to as "thresholds of significance") in Section 3.6.4; describes the methodology used to evaluate these impacts in Section 3.6.5; analyzes direct and indirect beneficial effects and adverse impacts in Section 3.6.6; analyzes cumulative effects in Section 3.6.7; and lists references in Section 3.6.8.

Much of the site specific information provided in this Section 3.6 was obtained from the July 1, 2013 geotechnical investigation conducted by Group Delta Consultants, entitled *Ballona Wetlands Restoration Project, Marina del Rey Area, Los Angeles County, California* (Appendix E). Information provided in this initial report, referred to herein as the "2013 geotechnical investigation," has been updated in this section to reflect information and project changes that have occurred since 2013.

3.6.2 Affected Environment

3.6.2.1 Study Area

To evaluate the potential environmental consequences relative to geology, seismicity, and soils, the study area consists of the Project site (see Section 1.4.1, *Location of the Project Site*) and the area surrounding the site to include active faults up to 30 miles away. This distance was selected to include the active San Andreas Fault System, a dominant seismic feature that has the potential to affect the Ballona Reserve. For purposes of evaluating potential impacts relating to other hazards such as slope failure and seismic hazards, the study area includes the Ballona Reserve and Sites 1 and 2 of the SoCalGas Property (see Figure ES-2, *Project Site*).

3.6.2.2 Environmental Setting

Geology

Regional Geology and Faulting

The Ballona Reserve is located within the western portion of the Peninsular Ranges Geomorphic Province[69] (California Geological Survey [CGS] 2002a). This province consists of a series of northwest-trending ranges and valleys, almost parallel to faults branching from the San Andreas Fault. Although located along the coast, the underlying geologic materials are more like those

69 A geomorphic province is an area that possesses similar bedrock, structure, history, and age. California has 11 geomorphic provinces (CGS 2002a).

found in the Sierra Nevada Mountain range, with granitic rock intruding the older metamorphic rocks. The Peninsular Ranges extend from the southern slopes of the Santa Monica and San Gabriel Mountains of the Transverse Ranges Geomorphic Province along the north and east, south into Baja California, and bounded on the southeast by the Colorado Desert.

The Los Angeles Basin is in the northern portion of the province and extends south from the Santa Monica Mountains, west from the Elysian-Repetto Hills, and north from the Palos Verdes Hills to the Pacific Ocean (Bilodeau et al. 2007). Major northwest-trending strike–slip faults such as the Whittier, Newport–Inglewood, and Palos Verdes Faults dominate the basin. The thickness of the dominantly Miocene and Pliocene (23 to 2.5 million years before present) sedimentary fill in the central trough of the Los Angeles Basin, a structural low between the Whittier and Newport–Inglewood Faults, is estimated to be about 30,000 feet.

The Ballona Reserve is located on the coastal plain of the Los Angeles Basin in a small valley referred to in the 2013 geotechnical investigation (Appendix E) as the Ballona Gap. As explained in the 2013 geotechnical investigation, the Ballona Gap was formed by erosion, repeated sea level fluctuations, and river channel migration (Id.). Prior to 1825, the Los Angeles River flowed through this area, depositing fluvial (river) sediments that intertwine seaward with deltaic and marsh deposits[70] (Bilodeau et al. 2007). Following the 1825 flood, the Los Angeles River shifted southward to its present outlet at the Long Beach Harbor. The culverted and channelized Ballona Creek now follows the former westward river course through Ballona Gap to Santa Monica Bay through the middle of the Ballona Reserve. The present-day coastal environment includes the wetland area that would be restored as part of the Project under Alternative 1, 2, or 3.

The western half of the Ballona Reserve is on the eastern part of the SoCalGas Company's Playa del Rey Storage Field,[71] originally an oil field that produced from an anticlinal trap[72] in sedimentary rocks about 6,100 feet below the ground surface (SoCalGas 2008). The field produced oil for about 10 years during the 1930s. In 1942, a depleted portion of the oil field was turned into an underground natural gas storage facility and is presently operated by SoCalGas.

Site Geology and Soils

The Project site includes the Ballona Reserve, which has been divided into Areas A, B, and C as shown on the geologic map of surface units shown on Figure 3.6-1, *Site Surface Geology*, and the SoCalGas Property (see Figure ES-2, *Project Site*). The description of the areas is from the 2013 geotechnical investigation (Appendix E), unless otherwise cited.

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70 Deltas and marshes can have a tendency to form where rivers meet the ocean. As sea level and river flow fluctuate over time, the deposits tend to interfinger.

71 The boundaries of the area of influence of the Playa del Rey Storage Field do not conform to a typical geometric shape. The approximate boundaries are on the north from Marquesa Way to Mindanao Way, on the south along 92nd Street, on the east along Park Hill Drive from 92nd Street north through the State owned lands, and on the west to the Pacific Ocean (SoCalGas Company 2008; Playa del Rey Storage Pamphlet).

72 An anticline is a formation of stratified rock raised up, by folding, into a broad arch so that the strata slope down on both sides from a common crest. Oil and natural gas can be trapped under the crest of the formed arch.

Ballona Wetlands Restoration Project

Figure 3.6-1
Site Surface Geology

Area A

Area A is approximately 140 acres and lies north of Ballona Creek, west of Lincoln Boulevard, and south and east of Fiji Way. Area elevations range between approximately 12 and 20 feet above the North American Vertical Datum (NAVD 88), with higher ground closer to Fiji Way. Fill was placed in Area A in the early 1930s and the 1960s primarily from the excavations of Ballona Creek and the development of Marina del Rey, respectively. The northeast portion of Area A also reportedly was used as a celery waste dump site from 1945 to 1953. Area A is undeveloped, with the exception of parking areas along the western boundary, a drainage channel along the northern boundary, and SoCalGas Company access roads in the northwestern corner. The existing Ballona Creek levees run along the southern edge of Area A. An excavated, unlined drainage channel known as the "Fiji Ditch" runs parallel to Fiji Way along the northern boundary in the eastern portion of Area A and into Area C.

According to the State of California Seismic Hazards Zone Map for the Venice Quadrangle, Area A is in a potential liquefaction hazard zone and not within a potential earthquake-induced landslide zone, as shown on Figure 3.6-2, *Landslide and Liquefaction Hazard Zone Map* (CGS 1999). As reported in the 2013 geotechnical investigation (Appendix E), the existing levees within the Ballona Reserve were constructed in the 1930's and do not meet current Corps seismic requirements. The western edge of Area A also includes a total of seven SoCalGas Company natural gas monitoring wells, one of which is abandoned (Del Rey 16).

Surface conditions in Area A consist of non-native scrubland with some areas of salt flats. Artificial fill, primarily from the dredging of Marina del Rey and the Ballona Creek channel, covers the surface of Area A with thicknesses of up to 20 feet. In general, the surface fill soils are dry and loose, and are predominantly composed of soft to medium stiff sandy silts and clays[73] and loose to medium dense silty sands. To a lesser extent, other soil types encountered in the upper 20 feet of the borings conducted as part of the geotechnical investigation included poorly graded sands and gravels and small layers of elastic silts.[74] In addition, surface soils within the existing levees include buried organics and tree roots.

Below the surface fills lies predominantly fine-grained native materials consisting of interbedded sands, silts, and clays. This layer is approximately 35 to 50 feet thick and includes predominantly very soft to medium stiff clays and silts and loose to medium dense sands. Some denser/stiffer soils also are present within this layer, but individual layers are not found to be laterally continuous. Between 55 and 70 feet, the fine-grained native deposits are underlain by dense to very dense sands and gravels (also known as Ballona Aquifer or 50 Foot Aquifer) (ESA 2015).

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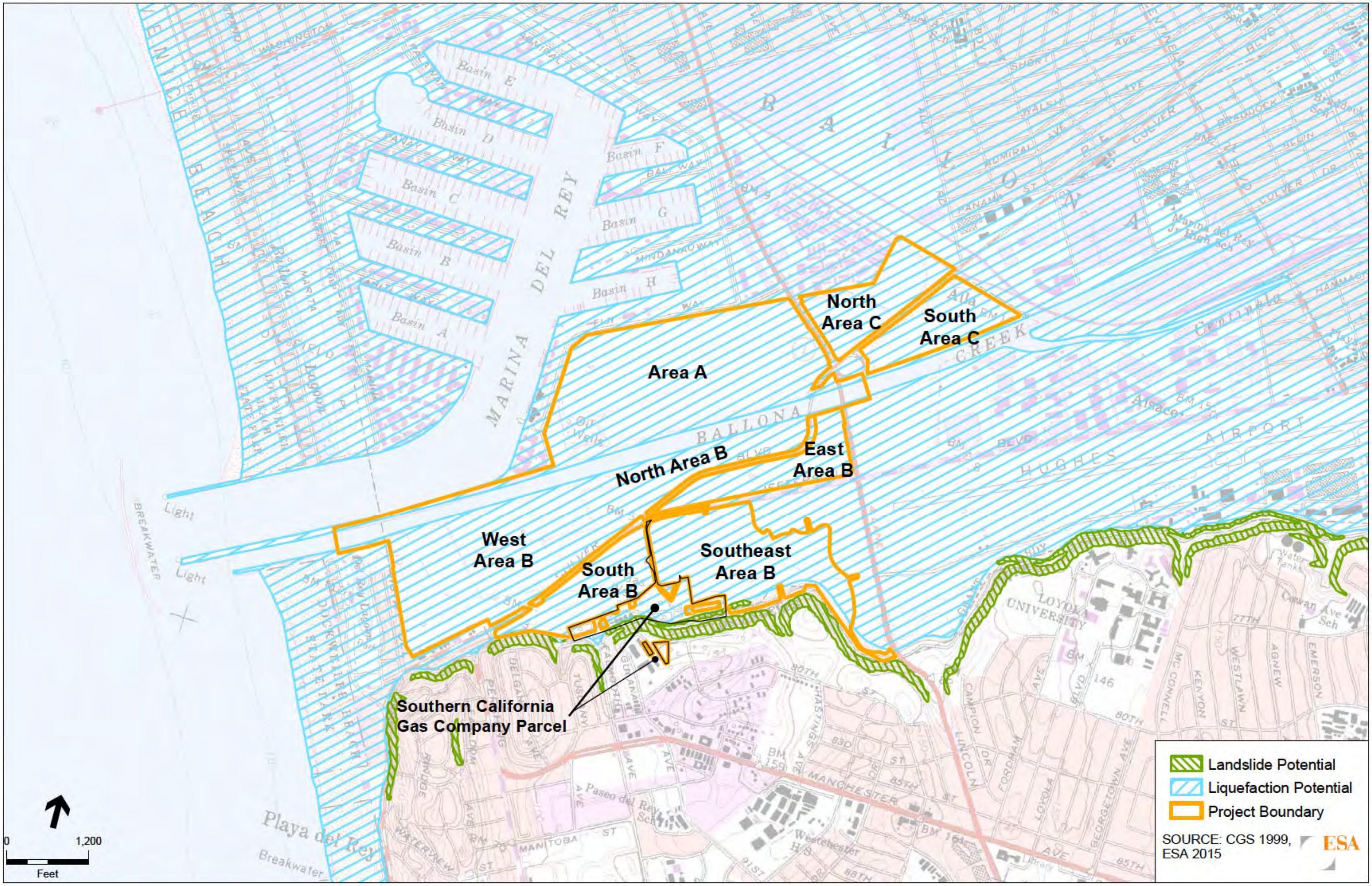
73 Grain size determines whether soils are classified as sands, silts, or clays with sands being larger than silts and silts being larger than clays.

74 Elastic silt tends to have a high moisture content causing the soil to begin to behave as a liquid material and begin to flow, especially under a load.



Ballona Wetlands Restoration Project

Figure 3.6-2
Landslide and Liquefaction Hazard Zone Map

Area B

Area B, which is approximately 338 acres, lies south of Ballona Creek and west of Lincoln Boulevard. Area B extends south to the base of the Playa del Rey Bluffs in the City of Los Angeles. To the west, Area B extends into the dunes that border residences along Vista del Mar. The existing Ballona Creek levees run along the northern edge of Area B (North and West). Area B contains the largest area of remnant unfilled wetlands with abandoned agricultural lands to the southwest and the existing Freshwater Marsh to the east. Though some fill is present in this area, most of the fills are limited to Culver Boulevard and Jefferson Boulevard. Elevations across Area B range between approximately 5 and 8 feet NAVD 88 in the lower flat portions, and due to the historic fill placement, as high as 21 feet NAVD 88 at existing levees and eastern portions of Culver Boulevard. Where present, the fill layer predominantly consists of loose to medium dense silty sands and soft to stiff sandy silts and clays. Other soil types encountered in the borings conducted during the 2013 geotechnical investigation included poorly graded silty sands and gravels. Materials in this layer either are non-plastic or have low plasticity[75]. Below the fill layer lie native alluvial materials consisting of interbedded fine-grained and coarse-grained soils. A five foot layer of fine grained soils immediately beneath the fill consists of predominantly fat clays[76] with lesser amounts of elastic silts, low to medium plasticity clays, and silts. At lower depths below this five foot layer are dense to very dense sands. According to the State of California Seismic Hazards Zone Map for the Venice Quadrangle, Area B is in a potential liquefaction hazard zone and not within a potential earthquake-induced landslide zone although to the south of Area B, outside of the Project boundary, there is a strip of area located within a landslide potential hazard area (CGS 1999 and Figure 3.6-2, *Landslide and Liquefaction Hazard Zone Map*).

Area B also includes SoCalGas Company facilities such as a total of 12 well sites (1 injection/withdrawal well and 11 monitoring wells) and a system of access roads in addition to existing gas pipelines.

Area C

Area C is north of Ballona Creek and east of Lincoln Boulevard. The Marina Freeway (State Route [SR] 90) forms the northeastern border of Area C. The area is approximately 66 acres and is traversed in an east-west direction by Culver Boulevard. As noted above, an excavated, unlined drainage channel known as the "Fiji Ditch" runs parallel to Fiji Way along the northern boundary of Area C. Area C contains fill from the construction of the Ballona Creek channel and developments such as Marina del Rey, the Pacific Electric Railroad, the raising of Culver Boulevard, and SR-90. North Area C is undeveloped. South Area C contains baseball fields and associated minor structures. Elevations within Area C range from approximately 7 to 28 feet NAVD 88. According to the State of California Seismic Hazards Zone Map for the Venice Quadrangle, Area C is in a potential liquefaction hazard zone and not within a potential earthquake-induced landslide zone (CGS 1999 and Figure 3.6-2, *Landslide and Liquefaction Hazard Zone Map*).

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75 Plasticity refers to the physical properties of the soils where the induced strain produces continuous permanent deformation without rupture. In general, soils that are high in clay content have higher plasticity indexes.

76 Fat clays are highly plastic and often with a high percentage of organic material. Fat clays tend to be susceptible to shrink-swell or linear expansion (see the discussion of seismic hazards, below).

Artificial fill covers Area C with thicknesses of between 8 and 15 feet NAVD 88. This layer consists of a mixture of fine-grained and coarse-grained soils, and predominantly includes loose to medium dense silty sands and soft to stiff sandy silts and clays. According to the 2013 geotechnical investigation (Appendix E), other soil types encountered in the borings include poorly graded sands and clayey sand and high-plasticity silts and clays. Below the fill layer, native alluvial materials of interbedded layers of fine-grained and coarse-grained soils are present. This layer predominantly includes soft to stiff clays and silts and loose to dense sands. Dense to very dense sands are present below the fill layer and fine- and coarse-grained soils layer. There are no SoCalGas Company wells or existing sewer infrastructure in Area C.

SoCalGas Company Sites

Sites 1 and 2 on the SoCalGas Property are located on the top of the bluff on the upper facility area; Sites 3 through 7 are located on the lower facility area below the bluff. The combined size of the seven sites is approximately 4 acres, with each site ranging from 0.2 acre to 1 acre, all consisting of existing disturbed and developed areas. The elevations for the seven sites range from about 6 to 20 feet NAVD 88. According to the State of California Seismic Hazards Zone Map for the Venice Quadrangle, Sites 1 and 2 are not in a potential liquefaction zone or a potential earthquake-induced landslide zone (CGS 1999). Sites 3 through 7 are in a potential liquefaction hazard zone and not within a potential earthquake-induced landslide zone. However, the area separating Sites 1 and 2 from Sites 3 through 7 is mapped as an earthquake-induced landslide hazard zone.

Seismicity and Faults

This section describes the region's known faults and historical earthquakes, estimates the likelihood of future earthquakes, and describes probable ground shaking effects (under Historical Earthquake Activity below).

Earthquake Terminology and Concepts

Earthquake Mechanisms and Fault Activity

Faults are planar features within the earth's crust that have formed to release strain caused by the dynamic movements of the earth's major tectonic plates. An earthquake on a fault is produced when these strains overcome the inherent strength of the earth's crust, and the rock ruptures. The rupture causes seismic waves that propagate through the earth's crust, producing the ground shaking effect known as an earthquake. The rupture also causes variable amounts of slip along the fault, which may or may not be visible at the earth's surface.

Geologists commonly use the age of offset rocks as evidence of fault activity—the younger the displaced rocks, the more recently earthquakes have occurred. To evaluate the likelihood that a fault would produce an earthquake, geologists examine the magnitude and frequency of recorded earthquakes and evidence of past displacement along a fault. The State of California's Alquist-Priolo Earthquake Fault Zoning Act defines an active fault as one that has had surface displacement within Holocene time (the last 11,000 years). A Quaternary fault is defined as a fault that has shown evidence of surface displacement during the Quaternary period (the last 1.6 million years), unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. This definition does not mean that a fault lacking evidence of surface displacement is necessarily inactive. In addition, it is possible for faults currently considered to be inactive to become active again in the future. However, in general the CGS considers active faults to be the most likely to be the source of future earthquakes.

Earthquake Magnitude

When an earthquake occurs along a fault, its size can be determined by measuring the energy released during the event. A network of seismographs record the amplitude and frequency of the seismic waves that an earthquake generates. The Richter local magnitude (M_L) of an earthquake represents the highest amplitude measured by the seismograph at a distance of 100 kilometers from the epicenter. Richter magnitudes vary logarithmically, with each whole-number step representing a tenfold increase in the amplitude of the recorded seismic waves and 32 times the amount of energy released. While Richter magnitude was historically the primary measure of earthquake magnitude, seismologists now use moment magnitude as the preferred way to express the size of an earthquake. The moment magnitude (M_W) scale is related to the physical characteristics of a fault, including the rigidity of the rock, the size of fault rupture, and the style of movement or displacement across the fault. Although the formulae of the scales are different, they both contain a similar continuum of magnitude values, except that M_W can reliably measure larger earthquakes and do so from greater distances.

Peak Ground Acceleration

A common measure of ground motion at any particular site during an earthquake is the peak ground acceleration (PGA). The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared. In terms of automobile acceleration, 1 "g" of acceleration is equivalent to the motion of a car traveling 328 feet from rest in 4.5 seconds. For comparison purposes, the maximum PGA value recorded during the 1994 Northridge earthquake in the vicinity of the epicenter approached 1g in several locations. Unlike measures of magnitude, which provide a single measure of earthquake energy, PGA varies from place to place and is dependent on the distance from the epicenter and the character of the underlying geology (e.g., hard bedrock, soft sediments, or artificial fills).

Modified Mercalli Intensity Scale

The Modified Mercalli Intensity (MMI) Scale assigns an intensity value based on the observed effects of ground shaking produced by an earthquake. Unlike measures of earthquake magnitude and PGA, the Modified Mercalli Intensity Scale is qualitative in nature in that it is based on actual observed effects rather than measured values. Similar to PGA, Modified Mercalli values for an earthquake at any one place can vary depending on the earthquake's magnitude, the distance from its epicenter, the focus of its energy, and the type of geologic material. The MMI values for intensity range from I (earthquake not felt) to XII (nearly total damage), and intensities ranging from IV to X can cause moderate to significant structural damage. Because the MMI scale is a measure of ground shaking effects, intensity values can be correlated to a range of average PGA values, as shown in Table 3.6-1, *Modified Mercalli Intensity Scale*.

TABLE 3.6-1
MODIFIED MERCALLI INTENSITY SCALE

Intensity Value	Intensity Description	Average Peak Ground Acceleration[a]
I	Not felt. Marginal and long period effects of large earthquakes.	< 0.0017 g
II	Felt by persons at rest, on upper floors, or favorably placed.	0.0017–0.014 g
III	Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.	0.0017–0.014 g
IV	Hanging objects swing. Vibration like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink. Crockery clashes. In the upper range of IV, wooden walls and frame creak.	0.014–0.039 g
V (Light)	Felt outdoors. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clocks stop, start, change rate.	0.035–0.092 g
VI (Moderate)	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster, adobe buildings, and some poorly built unreinforced masonry buildings cracked. Small bells ring (church, school). Trees, bushes shaken (visibly, or heard to rustle).	0.092–0.18 g
VII (Strong)	Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to some poorly built unreinforced masonry buildings. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices (also unbraced parapets and architectural ornaments). Some cracks even in better built masonry buildings if not reinforced. Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.	0.18–0.34 g
VIII (Very Strong)	Critical or extensive damage to some buildings, but well-designed buildings are largely undamaged. Steering of motor cars affected. Damage to unreinforced masonry buildings, including partial collapse. There is no damage to well-designed reinforced masonry buildings. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.	0.34–0.65 g
IX (Violent)	General panic. Damage to masonry buildings ranges from collapse to serious damage unless modern design. Wood frame structures, if not bolted, shifted off foundations. Frames racked. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluvial areas sand and mud ejected, earthquake fountains, sand craters.	0.65–1.24 g
X (Very Violent)	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.	> 1.24 g
XI (Very Violent)	Rails bent greatly. Underground pipelines completely out of service.	> 1.24 g
XII (Very Violent)	Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.	> 1.24 g

NOTE:

[a] Value is expressed as a fraction of the acceleration due to gravity. Gravity (g) is 9.8 meters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

SOURCES: ABAG (2010); Wald et al (1999).

Faults and Historical Earthquake Activity

Faults

The Project site is in a seismically active area of southern California containing both active faults and potentially active faults (Quaternary age, within the last 1.6 million years). Throughout the region, there is the potential to experience strong ground shaking and damage from any one of these faults. Figure 3.6-3, *Active and Potentially Active Regional Faults*, shows the locations of the major faults in the region and their geographic relationship to the Project site. Table 3.6-2, *Major Faults in the Vicinity of the Ballona Reserve*, lists known active and potentially active faults in the region that could affect the Project site, the type of the fault, the distance to the Ballona Reserve, and the estimated M_W of earthquakes that could occur on each fault.

TABLE 3.6-2
MAJOR FAULTS IN THE VICINITY OF THE BALLONA RESERVE

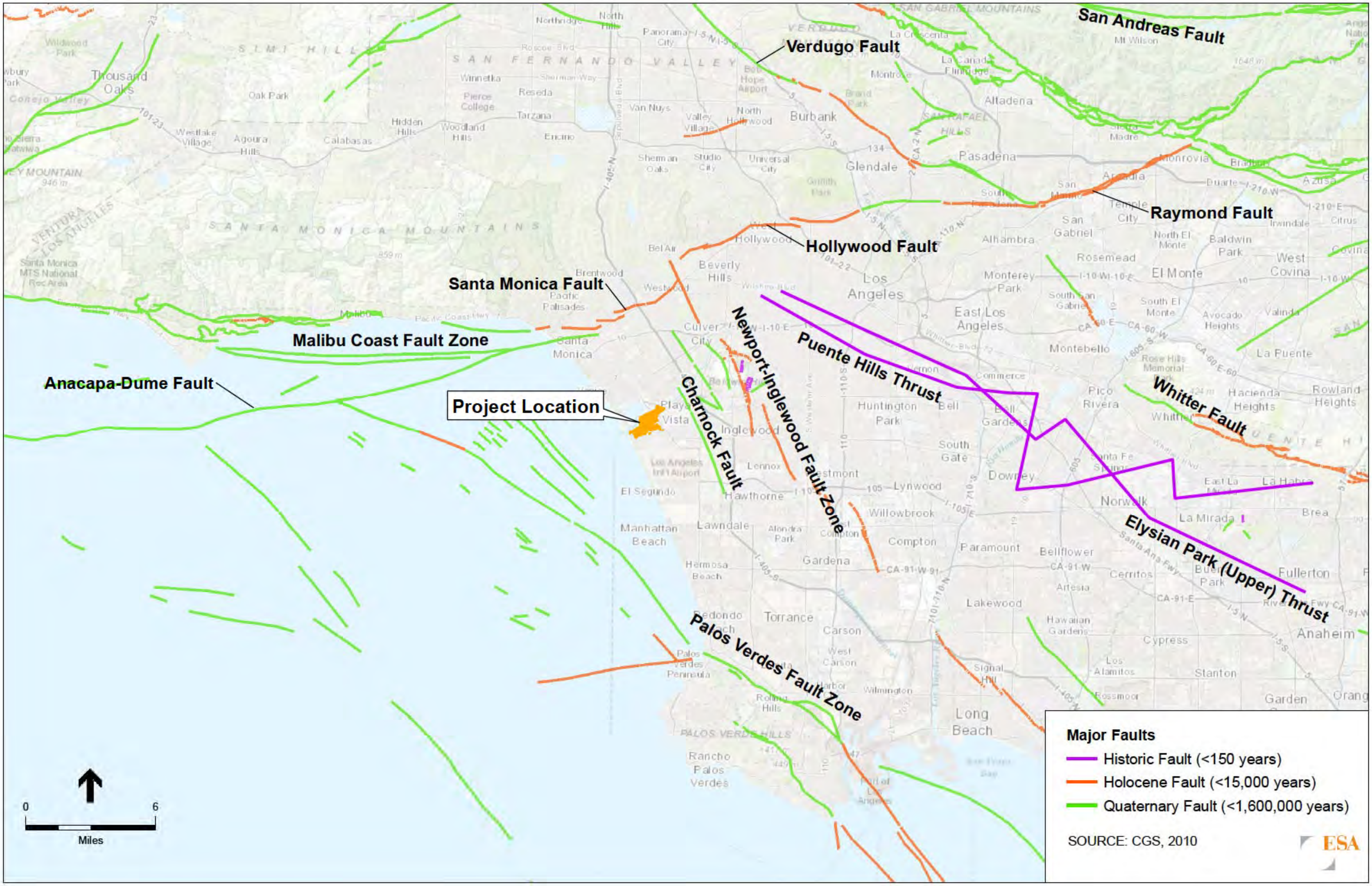
Fault Name	Fault Type[a]	Recency	Maximum Magnitude (M_W)	Distance from the Project Site (miles)	Slip Rate (millimeters/year)
Newport-Inglewood	Strike Slip	Historic	7.5	4.5	1.0
Santa Monica	Strike Slip	Holocene	7.3	4.8	2.6
Palos Verdes	Strike Slip	Holocene	7.7	5.5	3.0
Malibu Coast	Strike Slip	Holocene	6.7	6.3	0.3
Puente Hills	Thrust	Historic	7.0	7.3	0.7
Hollywood	Strike Slip	Holocene	6.7	8.0	1.0
Elysian Park (Upper)	Reverse	Historic	6.7	12.7	1.3
Anacapa-Dume	Reverse	Late Quaternary	7.2	14.7	3.0
Raymond	Strike Slip	Holocene	6.8	25.9	1.5
Verdugo	Reverse	Holocene	6.9	28.0	0.5
Santa Cruz-Santa Catalina	Strike Slip	Holocene (in part)	6.5-7.3	40	unknown

NOTE:

[a] A strike slip fault refers to the dominant motion of the two fault blocks that move horizontally along a vertical plane. A thrust fault is characterized by a low angle (less than 45 degrees from ground surface) where the overlying block moves upward towards the surface. A reverse fault is a characterized by the hanging wall being pushed over the foot wall typically encountered in areas undergoing compressional forces.

SOURCE: GDC (2013), Table 2; CGS (2010); Bilodeau et al. (2007).

Based on the available geologic data, there are no active or potentially active faults with the potential for surface fault rupture directly beneath or projecting toward the Ballona Reserve (Appendix E). The Charnock Fault, located about 1 mile to the east of the Ballona Reserve, is the closest mapped fault, but it is not considered active. Various investigations have concluded that it is a deep fault that does not break the Pleistocene (11,000 to 1.6 million years ago) 50-foot gravel layer and is estimated to be 1 to 2 million years old, making it a potentially active fault, but not an



Ballona Wetlands Restoration Project

Figure 3.6-3
Active and Potentially Active Regional Faults

active fault. A methane gas investigation conducted in 1999 for the offsite Playa Vista development suggested the existence of a buried, north-to-south, potentially active fault, referred to as the "Lincoln Avenue Fault," and was projected to extend through Southeast Area B, East Area B, and North Area C (ETI, 2000). However, a subsequent field investigation and literature review could find no evidence of a fault in this area (ECI, 2001). The Project site is not within an Alquist-Priolo Earthquake Fault Zone or a Fault Rupture Study Area. The closest Alquist-Priolo Earthquake Fault Zone is associated with the Newport-Inglewood fault, approximately 4.5 miles east of the site. Table 3.6-2 summarizes the active faults within 30 miles of the Project site that have the potential to generate strong ground shaking.

Historical Earthquakes

Seismic activity within the region includes a number of noteworthy earthquakes that have occurred within historic times. Several major earthquakes with magnitudes ranging from of 5.9 to 6.7 have occurred within approximately 35 miles of the Project site (Appendix E). A brief description of the four most recent of these historical earthquakes follows chronologically.

Long Beach Earthquake of 1933

The 6.4-magnitude Long Beach earthquake took place on March 10, 1933, causing widespread damage to buildings throughout southern California. The epicenter was offshore, southeast of Long Beach on the Newport-Inglewood Fault, and approximately 35 miles southeast of the Project site. The estimated ground motion caused at the site was less than 0.1 g (Appendix E). Although only moderate in terms of magnitude, this earthquake caused serious damage to weak masonry structures from Los Angeles south to Laguna Beach. Property damage was estimated at $40 million, and 115 people were killed. The earthquake was felt almost everywhere in the 10 southern counties of California. Damage to school buildings, which were among the structures most commonly and severely damaged by this earthquake, led to the State Legislature passing the Field Act, which now regulates building-construction practices in California.

San Fernando Earthquake of 1971

The 6.6-magnitude San Fernando earthquake occurred on February 9, 1971, in a sparsely populated area of the San Gabriel Mountains, near the City of San Fernando. It lasted about 60 seconds, and, in that brief span of time, took 65 lives, injured more than 2,000, and caused property damage estimated at $505 million. The epicenter was located about 30 miles north of the Project site. The MMI felt at the site ranged from V to VI (i.e., Moderate to Strong), corresponding to PGA values in the range of 0.04 g to 0.18 g (Appendix E).

Whittier Narrows Earthquake of 1987

The 5.9-magnitude Whittier Narrows earthquake occurred in the southern San Gabriel Valley on October 1, 1987. The epicenter was in the town of Rosemead, about 22 miles east of the Project site. The earthquake was caused by slip on a blind thrust fault near the northern end of the Whittier Fault, which is part of the Elsinore Fault Zone, on a previously unknown fault structure. There was no surface rupture. The MMI felt at the site was V (i.e., Moderate), corresponding to PGA values in the range of 0.04 g to 0.09 g (Appendix E).

Northridge Earthquake of 1994

The Northridge Earthquake occurred on January 17, 1994 in Northridge, California. It was a magnitude 6.7 earthquake and was the most costly earthquake in United States history. The shaking heavily damaged communities throughout the San Fernando Valley and Simi Valley, in West Los Angeles and Santa Monica, and within the surrounding mountains north and west of Los Angeles, causing $20 billion in damages. Sixty people were killed, more than 7,000 people were injured, and more than 40,000 buildings suffered damaged. The epicenter occurred about 18 miles north of the Project site. The MMI felt at the site ranged from VI to VII (i.e., Strong to Very Strong) corresponding to PGA values in the range of 0.20 g to 0.30 g whereas areas closer to the epicenter had PGA values of approximately 1.0g (Appendix E).

Local Site Micro-Seismicity

From 1994 to 2012, 10 micro-earthquakes were recorded near the Project site with magnitudes in the range of 2.3 M_L to 3.5 M_L and with epicenters at a depth of 5.6 to 9.9 miles (Appendix E)[77]. None of the reported micro-earthquakes have been shallow (the minimum depth was 6.2 miles). These micro-events occurred within a 1.9-mile radius from the approximate center point of the Ballona Reserve. However, the depth and magnitude estimates were generated using seismometers located at relatively large distances from the source. Thus, the accuracy of the micro-seismicity data, including locations, is approximate. According to the findings of the 2013 geotechnical investigation, this micro-seismicity does not reveal the presence of shallow (near surface) active faults within the Project site.

While these historic earthquakes do not provide any indication of what may occur in the future, the Uniform California Earthquake Rupture Forecast has modeled the probability of one or more earthquakes of greater than 5-magnitude over the next 30 years (USGS 2015). According to USGS findings, there is a 93 percent chance of a 6.7 or greater earthquake occurring in the southern California region. The shaking experienced at the Project site would depend on a number of factors including distance to epicenter, depth of rupture, duration of shaking, and characteristics of underlying materials.

Seismic Hazards

Seismic hazards generally are classified into two categories: primary seismic hazards (surface fault rupture and ground shaking) and secondary seismic hazards (liquefaction and other types of seismically induced ground failure, such as seismically induced landslides).

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude, sense, and nature of fault rupture can vary for different faults or even along different strands of the same fault. Although future earthquakes could occur anywhere along the length of an active fault, only regional strike-slip earthquakes of magnitude 6.0 or greater are likely to be associated with significant surface fault rupture and offset (CDMG and USGS 1996). It is important to note that unmapped subsurface

[77] M_L refers to the local magnitude of the energy released by an earthquake within 60 miles of the epicenter. M_L values of 2.5 – 3.9 represent earthquakes that may or may not be felt and cause no damage.

fault traces could experience unexpected and unpredictable earthquake activity and fault rupture. However, ground rupture is considered more likely along active, strike-slip faults, which are referenced above in Figure 3.6-3, *Active and Potentially Active Regional Faults*, and Table 3.6-2, *Major Faults in the Vicinity of the Reserve*. Therefore, the highest potential for surface faulting in or near the Project site is along existing active fault traces. The closest known active fault to the Project site with historical earthquake events is the Newport-Inglewood Fault, located 4.5 miles from the Ballona Reserve.

Seismic Groundshaking

As noted above, the Project site is in a seismically active region of southern California. According to USGS earthquake rupture forecasting, the southern California region has a 93 percent chance of experiencing a magnitude 6.7 or greater earthquake over the next 30 years. Depending on a number of factors, there is a potential for high-intensity ground shaking to occur in this region. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the moment magnitude, the duration of shaking, and the nature of the geologic materials on which the Project components would be constructed. Disregarding local variations in ground conditions, the intensity of shaking at different locations generally can be expected to decrease with distance from an earthquake epicenter.

For the purposes of estimating expected ground shaking at the Project site, the 2013 geotechnical investigation considered the seismic history of the region and other seismic data to develop what is known as a “design earthquake.” The design earthquake considers the proximity to active faults, their slip rate history, and estimated potential energy to estimate the potential groundshaking that could be experienced at the site. As a result of these calculations, the 2013 geotechnical investigation determined that the design earthquake for this Project was selected as an earthquake with a PGA of 0.32 g, with a magnitude of 6.7 that occurs at a distance of 13 kilometers (7.8 miles) from the site.

Liquefaction and Lateral Spreading

Liquefaction is the rapid loss of shear strength experienced in saturated, predominantly granular soils below the groundwater level during strong earthquake ground shaking and occurs due to an increase in pore water pressure. In general, a relatively high potential for liquefaction exists in loose, sandy soils that are saturated and within 50-feet of the ground surface. Liquefaction-induced lateral spreading is defined as the finite, lateral displacement of gently sloping ground as a result of pore-pressure buildup or liquefaction in a shallow underlying deposit during an earthquake (VT 2013). The occurrence of this phenomenon is dependent on many complex factors, including the intensity and duration of ground shaking, particle-size distribution, density of the soil, and the depth to groundwater.

The potential damaging impacts of liquefaction include differential settlement, loss of ground support for foundations, ground cracking, heaving and cracking of structure slabs due to sand boiling, and buckling of deep foundations due to ground settlement. Dynamic settlement (i.e., pronounced consolidation and settlement from seismic shaking) may also occur in loose, dry sands above the water table, resulting in settlement of and possible damage to overlying structures. Lateral spreading can move blocks of soil, placing strain on buried pipelines that can lead to leaks or pipe failure (VT 2013).

As shown on Figure 3.6-2, *Landslide and Liquefaction Hazard Zone Map*, the CGS has indicated that the Ballona Reserve is considered to be in a liquefaction hazard zone (CGS 1999). The 2013 geotechnical investigation further evaluated the potential for liquefaction to occur at the Ballona Reserve (Appendix E). In general, the Ballona Reserve is underlain by artificial fill, relatively young and loose/soft interbedded deposits of fine-grained silt/clay with relatively thin discontinuous layers of sandy or non-plastic silt with dense to very dense sands present at depth.[78] Based on the 2013 geotechnical investigation, localized liquefaction is predicted to occur in the saturated sand and non-plastic silt lenses and layers that occur throughout the project site, during the previously discussed design earthquake, and given the depths to groundwater at the Ballona Reserve.[79] The results of the liquefaction analysis estimated post-liquefaction settlement on the order of 0 to 3 inches for the design earthquake. Lateral spreading was estimated to be on the order of 3 to 6 inches at the location of the new levees, at a distance of about 300 to 1,000 feet from the meander channel (Appendix E). An evaluation was also made on the effect of changes in water level in the channel on the predicted seismic displacements for new and existing levees that would remain. On new levees, the water level is generally equal to the groundwater level and would not be a factor on seismic deformations (Appendix E).

Landslides and Ground Cracking

Earthquake motions can induce substantial stresses on slopes and can cause earthquake-induced landslides or ground cracking if the slope fails. Earthquake-induced landslides can occur in sloped areas (minor slopes like those associated with levees) that are susceptible to strong ground motion during an earthquake. Slope stability can depend on a number of complex variables. The geology, structure, and amount of moisture in the slope affect slope failure potential, as do external processes (i.e., climate, topography, slope geometry, and human activity). The factors that contribute to slope movements include those that decrease the resistance in the slope materials and those that increase the stresses on the slope. Slope failure under static forces occurs when those forces initiating failure overcome the forces resisting slope movement. For example, a soil slope may be considered stable until it becomes saturated with water. Under saturated conditions, the water pressure in the individual pores within the soil increases, reducing the strength of the soil and making it more susceptible to earthquake induced failure. The 1989 Loma Prieta earthquake on the San Andreas Fault triggered thousands of landslides over an area of 5,400 square miles. Figure 3.6-2, *Landslide and Liquefaction Hazard Zone Map* , presents the seismically-induced landslide hazard potential in the study area described in Section 3.6.2.1 and beyond (CGS 1999). The hills to the south of the Project site in Playa del Rey, south of Cabora Drive, are mapped in the Landslide Hazard Zone.

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78 "Non-plastic" silts are silts that behave more like sand in that the silt material is less susceptible to sticking together in a plastic way similar to clay (e.g., Play-Doh).

79 See Hydrology and Water Quality Section 3.9.2.2, which explains that the depth to groundwater in Area A has been measured between 7 to 17 feet below the ground surface with a corresponding elevation of -6 to 10 feet North American Vertical Datum (ft NAVD 88); in Area B, the depth to groundwater has been measured between 2 to 11 feet below the ground surface (2 to 8 ft NAVD 88); and in Area C, the depth to groundwater has been measured between 12 to 23 feet below the ground surface (-2 to 6 ft NAVD 88).

Geologic and Soils Hazards

Geologic hazards include soil erosion and the loss of topsoil, potentially unstable geologic units (seepage/piping, settlement and subsidence), and problematic soils (expansive soils or corrosive soils). Each is described below.

Erosion

Erosion is the wearing-away of soil and rock by processes such as mechanical or chemical weathering, mass wasting, and the action of waves, river flow, wind and underground water. Excessive soil erosion eventually can lead to damage of building foundations and roadways. In general, areas that are most susceptible to erosion are unprotected, un-vegetated areas, or areas that would be exposed during construction soils are disturbed and require stockpiling. Typically, soil erosion potential is reduced once the soil is graded and covered with concrete, structures, asphalt, vegetation, or slope protection; however, changes in drainage patterns also can cause areas to be susceptible to erosion.

Throughout most of its length, Ballona Creek is a concrete-lined, flood-control channel in a highly urbanized watershed. These factors limit the amount of erosion along the channel, so erosion only occurs in the soft-bottom portion of the channel. At the mouth of Ballona Creek, coastal sediment transport processes strongly influence sediment dynamics. See Section 3.9.2.2, *Hydrology and Water Quality*, for further description and discussion of erosion and sedimentation.

Seepage/Piping

Shallow permeable sand layers, previous channels, or the buried organics, including decayed tree roots, present beneath levees or other structures could provide a path for seepage (Appendix E). The levees themselves also would present a potential for seepage depending on the permeability values of the soil types present. The flow of water through or beneath levees or structures could erode, weaken, and undercut the levees or structures. Shallow sand layers are possible in West Area B because of the proximity of the dunes. Undocumented buried channels with un-compacted fill could be anywhere beneath the Ballona Reserve. Buried organics at the former celery waste dump in the northeast portion of Area A (see Section 3.8, *Hazards and Hazardous Materials*), may provide seepage pathways if left in place.[80]

Settlement and Subsidence

Subsidence can be caused by the withdrawal of fluids such as groundwater and oil or by the placement of new loadings such as structures or levees. The removal of the fluids reduces the strength of the geologic layers, with silts and clays being the most susceptible to subsidence. Oil has not been extracted from the local area since the 1930s (Appendix E). There are no water supply wells located within the Project site. With no fluid extraction activities, the Project site is not known to be subject to subsidence due to fluid withdrawal. However, settlement can occur when a load from a structure or placement of new fill material is applied, causing distortion in the underlying materials. This settlement occurs quickly and typically is complete after

[80] Prior to placement of compacted fill for the new levees the subgrade soils including buried organics in the area of the celery dump would be removed (Appendix E).

placement of the final load. On the other hand, over longer periods of time, consolidation settlement can occur in saturated clays from the volume change caused by squeezing out water from the pore spaces. Given enough time, consolidation is followed by secondary compression, which is a continued change in void ratio under the continued application of the load. Soils tend to settle at different rates and by varying amounts depending on the load weight or changes in properties over an area, which is referred to as differential settlement.

Expansive Soils

Expansive soils are fine-grained soils that shrink or swell as the moisture content decreases or increases. Structures built on these soils can experience damage resulting from shifting, cracking, and breaking damage as soils shrink and subside, or expand and rise. The change in soil volume is due to the gain (swell) or loss (shrink) of water in soils having high clay content; silts also can undergo volume changes with changes in moisture. The shrink/swell phenomenon most commonly is observed in the upper 10 to 20 feet of soil where precipitation, evapotranspiration, and related water-cycle reactions occur. Most of the Ballona Reserve is covered with artificial fill ranging from 0 feet (not present in certain areas) to approximately 20 feet; in general, shrink/swell would be mostly limited to any fine-grained materials located within the upper depth intervals. The 2013 geotechnical investigation performed within the Ballona Reserve included testing for soil expansion and laboratory results from a very limited sampling effort determined a low potential for expansion in near surface soils, however boring logs indicate that there are clayey soil layers that may have higher expansion potential (Appendix E).

Corrosive Soils

Corrosive soils have the potential to corrode metal and concrete upon contact under certain conditions. Factors in determining soil corrosivity are electrical resistivity, pH, soluble salt content, soil types, aeration, anaerobic conditions, and site drainage. Eleven soil samples from Area A were tested for soil corrosivity in a previous investigation (M.J. Schiff & Associates 1989). This 1989 investigation concluded that the soils are severely corrosive to ferrous metals, possibly aggressive to copper, and moderately aggressive to concrete. The 2013 geotechnical investigation (Appendix E) included analysis of one sample located in Area B along the south side of the Ballona Creek channel that indicated a low corrosion potential. No samples were collected from Area C for analysis of corrosion potential for the 2013 geotechnical investigation.

3.6.3 Applicable Laws, Regulations, Plans, and Standards

3.6.3.1 Federal

33 USC Section 408

Non-Federal proposals, such as this Project, to degrade, raise, or realign existing Corps projects under Section 408 are evaluated as new construction of Federal projects and the potential impact of these changes, including system impacts, are evaluated in accordance with Corps' regulations and policy. System performance analyses would be applied to all evaluations of alterations/ modifications to existing Corps' flood risk management projects proposed under Section 408 in accordance with Engineer Circular 1165-2-216. The technical analysis and adequacy of design include a geotechnical evaluation, structural evaluation, analysis on hydraulics and hydrology, and post-restoration requirements. See Section 3.9, *Hydrology and Water Quality*, for more detail.

Clean Water Act – Water Quality

In 1972, the Clean Water Act (CWA) established the basic structure for regulating discharges of pollutants into the waters of the U.S. and gave the U.S. Environmental Protection Agency (USEPA)) the authority to implement pollution control programs. The CWA sets water quality standards for contaminants in surface waters. The statute employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, to finance municipal wastewater treatment facilities, and to manage polluted runoff. The USEPA has delegated responsibility for implementation of portions of the CWA, including water quality control planning and programs, in California to the State Water Resources Control Board and the nine RWQCBs.

Section 402 of the CWA authorizes the USEPA to establish a nationwide surface water discharge permit program for municipal and industrial point sources known as the NPDES program. Under Section 402, the RWQCB has set standard conditions for each permittee including construction requirement as discussed further below.

Occupational Safety and Health Administration Regulations

Occupational safety standards exist to minimize worker safety risks from both physical and chemical hazards in the work place. The Federal Occupational Safety and Health Administration (OSHA) is the agency responsible for ensuring worker safety in the workplace.

The OSHA Excavation and Trenching standard (29 CFR 1926.650) covers requirements for excavation and trenching operations that are greater than 5 feet in depth, to control one of the most hazardous of construction activities. OSHA requires that all excavations greater than 5 feet in which employees could enter and be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area. In California, Cal/OSHA is the implementing state agency that implements Federal OSHA standards.

3.6.3.2 State

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes. This act requires the State Geologist to delineate various seismic hazard zones and cities, counties, and other local permitting agencies to regulate certain development projects within these zones. The *California Geological Survey Guidelines for Evaluating and Mitigating Seismic Hazards* (Special Publication 117A) provides guidance for evaluating and mitigating seismic hazards (CGS 2008). The CGS has completed delineations for the USGS quadrangles in which Project components are proposed as discussed above in Section 3.6.2.2.

California Building Code

The California Building Code (CBC), which is codified in California Code of Regulations Title 24, Part 2, was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, egress facilities, and general building stability. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all building and structures within its jurisdiction. Title 24 is administered by the California Building Standards Commission, which coordinates all building standards. Under State law, all building standards must be centralized in Title 24 or they are not enforceable. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The 2013 edition of the CBC is based on the 2012 International Building Code (IBC) published by the International Code Council, was published by the California Building Standards Commission in July 2013, and took effect on January 1, 2014. The 2013 CBC contains California amendments based on the American Society of Civil Engineers (ASCE) Minimum Design Standard 7. ASCE Minimum Design Standard 7, Minimum Design Loads for Buildings and Other Structures, provides requirements for general structural design and includes means for determining earthquake loads, as well as other loads (such as wind loads) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, use and occupancy, location, maintenance, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California. Seismic design provisions of the building code generally prescribe minimum lateral forces applied statically to the structure, combined with the gravity forces of dead and live loads. The prescribed lateral forces generally are considered to be substantially smaller than the actual peak forces that would be associated with a major earthquake. Consequently, structures should be able to resist: (1) minor earthquakes without damage, (2) moderate earthquakes without structural damage but with some nonstructural damage, and (3) major earthquakes without collapse, but with some structural as well as nonstructural damage. Conformance to the current building code recommendations does not constitute a guarantee that significant structural damage would not occur in the event of a maximum magnitude earthquake. However, it is reasonable to expect that a structure designed in accordance with the seismic requirements of the CBC should not collapse in a major earthquake.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, all of which are used to determine a seismic design category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site; SDC ranges from A (very small seismic vulnerability) to E/F (very high seismic vulnerability and near a major fault). Seismic design specifications are determined according to the SDC in accordance with CBC Chapter 16. Chapter 16, Section 1613, provides earthquake loading specifications for every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, which shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE Minimum Design Standards 7-05. CBC Chapter 18 covers the requirements of geotechnical investigations (Section 1803), excavation, grading, and fills (Section 1804), load-bearing of soils (Section 1805), as well as foundations (Section 1808), shallow foundations (Section 1809) and deep foundations

(Section 1810). Chapter 18 also describes analysis of expansive soils and the determination of the depth to groundwater table. For SDCs D, E, and F, Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading, plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. It also addresses measures to be considered in structural design, which may include ground stabilization, selecting appropriate foundation type and depths, selecting appropriate structural systems to accommodate anticipated displacements, or any combination of these measures. The potential for liquefaction and soil strength loss must be evaluated for site-specific peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions.

The updated CBC no longer cites the 1997 Universal Building Code (UBC) Table 18-1-B for identifying expansive soils; however, the significance criterion in CEQA Guidelines Appendix G still refers to this out-of-date table. Instead, this EIS/EIR uses the updated version of CBC Section 1803.5.3, as provided below.

> ***1803.5.3 Expansive Soil.*** In areas likely to have expansive soil, the building official shall require soil tests to determine where such soils do exist. Soils meeting all four of the following provisions shall be considered expansive, except that tests to show compliance with Items 1,2 and 3 shall not be required if the test prescribed in Item 4 is conducted:
>
> 1. Plasticity index (PI) of 15 or greater, determined in accordance with ASTM D 4318.
> 2. More than 10% of the soil particles pass a No. 200 sieve (75 micrometers), determined in accordance with ASTM D 422.
> 3. More than 10% of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D 422.
> 4. Expansion index greater than 20, determined in accordance with ASTM D 4829.

California Excavation Notification Requirements

Title 8 California Code of Regulations Section 4216 et seq. requires any person who plans to conduct any excavation to contact the appropriate regional notification center 48 hours before breaking ground. This program allows owners of buried installations to identify and mark the location of its facilities before any nearby excavation projects commence. Adherence to this law by contractors of projects reduces the potential of inadvertent pipeline and utility damage and leaks.

NPDES Construction General Permit

Restoration and construction associated with the Project would disturb more than 1 acre of land surface and so could affect the quality of storm water discharges into waters of the U.S. The Project therefore would be subject to the *NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (Order 2009-0009-DWQ, NPDES No. CAS000002, Construction General Permit [CGP]), as amended by Order 2010-0014-DWQ and Order 2012-0006-DWQ). The CGP regulates discharges of pollutants in stormwater associated with construction activity to waters of the U.S. from construction sites that disturb 1 acre or more of land surface, or that are part of a common plan of development or sale that disturbs more than 1 acre of land surface.

The CGP requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that includes specific Best Management Practices (BMPs) designed to prevent pollutants from contacting storm water and would keep all products of erosion from moving off-site into receiving waters. The SWPPP BMPs are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. The CGP and SWPPPs are described in more detail in Section 3.9, *Hydrology and Water Quality*.

California Coastal Act of 1976

The California Coastal Act (Coastal Act) of 1976 (Pub. Res. Code §30000 et seq.) was enacted to establish policies and guidelines that provide direction for the conservation and development of the California coastline. The Coastal Act established the California Coastal Commission and created a state and local government partnership to ensure that public concerns regarding coastal development are addressed.

The California Coastal Commission is responsible for assisting in the preparation, review, and certification of Local Coastal Programs/Local Coastal Plans (LCPs), which are developed by municipalities for that portion of their jurisdiction that falls within the coastal zone. Following certification of the LCP, regulatory responsibility is then delegated to the local jurisdiction, although the California Coastal Commission retains jurisdiction over the immediate shoreline.

Portions of the Ballona Reserve (including portions of Areas A, B, and C) are located within the Coastal Zone, support features subject to the jurisdiction of the California Coastal Commission, and are subject to the Coastal Act, including the California Coastal Commission's Coastal Development Permit approval requirement. The Coastal Development Permit process requires maps; Project plans; CEQA review; relevant grading, drainage, erosion control, geology and soils, and/or geotechnical plans and a report; local approval of the Project; and various fees and filings.

3.6.3.3 Local

State agencies acting in their sovereign capacity are not subject to local regulations unless the California Constitution says they are or the Legislature has consented to such regulation. However, local regulations are mentioned in this EIS/EIR because this analysis contemplates actions by SoCalGas Company outside of state property. Moreover, local plans and policies help inform this analysis related to geology and soils.

County of Los Angeles Department of Public Works

Within its jurisdiction, the Los Angeles County Department of Public Works requires project applicants to submit applications for building and grading permits for review and approval (County of Los Angeles 2013). In general, engineering geology, soils engineering, geotechnical, geologic, and soils reports in support of such applications are required to include at a minimum:

1. A description of the general setting with respect to major geologic and geographic features;

2. A description of the geology of the site accompanied with geologic maps and cross-sections;
3. A description of natural materials and structural features;
4. Data regarding the nature, distribution, and strength of existing soils;
5. Conclusions and recommendations regarding the effect of geologic and seismic conditions on the proposed development and for grading procedures and design criteria for corrective;
6. measures, including buttress fills, when necessary; and
7. An opinion as to whether the site is suitable for the intended use.

3.6.4 Thresholds of Significance

The Corps has agreed to use the CEQA Guidelines for purposes of this EIS/EIR. The significance criteria listed below are derived from CEQA Guidelines Appendix G, Section VI, with an additional consideration by both Lead Agencies of whether the presence of corrosive soils could create substantial risks to life or property. In addition, the analysis considers where improvements of the Project would provide a net benefit relative to the conditions described in Section 3.6.2, Affected Environment.

Under CEQA Guidelines Appendix G Section VI(b), a project would have a significant adverse impact on the environment if it would result in substantial soil erosion or the loss of topsoil. This question is distinguished from erosion that leads to sedimentation and impairment of water quality, which is addressed in Section 3.9, *Hydrology and Water Quality*, by considering the long term erosional effects that could lead to substantive physical damage of improvements, such as the undermining of foundations or roadways. However, as a result of the measures undertaken to protect water quality as discussed in Section 3.9, there would be no resultant means for causing long term erosional effects (e.g., substantial soil erosion or the loss of topsoil) that could lead to substantive physical damage and, thus, CEQA Guidelines Appendix G Section VI(b) is not considered further in this Section 3.6.

Under CEQA Guidelines Appendix G Section VI(c), a project would have a significant adverse impact on the environment if it would 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 one or more of a list of ground failure mechanisms, including some that more commonly are associated with seismically-induced failures (i.e., liquefaction and lateral spreading). As indicated below, this analysis evaluates seismically-induced ground failures under GEO-1; ground failures that do not require a seismic event (i.e., seepage/piping, slope stability, and settlement) are analyzed under GEO-2.

Under CEQA Guidelines Appendix G Section VI(e), a project would have a significant adverse impact on the environment if it would have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater. The Project does not include septic tanks or wastewater disposal, and could not cause or contribute to any effect related to this significance threshold. Therefore, CEQA Guidelines Appendix G Section VI(e) is not considered further in this analysis.

CEQA Guidelines Appendix G Section VI does not address the potential for corrosive soil conditions. Nonetheless, because corrosive soil can adversely impact unprotected concrete and steel, the types of materials that may be used for the parking structure, this EIS/EIR would consider the Project to have a significant adverse impact if it would be located on corrosive soils and thereby create substantial risks to life or property. See significance threshold GEO-4.

For purposes of this analysis, Alternative 1, 2, 3, or 4 would have a significant impact related to Geology and Soils if it would:

GEO-1 Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

- a) 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);
- b) Strong seismic ground shaking;
- c) Seismic-related ground failure, including liquefaction; or
- d) Landslides;

GEO-2 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 seepage/piping, slope stability issues, or settlement;

GEO-3 Be located on expansive soil, as defined in 24 CCR 1803.5.3 of the California Building Code (2013) creating substantial risks to life or property; and/or

GEO-4 Be located on corrosive soils creating substantial risks to life or property.

3.6.5 Methodology

3.6.5.1 List of Primary Documents Used in the Analysis

Geologic, seismic, and soils information for the Project area was derived from various sources and compiled in this section to develop a comprehensive understanding of the potential constraints and hazards associated with Project implementation. Information sources include regional geologic maps prepared by the CGS and USGS, the PSHA of California, and earthquake rupture forecasts developed by the Working Group on California Earthquake Probabilities, all of which reflect the most up-to-date understanding of the regional geology and seismicity.

As indicated above, the Project-specific 2013 geotechnical investigation provided in Appendix E was relied on to inform the analysis of geosciences-related impacts. Other documents relied upon in this analysis are cited in the text and full references are provided in Section 3.6.8, *References*.

3.6.5.2 Assessment Methodology

Geological impacts have been evaluated in two ways: (1) impacts of the alternatives on the local geologic environment, and (2) impacts of geological hazards on components of the alternatives that may result in substantial damage to structures or infrastructure (e.g., levees, bridges, and parking lots), expose people to substantial risk of injury, or adversely affect the environment. Impacts would be considered significant and adverse if the alternative meets any of the significance criteria listed in Section 3.6.4.

The impact analysis of geology, seismicity, and soils presented in this section takes into consideration that CDFW and LACFCD would implement site-specific geotechnical investigation recommendations presented in the 2013 geotechnical investigation (Appendix E). The 2013 geotechnical investigation included site inspections, a review and summary of previous geotechnical and contamination investigations, geotechnical field work consisting of 75 soil explorations (25 rotary wash borings, 31 cone penetration tests (CPTs), 8 hollow stem auger borings, and one hand auger boring), seven shear wave velocity measurements, four field permeability measurements, geotechnical and chemical laboratory analyses, and engineering analyses to develop the geotechnical recommendations for the constructed features of the Project such as the levees, bicycle/pedestrian bridges (which would be temporarily used to transport soils during restoration), and parking lots. Geotechnical recommendations in the 2013 geotechnical investigation that address problematic soils, seepage and piping issues, slope stability, and settlement within the Ballona Reserve include, but are not limited to, the following:

a) Conduct deep soil mixing or other County and USACE approved geotechnical engineering measures adjacent to the tie-ins of new levees with existing levees to improve the stability of the existing levees.

b) Surcharge loads placed in Area C shall be at least 70 feet back from the top of the channel slope.

c) Monitoring and evaluation of soil conditions shall occur throughout construction period by a California licensed Geotechnical Engineer to reduce the potential for settlement from placement of new fills and loadings. Placement of fills for the proposed new levees shall be done in lifts at a rate of 5 feet of fill per month or slower depending on observed conditions.

d) All fill placed shall be compacted to at least 90 percent of the maximum dry density determined by the most current ASTM D 1557 standard.

e) Prior to placement of compacted fill for the new levees, the subgrade soils along the levee alignments shall be excavated and recompacted, within limits determined by the Project geotechnical engineer during construction, based on the conditions exposed, to ensure the soil can support the structure under static and earthquake conditions. Deeper removals under the levee core shall occur if unsuitable soils are present and will adhere to USACE EM 110-2-1913, Engineering and Design and Construction of Levees.

f) If permeable sand layers are exposed that could provide a path for seepage under the new levee core, those sand layers shall be over-excavated and replaced to the limits determined by the Project geotechnical engineer during grading to prevent seepage that would undermine the levee.

g) It shall be anticipated that there is the possibility of discovering old unknown channels in the area. If encountered, any soft and sandy material shall be removed and replaced with compacted fill. Shoring or cofferdams and other stabilization shall be incorporated into construction specifications as needed.

h) Capping of the levee core shall be planned as the last step of grading, after settlements are complete as confirmed by on-site monitoring by the Project geotechnical engineer. New culverts shall not be installed until 90 percent of the primary consolidation is completed.

i) The proposed bridges, which would be constructed prior to restoration activities to allow for the transport of soil and would operate as a bicycle and pedestrian bridge upon completion of the restoration, shall be supported on piles installed into the dense sand and gravel bearing layer that underlies the Project site at a depth of about 50 to 60 feet in accordance with the final design geotechnical report.

Geotechnical investigations are an essential piece of any above ground improvements because the data inform structural and foundation design, seismic design criteria, and necessary remedies to address how existing materials are expected to perform with the addition of proposed elements. Geotechnical investigations are required under the CBC and County regulations and USACE guidance for most structures. Based on field observation and laboratory testing, the geotechnical engineer can assess whether the soils are adequate to support the structure (e.g., buildings, levees, roadways, etc.) under static (non-earthquake) or earthquake conditions. If corrective work is necessary to remedy the problem, soils or otherwise unstable ground condition, the geotechnical engineer would recommend approaches to correct the condition such as replacement of unsuitable soils with engineered fill. Geotechnical engineering recommendations are typically standard engineering practices that have been proven elsewhere to increase the geotechnical performance of an underlying soil or bedrock material.

In addition to compliance with the geotechnical requirements discussed above, certain geotechnical aspects of the Project have quantitative thresholds that are used to quantify significance conclusions. Project components that are constructed within 500 feet of an active fault are considered to present a significant impact (Bryant and Hart 2007). The CBC presents specific criteria for quantifying seismic conditions and for identifying expansive soil, as described in Section 3.6.3, *Applicable Laws, Regulations, Plans, and Standards*.

Alternative 1 would be implemented in two phases consisting of multiple sequences beginning as early as 2017. The sequences would be grouped into two primary work periods, with the first occurring between 2017 and 2019 and the second occurring in 2023. No mechanized activities would occur between 2020 and 2023 to facilitate habitat restoration and plant establishment. Alternatives 2 and 3 each would be implemented in a single phase consisting of multiple sequences. Alternative 4 would leave the Ballona Reserve in essentially its existing condition. Some structures in Alternatives 1, 2, and 3, such as levees, would be reworked into their proposed final condition during the restoration phase and before all restoration activities have been completed. Post-restoration activities consist of monitoring the response of the reconstructed levees and success of the habitat restoration activities. Current O&M activities within the Ballona Reserve, including the ongoing operation and maintenance of LACDA project facilities, would occur as scheduled or needed in accordance with the OMRR&R. Since the levees, parking structure, two bicycle/pedestrian bridges, and restored habitat would be subject to the same potential impacts relative to geology, seismicity, and soils during the Phase 1, Phase 2, and post-restoration activities, the impact analyses below combine all of the activities together.

3.6.6 Direct and Indirect Impacts

3.6.6.1 Alternative 1: Full Tidal Restoration/Proposed Action

1-GEO-1a: Alternative 1 would not expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. (Less than Significant Impact)

Direct Impacts

The Project site is not located on or near an active fault and as a result there is a very low potential for surface fault rupture to occur at all within the Project site boundary let alone during the construction period. Further, the implementation of Alternative 1 would not include any element that would trigger fault rupture. Therefore, there would be no direct impacts associated with surface fault rupture under Alternative 1.

Indirect Impacts

Placement of buildings or other structures on or within 500 feet of an active fault could expose people or structures to potential injury or loss in the event of a rupture of a known earthquake fault. However, as shown on Figure 3.6-3, *Active and Potentially Active Regional Faults*, no known active faults pass through or within 500 feet of the Project site. A methane gas investigation conducted in 1999 suggested the existence of a buried, north-to-south, potentially active fault, referred to as the "Lincoln Avenue Fault," through Southeast Area B, East Area B, and North Area C (ETI, 2000). A subsequent field investigation and literature review specifically investigated the suspected feature found no evidence of a fault in this area (ECI 2001; Appendix E).The closest earthquake fault zone to the Project site is the Newport-Inglewood fault, approximately 4.5 miles east of the Project site. While fault rupture is not necessarily confined to the limits of an active fault trace, the potential for rupture to occur beyond 500 feet is considered to be very low. As a result, based on available geologic data, there are no known active or potentially active faults with the potential for surface fault rupture directly beneath or projecting toward the Project site. Therefore, there would be no indirect impacts associated with surface fault rupture under Alternative 1.

1-GEO-1b: Alternative 1 would not expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving strong seismic ground shaking. (Less than Significant Impact with Mitigation Incorporated)

Direct Impacts

The implementation of Alternative 1 would not include any element that would trigger seismic activity. While it is technically feasible that such activity could occur during the restoration period at a time when workers might be susceptible to injury or death because of strong ground shaking, the likelihood of an earthquake occurring during this relatively short time frame is relatively low. There is evidence that activities such as injection of fluids into the subsurface can trigger seismic activity; however, Alternative 1 proposes no such activities. As a result, there would be negligible risks of ground-shaking from implementation of Alternative 1 on the levees, bridges, or parking structure.

Indirect Impacts

The Project site is located within a seismically active region of southern California and has the potential to experience strong ground shaking from local and regional faults. The Project site would likely experience at least one substantive (i.e., greater than 6.7 magnitude) earthquake in the next 30 years. Under Alternative 1, rigid structures (e.g., the bicycle/pedestrian bridges and proposed parking garage) and levees would be subjected to ground shaking during a moderate to large earthquake and could experience structural damage or deformation if not engineered to withstand such forces. In earthen improvements, such as sloped fills and levees, where secondary impacts of shaking, such as liquefaction-induced lateral are possible, some displacement would be expected.

California has some of the nation's most stringent seismic regulations. Applicable provisions of Title 24, the California Building Code, are described in Section 3.6.3.2. Title 24 ensures that structural improvements are adequately designed to withstand the impacts of earthquake ground shaking and requires project sponsors to complete a soils and foundation investigation, which must be overseen by a geotechnical engineer registered in the State of California. Therefore, compliance with the California Building Code will ensure that this would be less than significant impact.

Implementation of the regulatory requirements of the CBC, to ensure that all improvements are constructed in compliance with the law, is the responsibility of the project engineers and building officials. The geotechnical engineer, as a registered professional with the State of California, is required to comply with the CBC, Section 408, any applicable County codes, and other relevant requirements, while applying standard engineering practice and the appropriate standard of care for the particular region in California. The California Professional Engineers Act (Building and Professions Code §§6700-6799), and the Codes of Professional Conduct, as administered by the California Board of Professional Engineers and Land Surveyors, provides the basis for regulating and enforcing engineering practice in California. However, for purposes of this EIS/EIR, Mitigation Measure GEO-1b has been developed to ensure that the recommendations made in the 2013 geotechnical investigation are implemented.

Mitigation Measure

Mitigation Measure GEO-1b: ***Geotechnical Recommendations.*** As a condition of approval, CDFW shall require that all the recommendations made in the July 1, 2013 Geotechnical Investigation Report for the Ballona Restoration Project by Group Delta Consultants, including revisions in response to Corps comments, are incorporated as part of Project designs. Recommendations that are applicable to earthwork, site preparation, levee design, and foundation design that were prepared for the project shall be incorporated in the Project. The final seismic considerations as well as recommendations for all other identified geotechnical hazards (including but not limited to expansive soils) for the site shall be in accordance with all current design requirements of the most recent California Building Code and any current Corps' standards. All recommendations and plans for all improvements proposed as part of the project shall be submitted to and approved of by the County and the Corps prior to the commencement of any ground breaking activities.

Level of Significance after Mitigation

Implementation of Mitigation Measure GEO-1b would reduce this impact to less than significant.

1-GEO-1c-i: Alternative 1's levees and bridge structures would, unless mitigated, expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving seismic-related ground failure. (Less than Significant Impact with Mitigation Incorporated)

Seismic Impacts on Levees

Direct Impacts

Alternative 1 would not include any element that would trigger seismic activity. While it is technically feasible that a seismic event could occur during construction, workers or post-construction workers or visitors might be susceptible to injury or death because of strong ground shaking, the likelihood of an earthquake occurring at such a time is relatively low. Accordingly, there would be negligible risks of loss, injury, or death from seismic-related ground failure during implementation of Alternative 1.

Indirect Impacts

Although the existing Ballona Creek channel and levees were constructed in the 1930s before current practices of geotechnical field quality control (including compaction testing) and prior to modern geotechnical earthquake engineering, the existing levees have withstood the seismic forces of earthquakes that have occurred since the 1930s, including the 1994 Northridge earthquake of Magnitude 6.7 with an epicenter that was just 19 miles north of the Project site. Throughout their existence, there is no evidence in the record that they are not capable of providing their purpose in flood risk reduction. Nonetheless, the replacement or upgrade of aging infrastructure has been proposed as a beneficial effect of Alternative 1.

The levees proposed under Alternative 1 have been designed to Corps' current design requirements, which prescribe such parameters as construction materials, degree of material compaction during grading, acceptable slope gradients, and seismic thresholds for seismic loading. As a result, the new levees would be constructed to higher structural standards and as a result would be expected to perform better than the existing levees during a major earthquake. Design of new levees benefit from the capability of geotechnical engineers to model seismic response based on the design parameters (also known as the design earthquake) and determine anticipated deformation in the event of such an earthquake. The design earthquake for this Project was selected as an earthquake with a PGA of 0.32 g, with a magnitude of 6.7 that occurs at a distance of 8 miles from the Project site. As listed in Table 3.6-1, *Modified Mercalli Intensity Scale*, this estimated PGA equates to a Modified Mercalli ground shaking intensity of VII (strong). The new levee designs under Alternative 1, which are to be designed to modern engineering standards and evaluated through stability modeling in the 2013 geotechnical evaluation, performed well under the design earthquake yielding acceptable[81] factors of safety that indicate adequate stability under earthquake and non-earthquake conditions. Construction of the proposed levees would meet higher standards than were in place when the existing levees were constructed and would provide an improvement over existing conditions.

In the areas where a new levee would tie into an existing levee, the existing levee could experience settlement from additional loading, resulting in cracking of the existing levee if not designed appropriately. However, the 2013 geotechnical investigation provides recommendations to address not only the stability of the new levees, but also the areas where the new levees would tie into the existing levees to minimize the potential for damage related to seismic ground shaking. Specifically, the recommendations include ground improvements (i.e., deep soil mixing) at the site of the tie-in between new and existing levees to strengthen engineering characteristics of the foundation. As a result, the overall seismic stability of the levees would benefit from the improvements under Alternative 1 and the potential indirect impacts related to seismicity would be considered minor and less than significant with implementation of Mitigation Measure GEO-1b.

Mitigation Measure

Implement Mitigation Measure GEO-1b: *Geotechnical Recommendations*.

Level of Significance after Mitigation

Implementation of Mitigation Measure GEO-1b would reduce this impact to less than significant.

Seismic Impacts on Bridge Structures

Direct Impacts

Alternative 1 would not include any element that would trigger seismic activity. While it is technically feasible that such activity could occur when restoration workers or post-restoration workers or visitors are on-site and susceptible to injury or death because of strong ground shaking, the likelihood of an earthquake occurring at such a time is relatively low. Accordingly,

[81] In accordance with building code requirements and industry standards a minimum factor of safety of greater than 1.3 was adopted for sudden and short term loading conditions, a minimum of 1.5 for long term steady state conditions (non-earthquake), and a minimum factor of safety of 1.0 for post liquefaction conditions.

there would be negligible risks of ground-shaking from implementation of Alternative 1 on the bridge structures.

Indirect Impacts

The 2013 geotechnical investigation also analyzed and provided recommendations for the bridges. The foundation design for bridges involve driving deep piles through the soft, potentially liquefiable soils and into the dense sands at a depth of about 40 to 50 feet. The use of driven piles in areas with soft, fine-grained mud and clay that contain potentially liquefiable material is common place in California and is considered a proven engineering practice for ensuring seismic stability and to reduce the direct and indirect seismic impacts. The geotechnical investigation provided analysis and estimates for the piles, the pile axial capacity, pile settlement, pile lateral capacity and lateral resistance (Appendix E). The recommendations for the bridge foundation piles would be incorporated into the final design and are adequate to ensure that during the design earthquake, the bridges would remain stable when subjected to ground shaking. As a result, there would be minor indirect seismic impacts associated with the bridges and therefore it would be a less than significant effect with implementation of Mitigation Measure GEO-1b.

Mitigation Measure

Implement Mitigation Measure GEO-1b: Geotechnical Recommendations.

Level of Significance after Mitigation

Implementation of Mitigation Measure GEO-1b would reduce this impact to less than significant.

1-GEO-1c-ii: The proposed parking structure would, if not mitigated, expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving seismic-related ground failure. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 1 would not include any element that would trigger seismic activity. While it is technically feasible that activity seismic event could occur when restoration workers or post-restoration workers or visitors are on-site and susceptible to injury or death because of strong ground shaking, the likelihood of an earthquake occurring at such a time is relatively low. Accordingly, there would be negligible risks of seismic-related ground failure from implementation of Alternative 1 on the parking structure.

Indirect Impacts

Alternative 1 would include construction of a three-story parking structure along the western side of Area A. The design particulars of this structure are not known at this time and no final engineering design criteria have been developed, which is not uncommon at this stage in the planning process. This analysis presumes that the structure would be placed on geologic materials that could be susceptible to strong ground shaking, potential liquefaction, lateral spreading, and other liquefaction-related ground failures if not designed appropriately. The 2013 geotechnical investigation focused on the existing conditions at the site, the new and existing levees, the proposed grading, and the proposed bridge but did not include analysis of the proposed parking structure. The data included in the 2013 geotechnical investigation does provide enough information to determine that there are soft soils in the parking structure area that could be susceptible to seismic impacts if not designed appropriately. However, without adequate, available engineering data to arrive at a reasonable conclusion as to the integrity of the proposed structure during an earthquake, this analysis considers that there is a potential for indirect impacts to the public from exposure to injury and loss if a poorly designed parking structure is placed within the restoration area. The proposed parking structure could not be designed or constructed without initially determining the soil conditions and seismic response for the foundation and that such an investigation would be required in compliance with the CBC. However, for purposes of this Draft EIR/EIS, Mitigation Measure GEO-1c has been developed to ensure that the responsible agency commission a geotechnical investigation prior to final design of the proposed parking structure.

Mitigation Measure

Mitigation Measure GEO-1c: *Geotechnical Investigation and Report.* As a condition to allowing the Los Angeles County Department of Beaches and Harbors to enter the reserve and construct the parking structure, CDFW shall require that entity, prior to proceeding with such construction to:

1. Commission a site-specific, design level geotechnical investigation for the proposed parking structure prepared by a registered geotechnical engineer. The investigation shall comply with all applicable state and local building code requirements and:

    a) Include an analysis of the expected ground motions at the site from known active faults using methodologies in accordance with the California Building Code;

    b) Determine and implement structural design requirements as prescribed by the most current version of the California Building Code, including applicable County amendments, to ensure that structures can withstand ground accelerations expected from known active faults;

    c) Determine the final design parameters for walls, foundations, foundation slabs, utilities, roadways, parking lots, sidewalks, and other surrounding related improvements in order to comply with the most current version of the California Building Code;

2. Ensure that project plans and specifications for foundation design, earthwork, and site preparation shall incorporate all of the recommendations contained in the site specific investigation.

3. Ensure that the project structural engineer shall review the site specific recommendations, provide any additional necessary amendments to meet Building Code requirements, and incorporate all applicable recommendations from the

investigation in the structural design plans and shall ensure that all structural plans for the project meet current California Building Code requirements.

4. Ensure that the approval agency review all project plans for grading, foundations, structural, infrastructure and all other relevant construction permits to ensure compliance with the applicable geotechnical investigation and other applicable Code requirements.

5. If expansive soils are present, the technical investigation shall provide recommendations to either remove or treat the expansive soils in accordance with current California Building Code Requirements and any local County amendments.

Level of Significance after Mitigation

Implementation of Mitigation Measure GEO-1c would reduce this impact to less than significant.

1-GEO-1c-iii: Alternative 1 would not expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving liquefaction. (Less than Significant Impact with Mitigation Incorporated)

Direct Impacts

As noted above, implementation of Alternative 1 does not include any element that would trigger seismic activity including secondary impacts like liquefaction. As a result, there would be no immediate risks of liquefaction from implementation of Alternative 1 and therefore no direct impacts would be anticipated.

Indirect Impacts

The Project site contains underlying materials that could be subject to liquefaction and associated ground failures, such as lateral spreading, differential settlement, or loss of ground support for improvements proposed to support the restoration activities, including levees, bridges, parking structures, and other related improvements. Typically, liquefaction occurs in areas where there are loose sands and the depth to groundwater is less than 50 feet from the ground surface. Dynamic settlement (i.e., pronounced consolidation and settlement from seismic shaking) also could occur in loose, dry sands above the water table, resulting in settlement of and possible damage to overlying structures. These seismically induced ground failures could damage the levees, the parking structure, two bicycle/pedestrian bridges, or other visitor-serving facilities.

The entire Ballona Reserve is located within a State of California Liquefaction Hazard Zone as mapped by the CGS under the California Seismic Hazard Mapping Act (SHMA). As discussed in Section 3.6.3.2, the SHMA requires liquefaction susceptibility mapping for area in California that are underlain by liquefiable soil materials. Development of a project within a liquefaction hazard zone must comply with *California Geological Survey Guidelines for Evaluating and Mitigating Seismic Hazards* (Special Publication 117A). Special Publication 117A provides standards for field investigations, soils testing, seismic modeling and mitigation strategies to overcome risks of liquefaction-relate ground failure.

A liquefaction analysis for the Ballona Reserve was included in the 2013 geotechnical investigation and included the levees, habitat restoration, and a bicycle/pedestrian bridge spanning the Ballona Creek channel. According to the analysis, localized liquefaction would be predicted to occur in the underlying sand and non-plastic silt lenses and layers during the design earthquake. The 2013 geotechnical investigation determined that, based on site conditions, it is anticipated that the layers in which liquefaction would occur are relatively thin discontinuous layers and the main effect from liquefaction would be post-liquefaction settlement of approximately 0 to 3 inches. Displacement from lateral spreading was estimated to be on the order of 3 to 6 inches at the location of the new levees (Appendix E).Recommendations made in 2013 address incorporating design measures to ensure that any displacement from liquefaction or lateral spreading would be minimized and result in an overall improvement over existing conditions, thus providing a beneficial effect. In addition, with incorporation of the geotechnical recommendations in accordance with Mitigation Measure GEO-1b, the indirect impacts associated with liquefaction would be minor and therefore less than significant.

Mitigation Measure

Implement Mitigation Measure GEO-1b: Geotechnical Recommendations.

Level of Significance after Mitigation

Implementation of Mitigation Measure GEO-1b would reduce this impact to less than significant.

SoCalGas Property

The potential direct and indirect impacts associated with seismic shaking and liquefaction-related ground failures on the SoCalGas Property are expected to be minimal and therefore less than significant because the relocation of natural gas storage wells to the SoCalGas Property would not involve a change to the existing use of the property and, therefore, would not result any increased risk to the public or environment. Additionally, the relocated wells and surface well pads could be replaced or repaired if damaged by ground surface movement caused by seismic shaking with minimal impact, since the pads are insubstantial and easily repaired if damaged.

1-GEO-1d: Alternative 1 would not expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving seismically-induced landslides. (Less than Significant Impact)

Direct Impacts

The area within the Project site is relatively flat. The only notable slopes are located off-site to the south of the site. No aspect of the implementation of Alternative 1 would affect these slopes and, as a result, there would be no direct impacts related to seismically-induces landslides.

Indirect Impacts

As noted above, the Project site is located within a seismically active area of southern California and has the potential to experience a significant seismic event. As a result, this analysis considered whether the local area could be subject to seismically induced landslides or slope failure, which could damage the levees, parking structure, two bicycle/pedestrian bridges, or other visitor-serving facilities.

The Ballona Reserve is located along the coast and is relatively flat, although the Westchester Bluffs are located south of the site with graded slopes roughly along Carbora Drive. A thin band of these slopes have been mapped by the CGS (formerly CDMG) as susceptible to seismically induced landslides in accordance with the SHMA (CDMG, 1999). Most of the landslide hazard zones along these slopes are well away from the proposed levees, parking structure, and bridges to have any effect. However, the West Area B Levee in the southwestern portion of the site is located within a couple of hundred feet of a mapped hazard zone. Considering the height of the sloped grade in this area, it is unlikely that a slope failure would extend far enough to adversely affect the proposed West Area B Levee in this location. Even if failure did occur and did extend that far, necessary repairs would likely be relatively minor. Otherwise, the relatively flat and low-lying topography of the site itself results in a low potential for landslides. Therefore, the potential indirect impacts from landslides to the Ballona Reserve would be minor and thus less than significant.

Five natural gas monitoring wells currently located within the Ballona Reserve are proposed for abandonment and/or relocation within the SoCalGas Property. Sites 1 and 2 are on the top of the bluff; Sites 3 through 7 are just below the bluff. Wells placed close to the bluff edge at Sites 1 and 2 could be damaged if the surrounding soil were to move with a seismically induced landslide. A seismically induced landslide could result in soil flowing down the slope and burying wells or damaging well heads located on Sites 3 through 7. However, with the exception of one extraction/injection well, the wells are used only for monitoring purposes and damaged wells would not release liquids, such as crude oil. Wells that were buried or damaged by landslide soil could be uncovered, repaired, or replaced without resulting in a significant impact, since the well pads are just concrete poured within a square or rectangular box of a few inches to 1 foot at most. As a result, direct and indirect impacts to the gas monitoring wells within the Ballona Reserve and on the SoCalGas Property from seismically induced landslides would be minor and thus less than significant.

1-GEO-2: Alternative 1 would, unless mitigated, be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and, thereby, potentially result in seepage/piping, slope stability issues, or settlement. (Less than Significant Impact with Mitigation Incorporated)

Direct Impacts

The 2013 geotechnical investigation (Appendix E) suggests that the inappropriate placement, preparation, or compaction of soil under the levees, as well as other improvements such as the parking structure, or the two bridges could result in damage from unstable soil conditions. The 2013 geotechnical investigation provides detailed analyses of existing conditions at the Ballona Reserve, including the current soil conditions in all three areas. Of the various soil stability issues, the investigation revealed that the upper approximately 20 feet are composed of artificial fill, underlain by tens of feet of native interbedded fine- and coarse-grained soils, then dense to very dense sands. The density of the fill materials ranged from loose to medium dense, suggesting the fill was not properly compacted upon placement.

The results of the geotechnical analysis estimated settlement under new fill loads along the levees to range from about 1.5 to 2 inches per foot of fill in Areas A and B, and about 1.0 to 1.5 inches per foot of fill in Area C. Settlement in locations away from the levees would be less. The maximum settlements are anticipated to be up to 17.1 inches for Area A, 41.4 inches for Area B, and 25.3 inches for Area C in the locations with the maximum amount of existing fill, which could reduce flood control functionality. These settlements would occur as the new loadings/fills are placed and the soft underlying materials undergo a process of consolidation. Based on laboratory data and the empirical data from the neighboring development to the south, the primary consolidation during placement of the levees would be expected to be 90 percent complete within three to six months of application of the last load increment. If not managed appropriately, placement of the materials for construction of the levees could be subject to differential settlement (varying rates of settlement along levee) resulting in cracking and a reduction in levee height and functionality. However, surcharging areas by stockpiling fills to preconsolidate underlying materials and timing the placement of the layers of fill material to allow for consolidation to occur over time would reduce adverse impacts of settlement and therefore any impact would be below the level of significance.

As discussed under *Seismic Impacts on Levees*, where a new levee ties into and exerts force on a less stable existing levee, the existing levee could experience additional loading and settlement that could cause cracking of the existing levee. Therefore, it is recommended from the geotechnical analysis that engineering remedies, such as deep soil mixing, be performed at and adjacent to tie-in locations to improve the stability of the existing levees that would remain in Areas A and B.

Static (non-seismic) settlement of poorly compacted artificial fills under proposed structures, existing levees, and new-to-existing tie-in locations could cause settlement that would result in intolerable unstable soil conditions. However, implementation of the geotechnical recommendations related to settlement, seepage, and slope stability that are provided in the 2013 geotechnical investigation (Appendix E) would assure that the construction of the proposed levees and bridges under Alternative 1 result in stable soil conditions. Implementation of these recommendations would even result in a levee system that is constructed to higher standards than the existing levees are resulting in overall beneficial effects. Therefore, direct impacts related to soil stability would be minor and therefore less than significant with implementation of Mitigation Measure GEO-1b.

Mitigation Measure

Implement Mitigation Measure GEO-1b: Geotechnical Recommendations.

Level of Significance after Mitigation

Implementation of Mitigation Measure GEO-1b would reduce this impact to less than significant.

Indirect Impacts

The 2013 geotechnical investigation (Appendix E) developed recommendations for the appropriate placement, preparation, and compaction of soil under the levees, parking structure, or the two bridges to ensure long term stable conditions. As noted above, based on site observations and data from the neighboring development, 90 percent of the primary consolidation is anticipated to occur within a 3 to 6 month time frame. Therefore, with implementation of the geotechnical recommendations contained in the 2013 geotechnical investigation, site preparations, fill placement and foundation design criteria developed for the site would be developed to ensure long term stability of the site improvements. With active monitoring during the construction phase by a California licensed geotechnical engineer, as included in these recommendations, the improvements or earthwork activities can be adjusted to accommodate observed conditions from on-site monitoring such that the final construction of the levees, bridges and parking structure maintain their integrity throughout the intended design life of the improvements. As a result, the potential indirect impacts would be minor and therefore less than significant with implementation of Mitigation Measure GEO-1b.

Mitigation Measure

Implement Mitigation Measure GEO-1b: Geotechnical Recommendations.

Level of Significance after Mitigation

Implementation of Mitigation Measure GEO-1b would reduce this impact to less than significant.

1-GEO-3: Alternative 1 would, unless mitigated, be located on expansive soil and, thereby, create substantial risks to life or property. (Less than Significant with Mitigation Incorporated)

Direct Impacts

The impacts of expansive soils, if present, typically take years to take effect through many cycles of volumetric changes from wet and dry periods. As a result, there would be no anticipated direct impacts related to expansive soils.

Indirect Impacts

Levees, the parking structure, bicycle/pedestrian bridges, or other visitor amenities constructed on expansive soils could be damaged thereby resulting in potential risks to the public or the environment. As discussed in Section 3.6.2, *Affected Environment*, the expansion or shrink-swell of soils caused by changes in soil moisture content can damage foundations, levees, and other structures. Shallow expansive soils commonly are found on development sites in California and soil testing for shrink/swell is frequently conducted by the engineer when characteristic soils are identified during the field soil sample and laboratory testing phases. If soils with shrink/swell tendencies are identified, they can be managed in various ways but one of the most common is removal of the expansive soils and replacement with non-expansive fills. The 2013 geotechnical investigation for the Project (Appendix E) included only limited testing for soil expansion and determined the expansion potential to be low. However, the site-specific evaluation of the potential for expansive soils would be included as part of the geotechnical investigation required by Mitigation Measure GEO-1c and, as a result, would not be considered a geotechnical constraint on the restoration area and, as such, would be less than significant.

Similar testing also would be conducted during the geotechnical investigation for the parking structure, as required under Mitigation Measure GEO-1c. If expansive soils are present, the geotechnical investigation would provide recommendations to either remove or treat the expansive soils in accordance with the most recent California Building Code requirements. Thus, the potential indirect impacts would be very minor and therefore less than significant.

Mitigation Measure

Implement Mitigation Measure GEO-1b: Geotechnical Recommendations and GEO1c: Geotechnical Investigation and Report.

Level of Significance after Mitigation

Implementation of Mitigation Measure GEO-1b and GEO-1c would reduce this impact to less than significant.

1-GEO-4: Alternative 1 would, if not mitigated, be located on corrosive soils and, thereby, create substantial risks to life or property. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Similar to expansive soils above, corrosive soils, if present, typically take time to result in observable damage depending on site specific conditions and the materials involved. Therefore, this impact is considered primarily as having a potential indirect impact from long term exposure to corrosive soils, if present. Therefore, there would be no direct impacts related to corrosive soils.

Indirect Impacts

Corrosive soils can degrade and damage unprotected steel and concrete. Soils in Area A are known to be severely corrosive to ferrous metals, possibly aggressive to copper, and moderately aggressive to concrete. The parking structure would be constructed along the western side of Area A and culverts could also be susceptible to corrosion. Although the one sample tested in Area B had a low potential for corrosion, the presence of corrosive soils in Area A suggests that corrosive soils could be present anywhere within the Ballona Reserve. Corrosive soils within the Project site could damage concrete foundations (e.g., for the parking structure and bridges), as noted in the 1989 corrosion investigation conducted for the Project (M.J. Schiff & Associates 1989), which recommended the use of Type II cement to reduce the risk of corrosion. Types II and V are designed to resist attack from sulfate ions that can cause severe damage to concrete structures. It is a chemical reaction with the concrete and sulfate ions that enter the concrete from the outside environment. The products generated by this reaction have a larger volume than the reactants, and this creates stresses which force the concrete to expand and crack. If corrosive soils were to damage unprotected concrete or steel foundations, a significant impact would result.

SoCalGas Company wells within the Ballona Reserve would be abandoned and/or relocated to the SoCalGas Property. Gas wells to be removed (abandoned) and relocated are shown in Figure 2-30, *South/Southeast Area B: Gas Well Decommissioning*, Figure 2-31, *Area A: Gas Well Decommissioning*, and Figure 2-32, *West and East Area B: Gas Well Decommissioning*. As a part of the abandonment of the wells, the top 5 feet of the wells would be cut off and removed, thus separating the grout-filled lower portions of the wells left in place from the surface and shallow soils of the Ballona Reserve. Even if corrosive soils were to affect the abandoned portions of the wells at depth (i.e., at 5 feet and deeper), that impact could not affect the surface or shallow soils of the Ballona Reserve and there could be no impact at the well abandonment locations. At the relocation sites on the SoCalGas Property, well pads would be constructed of concrete and so could be adversely affected by corrosive soils. Implementation of Mitigation Measure GEO-4 would minimize potential indirect impacts.

Mitigation Measure

Mitigation Measure GEO-4: *Corrosive Soil Testing*. Any native or other fill soils that contact concrete or metal foundation elements of structures constructed under the Project shall be tested for corrosivity. Those soils, as determined by laboratory analysis and reviewed by a California licensed geotechnical engineer, that exceed acceptable thresholds of corrosivity shall be managed in accordance with recommendations of a qualified geotechnical engineer or corrosion engineer. Engineering recommendations could include soil reconditioning through mixing with non-corrosive soils, replacement of the corrosive soils in the vicinity of the foundation, or corrosion reducing systems for exposed metal such as “sacrificial anodes.” In addition, the contractor shall use Type II cement for all concrete and steel foundation work to further reduce the potential for degradation of concrete through corrosion.

Level of Significance after Mitigation

Implementation of Mitigation Measure GEO-4 would reduce this impact to less than significant.

TABLE 3.6-3
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
GEO-1: Expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving:				
a) 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.) See Impact 1-GEO-1a.	☐	☐	☒	☐
b) Strong seismic ground shaking? See Impact 1-GEO-1b.	☐	☒	☐	☐

TABLE 3.6-3 (Continued)
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
c) Seismic-related ground failure, including liquefaction?				
Relating to the proposed levees and bridge structures, see Impact 1-GEO-1c-i	☐	☒	☐	☐
Relating to the proposed parking structure, see Impact 1-GEO-1c-ii	☐	☒	☐	☐
Relating to liquefaction, see Impact 1-GEO-1c-iii	☐	☒	☐	☐
d) Landslides? See Impact 1-GEO-1d	☐	☐	☒	☐
GEO-2: 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 seepage/piping, slope stability issues, or settlement? See Impact 1-GEO-2.	☐	☒	☐	☐
GEO-3: Be located on expansive soil, as defined in 24 CCR 1803.5.3 of the California Building Code (2013), creating substantial risks to life or property? See Impact 1-GEO-3.	☐	☒	☐	☐
GEO-4: Be located on corrosive soils creating substantial risks to life or property? See Impact 1-GEO-4.	☐	☒	☐	☐

3.6.6.2 Alternative 2: Restored Partial Sinuous Creek

The same parking structure and bridges that would be built under Alternative 1 also would be built under Alternative 2 as well as construction of new Area A and Culver levees and a water control structure in South Area B. Natural gas wells and pipelines within the Ballona Reserve would be abandoned and/or relocated to the SoCalGas Property under Alternatives 1 and 2. Alternative 2's levees would be substantially similar to Alternative 1 but with a smaller footprint as can be seen by comparing Figure 2-46, *Alternative 2: Perimeter Levees Plan*, with Figure 2-6, *Alternative 1, Phase 1: Perimeter Levees Plan*. Similar to Alternative 1, the construction of the new levees would be in accordance with more current seismic standards thereby still improving overall seismic stability providing a beneficial effect. The reduction in the extent of the levee construction proposed under Alternative 2, however, would not change the impact conclusions reached in the context of Alternative 1 because the same structures (resulting in the same type of geology and soil-related impacts) would result. Although the *intensity* of such impacts would be reduced under Alternative 2 relative to Alternative 1, impact *conclusions* for Alternative 2 would be the same as for Alternative 1 and the same mitigation measures would apply. A summary of these impacts is provided below. For a description of the analysis supporting these conclusions, see Section 3.6.6.1, *Alternative 1: Proposed Action.* The rationale for the conclusions reached for Alternative 1 applies equally to Alternative 2.

TABLE 3.6-4
ALTERNATIVE 2 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
GEO-1: Expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving:				
a) 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.) See Impact 1-GEO-1a.	☐	☐	☒	☐
b) Strong seismic ground shaking? See Impact 1-GEO-1b.	☐	☒	☐	☐
c) Seismic-related ground failure, including liquefaction?				
Relating to the proposed levees and bridge structures, see Impact 1-GEO-1c-i	☐	☒	☐	☐
Relating to the proposed parking structure, see Impact 1-GEO-1c-ii	☐	☒	☐	☐
Relating to liquefaction, see Impact GEO-1c-iii	☐	☒	☐	☐
d) Landslides? See Impact 1-GEO-1d	☐	☐	☒	☐
GEO-2: 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 seepage/piping, slope stability issues, or settlement? See Impact 1-GEO-2.	☐	☒	☐	☐
GEO-3: Be located on expansive soil, as defined in 24 CCR 1803.5.3 of the California Building Code (2013), creating substantial risks to life or property? See Impact 1-GEO-3.	☐	☒	☐	☐
GEO-4: Be located on corrosive soils creating substantial risks to life or property? See Impact 1-GEO-4.	☐	☒	☐	☐

3.6.6.3 Alternative 3: Levee Culverts and Oxbow

For purposes of analyzing potential Geology and Soils related impacts, Alternative 3 would be the same as Alternatives 1 and 2 with respect to the proposed parking structure and natural gas well and pipeline work. However, Alternative 3 would have a substantially smaller levee footprint and only one bridge. Nonetheless, the improvements to the levee system using current seismic standards would overall provide a beneficial effect. See Figure 2-54, *Alternative 3: Public Access Plan*. Because the same types of features would be established (albeit less extensively with respect to the levees and fewer with respect to the bridges), the same types of impacts would result. Although the *intensity* of impacts would be reduced under Alternative 3 relative to Alternatives 1 and 2, impact *conclusions* for Alternative 3 would be the same as for Alternatives 1 and 2 and the same mitigation measures would apply. A summary of these impacts is provided below. For a description of the analysis supporting these conclusions, see Section 3.6.6.1, *Alternative 1: Proposed Action.* The rationale for the conclusions reached for Alternative 1 applies equally to Alternative 3.

TABLE 3.6-5
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
GEO-1: Expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving:				
a) 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.) See Impact 1-GEO-1a.	☐	☐	☒	☐
b) Strong seismic ground shaking? See Impact 1-GEO-1b.	☐	☒	☐	☐
c) Seismic-related ground failure, including liquefaction?				
Relating to the proposed levees and bridge structures, see Impact 1-GEO-1c-i	☐	☒	☐	☐
Relating to the proposed parking structure, see Impact 1-GEO-1c-ii	☐	☒	☐	☐
Relating to liquefaction, see Impact 1-GEO-1c-iii	☐	☒	☐	☐
d) Landslides? See Impact 1-GEO-1d	☐	☐	☒	☐
GEO-2: 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 seepage/piping, slope stability issues, or settlement? See Impact 1-GEO-2.	☐	☒	☐	☐
GEO-3: Be located on expansive soil, as defined in 24 CCR 1803.5.3 of the California Building Code (2013), creating substantial risks to life or property? See Impact 1-GEO-3.	☐	☒	☐	☐
GEO-4: Be located on corrosive soils creating substantial risks to life or property? See Impact 1-GEO-4.	☐	☒	☐	☐

3.6.6.4 Alternative 4: No Federal Action/No Project

4-GEO-1: Alternative 4 could expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving seismically-induced rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure (including liquefaction), or landslides as well as unstable, expansive or corrosive soils. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 4 would make no substantial changes to the physical or human environment within the Ballona Reserve or the SoCalGas Property. Existing geotechnical hazards including seismic and unstable soils would remain at the level that is present at the Project site under existing conditions.

As a result, Alternative 4 would result in no direct impact under any of the significance criteria set forth above and no beneficial effects.

Indirect Impacts

Under Alternative 4, as noted above, no substantial changes would be made to the site. The continuation of previously-permitted restoration activities would be allowed, such as the small-scale control of invasive plant species by hand-tools only and the planting and seeding of native species. Natural gas storage wells would continue to be operated and maintained within the Project site. SoCalGas Company activities on the portion of the Project site within the SoCalGas Property would continue in accordance with existing permits and approvals.

Existing levees in the Ballona Reserve would remain below current seismic stability standards established by the Corps and, as a result, could be susceptible to failure either from a seismic event or related seismic impacts such as liquefaction. Failure would compromise the functionality of the levees and the damage could be substantial depending on the severity of the seismic event. As noted in Section 3.6.2, Affected Environment, the timing of such an event is unknown although current models show that there is a high likelihood of a significant (greater than 6.7 magnitude) earthquake occurring in the southern California region over the next 30 years. The nature and severity of impact at the site would depend on a number of factors including magnitude, distance to the epicenter, depth of displacement, and duration of ground-shaking but potentially could result in significant indirect impacts including substantive damage and flood risk exposure. Although there is no evidence of imminent levee failure, the ability of the existing infrastructure to continue to perform under seismic stress becomes an increasing concern with the passage of time. Accordingly, this analysis conservatively concludes that a failure to upgrade the existing levees (a beneficial effect) would result in a potentially significant impact.

Mitigation Measure

> **Mitigation Measure 4-GEO-1:** ***Levee Reinforcement and/or Replacement***: As and when determined necessary on the basis of annual monitoring, reinforce or upgrade levees or levee segments within the Ballona Reserve so as to meet the requirements of then-current Corps' standards.

Level of Significance after Mitigation

> Implementation of Mitigation Measure 4-GEO-1 would reduce this impact to less than significant.

The implementation of Mitigation Measure 4-GEO-1 would result in potential significant impacts, the nature and severity of which would be comparable to those analyzed for the Project (under Alternative 1, 2, or 3) on a resource by resource basis in this EIS/EIR.

TABLE 3.6-6
ALTERNATIVE 4 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 4:				
GEO-1: Expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving one of the following (See Impact 4-GEO-1):	☐	☒	☐	☐
a) 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.)				
b) Strong seismic ground shaking?				
c) Seismic-related ground failure, including liquefaction?				
d) Landslides?				
GEO-2: 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 seepage/piping, slope stability issues, or settlement?	☐	☐	☐	☒
GEO-3: Be located on expansive soil, as defined in 24 CCR 1803.5.3 of the California Building Code (2013), creating substantial risks to life or property?.	☐	☐	☐	☒
GEO-4: Be located on corrosive soils creating substantial risks to life or property?	☐	☐	☐	☒

3.6.7 Cumulative Impacts

Regarding all Alternatives, the geographic scope of review would be the same area described in Section 3.6.2.1, *Study Area*, because this represents the largest area within which the direct and indirect impacts of the alternatives could manifest. Geologic and seismic impacts typically are tied to site specific conditions and the geotechnical hazards that are present which do not combine with other sites to become cumulatively significant. The temporal period considered for the cumulative impacts would be the projected lifespan of the improvements which, although not definitive, in general could be 50 years or more. The presence of past, current, and future projects in the cumulative scenario would have no effect on either the severity or the probability of geotechnical challenges associated with seismicity and/or the character of underlying soils on the Project site and as a result would not combine to create a cumulatively significant impact. Such hazards are site-specific and unaffected by the presence of other projects in the cumulative scenario, but rather are dependent on site specific characteristics of underlying materials and the geotechnical measures taken during site design to minimize those hazards. Further, there is no evidence of an existing significant adverse condition related to Geology and Soils in the study area to which the alternatives' incremental impacts could contribute. Implementation of the geotechnical recommendations would ameliorate any identified hazards just as other current and future projects would adhere to in accordance with building code requirements. Therefore, the cumulative effect related to geology and soils is less than significant. Because the incremental impacts of Alternatives 1, 2, and 3 would be less than significant or less than significant with mitigation incorporated, none of these Alternatives alone would result in a cumulatively considerable contribution to any significant cumulative impact. Cumulative impacts would be less than significant.

3.6.8 References

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3.7 Greenhouse Gas Emissions/Climate Change

3.7.1 Introduction

This section identifies and evaluates issues related to Greenhouse Gas Emissions and Climate Change in the context of various alternatives. It describes affected environment in Section 3.7.2; summarizes applicable laws, regulations, plans, and standards in Section 3.7.3; identifies the criteria used to evaluate the significance of potential impacts (referred to as "thresholds of significance") in Section 3.7.4; describes the methodology used to evaluate these impacts in Section 3.7.5; analyzes direct and indirect beneficial effects and adverse impacts in Section 3.7.6; analyzes cumulative impacts in Section 3.7.7; and provides references in Section 3.7.8.

3.7.2 Affected Environment

3.7.2.1 Environmental Setting

The unique chemical properties of greenhouse gases (GHGs) enable them to become well-mixed within the atmosphere and transported over long distances. Consequently, unlike other resource areas that are primarily concerned with localized impacts (e.g., within 1,000 feet of a project site), the global nature of climate change requires a broader analytical approach. The following sections provide background information on climate change, principal GHGs, and recent emissions inventories. Climate change is a cumulative, global issue; therefore, the study area for this analysis with respect to GHG emissions and climate change is the global environment with a focus locally within the South Coast Air Quality Management District (SCAQMD) to avoid diluting the potential consequences of Project-related emissions within the larger, global context. Potential impacts of climate change on the study area are also identified.

Climate Change

The phenomenon known as the *greenhouse effect* keeps the atmosphere near Earth's surface warm enough for the successful habitation of humans and other life forms. The greenhouse effect is created by sunlight that passes through the atmosphere. Some of the sunlight striking Earth is absorbed and converted to heat, which warms the surface. The surface emits a portion of this heat as infrared radiation, which is absorbed by the GHG's in the atmosphere preventing it from escaping into space. This raises the temperature of the atmosphere and the Earth's surface. Human activities that generate GHGs increase the amount of infrared radiation absorbed by the atmosphere, thus enhancing the greenhouse effect and amplifying the warming of Earth (CCES 2015).

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the Industrial Revolution. Rising atmospheric concentrations of GHGs in excess of natural levels result in increasing global surface temperatures - a phenomenon commonly referred to as *global warming*. Higher global surface temperatures in turn result in changes to Earth's climate system, including increased ocean temperature and acidity, reduced sea ice, variable precipitation, and increased frequency and intensity of extreme weather events (IPCC 2007). Large-scale changes to Earth's system are collectively referred to as *climate change*.

The Intergovernmental Panel on Climate Change (IPCC) has been established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC estimates that the average global temperature will rise by 0.3° to 4.8° Celsius during the twenty-first century (IPCC 2013). Large increases in global temperatures could have substantial adverse effects on the natural and human environments on the planet and in California.

Greenhouse Gases Emissions and Reporting

The primary GHGs associated with the Project are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). These GHG's are the focus of the analysis because they are the most abundant GHGs and are associated with combustion activities which would occur as a result of restoration-related construction activities. Other GHG's are less common in the atmosphere and are associated with specific industrial processes. CO_2 is the most important anthropogenic GHG and accounts for more than 75% of all GHG emissions caused by humans. The primary sources of anthropogenic CO_2 in the atmosphere include the burning of fossil fuels, gas flaring, cement production, and land use changes (IPCC 2013). CH_4 and N_2O are not as abundant as CO_2, but are significantly more powerful. Sources of CH_4 include growing rice, raising cattle, using natural gas, landfill outgassing, and mining coal. Source of N_2O include agricultural processes, nylon production, fuel-fired power plants, nitric acid production, and vehicle emissions (IPCC 2013).

Methods have been set forth to describe emissions of GHGs in terms of a single gas to simplify reporting and analysis. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) methodology defined in the IPCC reference documents (IPCC 2007). The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO2e,[82] which compares the gas in question to that of the same mass of CO_2 (CO_2 has a global warming potential of 1 by definition).

Table 3.7-1, *Lifetimes and Global Warming Potentials of Key Greenhouse Gases*, lists the global warming potential of CO_2, CH_4, and N_2O their lifetimes, and abundances in the atmosphere.

TABLE 3.7-1
LIFETIMES AND GLOBAL WARMING POTENTIALS OF KEY GREENHOUSE GASES

Greenhouse Gases	Global Warming Potential (100 years)	Lifetime (years)	Current Atmospheric Abundance (ppb)
CO_2	1	50–200	379,000
CH_4	25	12	1,774
N_2O	298	114	319

NOTES: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; ppb = parts per billion

SOURCE: IPCC 2007.

82 CO_2e, or "carbon dioxide equivalent," is a standard unit for measuring carbon footprints. It expresses the impact of each different GHG in terms of the amount of CO_2 that would create the same amount of warming.

Greenhouse Gas Emissions Inventories

A GHG inventory is a quantification of all GHG emissions and sinks within a selected physical and/or economic boundary. GHG inventories can be performed on a large scale (i.e., for global and national entities) or on a small scale (i.e., for a particular building or person). Although many processes are difficult to evaluate, several agencies have developed tools to quantify emissions from certain sources. Table 3.7-2, *Global, National, State, and Local GHG Emissions Inventories*, outlines the most recent global, national, statewide, and local GHG inventories to help contextualize the magnitude of potential Project-related emissions.

TABLE 3.7-2
GLOBAL, NATIONAL, STATE, AND LOCAL GHG EMISSIONS INVENTORIES

Emissions Inventory	CO_2e^a (metric tons)
2004 IPCC Global GHG Emissions Inventory	49,000,000,000
2011 USEPA National GHG Emissions Inventory	6,702,300,000
2012 ARB State GHG Emissions Inventory	458,680,000
2004 City of Los Angeles GHG Emissions Inventory	51,600,000

NOTE:

[a] CO_2e = carbon dioxide equivalents

SOURCES: IPCC 2007, USEPA 2013, ARB 2014a, City of Los Angeles 2007a, City of Los Angeles 2007b.

Potential Effects of Climate Change in California and in the Project Area

Even with the efforts of the municipalities along the coast of Southern California, in the greater Los Angeles area, California as a whole will experience a certain amount of future climate change as a result of existing and unavoidable future GHG emissions. The University of California, Los Angeles (UCLA), in partnership with Los Angeles Regional Collaborative for Climate Action and Sustainability (LARC), recently published several studies that develop climate change predictions that are specific to the greater Los Angeles area (UCLA 2012). These studies indicate that if GHG emissions continue to increase globally based on current trends, climate change could impact the natural environment in the following ways:

1. **Increases in Extreme Heat Conditions:** Heat waves and very high temperatures could last longer and become more frequent. Extreme heat days are expected to triple in the coastal and central areas. UCLA's high emissions modeling scenario predicts a nearly 1.5- to 2-fold increase in the number of heat days for coastal Los Angeles County.

2. **Decreased Snowfall and Winter Snowpack:** The region's mountains could see a 42% reduction in annual snowfall by mid-century. The winter snowpack also is expected to melt 16 days earlier as a result of rising temperatures. Changes in snowfall could reduce water supplies for all end users throughout the County and the study area.

3. **Increased Frequency, Intensity, and Duration of Extreme Storms:** Changes in storm events could create conditions that are conducive to air pollution formation, which would

further exacerbate air quality issues. Increased winter storm events also could affect peak stream flows and flooding.

4. **Changes in Growing Season and Species Distribution:** Changes in growing season conditions could cause variations in crop quality and yield. Plant and wildlife distributions also may be affected by changes in temperature, competition from colonizing species, regional hydrology, sea level, and other climate-related effects.

5. **Rising Sea Levels:** Estimates of sea level rise can be used to evaluate potential future flooding conditions. In 2013, the Ocean Protection Council released a resolution, which revised previous global sea-level rise projections. The resolution advises California state agencies to consider 10-17 inches of sea level rise by 2050 and 31-69 inches by 2100 (measured from a 2000 baseline) based on the National Research Council's Sea-Level Rise for the Coasts of California, Oregon, and Washington report (OPC 2013, NRC 2012). The 2100 estimates reflect the range in GHG emission scenarios, with low emissions resulting in 31-50 inches of sea level rise and high emissions resulting in 43-69 inches. To date, emissions have been tracking on the high scenario. Assuming continuation of the high emissions trajectory, the higher range of sea level rise projections would apply. The high estimate is similar to the Corps Modified NRC-III curve which predicts 59 inches by 2100 (from a 1992 baseline) (Corps 2011). As global water levels increase, land elevations may also be changing. Land subsidence in Los Angeles is on the order of 0.06 inches per year (1.5 millimeters per year), which is much less than projected sea-level rise rates (NRC 2012).

Carbon Sequestration

Plants take up CO_2 from the atmosphere through the process of photosynthesis. CO_2 is absorbed by the plant tissue, along with water and nutrients, to allow the plant to grow. Through this process carbon is sequestered into the plant and stored as carbon stock. Some portion of the carbon removed from the atmosphere is returned to the atmosphere through several processes, including respiration, decay, and disturbance (PCOR, 2016).

The soil carbon sequestration rate captures the below ground carbon stocks through time. When land is covered with vegetation, soil carbon increases over time according to the soil sequestration rate of the habitat, due to the incorporation of dead organic matter back into the soil. When a habitat converts to another habitat (e.g. from upland to salt marsh), aboveground biomass changes (may increase or decrease) due to the different type of vegetation, but soil sequestration continues. When salt marsh converts to mudflat, aboveground biomass is lost and soil sequestration halts, but soil carbon stored prior to the conversion remains sequestered within the mudflat. In contrast, when wetlands are diked or drained, the belowground carbon stock can be released as CO_2 (PCOR, 2016).

3.7.3 Applicable Laws, Regulations, Plans, and Standards

3.7.3.1 Federal

Although there is currently no Federal overarching law specifically related to climate change or the reduction of GHGs, the U.S. Environmental Protection Agency (USEPA) is developing regulations under the Clean Air Act (CAA) that may be adopted pursuant to USEPA's authority under the CAA in the next 2 years. Foremost among recent developments have been the settlement agreements between USEPA, several states (including California), and nongovernmental organizations (NGOs) to address GHG emissions from electric generating units and refineries; the U.S. Supreme Court's decision in *Massachusetts v. EPA (2009) 549 U.S. 497*; and USEPA's "Endangerment Finding," "Cause or Contribute Finding," and Mandatory Reporting Rule (74 FR 66496; USEPA 2015). Although periodically debated in Congress, there is no Federal legislation concerning GHG emissions limitations. In *Coalition for Responsible Regulation, Inc., et al. v. EPA (2012) 684 F.3d 102*, the United States Court of Appeals upheld USEPA's authority to regulate GHG emissions under the CAA.

Council on Environmental Quality NEPA Guidance

The Council on Environmental Quality (CEQ) issued Final Guidance for Federal Departments and Agencies on Considerations of Greenhouse Gas Emissions and the Effects of Climate Change In NEPA Reviews in August 2016 (CEQ 2016). This guidance indicates that NEPA analyses should consider the potential effects of a proposed action on climate change as indicated by assessing GHG emissions as a proxy to the effects of climate change (e.g., to include, where applicable, carbon sequestration), and the effects of climate change on a proposed action and its environmental impacts. The guidance is intended to assist agencies in disclosing and considering the effects of GHG emissions and climate change along with the other reasonably foreseeable environmental effects of their proposed actions. However, the guidance does not identify any particular quantity of GHG emissions as "significantly" affecting the quality of the human environment or give greater consideration to the effects of GHG emissions and climate change over other effects on the human environment.

3.7.3.2 State

California has adopted statewide legislation addressing various aspects of climate change and GHG emissions mitigation. Much of this establishes a broad framework for the state's long-term GHG reduction and climate change adaptation program. The Governor of California also has issued several executive orders (EOs) related to the state's evolving climate change policy. Of particular importance to local governments is the direction provided by the Assembly Bill 32 (AB 32) Scoping Plan, which recommends local governments reduce their GHG emissions by a level consistent with state goals (i.e., 15% below current levels) by 2020.

In the absence of Federal regulations, control of GHGs is generally regulated at the state level and typically is approached by setting emission reduction targets for existing sources of GHGs, setting policies to promote renewable energy and increase energy efficiency, and developing statewide action plans. Summaries of key policies, legal cases, regulations, and legislation at the state levels that are relevant to the Project are provided below.

Assembly Bill 1493—Pavley Rules (2002, Amendments 2009, 2012 rule-making)

Known as "Pavley I," Assembly Bill (AB) 1493 standards are the nation's first GHG standards for automobiles. AB 1493 requires the California Air Resources Board (ARB) to adopt vehicle standards that will lower GHG emissions from new light duty autos to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards (referred to previously as "Pavley II", now referred to as the "Advanced Clean Cars" measure) has been proposed for vehicle model years 2017 through 2025. Together, the two standards are expected to increase average fuel economy to roughly 43 miles per gallon by 2020 and reduce GHG emissions from the transportation sector in California by approximately 14%. In June 2009, USEPA granted California's waiver request enabling the state to enforce its GHG emissions standards for new motor vehicles beginning with the current model year.

Assembly Bill 32—California Global Warming Solutions Act (2006)

AB 32 codified the state's GHG emissions target by requiring that the state's global warming emissions be reduced to 1990 levels by 2020. Since being adopted, ARB, CEC, CPUC, and the State Building Standards Commission have been developing regulations that will help meet the goals of AB 32 and Executive Order (ES) S-03-05. The Scoping Plan for AB 32 identifies specific measures to reduce GHG emissions to 1990 levels by 2020, and requires ARB and other state agencies to develop and enforce regulations and other initiatives for reducing GHGs. Specifically, the Scoping Plan articulates a key role for local governments, recommending they establish GHG reduction goals for both their municipal operations and the community consistent with those of the state. GHG reduction goals established by the City of Los Angeles are set forth below.

Executive Order S-01-07—Low Carbon Fuel Standard (2007)

EO S-01-07 mandates: (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020 and (2) that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established in California.[83]

Scoping Plan Provisions

Pursuant to AB 32, the ARB adopted a *Climate Change Scoping Plan* in December 2008 (ARB 2008) outlining measures to meet the 2020 GHG reduction goal. To meet this goal, California must reduce its GHG emissions by 30% below projected 2020 business-as-usual emissions levels. The 2008 Scoping Plan recommends measures that California may implement such as new fuel regulations, to reduce statewide GHG emissions. It estimates that a reduction of 174 million metric tons (MMT) of CO_2e from the transportation, energy, agriculture, forestry, and other sources could be achieved if California implements all of the measures. An update to the Scoping Plan, published in 2014, lays out a set of new actions, including specific recommended actions with lead agency

83 The ARB approved the LCFS on April 23, 2009 and the regulation became effective on January 12, 2010 (California Air Resources Board 2011). The U.S. District Court for the Eastern District of California ruled in December 2011 that the LCFS violates the Commerce Clause of the U.S. Constitution. The ARB appealed this ruling in 2012 and on September 18, 2013, a 9th U.S. Circuit Court of Appeals panel upheld the LCFS, ruling that the program does not violate the Commerce Clause and remanded the case to the Eastern District.

assignments and anticipated due dates. Some of the actions are near-term, while others are focused on longer-term efforts (ARB 2014b). Measures relevant to the Project are listed in Table 3.7-3, *Relevant Recommended Actions of Climate Change Scoping Plan*.

TABLE 3.7-3
RELEVANT RECOMMENDED ACTIONS OF CLIMATE CHANGE SCOPING PLAN

Source	Strategy Name and Description
2008 Scoping Plan	***W-4 Reuse Urban Runoff.*** This measure proposes that low impact development (LID) be required to maximize the infiltration and/or capture of stormwater to increase local water supplies. Where favorable soil and geologic conditions exist, stormwater would be infiltrated to increase groundwater supplies. In locations where potential infiltration is either limited or not recommended, capture and storage would be required to preserve stormwater for nonpotable applications. In addition to LID techniques, this measure promotes development of regional infiltration facilities and neighborhood facilities to augment local water supplies.
2014 Update	SWRCB and RWQCB are to implement green infrastructure permits to treat and capture urban runoff for local use by 2016.
2014 Update	SWRCB and RWQCBs are to modify state and regional water board policies and permits to achieve conservation, water recycling, stormwater reuse, and wastewater-to-energy goals by 2016.

SOURCE: ARB 2008 and 2014b

CEQA Guidelines

The CEQA Guidelines require lead agencies to describe, calculate, or estimate the amount of GHG emissions that would result from a project. Moreover, the CEQA Guidelines emphasize the necessity to determine potential climate change effects of a project and propose mitigation as necessary.

CEQA Guidelines Section 15126.4 includes considerations for lead agencies related to feasible mitigation measures to reduce GHG emissions, which may include, among others:

1. Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency’s decision;
2. Implementation of project features, project design, or other measures which are incorporated into the project to substantially reduce energy consumption or GHG emissions;
3. Off-site measures, including offsets that are not otherwise required, to mitigate a project’s emissions; and
4. Measures that sequester carbon or carbon-equivalent emissions.

3.7.3.3 Local

State agencies acting in their sovereign capacity are not subject to local regulations unless the California Constitution says they are or the Legislature has consented to such regulation. However, local plans and policies are mentioned here to help inform this analysis related to GHGs.

SCAQMD GHG CEQA Significance Threshold Working Group

SCAQMD staff is convening an ongoing GHG CEQA Significance Threshold Working Group to provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents. Members of the working group include government agencies and representatives from various stakeholder groups. In October 2008, the Working Group identified a tiered approach for determining the significance of GHG emissions, but the approach has not been formally adopted by the SCAQMD board.

County of Los Angeles

The Los Angeles County Community Climate Action Plan (CCAP) presents the existing GHG inventory for the unincorporated County, includes GHG reduction requirements, provides mechanisms to monitor and evaluate progress, and includes mechanisms that allow the plan to be revised to meet targets. By 2020, the plan aims to reduce GHG emissions by 11% from 2010 levels, which were estimated to be approximately 7.9 million metric tons (MT). The County has developed strategies that focus on: green building and energy; land use and transportation; water conservation and wastewater; waste reduction, reuse and recycling; and land conservation and tree planting.

City of Los Angeles

The City has adopted a climate action plan, entitled “GreenLA” (Los Angeles 2007a), and an implementation document, entitled “ClimateLA” (Los Angeles 2007b). ClimateLA presents the existing GHG inventory for the City, includes enforceable GHG reduction requirements, provides mechanisms to monitor and evaluate progress, and includes mechanisms that allow the plan to be revised to meet targets. By 2030, the plan aims to reduce GHG emissions by 35% from 1990 levels, which were estimated to be approximately 54.1 million MT. The City has developed strategies that focus on energy, water use, transportation, land use, waste, open space, and thresholds of significance.

3.7.4 Thresholds of Significance

The Corps’ position under NEPA is that there are no science-based GHG significance thresholds, nor has the Federal government adopted any by regulation. In the absence of an adopted or science-based GHG significance standard, the Corps will not utilize the CEQA significance criterion being used by CDFW, propose a new GHG significance standard, or make a NEPA impact determination for GHG emissions anticipated to result from any of the alternatives. Rather, in compliance with NEPA implementing regulations, the anticipated GHG emissions are disclosed for each alternative without the Corps expressing judgment as to the significance of such emissions.

According to CEQA Guidelines Appendix G, Section VII, Alternative 1, 2, 3, or 4 would have a significant impact related to GHG emissions under CEQA if it would:

GHG-1 Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

GHG-2 Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Currently, while SCAQMD has issued proposed standards and guidelines related to some land uses,[84] there is no adopted state or local standard for determining the cumulative significance of the Project's GHG emissions on global climate change. Accordingly, because it is the lowest of SCAQMD's proposed thresholds, this analysis relies on a threshold of 1,400 MT/year CO_2e to determine whether the Project would result in a significant impact related to GHG emissions.

3.7.5 Methodology

This GHG impact analysis was developed using a custom excel-based calculation worksheet, provided in Appendix C1, *Air Quality and Greenhouse Gas Calculations*. Emission factors for CO_2 and CH_4 associated with off-road vehicle construction activities were estimated using California Air Resources Board's OFFROAD2011 model.

During implementation of Alternatives 1, 2, or 3, equipment, trucks, worker vehicles, and ground-disturbing activities would generate GHG emissions directly. The equipment inventory and use assumptions input to estimate restoration-phase emissions were developed based on the assumed weekly implementation schedule for each alternative combined with equipment types and duration of use information provided by PSOMAS (PSOMAS 2015). Alternative 1 would be implemented in two phases consisting of multiple sequences beginning in early 2017.[85] The sequences would be grouped into two primary periods, with the first occurring between 2017 and 2022 and the second occurring in 2023. No mechanized activities would occur between 2022 and 2023 to facilitate habitat restoration and plant establishment. Restoration activities would include vegetation removal, restoration-related excavation, grading, backfilling, and material loading. Alternative 2 and Alternative 3 each would be implemented in a single phase beginning in 2017: Alternatives 2 and 3 would require 60 months.

Truck trips would be required to implement Alternatives 1, 2, and 3, including materials hauling and worker transportation. Expected vehicle trip data were obtained from the Project-specific traffic study (Appendix H), and CO_2 vehicle emission factors were obtained from the California Air Resources Board's EMFAC 2014, using context-specific parameters (see Appendix C1, *Air Quality and Greenhouse Gas Calculations*, Tables 25 through 34 for more details). Trip length information was provided by CalEEMod default factors, which are 20 and 14.6 miles for round trips for haul and worker trips, respectively.

[84] SCAQMD has adopted a threshold of 10,000 MT/year CO_2e for industrial projects for which it is the lead agency and has proposed (but not yet adopted) a 3,000 MT/year CO_2e threshold for mixed use developments, a 3,500 MT/year CO_2e threshold for residential developments, and a 1,400 MT/year CO2e threshold for commercial developments. None of these thresholds would apply to the Project. (SCAQMD 2009)

[85] The proposed construction start date may be adjusted in the Final EIS/EIR.

SCAQMD recommends that for construction GHG emissions the total emissions for a project be amortized over a 30-year period and added to its operational emission estimates. Because GHG emissions are cumulative by nature, the analysis of impacts for this Project added the GHG emissions that would occur during the restoration phase to the post-restoration emissions to determine the Project's total annual GHG emissions. Post-restoration emissions also were estimated using the most recent version of the CalEEMod as recommended by the SCAQMD.

Several volunteers and employees (e.g., CDFW, the County, and SoCalGas) currently visit the Project site to perform operations and maintenance (O&M) work, including operation and maintenance of the LACDA project facilities pursuant to the Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) manual (Corps 2009), as well as to inspect the on-site SoCalGas natural gas storage wells. The same general nature and type of O&M activities that occur now within the Project site would continue to occur under Alternatives 1, 2, or 3(see Appendix B5), although the frequency of O&M activities in response to the proposed increase in public access may change. GHG emissions like those that currently result from off-road maintenance equipment and vehicular trips associated with O&M activities also would result under Alternative 1, 2, or 3. Most of the on-site O&M activities do not and would not require the use of off-road equipment. However, if maintenance on any of the on-site channels were required (e.g., after a significant storm event) it is assumed that a loader and excavator would be used to dredge the affected area. Dredge material would be placed either in the Ballona Reserve that would not affect the proposed habitat restoration or disposed of off-site. Off-haul options are described in Section 2.3.2.5, *Alternative 1: Implementation and Construction Process*. It is likely that any dredged material would be placed in the Ballona Reserve. However, if dredged material is to be transported off-site, soil excavation and disposal volumes would be less than restoration-phase volumes. Any off-haul activities for maintenance therefore would have a shorter duration than for restoration activities. Sediment testing would be performed prior to channel maintenance and any soil requiring special management measures would be handled and disposed of according to regulations. This analysis assumes that a loader and excavator would be used to dredge the channels 52 days out of the year for Alternatives 1, 2, and 3. The combined average daily traffic (ADT) for the Project in the post-restoration phase, which includes visitor and worker trips during O&M activities, would be 390 one-way trips. Post-restoration GHG emissions were calculated using CalEEMod (see Appendix C1, *Air Quality and Greenhouse Gas Calculations*, page 76 through 111 for more details). Because CalEEMod uses the global warming potentials for CH_4 and N_2O identified in the IPCC's Second Assessment Report (AR2), which have been superseded by the GWPs in the IPPC's Fourth Assessment Report (AR4), GHG emissions were taken from CalEEMod and CO_2e for these two GHGs were calculated outside of CalEEMod using the AR4 GWPs.

Discussion of the carbon sequestration potential for the Project is based on a technical memorandum that includes an assessment of the GHG sequestration and emissions that would be associated with the wetlands established under the Project (ESA 2014).

3.7.6 Direct and Indirect Impacts

3.7.6.1 Alternative 1: Full Tidal Restoration/Proposed Action

1-GHG-1: Alternative 1 would not generate GHG emissions, either directly indirectly, that would have a significant impact on the environment. (Less than Significant Impact)

Direct Impacts

Restoration activities associated with Alternative 1 would consist of removing the existing armored levees along the banks of the Ballona Creek channel. New levees would be constructed around the northern perimeter of Area A, along the north side of Culver Boulevard in North and West Area B, and immediately east of the dune habitat in West Area B (see Figure 2-2, *Alternative 1, Phase 2: Preliminary Grading Plan*). New trails and bike paths also would be constructed. Direct GHG emissions under Alternative 1 would be generated on-site by use of off-road equipment such as loaders and excavators. Direct and indirect emissions were combined and are presented for each restoration year as well as for post-restoration as shown in Table 3.7-4, *Alternative 1 GHG Emissions by Year (MT CO_2e)*.

TABLE 3.7-4
ALTERNATIVE 1
GHG EMISSIONS BY YEAR (MT CO_2E)

Source	Restoration				Post-Restoration
	2017	2018	2019	2023	2023
Project Emissions	8,017	6,357	6,991	3,887	135

As discussed in Section 3.7.5, *Methodology*, for the purposes of CEQA impact determinations, the SCAQMD recommends that construction GHG emissions be amortized over a 30-year period and added to the operational emission estimates for comparison to the GHG emissions significance threshold. Estimated amortized GHG emissions that would occur under Alternative 1 are presented in Table 3.7-5, *Proposed Action Amortized GHG Emissions (MT CO_2e)*. See Appendix C1, *Air Quality and Greenhouse Gas Calculations*, for the assumptions used to estimate these emissions. As shown, restoration-related direct CO_2e emissions would be 11,495 MT and restoration direct and indirect GHG emissions combined would be 25,252 MT CO_2e, or 842 MT CO_2e amortized over 30 years.

Once restoration is complete, Alternative 1 would result in negligible new sources of GHG emissions. The operation of the loader and excavator, and truck trips would generate approximately 135 MT CO_2e per year. When added to the amortized restoration-phase emissions, total annual CO_2e emissions for Alternative 1 would be 977 MT.

TABLE 3.7-5
PROPOSED ACTION
AMORTIZED GHG EMISSIONS (MT CO_2E)

	MT CO_2e
Restoration Activity Direct (Off-road Equipment) Emissions	11,495
Restoration Activity Indirect (Vehicle) Emissions	13,757
Restoration Activity Total Emissions	25,252
Restoration Activity Amortized Emissions	842
Post-Restoration O&M Activities	135
Total Amortized Project Emissions (MT per year)	977
SCAQMD Significance Threshold	1,400
Exceeds Threshold?	**No**

NOTE: Restoration-phase emissions were amortized over a 30-year period.

As shown in Table 3.7-5, restoration and post-restoration annual direct and indirect total amortized GHG emissions under Alternative 1 would be less than the SCAQMD significance threshold of 1,400 MT CO_2e per year for non-stationary sources. Therefore, the GHG emissions that would be associated with Alternative 1 would be less than significant.

In addition, the proposed increase in wetlands post-restoration would increase the Project site's ability to function as a carbon sink, which would partially offset Alternative 1-generated GHG emissions. A recent assessment has indicated that under Alternative 1, the Ballona Wetlands would be expected to remove 13,100 to 40,300 MT of CO_2 (minus emissions) from the atmosphere by the year 2100 (ESA 2014). Because the proposed restoration would create marshes and allows them to transgress upslope with sea-level rise, more carbon biomass aboveground and underground would be created and sustained. As sea levels rise, the rate of sequestration would decrease due to the conversion of salt marsh to mudflat, but the carbon would remain sequestered in the soils. Although methane has a larger warming potential than CO_2, the amount of brackish marsh assumed for Alternative 1 would be small enough that emissions would not outweigh the carbon sequestered in the salt marsh, even with conservative assumptions (ESA 2014).

Indirect Impacts

The proposed restoration activities under Alternative 1 would generate indirect emissions of CO_2e from vehicle trips associated with debris and material hauling and worker commute trips. Estimated GHG emissions that would occur under Alternative 1 are presented in Table 3.7-5. See Appendix C1, *Air Quality and Greenhouse Gas Calculations*, for the assumptions used to estimate these emissions. As shown, restoration-related indirect CO_2e emissions would be 13,757 MT. During the post-restoration phase, GHG emissions would be generated by public visitors driving to and from the Project site. Since the on-site restoration activities would not increase capacity or substantially alter the existing on-site recreational areas, the number of people visiting the site is not expected to increase enough to result in a marked increase in mobile source GHG emissions.

As shown in Table 3.7-5, restoration and post-restoration annual direct and indirect total amortized GHG emissions under Alternative 1 would be below the SCAQMD threshold of 1,400 MT CO_2e per year for non-stationary sources. Therefore, the impact would be less than significant.

1-GHG-2: Alternative 1 would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions. (No Impact)

As described above with regard to Table 3.7-5, *Annual Project-related GHG Emissions (MT CO_2e)*, the GHG emissions generated by Alternative 1 would not exceed 1,400 MT CO_2e per year and, as such, would have a less-than-significant impact on the environment. In addition, implementation of Alternative 1 would not conflict with any applicable adopted GHG-related plans, policies, or regulations, or with GreenLA or the County's Draft CCAP, which generally do not address temporary construction-related GHG emissions. Additionally, Alternative 1 would support the goals of CARB's Climate Change Scoping Plan by complying with the relevant measures described in Table 3.7-3, *Relevant Recommended Actions of Climate Change Scoping Plan*. For example, Alternative 1 would remove all or portions of the existing levees and the concrete channel and would construct new flood risk management levees, restore wetland floodplain, and construct new water control structures (such as culverts, weirs, and tide gates) and/or erosion protection features, which would reuse urban runoff (and thereby support Scoping Plan Measure W-4) by contributing stormwater from the Basin to restored wetland habitat within the Ballona Reserve. Therefore, no impact would occur with respect to applicable plans and policies to reduce emissions of GHGs.

TABLE 3.7-6
ALTERNATIVE 1 CEQA IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
GHG-1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? See Impact 1-GHG-1.	☐	☐	☒	☐
GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs? See Impact 1-GHG-2.	☐	☐	☐	☒

3.7.6.2 Alternative 2: Restored Partial Sinuous Creek

2-GHG-1: Alternative 2 would not generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment. (Less than Significant Impact)

Direct Impacts

The implementation of Alternative 2 would occur between 2017 and 2022 and would have similar characteristics as Alternative 1. Alternative 2 would have a substantially similar footprint when compared to Alternative 1 (approximately 355 acres relative to the Proposed Action's 346 acres). As described in Chapter 2, the existing armored levees on the Ballona Creek channel within the Ballona Reserve would be removed and Ballona Creek would be realigned to flow in a natural meander-shaped pattern as described in Alternative 1; however, the southern levee of the Ballona Creek channel adjacent to West Area B would not be breached, and the existing water control structures would remain. As a result, Alternative 2 would restore a mix of fully tidal wetlands and managed wetlands in the Ballona Reserve while retaining existing habitats in West Area B (see Figure 2-43, *Alternative 2: Proposed Habitats*). Alternative 2 would include the first restoration phase described in Alternative 1, but not the second and final restoration phase and would not include stockpiled fill along the Culver Boulevard levee and East Area B.

Same as under Alternative 1, direct GHG emissions under Alternative 2 would be generated on-site by use of off-road equipment such as loaders and excavators. Direct and indirect emissions that would be generated under Alternative 2 were combined and are presented for each restoration year as well as for post-restoration as shown in Table 3.7-7, *Alternative 2 GHG Emissions by Year (MT CO_2e)*.

TABLE 3.7-7
ALTERNATIVE 2
GHG EMISSIONS BY YEAR (MT CO_2E)

Source	Restoration			Post-Restoration
	2017	2018	2019	2023
Project Emissions	6,867	6,991	6,287	135

As discussed in Section 3.7.5, *Methodology*, for the purposes of CEQA impact determinations, the SCAQMD recommends that construction GHG emissions be amortized over a 30-year period and added to the operational emission estimates for comparison to the GHG emissions significance threshold. Estimated amortized GHG emissions that would be generated under Alternative 2 are presented in Table 3.7-8, *Alternative 2 Amortized GHG Emissions (MT CO_2e)*. See Appendix C1, *Air Quality and Greenhouse Gas Calculations*, for the assumptions used to estimate these emissions. As shown, restoration-related direct CO_2e emissions under Alternative 2 would be 9,133 MT and restoration direct and indict GHG emissions combined would be 20,145 MT CO_2e, or 671 MT CO_2e amortized over 30 years.

Once restoration is complete, Alternative 2 would result in negligible new sources of GHG emissions. The operation of the loader and excavator, and truck trips during O&M activities would generate approximately 135 MT CO_2e per year. When added to the amortized restoration emissions, total annual emissions under Alternative 2 would be 806 MT CO_2e.

As shown in Table 3.7-8, restoration and post-restoration amortized GHG emissions under Alternative 2 would be less than the SCAQMD significance threshold of 1,400 MT CO_2e per year for non-stationary sources. Therefore, GHG emissions that would be associated with Alternative 2 would be less than significant.

TABLE 3.7-8
ALTERNATIVE 2
AMORTIZED GHG EMISSIONS (MT CO_2E)

	MT CO2e
Restoration Activity (Off-road Equipment) Emissions	9,133
Restoration Activity (Vehicle) Emissions	11,012
Restoration Activity Total Emissions	20,145
Restoration Activity Amortized Emissions	671
O&M Activities	135
Total Amortized Project Emissions (MT per year)	806
SCAQMD Significance Threshold	1,400
Exceeds Threshold?	**No**

NOTE: Restoration phase emissions were amortized over a 30-year period.

In addition, the increase in wetlands post-restoration under Alternative 2 would increase the Project site's ability to function as a carbon sink, which would further reduce GHG emissions. Initially, Alternative 2 would sequester more carbon than Alternative 1 because it would have larger amounts of salt marsh in west and north Area B (as opposed to the upland levee, which would sequester less carbon). However, with sea level rise, the tidal signal in the managed marsh eventually would shrink until vegetation would be impacted and the habitat converted to mudflat. Under Alternative 2, the marsh would be able to migrate up the levee slope, and the upland would remain, sequestering carbon for a longer period of time than would occur under Alternative 3; however, to a lesser extent than under Alternative 1. In addition, the proposed increase in wetlands would increase the site's ability to function as a carbon sink (ESA 2014).

Indirect Impacts

The proposed restoration activities under Alternative 2 would generate indirect emissions of CO_2e from vehicle trips associated with debris and material hauling and worker commute trips. Estimated GHG emissions that would occur under Alternative 2 are presented in Table 3.7-8. See Appendix C1, *Air Quality and Greenhouse Gas Calculations*, for the assumptions used to estimate these emissions. As shown, restoration-related indirect CO_2e emissions would be 11,012 MT. During the post-restoration phase, GHG emissions would be generated by public visitors driving to and from the Project site. Since the on-site restoration activities would not increase capacity or substantially alter the existing on-site recreational areas, the number of people visiting the site is not expected to increase enough to result in a marked increase in mobile source GHG emissions.

As shown in Table 3.7-8, restoration and post-restoration direct and indirect amortized GHG emissions under Alternative 2 would be below the SCAQMD threshold of 1,400 MT CO_2e per year for non-stationary sources. Therefore, the impact would be less than significant.

2-GHG-2: Alternative 2 would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. (No Impact)

As shown in Table 3.7-8, *Alternative 2 Annual Project-related GHG Emissions (MT CO_2e)*, the GHG emissions generated by Alternative 2 would not exceed 1,400 MT CO_2e per year and, as such, would not have a significant impact on the environment. In addition, like Alternative 1, implementation of Alternative 2 would not conflict with any applicable adopted GHG-related plans, policies, or regulations, or with GreenLA or the CCAP, which plans generally do not address temporary construction-related GHG emissions. Additionally, Alternative 2 would support the goals of CARB's Climate Change Scoping Plan by complying with the relevant measures described in Table 3.7-3, *Relevant Recommended Actions of Climate Change Scoping Plan*. For example, Alternative 2 would result in the removal of all or portions of the existing levees and the concrete channel and construction of new flood risk management levees, restoration of the wetland floodplain, and construction of new water control structures (such as culverts, weirs, and tide gates) and/or erosion protection features, which would result in the reuse of urban runoff (and thereby support Scoping Plan Measure W-4) by contributing stormwater from the Basin to the habitat within the Ballona Reserve. In addition, the proposed increase in wetlands would increase the site's ability to function as a carbon sink. Therefore, no impact would occur with respect to applicable plans and policies to reduce emissions of GHGs.

TABLE 3.7-9
ALTERNATIVE 2 CEQA IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
GHG-1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? See Impact 2-GHG-1.	☐	☐	☒	☐
GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs? See Impact 2-GHG-2.	☐	☐	☐	☒

3.7.6.3 Alternative 3: Levee Culverts and Oxbow

3-GHG-1: Alternative 3 would not generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment. (Less than Significant Impact)

Direct Impacts

Restoration activities associated with Alternative 3 would occur between 2017 and 2022 and would have similar characteristics as Alternative 1. Restoration under Alternative 3 would be focused in Area A only. Area B and Area C would not be actively restored and habitats would remain in their existing condition as described in Section 3.7.2, Affected Environment (e.g., muted tidal in West and South/Southeast Area B, nontidal in the remainder of Area B, primarily upland habitat in Area C). In Alternative 3, existing armored levees on the Ballona Creek channel adjacent to the Ballona Reserve would remain intact. No levee breaching would occur. Instead, two new culvert water control structures would be installed within the northern Ballona Creek channel levee to support full tidal restoration in Area A similar to Alternative 1, with an oxbow-shaped channel (see Figure 2-52, *Alternative 3: Proposed Habitats*). The southern Ballona Creek channel levee would remain unchanged from its current condition. Alternative 3 would include restoration of Area A and a new perimeter flood risk management levee.

As under Alternatives 1 and 2, direct GHG emissions under Alternative 3 would be generated on-site by use of off-road equipment such as loaders and excavators. Direct and indirect emissions were combined and are presented for each restoration year as well as for post-restoration as shown in Table 3.7-10, *Alternative 3 GHG Emissions by Year (MT CO_2e)*.

TABLE 3.7-10
ALTERNATIVE 3
GHG EMISSIONS BY YEAR (MT CO_2E)

	Restoration			Post-Restoration
Source	**2017**	**2018**	**2019**	**2023**
Project Emissions	5,693	4,769	5,121	135

As discussed in Section 3.7.5, *Methodology*, for the purposes of CEQA impact determinations, the SCAQMD recommends that construction GHG emissions be amortized over a 30-year period and added to the operational emission estimates for comparison to the GHG emissions significance threshold. Estimated amortized GHG emissions that would occur under Alternative 3 are presented in Table 3.7-11, *Alternative 3 Amortized GHG Emissions (MT CO_2e)*. See Appendix C1, *Air Quality and Greenhouse Gas Calculations*, for the assumptions used to estimate these emissions. As shown, restoration-related direct CO_2e emissions would be 6,007 MT and direct and indirect GHG emissions combined would be 15,583 MT CO_2e, or 519 MT CO_2e amortized over 30 years.

TABLE 3.7-11
ALTERNATIVE 3
AMORTIZED GHG EMISSIONS (MT CO_2E)

	MT CO_2e
Restoration Activity Direct (Off-road Equipment) Emissions	6,007
Restoration Activity Indirect (Vehicle) Emissions	9,576
Restoration Activity Total Emissions	15,583
Restoration Activity Amortized Emissions	519
O&M Activities	135
Total Amortized Project Emissions (MT per year)	654
SCAQMD Significance Threshold	1,400
Exceeds Threshold?	**No**

NOTE: Restoration-phase emissions were amortized over a 30-year period.

Once restoration is complete, Alternative 3 would result in negligible new sources of GHG emissions. The operation of the loader and excavator, and truck trips during post-restoration O&M activities would generate approximately 135 MT CO_{2e} per year. When added to the amortized restoration-phase emissions, total annual emissions of Alternative 3 would be 654 MT CO_2e.

As shown in Table 3.7-11, restoration and post-restoration annual direct and indirect amortized GHG emissions under Alternative 3 would be less than the SCAQMD threshold of 1,400 MT CO_2e per year for non-stationary sources. Therefore, GHG emissions that would be associated with Alternative 3 would be less than significant.

In addition, the increase in wetlands post-restoration under Alternative 3 would increase the site's ability to function as a carbon sink, which would partially offset Project-generated GHG emissions. Under Alternative 3, the marsh would not be able to migrate up the levee slope, which would result in sequestered carbon for a shorter period of time than would occur under Alternatives 1 and 2. However, Alternative 3 would have less brackish marsh than under Alternatives 1 and 2, and so would result in lower methane emissions.

Indirect Impacts

The proposed restoration activities under Alternative 3 would generate indirect emissions of CO_2e from vehicle trips associated with debris and material hauling and worker commute trips. Estimated GHG emissions that would occur under Alternative 3 are presented in Table 3.7-10. See Appendix C1, *Air Quality and Greenhouse Gas Calculations*, for the assumptions used to estimate these emissions. As shown, restoration-related indirect CO_2e emissions would be 9,576 MT. During the post-restoration phase, GHG emissions would be generated by public visitors driving to and from the Project site. Since the on-site restoration activities would not increase capacity or substantially alter the existing on-site recreational areas, the number of people visiting the site is not expected to increase enough to result in a marked increase in mobile source GHG emissions.

As shown in Table 3.7-11, restoration and post-restoration annual direct and indirect amortized GHG emissions under Alternative 3 would be below the SCAQMD threshold of 1,400 MT CO_2e per year for non-stationary sources. Therefore, the impact would be less than significant.

3-GHG-2: Alternative 3 would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions? (No Impact)

As described above and shown in Table 3.7-11, *Alternative 3 Annual GHG Emissions (MT CO_2e)*, Alternative 3's GHG emissions would not exceed 1,400 CO_{2e} MT per year and, as such, would not have a significant impact on the environment. In addition, like Alternative 1, implementation of Alternative 3 would not conflict with any applicable adopted GHG-related plans, policies, or regulations, or with GreenLA or the CCAP, which plans generally do not address temporary construction-related GHG emissions. Additionally, Alternative 3 would support the goals of CARB's Climate Change Scoping Plan by complying with the relevant measures described in Table 3.7-3, *Relevant Recommended Actions of Climate Change Scoping Plan*. For example, Alternative 3 would remove portions of the existing levees and the concrete channel and would construct new flood risk management levees, restore wetland floodplain, and construct new water control structures (such as culverts, weirs, and tide gates) and/or erosion protection features, which would reuse urban runoff (and thereby support Scoping Plan Measure W-4) by contributing stormwater from the Basin to wetland habitat within the Ballona Reserve. Therefore, Alternative 3 would result in no impact with respect to applicable plans and policies to reduce GHG emissions.

TABLE 3.7-12
ALTERNATIVE 3 CEQA IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
GHG-1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? See Impact 3-GHG-1.	☐	☐	☒	☐
GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs? See Impact 3-GHG-2.	☐	☐	☐	☒

3.7.6.4 Alternative 4: No Federal Action/No Project

Under Alternative 4, no substantial changes would be made to the physical or human environment within the Project site. Continuation of previously-permitted restoration activities would be allowed, such as the small-scale control of invasive nonnative plant species by hand-tools only and the planting and seeding of native species. Operation and maintenance activities, including operation and maintenance of the LACDA project facilities pursuant to the Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) manual (Corps 2009), would continue to occur. Gas wells would continue to be operated and maintained within the Project site. Alternative 4 would not involve any new construction or the use of mechanized equipment. For these reasons, Alternative 4 would generate no restoration-related GHG emissions and no change in existing GHG generation or sequestration within the Project site.

3.7.7 Cumulative Impacts

As analyzed in Section 3.7.6.4, Alternative 4 would result in no impact relating to GHG emissions. Therefore, Alternative 4 would not cause or contribute to any related cumulative impact. Similarly, Alternative 1, 2, or 3 would not conflict with the state's GHG reduction goals, and so could not cause or contribute to any cumulative effect in this regard.

This analysis evaluates the potential for the incremental GHG emissions of Alternatives 1, 2, and 3 to combine with the GHG emissions of past, other present, and reasonably foreseeable future projects to cause or contribute to a significant adverse cumulative impact. The geographic scope of this review is global because GHG emissions accumulate in the atmosphere around the Earth and result in global climate change; however, this analysis focuses more locally within the SCAQMD to avoid diluting the potential consequences of Project-related emissions within the larger, global context. The Project would generate GHG emissions associated with the implementation of restoration activities and, to a lesser extent, during post-restoration activities.

There is no dispute among scientists that global climates are warming or that GHG emissions resulting from actions taken by humans are contributing to the change. See, for example, Warrick 2016, which identifies Aliso Canyon's 112-day long leak, which released approximately 5 billion cubic feet of methane into the atmosphere, as "the worst accidental discharge of greenhouse gases in U.S. history" and as an accident of "historic" proportions. More locally, "the methane flow from one damaged wellhead [at the Aliso Canyon facility] more than doubled the amount of methane pollution emitted by all sources across the entire Los Angeles basin" (Id.). This analysis considers the ongoing impacts of these past actions to demonstrate a significant adverse cumulative impact.

In the context of these past projects and recognizing that all of the cumulative projects identified in Table 3.1-1, *Existing and Reasonably Foreseeable Future Projects*, would contribute to climate change due to the generation of short-term and/or long-term GHG emissions (indeed any project anywhere on Earth that would generate GHG emissions could contribute climate change), the CEQA question for this analysis is whether the Project's contribution to the significant adverse impact would be cumulatively considerable. This analysis relies on the SCAQMD significance thresholds to make the determination. As analyzed in Section 3.7.6, the Project under Alternatives 1, 2, or 3 would result in a less-than-significant impact related to short-term GHG emissions during restoration and long-term GHG emissions during the post-restoration phase because they would not result in GHG emissions that would exceed the SCAQMD significance thresholds. Therefore, the Project's incremental impact under Alternative 1, 2, or 3 would not be cumulatively considerable.

3.7.8 References

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3.8 Hazards and Hazardous Materials

3.8.1 Introduction

This section identifies and evaluates Hazards (related to proximity to airports, interference with emergency routes or plans, or location within high wildfire hazard area) and Hazardous Materials (related to routine use or accidental release of hazardous materials and location on a hazardous materials site or resulting in emissions near schools). Topics addressed include hazardous, toxic, and radioactive waste (HTRW). It describes existing conditions in Section 3.8.2; summarizes applicable laws, regulations, plans, and standards in Section 3.8.3; identifies the criteria used to evaluate the significance of potential impacts (referred to as "thresholds of significance") in Section 3.8.4; describes the methodology used to evaluate these impacts in Section 3.8.5; analyzes direct and indirect beneficial effects and adverse impacts in Section 3.8.6; analyzes cumulative effects in Section 3.8.7; and provides references in Section 3.8.8.

3.8.2 Affected Environment

3.8.2.1 Study Area

To evaluate the potential environmental consequences relative to hazards and hazardous materials, the study area consists of the Project site as described in Section 1.4.1, *Location of the Project Site*, hazardous materials sites that are close enough to the Project site that they could affect the site, and airports within two miles of the Project site.

3.8.2.2 Environmental Setting

Historical Land Use

The following information was taken from a report by the United States Environmental Protection Agency (USEPA), titled "*Ballona Creek Wetlands, Total Maximum Loads for Sedimentation and Invasive Exotic Vegetation*" (USEPA 2012). Table 3.8-1, *Summary of Anthropogenic Activities at Ballona Wetlands since the 1880's*, summarizes some of the human activities that affected the Ballona Reserve from the early 1880s until the 1960s. The purpose of this section is to summarize those historical activities conducted on the Project site that have the potential to have resulted in the release of hazardous materials to the environment.

During the late 1800s, the Ballona Wetlands were used by several hunting lodges and resorts for recreation. Rail lines were constructed through the marsh in the 1880s and roadways were built between 1900 and 1910. Oil and natural gas exploration and production began in the 1930s, and in 1934, Ballona Creek was channelized to the ocean. The channelization of Ballona Creek resulted in limited flow to adjacent wetlands.

Between the 1930s and 1950s, oil derricks were built throughout the wetland areas, including the construction of dikes, which caused the wetlands to be drained or artificial ponds to develop. The Ballona Reserve and the surrounding area was an active oil-producing region in the 1930s. Oil production ceased in the 1940s, and the western portion of the Ballona Reserve has been

TABLE 3.8-1
SUMMARY OF ANTHROPOGENIC ACTIVITIES AT BALLONA WETLANDS SINCE THE 1880'S

Time Period	Anthropogenic Activity	Impact
1880's to Early 1900's	Pacific Electric railroad tracks built on artificial fill earthen berms, which altered tidal flows in Areas A, B and C.	Sediment deposition; habitat alteration; reduced tidal flushing
1918	Lincoln Boulevard and Jefferson Boulevard were constructed. Surface flows from the eastern portions of wetlands were routed into culverts under Culver Boulevard in Area B.	Sediment movement; habitat alteration; reduced and/or restricted freshwater flows
1920's	Artificial fill was dumped in several places to construct oil and gas drilling platforms, protect them from extreme tides, and build artificial fill berms for access roads for the platforms; The Gas Company Road in Area B restricted flows from the east, and platforms and access roads in Area A created depressions where water continued to pond sporadically.	Sediment deposition and transport; habitat burial
1930 to 1958	Farming of lima beans and barley in Area B (east of the Gas Company Road) and Area C resulted in filling of many natural tidal channels.	Sediment deposition and transport; habitat burial
1930's	Oil production throughout the 1930's; the Corps straightened and channelized Ballona Creek into a concrete channel with adjacent levees; culverts with flap gates allowed drainage from Area B, but prevented tidal inflows (except when gates malfunctioned).	Sediment deposition; habitat alteration; reduced and/or restricted freshwater flows and tidal flushing
1940's to 1960's	Approximately 5 to 10 acres of the northeastern portion of Area A was used as a dump site for celery waste from 1945 to 1953. Centinela Ditch was excavated through Area B before 1950, which directed freshwater flows from east of Lincoln Boulevard along the south border of the wetlands area. In 1962, Centinela Creek was fully channelized in concrete and diverted to Ballona Creek channel at Centinela Avenue at the then-eastward extent of the remaining wetlands.	Sediment deposition and removal; reduced and/or restricted freshwater flows
1960's	The southwest portion of the wetlands in 1960 was dredged to create Marina del Rey harbor and marina. The dredged mud was deposited on Area A and raised the land surface 12 to 15 feet above previous mean sea level. In addition, construction of the Marina Freeway occurred over a 5-year period ending in 1972, and resulted in additional fill in Area C.	Sediment deposition; reduced tidal flushing

SOURCE: USEPA 2012

used for natural gas storage since that time. The Marina del Rey recreational harbor and marina was constructed in the late 1950s and 60s and involved dredging existing wetlands to subtidal levels and placing the dredged materials as fill on wetlands in Area A. There is no other known record of hazardous waste including radiological waste dumping at the site.

Hazardous Materials and Hazardous Waste Terminology

"Hazardous material" has different definitions depending on the regulatory scheme with jurisdiction over the material or the industrial operation. This EIS/EIR uses the California Health and Safety Code §25501 definition. The Health and Safety Code defines hazardous material as "any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment" (Health and Safety Code §25501(n)). The term "hazardous materials" refers to both hazardous substances and hazardous wastes. Under

Federal and state laws, any material, including wastes, may be considered hazardous if it is specifically listed by statute as such or if it is toxic (causes adverse human health impacts), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases).

Hazardous wastes are hazardous substances that no longer have practical use, such as materials that have been spent, discarded, discharged, spilled, contaminated, or are being stored until they can be disposed of properly (22 Cal. Code Regs. §66261.1 et seq.). Soil that is excavated from a site containing hazardous materials is a hazardous waste if it exceeds specific regulatory criteria. While hazardous substances are regulated by multiple agencies, as described in Section 3.8.3, *Applicable Laws, Regulations, Plans, and Standards*, cleanup requirements of hazardous wastes are determined on a case-by-case basis according to the agency with lead jurisdiction over the Project.

Acute hazardous wastes could pose a threat to human health (including death, disabling personal injury, or serious illness) and the environment even when properly managed (40 C.F.R. Part 261; 22 Cal. Code Regs. §66261.33(e)). USEPA designates a waste as acutely hazardous if it contains constituents that scientific studies show to be fatal to humans or animals in low doses. An example would be unused discarded formulations of nitroglycerine. Although nitroglycerine is not a hazardous constituent, wastes containing unused nitroglycerine are so unstable that they pose an acute hazard.

Onsite Hazardous Materials

As previously discussed, the Ballona Reserve has been modified almost entirely from its original natural state by various flood risk management, railroad, oil and gas, and urban development projects that have occurred over the past century. Particularly relevant to this Project, the modifications include three known activities that may have resulted in the use or release of hazardous materials on the Ballona Reserve or on the SoCalGas Property: the placement of dredge and other fill materials; the dumping and treatment of celery waste; and oil and natural gas production and storage. Each of these historical activities is discussed in the following sections.

Dredge and Fill Materials

As discussed in Chapter 2, *Description of Alternatives*, over 2 million cubic yards of onsite soil would be reworked as a part of the restoration activities for Alternative 1. To evaluate the potential for the above-listed activities to have resulted in residual chemicals present at concentrations above action levels, soil and sediment samples in Areas A and B at the Ballona Reserve were analyzed during several investigations to test for the presence of various chemicals based on site history.[86] The most recent investigations that provide chemical analyses relevant to hazardous materials are the *Ballona Wetlands Restoration Project Sediment Quality Investigation* (this Sediment Quality Investigation is provided in Appendix F5) and the 2014 *Toxicity Evaluation of Ballona Wetlands Sediment Cores, Southern California Coastal Water Research Project* (Appendix F5, p. C-1 et seq.). The Sediment Quality Investigation included the results of a 2008 soil sampling investigation (Weston 2009) for a total of 51 soil samples from

[86] Area C was not the focus of a similar investigation because proposed restoration activities would not involve the kind of disturbances that would take place in Areas A and B; instead, restoration activities primarily would place fill in Area C to create upland habitat.

27 soil borings at various locations within Areas A and B. The locations were selected to represent the different proposed location use types (e.g., levees, wetlands, upland habitat). The 2014 Toxicity Evaluation incorporated the results of a previous chemistry investigation into a sediment bioassay investigation of five sediment samples collected from locations in Areas A and B at depths to represent the approximate depth of the future estuary. The samples were analyzed for toxicity testing and one sample also was chemically analyzed for metals, polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), organochlorine pesticides, phthalates, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), sulfides, ammonia, and petroleum hydrocarbons in the gasoline and diesel range. The samples were tested by bioassay for toxicity where certain marine arthropods are placed in water for a certain time period with sediments collected from the Ballona Reserve to test whether the sediment increases the mortality of the arthropods. The results were evaluated for four potential uses (wetland surface materials, wetland foundation materials, upland materials, or ocean disposal) against several ecologic, two human health, two hazardous waste, and one ocean disposal criteria, as discussed below.

Ecologic Criteria

The Sediment Quality Investigation compared the results to criteria developed to evaluate dredged material for ocean disposal, including the Effects Range- Low (ER-L) and Effects Range-Median (ER-M) values.[87] The criteria are used in assessing the potential biological impact of elevated constituents of concern. The results indicated that silver was present at concentrations exceeding ER-L values in two samples for materials that would be used as wetland surface material and in one sample for materials that would be used as wetland foundation material (ESA 2015). In addition, silver, copper, arsenic, lead, zinc, and DDT were present at concentrations exceeding ER-L values in up to three samples for materials proposed for upland restoration. However, the investigation noted that some of the ER-L metals values were below naturally-occurring background levels for marine sediments suggesting that these screening level criteria may not be applicable for this site. No metals exceeded the corresponding ER-M values for any of the samples analyzed.

To further evaluate the sediments, bioassay tests were conducted on five of the samples discussed above to analyze the causes of an increased level of mortality in arthropods (Greenstein and Bay 2014). The results revealed that the increased mortality was actually associated with a higher percentage of fine-grained sediments (silt- and clay-sized particles) and not with any particular chemical. The survival rate increased with an increase in sand content. The bioassay investigation concluded that the sediments are acceptable for habitat reuse in the Ballona Reserve restoration.

Human Health Criteria

The Sediment Quality Investigation also evaluated the analytical results for sediment samples that were tested for PAHs, PCBs, organochlorine pesticides, metals, and petroleum hydrocarbons. The results were compared to California Human Health Screening Levels (CHHSLs) and Preliminary

[87] Effects Range-Low (E-RL) and Effects Range Medium (E-RM) are threshold criteria used in dredged material evaluation for Ocean Disposal in combination with the results of bioassay testing and bioaccumulation testing (See also explanation in Appendix F).

Remediation Goals (PRGs; now referred to as Regional Screening Levels (RSLs)[88]), which are screening levels used by the Cal/EPA and the USEPA, respectively, to evaluate risks to human health for residential or commercial land uses. None of the sediment samples exceeded residential or commercial CHHSLs and RSLs for PAHs, PCBs, organochlorine pesticides, or benzo[a]pyrene. Arsenic concentrations exceeded the CHHSL criteria for residential and commercial land uses in all of the 21 samples that were collected and analyzed. Arsenic concentrations also were exceeded in all but four samples compared to RSLs for commercial purposes (see Table 5 in Appendix F5 for further details). However, the detected concentrations were consistent with the naturally-occurring background levels in typical marine sediments, as also discovered and reported in an earlier 2008 study (Weston, 2009 as cited in ESA, 2015); accordingly, the arsenic concentrations are within the typical range of marine sediments and do not exhibit a potential human health risk prior to approval of use as fill.

During the drilling of boreholes, some intervals were observed to be stained in a way that suggested the presence of petroleum hydrocarbons, and, further, a petroleum product odor was noted in those sediments. As discussed above, the Ballona Reserve and the surrounding area was an active oil-producing region in the 1930s and has been used for natural gas storage since then. The stained samples were analyzed for the presence of petroleum hydrocarbons. Although petroleum hydrocarbons were detected, the concentrations were all below the relevant CHHSLs and RSLs (see Table 6 Appendix F5 for full details).

Hazardous Waste Criteria

As discussed in Chapter 2, *Description of Alternatives*, some of the excavated soils and sediments that would not be used for onsite wetland restoration or upland habitat would be sent for offsite disposal at one of several different landfills. The Sediment Quality Investigation also compared the reported concentrations of the various chemical compounds to three hazardous waste levels: the total threshold limit concentrations (TTLCs), soluble threshold limit concentrations (STLCs), and toxicity characteristic leaching procedure (TCLPs). These criteria typically are used by landfills as acceptance criteria for waste. Concentrations below these levels are considered non-hazardous waste and can be accepted by Class III landfills with no restrictions or used as fill for upland areas at the Ballona Reserve. None of the samples had concentrations above the landfill acceptance criteria.

Ocean Disposal Criteria

The Sediment Quality Investigation also concluded that based on the available results, the possible disposal of excavated sediments that would not be used for onsite wetland restoration or upland habitat at a designated ocean disposal or open water placement site remains a potential alternative, if needed (ESA 2015). However, the determination of suitability would require

[88] USEPA Region IX Regional Screening Levels (RSLs) are screening levels used by the USEPA Region IX to help evaluate whether a particular site may require further investigation and possibly cleanup. RSLs are a combination of the PRGs, noted above, and screening levels used by USEPA Regions 3 and 6. Like CHHSLs and PRGs, RSLs are risk-based concentrations derived from standardized equations combining exposure information assumptions with USEPA toxicity data. RSLs are considered by the USEPA to be protective for humans (including sensitive groups, such as children) over a lifetime; however, RSLs are not always applicable to a particular site and do not address non-human health endpoints, such as ecological impacts.

further biological testing in accordance with Corps guidelines summarized in the Sediment Quality Investigation.

Celery Waste Dump Site

A portion of the Ballona Reserve historically had been used for agricultural purposes. (See Section 3.1.3.2, *Agriculture and Forestry Resources*). Relative to hazardous materials issues, approximately 5 to 10 acres of the northeastern portion of Area A was used as a dump site for celery waste from 1945 to 1953 (Law/Crandall 1996) (see Figure 3.8-1, *Local Hazardous Materials Sites*). The materials disposed of were packing house waste, including celery leaves and trimmings. The waste was allowed to decompose on the surface before being disked into the soil each year. The celery waste (stalks, leaves, roots) would not present a hazardous waste issue since the celery material would decompose into innocuous soil. However, records indicate that the waste piles were periodically sprayed with gamma-hexachlorocyclohexane (commercially sold as Lindane) and fuel oil for odor and pest control (specifically flies). Lindane is an organochlorine pesticide used as an agricultural insecticide.

As a part of a state-wide program to evaluate solid waste disposal sites, the celery waste dump site was identified and then investigated between 1988 and 1996 (Law/Crandall, 1996). Soil and groundwater samples were collected from the location of the dump and analyzed for VOCs, SVOCs, metals, PCBs, petroleum hydrocarbons (including fuel oil) and pesticides (including Lindane). No celery leaves or trimmings were observed during the sampling events. No chemicals associated with the celery waste dump, including Lindane and fuel oil, were detected in the samples collected. No other hazardous waste materials were identified as part of the former agricultural activities.

Natural Gas Storage Wells

The western half of the Ballona Reserve is on the eastern part of the SoCalGas Company's Playa del Rey Storage Field[89], originally an oil field that produced from about 6,100 feet below the ground surface (SoCalGas 2008). The field produced oil for about 10 years during the 1930s. In 1942, a depleted portion of the oil field was turned into an underground natural gas storage facility. Pacific Lighting (a predecessor of SoCalGas) purchased the gas reservoir in 1955 and has been operating the gas field ever since. The gas is stored in the sandstone formation 6,100 feet below ground level and is covered by 1,500 feet of impermeable shale that provides a seal on the porous storage area below. SoCalGas continues to monitor and operate at the site and oversees a system of monitoring wells and pipelines within the Ballona Reserve. As part of the ongoing safety and maintenance efforts, SoCalGas performs routine patrols and have set up a soil gas monitoring program performed by a California Public Utilities Commission third party consultant. Currently, the storage field is operated through 54 wells directionally drilled from the lowlands and hilltop of Playa Del Rey (PDR). Of these 54 wells, 25 are injection/withdrawal wells used to inject and extract gas, 8 are liquid (primarily water) removal wells, 3 are lateral migration wells to control gas movement, and 18 are observation wells used to monitor pressure and liquid saturation.

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89 The boundaries of the area of influence of the Playa del Rey Storage Field do not conform to a typical geometric shape. The approximate boundaries are on the north from Marquesa Way to Mindanao Way, on the south along 92nd Street, on the east along Park Hill Drive from 92nd Street north through the State owned lands, and on the west to the Pacific Ocean (SoCalGas Company 2008; Playa del Rey Storage Pamphlet).

Ballona Wetlands Restoration Project

Figure 3.8-1
Local Hazardous Material Sites

During an investigation of gas migration for the offsite residential development to the south, gases (both biogenic [naturally occurring in shallow deposits] and thermogenic [natural gas found deeper in the earth from buried organic material]) were detected by during a soil gas survey in the Playa Vista area (ETI 2000). Following a second phase of evaluation ETI (2001) concluded, "storage gases are not present in any of the methane anomalies observed east of Lincoln Blvd." Routine surface monitoring SCG wells found storage gases were reaching the surface through casing leaks and along the well casings in three wells. Biogenic gas was detected in four abandoned wells in the PDR field area, resulting in re-abandonment of these wells to eliminate the leaks. Biogenic gas in the area is probably related to decomposition of organic material deposited within a lagoon environment and not an indication of a release of the stored natural gas at depth.

Hazardous Materials Sites

This section summarizes the seven active hazardous materials sites identified within 0.25 miles of the Project site. The information was acquired by reviewing the State Water Resources Control Board (SRWCB) GeoTracker and Department of Toxic Substances Control (DTSC) EnviroStor websites to identify each site and to obtain its current status. The GeoTracker and EnviroStor websites are used by the regulatory agencies to post historical and current hazardous materials site activities, along with the current site status. Recent status reports as cited in the site descriptions below were downloaded from the regulatory agency websites. The locations of each site are shown on Figure 3.8-1, *Local Hazardous Materials Sites*. Only active sites within 0.25 mile were included as sites located farther away would be unlikely to have the potential to affect the Ballona Reserve or the SoCalGas Property. Closed sites are not listed because their status as "closed" indicates they no longer are considered by the regulatory agency to pose a threat to human health or the environment. According to a review of solid waste disposal sites identified by the Regional Water Quality Control Board, the Project site nor surrounding areas were listed with waste constituents above hazardous waste levels outside the waste management unit (RWQCB, 2016).

Los Angeles County Sheriff Station, 13851 Fiji Way, Marina del Rey

The Station is located on the west side of Fiji Way, west of Area A. In December 1998, three 1,500-gallon steel gasoline underground fuel storage tanks (USTs), one 1,000-gallon steel diesel UST, and associated piping were removed from the station (SLR 2015). Petroleum hydrocarbons mostly in the gasoline range were detected in soil and groundwater at the Station. Subsequent remediation included soil excavation, two rounds of in-situ chemical treatment of soil and groundwater, and groundwater monitoring. The concentrations of gasoline in groundwater have been decreasing in response to the treatment activities, and groundwater beneath the site is being monitored to tack the remediation progress. The extent of the plume of gasoline and gasoline components of benzene, toluene, ethylbenzene, and xylenes in groundwater as of October 8, 2014, is confined to the Station and does not extend east to Area A. On October 8, 2014, the depth to groundwater ranged from 2.57 to 7.71 feet below the ground surface at the Station. The direction of groundwater flow beneath the majority of the Station was generally to the west but may be influenced by tidal variations.

Del Rey Cleaners, 310 Culver Boulevard, Playa del Rey

This property, located approximately 200 feet southeast of the southern border of Area B, was an auto repair garage from 1935 to 1962, and a dry cleaners from 1962 to 2007 (Bowyer 2014). The dry cleaning operations were conducted onsite and used the most common dry cleaning solvent, perchloroethene (also known as PCE, perc, or tetrachloroethene). The operations resulted in the release of PCE into soil and groundwater beneath the former dry cleaners. In 2002, a soil and groundwater investigation confirmed the presence of PCE in soil and groundwater (Targhee 2002). The maximum PCE concentration in soil was 3,590 ug/kg, below the industrial RSL of 39,000 mg/kg. The maximum PCE concentration in groundwater was 43,500 micrograms per liter (ug/L), above the California Department of Public Health Maximum Contaminant Levels (MCLs), the primary drinking water standard for California of 5 ug/L[90]. The direction of groundwater flow measured on January 14, 2002, was to the southeast. No other groundwater flow direction measurements have been performed for this property. However, this location is close to the ocean and it is possible that the groundwater flow directions beneath the site vary due to tidal fluctuations. In addition, the former dry cleaners location is on the edge of the east to west bluffs along Cabora Drive south of the Ballona Reserve. Groundwater flow directions typically mimic the surface topography, which would suggest a groundwater flow direction with some combination of north and west. Considering how little investigation has been done at former dry cleaners site, it is possible that the contaminant plume from the former dry cleaners has spread to beneath the southwestern portion of Area B.

A soil vapor and soil sampling event was conducted at the former dry cleaners site and reported in March 2014 (Bowyer 2014). Soil vapor samples detected PCE and its degradation products (trichloroethene [TCE], cis-1,2-dichloroethene [cis-1,2-DCE], trans-1,2-DCE and vinyl chloride), along with some chlorobenzene and chloroform. The highest reported PCE concentration in soil vapor was 210,000 micrograms per liter (ug/L), which exceeded CHHSLs. The soil samples also had PCE, TCE and cis-1,2-DCE, along with some 1,4-dichlorobenzene. The highest PCE concentration in soil was 600,000 micrograms per kilogram (ug/kg), which exceeded the RSL.

The Panama Site, 12922 Panama Street, Los Angeles

The Panama site property is located in the block bordered by Culver Boulevard, Alta Street, Panama Street, and Beethoven Street, about 500 feet northeast of Area C. The Panama site was used for electronics and aerospace manufacturing from the mid 1950's until late 2013 (Alta 2014). The property continues to be used for chemical and hazardous waste storage. Past chemical uses included solvents, paints, and metals. Chlorinated solvents (PCE and TCE) and Title 22 metals (chromium and nickel) associated with these manufacturing activities have affected soil and groundwater at the site. Site characterization is currently underway and is incomplete. Shallow groundwater has been documented at about 10 to 12 feet below the ground surface, and the site flows to the southwest toward the Ballona Reserve. Various concentrations of chlorinated VOCs (PCE, TCE, cis-1,2-DCE, 1,1-dichloroethane [1,1-DCA], and vinyl chloride) were detected in groundwater beneath the site at concentrations above California MCLs. Although several metals (antimony, arsenic, barium, beryllium, cadmium, chromium, nickel, and selenium) were also detected in groundwater beneath the site at concentrations above MCLs, the concentrations of the metals are considered to be within background levels for the uppermost groundwater zone in the site vicinity.

[90] MCLs apply to the maximum concentration allowed in drinking water ("out of the tap"). However, MCLs commonly are used for comparison purposes in initial site characterizations even though underlying groundwater resources may not be used as a drinking water source, such as the case for this site. This is because PCE does not occur naturally in groundwater and the State Water Quality Control Board established the Nondegradation Policy 68-16 that requires groundwater quality be maintained at its existing quality.

The area offsite from and adjacent to the Panama site was investigated in January and February 2015 (Alta 2015). The depth to groundwater at this location on February 2, 2015, ranged from 9.85 to 12.20 feet below the ground surface. Groundwater flows to the southwest toward the Ballona Reserve and the down gradient extent of the contaminated groundwater has not yet been defined.

Marina Waterside Shopping Center – Former Bon Marche/One Hour Cleaners, 4704 Admiralty Way, Marina Del Rey

This active site is located about 700 feet north of Area A, at the east corner of Admiralty Way and Mindanao Way. A former dry cleaner operated on this site from about 1970 to 1987 (LARWQCB 2015). Site assessments were conducted in 2003 and 2004. PCE and TCE were detected in soil and groundwater at concentrations that warranted remediation. As of 2006, approximately 2,100 tons of soil and 1,400 gallons of groundwater were removed from the site. The direction of groundwater flow at the site was not evaluated. Site constraints at that time required that some soil contaminated with PCE and TCE be left in place. However, the Los Angeles Regional Water Quality Control Board (LARWQCB) has concluded that the site will require further remediation due to the remaining concentrations of PCE and TCE in soil vapor, soil, and groundwater.

Based on the investigations conducted at the nearby Chevron station discussed below, the depth to groundwater at the Marina Waterside Shopping Center site ranged from 7.24 to 7.85 feet below the ground surface on January 2, 2015. The direction of groundwater flow is reported to be variable, typically to the west and south, which could be toward the Ballona Reserve (Leidos 2015). However, the groundwater flow direction on July 15, 2014, was to the north, at least on the Chevron property, suggesting that the groundwater flow direction may be periodically affected by tidal variations.

O'Neil Data System, 12655 Beatrice Street, Los Angeles

The O'Neil Data System site is located about 820 feet east of the eastern corner of Area C. This site formerly was used for the assembly and manufacturing of respirator products and the assembly of computers, which resulted in the release of chlorinated solvents (PCE and its degradation daughter products) to soil and groundwater (Partner 2014). Soil and groundwater investigations and cleanup actions have been in progress at the site since 1999 under the oversight of the RWQCB. The former USTs have been removed; several remediation activities, including the injection of potassium permanganate, have been implemented; and chemical concentrations have decreased from initial levels. The depth to groundwater was 17.79 to 21.98 feet below the ground surface at this site on March 19, 2015. The direction of groundwater flow is to the southwest (Partner 2015). The chlorinated solvents in groundwater are limited to the site and do not extend onto the Ballona Reserve.

Former Fire Safety Training Area (now Playa Vista Elementary School #22 [Lot 6]), 13150 West Bluff Creek Drive, Los Angeles

The Former Fire Safety Training Area (FSTA) is located about 1,000 feet east of the eastern border of Southeast Area B. The FSTA is part of a larger investigation area referred to as the Playa Vista Property (CDM 2014). Several localized sites, including the FSTA are included within this monitoring program. The FSTA is now the Playa Vista Elementary School (also known as Lot 6). Excavation of soil contaminated with petroleum hydrocarbons and vinyl chloride followed by backfilling with clean soil was conducted between February 8 and May 5, 2010. A groundwater treatment system is currently in operation to limit the extent of chemicals in groundwater and, according to the October/November 2014 monitoring data, the plume does not extend to the Ballona Reserve or the Freshwater Marsh (CDM 2015).

Chevron Station No. 9-3910, 4680 Lincoln Boulevard, Marina del Rey

Chevron Station No. 9-3910 is located on the north corner of Lincoln Boulevard and Mindanao Way, about 1,600 feet northwest of the northwest border of the Ballona Reserve (Leidos 2015). Gasoline- and diesel-range petroleum hydrocarbons have been detected in soil and groundwater at this site due to past product line leaks first detected in 1978. The USTs and pipelines were replaced in 1981, one 4,000 gallon underground storage tank (UST) was removed in 1989 along with an unreported amount of soil, and an additional 3,235.6 tons of soil were removed in 1996. The depth to groundwater at this site ranged from 7.24 to 7.85 feet below the ground surface on January 2, 2015. The direction of groundwater flow is reported to be variable, typically to the west and south, although the January 2, 2015, measurements also indicated some areas of flow to the north and east. This suggests that groundwater flow direction may be affected by tidal variations. The highest concentrations of gasoline- and diesel-range petroleum hydrocarbons in groundwater are at the southern corner of the Chevron property, and the full extent to the south has not been defined.

Proximity to Schools, Daycare Centers, Nursing Homes, and Hospitals

Schools, daycare centers, nursing homes, and hospitals are considered sensitive receptors because children, the elderly, and the ill are more susceptible than healthy adults to the impacts of hazardous materials. The following schools and daycare centers are located within 0.25 mile of the Ballona Reserve as shown on Figure 3.8-2, *Nearby Schools*. As indicated in Section 3.1.4.2, *Cumulative Scenario*, no new schools are proposed within 0.25 mile of the Project site. No nursing homes or hospitals are located within 0.25 mile of the Project site.

1. Loyola Marymount University (specifically the Loyola Marymount School of Film and TV and the Loyola Marymount University Children's Center) located approximately 450 feet from southeastern tip of Southwest Area B;

2. Playa Vista Elementary School located approximately 900 feet to the east of Southeast Area B;

3. Westside Neighborhood School located approximately 1,000 feet to the southeast of South Area C;

4. Paseo Del Rey Natural Science Magnet School located approximately 1,200 feet south of the SoCalGas Property; and

5. First Friends by the Sea Daycare Center located about 1,000 feet west of the western side of West Area B.

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Figure 3.8-2
Nearby Schools

Proximity to Airports

Aviation safety hazards can result if projects are sited on or in the vicinity of airport property. Specifically, airport land use compatibility plans have land use restrictions relating to height, noise, distracting light or glare, and attractants to wildlife such as birds. The Ballona Reserve and the SoCalGas Property are not located within an airport land use plan, but do lie within 2 miles of a public airport or public use airport. Although the Los Angeles International Airport (LAX) is located approximately 1 mile south of the Project site, the Project site is not located within the LAX Airport Influence Area or Runway Protection Zones (LAC ALUC 2003). There are no private airports located within 2 miles of the Project site.

Wildfires

Government Code §§51175-89 directs the California Department of Forestry and Fire Protection (CAL FIRE) to identify areas of very high fire hazard severity zones within Local Responsibility Areas (LRA). Mapping of the areas, referred to as Very High Fire Hazard Severity Zones (VHFHSZ), is based on data and models of potential fuels over a 30- to 50-year time horizon and their associated expected fire behavior, and expected burn probabilities to quantify the likelihood and nature of vegetation fire exposure (including firebrands) to buildings.

According to the figure "Fire Hazard Severity Zones in LRA – Los Angeles County" of the Fire and Resource Assessment Program, California Department of Forestry and Fire Protection, all of South Area B and Southeast Area B, and portions of North and West Area B are considered a High Fire Risk Area (CAL FIRE 2011). In addition, the SoCalGas Property, including the natural gas storage well relocation sites, are identified within a high fire hazard severity area. Fire Hazard Severity Zones are identified as moderate, high, and very high hazard severity zones using a science-based and field-tested computer model that assigns a hazard score based on the factors that influence fire likelihood and fire behavior. Factors considered include fire history, existing and potential fuel (natural vegetation), flame length, blowing embers, terrain, and typical weather for the area. Neither Area A nor Area C is considered to be within high a fire risk zone.

3.8.3 Applicable Laws, Regulations, Plans, and Standards

Federal, state, and local laws and regulations regulate the use, storage and transport of hazardous materials and the potential for hazardous circumstances to protect human health and the environment. The USEPA, the California DTSC, Regional Water Quality Control Board (RWQCB), and the County of Los Angeles are the primary agencies enforcing these regulations. Local regulatory agencies enforce many Federal and state regulations through the USEPA's Certified Unified Program Agencies (CUPA) program. In 1997, the Los Angeles County Fire Department (LACoFD) Health Hazardous Materials Division became the County's CUPA for the Hazardous Waste Generator Program, the Hazardous Materials Release Response Plans and Inventory Program, the California Accidental Release Prevention (CalARP) Program, and the Aboveground Storage Tank Program and the Underground Storage Tank Program in the County.

3.8.3.1 Federal

Primary Federal agencies with responsibility for hazardous materials management include the USEPA, Department of Labor (Federal Occupational Health and Safety Administration

[OSHA]), and Department of Transportation (DOT). Federal laws and regulations governing hazards and hazardous materials and relevant to this analysis of potential impacts are summarized below.

Resources Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act was adopted in 1976. RCRA Subtitle C regulates the generation, transportation, treatment, storage and disposal of hazardous waste by "large-quantity generators" (1,000 kilograms per month or more) as well as "small quantity generators" (under 1,000 kilograms) through comprehensive life cycle or "cradle to grave" tracking requirements. The requirements include maintaining inspection logs of hazardous waste storage locations, records of quantities being generated and stored, and manifests of pick-ups and deliveries to licensed treatment/storage/disposal facilities. RCRA also identifies standards for treatment, storage, and disposal, which is codified in 40 C.F.R. Part 260. RCRA applies to this analysis because contractors would be required to comply with its hazardous waste requirements to reduce the possibility of spills.

According to RCRA Subpart C and the USEPA, materials and waste are considered hazardous based on four characteristics:

1. ***Ignitability.*** Ignitable wastes can create fires under certain conditions, are spontaneously combustible, or have a flash point less than 60 °C (140 °F). Examples include waste oils and used solvents.
2. ***Corrosivity.*** Corrosive wastes are acids or bases (pH less than or equal to 2, or greater than or equal to 12.5) that are capable of corroding metal containers, such as storage tanks, drums, and barrels. Battery acid is an example.
3. ***Reactivity.*** Reactive wastes are unstable under "normal" conditions. They can cause explosions, toxic fumes, gases, or vapors when heated, compressed, or mixed with water. Examples include lithium-sulfur batteries and explosives.
4. ***Toxicity.*** Toxic wastes are harmful or fatal when ingested or absorbed (e.g., containing mercury, lead, etc.)

DOT Hazardous Materials Transportation Act (49 U.S.C. §5101)

DOT, in conjunction with the USEPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to safe storage and transportation of hazardous materials. 49 C.F.R. Sections 171 through 180, regulate the transportation of hazardous materials, types of material defined as hazardous, and the marking of vehicles transporting hazardous materials. This Act applies to this analysis because contractors would be required to comply with its storage and transportation requirements to reduce the possibility of spills.

The Federal Motor Carrier Safety Administration (49 C.F.R. Part 382)

The Federal Motor Carrier Safety Administration, a part of the DOT, issues regulations concerning highway routing of hazardous materials, the hazardous materials endorsement for a commercial driver's license, highway hazardous material safety permits, and financial responsibility requirements for motor carriers of hazardous materials. This Act applies to this analysis because contractors would be required to comply with its storage and transportation requirements to reduce the possibility of spills.

Occupational Safety and Health Administration (OSHA; 29 U.S.C. §15)

OSHA is the Federal agency responsible for ensuring worker safety. The Occupational Safety and Health Act of 1970 and its implementing regulations provide standards for safe workplaces and work practices, including those relating to hazardous materials handling. OSHA's oversight applies to this analysis because contractors would be required to comply with its hazardous materials management and handling requirements to reduce the possibility of spills and protect worker safety.

3.8.3.2 State

The primary State agencies with jurisdiction over hazardous materials and hazardous waste management are the DTSC and the RWQCB. Other State agencies involved in hazardous materials management are the Department of Industrial Relations (State OSHA implementation), State Office of Emergency Services (OES) - CalARP implementation, California Air Resources Board (CARB), California Department of Transportation (Caltrans), State Office of Environmental Health Hazard Assessment (OEHHA), California Integrated Waste Management Board (CIWMB), and the California Highway Patrol (CHP). Hazardous materials management laws in California include the following statutes and regulations promulgated there under.

Hazardous Waste Control Act (HWCA; California Health and Safety Code §25100 et seq.)

The HWCA is the state equivalent of RCRA and regulates the generation, treatment, storage, transportation, and disposal of hazardous waste. This Act implements the RCRA "cradle-to-grave" waste management system in California but is more stringent in its regulation of non-RCRA wastes, spent lubricating oil, small-quantity generators, transportation and permitting requirements, as well as in its penalties for violations. HWCA applies to this analysis because contractors would be required to comply with its hazardous waste requirements to reduce the possibility of spills.

Government Code Section 65962.5 (the "Cortese" List)

The provisions in Government Code Section §65962.5 commonly are referred to as the "Cortese List," in reference to the Legislator who authored the legislation that enacted it. The list and a particular site's presence on it are relevant to local permitting processes and CEQA compliance. Although the statute refers to the preparation of a "list" of specific types of information, the information now largely is available on the internet sites of the responsible governmental agencies identified in the statute. A website of the California Environmental Protection Agency (CalEPA) lists the data resources that provide information regarding the facilities or sites identified as meeting Cortese List requirements (CalEPA 2016a, CalEPA 2016b). They are as follows:

1. List of Hazardous Waste and Substances sites from the DTSC EnviroStor database;

2. List of Leaking Underground Storage Tank Sites by County and Fiscal Year from the SWRCB's GeoTracker database;
3. List of solid waste disposal sites identified by the SWRCB with waste constituents above hazardous waste levels outside the waste management unit;
4. List of "active" Cease and Desist Orders and Cleanup and Abatement Orders from the SWRCB as refined or clarified by the applicable RWQCB; and
5. List of hazardous waste facilities subject to corrective action pursuant to Health and Safety Code §25187.5 as identified by DTSC.

California Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act)

The Business Plan Act requires preparation of Hazardous Materials Business Plans (HMBPs) and disclosure of hazardous materials inventories, including an inventory of hazardous materials handled, plans showing where hazardous materials are stored, an emergency response plan, and provisions for employee training in safety and emergency response procedures (Health and Safety Code §25500 et seq.). Statewide, DTSC has primary regulatory responsibility for management of hazardous materials, with delegation of authority to local jurisdictions that enter into agreements with the state. Local agencies are responsible for administering these regulations.

Several state agencies regulate the transportation and use of hazardous materials to minimize potential risks to public health and safety, including CalEPA and the California Emergency Management Agency. The CHP and Caltrans enforce regulations specifically related to the transport of hazardous materials. Together, these agencies determine container types used and license hazardous waste haulers for hazardous waste transportation on public roadways.

The Business Plan Act applies to this analysis because contractors would be required to comply with its handling, storage, and transportation requirements to reduce the possibility of spills, and to prepare an emergency response plan to respond to accidental spills.

California Division of Occupational Safety and Health (Cal/OSHA)

Cal/OSHA is responsible for developing and enforcing workplace safety standards and assuring worker safety in the handling and use of hazardous materials. Among other requirements, Cal/OSHA requires many entities to prepare injury and illness prevention plans and chemical hygiene plans, and provides specific regulations to limit exposure of workers to lead. OSHA applies to this analysis because contractors would be required to comply with its handling and use requirements to reduce the possibility of spills, and to prepare an emergency response plan to respond to accidental spills.

Emergency Response and Evacuation Plans

California has developed an emergency response plan to coordinate emergency services provided by Federal, state, and local government agencies and private organizations (California Health and Safety Code §25500 et seq.). Responding to hazardous materials incidents is one part of this plan, as is responding to intentional acts of destruction. Another part involves development of a downstream evacuation plan for areas within the potential inundation area of a dam.

For Los Angeles County, the Operational Area Emergency Response Plan is administered by the Los Angeles County Office of Emergency Management (OEM), which is charged "with responsibility for organizing and directing the preparedness efforts of the Emergency Management Organization of Los Angeles County. OEM is the day-to-day Los Angeles County Operational Area coordinator for the entire geographic area of the county" (Los Angeles County Office of Emergency Management 2016; Los Angeles County 2011). The Plan serves as a guide for the County's response to emergencies and disasters in the County. As shown on Figure ES-2, *Project Site*, Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard are the only paved publically-accessible roads that cross the Ballona Reserve. Lincoln Boulevard is listed as a designated disaster route by the County of Los Angeles Department of Public Works and Culver Boulevard is a tsunamic evacuation route (LADPW 2008).

Response to emergencies in the Project area is facilitated by responding agencies, such as the Los Angeles County Fire Department and the Los Angeles Police Department. The Los Angeles City Fire Department Fire Station 67 at 5451 Playa Vista Drive in Playa Vista is located just east of East Area B and serves the Project site. The Los Angeles County Fire Department adopted a Wildfire Action Plan in 2009 that contains guidelines recommending fire prevention measures such as creating defensible space and completing fire-resistive retrofits in homes (LACoFD 2009). In addition, this plan provides residents with information regarding emergency preparedness and planning in the event of a wildfire. Compliance with this plan applies to this Project because the state has delegated the authority for wildfire in this location to the local jurisdiction.

California Vehicle Code Section 38366

Section 38366 requires spark-arresting equipment on vehicles that travel off-road. This code section applies to this analysis because any construction-related or other Project vehicle that travels in an off-road area would be required to have spark-arresting equipment to reduce the risk of wildfires.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates investor-owned electric and natural gas utilities operating in California. On June 16, 1945 a constitutional amendment was proposed by the legislature to rename the Railroad Commission as the California Public Utilities Commission, which was ratified by the electorate on November 5, 1946. As a result of the amendment, the Constitution of California declares that the Public Utilities Code is the highest law in the state, that the legislature has unlimited authority to regulate public utilities under the Public Utilities Code, and that its provisions override any conflicting provision of the State Constitution which deals with the subject of regulation of public utilities.

The CPUC regularly performs field and headquarter inspections and audits of practices and procedures developed by these gas utilities. The utilities also perform audits and report to the CPUC on an ongoing basis their practices, procedures, and progress on a variety of issues. CPUC gas safety engineers are trained and qualified by the federal government. The CPUC enforces natural gas and LPG safety regulations; inspects construction, operation, and maintenance activities; and makes necessary amendments to regulations to protect and promote the safety of the public, the utility employees that work on the gas pipeline systems, and the environment.

3.8.3.3 Local

State agencies acting in their sovereign capacity are not subject to local regulations unless the California Constitution says they are or the Legislature has consented to such regulation. However, local regulations are mentioned in this EIS/EIR because this analysis contemplates actions by SoCalGas outside of state property. Moreover, local plans and policies help inform this analysis related to hazards and hazardous materials.

Certified Unified Program Agency

In 1993, Senate Bill (SB) 1082 was passed by the State Legislature to streamline the permitting process for those businesses that use, store, or manufacture hazardous materials. The passage of SB 1082 provided for the designation of a CUPA that would be responsible for the permitting process and collection of fees. The CUPA would be responsible for implementing the program at the local level to consolidate, coordinate, and make consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental and emergency management programs:

1. Hazardous Materials Release Response Plans, Inventories, and Hazardous Materials Business Plans (collectively, “HMBPs”)
2. California Accidental Release Prevention (CalARP) Program
3. Underground Storage Tank (UST) Program
4. Aboveground Petroleum Storage Act Requirements for Spill Prevention, Control and Countermeasure (SPCC) Plans
5. Hazardous Waste Generator and On-Site Hazardous Waste Treatment (tiered permitting) Programs
6. California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements

As the CUPA in Los Angeles County, the LACoFD has primary regulatory responsibility for implementing and managing the above-listed programs. The contractors for the Project would be required to prepare and implement a HMBP for their onsite activities.

3.8.4 Thresholds of Significance

In this analysis, the Corps has elected to evaluate the context and intensity of potential environmental consequences relative to the criteria identified in CEQA Guidelines Appendix G, Section VIII (revised as discussed below). In addition, the analysis considers where improvements of the Project would provide a net benefit relative to the conditions described in Section 3.8.2, *Affected Environment*.

For purposes of this analysis, Alternative 1, 2, 3, or 4 would have a significant impact related to hazards and hazardous materials if it would:

HAZ-1 Create a significant hazard to the public or the environment through the routine transport, use, or disposal, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials;

HAZ-2 Create a significant hazard to the public or the environment by disturbing existing contaminated soil or groundwater at the Ballona Reserve;

HAZ-3 Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed sensitive receptor;

HAZ-4 Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;

HAZ-5 Be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, or within the vicinity of a private airstrip, and result in a safety hazard for people residing or working in the project area;

HAZ-6 Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and/or

HAZ-7 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.

Criterion HAZ-1 combines the first two Appendix G criteria addressing the routine use and accidental spills of hazardous materials during restoration and post-restoration activities. These two criteria have been combined because the same sets of regulations address both criteria, as discussed below.

Criterion HAZ-2 has been added for this analysis specifically to address the potential for restoration or Project-related construction activities to disturb or encounter potentially contaminated soil or groundwater that may be present at the Project site from historical activities or from the migration of contaminated groundwater from nearby sites with contaminated groundwater.

Criterion HAZ-5 is a combination of the two Appendix G Section VIII criteria addressing airports (criteria e) and f)).[91] These have been combined because there is only one airport within 1 mile of the Project site.

91 Pursuant to CEQA Guidelines Appendix G criterion (e), a project located within the boundaries of an airport land use plan or, where such a plan has not been adopted, a project located within 2 miles of a public airport or public use airport would result in a significant adverse impact if it would result in a safety hazard for people residing or working in the project area. Similarly, pursuant to CEQA Guidelines Appendix G Section VIII criterion (f), a project located in the vicinity of a private airstrip would result in a significant adverse impact if it would result in a safety hazard for people residing or working in the project area.

3.8.5 Methodology

3.8.5.1 List of Primary Documents Used in the Analysis

Hazards and hazardous materials information for the Project site was derived from various sources to develop a comprehensive understanding of the potential constraints and hazards associated with Project activities. The primary hazardous materials investigations prepared specifically for portions or all of the Ballona Reserve are cited below, were relied on to inform the analysis of hazardous materials-related impacts. Other documents relied upon in this analysis are cited in the text and full references are provided in Section 3.8.9, *References*.

1. Environmental Science Associates (ESA). 2015, *Ballona Wetlands Restoration Project, Sediment Quality Investigation*. May 15. [Appendix F5]

2. Greenstein, Darren and Steven Bay, 2014. *Toxicity Evaluation of Ballona Wetlands Sediment Cores, Southern California Coastal Water Research Project*. November 7. [Appendix E2]

3. Law/Crandall, 1996. *Report of Solid Waste Assessment Test (SWAT), Celery Dump – Parcel A, Playa Vista Project, Los Angeles, California*. May 7.

3.8.5.2 Assessment Methodology

The following analysis evaluates the impacts from hazards and hazardous materials that would result during and following the proposed restoration under Alternatives 1, 2, or 3 as well as under Alternative 4, *No Federal Action/No Project*. Based upon the existing conditions described in Section 3.8.2, Affected Environment, the impact analysis assesses the direct and indirect impacts and determines whether the Project would trigger a threshold listed above. Site-specific investigations and the information contained in a search of the Cortese List regulatory agency databases were used to evaluate the subject property and surrounding properties for any records of past releases, investigations, and cleanup activities. Properties farther than 0.25 mile from the Project site were not considered under this analysis because of their low probability for affecting the Project site.

Hazards and hazardous materials impacts have been evaluated in two ways: (1) impacts of the Project on the local environment and the public, and (2) impacts of Project-related disturbance of existing site materials (residual chemicals, if any) on the local environment and the public. Potential impacts were evaluated that may result in risks that expose people to substantial risk of injury, or adversely affect the environment. Impacts would be considered significant if the Project meets or exceeds any of the significance criteria listed above.

3.8.6 Direct and Indirect Impacts

3.8.6.1 Alternative 1: Full Tidal Restoration/Proposed Action

Alternative 1 would include wetland and upland habitat restoration within the Ballona Reserve and replacement of the existing concrete channelized segment of Ballona Creek with a more natural meander-shaped flow pattern; construction of a new three-story parking structure and two bicycle/pedestrian bridges as well as other visitor-serving amenities (see Section 2.3.2.3, *Public*

Access and Visitor Facilities); and the removal of natural gas storage wells and pipelines from within the Ballona Reserve, relocation of the natural gas wells to the SoCalGas Property, and removal of the abandoned sewer pipeline. See Table 2-1, *Summary of Alternatives*, in Chapter 2, *Description of Alternatives*, for further details.

1-HAZ-1: Alternative 1 would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials. (Less than Significant Impact)

Direct Impacts

Release of Hazardous Materials

Proposed restoration and construction activities would require the transport, storage, use, and disposal of hazardous materials, including fuels (e.g., gasoline, diesel); hydraulic fluids, oils, and lubricants; paints, sealants, and thinners; solvents; and other similarly related construction materials in varying quantities. Most of these materials would be used in relatively small quantities with the possible exception of fuels and none are considered “acutely hazardous.” The release of hazardous materials could occur during routine transport, disposal, or use, or through reasonably foreseeable upset and accident conditions during equipment and hazardous materials use.

However, as discussed in Section 3.9, *Hydrology and Water Quality*, the Federal Clean Water Act [CWA Section 402: National Pollutant Discharge Elimination System (NPDES)] would require preparation of a Stormwater Pollution Prevention Plan (SWPPP) under the Construction General Permit[92], which describes BMPs to avoid pollutant runoff in stormwater. The BMPs would include hazardous materials risk management measures to reduce the likelihood of a potential release and to prevent any such release from reaching an adjacent waterway or stormwater collection system. Such BMPs would include dedicated storage areas, secondary containment features, and presence of spill control materials such as absorbent materials. As a result of implementation of these hazardous materials risk management BMPs, if a release did occur, it likely would be localized, contained, and addressed through follow up measures to ensure appropriate removal if necessary).

In addition, restoration-related grading and construction activities, as well as post-restoration maintenance and monitoring activities, associated with Alternative 1 is legally required to be conducted in accordance with the hazardous materials management regulations summarized in Section 3.8.3, *Applicable Laws, Regulations, Plans, and Standards*. The California Hazardous Materials Release Response Plans and Inventory Program (19 Cal. Code Regs. Div. 2, Ch. 4) requires entities such as contractors that store, use, and/or transport hazardous materials to prepare a HMBP that includes an inventory of hazardous substances and an Emergency Response Plan (ERP) to address emergencies such as accidental releases. The HMBP would

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92 Section 402 of the CWA regulates construction-related storm water discharges to surface waters through the NPDES program, administered by the USEPA with implementation authority delegated to the State Water Resources Control Board (SWRCB), in California. An NPDES permit is required for all projects that disturb 1 acre or more of land. Therefore, the Project would require an NPDES General Construction permit from the LARWQCB.

describe the procedures for the storage and handling of hazardous materials to reduce the potential for releases, such as developing a list of all hazardous materials used, the quantities of those materials that are used daily or stored onsite, handling procedures, and descriptions of storage type and location. The HMBP requires site maps using symbols to identify storage (above ground tanks, compressed gas, and storage cabinets), electrical sources, and water and gas shut off equipment. HMBPs also include an ERP and description of employee training. The ERP would include procedures for responding to accidental spills of fuels that might occur during the implementation of Project activities and would describe the cleanup procedures to be implemented in the event of an accidental release.

The transport of hazardous materials is regulated by the DTSC and transporters of hazardous materials would be required to be licensed by DTSC and inspected by the CHP. Delivery vehicles would be required to utilize roadways approved for transportation of hazardous materials and maintain the proper storage containers for hazardous materials. However, as noted above in the Setting section, samples obtained from the site in areas planned for excavation had concentrations indicating that they would be classified as hazardous and would be within the non-hazardous Class III landfill acceptance criteria.

For these reasons, no additional measures are recommended to address a potential release of hazardous materials during routine transport, disposal, or use, or through reasonably foreseeable upset and accident conditions during equipment and hazardous materials use. The implementation of the existing regulatory requirements above would minimize the exposure risks of hazardous materials such that the direct impacts would be less than significant.

Hazardous Materials Release from Gas Well Abandonment/Relocation

Relocation of natural gas storage wells would require abandonment of existing wells within the Ballona Reserve and drilling replacement wells on the SoCalGas Property. The well abandonment process involves the use of a drill rig, which is used to set cement plugs in the well bore to isolate the gas producing zones. The wellhead is removed and the well casing is cut and capped approximately 5 feet below grade. Because this is a standard procedure, mechanisms and protocols have been developed to capture displaced natural gas and other residual gases that may exit the well during abandonment. Abandoned well sites are regularly monitored following abandonment to ensure that no leakage occurs in accordance with California Public Utility Commissions (CPUC) requirements.

Drilling new wells is a common industrial practice that utilizes standard, proven drilling processes, air monitoring, and safety practices in accordance with local well permitting and CPUC requirements. Consequently, there is a low potential that harmful quantities of natural and other gases or hazardous materials would be released during the well installation into the environment.

Petroleum hydrocarbons (e.g., crude oil) may be encountered in near-surface soil at the SoCalGas Property during well abandonment or drilling of new wells (SoCalGas 2014). The petroleum hydrocarbons represent residual, incidental contamination from normal oil field activities. SoCalGas and its consultants would conduct an investigation before the wells are drilled and after abandonment to determine if soils contamination is present. If substantial amounts of petroleum are found in the soils, SoCalGas would remediate or remove the affected soil to an offsite location in accordance with local requirements from the LACoFD as the CUPA leader. Therefore, all gas well abandonment and relocation efforts would be conducted according to industry standard practices, local well permitting requirements, and CPUC requirements which would minimize the potential risk of exposure to hazardous materials to a less-than-significant level.

Indirect Impacts

There would be no indirect impacts related to construction/restoration activities because of the relatively short time period under which it would occur combined with the localized area affected.

Following restoration activities, the newly restored areas would be subject to a Monitoring and Adaptive Management Plan (MAMP) (see Mitigation Measure WQ-1a-i in Section 3.9, *Hydrology and Water Quality*) in addition to other operation and maintenance activities to measure the effectiveness of Alternative 1 and provide upkeep of the area in accordance with the restoration objectives. These activities would require routine periodic monitoring and management activities such as collection of samples, retrieval of trash, adjustment of water-control structures, habitat monitoring, and other activities by a handful of CDFW employees and potentially two contractors, as well as continuing operation and maintenance of the LACDA project facilities within the Ballona Reserve (see Appendix B5, Preliminary Operation and Maintenance Plan, for further details). The post-restoration change in location where operation and maintenance activities would be implemented would result in a negligible change in the routine transport of hazardous materials relative to existing, ongoing practices that would be limited to the distance traveled within the Ballona Reserve and the route taken to access the relocated infrastructure; it would have no impact on the use or disposal of hazardous materials relative to existing, ongoing practices. The anticipated need for hazardous materials for these efforts would be relatively limited but could include small quantities of petroleum fuels, oils, adhesives, and other materials. The hazardous materials would be handled, stored, and disposed of in accordance with the same applicable laws and regulations as stated above. As a result, the indirect impacts associated with routine transport, use, or disposal of hazardous materials including risk of upset and accidental spills would be minor and therefore less than significant.

1-HAZ-2: Alternative 1 could, unless mitigated, create a significant hazard to the public by potentially disturbing existing contaminated soil or groundwater at the Ballona Reserve. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Exposure to hazardous materials could occur from stockpiling, handling, or transportation of soils that have been contaminated by hazardous materials from historical activities at the Ballona Reserve. Exposure to legacy contaminants could also occur as a result of the dewatering activities, if not managed appropriately.

The analytical results for soil samples collected in Area A concluded that the historical disposal of celery waste had not resulted in the presence of chemicals associated with the dumping activities to soil or groundwater. Results from six soil borings in Areas A and B indicate five of the six soil borings with detectable petroleum hydrocarbons; however, the concentrations were all below both human health and ecological action levels. Results of the Sediment Quality

Investigation and the Sediment Toxicity Evaluation concluded that there are no chemicals in soil at concentrations that would prevent the reuse of soil in the various proposed habitats at the Ballona Reserve. The results also indicated the excess soil could be disposed of at various landfills or at an ocean disposal site, although disposal at the ocean site would require additional testing. As stated in the Sediment Quality Investigation (ESA 2015), a Sampling and Analysis Plan (SAP) would be prepared to describe the procedures to sample and analyze sediment and ensure its suitability for the intended uses (e.g., levee material, wetland or upland habitat) (See Mitigation Measure WQ-1a-ii in Section 3.9, *Hydrology and Water Quality*). The SAP would address both the additional samples planned to be collected prior to and during ground disturbing activities.

However, there remains a potential that ground disturbance in Areas A and B could encounter areas that have not previously been sampled as well as the potential that four of the seven offsite properties[93] previously discussed in Section 3.8.2 could have contributed contaminates to shallow groundwater that migrated below portions of the Ballona Reserve.

1. The former Bon Marche Cleaners site could have affected the northern portions of Area A with PCE in an area where the depth to groundwater is about 7.5 feet below the ground surface;
2. The Chevron Station site could have affected the northern portions of Area A with petroleum hydrocarbons in an area where the depth to groundwater is about 7.5 feet below the ground surface;
3. The former Del Rey Cleaners site could have affected the western portions of West Area B with chlorinated solvents such as PCE and its degradation byproducts.
4. The Panama site could have affected the eastern portions of Area C with chlorinated solvents where the depth to groundwater is about 10 to 12 feet below the ground surface.

Given these four potential offsite sources, it is possible that excavation activities within the Ballona Reserve that are deep enough to reach groundwater could encounter contaminated groundwater. The relocation of soil from the areas with contaminated groundwater could spread that contamination to other areas of the Ballona Reserve.

To address the potentially substantial impact associated with encountering soil or groundwater with chemicals above hazardous materials regulatory action levels, the scope of work in the SAP described in the Sediment Quality Investigation (ESA 2015) would mitigate the risk of exposure to legacy contaminants by expanding the scope of work as described in Mitigation Measure WQ-1a-ii, *Sampling and Analysis Plan*, to include the analyses for petroleum hydrocarbons (including gasoline, diesel, and motor oil range petroleum hydrocarbons) and VOCs (including chlorinated solvents with as PCE and TCE) in both soil and groundwater samples. The SAP would be used to identify any levels of constituents that may have been missed in previous sampling efforts prior to commencement of construction.

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[93] Of the seven properties, three of them, the Los Angeles County Sheriff Station, Former Fire Safety Training Area, and O'Neil Data Systems site, have an affected area limited to within these offsite locations or are located downgradient from the Project site and would not extend onto the Project site.

In addition, as discussed above and in Section 3.9, *Hydrology and Water Quality*, Alternative 1 would require implementation of BMPs to control erosion of the site in accordance with the NPDES Construction General Permit and the County MS4 Permit required as part of the permitting process. Implementation of the SWPPP would control runoff from leaving the Project site and further limit the potential spread of contaminates potentially present in disturbed soils.

Mitigation Measure

Implement Mitigation Measure WQ-1a-ii: Sampling and Analysis Plan (SAP).

Level of Significance after Mitigation

Implementation of Mitigation Measure WQ-1a-ii would reduce this impact to less than significant.

Indirect Impacts

There would be no indirect impacts related to construction/restoration activities because of the relatively short time period under which it would occur combined with the localized area affected.

Once restoration activities are completed, there would be very little, if any disturbance of subsurface terrestrial materials or aquatic sediments. As calculated for purposes of the Preliminary Operations and Maintenance Plan, "up to 4 feet of uniform deposition along the new channel alignment would be allowed before channel maintenance would be required. This amount of sedimentation is estimated to take at least 50 years to accumulate in the channel" (AppendixB5, p. B5-11). The Operation and Maintenance activities would include habitat monitoring activities; sampling; trash removal; and operation and maintenance of the LACDA project facilities within the Ballona Reserve in their new locations. In general, these activities would not likely require any substantive earthwork activities that could expose workers or the environment to legacy contaminants. As a result, the potential for any risks associated with exposure to contaminated soils or groundwater during the long term post-restoration period would be minor and the indirect impacts would be less than significant.

1-HAZ-3: Alternative 1 would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. (Less than Significant Impact)

Direct Impacts

The Project site is located within 0.25 miles of five existing school facilities and no new schools are planned within this perimeter. In addition, no nursing homes or hospitals are located within 0.25 mile of the Project site. As noted above, restoration activities would require the use of only limited quantities of hazardous materials such as fuels (e.g., gasoline, diesel); hydraulic fluids, oils, and lubricants; paints, sealants, and thinners; solvents; and other similarly related construction materials. However, as required by law, these hazardous materials would be used and stored in accordance with regulations for their storage, handling, and disposal, as set forth on the Federal level by RCRA, and at the state level by the Hazardous Waste Control Act, California Health and Safety Code, Cal OSHA and the California Hazardous Materials Response

Plan and Inventory Law. In addition, the contractors handling these hazardous materials would, as required by law, implement HMBP, ERP, and the SWPPP, which would appropriately minimize the potential emissions from these hazardous materials. The use of these hazardous materials would also not constitute any routine emissions as the hazardous materials use would continually vary depending on the construction activities occurring and compared to industrial land uses, would be relatively minor and the direct impacts would be less than significant.

Therefore, under Alternative 1, there would be no impact associated with the release of hazardous emissions, handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of a proposed school. None of the materials that would be used for Alternative 1 is considered to be "acutely hazardous." Otherwise, the hazardous materials use, transport and disposal would be controlled by existing regulatory requirements. Therefore, Alternative 1 also would result in no effect regarding the handling of acutely hazardous materials, substances, or waste within 0.25 mile of a school.

Indirect Impacts

Restoration activities would have no indirect impacts as they would be relatively short term localized activities. Similar to the discussion for 1-HAZ-1, upon completion of restoration activities, operation and maintenance activities would require very limited and small quantities of petroleum fuels, oils, adhesives, and other hazardous materials that would be substantially comparable in types and amounts to what is used under existing conditions for LACDA and non-LACDA project facilities. The hazardous materials that would be handled, stored, and disposed of at the site would be done in accordance with the same applicable laws and regulations as stated above in 1-HAZ-1 during the Operation and Maintenance phase and would not consist of any prolonged or continual emissions of hazardous materials. As a result, the indirect impacts associated with emissions of hazardous materials or acutely hazardous materials within 0.25 miles of an existing school would be very minor and therefore less than significant. Alternative 1 would result in no indirect impacts associated with emissions of hazardous materials or acutely hazardous materials within 0.25 miles of a proposed school because no such facilities are planned within this distance.

1-HAZ-4: Alternative 1 would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5; however, it would not create a significant hazard to the public or the environment. (Less than Significant Impact)

Direct Impacts

As discussed in Section 3.8.2, *Affected Environment*, the former celery waste dump site, located in the northwest corner of Area A, was part of a state wide evaluation of solid waste disposal facilities and as such considered part of Government Code Section §65962.5(also known as the Cortese List). As part of this evaluation, soil and groundwater at this location were tested for chemicals that would have been associated with past activities at the dump site. Samples were collected between 1988 and 1996 and analyzed for VOCs, SVOCs, metals, PCBs, petroleum hydrocarbons (including fuel oil) and pesticides (including Lindane). The results indicated that no chemicals associated with the celery waste dump, including Lindane and fuel oil, were detected in the samples collected. As a result, there is no indication of any known release from a listed hazardous materials site that would create a significant hazard to the public or environment and thus no impacts are anticipated. The potential for offsite sources to adversely affect the Project site or the presence of previously unidentified contaminants is discussed above in Impact 1-HAZ-2, is considered to be minor, and would be less than significant.

Indirect Impacts

As stated above, the former celery waste dump site, located in Area A, qualifies as a hazardous materials site compliant with Government Code §65962.5. However, a subsequent investigation found no evidence of any remaining contaminants at the site. As a result, there would be no long term indirect impacts associated with the fact that a portion of the Project site is listed as a release site and there would be no significant hazard to the public or environment as a result of being included on Government Code §65962.5. A less-than-significant impact would result.

1-HAZ-5: Alternative 1 would not be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, or within the vicinity of a private airstrip, and would the project result in a safety hazard for people residing or working in the project area. (No Impact)

Direct Impacts

The Los Angeles International Airport (LAX) is located approximately 1 mile south of the Project site. However, the Project site is not located within the LAX Airport Influence Area or Runway Protection Zones (LAC ALUC 2003). There are no private airports or airstrips located within the vicinity (2 miles) of the Project site. Therefore, Alternative 1 it would not result in a safety hazard for people residing or working in the project area. There would be no direct impacts related to airport land use plans, airports or private airstrips during or following restoration activities.

Indirect Impacts

As stated above, the Project site is not located within the LAX Airport Influence Area or Runway Protection Zones (LAC ALUC 2003) or in the vicinity (within 2 miles) a private airport or airstrip. Therefore there would be no indirect safety hazards for people visiting or working in the project area during or following restoration activities.

1-HAZ-6: Alternative 1 includes four activities that could affect but would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan by requiring temporary road closures, traffic lane restrictions, or interruptions for truck crossings. (Less than Significant with Mitigation Incorporated)

Direct Impacts

LACoOEM's Los Angeles County Operational Area Emergency Response Plan (Los Angeles County 2011) identifies Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard as the only paved publically-accessible roads that cross the Ballona Reserve. Lincoln Boulevard is listed as a designated disaster route by LACDPW (LACDPW 2008). As discussed below, the presence of equipment, materials, and workers within the Ballona Reserve could affect but would not prevent use of Lincoln Boulevard in the event of an emergency. Although temporary closures and obstructions would occur on Culver Boulevard, which is designated as a tsunami evacuation route, emergency access to and through the area would be maintained at all times. The following discussion summarizes the anticipated closures or restrictions to Lincoln and Culver Boulevards under Alternative 1.

Alternative 1 includes the construction of two bicycle/pedestrian bridges. One bridge would cross over Ballona Creek and would not require temporary road closures or restrictions. The other bridge would cross over Lincoln Boulevard just north of the existing Culver Boulevard crossing, using existing bridge abutments from a former railroad crossing. The construction of this second bridge would require temporary lane closures; however, the lane closures would be phased and implemented so as to allow emergency access at all times. Lincoln Boulevard lane closures would occur intermittently at night (between 11 pm and 4 am) 5 days a week over a 3 to 4 week period. This would allow the cranes that would be used to place the bridge segments to swing the structural members over the travel lanes. These temporary closures would require traffic to be re-routed as analyzed in Section 3.12, *Transportation and Traffic*. None of the detour streets is a designated disaster route.

Alternative 1 would also include transfer of soils across Culver Boulevard which would be accomplished with manned flaggers, warning lights and signs, and traffic cones. The transfer of soils is estimated to require about 17 weeks but would not require any road closures. Also storm drainage improvements would require temporary closures of one lane over a 3 week period during which traffic would be restricted to one lane. Traffic control would be accomplished using manned flaggers, warning lights and signs, and traffic cones. Temporary lane closure could also be required for a period of about 4 weeks for the relocation of the natural gas line. Traffic control in the event of lane closure would be accomplished using manned flaggers, warning lights and signs, and traffic cones.

While these lane closures on Culver Boulevard would restrict traffic flow to one lane, the closures would be temporary and the likelihood of a tsunami event occurring simultaneously with a lane closure is relatively remote. In addition, there would be no full closure of this evacuation route and with implementation of Mitigation Measure TRANS-1b, the lane closures would be restricted to nighttime hours. As a result, there would be little likelihood of causing any adverse impacts.

In summary, Alternative 1 includes activities that could affect but would not physically interfere with an adopted emergency response plan or emergency evacuation plan by requiring temporary road closures, traffic lane restrictions, or interruptions for truck crossings. Although none of these potential impacts would be permanent, they could be reduced via the implementation of a traffic control plan such as is described in Mitigation Measures TRANS-1a, Traffic Control and Safety Assurance Plan, and TRANS-1b Restriction of Lane Closures, in Section 3.12, *Transportation and Traffic*.

Mitigation Measures

Implement Mitigation Measures 1TRANS-1a, Traffic Control and Safety Assurance Plan and TRANS-1b Restriction of Lane Closures.

Level of Significance after Mitigation

Implementation of Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to less than significant.

Indirect Impacts

There would be no indirect impacts related to construction/restoration activities because any potential impact resulting from impaired implementation of or physically interference with an adopted emergency response plan or emergency evacuation plan would occur contemporaneously with the impact (not later in time) and would occur at the point of the potential impact (not farther removed in distance).

Following restoration activities, there would be no further need for any lane closures or other physical interference with the transportation network at the Project site. As a result, there would be no indirect impacts associated with impairing or physically interfering with an adopted emergency response plan or emergency evacuation plan.

1-HAZ-7: Alternative 1 would not 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. (Less than Significant Impact)

Direct Impacts

The CAL FIRE fire hazard severity zone maps identify the following areas in the high fire hazard severity category: all of South Area B and Southeast Area B; and portions of North and West Area B (CAL FIRE 2011). In addition, the SoCalGas Property (as well as the rest of the SoCalGas facility) is identified within a high fire hazard severity area. Alternative 1's restoration activities, as well as post-restoration maintenance and monitoring activities, would occur in all areas of the Ballona Reserve and would require the use of equipment with internal combustion engines. Potential sources of ignition during such activities include sparks from gasoline combustion engines and to a lesser degree, cigarette smoking, and sparks generated by mowing equipment. While fires started by these ignition sources could be readily extinguished, the most significant source of ignition would be sparks from gasoline engines. Sparks released from an unprotected exhaust pipe could spread sparks and cause a fire over a large area. California Vehicle Code Section 38366 and DOT regulations require spark-arresting equipment on vehicles that travel off-road. Therefore, vehicles associated with restoration, post-restoration maintenance, and monitoring activities and other Project vehicles that travel in an off-road area will, as required by law, have spark-arresting equipment to reduce the risk of wildfires. As a result, restoration activities and post-restoration maintenance and monitoring activities would have minor direct impacts, which would be less than significant.

Indirect Impacts

Alternative 1 would include improvements to emergency vehicle access on the maintenance roads providing increased accessibility for LACoFD to respond to any fire-related incidents. Maintenance routes would provide access to the Ballona Reserve for emergency vehicles and to access SoCalGas facilities, primarily using the levee-top bicycle paths. Controlled access points to the levee-top paths would be limited to Ballona Reserve management, maintenance, SoCalGas, and emergency vehicles only. Improved access also would be constructed in West Area B behind the commercial businesses along Culver Boulevard for emergency vehicles. This improved access would provide an increase in accessibility for fire response having a potential beneficial effect in the unlikely event of a fire and thus there would be no indirect impacts during or following restoration.

TABLE 3.8-2
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials? See Impact 1-HAZ-1.	☐	☐	☒	☐
HAZ-2: Create a significant hazard to the public or the environment by disturbing existing contaminated soil or groundwater at the Ballona Reserve? See Impact 1-HAZ-2.	☐	☒	☐	☐
HAZ-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed sensitive receptor? See Impact 1-HAZ-3.	☐	☐	☒	☐
HAZ-4: Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? See Impact 1-HAZ-4.	☐	☐	☒	☐
HAZ-5: Be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, or within the vicinity of a private airstrip, and result in a safety hazard for people residing or working in the project area? See Impact 1-HAZ-5.	☐	☐	☐	☒
HAZ-6: Impair implementation of or physically interfere with an adopt d emergency response plan or emergency evacuation plan? See Impact 1-HAZ-6.	☐	☒	☐	☐
HAZ-7: 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? See Impact 1-HAZ-5.	☐	☐	☒	☐

3.8.6.2 Alternative 2: Partial Naturalized Creek

Alternative 2 is similar to Alternative 1 but with a smaller footprint of habitat restoration and levee construction. The parking structure, two bicycle/pedestrian bridges, gateway entrances, and educational signage would still be constructed and the natural gas wells and pipelines within the Ballona Reserve would still be abandoned and/or relocated to the SoCalGas Property. See Table 2-1c, *Summary of Alternatives*, in Chapter 2, *Description of Alternatives*, for further details.

2-HAZ-1: Alternative 2 would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials. (Less than Significant Impact)

Direct Impacts

Alternative 2 would have similar anticipated activities as in Alternative 1 except the amount of restoration-related and levee construction-related grading would be reduced while the post-construction monitoring would be relatively similar. Alternative 2 would require the transport, storage, use, and disposal of hazardous materials, including fuels (e.g., gasoline, diesel); hydraulic fluids, oils, and lubricants; paints, sealants, and thinners; solvents; and other similarly related materials in varying but still overall reduced quantities than Alternative 1. As with Alternative 1, restoration-related grading and construction activities, as well as post-restoration maintenance and monitoring activities, associated with Alternative 2, would be subject to the hazardous materials management regulations summarized in Section 3.8.3, *Applicable Laws, Regulations, Plans, and Standards*. The implementing agency and contractors would be required to comply with all applicable federal, state, and local laws and regulations that pertain to the transport, storage, use, and disposal of hazardous materials and waste. The California Hazardous Materials Release Response Plans and Inventory Program (19 Cal. Code Regs. Div. 2, Ch. 4) requires entities such as contractors that store, use, and/or transport hazardous materials to prepare a HMBP that includes an inventory of hazardous substances and an ERP to address emergencies such as accidental releases.

The transport of hazardous materials is regulated by the DTSC and transporters of hazardous materials would be required to be licensed by DTSC and inspected by the CHP. Delivery vehicles would be required to utilize roadways approved for transportation of hazardous materials and maintain the proper storage containers for hazardous materials. As noted above in the Setting section, samples obtained from the site in areas planned for excavation had concentrations indicating that they would be classified as hazardous and would be within the non-hazardous Class III landfill acceptance criteria.

In addition, as discussed in Section 3.9, *Hydrology and Water Quality*, Alternative 2 would require the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which describes BMPs to avoid runoff of stormwater and pollutants. The BMPs would include protection measures to contain a potential release and to prevent any such release from reaching an adjacent waterway or stormwater collection system.

Alternative 2 would also require abandonment and relocation of natural gas wells similar to Alternative with the exception of West Area B. As discussed in Alternative 1, SoCalGas would conduct an investigation for the potential to encounter contamination and provide the appropriate measures to ensure that all abandonment and relocation activities are in accordance with local requirements from the LACoFD as the CUPA leader. Therefore, the implementation of the existing regulatory requirements above would minimize the exposure risks of hazardous materials such that the direct impacts would be minor and less than significant.

Indirect Impacts

There would be no indirect impacts related to construction/restoration activities because of the relatively short time period under which it would occur combined with the localized area affected.

Following restoration activities, the newly restored areas would be subject to similar operation and maintenance activities as Alternative 1. These activities would require routine monitoring and management activities such as collection of samples, retrieval of trash, adjustment of water-control structures, habitat monitoring, and other activities by a handful of CDFW employees and potentially two contractors, as well as continuing operation and maintenance of the LACDA project facilities within the Ballona Reserve (see Appendix B5, Preliminary Operation and Maintenance Plan, for further details). The post-restoration change in location where operation and maintenance activities would be implemented would result in a negligible change in the routine transport of hazardous materials relative to existing, ongoing practices that would be limited to the distance traveled within the Ballona Reserve and the route taken to access the relocated infrastructure; it would have no impact on the use or disposal of hazardous materials relative to existing, ongoing practices. The anticipated need for hazardous materials for operations and maintenance efforts would be relatively limited but could include small quantities of petroleum fuels, oils, adhesives, and other materials. The hazardous materials would be handled, stored, and disposed of in accordance with the same applicable laws and regulations as stated above. As a result, the indirect impacts associated with routine transport, use, or disposal of hazardous materials including risk of upset and accidental spills would be minor and therefore less than significant.

2-HAZ-2: Alternative 2 would not create a significant hazard to the public by potentially disturbing existing contaminated soil or groundwater. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Similar to Alternative 1, Alternative 2 could encounter contaminated soil and/or groundwater during Alternative 2-related activities from legacy contaminants released during historical activities. In addition, there are several nearby offsite properties with contaminated groundwater that may have migrated to beneath the Project site. The public or the environment could be exposed to chemicals at concentrations above regulatory action levels. The potential significance of this impact could be reduced through the Mitigation Measure WQ-1a-ii, Sampling and Analysis Plan (SAP). Following restoration, there would be little to no disturbance of surface or subsurface materials and, thus, Alternative 2 would have no direct impacts in this regard.

As with Alternative 1, the potential to encounter soil or groundwater with chemicals above hazardous materials regulatory action levels would be addressed by the implementation of the previously described Mitigation Measure WQ-1a-ii, *Sampling and Analysis Plan*. Specifically, the SAP would include the analyses for petroleum hydrocarbons (including gasoline, diesel, and motor oil range petroleum hydrocarbons) and VOCs (including chlorinated solvents with as PCE and TCE) in both soil and groundwater samples. With the implementation of Mitigation Measure WQ-1a-ii, Impact 2-HAZ-2 would be reduced to a less-than-significant level.

In addition, as discussed in Section 3.9, *Hydrology and Water Quality*, Alternative 2 would require a SWPPP. Implementation of the SWPPP and the BMPs contained within the plan, would control runoff from leaving the work areas of the Ballona Reserve and thereby further limit the potential spread of contaminates potentially present in disturbed soils.

Mitigation Measure

Implement Mitigation Measure WQ-1a-ii, Sampling and Analysis Plan.

Level of Significance after Mitigation

Implementation of Mitigation Measure WQ-1a-ii would reduce this impact to less than significant.

Indirect Impacts

There would be no indirect impacts related to construction/restoration activities because of the relatively short time period under which it would occur combined with the localized area affected.

Once the grading and earthwork restoration activities are completed, there would very little, if any disturbance of subsurface terrestrial materials or aquatic sediments. As calculated for purposes of the Preliminary Operations and Maintenance Plan, “up to 4 feet of uniform deposition along the new channel alignment would be allowed before channel maintenance would be required. This amount of sedimentation is estimated to take at least 50 years to accumulate in the channel” (AppendixB5, p. B5-11). The Operation and Maintenance activities would include habitat monitoring activities; sampling; trash removal; and operation and maintenance of the LACDA project facilities within the Ballona Reserve in their new locations. In general, these activities would not likely require any substantive earthwork activities that could expose workers or the environment to legacy contaminants. As a result, the potential for any risks associated with exposure to contaminated soils or groundwater during the long term post-restoration period would be minor.

2-HAZ-3: Alternative 2 would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. (Less than Significant Impact)

Direct Impacts

As indicated above under Alternative 1, no new schools are proposed within 0.25 mile of the Project site and there are five existing schools located within 0.25 miles. There are also no nursing homes or hospitals within 0.25 mile of the Project site. None of the hazardous materials that would be used for Alternative 2 are considered to be acutely hazardous.

As with Alternative 1, as required federally by RCRA, and at the state level by the Hazardous Waste Control Act, California Health and Safety Code, Cal OSHA and the California Hazardous Materials Response Plan and Inventory Law, all hazardous materials would be used and stored in accordance with the stipulated regulations for their storage, handling, and disposal, as discussed above in the sections on Release of Hazardous Materials. As discussed above in the section on Release of Hazardous Materials, contractors would be required to prepare and implement a HMBP, ERP, and the SWPPP, which along with the compliance with existing regulations, would reduce potential risks of any emissions to nearby schools and the impacts would be minor and less than significant. Operation and maintenance activities would involve negligible quantities of hazardous materials; related impacts would be less than significant.

Indirect Impacts

Upon completion of restoration activities, operation and maintenance activities would require very limited and small quantities of petroleum fuels, oils, adhesives, and other hazardous materials that would be substantially comparable in types and amounts to what is used under existing conditions for LACDA and non-LACDA project facilities. The hazardous materials that would be handled, stored, and disposed of at the site would be done in accordance with the same applicable laws and regulations as stated above in 1-HAZ-1 with negligible emissions of hazardous materials. As a result, indirect impacts associated with emissions of hazardous materials or acutely hazardous materials within 0.25 miles of an existing school would be very minor and therefore less than significant. Alternative 2 would result in no indirect impacts associated with emissions of hazardous materials or acutely hazardous materials within 0.25 mile of a proposed school because no such facilities are planned within this distance.

2-HAZ-4: Alternative 2 would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5; however, it would not create a significant hazard to the public or the environment. (Less than Significant Impact)

Direct Impacts

As discussed in Section 3.8.2, Affected Environment, the former celery waste dump site, located in the northwest corner of Area A, is considered as a release site in accordance with Government Code Section §65962.5 (also known as the Cortese List). Soil and groundwater at this location was tested for chemicals that would have been associated with the dump site. The sample results did not detect any of the chemicals associated with the former celery waste dump site, indicating that the former dump site had not impacted soil and groundwater. As a result, there is no indication of any known release from a listed hazardous materials site that would create a significant hazard to the public or environment and thus no impacts are anticipated. The potential for offsite sources to adversely affect the Project site or the presence of previously unidentified contaminants is discussed above in Impact 2-HAZ-2 where the direct impacts were determined to be minor and less than significant.

Indirect Impacts

The former celery waste dump site located in Area A is a hazardous materials site for purposes of Government Code Section §65962.5. However, a subsequent investigation found no evidence of any remaining contaminants at the site. As a result, there would be no long term indirect impacts associated with the fact that a portion of the Project site is listed as a release site and there would be no significant hazard to the public or environment. Therefore, indirect impacts from being on a hazardous materials release list would be minor and less than significant.

2-HAZ-5: Alternative 2 would not be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, or within the vicinity of a private airstrip, and would the project result in a safety hazard for people residing or working in the project area. (No Impact)

Direct Impacts

As discussed in 1-HAZ-5, the Project site is not located within the LAX Airport Influence Area or Runway Protection Zones (LAC ALUC 2003). There are no private airports or airstrips located in the vicinity (within 2 miles) of the Project site. Therefore, Alternative2 would not result in a safety hazard for people residing or working in the project area. There would be no direct impacts related to airport land use plans, airports or private airstrips during or following restoration.

Indirect Impacts

As stated above, the Project site is not located within the LAX Airport Influence Area or Runway Protection Zones (LAC ALUC 2003) or in the vicinity (within 2 miles) of a private airport or airstrip. Therefore, there would be no indirect impacts related to airport land use plans, private airstrips, or safety for people residing or working in the project area.

2-HAZ-6: Alternative 2 includes four activities that could affect but would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan by requiring temporary road closures, traffic lane restrictions, or interruptions for truck crossings. (Less than Significant with Mitigation Incorporated)

Direct Impacts

LACoOEM's Los Angeles County Operational Area Emergency Response Plan (Los Angeles County 2011) identifies Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard as the only paved publically-accessible roads that cross the Ballona Reserve. Lincoln Boulevard is listed as a designated disaster route by LACDPW (LACDPW 2008). As discussed above, the presence of equipment, materials, and workers within the Project site could affect but would not prevent use of Lincoln Boulevard in the event of an emergency. The anticipated lane closures and roadway restrictions under Alternative 2 would be similar to those of Alternative 1. Briefly, Alternative 2 includes activities that could affect but would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan as a result of intermittent, temporary, nighttime lane closures on Lincoln Boulevard. Although this potential impact would be temporary, it would be potentially significant for the reasons discussed in the context of Alternative 1.

Mitigation Measures

Implement Mitigation Measures TRANS-1a, Traffic Control and Safety Assurance Plan and TRANS-1b Restriction of Lane Closures.

Level of Significance after Mitigation

Implementation of Mitigation Measures TRANS-1a and TRANS-1bwould reduce this impact to less than significant.

Indirect Impacts

As with Alternative 1, upon completion of restoration activities, there would be no further need for any lane closures or other physical interference with the transportation network at the Project site. As a result, there would be no indirect impacts associated with impairing or physically interfering with an adopted emergency response plan or emergency evacuation plan.

2-HAZ-7: Alternative 2 would not 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. (Less than Significant Impact)

Direct Impacts

The CAL FIRE fire hazard severity zone maps identify the following areas in the high fire hazard severity category: all of South Area B and Southeast Area B; and portions of North and West Area B (CAL FIRE 2011). In addition, the SoCalGas Property is identified within a high fire hazard severity area. Alternative 2's restoration and construction activities, as well as post-restoration maintenance and monitoring activities, would occur in all areas of the Project site and would require the use of equipment with internal combustion engines. Contractors using equipment would be required to comply with the requirements of the DOT and California Vehicle Code for spark arrester protection on vehicles that would reduce the potential risk. Therefore, direct impacts related to wildfires would be considered minor and less than significant.

Indirect Impacts

Alternative 2, similar to Alternative 1 would include improvements to emergency vehicle access on the maintenance roads providing increased accessibility for LACoFD to respond to any fire-related incidents. Improved access would also be constructed in West Area B behind the commercial businesses along Culver Boulevard for emergency vehicles. This improved access would provide an increase in accessibility for fire response having a potential beneficial effect in the unlikely event of a fire and thus there would be no indirect impacts related to wildfires.

TABLE 3.8-3
ALTERNATIVE 2 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials? See Impact 1-HAZ-1.	☐	☐	☒	☐
HAZ-2: Create a significant hazard to the public or the environment by disturbing existing contaminated soil or groundwater at the Ballona Reserve? See Impact 1-HAZ-2.	☐	☒	☐	☐
HAZ-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed sensitive receptor? See Impact 1-HAZ-3.	☐	☐	☒	☐
HAZ-4: Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? See Impact 1-HAZ-4.	☐	☐	☒	☐
HAZ-5: Be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, or within the vicinity of a private airstrip, and result in a safety hazard for people residing or working in the project area? See Impact 1-HAZ-5.	☐	☐	☐	☒
HAZ-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? See Impact 1-HAZ-6.	☐	☒	☐	☐
HAZ-7: 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? See Impact 1-HAZ-5.	☐	☐	☒	☐

3.8.6.3 Alternative 3: Levee Culverts and Oxbow

Alternative 3 is similar to Alternatives 1 and 2 but with a substantially smaller footprint of restoration and levee construction. One bicycle/pedestrian bridge would be constructed instead of two. The parking structure, gateway entrances, and educational signage would still be constructed and the natural gas wells and pipelines within the Ballona Reserve would still be abandoned and/or relocated to the SoCalGas Property. See Table 2-1c, *Summary of Alternatives*, in Chapter 2, *Description of Alternatives*, for further details.

3-HAZ-1: Alternative 3 would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials. (Less than Significant Impact)

Direct Impacts

Alternative 3 would require similar activities to be implemented as Alternatives 1 and 2 to restore the Project site and construct visitor amenities, except the amount of grading would be substantially reduced. As a result, the transport, storage, use, and disposal of hazardous materials, including fuels (e.g., gasoline, diesel); hydraulic fluids, oils, and lubricants; paints, sealants, and thinners; solvents; and other similarly related materials would be much reduced. As with Alternative 1, restoration-related grading and construction activities, as well as post-restoration maintenance and monitoring activities, associated with Alternative 3 still would be subject to the hazardous materials management regulations summarized in Section 3.8.3, *Applicable Laws, Regulations, Plans, and Standards*. The implementing agency and construction contractors would be required to comply with all applicable Federal, state, and local laws and regulations that pertain to the transport, storage, use, and disposal of hazardous materials and waste. The California Hazardous Materials Release Response Plans and Inventory Program (19 Cal. Code Regs. Div. 2, Ch. 4) requires entities that store, use, and/or transport hazardous materials to prepare a HMBP that includes an inventory of hazardous substances and an ERP to address emergencies such as accidental releases.

The transport of hazardous materials is regulated by the DTSC and transporters of hazardous materials would be required to be licensed by DTSC and inspected by the CHP. Delivery vehicles would be required to utilize roadways approved for transportation of hazardous materials and maintain the proper storage containers for hazardous materials. As noted above, samples obtained from the Project site in areas planned for excavation had concentrations indicating that they would be classified as hazardous and would be within the non-hazardous Class III landfill acceptance criteria. Following completion of construction activities, there would be no substantive use or disposal of hazardous materials such that there would be no direct impacts.

In addition, as discussed in Section 3.9, *Hydrology and Water Quality*, Alternative 3 would require the preparation and implementation of a SWPPP, which describes BMPs to avoid runoff of stormwater and pollutants. The BMPs would include protection measures to contain a potential release and to prevent any such release from reaching an adjacent waterway or stormwater collection system.

The same natural gas storage well abandonment and/or relocation activities would occur under Alternative 3 as under Alternative 2. Therefore, there would be no changes to the gas wells in West Area B but otherwise the abandonment/relocation activities would be in accordance with local requirements the LACoFD as the CUPA leader. As a result, Alternative 3 would not result in a significant impact relating to this aspect of the Project and direct impacts would be considered minor and less than significant.

Indirect Impacts

There would be no indirect impacts related to construction/restoration activities because of the relatively short time period under which it would occur combined with the localized area affected.

Following restoration activities, the newly restored areas would be subject to similar operation and maintenance activities as Alternative 1, although somewhat reduced. These activities would require routine monitoring and management activities such as collection of samples, retrieval of trash, adjustment of water-control structures, habitat monitoring, and other activities by a handful of CDFW employees and potentially two contractors, as well as continuing operation and maintenance of the LACDA project facilities within the Ballona Reserve. Because the Ballona Creek channel would remain in its existing location, activities required to operate and maintain it would be implemented in the same or substantially the same locations where they currently occur. Operation and maintenance of the two culverts that would connect the Ballona Creek channel to Area A would result in a negligible change in the routine potential transport of hazardous materials relative to existing practices that would be limited to the distance traveled within the Ballona Reserve and the route taken to access the infrastructure. Alternative 3 would have no impact on the potential use or disposal of hazardous materials relative to existing, ongoing practices. The anticipated need for hazardous materials to operate and maintain habitats and infrastructure (i.e., non-LACDA project facilities as well as LACDA project facilities) would be relatively limited but could include small quantities of petroleum fuels, oils, adhesives, and other materials. The hazardous materials would be handled, stored, and disposed of in accordance with the same applicable laws and regulations as stated above. As a result, the indirect impacts associated with routine transport, use, or disposal of hazardous materials including risk of upset and accidental spills would be minor and therefore less than significant.

3-HAZ-2: Alternative 3 would not create a significant hazard to the public or the environment by potentially disturbing existing contaminated soil or groundwater. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Similar to Alternatives 1 and 2, Alternative 3 could encounter contaminated soil and/or groundwater during its implementation from legacy contaminants released during historical activities. In addition, there are several nearby offsite properties with contaminated groundwater that may have migrated to beneath the Project site. The public or the environment could be exposed to chemicals at concentrations above regulatory action levels. The potential significance of this impact could be reduced.

The potential to encounter soil or groundwater with chemicals above hazardous materials regulatory action levels would be addressed by the implementation of the previously described Mitigation Measure WQ-1a-ii, *Sampling and Analysis Plan*. Specifically, the SAP would be expanded to include the analyses for petroleum hydrocarbons (including gasoline, diesel, and motor oil range petroleum hydrocarbons) and VOCs (including chlorinated solvents with as PCE and TCE) in both soil and groundwater samples. With the implementation of Mitigation Measure WQ-1a-ii, Impact 3-HAZ-2 would be reduced.

In addition, as discussed in Section 3.9, *Hydrology and Water Quality*, Alternative 3 would require a SWPPP. Implementation of the SWPPP and the BMPs contained within the plan would control runoff from leaving the construction areas and thereby further limit the potential spread of contaminates potentially present in disturbed soils.

Mitigation Measure

Implement Mitigation Measure WQ-1a-ii, Sampling and Analysis Plan.

Level of Significance after Mitigation

Implementation of Mitigation Measure WQ-1a-ii would reduce this impact to less than significant.

Indirect Impacts

There would be no indirect impacts related to construction/restoration activities because of the relatively short time period under which it would occur combined with the localized area affected.

Once restoration activities are completed, there would very little, if any disturbance of subsurface terrestrial materials or aquatic sediments. As calculated for purposes of the Preliminary Operations and Maintenance Plan, "up to 4 feet of uniform deposition along the new channel alignment would be allowed before channel maintenance would be required. This amount of sedimentation is estimated to take at least 50 years to accumulate in the channel" (Appendix B5, p. B5-11). The operation and maintenance activities would include habitat monitoring activities, sampling, trash removal, and operation and maintenance of the two new culverts between the Ballona Creek channel and Area A that would be part of the LACDA project facilities within the Ballona Reserve. In general, these activities would not likely require earthwork activities that could expose people or the environment to a substantial risk from legacy contaminants. As a result, the potential for any risks associated with exposure to contaminated soils or groundwater during the long term post-restoration period would be minor and the indirect impacts would be less than significant.

3-HAZ-3: Alternative 3 would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. (Less than Significant Impact)

Direct Impacts

As indicated above, no new schools are proposed within 0.25 mile of the Project site and there are five existing schools located within 0.25 miles. There are also no nursing homes or hospitals within 0.25 mile of the Project site. None of the hazardous materials that would be used for Alternative 3 are considered to be acutely hazardous.

As with Alternative 1 and Alternative 2, the storage, handling, and disposal of hazardous materials would be controlled by existing regulations including RCRA, the Hazardous Waste Control Act, California Health and Safety Code, Cal OSHA and the California Hazardous Materials Response Plan and Inventory Law. Contractors would be required to prepare and implement a HMBP, ERP, and the SWPPP, which along with the compliance with the aforementioned existing regulations, would reduce potential risks of any emissions to nearby schools and the direct impacts would be minor and less than significant.

Indirect Impacts

There would be no indirect impacts related to construction/restoration activities because of the relatively short time period under which such activities would occur combined with the localized area affected.

Upon completion of restoration activities, operation and maintenance activities would require very limited and small quantities of petroleum fuels, oils, adhesives, and other hazardous materials that would be substantially comparable in types and amounts to what is used under existing conditions for LACDA and non-LACDA project facilities. The hazardous materials that would be handled, stored, and disposed of at the site would be done in accordance with the same applicable laws and regulations as stated above in 1-HAZ-1 with negligible emissions of hazardous materials. As a result, indirect impacts associated with emissions of hazardous materials or acutely hazardous materials within 0.25 mile of an existing school would be very minor; therefore, the indirect impacts would be less than significant. Alternative 3 would result in no indirect impacts associated with emissions of hazardous materials or acutely hazardous materials within 0.25 mile of a proposed school because no such facilities are planned within this distance.

3-HAZ-4: Alternative 3 would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5; however, it would not create a significant hazard to the public or the environment. (Less than Significant Impact)

Direct Impacts

As discussed in Section 3.8.2, Affected Environment, the former celery waste dump site, located in the northwest corner of Area A, is considered as a release site in accordance with Government Code Section §65962.5 (also known as the Cortese List). Soil and groundwater at this location was tested for chemicals that would have been associated with the dump site. The sample results did not detect any of the chemicals associated with the former celery waste dump site, indicating that the former dump site had not impacted soil and groundwater. As a result, there is no indication of any known release from a listed hazardous materials site that would create a significant hazard to the public or environment and thus no impacts are anticipated. The potential for offsite sources to adversely affect the Project site or the presence of previously unidentified contaminants is discussed above in Impact 2-HAZ-2.

Indirect Impacts

The former celery waste dump site located in Area A is a hazardous materials site for purposes of Government Code Section §65962.5. However, a subsequent investigation found no evidence of any remaining contaminants at the site. As a result, there would be no long term indirect impacts associated with the fact that a portion of the Project site is listed as a release site and there would be no significant hazard to the public or environment. Indirect impacts related to being included on a hazardous materials release list is considered minor and would be less than significant.

3-HAZ-5: Alternative 3 would not be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, or within the vicinity of a private airstrip, and would the project result in a safety hazard for people residing or working in the project area. (No Impact)

Direct Impacts

As discussed above, the Project site is not located within the LAX Airport Influence Area or Runway Protection Zones (LAC ALUC 2003) or in the vicinity (within 2 miles) of private airports or airstrips Therefore, Alternative3 would not result in a safety hazard for people residing or working in the project area. There would be no direct impacts related to airport land use plans, airports or private airstrips, or safety for those living or working in the project area during or following restoration.

Indirect Impacts

There would be no indirect impacts related to airports, private airstrips, or safety of those living or working in the project area because the Project site is not located within the LAX Airport Influence Area or Runway Protection Zones (LAC ALUC 2003) or in the vicinity (within 2 miles) of a private airstrip.

3-HAZ-6: Alternative 3 includes four activities that could affect but would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan by requiring temporary road closures, traffic lane restrictions, or interruptions for truck crossings. (Less than Significant with Mitigation Incorporated)

Direct Impacts

LACoOEM's Los Angeles County Operational Area Emergency Response Plan (Los Angeles County 2011) identifies Lincoln Boulevard, Culver Boulevard, and Jefferson Boulevard as the only paved publically-accessible roads that cross the Ballona Reserve., Lincoln Boulevard is listed as a designated disaster route by LACDPW (LACDPW 2008). As discussed below, the presence of equipment, materials, and workers within the Project site could affect but would not prevent use of Lincoln Boulevard in the event of an emergency. The anticipated lane closures or roadway restrictions under Alternative 3 would be similar to those of Alternative 1 and Alternative 2, as discussed above. Briefly, Alternative 3 includes activities that could affect but would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan as a result of intermittent, temporary, nighttime lane closures on Lincoln Boulevard. Although this potential impact would be temporary, it would be significant for the reasons discussed in the context of Alternative 1.

Mitigation Measures

Implement Mitigation Measures TRANS-1a Traffic Control and Safety Assurance Plan and TRANS-1b Restriction of Lane Closures.

Level of Significance after Mitigation

Implementation of Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to less than significant.

Indirect Impacts

As with Alternative 1 and Alternative 2, upon completion of restoration activities, there would be no further need for any lane closures or other physical interference with the transportation network at the Project site. As a result, Alternative 3 would result in no indirect impacts associated with impairing or physically interfering with an adopted emergency response plan or emergency evacuation plan.

3-HAZ-7: Alternative 3 would not 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. (Less than Significant Impact)

Direct Impacts

The CAL FIRE fire hazard severity zone maps identify the following areas in the high fire hazard severity category: all of South Area B and Southeast Area B; and portions of North and West Area B (CAL FIRE 2011). In addition, the SoCalGas Property is identified within a high fire hazard severity area. Alternative 3's construction activities would occur in all areas of the Ballona Reserve and would require the use of equipment with internal combustion engines. Contractors using equipment would be required to comply with the requirements of the DOT and California Vehicle Code for spark arrester protection on vehicles that would reduce the potential risk. Therefore, the direct impacts related to wildfires are considered minor and would be less than significant.

Indirect Impacts

Alternative 3, similar to Alternative 1 would include improvements to emergency vehicle access on the maintenance roads providing increased accessibility for LACoFD to respond to any fire-related incidents. Improved access would also be constructed in West Area B behind the commercial businesses along Culver Boulevard for emergency vehicles. This improved access would provide an increase in accessibility for fire response having a potential beneficial effect in the unlikely event of a fire and thus there would be no indirect impacts.

TABLE 3.8-4
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials? See Impact 3-HAZ-1.	☐	☐	☒	☐
HAZ-2: Create a significant hazard to the public or the environment by disturbing existing contaminated soil or groundwater at the Ballona Reserve? See Impact 3-HAZ-2.	☐	☒	☐	☐
HAZ-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed sensitive receptor? See Impact 3-HAZ-3.	☐	☐	☒	☐
HAZ-4: Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? See Impact 3-HAZ-4.	☐	☐	☒	☐

TABLE 3.8-4 (Continued)
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
HAZ-5: Be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, or within the vicinity of a private airstrip, and result in a safety hazard for people residing or working in the project area? See Impact 3-HAZ-5.	☐	☐	☐	☒
HAZ-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? See Impact 3-HAZ-6.	☐	☒	☐	☐
HAZ-7: 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? See Impact 3-HAZ-5.	☐	☐	☒	☐

3.8.6.4 Alternative 4: No Federal Action/No Project

Under Alternative 4, no substantial changes would be made to the physical or human environment within the Project site. Continuation of previously-permitted restoration activities would be allowed, such as the small-scale control of invasive plant species by hand-tools only and the planting and seeding of native species. Gas wells would continue to be operated and maintained within the Project site. SoCalGas activities on the SoCalGas Property would continue in accordance with existing permits and approvals. Under Alternative 4, no federal, state, or local approvals would be granted, and there would be no Project-related change to existing conditions or activities (or to the locations where such activities would occur) on the Project site. Therefore, there would be no change, and therefore no impact, relating to any of the criteria set forth in Section 3.8.4.2, regarding thresholds of significance.

3.8.7 Cumulative Impacts

The geographic scope for potential cumulative hazards and hazardous materials impacts consists of the Project site plus a 0.25 mile radius around the schools and daycare facilities identified above in accordance with widely accepted industry standards for hazardous materials release investigations. The timeframe during which the Project could contribute to cumulative hazards or hazardous materials impacts from the moment on-site activities begin and would continue for so long as Project components are operated and/or maintained except that potential cumulative impacts relating to Lincoln Boulevard as a designated emergency route would be limited to the 4 to 5 week period during which lane closures would be required to construct the proposed pedestrian/bike bridge.

As analyzed above, the routine use and accidental release of hazardous materials are governed by Federal and state laws that have been established to avoid or reduce the potential for such events to result in adverse environmental impacts by establishing response plan requirements and limiting the extent of harmful releases should they occur. These existing regulatory requirements apply to all projects within the geographic scope of the cumulative analysis. Hazard and hazardous materials incidents tend to be isolated occurrences and do not combine unless they occur at the same location and overlap in time. Only simultaneous releases that occur on adjacent sites or within close proximity of one another would have the potential to overlap and result in a cumulative impact. Federal and state requirements would be independently applicable to (and enforceable in the context of) the regulated activities of past projects and the projects identified in Table 3.1-1, *Existing and Reasonably Foreseeable Future Projects*. Existing conditions (as described in Section 3.8.2) do not demonstrate significant adverse existing conditions on the Project site or within 0.25 mile of one of the schools or daycare centers based in part on the review of past release databases. Therefore, the less-than-significant incremental impact of the Project and the unlikeliness of simultaneous releases in combination with the incremental impacts of past, other present, and reasonably foreseeable future projects would not cause or contribute to a significant cumulative impact.

Further, regulatory action levels are absolute limits, not cumulative limits. In other words, it does not matter whether a given area has been contaminated by one responsible party or multiple (cumulative) responsible parties; the regulatory action or cleanup level is still an absolute value and the responding regulatory agency will direct all responsible parties to clean up the affected area to that absolute value. Therefore, there can be no additive impacts of the Project when combined with impacts of the cumulative projects and the cumulative projects would not cause or contribute to a significant cumulative impact related to the release of hazardous materials.

As described above, the potential exists for Project activities to disturb contaminated material on the Project site. Other areas within the cumulative projects could also contain areas with legacy contaminants. However, simultaneous disturbances of contaminated materials is considered somewhat unlikely. Even if simultaneous disturbance of contaminated materials were to occur, they would not combine to create a cumulatively considerable impact because of the regulatory oversight, implementation of OSHA requirements, and industry standard practices such that the potential for adverse effects is minimized. Therefore, there would be no significant cumulative effect related to public hazards associated with disturbance of existing contaminated soil or groundwater. For similar reasons, there would be no significant cumulative effect related to significant hazard to the public or the environment due to any of the cumulative project sites being included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

In the analysis above for the various alternatives, there are no new schools are proposed within 0.25 mile of the Project site; therefore, the Project would not cause or contribute to any cumulative effect related to the release of hazardous emissions, handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of a proposed school. None of the hazardous materials that would be used for the Project are considered to be acutely hazardous; therefore, the Project would not cause or contribute to any cumulative effect related to the handling of acutely hazardous materials, substances, or waste within 0.25 mile of a school. Further, because there are no nursing homes or hospitals within 0.25 mile of the Project site, the Project would not cause or contribute to any cumulative effect related to such facilities. Finally, the Project site is not located within an airport land use plan area, within 2 miles of a public airport or public use airport, or in the vicinity of a private airstrip; therefore, the Project would not cause or contribute to a cumulative impact associated with safety hazards for people residing or working near airports.

The less-than-significant Project-related impact associated with Lincoln Boulevard lane closures would not cause or contribute to a significant adverse cumulative impact because emergency access would be maintained at all times. Implementation of Mitigation Measures TRANS-1a, Traffic Control and Safety Assurance Plan and TRANS-1b Restriction of Lane Closures, would be required if the Project were approved and would require coordination and cooperation with relevant oversight agencies to assure that current information about potential cumulative projects at the actual time lane closures are needed (such specificity is not and cannot be known at this stage of Project review) is assessed to phase Project-related lane closures to assure that Lincoln Boulevard, a designated emergency route, remains accessible at all times. Therefore, no significant adverse cumulative impact would occur.

As described above in the impacts discussion for HAZ-7, the Project would result in a less-than-significant wildfire-related impact in those portions of the Ballona Reserve that are within a high fire hazard severity category. However, none of the cumulative projects are located within a high fire hazard severity category. Therefore, there can be no additive impacts of the Project when combined with impacts of the cumulative projects and the cumulative projects would not cause or contribute to a significant cumulative impact related to wildfires.

3.8.8 References

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3.9 Hydrology and Water Quality

3.9.1 Introduction

This section identifies and evaluates issues related to Hydrology and Water Quality in the context of various restoration alternatives. Such issues include potential changes to groundwater, flooding, erosion, and water quality (including sediment quality). It describes the affected environment in Section 3.9.2, summarizes applicable laws, regulations, plans, and standards in Section 3.9.3; identifies the criteria used to evaluate the significance of potential impacts (referred to as "thresholds of significance") in Section 3.9.4; describes the methodology used to evaluate these impacts in Section 3.9.5; analyzes direct and indirect beneficial effects and adverse impacts in Section 3.9.6; analyzes cumulative impacts in Section 3.9.7; and provides references in Section 3.9.8.

3.9.2 Affected Environment

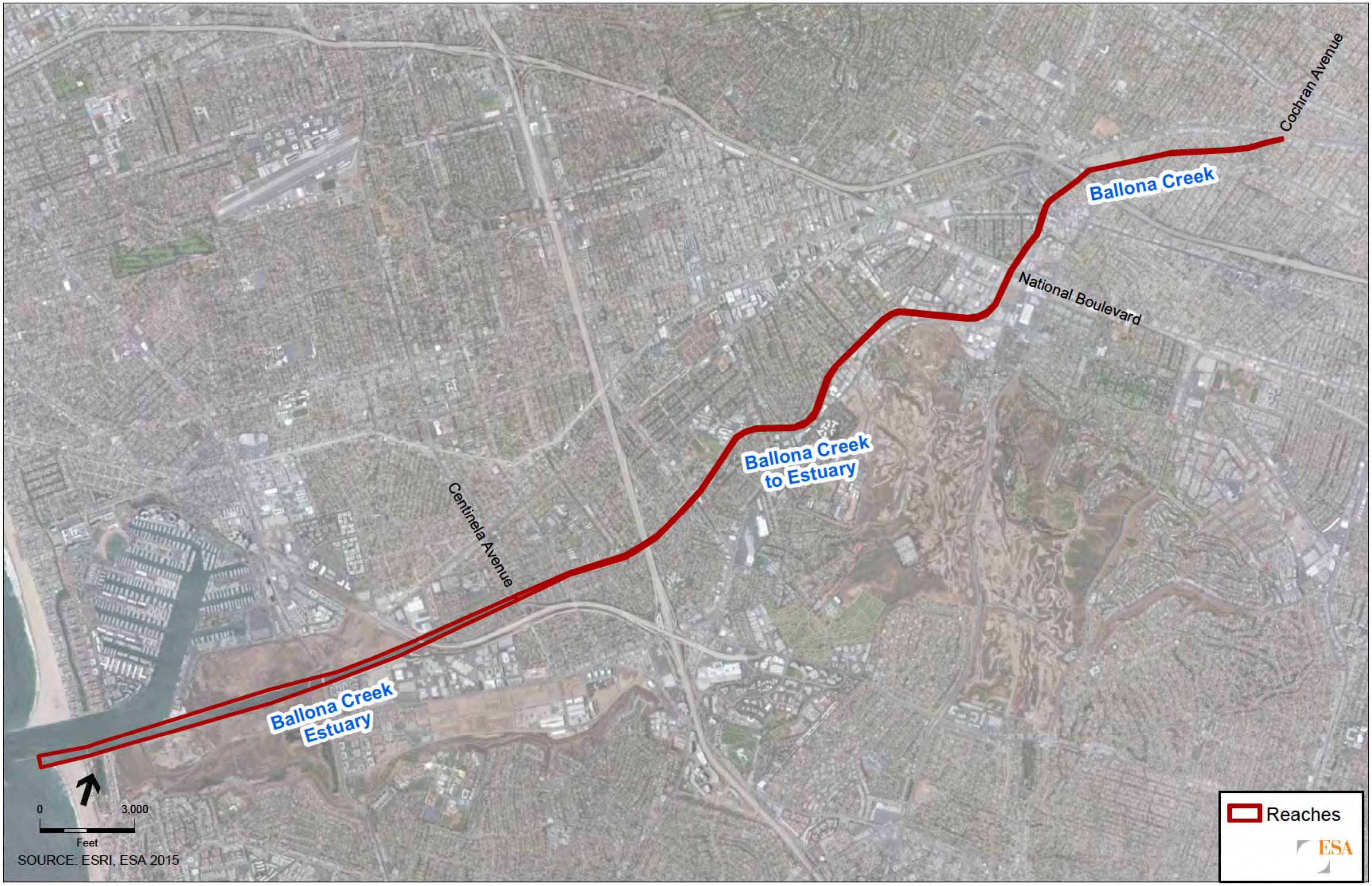
3.9.2.1 Study Area

To evaluate the potential impacts relative to water quality and hydrology, the study area consists of Ballona Creek (specifically, Ballona Creek upstream of the Project site and the Ballona Creek Estuary (Figure 3.9-1, *Ballona Creek Reaches*, p. 3.9-2), Santa Monica Bay, and Marina del Rey. To analyze potential impacts relating to groundwater, the study area consists of the Santa Monica Basin and Coastal Subbasin. These areas were selected because they are the areas where Project-related changes to the human environment could impact surface water and groundwater hydrology and quality.

3.9.2.2 Environmental Setting

Climate and Precipitation

The Ballona Creek watershed is located in Los Angeles County with headwaters in the Santa Monica Mountains to the north and in the Baldwin Hills to the south (Figure 3.9-2, *Ballona Creek Watershed*, p. 3.9-3). The coastal plains within this region have a Mediterranean climate with mild rainy winters and warm dry summers, while the inland slopes and basins have more extreme temperatures and less precipitation (LARWQCB 1994). These variations of climate within the region can be attributed to variable topography. Prevailing winds from the west and northwest carry moist air from the Pacific Ocean over 35 miles inland until it is forced upward by the San Gabriel Mountains, which are located northeast of the study area. The resulting orographic rainfall occurs mostly between November and March, followed by dry summer months. Periodic drought conditions also are known to occur within the area (LARWQCB 1994, State of California 2015). The average annual rainfall within the Los Angeles Basin is approximately 12.02 inches (Western Regional Climate Center 2015).



Ballona Wetlands Restoration Project

Figure 3.9-1
Ballona Creek Reaches

Ballona Wetlands Restoration Project

Figure 3.9-2
Ballona Creek Watershed

Surface Water Hydrology and Drainage

As noted above, the study area is within the Ballona Creek Watershed, specifically, Ballona Creek upstream of the Project site, the Ballona Creek Estuary, and Santa Monica Bay. As discussed in Section 2.4.7, *19th Century Wetlands*, prior to 1825, the Los Angeles River flowed into the Ballona Wetlands. By 1939, Ballona Creek had been channelized to its current location. Ballona Creek includes three reaches as defined by the 1994 Water Quality Control Plan for the Los Angeles Region (Basin Plan) (LARWQCB, 1994):

1. Reach 1 or Ballona Creek: Cochran Avenue to National Boulevard.
2. Reach 2 or Ballona Creek to Estuary: National Boulevard to Centinela Avenue.
3. Ballona Creek Estuary: Centinela Avenue to the Pacific Ocean.

Reaches 1 and 2 are upstream of the site; the Project falls within the Ballona Creek Estuary.

Characterization of the existing hydrologic conditions also includes Marina del Rey, since the mouth of Ballona Creek discharges adjacent to the Marina entrance and due to the connection of the Marina (Basin H) to Fiji Ditch in Area A of the Ballona Reserve underneath Fiji Way. These individual areas are described below and the entire project area is shown on Figure 3.9-1, *Ballona Creek Reaches*, p. 3.9-2.

Ballona Creek Watershed Upstream of the Project Site

The Ballona Creek Watershed covers an area of approximately 130 square miles and is located in the coastal plain of the Los Angeles Basin (Figure 3.9-2, *Ballona Creek Watershed*, p. 3.9-3). Its boundaries are the Santa Monica Mountains to the north, the Harbor Freeway (110) to the east, and the Baldwin Hills to the south. Ballona Creek is a 9-mile long waterway that flows through Culver City until emptying into Santa Monica Bay between Marina del Rey and Playa del Rey. The creek has three major tributaries: Benedict Canyon Channel, Sepulveda Creek Channel, and Centinela Creek Channel. Following damaging flooding events in the 1930s, the Ballona Creek and its tributaries were channelized and concrete levees were constructed.

The watershed upstream of the site is 20% undeveloped foothill and canyon area and 80% highly urbanized coastal plain, including the densely developed communities of Beverly Hills, Culver City, Hollywood, and a portion of the City of Los Angeles (Corps 2010a). The urbanized portions of the watershed drain to Ballona Creek and its tributaries via streets and storm drains (Corps 2010b). Upstream of the confluence with Centinela Creek, Ballona Creek is a trapezoidal concrete channel confined by levees on both sides. Downstream of this point, the trapezoidal channel has a sediment bottom (i.e., “soft-bottom”) with concrete side slopes. Because the majority of the watershed is developed, the Ballona Creek sediment yield is relatively low (average of 9,100 cubic yards per year [cy/yr]) compared to natural systems and historic conditions as reported by ESA in the June 2015 Sediment Dynamics and Sediment Budget Analysis prepared for the Project (Appendix F1). Historically, the Los Angeles River intermittently drained and delivered sediment to the Ballona estuary, until it avulsed to its current location with its mouth at Long Beach (1825), where it was then channelized, which reduced storm flows and sediment delivery to Ballona Creek (1884-1939). Further development of the watershed and construction of sediment basins along Ballona Creek reduced the amount of sediment even more.

Ballona Creek at the Project Site – Ballona Creek Estuary

Within the Ballona Reserve, Ballona Creek is a straight, trapezoidal, soft-bottomed channel with concrete flood control levees. Ballona Creek is connected to the Ballona Reserve in West Area B through two self-regulated tide (SRT) gates, which limit the high tide levels in the wetland or "mute" the tides. A second culvert with a flap gate allows flow out of West Area B into the creek when West Area B water levels exceed the water levels in Ballona Creek. Additional culverts under Culver Boulevard and the Gas Company Road connect West Area B to South and then Southeast Area B respectively. These areas receive severely muted tides, and the tidal waters are limited to the western ditches that run through these areas.

The Freshwater Marsh treats urban runoff and stormwater from the Playa Vista development (central inlet) and from Jefferson Boulevard (Jefferson inlet). Water flows into the Freshwater Marsh year-round from the storm drains and an adjustable outlet weir into Southeast Area B provides water level control. Water flows out of the Freshwater Marsh through an underground culvert with a flapgate that connects to Ballona Creek. During storm events greater than the 1-year event[94], the Freshwater Marsh flows over the adjustable weir into a spillway in Southeast Area B. In addition, a partially-constructed culvert is located at the southern end of the marsh that could be used to manage the periodic release of freshwater into Southeast Area B with completion of the outlet.

The creek levees prevent water from Ballona Creek from entering Area A and Area C under existing conditions. However, Fiji Ditch, in the north of Area A, is connected to Marina del Rey by a culvert. A second overflow culvert under Lincoln Boulevard also provides Area C drainage to Fiji Ditch during storm events.

Santa Monica Bay

Santa Monica Bay is a bight[95] of the Pacific Ocean west of Los Angeles. The bay extends from Point Dume in Malibu to the Palos Verdes Peninsula. Ballona Creek falls close to the middle of the bay coastline. The Marina del Rey entrance and Venice Beach are north of Ballona Creek and Dockweiler Beach is to the south.

Marina del Rey

The Marina del Rey harbor opens to the Pacific Ocean in Santa Monica Bay. As shown in Figure ES-2, *Project Site* (p. ES-5), the mouth of Ballona Creek parallels the entrance channel to Marina del Rey, and they are separated by a jetty. The current area of the Marina del Rey watershed is approximately 2.9 square miles and drains a highly urbanized area that include residential, commercial, and industrial land uses. Dredging of the Marina entrance to maintain navigable waters affects the coastal processes in the vicinity of the mouth of Ballona Creek by creating a hole in which sand can be trapped. Additionally, Ballona Creek affects the water quality in Marina del Rey during large storm events as runoff from the larger watershed coming down the creek mixes with water in the Marina.

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94 The size of a storm event that has a 100% chance of occurring each year.
95 A "bight" is a curve or recess in a coastline.

Surface Water and Sediment Quality

The Basin Plan for the Los Angeles Region specifies water quality objectives for all surface waters within the Los Angeles region based on the beneficial uses of that water body (LARWQCB 1994). The Basin Plan lists current beneficial uses for the key surface water features in the Project area, as shown in Table 3.9-1, *Beneficial Uses of Key Surface Water Features in the Project Area*. The Basin Plan does not include specific water quality objectives for Ballona Creek.

TABLE 3.9-1
BENEFICIAL USES OF KEY SURFACE WATER FEATURES IN THE STUDY AREA

Beneficial Uses	Ballona Creek Reach[1]	Ballona Creek to Estuary Reach[2]	Ballona Creek Estuary[3]
Municipal and Domestic Supply (MUN)	P*	P*	--
Industrial Service Supply (IND)	--	--	--
Industrial Process Supply (PROC)	--	--	--
Agricultural Supply (AGR)	--	--	--
Groundwater Recharge (GWR)	--	--	--
Freshwater Replenishment (FRSH)	--	--	--
Navigation (NAV)	--	--	E
Hydropower Generation (POW)	--	--	--
Commercial and Sport Fishing (COMM)	--	--	E
Aquaculture (AQUA)	--	--	--
Warm Freshwater Habitat (WARM)	P	P	--
Cold Freshwater Habitat (COLD)	--	--	--
Inland Saline Water Habitat (SAL)	--	--	--
Estuarine Habitat (EST)	--	--	E
Marine Habitat (MAR)	--	--	E
Wildlife Habitat (WILD)	E	P	E
Preservation of Biological Habitat (BIOL)	--	--	--
Rare, Threatened or Endangered Species (RARE)	--	--	Ee
Migration of Aquatic Organisms (MIGR)	--	--	Ef
Spawning, Reproduction, and/or Early Development (SPWN)	--	--	Ef
Shellfish Harvesting (SHELL)	--	--	E
Wetland (WET)	--	--	--

NOTES:
E: Existing beneficial use; P: Potential beneficial use; I: Intermittent beneficial use.
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f: Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03.
1 This reach extends from Cochran Avenue to National Boulevard.
2 This reach extends from National Boulevard to the Ballona Creek confluence with Centinella Creek.
3 This reach extends from the confluence with Centinella Creek to Santa Monica Bay.

SOURCE: LARWQCB 2005.

Surface Water and Sediment Quality in Ballona Creek Upstream of the Project Site

In 2010, the State of California published an updated list of impaired water bodies pursuant to provisions of Clean Water Act Section 303(d). Ballona Creek is listed as impaired for various constituents, as shown in Table 3.9-2, *303(D) Pollutant Assessments in Ballona Creek Upstream of the Project Site*.

TABLE 3.9-2
303(D) POLLUTANTS IN BALLONA CREEK UPSTREAM OF THE PROJECT SITE

Pollutant	Source
Cadmium (sediment)	Point Source, Nonpoint Source
Coliform bacteria	Point Source, Nonpoint Source
Copper, Dissolved	Nonpoint Source
Cyanide	Source Unknown
Lead	Source Unknown
Selenium	Source Unknown
Toxicity	Source Unknown
Trash	Source Unknown
Viruses	Point Source, Nonpoint Source
Zinc	Source Unknown

SOURCE: SWRCB 2010

The greatest threat to the water quality of Ballona Creek is uncontrolled pollutants from nonpoint sources (many diffuse sources) throughout the watersheds; industrial and municipal effluents also are known to degrade the water quality of the creek (LARWQCB 1994). Historical and more recent water quality data, which forms the basis for the Total Maximum Daily Loads (TMDLs) indicate that dry weather flows in Ballona Creek periodically exceed water quality objectives for bacteria indicators, metals, and other constituents (Stein and Tiefenthaler 2004; Weston 2005; LARWQCB 2003, 2005, 2007, Johnston 2011, 2012). Storm water flows frequently exceed general water quality objectives for bacteria and metals in Ballona Creek as well.

TMDLs for bacteria and metals in the water column have been developed to address exceedances of these constituents in Ballona Creek. The TMDLs define waste load allocations (WLA)[96] and implementation timelines to meet these goals. For example, the TMDL WLA goal for trash is zero with phased reductions of trash to occur over a period of 10 years. Compliance for the bacteria TMDL was expected to be achieved for dry weather flows by April 27, 2013, and by April 27, 2021 for wet weather flows. As of September 2013, the dry weather flows still periodically exceeded the TMDL targets, although the number of exceedances has decreased over time. The metals TMDL is expected to be achieved by January 11, 2021 (see below for further discussion).

96 Total waste load allocations are the allowable amount of constituents that may be discharged to receiving waters that will not result in impairment of designated beneficial uses.

The Los Angeles Regional Water Quality Control Board (LARWQCB) has incorporated these TMDL WLAs and timelines into the reissued 2012 municipal separate storm sewer systems (MS4) permit. The MS4 permit requires municipalities and agencies that discharge stormwater and non-storm runoff from an MS4 to Ballona Creek to reduce pollutant concentrations. Compliance with the MS4 permit is an enforceable action subject to fines under the Clean Water Act and California Porter-Cologne Water Quality Control Act.

Surface Water and Sediment Quality in Ballona Estuary and Project Site

In the 2010 updated list of impaired water bodies, Ballona Creek Estuary was listed as impaired for various constituents, as shown in Table 3.9-3, *303(D) Pollutant Assessments in Ballona Estuary and Project Site*, including various metals, organic compounds, and sediment toxicity. Additionally, the Ballona Reserve is listed for hydrological modifications, excess sediment, and invasive vegetation.

TABLE 3.9-3
303(D) POLLUTANT ASSESSMENTS IN BALLONA ESTUARY AND PROJECT SITE

Pollutant	Source
Cadmium	Source Unknown
Chlordane (tissue & sediment)	Point Source, Nonpoint Source
Coliform bacteria	Point Source, Nonpoint Source
Copper	Source Unknown
DDT (tissue & sediment)	Point Source, Nonpoint Source
Lead (sediment)	Point Source, Nonpoint Source
PAHs (Polycyclic Aromatic Hydrocarbons) (sediment)	Point Source, Nonpoint Source
PCBs (Polychlorinated biphenyls) (tissue & sediment)	Point Source, Nonpoint Source
Sediment Toxicity	Point Source, Nonpoint Source
Shellfish Harvesting Advisory	Point Source, Nonpoint Source
Silver	Source Unknown
Zinc (sediment)	Point Source, Nonpoint Source

SOURCE: SWRCB 2010

Historical sediment quality data indicate that sediments within the tidal reach of Ballona Creek are impacted by metals, pesticides, PAHs,[97] and other organic compounds (Stein and Tiefenthaler 2004, LARWQCB 2005). Toxicity testing of sediments within the tidal reach of the creek also indicated toxic responses to some indicator benthic marine organisms (Greenstein and Bay 2014). The results of toxicity identification evaluation testing (TIE) indicated that synthetic pyrethroid pesticides, such as allethrin, resmethrin, permethrin, cyfluthrin or esfenvalerate, were the major contributor to toxicity in estuary sediments (Greenstein and Bay 2014).

97 Polycyclic aromatic hydrocarbons are molecules found in fossil fuels.

To address these exceedances in Ballona Creek Estuary, a TMDL for toxics as monitored in sediment and fish tissue was developed (2006 Toxics TMDL) and later revised by the LARWQCB on December 5, 2013. The revised TMDL combined this 2006 Toxics TMDL for sediment in the channel (within the tidal extent) with the 2008 Metals TMDL for the water column in Ballona Creek (above the tidal extent in the Ballona Creek Reach and the Ballona Creek to Estuary Reach). These were combined because constituents in the water column are carried with suspended sediment in storm flows from the watershed to the estuary, where sediments often settle out at the fresh water and salt water interface. Constituents that include PAHs and pesticides are hydrophobic and will be absorbed by sediment particles carried by storm flows. Metals can also be absorbed by sediment particles that may be carried during storm event down to the estuary or present in the dissolved phase within the water column. The water quality of storm flows from the watershed has direct impacts on the quality of sediments within the estuary. For this reason the two TMDLs have been combined to require both pollutant reductions from waste load allocation (WLA) of metals (copper, lead, zinc, and selenium) within the water column from the watershed, and attainment of the Sediment Quality Objectives (SQOs), which are targets used to protect against negative biological impacts. Compliance for the Toxics and Metals TMDL is expected to occur by January 11, 2021.

West Area B Water and Sediment Quality

Water quality monitoring showed that West Area B generally functions as a sink, rather than a source of bacteria (Johnston et al. 2012, Johnston et al. 2015). In the 2010-2011 and 2011-2012 monitoring years, water quality at all stations exceeded TMDL levels during at least one sampling event (Johnston et al. 2011, 2012). In the 2015 paper, Johnston and colleagues found that the tidal channels of the West Area B wetlands were acting as a sink for bacteria loading, even when the sediment resuspended in the water column with the outgoing tide.

Sediment data collected by Weston in 2006 for the Project (Appendix F2) indicate that both flows from Ballona Creek and urban runoff are impacting the sediments in West Area B. To assess the sediment samples for potential biological impact due to elevated constituents of concern, the Effects Range – Low (ER-L) and Effects Range-Median (ER-M) values can be used as a metric[98]. The ER-Ls and ER-Ms were developed by Long et al. (1995) to evaluate dredged material for ocean disposal. In West Area B, arsenic, cadmium, copper, lead, mercury, nickel, silver, and zinc exceeded the more conservative ER-Ls. Silver exceeded the ER-M in the most northeastern extent of the channel network. Copper, lead, and zinc exceeded the ER-Ms, as well, in the channel near Culver Boulevard, which indicates that runoff from adjacent residential communities and transportation corridors is likely impacting sediment quality in the marsh.

Sediment samples near the SRT gates (Figure ES-2, *Project Site*, p. ES-5) show that the sediment is potentially affected by pesticides, specifically chlordane and DDT from Ballona Creek. Metal concentrations near the SRT gates were higher than those observed in Ballona Creek. West Area B may be acting as a sink for these metals due to the limited tidal circulation and flushing (Appendix F2).

98 The sediment samples were tested before the SQO methodology was approved. RSL/PRG standards were not used because these samples were in a protected reserve (West Area B). Later samples taken in Area A where there could be human contact were evaluated against RSL/PRG. See Water Quality Tech Report (Appendix F6) for more details.

Area A and North Area B Sediment Quality

As described in Section 2.3.2.2, Area A is comprised of loosely consolidated dredge material from the excavation of Marina del Rey. Sediment samples collected by Weston in 2008 in Area A (Appendix F2) and 2012 in Area A and North Area B (Appendix F3) show chemical concentrations below levels that would classify it as hazardous waste per the USEPA regulations found in Title 40 Code of Federal Regulations (C.F.R.) Part 261 (USEPA 2006). The sediment samples were compared to the ER-Ls and ER-Ms from Long et al. (1995). Another measure of potential ecological impacts is the Beneficial Reuse criteria for wetland restoration, developed by the San Francisco Regional Water Quality Control Board (2000) and refined for use outside of San Francisco Bay by Germano & Associates (2004). The Beneficial Reuse criteria have different values for material that will be used as wetland surface (more conservative) and wetland foundation material (less conservative) and account for existing ambient conditions.[99] Additionally, guidance for ocean disposal recommends comparison of sediments to the ER-Ls and ER-Ms (USEPA and Corps 1991 and 1998).

The 2008 and 2012 sediment samples, which were composited, were compared to the ER-Ls, ER-Ms, and Beneficial Reuse values to determine potential ecological impacts. The results showed that several metals slightly exceeded the ER-L values, including arsenic, cadmium, copper, lead, mercury, nickel, silver, zinc, total DDT, and total chlordane as reported by ESA in the May 2015 Sediment Quality Investigation prepared for the Project (Appendix F5). However, with the exception of silver, no metals exceeded the corresponding ER-M or wetland surface Beneficial Reuse values, indicating relatively low concentrations. While silver exceeded the wetland surface Beneficial Reuse value, it was below the wetland foundation value and within the range of concentrations historically found in the existing Area B wetland.

A bioassay study was conducted on the 2012 samples, and results indicated low to moderate toxicity for one of the marine arthropods, *Eohaustorius estuarius* (Greenstein and Bay 2014). These samples contained low concentrations of constituents and a high percentage of fine sediments, leading to speculation that the toxicity was related to sediment grain size characteristics. A TIE study conducted in 2014 concluded that multiple lines of evidence indicated that nonchemical factors, like grain size, were the most likely cause of toxicity for the sediment (Greenstein and Bay 2014). Therefore, it is likely that the fine-grained (physical) nature of the sediments (which is typical of most salt marsh sediments) was the cause of the toxicity response and not the constituents detected in the on-site sediments.

The results from the recent sediment sampling and testing efforts are summarized in Appendix F5 and the May 2015 Water Quality Technical Report prepared by ESA for this Project (Appendix F6).

Surface Water and Sediment Quality in Marina del Rey

Like Ballona Creek, Marina del Rey also exceeds the water quality objectives for bacteria indicators, metals, and other constituents (ABC 2004). However, the magnitude and frequency of

[99] In some cases for the San Francisco Bay, ambient values exceed ER-Ls (e.g., nickel and chromium) but have not been found to be associated with adverse biological effects. Additionally, since any restored tidal wetland eventually will take on the characteristics of the ambient sediments in nearby areas of the open bay, efforts to restore the wetland with sediments that are "cleaner" than ambient conditions often are not considered practical.

these exceedances are lower than in Ballona Creek. The main channel of Marina del Rey has better water quality than the back basins due to greater circulation, proximity to the Pacific Ocean, and less direct input from urban runoff. During high discharges from Ballona Creek, flushing of the Marina is inhibited, leading to an accumulation of chemicals in Marina waters (Moffatt and Nichol 1994). Additionally, Ballona Creek is a contributor of constituents to the marina (Moffatt and Nichol 1994 and 1999, Soule et al. 1996, ABC 2001).

Fiji Ditch is connected to Basin H in Marina del Rey, which has better water quality than the back basins due to its proximity to the Pacific Ocean and tidal flushing (PWA 2006) However, water samples collected by The Bay Foundation (2011) indicate high, but variable numbers of bacteria in Fiji Ditch (Johnston et al. 2011).

Marina del Rey has impacted sediments in the main channel, where vessels may be a major contributor of constituents, and in several of the back basins, where water movement is low and fine sediments, which are more likely to have high levels of constituents associated with them, settle (Moffatt and Nichol 1998, ABC 2001). The sources of the impacted sediments may include the Ballona Estuary, resuspension of coastal sediments during storms, storm water discharges directly into Marina del Rey, and human activities within the Marina (Moffatt and Nichol 1998, ABC 2001).

Erosion and Sedimentation

Throughout most of its length, Ballona Creek is a concrete-lined, flood-control channel in a highly urbanized watershed. These factors limit the supply of sediment to the creek, which in turn limits the potential for sedimentation in the channel. The concrete lining also prevents channel erosion, so erosion only occurs in the soft-bottom portion of the channel (downstream of Centinela Boulevard). At the mouth of Ballona Creek, coastal sediment transport processes strongly influence sediment dynamics.

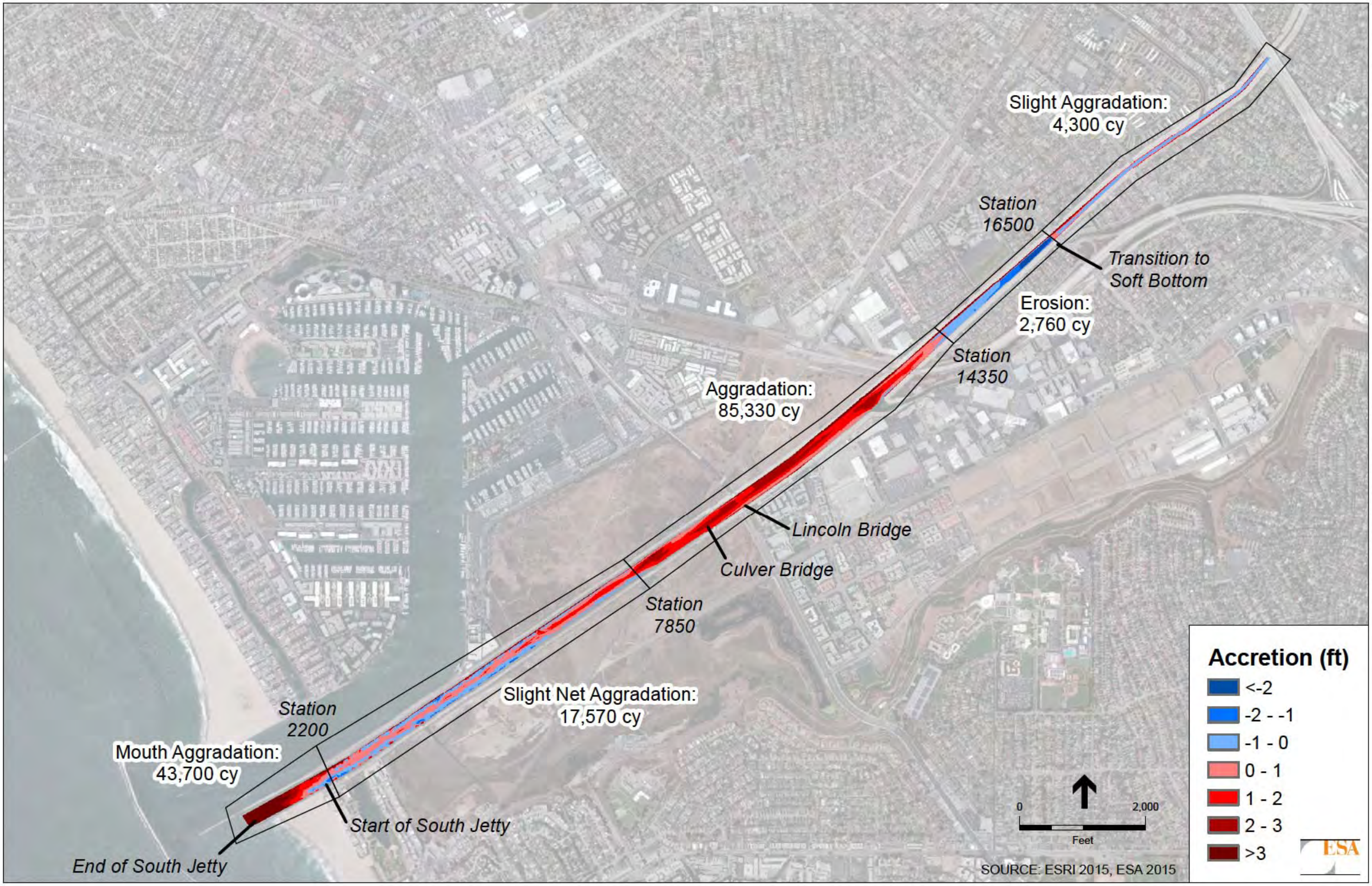
Erosion and Sedimentation in Ballona Creek Upstream of the Project Site

Storm events can mobilize sediment from the watershed or within Ballona Creek and result in either net deposition or, where the channel has a soft-bottom, net erosion within the channel. Channel profiles from 1961 and 2012 were compared to identify areas of net channel deposition or erosion over time. Based on these historic data, and sediment transport modeling results, five different sediment transport reaches were identified, three of which are upstream of the site (Figure 3.9-3, *Ballona Creek Accretion Between 1961-2012*, p. 3.9-12) as discussed in the May 2013 Preliminary Hydrology and Hydraulics Report prepared by ESA for the Project (Appendix F7):

1. (Station 23070 to 16500) - A slightly depositional reach exhibiting both erosion and deposition from I-405 to Centinela Avenue.

2. (Station 16500 to 14350) - An erosional reach immediately downstream of the terminus of the concrete channel lining to just upstream of the Marina Freeway, which includes a scour hole at the transition to the earthen channel bottom.

3. (Station 14350 to 7850) - A depositional reach, which extends from upstream to the middle of Area A.



Ballona Wetlands Restoration Project

Figure 3.9-3
Ballona Creek Accretion Between 1961 and 2012

Erosion and Sedimentation in Ballona Estuary and Project Site

Historic data and sediment modeling show the following sediment transport reaches within the Project site (Appendix F7):

1. (Station 14350 to 7850) – A depositional reach, which extends from just upstream of the Marina Freeway to the middle of Area A.
2. (Station 7850 to 2200) – A slightly depositional reach exhibiting both erosion and deposition to the Pacific Avenue bridge.
3. (Station 2200 to 0) – A depositional reach with a wave-driven shoal in the mouth of the creek.

Figure 3.9-3, *Ballona Creek Accretion Between 1961-2012* (p. 3.9-12), shows each of the five sediment transport reaches described above.

Since Area B is separated from Ballona Creek by SRT gates, which close when Ballona Creek water levels rise during high tides or storm events, no erosion occurs in the marsh as a result of Ballona Creek flood flows.

Erosion and Sedimentation in Marina del Rey and Santa Monica Bay

In the vicinity of Ballona Creek, the alignment of the coastline and the associated prevailing waves create a predominant net coastal sediment transport to the southeast or downcoast. Ocean waves and long-shore[100] currents carry sediment, whether from terrestrial or ocean sources, southeastward along the coast. This is reversed when southern swells approach the coastline during the summer, and occasionally under other conditions. Whether sediment is deposited or eroded from the shoreline depends on the actions of the long-shore currents, the shape of the coastline, and anthropogenic factors such as dredging and structures.

The construction of the Marina del Rey jetties and breakwater, as well as a series of other coastal structures in Santa Monica Bay, created littoral barriers that limit coastal sediment transport and that, along with sand nourishment, create compartmentalized, wide, stable beaches. The Marina del Rey breakwater creates a wave shadow that encourages deposition behind it. It is estimated that approximately 48,000 cy/yr of sand is deposited in the entrance to Marina del Rey as a result of coastal sediment transport processes.

Ballona Creek can also be a source of sediment to Santa Monica Bay. Sediment transport is extremely variable depending on sediment supply and hydrology, but the average sediment delivery from Ballona Creek into Santa Monica Bay and Marina del Rey is estimated to be approximately 7,000 cy/yr (Appendix F1).

Sediment deposited in the entrance to the marina is dredged to maintain boat access by the Corps and Los Angeles County. Since 1999, the following major dredge events have occurred:

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[100] "Long-shore currents" run parallel to or along the shoreline.

1. 1999: 670,000 cy dredged
2. 2007: 330,000 cy dredged
3. 2012: 780,000 cy dredged

Based on all of the dredging records (1969-2012), a total of approximately 55,000 cy of material are deposited each year in the marina entrance from all sources (Corps 2003a, 2003b, 2004, 2014, Kinnetic Laboratories and Halcrow 2011). Of this, an average of approximately 5,000 cy/yr is from Ballona Creek (the remaining 2,000 cy/yr from Ballona Creek is exported to Santa Monica Bay or further downshore).

Flooding

Flooding can occur when stormwater runoff exceeds the conveyance capacity of the drainage system. Flooding can also occur due to tsunamis, high tides/storm surge, dam or levee failure, sea level rise, or other causes.

Current Flooding Conditions Upstream of the Project Area

The Federal Emergency Management Agency (FEMA) identifies areas throughout the United States that are at risk for flooding. FEMA Flood Insurance Rate Maps (FIRMs) show areas that have a 0.2% risk (500-year event) or a 1% risk (100-year event) of being inundated by a flood event in a given year. The FIRM for Ballona Creek shows the 1% and 0.2% flood zones are contained within the channel (Figure 3.9-4, *FEMA Flood Map*; FEMA 2008, p. 3.9-15).

Hydraulic modeling was conducted to evaluate the water elevations under flood conditions (see Section 3.9.5, *Methodology*). The flood analysis was performed for a steady flow rate of 46,000 cubic feet per second (cfs), the design flow used by the Corps to design the channel. The Corps developed the design flow from a 24-hour, 50-year rainfall event using a modified Rational Method.[101] The design flow is greater than the 100-year event (44,690 cfs) because it includes "burning" and "bulking," or consideration of canyon and mountainous area wildfires adding debris to the runoff. Modeling of the design flow showed that the flow is contained within the channel with 5 to 7 feet of freeboard[102] below the levee crests (Appendix F7).

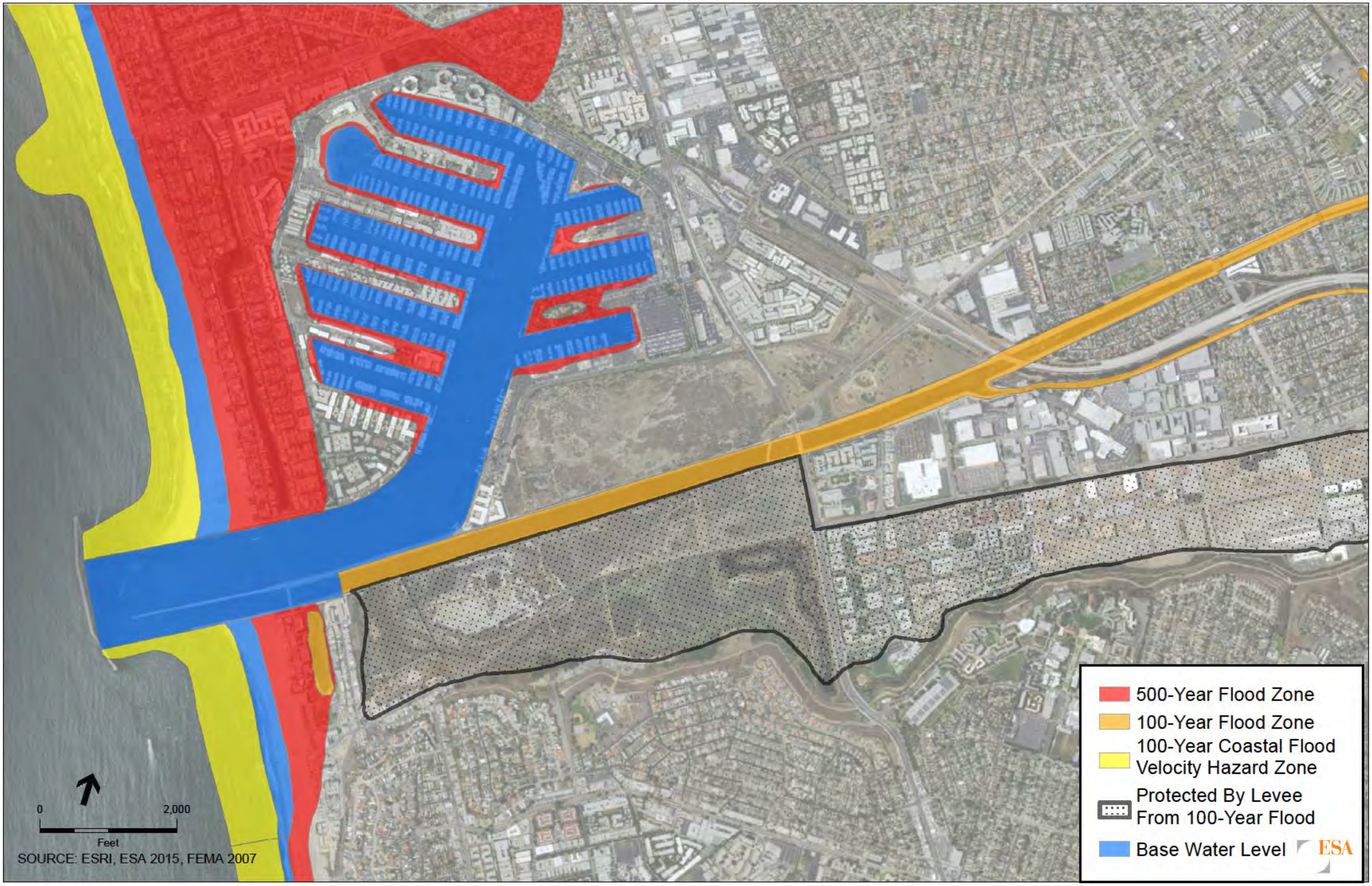
Current Flooding Conditions at the Project Site and Downstream of the Project Site

Storm Events

The FIRM (FEMA 2008) shows that the 100- and 500- year storm events (event with a 1% or 0.2% chance of occurring in a given year) are contained within the Ballona Creek channel (Figure 3.9-4, *FEMA Flood Map*, p. 3.9-15). Hydraulic modeling results indicate the design event of 46,000 cfs (greater than the 100-year event) is contained within the channel with 5 to 7 feet of freeboard to the levee crest (Appendix F7).

[101] The Rational Method is a simple method for estimating peak discharge from a drainage using a formula that relates flow rate to drainage area, rainfall intensity, and a runoff coefficient. It is commonly used to estimate design flow rates for engineering studies.

[102] "Freeboard" is the distance between the water elevation and the top of the channel or levee.



Ballona Wetlands Restoration Project

Figure 3.9-4
FEMA Flood Map

Localized flooding has been observed at the west end of Culver Boulevard near the intersection with Nicholson Street. The Pershing Drive storm drain collects the drainage from the Playa del Rey neighborhood south of Culver Boulevard and routes it toward the intersection of Nicholson Street, Pershing Drive, and Culver Boulevard. This pipe is undersized and contains an overflow drain that occasionally discharges on to the intersection of Culver Boulevard and Nicholson Street (Appendix B1).

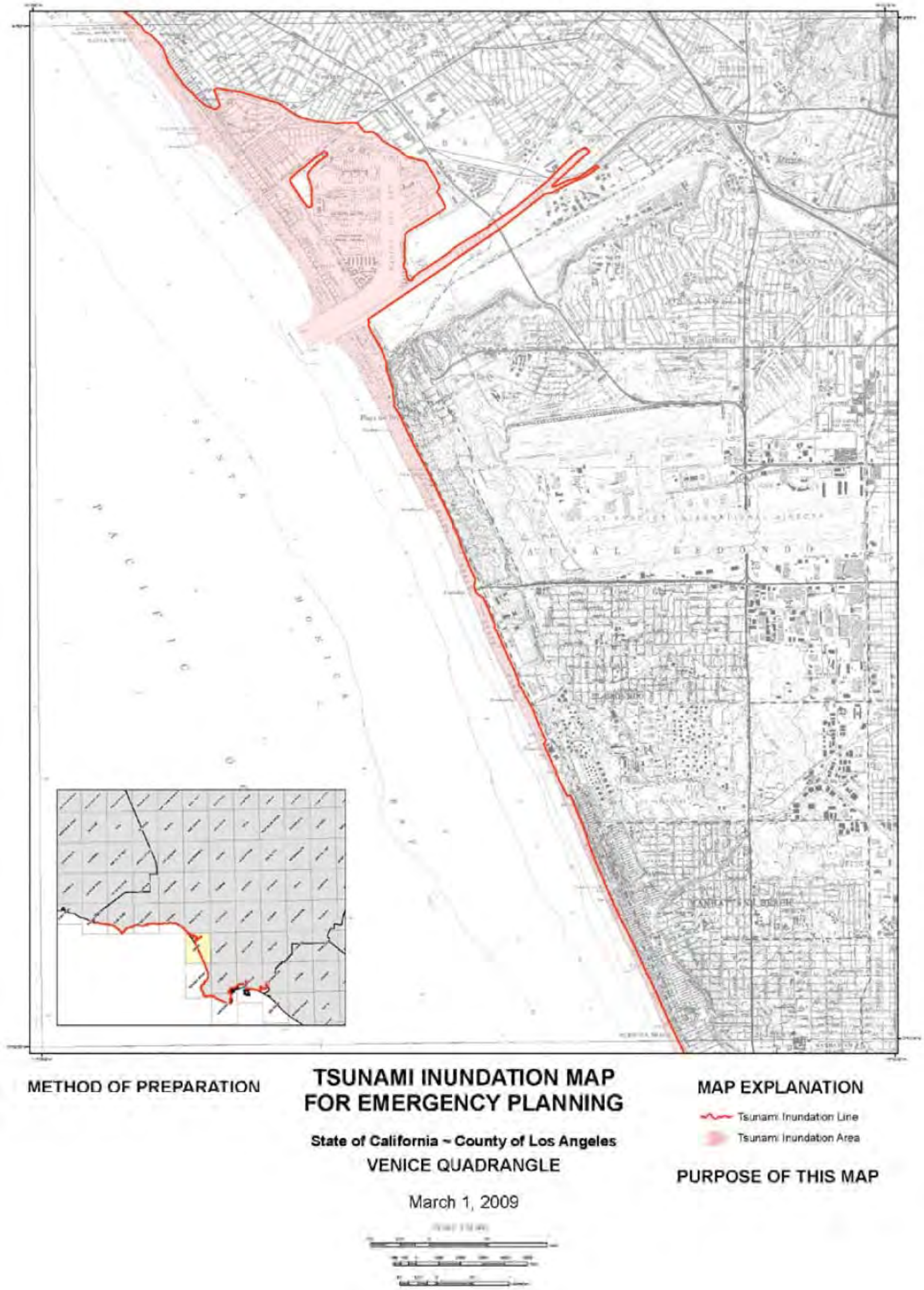
For storms greater than the 1-year event, flow from the Freshwater Marsh overtops the weir into Southeast Area B. When the water levels in the creek are high, Area B acts as storage for water from the Freshwater Marsh until the creek water levels are low enough for water to flow out of the SRT gates in West Area B and the flap gate from the Freshwater Marsh into Ballona Creek.

Tsunamis

Flooding can also occur from a tsunami. A tsunami is a wave or series of waves generated by an earthquake, landslide, volcanic eruption, or even large meteor hitting the ocean (Pridmore 2015). Typically, a magnitude 8 or higher submarine earthquake creates a significant upward movement of the sea floor resulting in a rise or mounding of water at the ocean surface. This mound of water moves away from this center in all directions as a tsunami. A tsunami can travel across the open ocean at speeds of approximately 500 mph (the speed of a jet plane). As the wave approaches land and as the ocean shallows, the speed of the wave slows to about 30 mph and grows significantly in height (amplitude). On shore run-up of a tsunami can cause substantial damage and property loss. The California Emergency Management Agency (CalEMA) has identified the tsunami inundation hazard zone for coastal areas of the state including the County of Los Angeles (State of California 2009). The hazard zone includes Marina del Rey and areas of Venice Beach, including and inland of the canal system, and also along the segment of the Ballona Creek channel within the Project area (Figure 3.9-5, *State Map of Tsunami Inundation*, p. 3.9-17). The City of Los Angeles General Plan also lists tsunamis as water action hazards.

Two notable tsunamis have affected the Los Angeles area in the twentieth century. On May 22, 1960, a far-field (distant) tsunami originating in Chile, South America from an 8.7 magnitude earthquake reached the Los Angeles coastline 14 hours later with a height of 2.6 feet (NOAA 2010). At least one death was associated with the tsunami in Los Angeles County and $1,000,000 in damage was recorded (Whitmore 2003). An 8.9 magnitude earthquake in Anchorage Alaska occurred on March 3, 1964 and resulted in run-up heights of 2 feet along the Los Angeles County shoreline (NOAA 2010). The tsunami caused $200,000 in boat damage and one death in the Los Angeles area (Whitmore 2003).

Santa Monica Bay is susceptible to the effects of near-field (near-vicinity) tsunamis from sources such as a submarine (underwater) landslide and/or a large earthquake on any of the nearby faults. These faults include the Palos Verdes fault zone, which trends northwest off the Long Beach and Santa Ana coast, the San Pedro Basin fault zone, and Santa Cruz-Santa Catalina Ridge fault zones (see Section 3.8, *Hazards and Hazardous Materials*, for additional details).



SOURCE: State of California (2009).

Ballona Wetlands Restoration Project

Figure 3.9-5
State Map of Tsunami Inundation

The Palos Verdes Slide (PVS), which is off the Palos Verdes Peninsula, has the potential to cause substantial damage in the Long Beach area. A slide on the PVS could cause up to a65 foot tsunami that would hit the Palos Verdes Peninsula 7 minutes after it occurs, causing velocities over 10 feet per second (3 meters per second (m/s)) in the Port of Los Angeles (Borrero et. al. 2002). However, the model used to predict this also showed that, near the peninsula in the Redondo Beach area (just south of Ballona Creek), a tsunami from the PVS would only be up to 1.6 feet and occur approximately 15 minutes after the slide.

Sea Level Rise

Estimates of sea level rise can be used to evaluate potential future flooding conditions. In 2013, the Ocean Protection Council released a resolution, which revised previous global sea-level rise projections. The resolution advises California state agencies to consider 10-17 inches of sea level rise by 2050 and 31-69 inches by 2100 (measured from a 2000 baseline) based on the National Research Council's *Sea-Level Rise for the Coasts of California, Oregon, and Washington* report (OPC 2013, NRC 2012). The 2100 estimates reflect the range in greenhouse gas emission scenarios, with low emissions resulting in 31-50 inches of sea level rise and high emissions resulting in 43-69 inches. To date, emissions have been tracking on the high scenario. Assuming continuation of the high emissions trajectory, the higher range of sea level rise projections would apply. The high estimate is similar to the Corps Modified NRC-III curve which predicts 59 inches by 2100 (from a 1992 baseline) (Corps 2011). As global water levels increase, land elevations may also be changing. Land subsidence in Los Angeles is on the order of 0.06 inches per year (1.5 mm/yr), which is much less than projected sea-level rise rates (NRC 2012).

Hydraulic modeling of Ballona Creek under 59 inches of sea level rise (by 2100) found that flood flows for the 100-year event would still be contained within the existing channel except for at the south jetty, where flows would overtop onto the adjacent beach (Appendix F7). In Area B, mean lower low tide (MLLW), which is an average of the lowest water level every day, would be higher than the SRT gates closing elevation, so the marsh would no longer experience a tide range and would drown out (ESA 2014).

Groundwater Occurrence and Flow

Los Angeles County is located in the South Coast Hydrologic Region (HR) (DWR 2003). The South Coast HR is divided into numerous smaller groundwater basins and subbasins; the Project site is within the Santa Monica Basin and more specifically, within the Coastal Subbasin. Figure 3.9-6, *Groundwater Basins* (p. 3.9-19), shows the location of the Coastal Subbasin within the Santa Monica Basin, as well as surrounding basins.

The Santa Monica Basin is characterized by aquifers that are generally confined with some areas of unconfined or perched groundwater (MWD 2007). Recharge to the Santa Monica Basin occurs primarily by infiltration of precipitation and surface runoff from the Santa Monica Mountains. Water discharges by surface runoff and subsurface outflow to the West Coast Basin to the south.

There are 19 production wells within the Santa Monica Basin, with only five drinking water wells and four irrigation wells currently in production (MWD 2007). The wells are located within the Arcadia, Charnock, and Olympic subbasins; there are no wells in the Coastal subbasin, where the Project site is located.

Ballona Wetlands Restoration Project

Figure 3.9-6
Groundwater Basins

In Area A of the Project site, the depth to groundwater has been measured between 7 to 17 feet below the ground surface with a corresponding elevation of -6 to 10 feet North American Vertical Datum 1988 (ft NAVD 88) (Appendix E). The groundwater in this area is unconfined, meaning the groundwater is under atmospheric pressure and can fluctuate seasonally, with tidal action, or in direct response to surface infiltration. The groundwater in this area is influenced by the tides through Marina del Rey in the north and Ballona Creek in the south. In Area B, the depth to groundwater has been measured between 2 to 11 feet below the ground surface (2 to 8 ft NAVD 88) (Appendix E). The groundwater is this area is strongly controlled by the adjacent uplands (bluffs), which are recharge areas for the confined aquifers, and by Ballona Creek and the coast, which are discharge areas. The water table, therefore, slopes from the Westchester Bluffs towards Ballona Creek. The inflow of groundwater into Area B is indicated by the presence of willows (generally salt water intolerant) along the base of the bluff slope. In Area C, the depth to groundwater has been measured between 12 to 23 feet below the ground surface (-2 to 6 ft NAVD 88; Appendix E). The groundwater in this area drains toward Ballona Creek and is influenced by the tides in the creek.

Groundwater Quality

In general, groundwater in the Santa Monica Basin is of fair to poor quality. Contaminants include total dissolved solids, nitrate, volatile organic compounds (VOCs), and methyl tertiary-butyl ether (MTBE). Groundwater quality in the Santa Monica Basin reflects current and historical land uses. As a highly urban area, commercial and industrial activities have resulted in contamination due to leaking aboveground and underground storage tanks, leaking sewer and oil pipelines, spills, and illegal discharges. Many groundwater contamination plumes consist of priority contaminants such as petroleum fuels and additives (e.g., MTBE) or solvents (e.g., trichloroethylene (TCE), perchloroethylene (PCE)) (see Section 3.8 for further discussion).

In 1996, the Arcadia and Charnock (water) well fields were shut down due to MTBE and VOC contamination. Since then, about 95% of the Los Angeles City’s water has been imported with the remainder coming from the Olympic subbasin wells (USEPA 2006).

The shallow water table is under tidal influence meaning that groundwater elevations fluctuate in response to tidal cycles in Santa Monica Bay. Generally, freshwater from the inland water table flows toward the coast and mixes with salty groundwater making groundwater that is brackish (a mixture of salty and fresh water). The brackish groundwater in these estuarine, shallow water table aquifers is non-potable.

3.9.3 Applicable Laws, Regulations, Plans, and Standards

3.9.3.1 Federal

Clean Water Act (CWA)

Regulatory authorities exist on both the state and Federal levels for the control of water quality in California. USEPA is the Federal agency responsible for water quality management pursuant to the CWA. The purpose of the CWA is to protect and maintain the quality and integrity of the nation’s waters by requiring states to develop and implement state water plans and policies.

CWA Section 303: Water Quality Standards and Implementation Plans

Section 303 of the CWA requires states to establish water quality standards consisting of designated beneficial uses of water bodies and water quality standards to protect those uses for all waters of the U.S. Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop lists of impaired waters. Impaired waters are waters that do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish a priority ranking for listed waters and develop action plans to improve water quality. This process includes development of TMDLs that set discharge limits for non-point source pollutants. Section 303(d) is part of the regulatory framework because Ballona Estuary is listed as an impaired waterway in the State 303d list and is under multiple TMDLs.

CWA Section 401: Water Quality Certification

Section 401 of the CWA (33 U.S.C. §1341) requires any applicant for a Federal license or permit to conduct any activity that may result in a discharge of a pollutant into navigable waters, including the crossing of rivers or streams during road, pipeline, or transmission line construction, to obtain a certification from the State in which the discharge originates. The certification ensures that the discharge will comply with the applicable effluent limitations and water quality standards. The State agency responsible for implementing section 401 of the CWA in California is the Regional Water Quality Control Board. Because the Project requires a Federal permit, a 401 water quality certification would be required.

CWA Section 402: National Pollutant Discharge Elimination System (NPDES)

Section 402 of the CWA regulates construction-related storm water discharges to surface waters through the NPDES program, administered by the USEPA with implementation authority delegated to the State Water Resources Control Board (SWRCB), in California. An NPDES Construction General permit is required for all projects that disturb 1 acre or more of land (discussed further below in section 3.9.3.2, State). Therefore, the Project would require an NPDES General Construction permit from the LARWQCB.

As part of the permitting effort, the project operator is required to file a public Notice of Intent to discharge storm water associated with the project. As part of the NPDES program, the project operator is required to develop a Storm Water Pollution Prevention Plan (SWPPP), which includes best management practices (BMPs) to be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby surface waters. Permittees are further required to conduct periodic monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants. The SWPPP and all associated BMPs must meet the requirements of the NPDES General Permit for construction storm water discharge (see Section 3.9.3.2, below).

CWA Section 404: Discharge of Dredged or Fill Material

Section 404 of the CWA (33 U.S.C. §1344) authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into the waters of the U.S. at specified disposal sites (33 C.F.R. Part 323). The term “waters of the U.S.” includes wetlands and non-wetland bodies of water that meet specific criteria as defined in the

Code of Federal Regulations (C.F.R.) and applicable Corps guidance. The selection and use of disposal sites will be in accordance with guidelines developed by the Administrator of USEPA in conjunction with the Secretary of the Army and published in 40 C.F.R. Part 230 (the "guidelines"). 40 C.F.R. Part 230 subpart C includes water quality aspects of dredge and fill activities. Among other topics, these guidelines address discharges, which alter substrate elevation or contours, suspended particulates, water clarity, nutrients and chemical content, current patterns and water circulation, water fluctuations, and salinity gradients. Alternative 1, 2 and 3would discharge dredged or fill material into waters of the U.S, a 404 Permit would be required (See Table 1-1, Summary of Required Permits and Approvals; see also Section 3.4, Biological Resources, for details about fill in waters of the U.S.).

California Toxics Rule, 40 CFR 131.38

On May 18, 2000, the USEPA promulgated numeric water quality criteria for priority toxic pollutants and other provisions for water quality standards to be applied to waters within California. USEPA promulgated this rule based on the Administrator's determination that the numeric criteria are necessary in California to protect human health and the environment.

The rule fills a gap in California water quality standards that was created in 1994 when a state court overturned the state's water quality control plans containing water quality criteria for priority toxic pollutants. Thus, the state of California has been without numeric water quality criteria for many priority toxic pollutants as required by the CWA, necessitating this action by USEPA. These Federal criteria are legally applicable in the state of California for inland surface waters, enclosed bays, and estuaries for all purposes and programs under the CWA, so the Project would need to comply with the Toxics Rule.

National Flood Insurance Program (NFIP)

FEMA is responsible for managing the National Flood Insurance Program (NFIP), which makes Federally-backed flood insurance available for communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. The NFIP, established in 1968 under the National Flood Insurance Act, requires that participating communities adopt certain minimum floodplain management standards, including restrictions on new development in designated floodways, a requirement that new structures in the 100-year floodplain be elevated to or above the 100-year flood level (known as base flood elevation), and a requirement that subdivisions be designed to minimize exposure to flood hazards.

To facilitate identifying areas with flood potential, FEMA has developed Flood Insurance Rate Maps that can be used for planning purposes, including floodplain management, flood insurance, and enforcement of mandatory flood insurance purchase requirements. A Conditional Letter of Map Revision (CLOMR) is FEMA's comment on a proposed project that would impact the hydrologic or hydraulic characteristics of a flooding source. Los Angeles County is a participating jurisdiction in the NFIP and, therefore, all new development must comply with the minimum requirements of the NFIP. The project would expand the existing floodplain and require a CLOMR from FEMA to revise the current flood maps. The LACFCD will obtain the CLOMR from FEMA.

33 U.S.C. Section 408: Modifications and Alterations of Corps of Engineers Projects

Section 14 of the Rivers and Harbors Act of 1899 and codified in 33 U.S.C. Section 408 (commonly referred to as "Section 408") authorizes the Secretary of the Army, on the recommendation of the Chief of Engineers of the Corps, to grant permission for the alteration of a Corps' civil works project if the Secretary determines that the activity will not be injurious to the public interest and will not impair the usefulness of the project. Because the Ballona Creek flood control channel is a Corps flood risk management project, a Section 408 permit would be required to remove the levees and reconnect the channel to the floodplain or to install culverts in the levee. The Section 408 permit application would include all project plans and review the proposed hydrologic changes for the Chief of Engineer's consideration on whether these changes would ultimately impair the usefulness of the original project or not.

3.9.3.2 State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Water Code §13000 et seq.), passed in 1969, requires protection of water quality by appropriate design, sizing, and construction of erosion and sediment controls. The Porter-Cologne Act established the SWRCB and divided California into nine regions, each overseen by a RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies and has delegated primary implementation authority to the nine RWQCBs. The Porter-Cologne Act assigns responsibility for implementing CWA Sections 401 through 402 and 303(d) to the SWRCB and the nine RWQCBs.

The Porter-Cologne Act requires the development and periodic review of water quality control plans (Basin Plans) that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters, provide the technical basis for determining waste discharge requirements, identify enforcement actions, and evaluate clean water grant proposals. The Basin Plans are updated every 3 years. Compliance with Basin Plans is primarily achieved through implementation of the NPDES, which regulates waste discharges as discussed above.

The project area is located within the jurisdiction of the LARWQCB- Region 4. The Basin Plan for the Los Angeles region defines a variety of water quality objectives for the hydrologic units (watersheds) within the project area (LARWQCB 1994). The Project would have to follow the Basin Plan to avoid impacts to water quality.

Water Quality Control Plan for the Los Angeles Region (Basin Plan)

The preparation and adoption of Basin Plans are required by California Water Code Section 13240. According to Water Code Section 13050, Basin Plans establish the beneficial uses to be protected for the waters within a specified area, water quality objectives to protect those uses, and an implementation program for achieving the objectives. Because beneficial uses, together with their corresponding water quality objectives, can be defined per Federal regulations as water quality standards, the Basin Plans are regulatory references for meeting the state and

Federal requirements for water quality control. In relevant part, Article X, Section 2 of the California Constitution declares:

> "[B]ecause of the conditions prevailing in this State, the general welfare requires that the *water resources of the State be put to beneficial use to the fullest extent of which they are capable*, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare…" (emphasis added)

The *Water Quality Control Plan for the Los Angeles Region* (Basin Plan) is designed to preserve and enhance water quality and protect beneficial uses of all waters. Specifically, it:

1. Designates beneficial uses for surface and ground waters;
2. Sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy; and
3. Describes implementation programs for achieving objectives to protect all waters in the Region.

In addition, the Basin Plan incorporates all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations (LARWQCB 1994). The Project would be required to meet water quality objectives and maintain the beneficial uses set out in the Basin Plan.

Statewide General NPDES Permit for Construction Activity

The state of California adopted a new Construction General Permit on September 2, 2009 (Order No. 2009-0009-DWQ as amended by 2010-0014-DWQ and 2012-0006-DWQ). The Construction General Permit regulates construction site storm water management. Dischargers whose projects disturb 1 acre or more of soil, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 acre or more, are required to obtain coverage under the general permit for discharges of storm water associated with construction activity. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. Because the Project would disturb more than 1 acre of land, it would require a Construction General Permit.

To obtain coverage under this permit, project operators must electronically file Permit Registration Documents, which include a Notice of Intent, a SWPPP, and other compliance-related documents. An appropriate permit fee must also be mailed to the SWRCB. The SWPPP identifies BMPs that must be implemented to reduce construction impacts on receiving water quality based on potential pollutants. The BMPs identified are directed at implementing both sediment and erosion control measures and other measures to control potential chemical contaminants. The SWPPP also includes descriptions of the BMPs to reduce pollutants in storm water discharges after all construction (restoration) phases have been completed at the site (post-construction or post-restoration BMPs).

The permit includes several new requirements (as compared to the previous Construction General Permit, 99-08-DWQ), including risk-level assessment for construction sites, an active storm water effluent monitoring and reporting program during construction (for Risk Level II and III sites), rain event action plans for certain higher risk sites, and numeric effluent limitations (NELs) for pH and turbidity as well as requirements for qualified professionals that prepare and implement the plan. The permit became effective July 1, 2010.

3.9.3.3 Local

State agencies acting in their sovereign capacity are not subject to local regulations unless the California Constitution says they are or the Legislature has consented to such regulation. However, local regulations are mentioned in this EIS/EIR because some may apply to a state agency or this analysis contemplates actions by Southern California Gas Company (SoCalGas) outside of state property. Moreover, local plans and policies help inform this analysis related to Hydrology and Water Quality.

Los Angeles County Municipal Separate Storm Sewer System Permit

The current Los Angeles County MS4 Permit became effective on December 28, 2012 (Order No. R4-2012-0175) and regulates municipal storm water and non-storm water discharges during the construction and operation of certain facilities. The requirements of the order apply to the Los Angeles County Flood Control District, the unincorporated areas of Los Angeles County under County jurisdiction, and 84 cities within the Los Angeles County Flood Control District (the Permittees) with the exception of the City of Long Beach. The MS4 permit contains minimum standards that the Permittees must enforce that apply to construction activities disturbing greater than 1 acre such as the Project (see also requirements for the statewide construction permit discussed above, which is a permit that the construction contractor must apply for and adhere to). Compliance with MS4 construction requirements includes implementation of work site BMPs for erosion, sediment, non-storm water management and waste management.

During operation of proposed improvements, non-storm water discharges from the site would be prohibited (with some conditional exceptions). Storm water effluent must meet water-quality based effluent limitations (WQBELs), or water quality standards for discharge leaving the site, and must not cause or contribute to the exceedance of receiving water limitations (water quality standards for receiving waters). The discharger would be required to prepare a Monitoring and Reporting Program (MRP), which includes outfall-based storm water monitoring data (where storm water exits the facility), wet and dry weather receiving water monitoring data, outfall-based non-storm water monitoring data and regional studies. The frequency of required monitoring and sampling activities varies with the waterbody. If it is determined that a receiving water limitation is being exceeded by effluent from the proposed facilities, the discharger would be required to submit an Integrated Monitoring and Compliance Report. This report would be used to determine additional measures to prevent or reduce pollutants contributing to the exceedance of receiving water limitations.

Ballona Creek and Ballona Estuary TMDLs

Historical and current water quality data indicate that dry weather flows from Ballona Creek (inland from the extent of the tides) periodically exceed water quality objectives for bacteria indicators, metals, and other constituents (Stein and Tiefenthaler 2004, Weston 2005, LARWQCB 2003, 2005, 2007). Storm water flows frequently exceed water quality objectives for bacteria, metals, PAHs, and pesticides as well. Ballona Creek is State 303(d) listed as impaired for various constituents, as shown in Table 3.9-2. In response to this listing, three TMDLs were put into place to address bacteria, metals, and trash in the water column. The Ballona Estuary (Ballona Creek within the extent of the tides) is also State 303(d) listed for toxicity and metals in sediment. A fourth TMDL was developed to address impairment due to toxicity of sediments in the Ballona Estuary.

The Metals TMDL for Ballona Creek (2008 Metals TMDL) was approved by the USEPA on October 29, 2005, and revised by the LARWQCB on December 5, 2013. The revised TMDL combined this 2008 Metals TMDL for the water column in Ballona Creek (above the tidal extent) with the Ballona Estuary Toxic Pollutant TMDL (2006 Toxics TMDL) for sediment in the channel (within the tidal extent) as discussed in Section 3.9.2.2, *Environmental Setting*. The combined TMDL requires both pollutant reductions from waste load allocation (WLA) of metals (copper, lead, zinc and selenium) within the water column from the watershed, and attainment of the SQOs.

Because the Project could impact sediment quality in Ballona Estuary, the Project would have to meet the sediment quality standards of the SQOs. However, the Permittees, and not the Project, are responsible for achieving the TMDL goals. Table 3.9-4, *TMDL Implementation and Project Construction Schedule*, presents the implementation schedule for the TMDLs in comparison with the schedule for the Project. The reductions for all three TMDLs currently is scheduled for completion by 2021, which, if successful, would correspond with Phase 1 of Alternative 1 and with Alternatives 2 and 3, each of which would be implemented in a single phase consisting of multiple sequences.[103]

Ballona Wetlands TMDL

Legacy sediment and invasive exotic vegetation have impacted the wetland habitats and the wildlife and aquatic organisms dependent on the wetlands. Excess sediment was placed on-site during the construction of the flood control channel and Marina del Rey. The sediment has raised elevations in Area A and C out of the tidal range necessary for wetland habitat and buried habitat. Excess sediment has also created conditions to support highly invasive exotic vegetation, which crowds out native species.

[103] Alternative 1 would be implemented in two phases consisting of multiple sequences beginning in early 2017. The sequences would be grouped into two periods, with the first occurring between 2017 and 2022 and the second occurring in 2023. No mechanized activities would occur between 2022 and 2023 to facilitate habitat restoration and plant establishment within the Ballona Reserve. Alternatives 2 and 3 each would be implemented in a single phase consisting of multiple sequences over the course of 60 months beginning in early 2017.

TABLE 3.9-4
TMDL IMPLEMENTATION AND PROJECT CONSTRUCTION SCHEDULE

Date	Bacteria TMDL	Toxics TMDL	Metals TMDL	Alternative 1 Schedule	Alternative 2 Schedule	Alternative 3 Schedule
January 11, 2006		Effective Date				
April 27, 2007	Effective Date					
October 29, 2008			Effective Date			
January 11, 2011			Reconsideration			
January 11, 2012		Reconsideration				
January 11, 2013		25% reduction	25% reduction			
April 27, 2013	Compliance for dry weather achieved[104]					
January 11, 2016		50% reduction	50% reduction			
January 11, 2017		75% reduction	75% reduction			
January 1, 2017 (earliest)				Start Phase 1 Construction	Start Construction	Start Construction
January 11, 2021		Compliance achieved	Compliance achieved	Area A breached (~4 yr after start)	Area A breached (~4 yr after start)	
April 27, 2021	Compliance for wet weather achieved					
March 2022				Finish Phase 1 Construction	Finish Construction	Finish Construction
May 2023 (earliest)				Start Phase 2 Construction		
January 2025				Finish Phase 2 Construction		

The TMDL for Sediment and Invasive Exotic Vegetation for the Ballona Creek Wetlands[105] (USEPA 2012) establishes a load allocation for legacy sediment removal for Area A, Area B, and Area C. The Ballona Creek Wetlands TMDL also includes alternative load allocations for sediment based on the restoration of historical marsh habitats. Table 3.9-5, *Ballona Creek*

[104] Pursuant to Part VI. E.4 of the Los Angeles County MS4 Permit, when Permittees anticipate that additional time is necessary to comply with the water quality-based effluent limitations and/or receiving water limitations for State adopted TMDLs where the final compliance deadlines have passed, they may request a time schedule order (TSO) pursuant to Water Code §13300 for the Board's consideration. The Permittees each submitted letters to the Los Angeles Water Board requesting a TSO to implement the dry-weather bacteria limitations applicable to the Ballona Creek watershed as set forth in Attachment M of the Los Angeles County MS4 Permit pursuant to Water Code §13300. These requests were received on April 17, 2013 (City of Los Angeles); April 24, 2013 (City of Culver City and City of Inglewood); April 25, 2013 (County and LACFCD jointly); April 26, 2013 (City of West Hollywood); and May 8, 2013 (City of Beverly Hills).

[105] The EPA refers to the Ballona Reserve as the "Ballona Creek Wetlands."

Wetlands TMDL Waste Load Allocations and Estimated Sediment Removal Quantities, presents the TMDL load allocations for sediment and anticipated sediment removal for the three alternatives for the Project. As summarized in Table 3.9-5, the proposed sediment removal quantities for the three alternatives do not reach the load allocations under the TMDL.

TABLE 3.9-5
BALLONA CREEK WETLANDS TMDL WASTE LOAD ALLOCATIONS AND ESTIMATED SEDIMENT REMOVAL QUANTITIES

	TMDL Load Allocation – Sediment Removal(cy)	Alt 1 – Estimated Sediment Removal (cy)	Alt 2 – Estimated Sediment Removal (cy)	Alt 3 – Estimated Sediment Removal (cy)
Area A	2,100,000	1,730,000	1,730,000	1,420,000
Area B	700,000	310,000	310,000	-
Area C	300,000	-	-	-

In the case where the sediment load allocation cannot be met, the TMDL allows for the use of an alternative load allocation based on the acres of salt marsh habitats restored. Table 3.9-6, *Alternative Load Allocations for Ballona Wetland TMDL and Estimated Project Habitat Acreage*, provides a summary of the TMDL alternative load allocations based on attainment of beneficial uses through habitat restoration. These alternative load allocations may supersede the sediment load allocations in Table 3.9-5, if the proposal to use these alternative allocations is submitted to USEPA and the LARWQCB, and approved by the Executive Officer of the LARWQCB with no objections from USEPA. As summarized in Table 3.9-6, the alternative load allocations under the TMDL for acreage of specific habitat types are based on elevation ranges in Ballona Creek Wetlands and similar wetland systems in southern California. The Project habitat acreages do not match the TMDL load allocation because the Project has been designed to achieve both sediment removal and restoration of historical tidal wetland habitats. Although the quantities do not rely solely on sediment or habitat load allocations to meet the individual load allocations, the combined achievements provide the best set of alternatives that achieve both goals for the site conditions and for the sustainable, long-term future of the site. A request for modification of the load allocations that combines both sediment and habitat load allocations for the Project is planned as part of the final permitting and design phase for submittal after discussions with USEPA and the LARWQCB.

TABLE 3.9-6
ALTERNATIVE LOAD ALLOCATIONS FOR BALLONA WETLAND TMDL AND ESTIMATED PROJECT HABITAT ACREAGE

Elevation Range (ft NAVD 88)	TMDL Load Allocation (ac)	Alt 1 habitats (ac)	Alt 2 habitats (ac)	Alt 3 habitats (ac)	Assumptions
-3 to -0.2 (subtidal)	22	62.97	63.14	62.53	Subtidal
-0.2 to 3.6 (intertidal)	87	19.96	13.74	2.81	Mudflat and low marsh
3.6 to 9.6 (vegetated wetland)	346	195.29	186.64	85.28	Mid and high marsh, transition zone, and muted-tidal
6.3 to 9.6 (salt flat)	5	26.25	26.69	22.81	Salt Pan

LARWQCB Groundwater Dewatering General Permit

The LARWQCB General NPDES Permit No. CAG994004 (Order No. 97-043) covers discharges of treated and untreated groundwater generated from permanent or temporary dewatering operations, including groundwater generated from well drilling, construction or development and purging of wells. This permit ensures the pollutant concentrations in the discharge will not violate any water quality objectives for receiving waters, including discharge prohibitions. Required groundwater samples taken prior to discharging operations determine whether or not another permit may apply or whether the water must be treated prior to being discharged. Dischargers must submit a Report of Waste Discharge (ROWD) prior to permit authorization, including a feasibility study on reuse/alternative disposal methods, a description of groundwater treatment collection and discharge system, a flow diagram, chemicals that will be used, etc. An ongoing monitoring and reporting program is also required under this permit. Because the construction of the channel meander shapes in the proposed Alternatives 1 and 2 would require dewatering, the Groundwater Dewatering General Permit would be required.

3.9.4 Thresholds of Significance

In this analysis, the Corps has elected to evaluate the context and intensity of potential environmental consequences relative to the criteria identified in CEQA Guidelines Appendix G, Section IX. In addition, the analysis considers where improvements of the Project would provide a net benefit relative to existing conditions, which are described in Section 3.9.2, Affected Environment.

For purposes of this analysis, Alternative 1, 2, 3, or 4 would result in significant impacts to Hydrology and Water Quality if it would:

WQ-1 Violate any water quality standards or waste discharge requirements; otherwise substantially degrade water (or sediment) quality; or 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;

WQ-2 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);

WQ-3 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;

WQ-4 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, or provide substantial additional sources of polluted runoff; or

WQ-5 Result in inundation by seiche[106] or tsunami.

CEQA Guidelines Appendix G, Section IX criterion g suggests that a project would have a significant adverse impact to Hydrology and Water Quality if it would 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. None of the Alternatives would place housing within a 100-year flood hazard zone. Therefore, the Project would have no direct or indirect impact during or following restoration under any of the alternatives, and could not cause or contribute to any potential cumulative impact in this regard. Because this CEQA Guidelines Appendix G criterion is not applicable to the Project, it is not discussed further in this analysis.

CEQA Guidelines Appendix G, Section IX criterion h suggests that a project would have a significant adverse impact to Hydrology and Water Quality if it would place within a 100-year flood hazard area structures that would impede or redirect flood flows. None of the Alternatives would place a structure within a 100-year flood hazard zone. The only proposed structure – the proposed parking structure in Area A -- would be outside of the floodplain. Therefore, the Project would have no direct or indirect impact during or following restoration under any of the Alternatives, and could not cause or contribute to any potential cumulative impact in this regard. Because this CEQA Guidelines Appendix G criterion is not applicable to the Project, it is not discussed further in this analysis.

CEQA Guidelines Appendix G, Section IX criterion i suggests that a project would have a significant adverse impact to Hydrology and Water Quality if it would 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. The Project site is located within the predicted dam inundation zone for Stone Canyon, Mulholland, Silver Lake, and Lower Franklin Canyon Dams. However, the Project under any of the Alternatives would have no impact on exposure of people or structures to a significant risk of loss, injury or death involving flooding during or following restoration because, consistent with the purpose and need (as stated in Section 1.2.1, *Statement of Purpose and Need under NEPA*, and in Objective 6 in Section 1.2.2, *CEQA Project Objectives*), it would ensure that any alteration or modification to the LACDA project components would maintain the authorized LACDA project levels of flood risk management, which in this section of Ballona Creek, includes ensuring there is no reduction to the conveyance capacity of 46,000 cfs and that LACDA project features reduce flood risk to the surrounding communities and infrastructure for up to the 100 year flood event. Therefore, the Project would have no direct or indirect impact during or following restoration under any of the alternatives, and could not cause or contribute to any potential cumulative impact in this regard. Because this CEQA Guidelines Appendix G criterion is not applicable to the Project, it is not discussed further in this analysis.

[106] A standing wave in an enclosed or partially enclosed body of water.

CEQA Guidelines Appendix G, Section IX criterion j suggests that a project would have a significant adverse impact to Hydrology and Water Quality if it would result in inundation by any of three events: seiche, tsunami, or mudflow. The potential for the Alternatives to result in inundation by seiche or tsunami is addressed for each of the Alternatives in Section 3.9.6, *Direct and Indirect Impacts.* (For each, see the analysis of WQ-5). However, due to the relatively flat topography of the project area, Project implementation would not result in inundation by mudflow. Therefore, the Project would have no direct or indirect impact relating to inundation by mudflow during or following restoration under any of the Alternatives, and could not cause or contribute to any potential cumulative impact in this regard. Because this CEQA Guidelines Appendix G criterion is not applicable to the Project as it relates to mudflow, it is discussed below only in connection with inundation by seiche or tsunami.

3.9.5 Methodology

This section describes the methodology and assumptions used to analyze Project-related impacts. Three primary sources of data and information were used to guide the impact analysis: 1) information obtained through subsurface investigations to enhance the understanding of the sediment quality in Area A and North Area B, 2) hydraulic modeling, including a one-dimensional and a two-dimensional model, to evaluate how Project implementation would influence surface water flow, and 3) a sediment dynamics and sediment budget analysis, including a sediment transport model, to evaluate how Project implementation would influence erosion and sedimentation. The following sections describe the details of the three primary elements of the impact analysis methodology.

3.9.5.1 Subsurface Investigations

A preliminary geotechnical investigation was completed by Weston under contract with the Port of Los Angeles in 2008 (the Preliminary Study, Appendix F3). The primary objective of the Preliminary Study was to provide geotechnical and chemical data to characterize approximately 4.5 million cy of dredge material that has been placed on Area A and which would be removed as part of the Project (the Preliminary Study, Appendix F3). This study was used to determine potential beneficial uses of the dredge material, to identify any special handling or disposal restrictions that may be required based on sediment and leachate chemistry, and to guide any further assessment deemed necessary. The results of the Preliminary Study were used to scope the 2012 sediment characterization Sampling and Analysis Plan (SAP) for the Project.

A field program for further sediment characterization was conducted from September 24 to 25, 2012 in accordance with the SAP (Appendix F4). The sampling included geotechnical observations, field observations and screening, and comparison of the constituent concentrations in the sediment samples to the relevant and applicable criteria/guidelines in Area A and North Area B. As discussed in Section 3.9.2.3, *Applicable Laws, Regulations, Plans, and Standards,* these guidelines included the USEPA Title 40 CFR Part 261 (USEPA 2006), which classifies sediment for hazardous waste; the ER-L and ER-M values (Long et al. 1995), which were developed to evaluate the potential biological impact of dredged sediments for ocean disposal; and the Beneficial Reuse criteria for wetland restoration (SFRWQCB 2000, Germano & Associates 2004), which have different values for material that would be used as wetland surface (more conservative) and wetland foundation material (less conservative). Additionally, a sediment TIE was conducted to identify the source of toxicity in samples that showed high toxicity results (Greenstein et al 2014). The results of the field program and the TIE are presented in Appendix F5 and F6.

The suitability of on-site excavated sediment for placement at a designated ocean dredged material disposal site would require a Tier III evaluation in accordance with Evaluation of Dredged Material Proposed for Ocean Disposal – Testing Manual (OTM; USEPA/Corps 1991). The Tier III evaluation contains sediment quality standards, which are set based on water quality criteria and protection of water quality. Sediment could be placed in an ocean disposal site only if it met the standards of the OTM. Initial sediment testing results were provided to the Southern California Dredge Material Management Team (DMMT) on January 28, 2015. The DMMT includes the Corps Los Angeles District and the LARWQCB. Further testing of the sediments would occur as part of the final permitting for off-site disposal in accordance with the ITM and OTM guidelines.

3.9.5.2 Hydraulic Modeling

Hydraulic modeling was a primary analytical tool used to evaluate Project impacts on flooding. This section describes the hydraulic models and how they were used to simulate the surface water response to the Project during storm events. The results of the hydraulic modeling are presented in Appendix F7 and the Hydraulic Modeling Addendum prepared by ESA in 2015 (Appendix F8).

What is a Hydraulic Model?

Hydraulic models are computer simulations that represent water flow in the environment using mathematical equations. By mathematically representing a simplified version of a surface water system, reasonable scenarios can be predicted, tested, and compared. The applicability or usefulness of a model depends on how closely the mathematical equations approximate the physical system being modeled.

Setting up a standard hydraulic model involves establishing the model domain, which is the area within which the model stimulates surface water conditions. In a one-dimensional model, the model domain is defined by a channel centerline and cross-sections. Channel roughness is defined across a cross-section to represent flow resistance under different conditions (e.g., a vegetated marsh versus a concrete channel). In a two-dimensional model, the model domain is defined by a horizontal grid. The grid divides the two-dimensional space into cells that resemble rectangular boxes, typically numbering in the tens of thousands. Each cell can have a different roughness to represent flow resistance under different flow conditions.

Boundary conditions are applied to the model to simulate the water conditions at the upstream and downstream ends of the domain and to provide a starting place for computations. In a steady-state model, the boundary conditions are represented by a single value (e.g., high tide, low tide, peak storm flow). In an unsteady model, the boundary conditions are represented by a time series (e.g., one week of tides, an entire storm event).

Features such as culverts and bridges can be added to the model domain, as well, to represent the system. Model inputs to represent these features include dimensions, roughness, and energy losses caused by the feature.

After the model has been set up for existing conditions as described in Section 3.9.2, Affected Environment, it then is verified against known information. Simulations are run for measured flow rates, and model results are compared to observed/measured water elevations or velocities. The various input parameters then are adjusted to better simulate observed conditions. When measured flow data are not available, model parameters are selected based on available information and professional judgment.

Model results for existing conditions then are used as a baseline for evaluating the potential hydraulic impacts of proposed changes, such as expansion of a floodplain, construction of a bridge, or enlargement of culverts. For this analysis, each alternative was modeled and the results were compared to existing conditions model results to identify potential impacts.

Hydraulic Model Terminology

Certain terminology is used in hydraulic modeling to describe and illustrate the nature, extent, and movement of surface water and the responses to changes. Key terms are presented below.

> *100-year Flow/Flood/Storm/Event*—a storm/flood/event expected to occur once every 100 years or with an annual probability of occurring of 1%. Any X-year event is expected to occur once every X years or with a 100/X% chance of annual occurrence.
>
> *Design Flow/Flood/Storm/Event*—the flow rate used in the design of flood risk management projects.
>
> *Design Water Level*—the downstream boundary water level used in the design of flood risk management projects.
>
> *Freeboard*—the distance between the water surface and the lowest possible entry point along a levee or berm during flooding or large waves.
>
> *MLLW*—mean lower low water, average height of the lowest tide each day.
>
> *MHHW*—mean higher high water, average height of the highest tide each day.
>
> *Q100* – the flow rate for the 100-year event. Any QX represents the flow rate for the X year event.
>
> *Steady/Unsteady Mo*del—steady models represent one point in time while unsteady models represent a time series.
>
> *Tidal Prism*—the volume of water that is exchanged in a given tidal area between MLLW and MHHW.

Limitations of Hydraulic Models

Hydraulic models use simplified mathematical equations to represent extremely complex natural systems. Therefore, significant uncertainty is inherent in model results, even when parameters have been calibrated to measured data. Nonetheless, hydraulic modeling is a standard tool for project planning, design and impact analysis, and the results provide a basis for comparing the hydraulic performance of different scenarios relative to a baseline.

Hydrodynamic Models Used for Project Analysis

Two models were used to predict the potential impacts of the Project on water levels and velocities during storm events. A steady state, one-dimensional HEC-RAS hydraulic model was the primary analytical tool used to evaluate project impacts on flooding. HEC-RAS is a public domain hydraulic modeling program that was developed by the Corps' Hydrologic Center and is used extensively in flood and sediment transport analysis applications. A two-dimensional model also was used to inform the setup of the HEC-RAS model and to more closely examine two-dimensional flow processes to inform project design. The two-dimensional Environmental Fluid Dynamics Code (EFDC) was developed at the Virginia Institute of Marine Science and receives continuing support from the USEPA.

HEC-RAS Model

Model set-ups were built for baseline conditions (no project), Phase 1 of Alternative 1, Phase 2 of Alternative 1, and Alternative 2. Both phases of Alternative 1 were modeled to assess potential interim impacts following Phase 1, and any unexpected delays to implementing Phase 2. Alternative 2 was modeled to assess the effects of removing the gas wells in Area A (which would not be removed in Alternative 1, Phase 1). Alternative 3 was not modeled since the channel would remain the same as under baseline conditions. The model extents includes Ballona Creek from the Pacific Ocean to the streamflow gage approximately 500 feet upstream of Sawtelle Boulevard, the Centinela Channel from Ballona Creek to Margaret Avenue, and the Sepulveda Channel from Ballona Creek to Braddock Drive. The models include the following bridges: Sawtelle Boulevard, I-405, Inglewood Boulevard, South Centinela Avenue, State Route (SR) 90, Lincoln Boulevard, Culver Boulevard, and Pacific Highway. Appendix F6 provides the detailed model set-up for Alternative 1. Appendix F7 includes details on the model-set up for Alternative 2.

HEC-RAS computes water surface elevations for each cross section working upstream from a known water surface elevation. The downstream boundary condition (water level) is therefore an important input to the model. For this study, the downstream boundary of the HEC-RAS model was Santa Monica Bay where Ballona Creek discharges to the Pacific Ocean.

LACDPW provided hydraulic calculations dated January 3, 1940, which indicated that a downstream water level of 5.23 ft NGVD[107] (7.63 ft NAVD 88) was used in the channel design

[107] National Geodetic Vertical Datum has been superseded by the NAVD datum. NGVD 29 was a system that was used by surveyors and engineers for most of the 20th Century. It has been the basis for relating ground and flood elevations, but it has been largely replaced by the more accurate North American Vertical Datum of 1988 (NAVD 88). The Corps uses NGVD 29 in the context of this Project because the Ballona Creek channel and levee system were built to that datum. This EIS/EIR uses NAVD 88 because it is more accurate and because it is the current national geodetic vertical datum as of the drafting of the EIS/EIR.

hydraulic analysis for Ballona Creek. This water level is referred to as the “highest tide of record.” This water level represents the best available information on the downstream water level used in the original channel design analysis and, therefore, was selected as the downstream boundary condition for the design flood analysis. Verification time series of observed water level data was also provided by the LACDPW (LACDPW; Tide Gate 702 A2) were used in unsteady flow analyses.

The model was verified using water level data provided by LACDPW. The largest recorded fluvial flow (14,000 cfs) was relatively small compared to the design flow rate for Ballona Creek (46,000 cfs) and did not influence high water levels recorded at the LACDPW gage. HEC-RAS model results were similar to recorded water surface elevations at the location of the tide gage. Both modeled and recorded water levels reflect the dominance of tidal water surface elevations at this location and flow rate.

A range of flow rates was applied at the upstream boundary of the model (see HEC-RAS Model Scenarios Section). Based on preliminary direction from Corps staff, analyses of flood performance were based on the design flow rate of 46,000 cfs (Renee Vermeeren, pers. comm. August 22, 2012).

To model Area B, a second HEC-RAS model was set up to include storage areas for West, South, and Southeast Area B. Under the conditions described in Section 3.9.2, Affected Environment, West Area B was modeled as a storage basin. For Alternative 1 Project conditions, West Area B was modeled as part of the cross-sections within the channel. Culverts between West and South Area B, South and Southeast Area B, and Southeast Area B and Ballona Creek were included in the model as well. The October 2013 Area B Modeling Memo, included as Appendix F9, provides the detailed model set-up for the Area B model.

HEC-RAS Model Scenarios

The HEC-RAS model was run with a range of tidal conditions and storm flows. Table 3.9-7, *HEC-RAS Model Scenarios*, presents the different scenarios. Table 3.9-8, *HEC-RAS Area B Model Scenarios*, presents the scenarios run for the Area B HEC-RAS model.

EFDC Model

The EFDC model domain extends from where Ballona Creek passes under Sawtelle Boulevard to Santa Monica Bay. Between the upstream and downstream boundaries, the model domain includes:

1. Lower Ballona Creek;
2. Ballona Wetland Restoration Areas A, B, and C;
3. Marina Del Rey, including Oxford Basin;
4. Del Rey Lagoon;
5. Ballona Lagoon, including the Grand Canal downstream of Washington Boulevard; and
6. A portion of Santa Monica Bay roughly 4,300 by 8,200 feet.

TABLE 3.9-7
HEC-RAS MODEL SCENARIOS

Model Set-Up	Upstream Boundary Condition	Downstream Boundary Condition
Existing (Baseline) Conditions, Alternative 1, Phase 1, Alternative 1, Phase 2, Alternative 2	Design Event (46,000 cfs)	Design Water Level (7.63 ft NAVD 88)
	Design Event	Design Water Level + 2100 Sea Level Rise (10.1 ft NAVD 88)[1]
	Q500	MHHW (5.2 ft NAVD 88)
	Q200	MHHW
	Q100	MHHW
	Q50	MHHW
	Q25	MHHW
	Q10	MHHW
	Q5	MHHW
	Q2	MHHW

NOTE: [1] Includes bed aggradation

TABLE 3.9-8
HEC-RAS AREA B MODEL SCENARIOS

Model Set-Up	Upstream Boundary Condition	Downstream Boundary Condition
Existing (Baseline) Conditions	No flow	Typical tides
	Q100	Typical tides
	No flow	Typical tides + SLR
	Q100	Typical tides + SLR
Alternative 1, Phase 2	No flow	Typical tides
	Q100	Typical tides
	No flow	Typical tides + SLR
	Q100	Typical tides + SLR

Under existing conditions, culverts and gates regulate flow into and out of the Area B wetland, Del Rey Lagoon, and Ballona Lagoon. Culvert flow is represented in the model as water-level-dependent discharge between a pair of grid cells. Since Area B is managed and the culvert connecting Area B and Ballona Creek would be closed during flood events, this culvert is not open during flood model runs.

The downstream boundary condition was the same water level data from LACDPW that was used in the HEC-RAS model for the unsteady runs. Various upstream boundary conditions were used including the Q10, Q50, and Q100 events.

The peak water level profiles for the HEC-RAS and EFDC models were compared for the 100-year event. The EFDC model does not have the ability to include bridges in the model and therefore does not include the bridges upstream or downstream of the site, whereas the HEC-RAS model includes the bridges. Due to these differences in how the bridges are represented in the models, the water level results for the EFDC and HEC-RAS models do not agree upstream of the site. Within the Project reach, the water surface profiles generally agree. Because the EFDC water levels were not well-verified with the HEC-RAS model, the EFDC results were not used for water elevations, but were used to identify key areas of potential erosion and to determine flow areas in HEC-RAS. For example, the EFDC model identified eddies in the upstream end of Area A and in West Area B. These eddies would not convey flow, so the flow area in the HEC-RAS model was reduced as a result.

3.9.5.3 Sediment Dynamics and Sediment Budget Analysis

Sedimentation and erosion in a stream channel can impact the flood conveyance capacity of the channel. Sediment analyses were used to evaluate the potential impact of sedimentation and/or erosion on flooding under Project conditions. This section describes the sediment dynamics analysis, including sediment transport modeling and geomorphic analyses, and how the results were used to build a sediment budget. The results of these analyses are presented in the Sediment Transport Analysis prepared for the Project by ESA in April 2014 (Appendix F10) and in Appendix F7.

Sediment Transport Model

A sediment transport model was developed based on the HEC-RAS model described above. This section describes the sediment transport model and how it was used to estimate potential changes to the bed surface and the surface water response to the Project during storm events. The results of the sediment transport modeling are presented in Appendix F7 and Appendix F10.

What is a Sediment Transport Model?

A sediment transport model is a computer simulation that represents the movement of sediments due to storm flows. As described above for hydraulic modeling, the model domain establishes the extent that the model will simulate. For a sediment transport model, input parameters include bed material grain size distribution (GSD), which is the percentage of each size of bed material in a channel; the incoming sediment load; and the upstream and downstream boundary conditions.

Sediment Dynamics Terminology

Certain terminology is used in sediment dynamics modeling to describe and illustrate the nature, extent, and movement of sediment. Key terms are presented below.

> *Bed Load*—the volume of sediment that is transported along the bottom of a channel and does not enter the water column like the suspended load. The bed load moves by rolling, sliding, or hopping (saltation).
>
> *Effective discharge*—the flow rate that moves sediment within a channel frequently enough to determine the average channel dimensions.

Grain size distribution—the distribution of sediment grain sizes, or what grain sizes are present in what proportions.

Shear stress—the force that causes materials (such as water and sediment) to slide upon each other in opposite directions.

Suspended Load—the volume of sediment that is transported in the water column and only rarely touches the channel bed.

Limitations of Sediment Transport Models

Like hydraulic models, sediment transport models use simplified mathematical equations to represent extremely complex natural systems. Therefore, significant uncertainty is inherent in model results, even when parameters have been calibrated to measured data. Nonetheless, sediment transport modeling is a standard tool for Project planning, design, and impact analysis, and the results provides a basis for comparing the hydraulic performance of different scenarios relative to existing conditions.

HEC-RAS Sediment Transport Model

Sediment transport modeling was conducted using the HEC-RAS model described in the Hydrodynamic Models section above. A range of tidal boundary conditions and flow rates was used to test the sensitivity to these parameters. For the sediment load inputs to the model, a sediment load rating curve was developed to relate sediment load to flow rate. The curve was developed based on suspended sediment measurements taken by the LACDPW and Southern California Coastal Water Research Project (SCCWRP) with an added factor of 10% to represent bed load. GSD for the bed material was input to the model based on sediment samples taken in the creek.

Since measured sediment transport data was not available to verify the model results, a sensitivity analysis was conducted to test the sensitivity of the different input parameters. A sensitivity analysis examines an upper and lower end for each parameter to determine how sensitive the model is to that parameter. If the model is very sensitive (i.e., the results change substantially between scenarios), then that parameter would require very accurate data to properly represent a system. If the model is not sensitive to a parameter, then the accuracy of the input data is less important to the model results.

The sensitivity analysis showed that the tidal boundary condition had the biggest influence over model results. When an upper bound scenario and a lower bound scenario were modeled with the same tidal boundary condition, there was no difference in water surface results relative to existing conditions. This indicates that, over a reasonable range of parameter combinations, the water surface profile is not sensitive to the selection of bed grain size distribution, sediment load grain size distribution parameters, and sediment load. The range of deposition and scour incurred under the parameter combinations did not impact the water surface profiles. The water surface is, however, inherently a function of the downstream boundary tide level and thus is sensitive to this parameter. In order to capture the possible variations due to this parameter, the sediment transport model was run with a range of tidal boundary conditions. Table 3.9-9, *Sediment Transport Model Sensitivity Scenarios*, presents the model scenarios used in the sediment transport model.

TABLE 3.9-9
SEDIMENT TRANSPORT MODEL SENSITIVITY SCENARIOS

Model Set-Up	Flow Event	Tidal Boundary
Existing Baseline Conditions	Design Flow	Design Water Level
Existing Baseline Conditions	Q-5	Mean Tide Level (MTL)
Existing Baseline Conditions	Q-eff	MTL
Existing Baseline Conditions	Q-100	MLLW
		MTL
		MHHW
		MHHW + Sea Level Rise
Alternative 1 Conditions	Design Flow	Design Water Level
Alternative 1 Conditions	Q-5	MTL
Alternative 1 Conditions	Q-eff	MTL
Alternative 1 Conditions	Q-100	MLLW
		MTL
		MHHW
		MHHW + Sea Level Rise

Geomorphic Analyses

A geomorphic analysis was performed to assess how the site would develop and evolve over time in response to the Project and physical processes. Flood events, tidal action, and coastal sediment transport processes were examined as part of this analysis.

Flood Events

The sediment transport modeling described above evaluated the potential for erosion and deposition within the Ballona Creek channel. Results from the EFDC model, described in the Hydrodynamic Modeling section above, were used to look more directly at scour and deposition on the marsh. Maps of hydraulic shear stress during the peak of a storm event were exported from EFDC to analyze potential marshplain erosion. Mathematical equations relating shear stress to erosion were used to develop a map of potential erosion during the 10-year and 100-year storm events and to estimate erosion volumes. The inputs to the equations, including critical shear stress, were chosen based on the most conservative values (the values resulting in the highest erosion) found in the literature, in order to evaluate the greatest possible impacts of the Project. For this reason, the marsh erosion volumes are likely a conservative overestimate.

To analyze deposition in the marsh, it was assumed that most of the sediment that enters the wetland system would be brought in during storm events, and in areas experiencing velocities slower than the settling velocity of the sediment, the sediment is expected to drop out of solution and settle or deposit onto the marsh. Cahoon et al. (1996) estimated that 0.64% of sediment yield was deposited on the marsh during storm events for creek mouth tidal wetlands. To roughly approximate the amount of sediment being deposited at different locations at Ballona, the estimate of 0.64% was applied to the total sediment load (from the sediment transport model) to estimate the volume of deposition. The total was then divided among the different slow-flowing marsh areas. This is likely a low estimate of marsh accretion, but was used to conservatively estimate the amount of sediment leaving the system with the Project.

Tidal Action

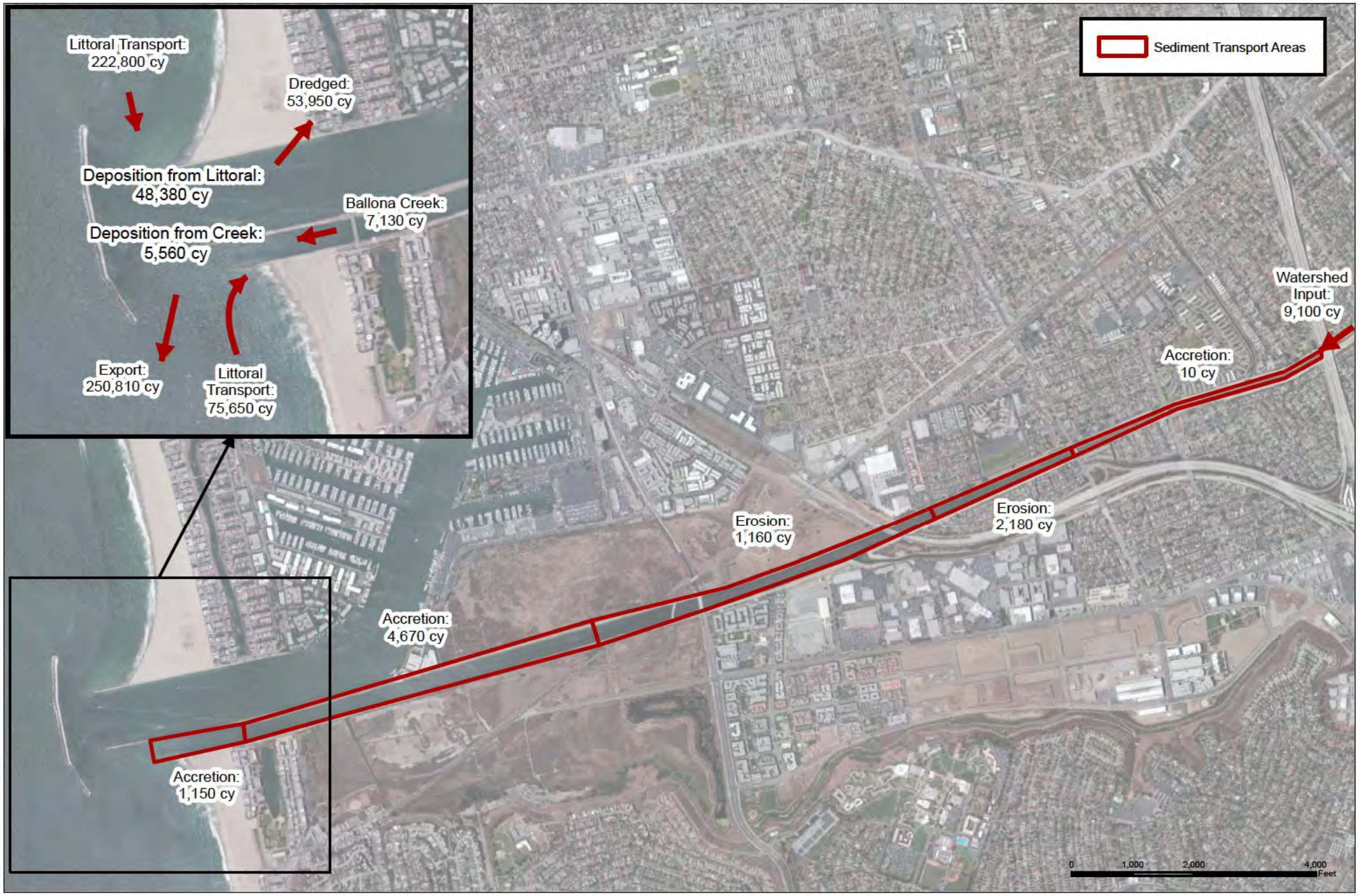
Tidal channels deposit or scour in response to the size of the tidal prism that the channels convey. Tidal hydraulic geometry relationships can provide an estimate of the equilibrium channel size (cross-section dimensions) in relationship to the tidal prism (the volume of water between MLLW and MHHW) or marsh area. These relationships were used to predict the equilibrium channel size under existing conditions and with the Project.

Coastal Sediment Transport

Analysis of the coastal sediment transport was conducted through a combination of literature review, shore planform analysis, and a shoal formation analysis. The shore planform analysis looked at shorelines since the 1880s from the USGS (2006) and Leidersdorf (1994) to examine changes over time. The shoal formation analysis considered grain size, tidal flow velocities, and tidal prism to determine that the shoal is likely formed by waves rather than tidal flows.

Sediment Budget

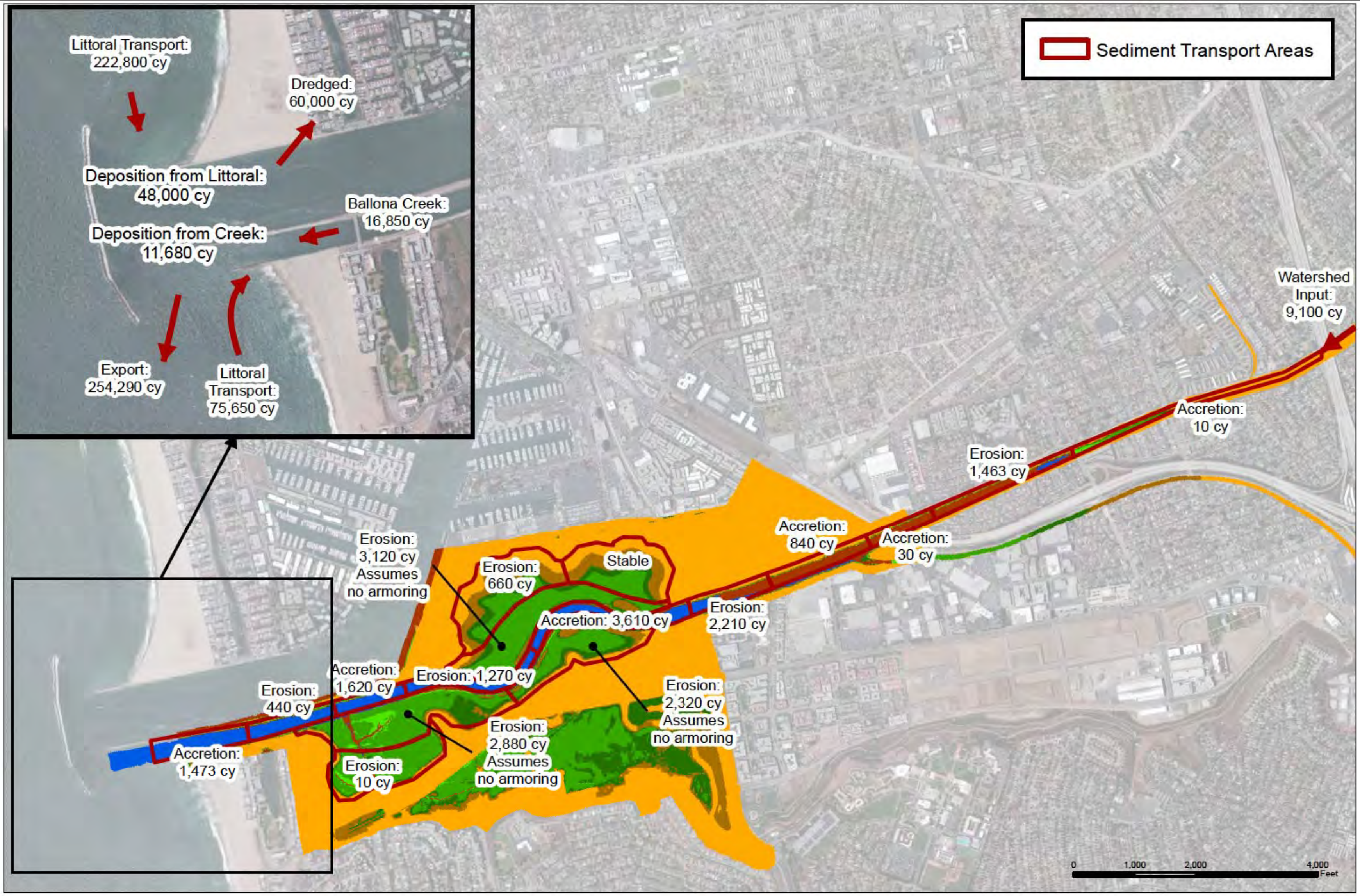
The sediment budget brought together the sediment transport model results with the geomorphic analyses to determine the volume of sediment moving through different parts of the system. Channel scour and deposition was determined through the HEC-RAS model, and the marsh erosion and deposition used the EFDC results with the mathematical equations relating shear stress to erosion. The coastal sediment budget was based on values in the literature (including Marina del Rey dredge records) as well as the geomorphic analyses described above. Figure 3.9-7, *Sediment Budget Under Existing Conditions (Average Year)* (p. 3.9-41), and Figure 3.9-8, *Sediment Budget Under Alternative 1 Project Conditions (Average Year)* (p. 3.9-42), present the sediment budgets for existing conditions and with the Alternative 1 Project.



SOURCE: ESRI, ESA 2015

Ballona Wetlands Restoration Project

Figure 3.9-7
Sediment Budget Under Existing Conditions (Average Year)



SOURCE: ESRI, ESA 2015

Ballona Wetlands Restoration Project

Figure 3.9-8
Sediment Budget Under Alternative 1
Project Conditions (Average Year)

3.9.6 Direct and Indirect Impacts

3.9.6.1 Alternative 1: Full Tidal Restoration/Proposed Action

1-WQ-1a: The excavation and grading associated with restoration proposed under Alternative 1 could expose and release contaminated sediments resulting in water quality impacts in Ballona Creek. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 1 would require ground disturbance, vegetation removal, and/or grading to restore and enhance the wetlands, build levees around Area A and along Culver Boulevard, place fill material in Area C and East Area B, and remove or relocate gas well and lines. Exposure and removal of topsoil and the underlying sub-soils during construction could generate sediment that, if mobilized by stormwater runoff or runoff from applied water during construction, could deliver sediment-laden runoff and possibly other constituents to Ballona Creek. Additionally, work within the existing channel to construct the meander-shaped channel would temporarily increase turbidity.

The construction activities for the proposed restoration would be required to comply with the Construction General Permit for the State and the County MS4 Permit required as part of the permitting process. Alternative 1 would be required to comply with the General Construction and MS4 Permits because greater than 1 acre of ground would be disturbed. For work in the channel, Alternative 1 also would be required to comply with a Section 401Water Quality Certification. Excavation of the channel may extend below the water table and could require temporary dewatering. All excavation dewatering would be conducted in accordance with the General Construction Permit, which ensures discharge water would not be discharged in such a way as to result in direct or indirect degradation of surface water in the Ballona Creek Estuary or Santa Monica Bay. Compliance with the General Construction Permit, MS4 Permit, and 401 Certification would ensure that the proposed activities would include adequate stormwater protection through BMPs and monitoring, to limit increased turbidity and decreased water quality from sediment and other pollutants leaving the construction site.

In addition to regulatory controls that require the applicant to reduce construction runoff from entering Ballona Creek, Alternative 1 contains specific elements to address operational erosion control. As described in Chapter 2, Table 2-2, *Project Design Features Incorporated into the Ballona Wetlands Restoration Project for Alternatives 1, 2, and 3*, the proposed Stormwater Management Plan (Appendix B2) includes drainage control features, such as bio-swales, pre-treatment basins, armoring, and appropriate surface materials for paths and other public access features. These features are designed to capture and slow the flow of surface water and drop the sediment load during and after construction

As a result of implementing Alternative 1, the volume of sediment runoff would increase, but, as discussed above, water quality monitoring during the restoration phase would assure erosion and sediment control measures from the Stormwater Management Plan (Appendix B2) are effective at maintaining turbidity levels in Ballona Creek below the General Construction Permit requirements; therefore, no significant adverse impacts would result.

After restoration, maintenance of the drainage features, such as the bio-swales and pre-treatment basins would be periodic and infrequent and would not involve substantive disturbance of soils. Activities would be done in accordance with BMPs established in the Operations and Maintenance Plan (Appendix B5), which would ensure that the proposed activities would include adequate measures to protect water quality; therefore, no significant adverse impacts would result.

Indirect Impacts

There would be no indirect impacts to water quality due to restoration activities because of the relatively short term nature of the work as well as the implementation of the required construction BMPs as discussed in Section 3.9.3 as part of the NPDES Construction General permit requirements. The BMPs would be implemented throughout restoration activities and are designed to isolate disturbed areas such that there would be no indirect impacts. Post-restoration erosion is discussed below for erosion within Ballona Creek and from the wetlands.

Erosion from Ballona Creek

Alternative 1 would reroute Ballona Creek through the site and reconnect it to the marsh floodplain on either side. Reconnection of the creek to the floodplain would change the flow patterns and velocity within the creek, with flows slowing down as they expand over the floodplain and speeding up as they reenter the channel downstream. During a large storm event, the new flow pattern could increase scour or erosion within the creek, which could re-suspend sediment and potential constituents such as metals (e.g., copper, zinc, silver, and lead) and organic compounds (e.g., PAHs, pesticides, and PCBs) within the estuary and Santa Monica Bay. Re-suspended sediment and associated constituents, if present, could result in deposition of these constituents in the channel and marsh that could impact sediment quality if the concentrations of the constituents were to be above thresholds and result in impaired conditions based on the SQOs analysis. If this occurs, it would be a significant adverse impact.

Water and Sediment Quality

Due to highly variable water quality conditions within the tidal prism (due to tidal flushing), water quality impacts to biological beneficial uses are assessed through sediment quality, which is less variable. Impacts to beneficial biological and recreational uses are assessed based on fish tissue targets, which are based on potential human exposure scenarios. The compliance date for meeting the SQOs and fish tissue targets under the combined Metals and Toxics TMDLs is January 2021. The anticipated schedule for Alternative 1 includes breaching the levees to Area A and North Area B in 2021 – the same time as the TMDL timeline to meet the sediment quality goals. Phase 2 of Alternative 1, and breaching the levees to West Area B, would not be completed until 2025. If the TMDL goals are achieved by 2021, the sediments in the channel would meet the SQOs and fish tissue targets for the specified constituents, and any post-construction channel erosion would not contribute to impacts on the sediment quality and the biological and recreational designated beneficial uses of the Ballona Creek Estuary or Santa Monica Bay. Additionally, Alternative 1 would cover a portion of the impacted sediment in the creek when the channel meander shapes are constructed. This would contain potential constituents in those segments from being re-suspended into the water column through erosion during storm events. Additionally, the stormwater management features and the restoration of the marsh in Area A would have a beneficial effect on water quality since the site drains straight to the marsh and creek under existing conditions.

Erosion Under Tidal Conditions

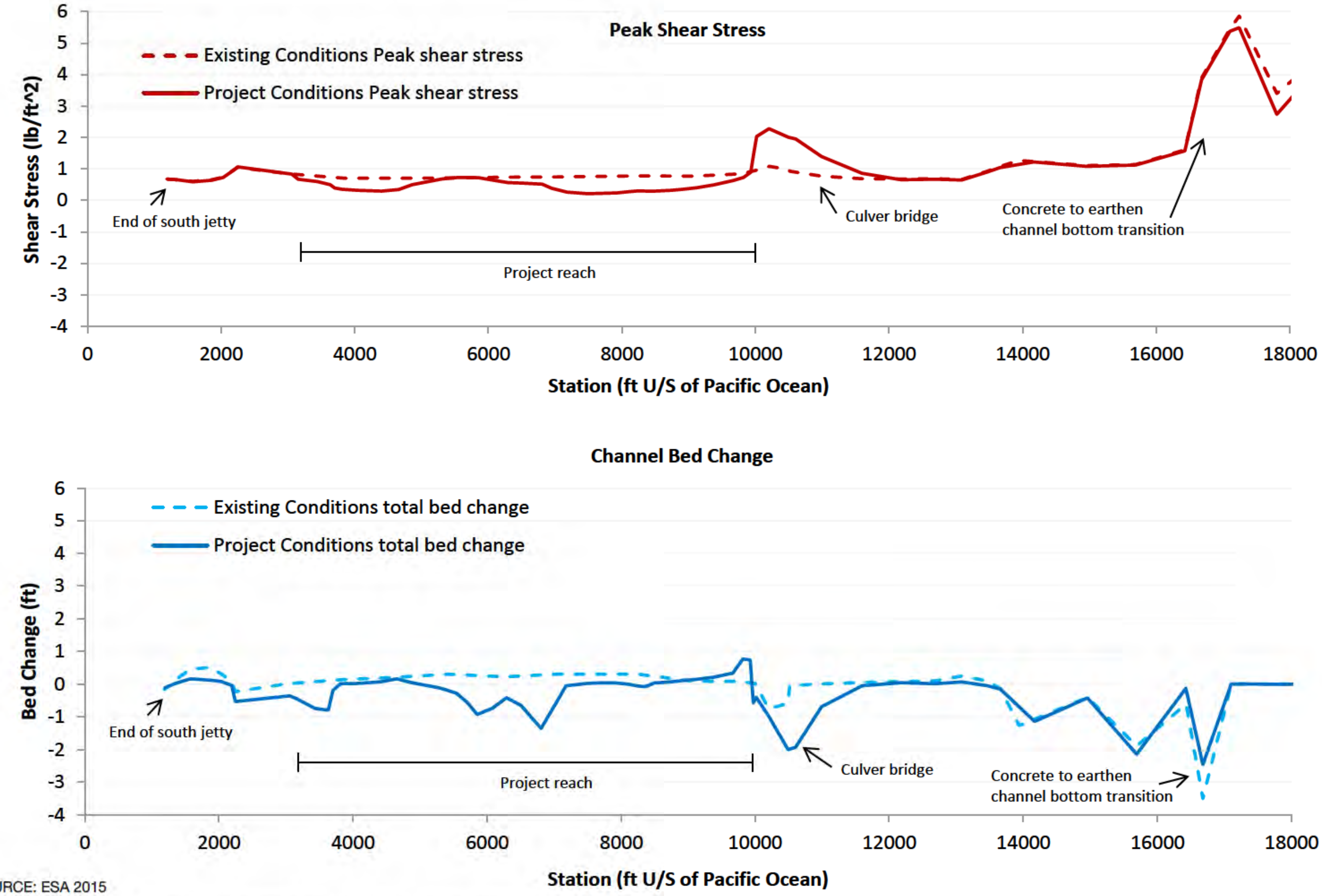
Under tidal conditions, the Project is not expected to experience substantial erosion in the channel because tidal flow velocities are low. Tidal channels deposit or scour in response to the size of the tidal prism that the channels convey, but when appropriately sized, they stay in equilibrium. As discussed in Section 3.9.5, Methodology, tidal hydraulic geometry relationships were used to estimate the equilibrium channel size (cross-section dimensions) of Ballona Creek. The existing Ballona Creek flood control channel is oversized compared to predicted equilibrium dimensions. This suggests that the existing channel is depositional during normal tidal conditions and more frequent smaller storm flows, but that deposition is limited by sediment supply. Since Alternative 1 would reconnect the channel to the marsh, the tidal prism would be increased from existing conditions and a slightly larger equilibrium channel would be expected. However, the channel in Alternative 1 would still be larger than the equilibrium channel to allow conveyance of storm flows. Some sediment re-suspension and deposition by tidal flows within the channel is expected as in natural tidal wetland systems; however, substantial erosion due to tidal flows is not expected.

Erosion during Storm Events

As described in Section 3.9.5, *Methodology*, a sediment dynamics assessment evaluated the areas that may experience additional scour during storm events and estimated the additional quantities of sediment that may be transported through the system as a result of the Project. Sediment transport modeling was conducted for both existing and Alternative 1 conditions. Results for existing conditions under a range of storm events showed scouring in the channel in two locations: 1) at the location where the channel transitions from a concrete bottom to an earthen or soft bottom and 2) near the Lincoln Boulevard Bridge (Appendix F7).

Sediment transport modeling results for Alternative 1 conditions showed similar erosion at the transition from the concrete to soft-bottom channel as under existing conditions, but increased scour from existing conditions in the vicinity of the Lincoln Boulevard Bridge. The increased scour is caused by flows expanding over the floodplain and lowering water levels as the channel enters the site. The difference in modeled water elevations between the channelized creek upstream of the site and the expanded floodplain within the site causes a slope in the water surface that increases velocities near the Lincoln Boulevard Bridge. Higher velocities cause an increase in shear stress at the channel bottom resulting in increased erosion. As described in Chapter 2, Table 2-2, *Project Design Features Incorporated into the Ballona Wetlands Restoration Project for Alternatives 1, 2, and 3*, Alternative 1 would include an armored sill across the channel from the Culver Boulevard Bridge to the Lincoln Boulevard Bridge. This feature of the proposed design would limit excessive erosion caused by the flow acceleration at the entrance to the site.

Modeling results of Alternative 1 conditions also showed erosion just upstream of West Area B in Phase 1 and Phase 2, and just before the downstream end of West Area B in Phase 2 (Figure 3.9-9, *Peak Shear Stress and Bed Change Under Design Conditions (46,000 cfs at 7.63 ft NAVD 88)* (p. 3.9-46); Appendix F7). When flood waters are funneled back into the channel by the interim levee (Phase 1) or the peninsula and salt pan berm (Phase 2) on the east side of West Area B, the water speeds up to pass through the constriction, increasing shear stresses and



SOURCE: ESA 2015

Note: Bed change results for existing and project conditions are the same upstream of station 16,500

Ballona Wetlands Restoration Project

Figure 3.9-9
Peak Shear Stress and Bed Change
Under Design Conditions (46,000 cfs at 7.63 ft NAVD88)

causing erosion. Additionally in Phase 2, the flood waters would expand into West Area B. Model results show that when flood waters are funneled back into the flood control channel downstream, higher velocities and shear stresses may result in erosion. However, some erosion is expected in natural systems.

Under existing conditions, which are described in Section 3.9.2, Affected Environment, estimates of sediment export from Ballona Creek range from 700 cy of sediment during the annual storm event up to 25,000 cy during the 100-year event (1% annual chance of occurrence) (Appendix F1). Storm events vary in intensity from typical seasonal events (i.e., annual storm) to infrequently-occurring extreme events (i.e., 100-year storm). Infrequent extreme events have the potential to cause greater erosion and deposition; however, more frequently occurring events can have a greater cumulative impact on sediment dynamics over time. On average, Ballona Creek exports an estimated 7,000 cy of sediment per year (Appendix F1). This average annual rate is a weighted-average that accounts for the chance of occurrence of extreme events and represents an annual average that could be expected over a series of years.

Under Alternative 1, Ballona Creek could export 8,000 cy of sediment in the average year. This is an additional 1,000 cy of sediment per year, or a 14% increase from existing conditions. The sediment transport model results showed that export from the channel under Alternative 1 could range from an increase of 300 cy (44% increase relative to existing conditions) during the annual event to an increase of 2,500 cy (10% increase relative to existing conditions) during the 100-year event. Although Alternative 1 would increase turbidity during storm events, it would only be for the limited time as the storm flows pass through. For example, the additional 300 cy of sediment produced during the annual storm would only occur for a few hours every year.

The additional 2,500 cy produced during the 100-year event would only occur (on average) once every 100 years. Additionally, such an increase in sediment erosion is typical in natural systems. As discussed above, constituents in the sediments in the channel would be below regulatory thresholds by the time of Alternative 1 implementation and any post-restoration channel erosion would not contribute constituents to Ballona Creek or Santa Monica Bay at a level that would impact the beneficial uses of the system. However, since some amount of erosion is expected in a natural system, Mitigation Measure WQ-1a-i has been developed to ensure monitoring and adaptive management is conducted to recognize and minimize any erosion or sediment quality issues identified such that the impacts would be less than significant.

Erosion from the Wetlands

Alternative 1 would excavate sediment in Area A and North Area B, reconnect and reroute Ballona Creek through this area, and open up West Area B to a full tidal connection with Ballona Creek. Reconnection of the creek to the floodplain and removal of the concrete levees could cause erosion of the marsh during a large storm event, which could deliver sediment-laden runoff and associated constituents to Ballona Creek. Constituents associated with these sediments could then settle out into the channel and marsh at concentrations that may result in impairment based on SQOs for biological resources/beneficial uses. If this occurs, it would be a significant adverse impact.

Sediment Quality

As discussed in Section 3.9.2.2, *Environmental Setting* above, sediment samples taken in 2006 in West Area B showed high levels of pesticides and metals, due to runoff from the adjacent communities and transportation corridors, such as Culver Boulevard, and due to limited tidal circulation and flushing. As described in Chapter 2, Table 2-2, *Project Design Features Incorporated into the Ballona Wetlands Restoration Project for Alternatives 1, 2, and 3*, Alternative 1 would install a stormwater pre-treatment basin between Culver Boulevard and the West Area B levee to provide infiltration and treatment of the runoff from the new emergency and bus access road and Culver Boulevard. The basin would reduce the amount of constituents entering the West Area B marsh and improve sediment quality by limiting continued accumulation of constituents over time from the roads. Additionally, in Phase 2, the levee would be breached and lowered in West Area B, reconnecting it to Ballona Creek. This would increase tidal flushing and circulation and reduce the settling of additional constituents coming from the watershed during the dry season in the marsh.

As discussed in Section 3.9.2.2, *Environmental Setting*, above, sediment samples taken in Area A in 2008 and Area A and North Area B in 2012 showed that metal and organic constituents are below the Beneficial Reuse values for materials to be used as wetland surfaces, except for silver (Appendix F5). However, silver was below the Beneficial Reuse value for wetland foundation material, within the range of concentrations historically found in the existing Area B wetland, and at concentrations consistent with natural marine sediments. Mitigation Measure WQ-1a-ii has been developed to ensure additional sediment sampling is conducted prior to construction to identify any contamination that may have been missed in previous sampling efforts. Additionally, the stormwater management plan includes features that would reduce the amount of sediment and associated constituents entering the marsh through runoff.

Erosion Under Tidal Conditions

Under tidal conditions, Alternative 1 is not expected to experience substantial erosion. In a stable estuary, mature marshes remain in a dynamic equilibrium between erosional and depositional processes. The marsh vegetation and its root structures help hold sediments in place. As discussed in the section above, tidal channels stay in equilibrium when appropriately sized. For Alternative 1, the tidal channels within the marsh have been designed using the tidal hydraulic geometry relationships. The appropriate sizing of the channel, as well as naturally recruited or planted vegetation, is expected to keep the marsh in a dynamic equilibrium, where any erosion during typical tides would be minor.

Erosion during Storm Events

Under existing conditions, the existing marsh is not fully connected to the creek, and sediment export from the marsh to the creek during storm events is likely minimal. The sediment budget analysis showed that under Alternative 1, the marsh could export an average of 9,000 cy of sediment per year (Appendix F1). For storms less than the 10-year event (10 percent or greater chance of occurrence annually), no export from the marsh is expected. The 10-year to 100-year events could export up to 50,000 – 65,000 cy of sediment. However, these events would occur infrequently with less than a 10% chance of occurrence every year. While the erosion would result in an increase in turbidity during storm events, it would be an infrequent, temporary impact, and one which is typical of natural systems. As a result, erosion would result in an infrequent, temporary impact relating to the contribution of constituents to Ballona Creek or Santa Monica Bay; these inputs would not have a substantial impact on the beneficial uses of the system. Additionally, Mitigation Measure WQ-1a-i has been developed to ensure monitoring and adaptive management is conducted to recognize and address any erosion or sediment quality issues.

Mitigation Measures

Mitigation Measure WQ-1a-i: *Monitoring and Adaptive Management Plan (MAMP).* A Monitoring and Adaptive Management Plan (MAMP) (Appendix F11) shall be prepared and implemented. The MAMP shall provide a framework for the assessment of the Project and watershed using the TMDL targets as assessment metrics. The MAMP shall use both Project monitoring, the sediment and water quality data gathered from the TMDL monitoring conducted by the Permittees (designated parties listed in the Ballona Creek and Ballona Creek Estuary TMDLs who are under a state-wide or LARWQCB NPDES MS4 Stormwater Permit),[108] and monitoring conducted by the Corps in the Marina del Rey harbor entrance channel to determine if impairment conditions exist and provide protocols for any further measures to meet TMDLs and dredging requirements. The assessment of the effectiveness of the Project features and watershed measures (conducted by the Permittees) shall be determined through comparisons to the Sediment Quality Objectives (SQOs) and fish tissue targets. If the SQO analysis indicated an impaired or likely impaired condition, then further source and delineation monitoring shall be conducted. Depending on the source of the impairment, reparative measures shall be implemented by the Project proponents, Permittees, or in cooperation with parties as outlined in the MAMP framework to reduce the impacts to sediment to below the SQOs and fish tissue targets. SQOs shall be the regulatory target used to protect against negative biological impacts and are considered the performance standard to identify negative impacts. In the event that sediment quality impairments are found to be a result of the project, the sediment shall be excavated and disposed of off-site or buried beneath uncontaminated material on-site. If sediment quality impairments in the Marina del Rey harbor entrance channel are found to be a result of the project, CDFW shall coordinate with the Corps to develop a mutually agreed upon course of action, which could include participating in reparative measures proportional to the amount of increased impairment due to the project.

Additionally, the MAMP shall monitor and address any changes in sediment deposition in the entrance of Marina del Rey after project implementation is complete. The plan shall use bathymetric data collected by the Corps to determine if deposition has increased substantially after completion of the project. In the event that substantial deposition is identified, CDFW shall coordinate with the Corps to develop a mutually agreed upon course of action, which could include participating in dredging proportional to the amount of increased deposition due to the project. Dredged material shall be disposed of back in the marsh by spraying a slurry of sediment in a thin layer across the marshplain or disposed of on- or off-site by other means in accordance with necessary permits or other approvals. The MAMP would ensure that any increases to deposition would be monitored and addressed in order to maintain boat access to the Marina consistent with historic dredging efforts.

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[108] Permittees would include Culver City, City of Los Angeles, Los Angeles County, and Caltrans.

The MAMP would also monitor water levels in South and Southeast Area B to determine operation of the culverts in order to prevent flooding. Over time, flap gates would be installed on the culverts as part of Alternative 1 to limit the flow into South and Southeast Area B. Initial modeling indicated that adding a flap gate every 25 years would maintain the current level of flood protection, but the MAMP would ensure that water levels were monitored so that flap gates could be added as needed to maintain an acceptable level of flood risk.

Mitigation Measure WQ-1a-ii: *Sampling and Analysis Plan (SAP)*. A SAP shall be prepared and implemented prior to commencement of restoration and construction activities to identify any levels of constituents that may have been missed in previous sampling efforts. The results of the sediment sampling shall determine which materials shall be used as wetland surfaces (highest quality), as wetland foundation, or buried in the uplands (lowest quality) in accordance with the ER-Ls and ER-Ms developed by Long et al. (1995). The SAP shall also include, without limitation:

a) In addition to the sampling and analysis of soil as identified in the SAP, soil and groundwater samples shall also be collected from any excavations that encounter groundwater. The soil samples shall be collected at or just below the static water level to sample soil that may have been affected by contaminated groundwater migrating from offsite properties. Each soil sample shall be labeled with a unique sample identification number, placed in to plastic bags in coolers with ice packs, along with the appropriate chain of custody documentation, and delivered to the analytical testing laboratory within the required testing method holding times.

b) All soil samples collected for the analyses described below shall be collected into Teflon-lined metal or plastic tubes and sealed to minimize the loss of volatile compounds. The groundwater samples shall be collected into glass bottles with Teflon-lined lids and the appropriate preservatives to seal in and preserve volatile compounds, if any. Each sample shall be labeled with a unique sample identification number, placed in to plastic bags in coolers with ice packs, along with the appropriate chain of custody documentation, and delivered to the analytical testing laboratory within the required testing method holding times.

c) All soil and groundwater samples shall be analyzed for petroleum hydrocarbons using US EPA Test Method 8015 or equivalent, including a silica gel cleanup (USEPA Test Method 3630C or equivalent) to remove naturally occurring polar non-petroleum hydrocarbons that could interfere with the analyses.

d) All soil and groundwater samples shall be analyzed for VOCs using USEPA Test Method 8260 or equivalent (at a minimum, the test methods shall be capable of detecting PCE).

e) Following receipt of laboratory results of the chemical testing, soil or groundwater material that exceeds the reuse screening levels, CHHSLs, or PRGs and cannot be reused on site shall be transported by a DTSC-licensed hazardous waste hauler and disposed of at an offsite disposal facility licensed to receive the contaminated soil and groundwater. Alternative disposal options, such as onsite burial, shall be considered for soil and groundwater found not to contain contaminates or having concentrations below the regulatory thresholds.

Level of Significance after Mitigation

Implementation of Mitigation Measure WQ-1a-i and WQ-1a-ii would reduce Impact 1-WQ-1a to less than significant.

1-WQ-1b: Under Alternative 1, contaminated water and sediment from the watershed could, unless mitigated, be transported into the restored marsh resulting in areas of accumulated contaminated sediments and potential exceedance of water quality limits set forth by the Ballona Creek TMDL. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 1 would require ground disturbance, vegetation removal, and/or grading to enhance the wetlands in West Area B, build levees along Culver Boulevard, and remove or relocate gas well and lines. Exposure and removal of topsoil and the underlying sub-soils during construction could generate sediment that, if mobilized by stormwater runoff or runoff from applied water during construction, could deliver sediment-laden runoff to the marsh in West Area B.

The construction activities for the proposed restoration would be required to comply with the Construction General Permit for the State and managed for consistency with the County MS4 Permit required as part of the permitting process as discussed for Impact 1-WQ-1a. Compliance with the General Construction Permit and MS4 Permit would ensure that the proposed activities would include adequate stormwater protection through BMPs and monitoring, to limit sediments leaving the construction site and entering the marsh.

In addition to regulatory controls that require the applicant to reduce construction runoff from entering the marsh, Alternative 1 contains specific elements to address operational erosion control in the Stormwater Management Plan (Appendix B2) as discussed for Impact 1-WQ-1a (see Chapter 2, Table 2-2, *Project Design Features Incorporated into the Ballona Wetlands Restoration Project for Alternatives 1, 2, and 3)*. The drainage control features as part of Alternative 1 are designed to capture and slow the flow of surface water and drop the sediment load.

As a result of implementing Alternative 1, the volume of sediment runoff would increase, but, as discussed above, water quality monitoring during the restoration phase would assure erosion and sediment control measures from the Stormwater Management Plan (Appendix B2) are effective at limiting accretion in the marsh below the General Construction Permit requirements; therefore, no significant adverse impacts would result.

Operation and maintenance activities would be infrequent and relatively minor with little to no disturbances to onsite soils such that it would not result in a significant impact relating to the transport of water and sediment from the watershed to the marsh; therefore, there would be no significant impact during the post-restoration period.

Indirect Impacts

There would be no indirect impacts to sediment quality in the marsh during restoration activities because of the relatively short term nature of the work as well as the implementation of the required BMPs as discussed above. The BMPs would be implemented throughout restoration activities and are designed to isolate disturbed areas such that there would be no indirect impacts. Post-restoration effects are discussed below for sediment quality and deposition within the wetlands.

Post-restoration, Alternative 1 would reconnect Ballona Creek to the existing marsh in West Area B. Reconnection of the creek to the floodplain would allow sedimentation to occur and could create a sink for metals, nutrients, pesticides, and other constituents in the marsh. Degradation of the sediment quality in West Area B could adversely impact the beneficial uses of this water body. As discussed in Section 3.9.3, *Applicable Laws, Regulations, Plans, and Standards*, Ballona Creek Estuary is listed as a 303(d) Impaired Water Body for metals, organic compounds, and toxicity. Accretion of sediments with levels of constituents in the marsh at concentrations above regulatory thresholds could result in impairment of beneficial uses based on the SQOs.

Sediment Quality

As discussed above, West Area B is likely impacted by metals and organics from both Ballona Creek in the northern portion of West Area B and stormwater running off to the southern portion of West Area B. The Project would install a stormwater pre-treatment basin (see Chapter 2, Table 2-2, *Project Design Features Incorporated into the Ballona Wetlands Restoration Project for Alternatives 1, 2, and 3*), which would reduce the amount of constituents entering the West Area B marsh and improve sediment quality by limiting continued accumulation. Additionally, in Phase 2, the levee would be breached and lowered in West Area B, reconnecting it to Ballona Creek, which would increase tidal flushing and circulation and reduce settling of additional constituents coming from the watershed during the dry season in the marsh. Alternative 1 would reduce the constituents entering West Area B from Ballona Creek and the watershed during typical tidal conditions.

Deposition during Storm Events

During storm events, some deposition is expected in the marsh after implementation of the Project. If the sediment coming from the creek contains constituents above the regulatory thresholds, it could degrade the sediment quality in West Area B after these events. However, the combined Metals and Toxics TMDL would reduce pollutant loading to Ballona Creek from the watershed, including constituents that are associated with suspended solids (metals, pesticides, PAHs). The compliance date for meeting the water quality goals and objective is January 2021. Since West Area B would not be breached before 2025, the constituents in the sediments coming from Ballona Creek would be below regulatory limits. Additionally, Mitigation Measure WQ-1a-i, the MAMP (Appendix F11) has been developed to ensure monitoring and adaptive management is conducted to recognize and address any erosion or sediment quality issues.

Mitigation Measure

> **Mitigation Measure 1-WQ-1b:** Implement Mitigation Measure WQ-1a-i, Monitoring and Adaptive Management Plan (MAMP).

Level of Significance after Mitigation

Implementation of Mitigation Measure WQ-1a-i would reduce Impact 1-WQ-1b to less than significant.

1-WQ-1c: Under Alternative 1, water quality degradation could occur at Los Angeles (LA-2) or Newport Bay (LA-3) ocean disposal sites due to placement of excavated project site sediments. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 1 would excavate sediments from Area A and North Area B to reach marshplain elevations in these areas. Excavated sediment would be used on-site to the extent feasible, but any remaining sediment may be designated for placement in an off-site landfill or in ocean disposal sites at either the Los Angeles (LA-2) or Newport Bay (LA-3) sites. The suitability of on-site excavated sediment for placement at a designated ocean dredged material disposal site would require a Tier III evaluation in accordance with Evaluation of Dredged Material Proposed for Ocean Disposal – Testing Manual (OTM; USEPA/Corps 1991). The Tier III evaluation contains sediment quality standards, which are set based on water quality criteria and protection of water quality. Sediment would be placed in an ocean disposal site only if it met the standards of the OTM, therefore, there would be no significant adverse impact as a result of ocean disposal.

As discussed in Section 3.9.2.2, *Environmental Setting*, previous sediment testing indicates that material from Area A and North Area B meets the requirements for placement in ocean disposal sites. A presentation of the sediment testing results was provided to the Southern California Dredge Material Management Team (DMMT) on January 28, 2015. The DMMT includes the Corps Los Angeles District and the LARWQCB. The DMMT recommended and relevant agencies would require further testing of the sediments as part of the final permitting for off-site disposal in accordance with the ITM and OTM guidelines. These guidelines require additional sample testing that includes bioaccumulation studies. As described for Impact 1-WQ-1a, Mitigation Measure WQ-1a-ii, the SAP, has been developed to ensure additional sediment sampling is conducted prior to construction to identify any contamination that may have been missed in previous sampling efforts. Sediments that are identified to have constituents at a level that preclude it from ocean disposal would be buried in upland areas on-site.

Operation and maintenance activities generally would not involve placement of fill in the ocean disposal sites (see below); therefore, there would be no direct impacts to water quality during the post-restoration phase.

Indirect Impacts

There would be no significant indirect impacts to water quality at the ocean disposal sites during restoration activities because of the relatively short term nature of the work. In addition, as discussed above, the adherence to the DMMT requirements for ocean disposal are designed to ensure that there are no long term adverse impacts to ocean water quality. Once restoration activities are completed, there would be no near term need for ocean disposal although the

Preliminary Operation and Maintenance Plan (Appendix B5) does allow for distant future maintenance dredging needs which are estimated to take approximately 50 years before requiring action; therefore, there would be no indirect impacts.

Mitigation Measure

Mitigation Measure 1-WQ-1c: Implement Mitigation Measure 1-WQ-1a-ii, Sampling and Analysis Plan (SAP).

Level of Significance after Mitigation

Implementation of the SAP prepared pursuant to Mitigation Measure WQ-1a-ii would reduce Impact 1-WQ-1c to less than significant.

1-WQ-2: Alternative 1 would increase the extent of tidal inundation and could increase infiltration of salt water into the groundwater table resulting in the inland advancement of sea water intrusion. (Less than Significant Impact)

Direct Impacts

During restoration and construction, there would be no direct impacts to groundwater through salt water intrusion.

Post-restoration in Phase 1, Alternative 1 would have excavated sediment from Area A and North Area B and reconnected Ballona Creek to these areas. After Phase 2, the creek levee in West Area B would be breached and lowered, reconnecting Ballona Creek with its historic floodplain. By removing the levees around Ballona Creek and lowering the surrounding areas to marshplain elevations, the extent of tidal inundation would increase. Alternative 1 also would increase the tide range and the tidal extent in South and Southeast Area B through new, larger culverts. The increased extent of tidal influence would increase the infiltration of salt water into the groundwater table throughout the site and could result in the inland advancement of sea water intrusion.

The groundwater beneath the Project site is shallow and occurs under unconfined conditions in fine grained sand, silt, and clay layers. As discussed in Section 3.9.2.2 *Environmental Setting,* the shallow water table is under tidal influence meaning that groundwater elevations fluctuate in response to tidal cycles in Santa Monica Bay. Generally, freshwater from the inland water table flows toward the coast and mixes with salty groundwater making groundwater that is brackish (a mixture of salty and fresh water). The brackish groundwater in these estuarine, shallow water table aquifers is non-potable. As it is non-potable, there are no wells in the vicinity of the Project site that draw groundwater from the shallow water table for domestic or municipal use (MWD 2007). Recharge of the water table beneath the site occurs from surface infiltration and tidal response.

Alternative 1 would increase tidal inundation through the marsh and possibly cause the extent of brackish water to migrate inland. If this were to occur, the change to water quality is not considered to have an adverse impact on water resources because the groundwater in this area is not used for domestic or municipal supply. The inland migration of the brackish groundwater would likely be limited and not extend much beyond the eastern limits of the Project area. While the increased inundation could cause more salt water to infiltrate to the water table, it would be infiltrating into an already brackish, estuarine water table that is not used for public or private supply.

Indirect Impacts

During restoration activities there would be no significant indirect impacts to groundwater because of the relatively short term nature of the work and the relatively longer period of time it takes for salt water to intrude into the groundwater table.

Once the tidal prism has increased and the groundwater has stabilized, there would be no change in the extent of brackish water, so there would be no indirect impacts. Over time with sea level rise, the brackish groundwater would continue to move inland, but this would occur without Alternative 1 as well and so is not an adverse impact attributable to Alternative 1.

1-WQ-3a: The realignment and restoration of Ballona Creek proposed under Alternative 1 would result in erosion that could result in localized and downstream siltation. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 1 would require ground disturbance, vegetation removal, and/or grading to restore and enhance the wetlands, build levees around Area A and along Culver Boulevard, place fill material in Area C and East Area B, and remove or relocate gas well and lines. Exposure and removal of topsoil and the underlying sub-soils during construction could generate sediment that, if mobilized by stormwater runoff or runoff from applied water during construction, could deliver sediment-laden runoff to Ballona Creek, which could result in localized and downstream siltation.

The construction activities for the proposed restoration would be required to comply with the Construction General Permit for the State and be managed for consistency with the County MS4 Permit as part of the permitting process as discussed for Impact 1-WQ-1a. For work in the channel, the Project also would be required to comply with a Section 401 Certification. Compliance with the General Construction Permit, MS4 Permit, and 401 Certification would ensure that the proposed activities would include adequate stormwater protection through BMPs and monitoring, to limit sediments leaving the construction site.

In addition to regulatory controls that require the applicant to reduce construction runoff from entering the marsh, the Project contains specific elements to address operational erosion control in the Stormwater Management Plan (Appendix B2) as discussed for Impact 1-WQ-1a (see Chapter 2, Table 2-2, *Project Design Features Incorporated into the Ballona Wetlands Restoration Project for Alternatives 1, 2, and 3*). The drainage control features in the Project are designed to capture and slow the flow of surface water and drop the sediment load.

As a result of implementing Alternative 1, the volume of sediment runoff would increase during construction, but, as discussed above, water quality monitoring during the restoration phase would assure erosion and sediment control measures from the Stormwater Management Plan (Appendix B2) are effective at limiting accretion in the marsh by dropping out sediment before it reaches the marsh; therefore, no significant adverse impact would result.

After restoration, maintenance of the drainage features, such as the bio-swales and pre-treatment basins would be periodic and infrequent and would not involve substantive disturbance of soils. Activities would be done in accordance with BMPs established in the Operations and Maintenance Plan (Appendix B5), which would ensure that the proposed activities would include adequate measures to protect water quality; therefore, no significant adverse impact would result.

Indirect Impacts

There would be no indirect impacts during restoration activities that would result in erosion because of the relatively short term nature of the work and the implementation of the BMPs during the restoration activities.

Alternative 1 would reroute Ballona Creek through the site and reconnect it to the restored marsh floodplain on either side. Reconnection of the creek to the floodplain would change the flow patterns and velocity within the creek, with flows slowing down as they expand over the floodplain and speeding up as they reenter the channel downstream. During a large storm event, the new flow pattern could increase scour or erosion within the creek and marsh, which could deliver sediment to Ballona Creek, the mouth of Marina del Rey, and Santa Monica Bay.

Erosion Protection Features

As previously described for Impact 1-WQ-1, Alternative 1 could cause additional erosion in the realigned creek and across the marsh during large storm events. Model results indicate that flow acceleration due to the expansion and contraction of floodwaters across the floodplain could increase shear stress and induce erosion during extreme events. It should be reiterated that erosion is not expected under normal tidal conditions. As described above, an armored sill would be constructed across the channel from the Culver Boulevard Bridge to the Lincoln Boulevard Bridge as part of Alternative 1 to limit scour at this location (see Chapter 2, Table 2-2, *Project Design Features Incorporated into the Ballona Wetlands Restoration Project for Alternatives 1, 2, and 3*). Additionally, Alternative 1 would have varying levels of erosion protection along the channel banks as described in Section 2.3.2.2, *Alternative 1: Flood Risk and Stormwater Management*, of the Project Description and shown in Figures 2-16, *Alternative 1, Phase 1: Perimeter Levee Armoring Plan* (p. 2-79), and 2-17, *Alternative 1, Phase 2: Perimeter Levee Armoring Plan* (p. 2-81) (see also Chapter 2, Table 2-2, *Project Design Features Incorporated into the Ballona Wetlands Restoration Project for Alternatives 1, 2, and 3*). The different levels would correspond to the risk and consequences of erosion occurring in those areas. In Phase 1, the highest level of armoring, identified as Level 1, would be buried or surface armoring along the channel banks at the entrance to the site and at the end of Area A to protect against erosion from the expansion and contraction of flood flows. Level 1 armoring would also be placed along the channel banks where the realigned channel could cut across the marshplain and bypass the new meander-shaped channel (also referred to as short-circuiting). The remainder of the channel banks would be unarmored but would be vegetated to use natural processes to limit erosion (Level 3 armoring).

Downstream Deposition in the Channel

The volume of sediment transported through the system may still increase as a result of Alternative 1, but, as discussed for Impact 1-WQ-1 above, the volumes of additional sediment is typical for this type of system. However, the additional sediment could increase flooding if it deposited downstream and reduced drainage capacity. The only location in the Ballona Creek channel where sediment transport modeling results showed increased deposition over existing conditions, which are described in Section 3.9.2, Affected Environment, was slightly past the Culver Boulevard Bridge, where velocities drop as water enters the Project site. However, hydraulic model results showed that the estimated level of deposition in this location (less than 1 foot) would not increase water levels relative to existing conditions.

Downstream Deposition in the Entrance to Marina del Rey

The increased volume of sediment transported through the system also could increase the amount of sedimentation at the entrance to Marina del Rey. As discussed in Section 3.9.2.2, *Environmental Setting*, under existing conditions, approximately 7,000 cy/yr of sediment is exported from the mouth of Ballona Creek, of which about 70% or 5,000 cy/yr is estimated to deposit in the Marina del Rey harbor southern entrance channel. Littoral sand transport (sand transport in the intertidal zone of the beach) along the coast deposits about 48,000 cy/yr of sand in the entrance channel. Sediment deposited in the entrance channel (total volume of about 55,000 cy/yr from littoral transport and Ballona Creek) is dredged from the entrance channel to maintain navigation.

For Alternative 1 conditions, erosion estimates show an increase from existing conditions in the amount of sediment exported from Ballona Creek and a corresponding increase in Ballona Creek deposition in the marina entrance. The increase in sediment deposition estimated for small storm events occurring, on average, once every 1 to 5 years, is 200 to 900 cy. The estimated increase for frequent storms represents up to a 2% increase in the average annual deposition of 55,000 cy in the entrance to the marina. Estimated increases for large, infrequent storm events are greater but would occur infrequently: an increase of 20,000 to 40,000 cy per event is estimated for floods occurring once every 10 to 100 years[109] on average. The estimated increase for extreme flood events represents approximately an 80% increase in deposition from existing conditions. This increase in deposition would be addressed by the existing dredge operations (300,000 to 800,000 cy every 5 to 8 years). Furthermore, the existing dredging operations would ensure that deposition downstream would not reduce the drainage capacity of the creek. Mitigation Measure 1-WQ-1a- would ensure that a MAMP is developed and implemented to conduct monitoring and adaptive management strategies at the site to identify and address any substantial deposition in the Marina, should it be necessary.

Downstream Deposition on the Beach

During large storm events, the increased export from Ballona Creek under Alternative 1 conditions could increase the deposition of fine sediments on the beach. However, this would be considered merely a temporary nuisance condition and wave action would wash fines out to the bay.

Mitigation Measure

> **Mitigation Measure 1-WQ-3a:** Implement Mitigation Measure WQ-1a-i, Monitoring and Adaptive Management Plan (MAMP).

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[109] The 100-year event results in less deposition than the 10-year event. Even though the 100-year event causes more erosion than the 10-year event, the faster water velocities flush the sediment out to Santa Monica Bay and less sediment can deposit in the Marina entrance. The 10-year event results in greater deposition than the 25-, 50-, and 100-year events. Below the 10-year event, erosion is substantially less, so there is less sediment to deposit in the Marina entrance.

Level of Significance after Mitigation

Implementation of Mitigation Measure WQ-1a-i would reduce Impact 1-WQ-3a to less than significant.

1-WQ-3b: Alternative 1's proposed connection of Ballona Creek to the marsh would result in erosion but would not result in significant loss of habitat and/or levee destabilization. (Less than Significant Impact)

Direct Impacts

Implementation of Alternative 1 would not result in any erosion that would result in a loss of habitat or levee destabilization. Additionally, none of the operations and maintenance activities would result in erosion causing a loss of habitat or levee destabilization.

Indirect Impacts

There would be no indirect impacts related to erosion that would result in a loss of habitat or levee destabilization during restoration activities because of the relatively short term nature of the work and the BMPs that would be implemented. The BMPs would cover all restoration activities with particular attention to prevention of erosion which can adversely affect water quality and result in loss of habitat or levee destabilization. These BMPs have proven effective and would be in accordance with the Operations and Maintenance Plan (Appendix B5).

Alternative 1 would reroute Ballona Creek through the site and reconnect it to the marsh floodplain on either side to recreate a more natural system. Reconnection of the creek to the floodplain would change the flow patterns and velocity within the creek, with flows slowing down as they expand over the floodplain and speeding up as they reenter the channel downstream. During a large storm event, the new flow pattern could increase scour or erosion within the creek and marsh, which could scour out marsh habitat or destabilize the levees.

Erosion Protection Features

As described above (Impact 1-WQ-1), Alternative 1 would cause erosion to occur across the marsh during large storm events. Alternative 1 would have four levels of erosion protection along the channel banks and levees as shown in Figures 2-16, *Alternative 1, Phase 1: Perimeter Levee Armoring Plan* (p. 2-79), and 2-17, *Alternative 1, Phase 2: Perimeter Levee Armoring Plan* (p. 2-81) (see Chapter 2, Table 2-2, *Project Design Features Incorporated into the Ballona Wetlands Restoration Project for Alternatives 1, 2, and 3*). In Phase 1, the highest level of armoring, Level 1, which would include buried or surface armoring, would be placed along the levees at the entrance to the site and at the end of Area A along the Interim levee to protect against erosion from the expansion and contraction of flood flows. The Culver Boulevard levee in North Area B would be protected with Level 2, or buried armoring. Most of the Area A levee would have the lowest level of armoring, Level 4, since the sloped marshplain would channel flows away from the levee. In Phase 2, Level 1 armoring would be added to the West Area B levee, where the flow would contract back into the channel. The southern, more protected part of the levee would have Level 2 armoring, and the levee south of the salt pan would be Level 4 armoring. Erosion of the levees would not occur because the Project design includes protection of the levees through either armoring or the slope of the marshplain.

Erosion of Marsh Habitat

Erosion would increase as a result of Alternative 1, but, as discussed above, the erosion is typical for this type of system. However, Alternative 1 could have an adverse impact from increased erosion if the marsh habitat could not be sustained over time. The sediment dynamics analysis found that during a 10-year event, some wetland vegetation could scour away. Approximately, up to 8 inches of sediment could erode along the channel in Area A and North Area B, with pockets of up to 18 inches of scour along the first bend of the channel and where the creek reenters the channel downstream (Figure 3.9-10, *Q10 Erosion Map*, p. 3.9-61). In West Area B, up to 4 inches of erosion is expected near the channel. Erosion of vegetated wetland area would result in a temporary loss of vegetation; however, the wetland surface would remain at an elevation at which vegetation could re-establish and recover following the storm event. During a 100-year event, results show up to 8 inches of erosion in Area A and North Area B, with pockets up to 22 inches along the channel (Figure 3.9-11, *Q100 Erosion Map*, p. 3.9-62). In West Area B, up to 4 inches of erosion would be expected through the marsh. The 100-year erosion could lower the marshplain so that areas that previously supported mid marsh species would re-establish with low marsh species, causing a conversion from mid marsh to low marsh habitat. The potential for mid to low marsh conversion due to erosion would occur in a relatively small area in Area A. In West Area B, the results show the potential to convert some of the mid marsh to low marsh habitat because the West Area B mid marsh is only about 6 inches above the low marsh elevation range. Note that a 100-year event occurs infrequently (approximately once every 100 years), so habitat changes due to such a large and infrequent event would be expected in a natural system. Additionally, sea-level rise also is expected to convert West Area B from mid marsh to low marsh by about 2030 (based on a high-range sea-level rise projection) and it therefore is likely that the loss of mid marsh habitat could occur due to sea-level rise before a 100-year (1% annual chance of occurrence) event occurs. Therefore, erosion is not expected to substantially impact the sustainability of habitats under Alternative 1.

1-WQ-3c: Alternative 1 would not alter the capacity or characteristics of the existing storm drainage system such that there would be a reduction in available drainage capacity. (Less than Significant Impact)

Direct Impacts

As discussed in Section 3.9.5, *Methodology*, tidal hydraulic geometry relationships were used to estimate the equilibrium channel size (cross-section dimensions) of Ballona Creek. The channel in Alternative 1 is designed to be larger than the equilibrium channel to allow conveyance of storm flows. Therefore, implementation of Alternative 1 would not result in a change to the existing storm drain capacity.

Operation and maintenance activities would not result in a change to existing storm drain capacity, unless dredging was required. Dredging would be a beneficial effect to the drainage capacity.

Indirect Impacts

There would be no significant indirect impacts to the drainage capacity due to restoration activities because of the relatively short term nature of the work and the process, as described above, would begin the process of levee removal and lowering of the marshplain that would transition the tidal inundation area into the proposed design state of Alternative 1.

Following completion of the restoration activities, the levees around Ballona Creek would be removed and the surrounding areas lowered to marshplain elevations, which would increase the extent of tidal inundation at the site. Alternative 1 also would increase the tide range and the tidal extent in South and Southeast Area B through new, larger culverts. The increased extent of tidal influence would increase the tidal prism. The larger tidal prism could cause more sand to shoal in the mouth of the channel and decrease the available drainage capacity of Ballona Creek. If Alternative 1 caused an increased accumulation of sediment that decreased the drainage capacity of Ballona Creek it could result in substantial flooding.

Multiple lines of evidence in the sediment dynamic analysis indicate that the shoal at the mouth of Ballona Creek is controlled largely by waves and less so by tidal influence (the longer-scale rising and falling of the water occurring twice a day). A grain size analysis showed that the sands within the shoal are similar in size and distribution to the sands on Dockweiler Beach to the south. Waves move these sediments into the mouth of the creek from the beach. While the tides may slightly influence the shoal, hydraulic modeling confirmed that tidal velocities were well below the 3 feet per second (ft/s) required to effectively move sand. Additionally, the shoal has not prograded (i.e., extended or progressed) up the channel as would be expected with a tidal shoal, and instead appears to be limited by the extent of the propagation of waves up the channel.

Alternative 1 would increase the tidal prism of the site by approximately 15%, which would increase tidal velocities and could increase the shoal size. However, under Alternative 1 conditions, tidal velocities are less than 1 ft/s, so sand movement due to the tides would be limited. Because the shoal is likely wave-built, rather than tidally-built, the Project would not cause an increase in the size of the shoal. Additionally, during a large storm event, flows would be strong enough to flush out the shoal at the mouth of the creek. Any changes to the shoal from Alternative 1 are not expected to cause flooding.

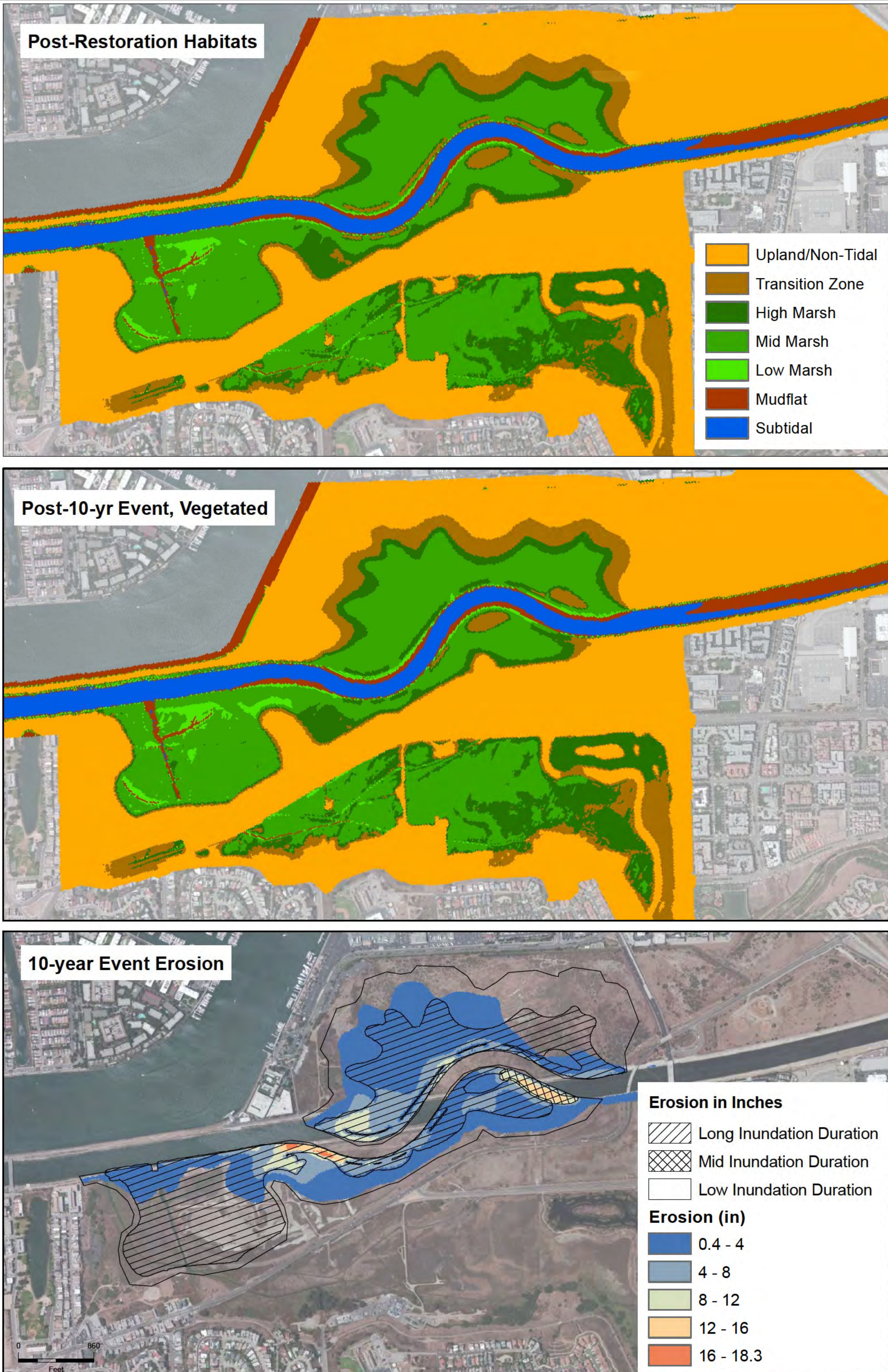
1-WQ-4: Alternative 1's proposed realignment and restoration of Ballona Creek could, unless mitigated, significantly increase the risk of flooding. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Operation and maintenance activities would not result in any adverse impacts to the risk of flooding because they would not result in a hydraulic change.

Off-site Flooding

Phase 1 of Alternative 1 would reconnect Ballona Creek to the restored wetland floodplain by grading Area A and North Area B to marshplain elevations and removing the levees along the creek. In Phase 2, the levee in West Area B would be breached and lowered to reconnect the marsh to the creek. The expansion of the floodplain could increase water levels upstream and downstream during storm events, thereby increasing off-site flooding.

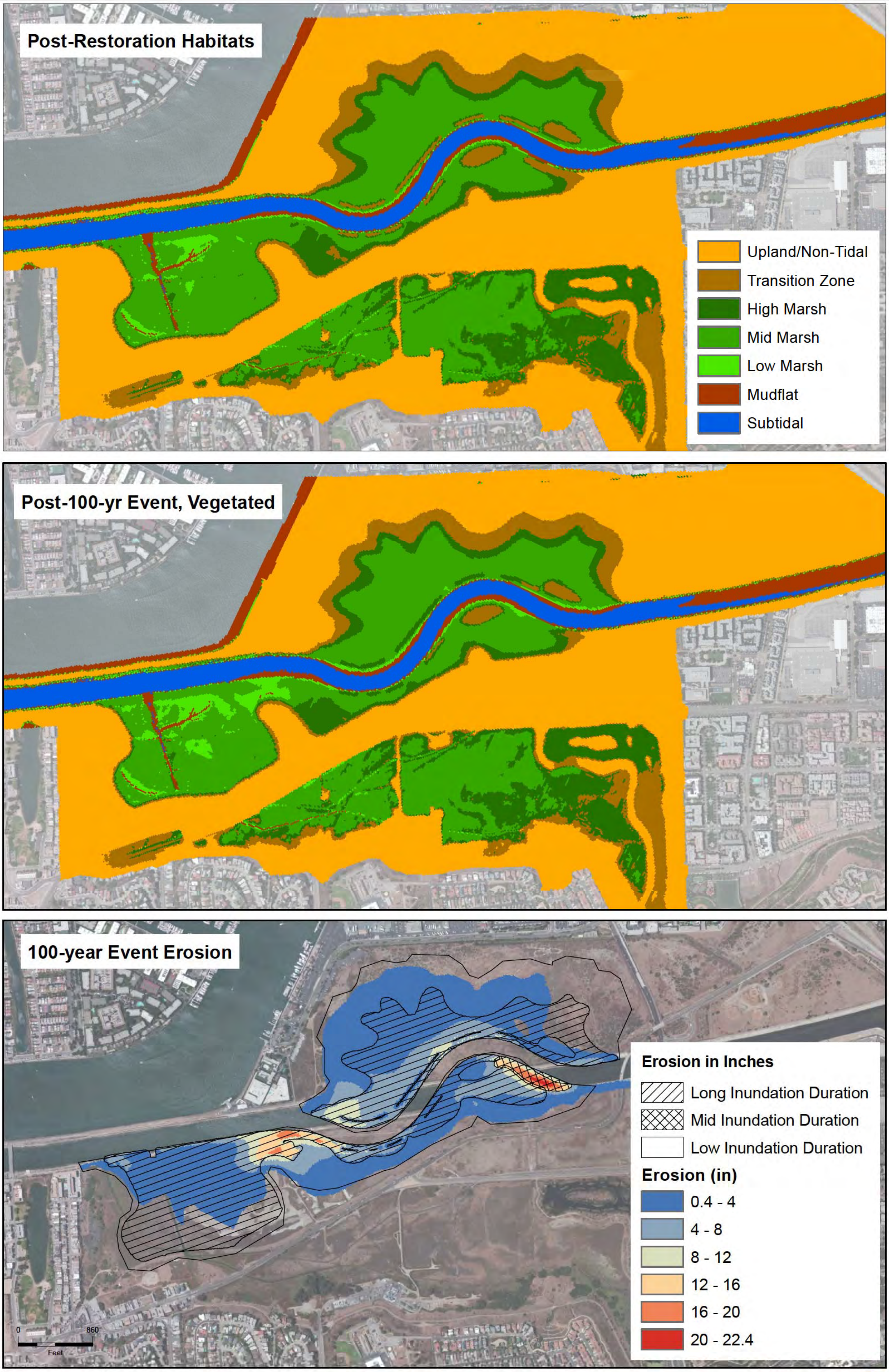


SOURCE: ESRI, ESA 2015

NOTES: Vegetation included. Armoring not included.

Ballona Wetlands Restoration Project

Figure 3.9-10
Q10 Erosion Map



SOURCE: ESRI, ESA 2015

NOTES: Vegetation included. Armoring not included.

Ballona Wetlands Restoration Project

Figure 3.9-11
Q100 Erosion Map

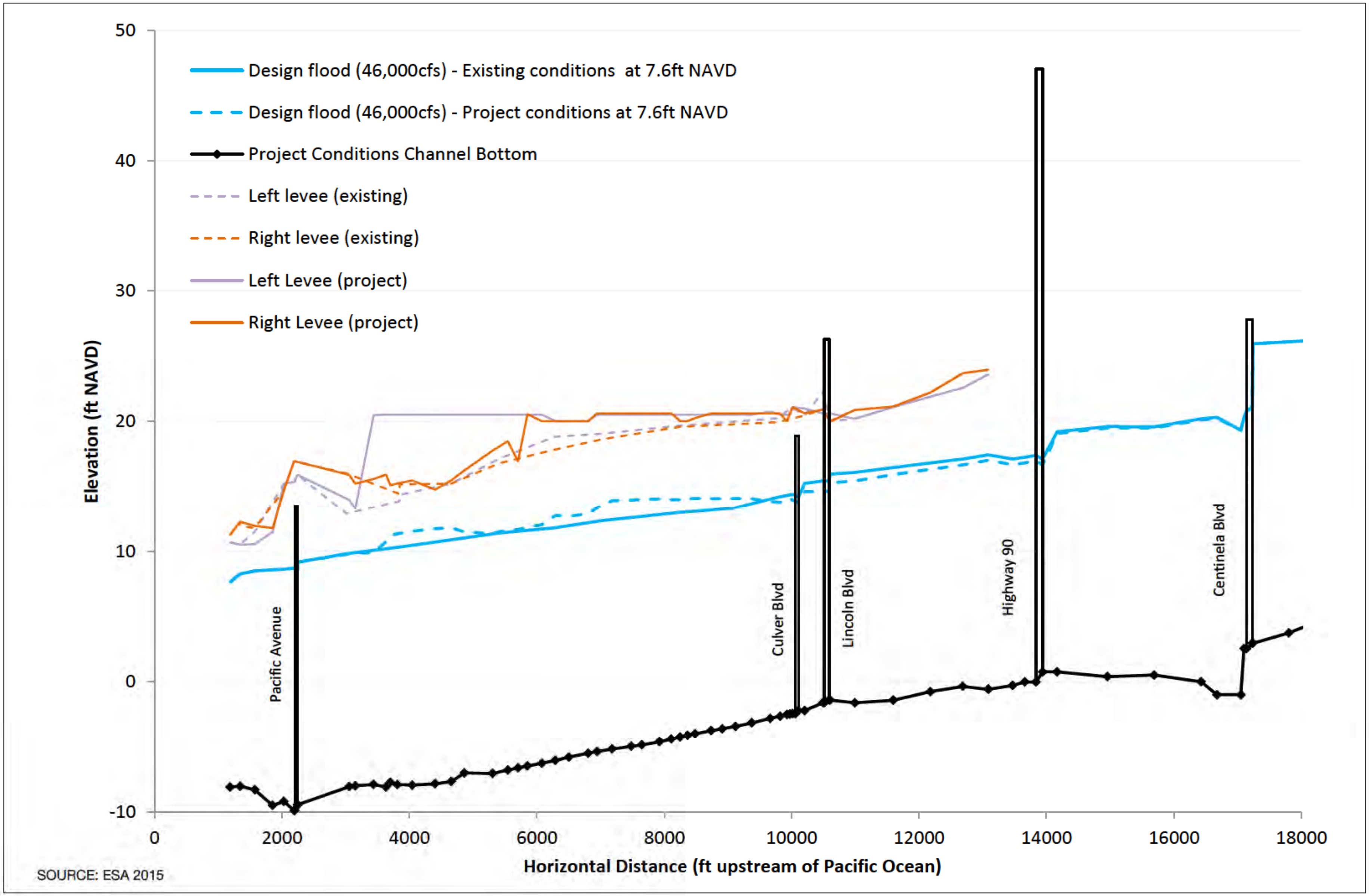
As described in Section 3.9.5, *Methodology*, hydraulic modeling evaluated any changes to flood water elevations that would result due to Alternative 1. Modeling was conducted for both existing and Alternative 1 conditions. Under existing conditions, model results indicate that the design flow is contained within the channel with 5 to 7 feet of freeboard to the top of the levees. With Alternative 1, the expansion of flow onto the floodplain reduces flow velocities through the Project site and increases the water level. However, the slower flow results in less head loss or energy dissipation through the Culver Boulevard Bridge and Lincoln Boulevard Bridge, which reduces water levels upstream to State Route 90 (Figure 3.9-12, *Water Levels during the Design Event*, p 3.9-64). Upstream of State Route 90 Alternative 1 does not change flood levels. The model results indicate that Alternative 1 actually decreases flood water levels just upstream of the site, which would be a beneficial effect.

Downstream of the site under Alternative 1, elevated water levels in the vicinity of West Area B reduce the amount of freeboard provided by the existing north levee/jetty. Since the majority of this bank is formed by the jetty that separates Ballona Creek from Marina del Rey, a reduction in freeboard may not represent a substantial increase in flood risk, since waters would spill over into the Marina del Rey channel. However, there is a section of the existing levee between the upstream end of the jetty and Area A that may need to be raised in order to maintain or improve the existing level of flood protection to the Breakwater at Marina del Rey Apartments. Further modeling for the 408 permit is required to receive that permit and will determine the elevation of the levee that is required to maintain the existing level of flood protection. Since Alternative 1 would raise the existing levee if that future modeling for the 408 permit determines Alternative 1 is raising flood levels in the vicinity of West Area B, there would be no increased flood risk downstream of the site.

On-site Flooding (Area A, North Area B, West Area B, and Ballona Creek)

In Phase 1, Alternative 1 would build levees along the perimeter of Area A and along Culver Boulevard, remove the levees along Ballona Creek, and reconnect the channel to its historic floodplain. In Phase 2, Alternative 1 would build a levee along the perimeter of West Area B and breach and lower the levee to reconnect West Area B to Ballona Creek. By removing the levees and expanding the floodplain, Alternative 1 could increase on-site flooding during large storm events. However, as discussed below, this is one of the primary goal of the restoration and a desired beneficial effect of reconnecting the floodplain.

As described in Section 3.9.5, *Methodology*, hydraulic modeling evaluated any changes to flood water elevations that would result due to the Project. Modeling was conducted for both existing and Project conditions. As discussed for Off-site Flooding, existing conditions model results indicate that the design flow is contained within the channel with 5 to 7 feet of freeboard to the tops of the levees. Under Alternative 1, water levels would increase within the site by 1 to 2 feet during the design event. Because Alternative 1 allows flows to expand over the floodplain, flow velocities decrease, water backs up, and the water level increases. However, the Project would increase levee elevations compared to existing conditions, resulting in a freeboard of 5.4 to 8.1 ft after Phase 1 and a freeboard of 6.4 to 9.4 after Phase 2. Table 3.9-10, *Levee Freeboard during the Design Flood (46,000 CFS)*, shows the freeboards under existing conditions and Phase 1 and Phase 2 of Alternative 1. Since freeboard would increase with the Project, this would be a beneficial effect.



SOURCE: ESA 2015

Ballona Wetlands Restoration Project

Figure 3.9-12
Water Levels during the Design Event

TABLE 3.9-10
LEVEE FREEBOARD DURING THE DESIGN FLOOD (46,000 CFS)

	Levee Freeboard in Area A/North Area B (ft)	
	Reach Average	Range
Existing Conditions[1]	5.7	5.0 – 6.3
Phase 1[2]	5.9	5.4 – 8.1
Phase 2[2]	6.9	6.4 – 9.4

NOTE:
1 Freeboard based on existing levee elevations
2 Freeboard based on the Project levee elevation of 20.5 feet North American Vertical Datum (NAVD 88)

On-site Flooding (South of Culver Boulevard)

Alternative 1 would build a berm in South and Southeast Area B, install new, larger culverts between South and West Area B and Southeast and South Area B, install new culverts from Ballona Creek to Southeast Area B, and allow higher tides behind Culver Boulevard. In Phase 1, a weir would be installed to block managed tidal flows in the channel and culverts from South to West Area B to keep tide levels from increasing in West Area B; however, the weir would allow storm flows to drain through West Area B during a storm event. In Phase 2, the weir would be removed because West Area B would be fully tidal. Additionally, the Freshwater Marsh would be managed to allow more freshwater to spill into Southeast Area B to maintain an area of seasonal, brackish marsh, thus decreasing the storage volume of the Freshwater Marsh and Southeast Area B.

Increasing the tides behind Culver Boulevard could result in an increased risk of flooding. The higher tides, the lowered storage volume of the Freshwater Marsh, and the loss of West Area B as a storage area in Phase 2 also could reduce the capacity to hold stormwater during large storm events. However, as discussed below, the new berm in South and Southeast Area B would actually increase capacity and lower the flood risk, which would be a beneficial effect of the Project.

Typical Tides

As described in Section 3.9.5, *Methodology*, hydraulic modeling evaluated the operation of the proposed gated culverts and higher tide levels in South and Southeast Area B. Modeling was conducted for both existing and Alternative 1 conditions under Phase 1 and Phase 2. Model results for existing conditions were compared to tide data collected within the marsh. Under existing conditions, the water level in West, South, and Southeast Area B rises with the tides until the water level in Ballona Creek reaches the elevation set on the SRT gates. Once the SRT gates have closed, the water levels increase more slowly in proportion to the water level in the creek since the SRT gates leaks. Under typical tides, flooding does not occur in Area B and water levels stay below the low point in Culver Boulevard, which acts like a berm to South Area B. As the creek water level drops, the areas drain and the water level approaches low tide.

In Phase 1 of Alternative 1, tide levels would increase in South and Southeast Area B, which would enhance marsh habitat and, therefore, be a beneficial effect of the Project. As part of Alternative 1, a berm intended to reduce the flood risk would be built along Culver Boulevard, a section of Jefferson Boulevard, and on the SoCalGas Property (see Chapter 2, Table 2-2, *Project Design Features Incorporated into the Ballona Wetlands Restoration Project for Alternatives 1, 2, and 3*). The model results show that water levels in South and Southeast Area B under typical tides would increase by about 2 feet from existing conditions. However, the berm would be set to 9 feet NAVD 88, which is 2.2 feet higher than the low point in Culver Boulevard near the existing southern channel, so the freeboard would increase from existing conditions. In Phase 2, tidal water levels would remain the same as under Phase 1, therefore, under tidal conditions, Alternative 1 is not expected to increase the flood risk behind Culver Boulevard.

Storm Events

During the design storm event under existing conditions, the water level in South and Southeast Area B increase faster than the water level in West Area B, since they receive more runoff from the bluffs and the Freshwater Marsh. West Area B acts as additional storage, but because the culverts connecting South and West Area B are undersized, the water levels remain higher in South and Southeast Area B. The undersized culverts prevent full drainage to West Area B over the duration of the storm. During the design flood, water levels remain 1.5 feet below the lowest point along Culver Boulevard, which is near the existing southern channel.

The increase in tides in South and Southeast Area B during Phase 1 and the reconnection of West Area B to Ballona Creek in Phase 2 could reduce the flood storage capacity of the system and increase flood risk behind Culver Boulevard. However, the new culverts would limit flow from Ballona Creek into Southeast Area B during storm events. Under Phase 1, tide levels would be higher than under existing conditions, but the increased culvert capacity would better connect South and West Area B, allowing flood waters to drain to West Area B for added storage capacity. Under Phase 2, the West Area B storage capacity would be lost since the breached and lowered levee in West Area B would make water levels the same as those in Ballona Creek. However, the new berms in South and Southeast Area B would increase the storage capacity behind Culver Boulevard. The freeboard with the new berm under the design storm would be the same as the freeboard at the low point in Culver Boulevard under existing conditions, indicating no increase to the flood risk.

The new culvert from the Freshwater Marsh to Southeast Area B also could reduce stormwater capacity in the system. As described in Section 3.9.2.2, *Environmental Setting*, the Freshwater Marsh holds up to the 1-year storm event under existing conditions before spilling into Southeast Area B. Alternative 1 would change the outflow structures of the Freshwater Marsh so that freshwater would flow into Southeast Area B more frequently. This would increase the volume of water in Southeast Area B. However, the increase in volume would be small compared to the total volume entering Southeast Area B, and the berms would be able to accommodate the extra water.

Indirect Impacts

During restoration activities there would be no indirect impacts to flooding on- or off-site because of the relatively short term nature of the work and the transition to the beneficial flooding effects as described above in the direct impact analysis.

Post-restoration in Phase 1, Alternative 1 would have reconnected Ballona Creek to the floodplain in Area A and North Area B and built levees along Area A and Culver Boulevard. New culverts from Ballona Creek to Southeast Area B would be installed to allow higher tides back behind Culver Boulevard. In Phase 2, the levee to West Area B would be breached and lowered, allowing full tidal connection to the area. Increasing water levels in Area A, and North and West Area B could increase the risk of flooding with sea level rise. Additionally, the increased tidal flow behind Culver Boulevard due to the new, enlarged culverts could increase flooding with sea level rise. However, as discussed below, an element of the proposed restoration is the addition of flap gates to the culverts over time, which would reduce flow behind Culver Boulevard.

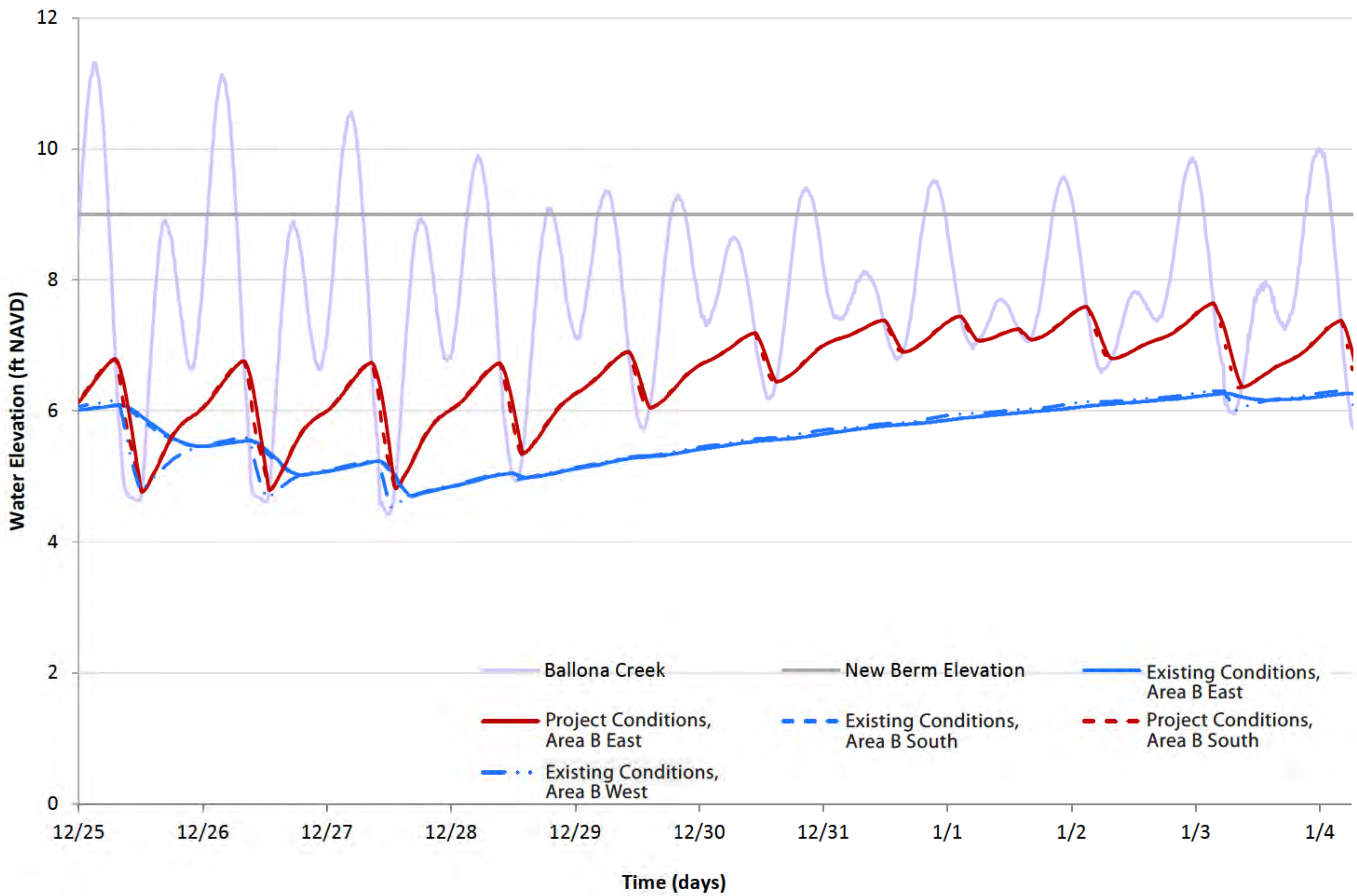
As described in Section 3.9.5, *Methodology*, hydraulic modeling evaluated flood levels in the creek with sea level rise as well as the operation of the proposed culverts and tide levels in South and Southeast Area B. Modeling was conducted for both existing and Alternative 1 conditions under Phase 1 and Phase 2.

Flooding From Ballona Creek

As discussed above for Direct Impact, flood levels within the creek upstream of the site would actually be reduced under Alternative 1. This would provide additional capacity in the creek for water level increases due to sea level rise. Within and downstream of the site, Alternative 1 would increase the levee heights, which also would provide additional capacity. Model runs with sea level rise showed that water levels for both existing and Alternative 1 conditions would increase up to Centinela Boulevard. However, upstream of the site, water levels under Alternative 1 would remain below existing conditions water levels, indicating that there would be no increase in flooding due to Alternative 1. Additionally, the model shows that the 100-year event coupled with 59 inches of sea level rise would still leave 5 feet of freeboard to the crest of the levees within the site. Since the levee height is designed to match or exceed the existing level of flood protection, and water levels upstream of the site are expected to decrease under Alternative 1, Alternative 1 would not increase flood risk due to sea level rise in the creek.

Flooding South of Culver Boulevard

Behind Culver Boulevard under Alternative 1, the larger culverts would allow more flow to enter South and Southeast Area B and raise tide levels during typical tides. With sea level rise, these increased water levels could cause flooding. Under existing conditions, 59 inches of sea level rise would mean that MLLW would be more than 2 feet above the current SRT gates closing elevation. This would mean that the water level in all of the managed areas would continually increase, due to the leakage in the SRT gates, except during lower low tides when the water can drain out (Figure 3.9-13, *Typical Tides with Sea Level Rise*). Under Alternative 1 conditions, water levels would show more of a tidal signal than under existing conditions because the increased capacity of the culverts would allow more drainage. Mitigation Measure WQ-1a-i, the MAMP (Appendix F11), would ensure that water levels in South and Southeast Area B would be monitored to determine operation of the culverts in order to prevent flooding. Over time, flap gates would be installed on the culverts as part of Alternative 1 to limit the flow into South and Southeast Area B. Initial modeling indicated that adding a flap gate every 25 years would maintain the current level of flood protection, but monitoring through the MAMP would determine the exact timing that flap gates would be added. The berms and flap gates would ensure that Alternative 1 would not increase the flood risk with sea level rise.



SOURCE: ESA 2015

Note: Ballona Creek water levels taken just outside Area B

Ballona Wetlands Restoration Project

Figure 3.9-13
Area B
Typical Tides with Sea-Level Rise

During storm events, as discussed above, the larger culverts would allow more flow to West Area B for stormwater storage, and the new berm would maintain the current level of flood protection. With 59 inches of sea level rise and No Project (see Section 3.9.6.4, *Alternative 4: No Federal Action/No Project Alternative*), modeling showed that during the design storm, there would be less than 0.1 feet of freeboard to low point in Culver Boulevard. Because Alternative 1 would build a berm, freeboard would increase to slightly less than 1 foot of freeboard. Alternative 1 would, therefore, decrease the flood risk behind Culver Boulevard with sea level rise compared to existing conditions.

Mitigation Measure

Mitigation Measure 1-WQ-4: Implement Mitigation Measure WQ-1a-i, Monitoring and Adaptive Management Plan (MAMP).

Level of Significance after Mitigation

Implementation of Mitigation Measure WQ-1a-i would reduce Impact 1-WQ-4 to less than significant.

1-WQ-5: Alternative 1 would not result in inundation by a seiche or tsunami. (Less than Significant Impact)

Direct Impacts

Alternative 1 would not directly result in inundation by tsunami or seiche. Tsunami are open sea waves caused by an underwater earthquake, landslide, or volcanic eruption, while seiches are seismically-induced waves in an enclosed or semi-enclosed body of water such as a lake, reservoir, or harbor. The restoration and post-restoration activities proposed in Alternative 1 would have no impact on earthquakes, landslides, volcanic eruptions, or other potential triggers for tsunami or seiche and so would not increase potential risk associated related inundation. Therefore, Alternative 1 would result in no direct impact during or following restoration relating to inundation.

Indirect Impacts

Alternative 1 would excavate Area A and North Area B and would reconnect Ballona Creek to its historic floodplain. This analysis considers whether the proposed removal of the levees along the Ballona Creek channel could exacerbate the effects of tsunamis by increasing flooding and whether the lowering of Area A would create an area that under flood conditions could be subject to a seiche. An adverse indirect impact would result if the waves associated with a tsunami or seiche overtopped the levees and resulted in flooding outside the Ballona Reserve.

As discussed in Section 3.9.2.2, *Environmental Setting*, tsunamis are infrequent events that have not substantially impacted Ballona Creek in the past due to the protection of the bay's coastline (Appendix F7). Additionally, as discussed above, the Project design includes levees that are higher than the existing levees along the creek. This would provide improved flood protection at the site in the case of a tsunami.

Seiches are also rare events that have not impacted Santa Monica Bay in the past. By lowering Area A, Alternative 1 would be creating a large basin that could potentially experience a seiche and overtop levees to cause flooding. However, for a seiche to occur, Area A would have to be filled with water, which would only occur during a large, infrequent storm event (e.g., 100 year event). It would be extremely unlikely that a large storm event would occur at the same time as a large earthquake induces a seiche. Additionally, the Alternative 1 design includes levees that have 5 to 8 feet of freeboard during the design event, so it is unlikely that a seiche would be large enough to overtop the levees and cause flooding. For these reasons, Alternative 1 would have a less-than-significant impact during or following restoration relating to inundation from tsunami or seiche.

TABLE 3.9-11
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
WQ-1: Violate any water quality standards or waste discharge requirements; otherwise substantially degrade water (or sediment) quality; or 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?				
a) The excavation and grading associated with restoration proposed under Alternative 1 would expose and release contaminated sediments resulting in water quality impacts in Ballona Creek. See Impact 1-WQ-1a.	☐	☒	☐	☐
b) Under Alternative 1, contaminated water and sediment from the watershed could be transported into the restored marsh resulting in areas of accumulated contaminated sediments and potential exceedance of water quality limits set forth by the Ballona Creek TMDL. See Impact 1-WQ-1b.	☐	☒	☐	☐
c) Under Alternative 1, water quality degradation could occur at Los Angeles (LA-2) or Newport Bay (LA-3) ocean disposal sites due to placement of excavated Project site sediments. See Impact 1-WQ-1c.	☐	☒	☐	☐
WQ-2: 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)? See Impact 1-WQ-2.	☐	☐	☒	☐
WQ-3: 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?				
a) The realignment and restoration of Ballona Creek proposed under Alternative 1 would result in post-restoration erosion that could result in localized and downstream siltation. See Impact 1-WQ-3a.	☐	☒	☐	☐
b) Alternative 1's proposed connection of Ballona Creek to the marsh would result in post-restoration erosion that could result in loss of habitat and/or levee destabilization. See Impact 1-WQ-3b.	☐	☐	☒	☐
c) Alternative 1 could alter the capacity or characteristics of the existing storm drainage system such that there would be a reduction in available drainage capacity. See Impact 1-WQ-3c.	☐	☐	☒	☐

TABLE 3.9-11 (Continued)
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1 (cont.)				
WQ-4: 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, or provide substantial additional sources of polluted runoff? See Impact 1-WQ-4.	☐	☒	☐	☐
WQ-5: Result in inundation by seiche or tsunami? See Impact 1-WQ-5.	☐	☐	☒	☐

3.9.6.2 Alternative 2: Restored Partial Sinuous Creek

2-WQ-1a: The excavation and grading associated with restoration proposed under Alternative 2 could expose and release contaminated sediments resulting in water quality impacts in Ballona Creek. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 2 would have similar ground disturbance, vegetation removal, and grading as in Alternative 1, except in West Area B where the grading would be reduced. As in Alternative 1, Alternative 2 would be required to comply with the requirements of the Construction General Permit, the MS4 Permit, and the 401 Water Quality Certification. These regulatory controls would reduce and manage erosion, control stormwater runoff, and reduce sediment delivery to Ballona Creek, which could occur during restoration of the Project. Alternative 2 would include erosion control elements, which would reduce the potential for erosion. Additionally, Alternative 2 would not connect West Area B to Ballona Creek, so there would be less potential for erosion compared to Alternative 1.

Indirect Impacts

Alternative 2, similar to Alternative 1, would reconnect Ballona Creek to the marsh in Area A and North Area B, implement the Stormwater Management Plan, Mitigation Measure WQ-1a-i, the MAMP, and Mitigation Measure WQ-1a-ii, the SAP, and include installation of a stormwater pre-treatment basin between Culver Boulevard and the West Area B levee. However, Alternative 2 would not connect West Area B to Ballona Creek, so there would be less potential for erosion of Ballona Creek and the Wetlands after restoration as compared to Alternative 1. Since West Area B would not be connected to Ballona Creek, minimal erosion would be expected in this area. In addition, operation and maintenance activities, including maintenance of the Ballona Creek channel and levees, would be the same as described under Alternative 1 (Appendix B5, Preliminary Operations and Maintenance Plan). Maintenance of water control structures under Alternative 2 would be similar to the description under Alternative 1, but with the following exceptions. Under Alternative 2, the existing West Area B gates connecting West Area B to

Ballona Creek would remain and would continue to be accessed and maintained as under the existing conditions. Access for the maintenance of flood risk management berms under Alternative 2 would be the same as described under Alternative 1. CDFW would conduct the same nature and type of activities to operate and maintain the non-LACDA project facilities within the Ballona Reserve at the same intervals as the agency does under existing conditions. However, operation and maintenance activities nonetheless would be done in accordance with BMPs established in the approved Operations and Maintenance Plan (for purposes of this analysis, the approved Operation and Maintenance Plan is assumed to be substantially similar to the Preliminary Operation and Maintenance Plan provided in Appendix B5).

Mitigation Measure

Mitigation Measure 2-WQ-1a: Implement Mitigation Measure WQ-1a-i, Monitoring and Adaptive Management Plan (MAMP) and Mitigation Measure WQ-1a-ii, Sampling and Analysis Plan (SAP).

Level of Significance after Mitigation

Implementation of Mitigation Measures WQ-1a-i and WQ-1a-ii would reduce Impact 2-WQ-1a to less than significant.

2-WQ-1b: Under Alternative 2, contaminated water and sediment from the watershed could be transported into the restored marsh resulting in areas of accumulated contaminated sediments and potential exceedance of water quality limits set forth by the Ballona Creek TMDL. (Less than Significant Impact)

Direct Impacts

Alternative 2 would have similar ground disturbance, vegetation removal, and grading as in Alternative 1, except in West Area B where the grading would be reduced. As in Alternative 1, Alternative 2 would be required to comply with the requirements of the Construction General Permit and would be managed for consistency with the County MS4 Permit. These regulatory controls would reduce and manage erosion, control stormwater runoff, and reduce sediment delivery to the marsh in West Area B, which could occur during restoration of the Project. Alternative 2 would implement erosion control elements, which would reduce the potential for accretion in the marsh. Operation and maintenance activities would be infrequent and relatively minor with little to no disturbances to onsite soils such that it would not result in a significant impact relating to the transport of water and sediment from the watershed to the marsh; therefore, there would be no significant impact during the post-restoration period. Additionally, Alternative 2 would not connect West Area B to Ballona Creek, so there would be less potential for accretion compared to Alternative 1.

Indirect Impacts

In Alternative 2, West Area B would not be reconnected to Ballona Creek, so there would be less potential for accumulation of constituents in sediments from the watershed as compared to Alternative 1. The existing SRT gates limits the amount of sediment that can enter West Area B because it limits the flow, so sedimentation would not increase as compared to Alternative 1 due to Alternative 2. Additionally, during large storm events when suspended sediments could increase in the creek due to Alternative 2, the SRT gates would likely be closed, allowing no additional sediment into the marsh. As in Alternative 1, Alternative 2 also would include the construction of the stormwater pre-treatment basin in West Area B, which would reduce the constituents entering the marsh from runoff.

2-WQ-1c: Under Alternative 2, water quality degradation would not occur at Los Angeles (LA-2) or Newport Bay (LA-3) ocean disposal sites due to placement of excavated Project site sediments. (Less than Significant with Mitigation Incorporated)

Direct Impact

Similar to Alternative 1, any excavated sediment designated for disposal in an ocean disposal site would meet the requirements for placement in such sites. Mitigation Measure WQ-1a-ii would ensure that sediment would be sampled prior to construction in order to determine if it meets requirements for ocean disposal.

Indirect Impact

Sediment would be placed in an ocean disposal site only if it met the standards of the OTM. As noted above for Alternative 1, the estimated time before accumulated sediment buildup would require dredging could take up to approximately 50 years before requiring action. Regardless of timing, the OTM requirements would ensure that protection of water quality; therefore, there would be no indirect impacts.

Mitigation Measure

Mitigation Measure 2-WQ-1c: Implement Mitigation Measure 1-WQ-1a-ii, Sampling and Analysis Plan (SAP).

Level of Significance after Mitigation

Implementation of Mitigation Measure 1-WQ-1a-ii would reduce this impact to less than significant.

2-WQ-2: Alternative 2 would increase the extent of tidal inundation and could increase infiltration of salt water into the groundwater table resulting in the inland advancement of sea water intrusion. (Less than Significant Impact)

Direct Impacts

As in the Alternative 1, Alternative 2 would excavate sediment from Area A and North Area B and reconnect Ballona Creek to these areas, which would increase the tidal prism at the site. However, Alternative 2 would not connect West Area B to Ballona Creek, so the increase in tidal prism from existing conditions would be less than in Alternative 1 because West Area B would not be fully tidal. Regardless, the increase in tidal prism is not expected to impact groundwater supplies as the groundwater in the area is not used for domestic or municipal supply.

Indirect Impacts

As discussed above, Alternative 2 would increase tidal inundation through the marsh and possibly cause the extent of brackish water to migrate inland. The inland migration of the brackish groundwater would be less than in Alternative 1, so there would be no indirect impacts.

2-WQ-3a: The realignment and restoration of Ballona Creek proposed under Alternative 2 would result in erosion that could result in localized and downstream siltation. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 2 would have similar ground disturbance, vegetation removal, and grading as in Alternative 1, except in West Area B where the grading would be reduced. As in Alternative 1, Alternative 2 would be required to comply with the requirements of the Construction General Permit, would be managed for consistency the County MS4 Permit, and the 401 Water Quality Certification. These regulatory controls would reduce and manage erosion, control stormwater runoff, and reduce sediment delivery to Ballona Creek, which could occur during restoration of Alternative 2. Alternative 2 would implement erosion control elements, which would reduce the potential for erosion. Additionally, Alternative 2 would not connect West Area B to Ballona Creek, so there would be less potential for erosion compared to Alternative 1.

Indirect Impacts

By reconnecting Ballona Creek to its historic floodplain, Alternative 2 would include the same changes to the channel and would impact storm flows as in Alternative 1. Alternative 2 would include the same armoring as under Phase 1 of Alternative 1. However, Alternative 2 would not reconnect West Area B to Ballona Creek, so there would be less potential for downstream sedimentation from realignment and restoration of Ballona Creek and erosion compared to Alternative 1. Operation and maintenance activities would occur similar to that of Alternative 1 and include the necessary BMPs in the approved Operations and Maintenance Plan, which would ensure that the proposed activities would include adequate measures to protect water quality and minimization of any erosion. This analysis assumes that the approved Operation and Maintenance Plan would be substantially similar to the Preliminary Operation and Maintenance Plan provided in Appendix B5. Mitigation Measure 1-WQ-1a-i also would ensure monitoring was conducted post-restoration to identify any effects due to substantial erosion.

Mitigation Measure

> **Mitigation Measure 2-WQ-3a:** Implement Mitigation Measure 1-WQ-1a-i, Monitoring and Adaptive Management Plan (MAMP).

Level of Significance after Mitigation

> Implementation of Mitigation Measure 1-WQ-1a-i would reduce this impact to less than significant.

2-WQ-3b: Alternative 2's proposed connection of Ballona Creek to the marsh would result in erosion that could result in loss of habitat and/or levee destabilization. (Less than Significant Impact)

Direct Impacts

Implementation of Alternative 2 would not result in any erosion that would result in a loss of habitat or levee destabilization.

Indirect Impacts

As in Alternative 1, Alternative 2 would reroute Ballona Creek through the site and reconnect it to the marsh floodplain on either side. Alternative 2 would have the same levels of armoring as under Phase 1 of Alternative 1, so erosion would not impact the levees. However, Alternative 2 would not reconnect West Area B to Ballona Creek, so any habitat loss due to erosion would be less than in Alternative 1; however, the existing managed West Area B marsh habitats to remain in Alternative 2 would convert to unvegetated habitat in response to sea-level rise and the muted tides. The operation and maintenance activities would also be relatively short term in nature and in accordance with the approved Operations and Maintenance Plan. This analysis assumes that the approved Operation and Maintenance Plan would be substantially similar to the Preliminary Operation and Maintenance Plan provided in Appendix B5. Alternative 2 therefore would protect the West Area B habitats from any erosion, but the West Area B habitats would be less resilient to sea-level rise than under Alternative 1.

2-WQ-3c: Alternative 2 would not alter the capacity or characteristics of the existing storm drainage system such that there would be a reduction in available drainage capacity. (Less than Significant Impact)

Direct Impacts

As discussed in Section 3.9.5, *Methodology*, tidal hydraulic geometry relationships were used to estimate the equilibrium channel size (cross-section dimensions) of Ballona Creek. The channel in Alternative 2, as in Alternative 1, is designed to be larger than the equilibrium channel to allow conveyance of storm flows. Therefore, implementation of Alternative 2 would not result in a change to the existing storm drain capacity.

Indirect Impacts

The loss of storm drainage capacity would be the same for Alternative 2 as discussed for Alternative 1. As mentioned for Alternative 1, the shoal at the mouth of Ballona Creek is likely wave-built and the increase in the tidal prism would not be expected to substantially increase the shoal size.

2-WQ-4: Alternative 2's proposed realignment and restoration of Ballona Creek would not significantly increase the risk of flooding. (Less than Significant with Mitigation Incorporated)

Direct Impacts

The flood management elements of Alternative 2 would be the same as Phase 1 of Alternative 1 except that soil would not be stockpiled along the Culver Boulevard levee and the levees therefore would be narrower in Alternative 2. Flood water levels would be the same in Alternative 2 as Phase 1 of Alternative 1, and levee heights would be raised as in Phase 1 of Alternative1. Alternative 2 would not increase the flood risk on- or off-site as compared to Alternative 1.

Alternative 2 would reconnect Ballona Creek to the floodplain by grading Area A and North Area B to marshplain elevations, constructing new perimeter levees, and removing the levees along the creek. The expansion of the floodplain could increase water levels upstream and downstream during storm events, thereby increasing off-site flooding. However, as for Alternative 1, model results show that upstream of the site, flood levels would actually decrease due to the Project. Downstream of the site, Alternative 2 would increase the existing levee near the Breakwater at Marina del Rey Apartments if water levels are determined to lower the existing freeboard on the levee.

Alternative 2 would build levees along the perimeter of Area A and along Culver Boulevard, remove the levees along Ballona Creek, and reconnect the channel to the floodplain, as in Alternative 1. Modeling results indicated that water levels would increase from existing conditions within the site due to the expansion of the flow onto the floodplain. The water level increase would be the same as Phase 1 of Alternative 1, which would be slightly higher than Phase 2 of Alternative 1. However, the levee design in Alternative 2 would increase levee elevations from existing conditions, increasing freeboard or the height of the levee above the flood water levels.

Similar to Phase 1 of Alternative 1, Alternative 2 would build a berm in South and Southeast Area B, install new, larger culverts between South and West Area B and Southeast and South Area B, install new culverts from Ballona Creek to Southeast Area B, and allow higher tides back behind Culver Boulevard. However, unlike Alternative 1, West Area B would still be managed as a muted tidal system as under existing conditions.

Indirect Impacts

As in Alternative 1, Alternative 2 would increase flood water levels within the site but the design would increase levee elevations as well. The increased culvert capacity in South and Southeast Area B would allow for more drainage to maintain a tidal signal for a longer period of time than under existing conditions and the berms would maintain the current flood risk. Flap gates added to the culverts over time would prevent water levels from rising too high with sea level rise based on monitoring through Mitigation Measure 1-WQ-1a-i, the MAMP. Additionally, during storm events, West Area B would still act as a stormwater storage basin unlike in Alternative 1, where it would become fully tidal. This would lower water levels in South and Southeast Area B compared to Alternative 1.

Mitigation Measure

Mitigation Measure 2-WQ-4: Implement Mitigation Measure 1-WQ-1a-i, Monitoring and Adaptive Management Plan (MAMP).

Level of Significance after Mitigation

Implementation of Mitigation Measure 1-WQ-1a-i would reduce this impact to less than significant.

2-WQ-5: Alternative 2 would not result in inundation by seiche or tsunami. (Less than Significant Impact)

Direct Impacts

Alternative 2 would not directly result in inundation by tsunami or seiche. Tsunami are open sea waves caused by an underwater earthquake, landslide, or volcanic eruption, while seiches are seismically-induced waves in an enclosed or semi-enclosed body of water such as a lake, reservoir, or harbor. The restoration and post-restoration activities proposed in Alternative 2 would have no impact on earthquakes, landslides, volcanic eruptions, or other potential triggers for tsunami or seiche and so would not increase potential risk associated related inundation. Therefore, Alternative 2 would result in no direct impact during or following restoration relating to inundation.

Indirect Impacts

Alternative 2 would have the same raised levee elevations as Alternative 1. The risk of a tsunami or seiche at the Project site and the increased levee height in the project design would be the same for Alternative 2 as for Alternative 1.

TABLE 3.9-12
ALTERNATIVE 2 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
WQ-1: Violate any water quality standards or waste discharge requirements; otherwise substantially degrade water (or sediment) quality; or 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?				
a) The excavation and grading associated with restoration proposed under Alternative 2 would expose and release contaminated sediments resulting in water quality impacts in Ballona Creek. See Impact 2-WQ-1a.	☐	☒	☐	☐
b) Under Alternative 2, contaminated water and sediment from the watershed could be transported into the restored marsh resulting in areas of accumulated contaminated sediments and potential exceedance of water quality limits set forth by the Ballona Creek TMDL. See Impact 2-WQ-1b.	☐	☐	☒	☐
c) Under Alternative 2, water quality degradation could occur at Los Angeles (LA-2) or Newport Bay (LA-3) ocean disposal sites due to placement of excavated Project site sediments. See Impact 2-WQ-1c.	☐	☒	☐	☐

**TABLE 3.9-12 (Continued)
ALTERNATIVE 2 IMPACTS SUMMARY**

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
WQ-2: 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)? See Impact 2-WQ-2.	☐	☐	☒	☐
WQ-3: 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?				
a) The realignment and restoration of Ballona Creek proposed under Alternative 1 would result in post-restoration erosion that could result in localized and downstream siltation. See Impact 2-WQ-3a.	☐	☒	☐	☐
b) Alternative 1's proposed connection of Ballona Creek to the marsh would result in post-restoration erosion that could result in loss of habitat and/or levee destabilization. See Impact 2-WQ-3b.	☐	☐	☒	☐
c) Alternative 2 could alter the capacity or characteristics of the existing storm drainage system such that there would be a reduction in available drainage capacity. See Impact 2-WQ-3c.	☐	☐	☒	☐
WQ-4: 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, or provide substantial additional sources of polluted runoff? See Impact 2-WQ-4.	☐	☒	☐	☐
WQ-5: Inundation by seiche, tsunami, or mudflow? See Impact 2-WQ-10.	☐	☐	☒	☐

3.9.6.3 Alternative 3: Levee Culverts and Oxbow

3-WQ-1a: The excavation and grading associated with restoration proposed under Alternative 3 could expose and release contaminated sediments resulting in water quality impacts in Ballona Creek. (Less than Significant Impact)

Direct Impacts

Alternative 3 would have less ground disturbance, vegetation removal, and grading than in Alternatives 1 and 2. As for Alternatives 1 and 2, Alternative 3 would have to comply with the requirements of the Construction General Permit, the MS4 Permit, and the 401 Water Quality Certification. These regulatory controls would reduce and manage erosion, control stormwater runoff, and reduce sediment delivery to Ballona Creek, which could occur during restoration of the Project site. In addition, Alternative 3 would include the same erosion control elements as

Alternatives 1 and 2 in Area A, which would reduce the potential for erosion, the generation of sediment, and the control of stormwater runoff to the Ballona Creek.

Indirect Impacts

Alternative 3 would not reroute Ballona Creek as in Alternatives 1 and 2, but would install two culvert banks through the existing levee to bring tidal flows into Area A. The flow into Area A is not expected to substantially change the flow patterns and velocity within the creek, or result in increased scour, since flow would be through a culvert. During normal tidal conditions, no erosion of the marsh would be expected as discussed for Alternatives 1 and 2. During large storm events, water levels would increase in Area A, but the culverts would limit the amount of flow that enters the site, and erosion would be undetectable. Operation and maintenance activities would be much less under Alternative 3 than Alternative 1. Channel-related operation and maintenance activities as well as maintenance of water control structures would occur similar to that of existing conditions with no substantive change under Alternative 3. The new tide gates would require similar maintenance to that of Alternative 1. Overall, operation and maintenance activities that would occur under Alternative would be in accordance with the Preliminary Operations and Maintenance Plan (Appendix B5).

3-WQ-1b: Under Alternative 3, contaminated water and sediment from the watershed could be transported into the restored marsh resulting in areas of accumulated contaminated sediments and potential exceedance of water quality limits set forth by the Ballona Creek TMDL. (Less than Significant Impact)

Direct Impacts

Alternative 3 would have less ground disturbance, vegetation removal, and grading than in Alternatives 1 and 2. As for Alternatives 1 and 2, Alternative 3 would have to comply with the requirements of the Construction General Permit and be managed for consistency with the County MS4 Permit. These regulatory controls would reduce and manage erosion, control stormwater runoff, and reduce sediment delivery to the marsh in West Area B, which could occur during restoration of the Project site. As in Alternatives 1 and 2, Alternative 3 also would include the construction of the stormwater pre-treatment basin in West Area B, which would reduce the sediment entering the marsh.

Operation and maintenance activities would be infrequent and relatively minor with little to no disturbances to onsite soils such that it would not result in a significant impact relating to the transport of water and sediment from the watershed to the marsh; therefore, there would be no significant impact during the post-restoration period.

Indirect Impacts

As would occur in Phase 1 of Alternative 1 and Alternative 2, West Area B would not be reconnected to Ballona Creek in Alternative 3 so there would be less potential for accumulation of constituents in sediments from the watershed as compared to Alternative 1. Similar to Alternative 2, the existing SRT gates limits the amount of sediment that can enter West Area B, so sedimentation would not increase as compared to Alternative 1 due to Alternative 3. As in

Alternatives 1 and 2, Alternative 3 also would include the construction of the stormwater pre-treatment basin in West Area B, which would reduce the constituents entering the marsh.

3-WQ-1c: Under Alternative 3, water quality degradation would not occur at Los Angeles (LA-2) or Newport Bay (LA-3) ocean disposal sites due to placement of excavated Project site sediments. (Less than Significant Impact with Mitigation Incorporation)

Direct Impact

Similar to Alternatives 1 and 2, any excavated sediment designated for disposal in an ocean disposal site would meet the requirements for placement in such sites. Mitigation Measure WQ-1a-ii would ensure that sediment would be sampled prior to construction in order to determine if it meets requirements for ocean disposal.

Indirect Impact

Sediment would only be placed in an ocean disposal site if it met the standards of the OTM, therefore, there would be no indirect impacts as a result of ocean disposal.

Mitigation Measure

Implement Mitigation Measure WQ-1a-ii, Sampling and Analysis Plan (SAP).

Level of Significance after Mitigation

Implementation of Mitigation Measure WQ-1a-ii would reduce this impact to less than significant.

3-WQ-2: Alternative 3 would increase the extent of tidal inundation and could increase infiltration of salt water into the groundwater table resulting in the inland advancement of sea water intrusion. (Less than Significant Impact)

Direct Impacts

As in Alternatives 1 and 2, Alternative 3 would excavate sediment from Area A and reconnect it to Ballona Creek through culverts, which would increase the tidal prism and tidal inundation at the site. However, Alternative 3 would not connect West Area B to Ballona Creek or increase the tide range in South and Southeast Area B, so the increase in tidal prism from existing conditions, which are described in Section 3.9.2, Affected Environment, would be less than in Alternatives 1 and 2. The increase in tidal prism is not expected to impact groundwater supplies as the groundwater in the area is not used for domestic or municipal supply.

Indirect Impacts

As discussed above, Alternative 3 would increase tidal inundation through the marsh and possibly cause the extent of brackish water to migrate inland. The inland migration of the brackish groundwater would be less than in Alternatives 1 and 2, so there would be no indirect impact.

3-WQ-3a: Since Ballona Creek would not be realigned under Alternative 3, potential erosion would not result in localized and downstream siltation. (No Impact)

Alternative 3 would not reroute Ballona Creek as in Alternatives 1 and 2, but would install two culvert banks through the existing levee to bring tidal flows into Area A. The flow into Area A is not expected to substantially change the flow patterns and velocity within the creek, or result in increased scour as compared to existing conditions. Considering that Alternative 3 would not change the flow patterns or erosion from existing conditions, it would result in no impact relating to the potential for post-construction erosion to result in localized and downstream siltation. Also, maintenance would be infrequent and not involve substantive disturbance of soils. Nonetheless, maintenance activities would be done in accordance with BMPs set forth in an approved Operations and Maintenance Plan. This analysis assumes that the approved Operation and Maintenance Plan would be substantially similar to the Preliminary Operation and Maintenance Plan provided in Appendix B5.

3-WQ-3b: Alternative 3's proposed connection of Ballona Creek to the marsh would result in erosion that could result in loss of habitat and/or levee destabilization. (Less than Significant Impact)

Direct Impacts

Implementation of Alternative 3 would not result in any erosion that would result in a loss of habitat or levee destabilization.

Indirect Impacts

During normal tidal conditions, no erosion of the marsh would be expected as discussed for Alternatives 1 and 2. During large storm events, water levels would increase in Area A, but the culverts would limit the amount of flow that enters the site, and erosion would be minimal. There would be no indirect impacts related to erosion that would result in a loss of habitat or levee destabilization during restoration activities because of the relatively short term nature of the work and the BMPs that would be implemented. The BMPs would cover all restoration activities with particular attention to prevention of erosion which can adversely affect water quality and result in loss of habitat or levee destabilization. These BMPs have proven effective and would be implemented in accordance with the Operations and Maintenance Plan (Appendix B5).

3-WQ-3c: Alternative 3 would not alter the capacity or characteristics of the existing storm drainage system such that there would be a reduction in available drainage capacity. (Less than Significant Impact)

Direct Impacts

Alternative 3 would not reroute Ballona Creek as in Alternatives 1 and 2, but would install two culvert banks through the existing levee to bring tidal flows into Area A. The flow into Area A is not expected to substantially change the flow patterns and velocity within the creek, therefore Alternative 3 would not impact existing storm drainage.

Indirect Impacts

As discussed for Alternatives 1 and 2, the shoal at the mouth of Ballona Creek is likely wave-built and the increase in the tidal prism and tidal flows are not expected to substantially increase the shoal size.

3-WQ-4: Alternative 3's proposed restoration would not significantly increase the risk of flooding. (Less than Significant Impact)

Direct Impacts

As discussed above, Alternative 3 is not expected to change flow patterns in the creek, so increased flooding on- or off-site is not expected. Around the perimeter of Area A, new higher levees would be constructed as part of Alternative 3. Additionally, the culverts would limit the flow of water into Area A. With the new levees, Alternative 3 would increase flood protection at the site.

Indirect Impacts

As in Alternatives 1 and 2, Alternative 3 would increase flood water levels within the site but the design would increase levee elevations as well. The culverts into Area A would limit water levels and flap gates could be added over time to prevent water levels from rising too high with sea level rise.

3-WQ-5: Alternative 3 would not result in inundation by seiche or tsunami. (Less than Significant Impact)

Direct Impacts

Alternative 3 would not directly result in inundation by tsunami or seiche. The restoration and post-restoration activities proposed in Alternative 3 would have no impact on earthquakes, landslides, volcanic eruptions, or other potential triggers for tsunami or seiche and so would not increase potential risk associated related inundation. Therefore, Alternative 3 would result in no direct impact during or following restoration relating to inundation.

Indirect Impacts

The risk for tsunamis and earthquake producing seiches would be the same under Alternative 3 as under the Alternatives 1 and 2. However, Area A would be connected to Ballona Creek through two sets of culverts, so increased water levels from a tsunami would only produce a limited water level increase in Area A under Alternative 3 due to the capacity of the culverts.

TABLE 3.9-13
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
WQ-3: Violate any water quality standards or waste discharge requirements; otherwise substantially degrade water (or sediment) quality; or 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?				
a) The excavation and grading associated with restoration proposed under Alternative 3 would expose and release contaminated sediments resulting in water quality impacts in Ballona Creek. See Impact 3-WQ-1a.	☐	☐	☒	☐
b) Under Alternative 3, contaminated water and sediment from the watershed could be transported into the restored marsh resulting in areas of accumulated contaminated sediments and potential exceedance of water quality limits set forth by the Ballona Creek TMDL. See Impact 3-WQ-1b.	☐	☐	☒	☐
c) Under Alternative 3, water quality degradation could occur at Los Angeles (LA-2) or Newport Bay (LA-3) ocean disposal sites due to placement of excavated Project site sediments. See Impact 3-WQ-1c.	☐	☒	☐	☐
WQ-2: 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)? See Impact 3-WQ-2.	☐	☐	☒	☐
WQ-3: 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?				
a) The realignment and restoration of Ballona Creek proposed under Alternative 1 would result in post-restoration erosion that could result in localized and downstream siltation. See Impact 3-WQ-3a.	☐	☐	☐	☒
b) Alternative 3's proposed connection of Ballona Creek to the marsh would result in post-restoration erosion that could result in loss of habitat and/or levee destabilization. See Impact 3-WQ-3b.	☐	☐	☒	☐
c) Alternative 3 could alter the capacity or characteristics of the existing storm drainage system such that there would be a reduction in available drainage capacity. See Impact 3-WQ-3c.	☐	☐	☒	☐
WQ-4: 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, or provide substantial additional sources of polluted runoff? See Impact 3-WQ-4.	☐	☐	☒	☐
WQ-5: Result in inundation by seiche or tsunami? See Impact 3-WQ-5.	☐	☐	☒	☐

3.9.6.4 Alternative 4: No Federal Action/No Project Alternative

Violation of Water Quality Standards/Degradation of Water Quality

Under Alternative 4, no substantial changes would be made to the physical or human environment within the Project site and new wetlands restoration would not take place within the Ballona Reserve. Continuation of previously-permitted restoration activities would be allowed, such as the small-scale control of invasive plant species by hand-tools only and the planting and seeding of native species.

Alternative 4 would not involve any new construction, so water and sediment quality would not be impacted by construction-related runoff. There would not be any increase in turbidity since the concrete levees would remain in place and Ballona Creek would not be reconnected to the floodplain. However, the drainage control features included in Alternatives 1, 2, and 3 would not be implemented, so any potentially contaminated runoff from the site would continue directly into the marsh and/or creek. Additionally, the stormwater pre-treatment basin in West Area B, which would be constructed under Alternatives 1, 2, and 3, would not be implemented, so runoff with high levels of constituents associated with sediments from Culver Boulevard would continue to flow into the marsh.

There would be no excavation or disposal of sediment, so there would be no impacts to the ocean disposal sites.

Since Alternative 4 would not involve any sediment removal, the alternative would not address the TMDL for Sediment and Invasive Exotic Vegetation for the Ballona Creek Wetlands (Section 3.9.3.3). By comparison, Alternatives 1, 2, and 3 would provide a beneficial effect for sediment removal.

Groundwater Supply and Recharge

Alternative 4 would involve no substantial changes to the physical environment within the Ballona Reserve. There would be no change to groundwater supply and recharge from existing conditions.

Erosion and Sedimentation

Because Alternative 4 would make no changes to the site, erosion and sedimentation within the creek would not change from existing levels. There would be no loss of habitat due to erosion; however, the vegetated marsh habitat in West Area B would likely flood (e.g., convert to mudflat or subtidal habitat) due to sea level rise due to the muted tides behind the SRT gates, whereas Alternative 1 would maintain vegetated marsh for longer. The existing vegetated marsh habitat would therefore be less resilient to sea-level rise in Alternative 4 than under Alternative 1. Alternative 4 would not change the flow patterns in Ballona Creek, so there would be no new risk of erosion for the levees. Additionally, there would be no change to the storm drainage capacity of the system.

Flooding

Under Alternative 4, flood risk would remain the same as under existing conditions. Alternative 4 would not change the existing levees, unlike Alternatives 1, 2, and 3, which would build new levees that would be raised from existing conditions. Therefore, Alternative 4 would have a lower level of flood protection than in the other alternatives. As sea level rises, the added height of the levees in all of the other alternatives would provide more flood protection than under Alternative 4.

Alternative 4 would result in no adverse impact to water quality, groundwater, erosion and sedimentation, or flooding as fully discussed in the corresponding NEPA analysis above. However, Alternative 4 also would not result in any of the beneficial effects of the proposed flood management activities.

3.9.7 Cumulative Impacts

As discussed in Section 3.9.6.4, *Alternative 4: No Federal Action/No Project Alternative*, Alternative 4 would result in no adverse impact (and no beneficial effects) on Hydrology and Water Quality. Accordingly, Alternative 4 would not cause or contribute to any potential cumulative Hydrology or Water Quality impacts.

Regarding Alternatives 1, 2, and 3, the geographic area considered for potential cumulative impacts to water resources (including water quality, groundwater level and supply, groundwater recharge, erosion/sedimentation, and flooding) includes the surface waters of Santa Monica Bay, the Ballona Creek Estuary, the Ballona Creek Watershed upstream of the Project site, and tributaries to Ballona Creek (Figure 3.9-1, *Ballona Creek Reaches*, p. 3.9-2). These are the surface water features and watersheds that could be impacted by Alternatives 1, 2, or 3.

Cumulative impacts could occur during and following restoration under Alternatives 1, 2, and 3. The greatest potential for cumulative impacts with respect to water quality would occur if land disturbing activities either during restoration or post-restoration (long-term) of cumulative projects were to happen concurrently. However, the operation and maintenance phases of potential cumulative projects also are included in the temporal scope of cumulative impacts because minor alterations in topography and the addition/reduction of impervious surfaces could combine with the incremental restoration and post-restoration impacts of the Project to produce cumulative impacts related to erosion and sedimentation.

The existing conditions described in Section 3.9.2.2, *Environmental Setting*, reflect the ongoing impacts of past and existing projects. It is within the context of these conditions that potential cumulative impacts to water resources are considered. Section 3.1 (including Table 3.1-1, *Existing and Reasonably Foreseeable Future Projects*) lists 41 projects that have the potential to cause impacts that could combine with those of the Project: projects #1-19, 22-39, 41, 43-46 from Table 3.1-1, *Existing and Reasonably Foreseeable Future Projects*, are within the watershed of the Project area. These projects are depicted in Figure 3.1-1, *Cumulative Projects* (p. 3.1-10). The cumulative scenario also includes reasonably foreseeable implementation of other projects and activities in the geographic area. For example, Los Angeles County is complying with the Municipal Separate Storm Sewer System (MS4) Permit Order No. R4-2012-0175 through the development of Enhanced Watershed Management Program (EWMP) Plans. These EWMP plans will be used to determine the network of control measures or best management plans that can be used to achieve required pollutant reductions. An EWMP has been prepared for the Ballona Creek Watershed and implementation of this plan would beneficially aid in the watershed wide improvement to water quality and achieving required TMDLs. Considered as a foreseeable future project, the BMPs and Watershed Control Measures that would be implemented at a watershed-scale level would likely result in a reduction in sediment delivery to the project site. A reduction in sediment delivery would reduce the need for maintenance activities such as dredging and would be a beneficial improvement to conditions in the project area.

During construction and operation of 41 listed projects, it is anticipated that fuels, antifreeze, paints, oils, greases, and other lubricants, and various other potential water quality pollutants, similar to those discussed for direct Project impacts, would be stored or utilized on each site, in support of construction and operation period activities. Handling of such materials for all cumulative projects would be regulated under applicable local, state, and Federal requirements, as discussed for direct and indirect impacts. Adherence to these requirements would ensure that water quality impacts of accidental releases of hazardous chemicals would be minimized. Minimal residual impacts on water quality could occur; however, they would be expected to be discrete in nature, associated with isolated incidents (e.g., accidental spills), and generally of low occurrence due to the nature of projects anticipated, and therefore, do not represent major hazardous materials users or manufacturers. Therefore, the Projects' incremental impacts would not combine to cause or contribute to a significant cumulative impact.

Construction of cumulative project #19 would require permanent dewatering, which would result in impacts to groundwater quantity through direct additions or withdrawals or through substantial loss of groundwater recharge capacity. The Project would not impact groundwater quantity, so the Projects' incremental impacts would not combine to cause or contribute to a significant cumulative impact.

Construction of some of the reasonably foreseeable projects would result in the temporary alterations to drainage patterns in Marina del Rey (cumulative projects #3-5, 8-15, 29-30), Ballona Creek (cumulative projects #25, 32, 41), or Del Rey Lagoon (cumulative project #31), including the installation of slips and docs, various grading activities, and BMP installations. Concurrent alteration of stormwater flows and drainage patterns could result in increased erosion and sedimentation. During construction and in the long-term, Alternatives 1, 2, or 3 could contribute to cumulative water quality impacts related to erosion. However, SWPPPs and/or BMP Plans and erosion control practices like those that would be required of the Project are standard construction industry practice, legally required for projects with disturbance areas over specified thresholds, and reflect limits that are set with cumulative conditions in mind. Additionally, most of these projects are expected to be completed before the Project is constructed. If some of the projects are not completed, there could be some overlap with construction or long-term operation of the Project. However, the Project would only increase erosion and turbidity during construction and large storm events, which would be infrequent and temporary. As a result, related significant cumulative impacts would not result.

The Project would not increase flood risk or risk of inundation by seiche or tsunami, and so could not cause or contribute to any cumulative impact.

3.9.8 References

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3.10 Noise

3.10.1 Introduction

This section identifies and evaluates issues related to noise and vibration in the context of various restoration alternatives. It describes existing conditions in Section 3.10.2; summarizes applicable laws, regulations, plans, and standards in Section 3.10.3; identifies the criteria used to evaluate the significance of potential impacts (referred to as "thresholds of significance") in Section 3.10.4; describes the methodology used to evaluate these impacts in Section 3.10.5; analyzes direct and indirect beneficial effects and adverse impacts in Section 3.10.6; analyzes cumulative impacts in Section 3.10.7; and provides references in Section 3.10.8.

3.10.2 Affected Environment

3.10.2.1 Study Area

This analysis focuses on the potential noise and vibration impacts to the existing environment resulting from implementation of the various alternatives. The study area for this analysis includes the Project site as described in Section 1.4.1, *Location of the Project Site*, and the immediate noise-sensitive land uses (e.g., residential uses) surrounding the Project site. In addition, the study area includes airports within 2 miles of the Ballona Reserve. See Figure ES-2, *Project Site*.

3.10.2.2 Environmental Setting

Noise and Vibration Technical Background and Terminology

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is generally defined as unwanted sound (i.e., loud, unexpected, or annoying sound). Acoustics is defined as the physics of sound. In acoustics, the fundamental scientific model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. Acoustics addresses primarily the propagation and control of sound.

Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), which is the standard unit of sound amplitude measurement. The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound, with 0 dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude. When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequency spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. For this reason, the A-weighted sound level has become the standard descriptor for environmental noise assessment. A range of representative noise sources associated with common indoor and outdoor activities and their corresponding A-weighted noise levels are shown in Figure 3.10-1, *Decibel Scale and Common Noise Sources*.

Noise Exposure and Community Noise

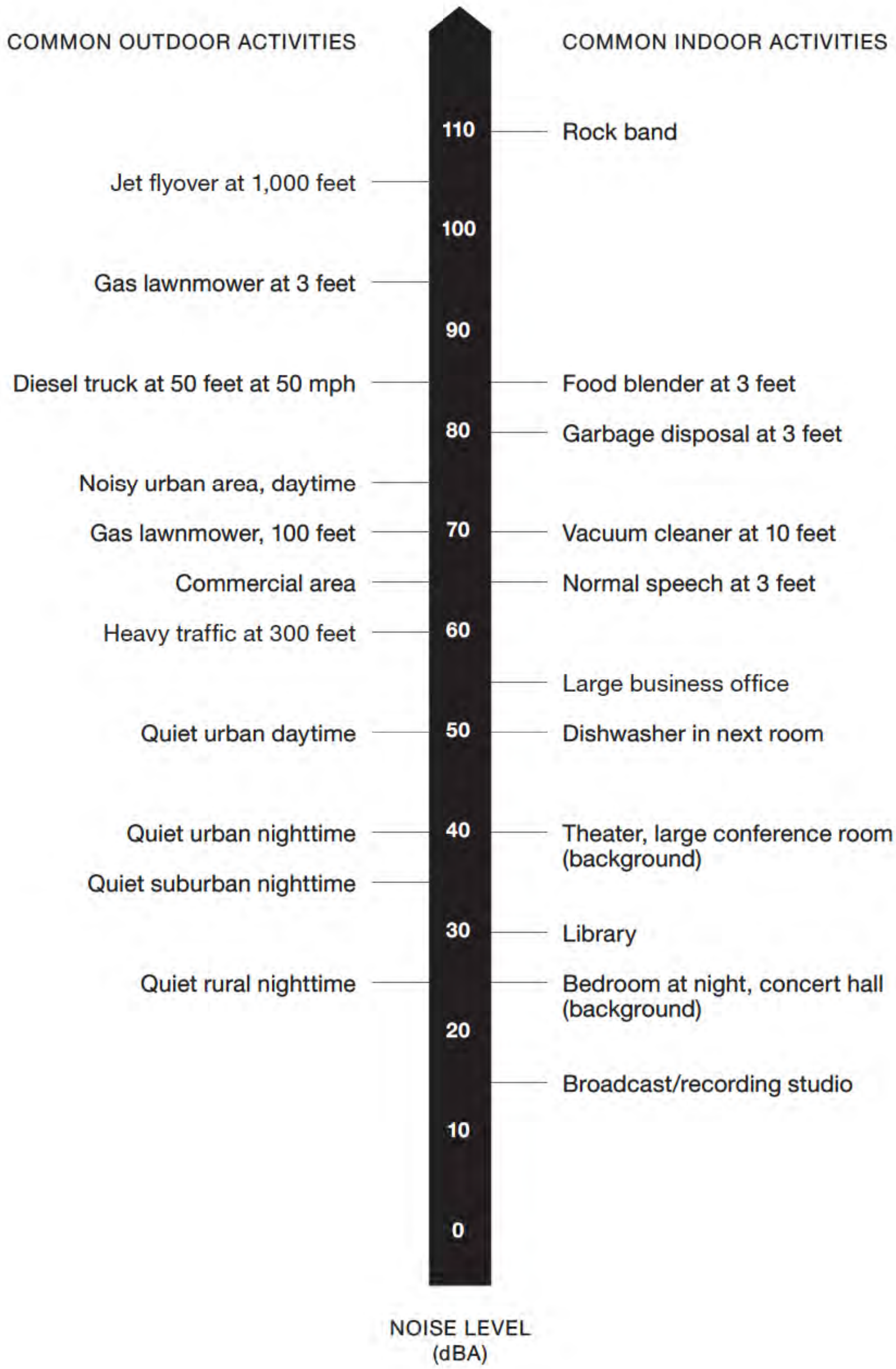
An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. The noise levels presented in Figure 3.10-1, *Decibel Scale and Common Noise Sources*, are representative of measured noise at a given instant in time; however, they rarely persist consistently over a long period of time. Rather, community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic. What makes community noise variable throughout a day, besides the slowly changing background noise, is the addition of short-duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, and sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment change the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The noise descriptors discussed in this analysis are summarized as:

L_{eq}: The L_{eq}, or equivalent sound level, is used to describe noise over a specified period of time in terms of a single numerical value; the L_{eq} of a time-varying signal and that of a steady signal are the same if they deliver the same acoustic energy over a given time. The L_{eq} may also be referred to as the average sound level.

L_{max}: The maximum, instantaneous noise level experienced during a given period of time.

L_x: The noise level exceeded X% of a specified time period. For instance, L_{50} and L_{90} represent the noise levels that are exceeded 50% and 90% of the time, respectively.



SOURCE: Caltrans

ESA

Ballona Wetlands Restoration Project

Figure 3.10-1
Decibel Scale and Common Noise Sources

L_{dn}: Also termed the Day-Night Sound Level (DNL), the L_{dn} is the average A-weighted noise level during a 24-hour day, obtained after an addition of 10 dBA to measured noise levels between the hours of 10:00 p.m. to 7:00 a.m. to account nighttime noise sensitivity.

CNEL: CNEL, or Community Noise Equivalent Level, is the average A-weighted noise level during a 24-hour day that is obtained after an addition of 5 dBA to measured noise levels between the hours of 7:00 p.m. to 10:00 p.m. and after an addition of 10 dBA to noise levels between the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively.

Effects of Noise on People[110]

Noise is generally loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity as a nuisance or disruptive. The effects of noise on people can be placed into four general categories:

1. Subjective effects (e.g., dissatisfaction, annoyance);
2. Interference effects (e.g., communication, sleep, and learning interference);
3. Physiological effects (e.g., startle response); and
4. Physical effects (e.g., hearing loss).

Although exposure to high noise levels has been demonstrated to cause physical and physiological effects, the principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. Interference effects of environmental noise refer to those effects that interrupt daily activities and include interference with human communication activities, such as normal conversations, watching television, telephone conversations, and interference with sleep. Sleep interference effects can include both awakening and arousal to a lesser state of sleep. With regard to the subjective effects, the responses of individuals to similar noise events are diverse and are influenced by many factors, including the type of noise, the perceived importance of the noise, the appropriateness of the noise to the setting, the duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity.

Overall, there is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction on people. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted (i.e., comparison to the ambient noise environment). In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships generally occur (Caltrans 2009):

[110] The potential impacts of noise and vibration to wildlife are evaluated in Section 3.4, *Biological Resources*.

1. Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
2. Outside of the laboratory, a 3 dBA change in noise levels is considered to be a barely perceivable difference;
3. A change in noise levels of 5 dBA is considered to be a readily perceivable difference; and
4. A change in noise levels of 10 dBA is subjectively heard as doubling of the perceived loudness.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion, hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. Under the decibel scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two sources are each producing sound of the same loudness, the resulting sound level at a given distance would be approximately 3 dBA higher than one of the sources under the same conditions. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. Under the decibel scale, three sources of equal loudness together produce a sound level of approximately 5 dBA louder than one source, and ten sources of equal loudness together produce a sound level of approximately 10 dBA louder than the single source.

Noise Attenuation

When noise propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on factors such as the type of noise source and the propagation path. Noise from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern; therefore, this type of propagation is referred to as "spherical spreading." Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement as their energy is continuously spread out over a spherical surface (Caltrans 2009). Hard sites are those with a reflective surface between the source and the receiver, such as asphalt or concrete surfaces or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites.

Roadways and highways, and to some extent, moving trains, consist of several localized noise sources on a defined path, and hence are treated as "line" sources, which approximate the effect of several point sources. Noise from a line source propagates over a cylindrical surface, often referred to as "cylindrical spreading." Line sources (e.g., traffic noise from vehicles along a road) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans 2009). Therefore, noise due to a line source attenuates less with distance than that of a point source with increased distance.

Fundamentals of Vibration

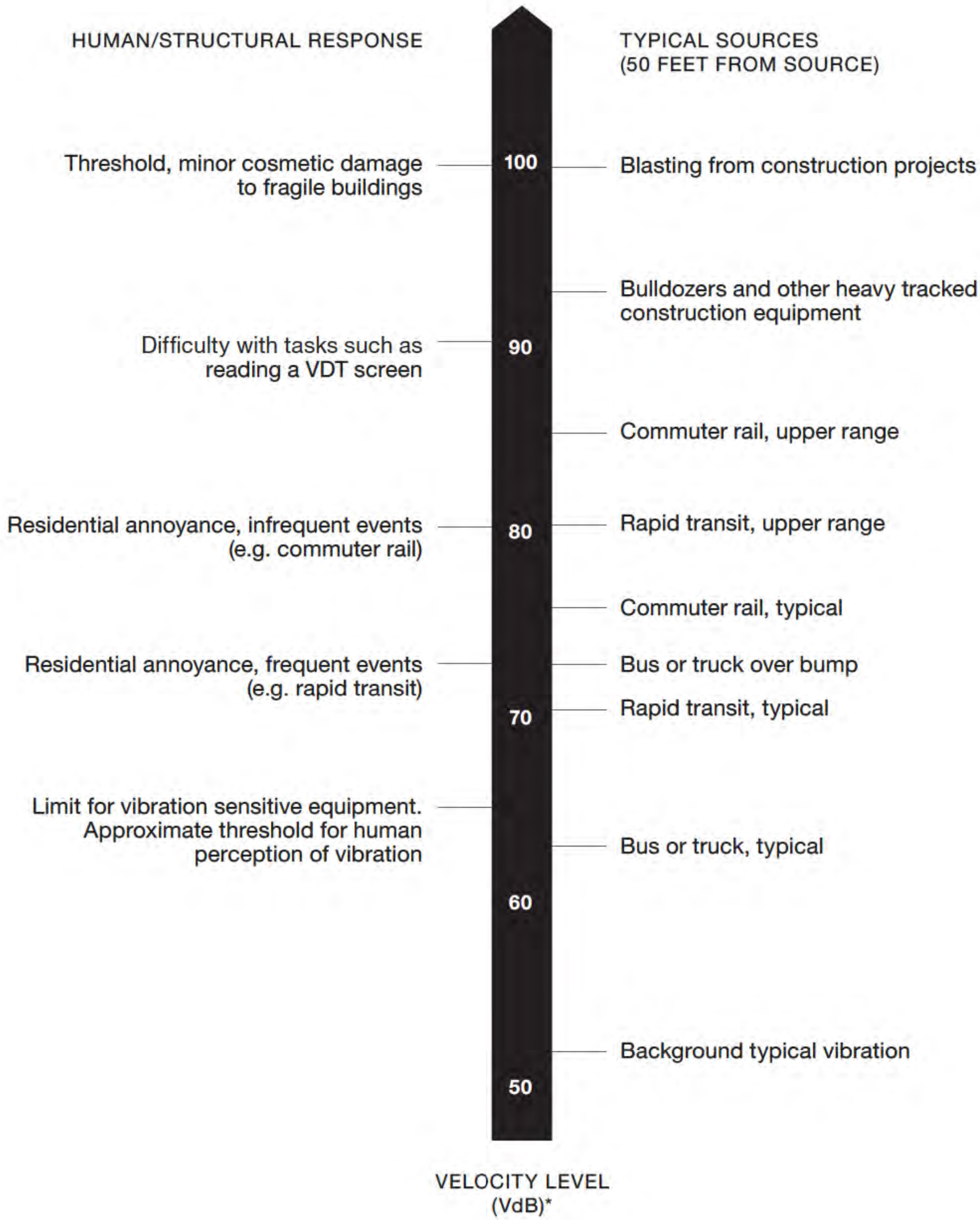
Vibration can be interpreted as energy transmitted in waves through the ground or man-made structures. These energy waves generally dissipate with distance from the vibration source. Because energy is lost during the transfer of energy from one particle to another, vibration becomes less perceptible with increasing distance from the source.

As described in the Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment (FTA 2006), ground-borne vibration can be a serious concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, heavy trucks and buses on rough roads, and construction activities such as blasting, pile-driving, and operation of heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV most frequently is used to describe vibration impacts to buildings. The root mean square (RMS) amplitude most frequently is used to describe the effect of vibration on the human body (i.e., annoyance). The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The relationship of PPV to RMS velocity is expressed in terms of the "crest factor," defined as the ratio of the PPV amplitude to the RMS amplitude. Peak particle velocity is typically a factor of 1.7 to 6 times greater than RMS vibration velocity (FTA 2006). The decibel notation acts to compress the range of numbers required to describe vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration sensitive equipment.

The effects of ground-borne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration levels exceed the threshold of perception by only a small margin. A vibration level that causes annoyance will be well below the damage threshold for normal buildings. The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 inches per second (in/sec) PPV (FTA 2006).

Figure 3.10-2, *Typical Vibration Levels*, illustrates common vibration sources and the human and structural response to ground-borne vibration. The range of interest is from approximately 50 VdB to 100 VdB. In residential areas, the background vibration velocity level is usually around 50 VdB (approximately 0.0013 in/sec PPV). This level is well below the vibration velocity level threshold of perception for humans, which is approximately 65 VdB. A vibration velocity level of 75 VdB is considered to be the approximate dividing line between barely perceptible and distinctly perceptible levels for many people (FTA 2006).



*RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second

SOURCE: Federal Transit Administration

Ballona Wetlands Restoration Project

Figure 3.10-2
Typical Vibration Levels

Groundborne Noise

Noise caused by vibration propagated through soil and building structures is referred to as groundborne noise. It is normally radiated by the ground in open air and by walls, floors and ceilings inside a building as a result of groundborne vibration. Groundborne noise in buildings is generated when interior surfaces (walls and floors) are vibrated into motion by ground vibration transmitted into the structure. For example, ground vibration could cause windows to rattle or items on shelves to move. The construction features of a building's foundation, structure, and walls determine the building's response to incident ground vibration.

The relationship between groundborne vibration and groundborne noise depends on the frequency content of the vibration and the acoustical absorption of the receiving room. The more acoustical absorption in the room, the lower the noise level will be. For a room with average acoustical absorption, the unweighted sound pressure level is approximately equal to the average vibration velocity level of the room surfaces. Hence, the A-weighted level of groundborne noise can be estimated by applying A-weighting to the vibration velocity spectrum. Since the A-weighting at 31.5 Hz is -39.4 dB, if the vibration spectrum peaks at 30 Hz, the A-weighted sound level will be approximately 40 dB lower than the velocity level. Correspondingly, if the vibration spectrum peaks at 60 Hz, the A-weighted sound level will be about 25 dB lower than the velocity level (FTA 2006).

Table 3.10-1, *Human Response to Different Levels of Groundborne Noise and Vibration*, describes the human response to different levels of ground-borne noise and vibration. Table 3.10-1 illustrates that achieving either the acceptable vibration or acceptable noise levels does not guarantee that the other will be acceptable. For example, the noise caused by vibrating structural components may be very annoying even though the vibration cannot be felt. Alternatively, a low-frequency vibration could be annoying while the ground-borne noise level it generates is acceptable.

TABLE 3.10-1
HUMAN RESPONSE TO DIFFERENT LEVELS OF GROUNDBORNE NOISE AND VIBRATION

Vibration Velocity Level	Noise Level		Human Response
	Low Frequency[a]	Mid Frequency[b]	
65 VdB	25 dBA	40 dBA	Approximate threshold of perception for many humans. Low-frequency sound usually inaudible, mid-frequency sound excessive for quiet sleeping areas.
75 VdB	35 dBA	50 dBA	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration at this level annoying. Low-frequency noise acceptable for sleeping areas, mid-frequency noise annoying in most quiet occupied areas.
85 VdB	45 dBA	60 dBA	Vibration acceptable only if there are an infrequent number of events per day. Low-frequency noise annoying for sleeping areas, mid-frequency noise annoying even for infrequent events with institutional land uses such as schools and churches.

NOTES:
[a] Approximate noise level when vibration spectrum peak is near 30 Hz.
[b] Approximate noise level when vibration spectrum peak is near 60 Hz.

SOURCE: FTA 2006.

Baseline Noise Environment

Ambient Daytime Noise Levels

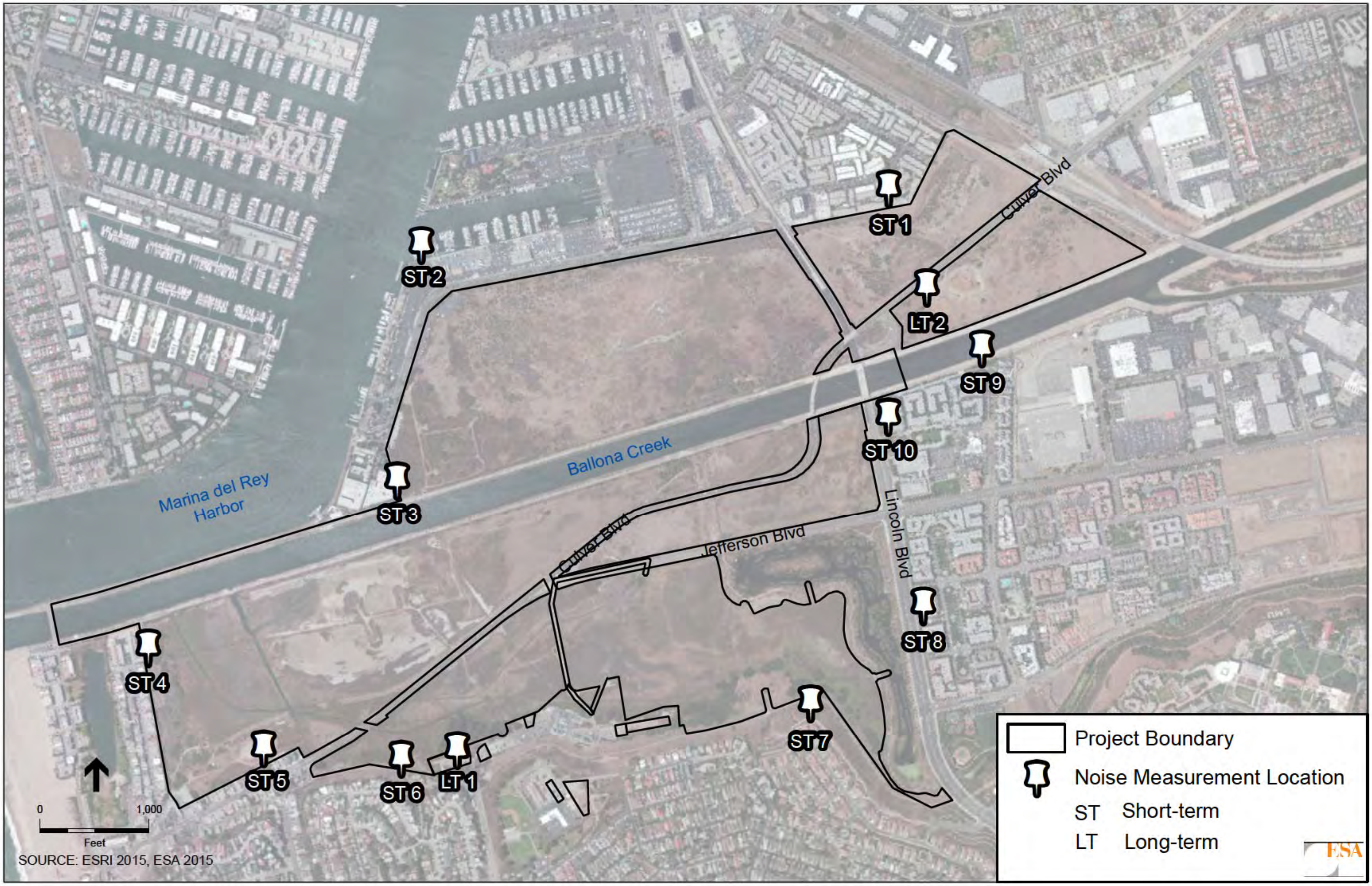
The Ballona Reserve is open to guided tours conducted by the Los Angeles Audubon Society and the Friends of Ballona Wetlands, but otherwise is closed to the public; the Southern California Gas Company (SoCalGas) Property also is closed to the public. In addition, the Project site contains baseball fields exclusively used by the Culver Marina Little League in South Area C. As such, noise levels generated at the Project site are associated with the periodic guided tours of the Ballona Reserve, use of the baseball fields during the baseball season,[111] and from CDFW, LACFCD, and SoCalGas staff to operate and maintain the Ballona Reserve as well as LACDA project facilities and SoCalGas Company infrastructure within the Ballona Reserve, including flood and stormwater facility inspection and maintenance; habitat restoration monitoring and maintenance; and public access, public services, and general maintenance. See, for example, Appendix B5, Preliminary Operation and Maintenance Plan, which describes existing activities associated with cleaning, inspecting, servicing, maintaining, and repairing infrastructure as well as pest and weed control.

In order to characterize existing daytime ambient noise conditions, short-term (15-minute) noise level measurements were conducted by ESA on June 30, 2015, from 9:45 a.m. to 12:34 p.m., and on July 7, 2015, from 10:06 a.m. to 12:29 p.m. at the off-site noise-sensitive locations shown in Figure 3.10-3, *Noise Measurement Locations*. The short-term noise measurements were conducted using a Larson Davis SoundTrack LXT sound level meter, which was calibrated prior to and after its use to ensure the accuracy of the measurements. In addition, two long-term (24-hour) noise level measurements were conducted within and along the border of the Project site (see Figure 3.10-3 for the locations) between December 16 and 17 in 2013 by ICF International (ICF 2015). The results of the short-term and long-term noise measurements are shown in Table 3.10-2, *Summary of Short-term Noise Measurements*, and Table 3.10-3, *Summary of Long-term Noise Measurements*, respectively.

Baseline Traffic Noise Levels Off-site

Existing traffic noise levels were calculated for 33 roadway segments, which are expected to be most directly affected by Project-related traffic (i.e., the routes visitors are expected to use to access the Project site) and which include the roadways that are located near and immediately adjacent to the Project site. These roadways, when compared to roadways located further away from the Project site, would experience the greatest percentage increase in traffic generated by the Project.

[111] The Little League season begins in March; post-season play continues into August (Culver City Little League 2016).



Ballona Wetlands Restoration Project

Figure 3.10-3
Noise Measurement Locations

TABLE 3.10-2
SUMMARY OF SHORT-TERM NOISE MEASUREMENTS

Location	Description	Date and Time Period	L_{eq} dBA	L_{max} dBA	Noise Sources
ST 1	Multi-family residential uses located north of the Project site and east of Lincoln Boulevard.	06/30/15 9:45 – 10:00 a.m.[a]	53.9	73.8	Traffic on Lincoln Boulevard; planes flying by overhead.
ST 2	Boat slips located north of Area A of Project site, beyond Fiji Way.	07/07/15 10:06 – 10:21 a.m.[b]	51.6	60.5	Planes flying by overhead; watercraft in the harbor; paint application from adjacent yacht center; birds chirping; traffic along Fiji Way.
ST 3	Multi-family residential uses located west of Area A of Project site and north of Ballona Creek.	07/07/15 10:40 – 10:55 a.m.[b]	51.2	63.8	Birds chirping; internal vehicle circulation; planes flying by overhead; bikers on bike trail.
ST 4	Multi-family residential uses located west of West Area B of Project site, along Vista Del Mar.	07/07/15 11:13 – 11:28 a.m.[b]	50.5	61.5	Planes flying by overhead; pedestrians/residents talking; faint radio music from residential unit; birds chirping; vehicles departing and entering condominium lot; operation of power tools from a distance.
ST 5	Titmouse Park located along Culver Boulevard and directly south of West Area B of Project site.	07/07/15 11:40 – 11:55 a.m.[b]	54.7	60.7	Traffic on Culver Boulevard; birds chirping; planes flying by overhead; periodic vacuuming noise from inside adjacent building.
ST 6	Single-family residence located at the terminus of Sinaloa Road, south of South Area B of Project site.	07/07/15 12:14 – 12:29 p.m.[b]	54.4	68.6	Traffic on Culver Boulevard; planes flying by overhead; birds chirping; hikers walking by and talking.
ST 7	Single-family residences located along Coastal View Drive, south of Cabora Drive and Project site.	06/30/15 10:38 – 10:53 a.m.[a]	50.9	73.5	Planes flying by in vicinity; light traffic from Lincoln Boulevard.
ST 8	Multi-family residential uses located east of Project Site along Lincoln Boulevard, between Jefferson Boulevard and Bluff Creek Drive.	06/30/15 11:13 – 11:28 a.m.[a]	63.9	74.5	Traffic on Lincoln Boulevard; Planes flying by overhead.
ST 9	Multi-family residential uses located directly south of South Area C, across Ballona Creek.	06/30/15 11:49 – 12:04 a.m.[a]	60.9	76.2	Lawn mower from a distance; planes flying by overhead.
ST 10	Multi-family residential uses located east of Project site along Lincoln Boulevard, between Culver Boulevard and Jefferson Boulevard.	06/30/15 12:19 – 12:34 p.m.[a]	66.6	72.2	Traffic on Lincoln Boulevard; lawn mower from a distance; planes flying by overhead.

NOTES:
[a] Noise measurement conducted by ESA on June 30, 2015.
[b] Noise measurement conducted by ESA on July 7, 2105.

TABLE 3.10-3
SUMMARY OF LONG-TERM NOISE MEASUREMENTS

Location		Dates[a]	CNEL dBA[b]	Noise Sources
LT 1	South of Project site boundary, northwest of the intersection of Falmouth Avenue and Cabora Drive.	12/16/13 – 12/17/13	65.6	Non-applicable, as unattended noise measurements do not specifically identify noise sources.
LT 2	Existing baseball fields in South Area C.	12/16/13 – 12/17/13	60.0	Non-applicable, as unattended noise measurements do not specifically identify noise sources.

NOTES:
[a] Noise measurements conducted by ICF International between December 16 and 17 in 2013.
[b] The 24-hour noise levels shown are from 7 a.m. on December 16 to 7 a.m. on December 17 in 2013.

Calculation of existing roadway noise levels was accomplished using the Federal Highway Administration Highway Noise Prediction Model (FHWA-RD-77-108) acoustical algorithms and peak hour traffic volumes at the intersections analyzed in the Project's traffic study (Raju Associates 2015; Appendix H). For traffic noise studies, CNEL is approximately equal to peak hour L_{eq}; therefore, the modeled noise levels represent both the peak hour L_{eq} as well as CNEL. The average noise levels at 50 feet from the center of the roadways were modeled based on traffic volumes, mix of vehicle types, and average speeds. The modeled average daily noise levels along these roadway segments are presented in Table 3.10-4, *Modeled Existing Roadway Noise Levels*.

Baseline Groundborne Vibration Sources

The Ballona Reserve consists of approximately 577 acres of open space that are not generally open to the public and includes natural gas storage wells and associated pipelines in Area A, South/Southeast Area B, and West Area B; and the baseball fields in South Area C. No permanent stationary or mobile sources of vibration (e.g., machinery or equipment) currently exist within the Ballona Reserve; however, there are intermittent sources as needed to implement operation and maintenance activities, including operation and maintenance of the LACDA project facilities pursuant to the Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) manual (Corps 2009) and maintenance of the natural gas storage wells. Within the SoCalGas Property, existing sources of vibration would likely include the periodic operation of mobile equipment such as forklifts, backhoes, and delivery trucks.

Additionally, the land uses located adjacent to and in proximity to the Project site include primarily residential, commercial, and park uses, none of which would include operations that generate perceptible levels of vibration. Thus, aside from periodic construction work that may occur in nearby areas, the only other sources of groundborne vibration in the vicinity of the Project site would include heavy-duty vehicular travel (e.g., refuse trucks, and delivery trucks) on local roadways. Trucks traveling at a distance of 50 feet typically generate groundborne vibration velocity levels of around 63 VdB (approximately 0.006 in/sec PPV), and these levels could reach 72 VdB (approximately 0.016 in/sec PPV) where trucks pass over bumps in the road (FTA 2006).

TABLE 3.10-4
MODELED EXISTING TRAFFIC NOISE LEVELS

Roadway	Roadway Segment	Existing Land Uses Located Along Roadway Segment	dBA CNEL[a]
Admiralty Way	North of Bali Way	Residential/Library/Medical	72.4
	South of Bali Way	Commercial/Marina	71.6
	North of Fiji Way	Commercial/Marina	69.4
Lincoln Boulevard	North of Washington Boulevard	Commercial	71.7
	North of State Route 90 (SR 90)	Commercial	73.1
	North of Bali Way	Commercial/Medical	71.7
	North of Mindanao Way	Commercial	72.5
	North of Fiji Way	Residential/Commercial	73.4
	North of Culver Boulevard	Commercial	75.6
	North of Jefferson Boulevard	Residential/Commercial	76.2
	North of Bluff Creek Drive	Residential	75.5
	South of Bluff Creek Drive	Residential/Park	76.0
Mindanao Way	West of Admiralty Way	Marina	56.2
	West of Lincoln Boulevard	Commercial	66.3
	West of SR 90 Eastbound (EB)	Residential/Commercial	68.5
	West of SR 90 Westbound (WB)	Residential/Commercial	67.4
	East of SR 90 Ramp	Commercial	67.5
Bali Way	West of Admiralty Way	Commercial	57.1
	West of Lincoln Boulevard	Commercial	64.2
Washington Boulevard	West of Lincoln Boulevard	Hotel/Commercial	70.8
	East of Lincoln Boulevard	Commercial	69.5
Bluff Creek Drive	East of Lincoln Boulevard	Residential/Park	65.5
Jefferson Boulevard	East of Lincoln Boulevard	Residential/Medical	72.6
Culver Boulevard	West of Nicholson Street	Residential/Hotel/ Commercial/Park	68.0
	West of Jefferson Boulevard	Residential	73.8
	West of SR 90 EB	Park	74.1
	East of SR 90 Ramp	Commercial	71.1
	East of Vista del Mar	Residential/Commercial	69.5
Vista del Mar	North of Culver Boulevard	Residential/Commercial	54.2
State Route 90 WB	North of Mindanao Way	Hotel/Commercial	69.2
	North of Culver Boulevard	Commercial	59.4
State Route 90 EB	North of Mindanao way	Commercial	68.0
	South of Mindanao Way	Residential	71.6

NOTES:

[a] Values represent noise levels 50 feet from center of the roadway.

TRAFFIC INFORMATION SOURCE: Raju Associates 2015.
TABLE SOURCE: ESA 2015. Calculation data and results provided in Appendix G.

Sensitive Receptors

Noise sensitive land uses are defined as those specific land uses that have associated indoor and/or outdoor human activities that may be subject to stress and/or significant interference from noise produced by other sound sources in the environment. For instance, residences, hotels, schools, rest homes, and hospitals are generally more sensitive to noise than commercial and industrial land uses. The *City of Los Angeles CEQA Thresholds Guide* (L.A. CEQA Thresholds Guide) specifically identifies uses such as residences, transient lodgings, schools, libraries, churches, hospitals, nursing homes, auditoriums, concert halls, amphitheaters, playgrounds, and parks as noise-sensitive land uses (City of Los Angeles 2006).

Currently, sensitive uses located in the study area include primarily residential and transient lodging uses (see Figure 3.10-3, *Noise Measurement Locations*, for an aerial view of the study area). Specifically, these nearby noise-sensitive uses include:

1. Multi-family residential uses located north of North Area C of the Project site, east of Lincoln Boulevard;
2. Boat slips located north of Area A of the Project site, beyond Fiji Way;[112]
3. Boat slips located west of Area A of the Project site, beyond Fiji Way;
4. Multi-family residential uses located west of Area A of the Project site and north of Ballona Creek;
5. Multi-family residential uses located west of West Area B of the Project site, fronting Vista Del Mar;
6. Multi-family residential, park, and hotel uses located along Culver Boulevard and directly south of West Area B of the Project site;
7. Single-family residences located south of West Area B and South Area B of the Project site and south of Culver Boulevard;
8. Single-family residences located along Cabora Drive and south of South Area B and Southeast Area B of the Project site;
9. Multi-family residential uses located west of Southeast Area B, across Lincoln Boulevard; and
10. Multi-family residential uses located east of East Area B, across Lincoln Boulevard.

[112] The boat slips are considered to be a noise-sensitive area in this analysis due to the potential for people to reside on board the boats.

3.10.3 Applicable Laws, Regulations, Plans, and Standards

3.10.3.1 Federal

Noise

Under the authority of the Noise Control Act of 1972, the United States Environmental Protection Agency (USEPA) established noise emission criteria and testing methods published in Parts 201 through 205 of Title 40 of the Code of Federal Regulations (CFR) that apply to some transportation equipment (e.g., interstate rail carriers, medium trucks, and heavy trucks) and construction equipment. In 1974, the USEPA issued guidance levels for the protection of public health and welfare in residential land use areas (USEPA 1974). The guidance levels specified an outdoor L_{dn} of 55 dBA and an indoor L_{dn} of 45 dBA. These guidance levels are not considered as standards or regulations and were developed without consideration of technical or economic feasibility. There are no Federal noise standards that directly regulate environmental noise related to the construction or operational activities associated with the Project.

Under the Occupational Safety and Health Act of 1970 (29 U.S.C. §1919 et seq.), the Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise level exposure as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, ensuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

Vibration

The FTA has adopted vibration standards that are used to evaluate potential building damage impacts related to construction activities. The vibration damage criteria adopted by the FTA are shown in Table 3.10-5, *Construction Vibration Damage Criteria*.

TABLE 3.10-5
CONSTRUCTION VIBRATION DAMAGE CRITERIA

Building Category	PPV (in/sec)
I. Reinforced-concrete, steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

SOURCE: FTA 2006.

3.10.3.2 State

Noise

The State of California does not have statewide standards for environmental noise, but the California Department of Health Services (DHS) has established guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The purpose of these guidelines is to maintain acceptable noise levels in a community setting for different land use types. Noise compatibility by different land uses types is categorized into four general levels: “normally acceptable,” “conditionally acceptable,” “normally unacceptable,” and “clearly unacceptable.” For instance, a noise environment ranging from 50 dBA CNEL to 65 dBA CNEL is considered to be “normally acceptable” for multi-family residential uses, while a noise environment of 75 dBA CNEL or above for multi-family residential uses is considered to be “clearly unacceptable.” In addition, California Government Code Section 65302(f) requires each county and city in the State to prepare and adopt a comprehensive long-range general plan for its physical development, with Section 65302(g) requiring a noise element to be included in the general plan. The noise element must: (1) identify and appraise noise problems in the community; (2) recognize Office of Noise Control guidelines; and (3) analyze and quantify current and projected noise levels.

Occupational noise exposure is regulated by California Occupational Safety and Health Administration (Cal-OSHA), which has promulgated Occupational Noise Exposure Regulations (8 Cal. Code Regs. §§5095-5099). These regulations set employee noise exposure limits that are equivalent to the Federal OSHA standards mentioned above.

The California Noise Act of 1973 (Health and Safety Code §§46000-46002) sets forth a resource network to assist local agencies with legal and technical expertise regarding noise issues. The objective of the act is to encourage the establishment and enforcement of local noise ordinances.

Vibration

There are no state vibration standards. Moreover, according to the California Department of Transportation’s (Caltrans) Transportation and Construction Vibration Guidance Manual (2013), there are no official Caltrans standards for vibration. However, this manual provides guidelines that can be used as screening tools for assessing the potential for adverse vibration effects related to structural damage and human perception. The manual is meant to provide practical guidance to Caltrans engineers, planners, and consultants who must address vibration issues associated with the construction, operation, and maintenance of Caltrans projects. Therefore, the Caltrans guidance would have limited applicability to the Project.

3.10.3.3 Local

State agencies acting in their sovereign capacity are not subject to local regulations unless the California Constitution says they are or the Legislature has consented to such regulation. However, local regulations are mentioned in this EIR because this analysis contemplates actions by SoCalGas outside of state property and because local plans and policies help inform this analysis related to noise and vibration.

Los Angeles County General Plan Noise Element

The Los Angeles County General Plan, Chapter 11 Noise Element (Los Angeles County, 2015) includes guidelines that are based on the community noise compatibility guidelines established by the County Noise Control Ordinance, Title 12 of the County Code. Specific regulations that implement these guidelines are set forth in the Los Angeles County Municipal Code as discussed below.

County of Los Angeles Municipal Code

Chapter 12.08, Noise Control, of the County of Los Angeles Municipal Code serves as the Noise Ordinance for the County and establishes noise standards to control unnecessary, excessive, and annoying noise and vibration in the County. Within Chapter 12.08 of the County Code, Section 12.08.380 assigned the following noise zones for receptor properties:

1. Noise Zone 1 – Noise sensitive areas
2. Noise Zone 2 – Residential properties
3. Noise Zone 3 – Commercial properties
4. Noise Zone 4 – Industrial properties

With respect to operational noise, Section 12.08.390 of the Noise Ordinance establishes exterior noise levels that should be applied to all receptor properties within a designated noise zone in the County, as shown in Table 3.10-6, *County of Los Angeles Exterior Noise Standards by Noise Zones*.

TABLE 3.10-6
COUNTY OF LOS ANGELES EXTERIOR NOISE STANDARDS BY NOISE ZONES

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level (dBA)
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 p.m. to 7:00 a.m. (nighttime)	45
		7:00 a.m. to 10:00 p.m. (daytime)	50
III	Commercial properties	10:00 p.m. to 7:00 a.m. (nighttime)	55
		7:00 a.m. to 10:00 p.m. (daytime)	60
IV	Industrial properties	Anytime	70

SOURCE: County of Los Angeles Ordinance No. 11743, Section 12.08.390.

The exterior noise levels shown in Table 3.10-6, *County of Los Angeles Exterior Noise Standards by Noise Zone*, are meant to be further applied as noise standards based on the duration of the noise; for example, the louder the noise, the shorter the time it can last. The Noise Ordinance uses a number of noise metrics to define the permissible noise levels. These metrics include L_{50}, L_{25}, $L_{8.3}$, $L_{1.7}$, and L_{max}, and are based upon a 1-hour timeframe that indicates exceedances of 50, 25, 8.3, and 1.7 percent of the time, respectively, plus the maximum sound level during that time period. The following noise standards should be applied to the exterior noise levels provided in Table 3.10-6:

1. **Standard No. 1** shall be the exterior noise level which may not be exceeded for a cumulative period of more than 30 minutes in any hour. Standard No. 1 shall be the applicable noise level from Table 3.10-6; or, if the ambient L_{50} exceeds the forgoing level, then the ambient L_{50} becomes the exterior noise level for Standard No. 1.

2. **Standard No. 2** shall be the exterior noise level which may not be exceeded for a cumulative period of more than 15 minutes in any hour. Standard No. 2 shall be the applicable noise level from Table 3.10-6 plus 5 dB(A); or, if the ambient L_{25} exceeds the forgoing level, then the ambient L_{25} becomes the exterior noise level for Standard No. 2.

3. **Standard No. 3** shall be the exterior noise level which may not be exceeded for a cumulative period of more than 5 minutes in any hour. Standard No. 3 shall be the applicable noise level from Table 3.10-6 plus 20 dB(A); or, if the ambient $L_{8.3}$ exceeds the forgoing level, then the ambient $L_{8.3}$ becomes the exterior noise level for Standard No. 3.

4. **Standard No. 4** shall be the exterior noise level which may not be exceeded for a cumulative period of more than 1 minute in any hour. Standard No. 4 shall be the applicable noise level from Table 3.10-6 plus 15 dB(A); or, if the ambient $L_{1.7}$ exceeds the forgoing level, then the ambient $L_{1.7}$ becomes the exterior noise level for Standard No. 4.

5. **Standard No. 5** shall be the exterior noise level which may not be exceeded for any period of time. Standard No. 5 shall be the applicable noise level from Table 3.10-7 plus 20 dB(A); or, if the ambient L_0 exceeds the forgoing level, then the ambient L_0 becomes the exterior noise level for Standard No. 5.

With respect to construction noise in the County, Section 12.08.440 of the Noise Ordinance prohibits the operation of any tools or equipment used between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays, that will create a noise disturbance across a residential or commercial real property line. (The Noise Ordinance includes no restrictions for Saturdays). Section 12.08.230 defines “noise disturbance” as an alleged intrusive noise, which violates an applicable noise standard as set forth in Municipal Code Chapter 12.08, Noise Control. The only exceptions would be emergency work of public service utilities or by variance issued by the health officer. Additionally, both the working hours and maximum levels of equipment and activity noise that are allowable from both mobile and stationary construction equipment in the County are defined by land use and shown in Table 3.10-7, *County of Los Angeles Construction Noise Standards*.

County of Los Angeles Groundborne Vibration Regulation

With respect to vibration, the County Noise Ordinance identifies a presumed perception threshold of 0.01 in/sec over the range of 1 to 100 Hz. Section 12.08.560 of the County Noise Ordinance prohibits the operation of any device that creates vibration above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property, or at 150 feet (46 meters) from the source if on a public space or public right-of-way.

TABLE 3.10-7
COUNTY OF LOS ANGELES CONSTRUCTION NOISE STANDARDS

	Residential Structures					
	Single-Family		Multi-Family		Semi-Residential/Commercial	
Allowable Work Dates & Hours	Mobile Equipment[a]	Stationary Equipment[b]	Mobile Equipment[a]	Stationary Equipment[b]	Mobile Equipment[a]	Stationary Equipment[b]
Daily 7:00 a.m. to 8:00 p.m.[c]	75 dBA	60 dBA	80 dBA	65 dBA	85 dBA	70 dBA
Daily 8:00 p.m. to 7:00 a.m.[d]	60 dBA	50 dBA	64 dBA	55 dBA	70 dBA	60 dBA
	Business Structures					
Daily[d]	85 dBA					

NOTES:
[a] Represents maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days).
[b] Represent maximum noise level for repetitively scheduled and relatively long-term operation (periods of 10 days or more).
[c] Exception for Sundays and legal holidays.
[d] Includes all day Sunday and legal holidays.

SOURCE: County of Los Angeles Ordinance No. 11743, Section 12.08.440.

City of Los Angeles General Plan Noise Element

The Noise Element of the City of Los Angeles General Plan is intended to identify sources of noise and provide objectives and policies that ensure that noise from various sources does not create an unacceptable noise environment. Overall, the City's Noise Element describes the noise environment (including noise sources) in the City, addresses noise mitigation regulations, strategies, and programs as well as delineating Federal, state, and City jurisdiction relative to rail, automotive, aircraft, and nuisance noise.

The City's noise standards are correlated with land use zoning classifications in order to maintain identified ambient noise levels and to limit, mitigate, or eliminate intrusive noise that exceeds the ambient noise levels within a specified zone. The City has adopted local guidelines based, in part, on the community noise compatibility guidelines established by the DHS for use in assessing the compatibility of various land use types with a range of noise levels. The City's noise/land use compatibility guidelines for land uses are shown in Table 3.10-8, *City of Los Angeles Guidelines for Noise Compatible Land Use*.

City of Los Angeles Municipal Code

The City's comprehensive Noise Ordinance, found in Chapter XI of the City of Los Angeles Municipal Code (LAMC), sets forth sound measurement and criteria, minimum ambient noise levels for different land use zoning classifications, sound emission levels for specific uses, hours of operation for certain uses, standards for determining when noise is deemed to be a disturbance, and legal remedies for violations. Key provisions of Chapter XI of the LAMC are discussed below.

TABLE 3.10-8
CITY OF LOS ANGELES GUIDELINES FOR NOISE COMPATIBLE LAND USE

Land Use Category	Day-Night Average Exterior Sound Level (CNEL dBA)						
	50	55	60	65	70	75	80
Residential Single Family, Duplex, Mobile Home	A	C	C	C	N	U	U
Residential Multi-Family	A	A	C	C	N	U	U
Transient Lodging, Motels, Hotels	A	A	C	C	N	U	U
School, Library, Church, Hospital, Nursing Home	A	A	C	C	N	N	U
Auditorium, Concert Hall, Amphitheater	C	C	C	C/N	U	U	U
Sports Arena, Outdoor Spectator Sports	C	C	C	C	C/U	U	U
Playground, Neighborhood Park	A	A	A	A/N	N	N/U	U
Golf Course, Riding Stable, Water Recreation, Cemetery	A	A	A	A	N	A/N	U
Office Building, Business Commercial, and Professional	A	A	A	A/C	C	C/N	N
Agriculture, Industrial, Manufacturing, Utilities	A	A	A	A	A/C	C/N	N

NOTES:

A = Normally acceptable: Specified land use is satisfactory, based upon assumption buildings involved are conventional construction, without any special noise insulation.

C = Conditionally acceptable: New construction or development only after a detailed analysis of noise mitigation is made and needed noise insulation features are included in project design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning normally will suffice.

N = Normally unacceptable: New construction or development generally should be discouraged. A detailed analysis of noise reduction requirements must be made and noise insulation features included in the design of a project.

U = Clearly unacceptable: New construction or development generally should not be undertaken.

SOURCE: City of Los Angeles 1999.

Section 41.40 of the LAMC prohibits construction activity and repair work where the use of any power tool, device, or equipment would disturb persons occupying sleeping quarters in any dwelling, hotel, apartment, or other place of residence between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, between 6 p.m. and 8 a.m. on Saturdays or national holidays, and at any time on Sundays. Construction hours may be extended with approval from the Executive Director of the Board of Police Commissioners.

Section 112.05 of the LAMC prohibits the operation of any powered equipment or powered hand tool that produces a maximum noise level exceeding the following noise limits at a distance of 50 feet from the source of the noise between the hours of 7:00 a.m. and 10:00 p.m. when the source is located within 500 feet of a residential zone:

a) 75 dB(A) for construction, industrial, and agricultural machinery including crawler-tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, motor graders, paving machines, off-highway trucks, ditchers, trenchers, compactors, scrapers, wagons, pavement breakers, compressors and pneumatic or other powered equipment;

b) 75 dB(A) for powered equipment of 20 horsepower or less intended for infrequent use in residential areas, including chain saws, log chippers and powered hand tools; or

c) 65 dB(A) for powered equipment intended for repetitive use in residential areas, including lawn mowers, backpack blowers, small lawn and garden tools and riding tractors.

Of the noise level limits presented above, the limit listed under Item (a) would be applicable to the Project's restoration-related construction activities. However, none of the noise limitations identified above would apply where compliance is deemed to be technically infeasible, which means that the noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers, and/or other noise reduction device or techniques during the operation of the equipment. The aforementioned limitations apply only to uses in residential zones or within 500 feet thereof; this Project is within 500 feet of a residential zone.

In accordance with the LAMC, a noise level increase of 5 dBA over the existing average ambient noise level at an adjacent property line is considered a noise violation. The applicable provision of this standard relative to the Project is associated with on-road motor vehicles driven on-site as defined in LAMC Section 114.02. These standards apply regardless of the off-site land use.

As indicated in Section 111.03 of the LAMC, the existing ambient noise level is either the actual measured ambient noise level or the City's presumed ambient noise level, whichever is greater. Where the ambient noise level is established by an actual measurement, the measurement must be averaged over a period of at least 15 minutes. See Table 3.10-2, *Summary of Short-term Noise Measurements*, for the actual 15-minute noise measurements collected for the Project. In areas where measurements have not been collected and the actual ambient conditions are not known, the City's presumed daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) ambient noise levels defined in Section 111.03 of the LAMC should be used. The City's presumed ambient noise levels for specific land use zones are shown in Table 3.10-9, *City of Los Angeles Presumed Ambient Noise Levels*.

TABLE 3.10-9
CITY OF LOS ANGELES PRESUMED AMBIENT NOISE LEVELS

Zone	Daytime (7:00 a.m. to 10:00 p.m.) dBA L_{eq}	Nighttime (10:00 p.m. to 7:00 a.m.) dBA L_{eq}
Residential, School, Hospitals, Hotels	50	40
Commercial	60	55
Manufacturing (M1, MR1, and MR2)	60	55
Heavy Manufacturing (M2 and M3)	65	65

SOURCE: City of Los Angeles Municipal Code, Section 111.03.

Furthermore, Section 111.02 of the LAMC states that under conditions where noise alleged to be offending occurs for less than 15 minutes in any 1-hour period between the hours of 7:00 a.m. and 10:00 p.m. of any day, a five dBA allowance should be provided to the noise source (i.e., a value of -5 dBA would be added to the sound level of the offending noise source). However, under conditions where the offending noise source generates repeated impulsive noise levels, a 5 dBA penalty should be accounted for in the noise levels (i.e., a value of +5 dBA would be added to the sound level of the offending noise source).

3.10.4 Thresholds of Significance

In this analysis, the Corps has elected to evaluate the context and intensity of potential environmental consequences relative to the criteria identified in CEQA Guidelines Appendix G, Section XII.

For purposes of this analysis, Alternative 1, 2, 3, or 4 would have a significant impact related to Noise if it would result in:

NOI-1 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;

NOI-2 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;

NOI-3 A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

NOI-4 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;

NOI-5 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; or

NOI-6 For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

3.10.4.1 Noise Criteria

As discussed previously, no Federal or state noise standards apply to the Project site. Therefore, since the Project site is located within unincorporated Los Angeles County and the City of Los Angeles, this analysis evaluates the potential noise impacts resulting from implementation of the Project in terms of exceeding an applicable standard established in the local general plan or noise ordinance (i.e., Appendix G threshold [a], above) based on whether the applicable County of Los Angeles or City of Los Angeles noise standards would be exceeded within the respective jurisdictions. See Section 3.10.3.3, *Applicable Laws, Regulations, Plans, and Standards,* regarding these local standards.

For purposes of analyzing potential impacts relating to thresholds NOI-3 and NOI-4, a “substantial” noise increase is defined as an increase in noise to a level that causes interference with land use activities at nearby sensitive receptors. The FTA has identified a daytime hourly L_{eq} level of 90 dBA as a noise level where adverse community reaction could occur from construction equipment-related noise levels (FTA 2006). As such, for the purpose of this analysis, this noise level is used here to assess whether the Project’s daytime on-site restoration-related noise levels would cause a substantial temporary or periodic increase in ambient noise levels at sensitive receptor locations surrounding the Project site.

With respect to temporary or periodic noise impacts associated with restoration-related off-site truck hauling noise as well as impacts associated with a permanent increase in ambient noise levels resulting from Project implementation, which would result from the increased traffic volumes on the local roadways due to implementation of the Project, it should be noted that in general the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. As discussed previously, in an outdoor environment, the average healthy ear can barely perceive a noise level change of 3 dBA. A change from 3 to 5 dBA may be noticed by some individuals who are sensitive to changes in noise. A 5 dBA increase is considered to be readily noticeable, while the human ear perceives a 10 dBA increase as a doubling of sound. Thus, because a change of 3 dBA is considered as a barely audible change and a change of 5 dBA in an exterior environment is considered to be readily perceptible, for the purpose of this analysis, an increase of 5 dBA or greater in the short-term or long-term noise exposure of sensitive receptors due to traffic is considered a substantial change. This threshold is applicable where ambient traffic noise levels are above normally acceptable land use compatibility levels as identified by the City of Los Angeles, which are 55 dBA or greater in single family residential areas, and 60 dBA or greater in residential multi-family areas.

3.10.4.2 Vibration Criteria

To assess potential vibration and associated groundborne noise impacts resulting from the Project, this analysis relies on the methodology recommended by the FTA. Thus, in terms of construction-related vibration impacts on buildings, the adopted guidelines/recommendations by the FTA to limit groundborne vibration based on the age and/or condition of the structures that are located in proximity to construction activity are used to evaluate potential groundborne vibration impacts associated with the proposed restoration activities. Based on the FTA criteria, such impacts would be considered significant if any of the following were to occur:

1. Project activities would cause a PPV groundborne vibration level to exceed 0.5 in/sec at a reinforced concrete, steel, or timber building;
2. Project activities would cause a PPV groundborne vibration level to exceed 0.3 in/sec at any engineered concrete and masonry building;
3. Project activities would cause a PPV groundborne vibration level to exceed 0.2 in/sec at any non-engineered timber and masonry buildings; or
4. Project activities would cause a PPV ground-borne vibration level to exceed 0.12 in/sec at any buildings “extremely susceptible to vibration damage” (i.e., a historical building).

In terms of vibration and groundborne noise impacts associated with human annoyance, as described previously, Section 12.08.560 of the County Noise Ordinance prohibits the operation of any device that creates vibration above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property, or at 150 feet (46 meters) from the source if on a public space or public right-of-way. The County Noise Ordinance identifies a presumed perception threshold of 0.01 in/sec over the range of 1 to 100 Hz. The Project’s potential vibration and associated groundborne noise impacts associated with on-site activities have been evaluated relative to the County’s vibration perception threshold at sensitive receptor locations near the Project work areas. In addition, off-site haul truck-related vibration impacts along public roadways are evaluated relative to the County’s vibration perception threshold at 150 feet.

3.10.5 Methodology

As the primary components of the Project consist of restoring wetlands and wetland functions within the Ballona Reserve, maintaining existing levels of flood protection for areas around the Ballona Reserve, and restoring and improving public access to the Ballona Reserve, the primary source of noise associated with the Project would be restoration activities at the Project site. Once restoration has been completed, limited stationary sources of noise (e.g., mechanical equipment associated with O&M activities in types and durations substantially similar to those that occur under the conditions described in Section 3.10.2, Affected Environment) would operate within the Project site. The relocated gas wells within the SoCalGas Property, once installed, would not generate perceptible noise at the property boundary. Secondary sources of noise would include Project-related traffic associated with visitors to the site. Thus, the increase in noise levels generated by the Project's restoration activities and Project-related traffic following restoration have been quantitatively estimated and compared to the applicable noise standards and thresholds of significance.

Aside from noise levels, groundborne vibration also would be generated during the Project's restoration activities by various off-road (e.g., graders, loaders, drill rigs, backhoes) and on-road (e.g., haul trucks) equipment. Thus, the groundborne vibration levels generated by these sources also have been quantitatively estimated and compared to applicable thresholds of significance.

3.10.5.1 On-site Restoration Activity Noise Levels

The implementation of Alternative 1 would occur in two phases consisting of multiple sequences beginning in early 2017.[113] The sequences would be grouped into two primary construction periods, with the first (a 5-year period) beginning as soon as 2017 and the second (a 3-year period) beginning in 2023. No mechanized activities would occur between the two restoration periods (estimated to be between 2022and 2023) to facilitate habitat restoration and plant establishment within the Ballona Reserve. Alternatives 2 and 3 each would be implemented in a single phase consisting of multiple sequences over the course of 60 months. Current O&M activities within the Ballona Reserve, including the ongoing operation and maintenance of LACDA project facilities,[114] would continue to occur in accordance with the OMRR&R and the O&M agreement between CDFW and LACFCD.

Restoration noise levels were estimated using the FHWA's Roadway Construction Noise Model (RCNM) and construction equipment information provided by PSOMAS, the Project Engineer, and provided in Appendix B4. Potential noise levels were identified for the nearest sensitive receptors located off-site based on their respective distances from the Project site. Over the course of the Project's implementation period, there would be numerous activities performed in different portions of the Project site by various construction equipment mixes. Noise at any specific off-site receptor would be dominated by the closest and loudest equipment. For the purposes of this analysis, the construction equipment mixes for different activities operating

[113] The proposed construction start date may be adjusted in the Final EIS/EIR.
[114] The existing LACDA project structures and facilities are continuously maintained in such a manner and operated at such times and for such periods as necessary to obtain the maximum flood protection benefits (33 CFR §208.10). See Appendix B5 for additional details.

closest to each identified off-site receptor were assessed to obtain a range of noise levels that would be experienced by the receptors. To present a conservative impact analysis, the estimated noise levels for each construction equipment mix were calculated for a scenario in which five representative pieces of construction equipment from each mix were assumed to be operating simultaneously and located at the same work area nearest to the affected receptors.[115] These assumptions are considered conservative because construction activities and equipment typically would be spread throughout the active work area within the Project site and could be located further away from the affected receptors. Nonetheless, although it is highly unlikely that five pieces of construction equipment from the various equipment mixes, or five pieces in general, would be operating simultaneously at the same construction location nearest to the affected receptors, for the purpose of presenting a conservative analysis this assumption is used in the analysis. As part of the available options for transporting excess soil from the Project site for disposal, barges could be used during the Project's restoration activities. However, as indicated by PSOMAS, these barges would only require the use of a single tugboat to tow the soil loads off-site. While noise levels would be generated by the single tugboat, the highest levels experienced by the off-site receptors during the Project's renovation activities would still be captured under the worst-case scenario discussed above, where a total of five pieces of construction equipment operating simultaneously at the same location is analyzed.

Upon determining the estimated noise levels at the affected receptors from the simultaneous operation of five pieces of construction equipment, the noise levels were then analyzed against the applicable construction noise standards established in the County's Noise Ordinance and the LAMC to determine whether an exceedance of allowable noise levels would occur. In addition, the calculated construction noise levels at the off-site, noise-sensitive locations were evaluated against the FTA's recommended threshold criteria for construction-related noise levels to determine whether impacts associated with a substantial increase in ambient noise levels would occur.

3.10.5.2 Off-site Roadway Noise Levels

Project-related off-site haul truck noise impacts were analyzed using the FHWA-RD-77-108 model acoustic algorithms, which calculate the average noise level at specific locations based on traffic volumes, vehicle type mix, average speeds, and site environmental conditions. For this analysis, the maximum daily haul truck trips that could occur during the proposed restoration are assessed. Restoration-related off-site truck volumes were obtained from the Project's traffic report (Raju Associates 2015; Appendix H). Noise impacts were determined by comparing the predicted traffic noise levels with that of the existing (baseline) ambient traffic noise levels along the Project's haul route.

With respect to post-restoration activities, roadway noise levels were calculated for selected study roadway segments near the Project site based on information provided in the traffic report for the Project (Appendix H). The roadway segments selected for analysis are expected to be most directly impacted by Project-related traffic because they are nearest to the Project site and

[115] To provide a representative sample of restoration-phase noise levels, five pieces of construction equipment that are different in type were selected from each construction equipment mix for the analysis. Where a construction equipment mix had more than five different types of equipment, the equipment that generated higher noise levels were chosen to be amongst the group of the five pieces of equipment.

are also adjacent to noise-sensitive receptors. The noise levels were calculated using the FHWA-RD-77-108 model acoustic algorithms and post-restoration-related traffic volumes obtained from the Project's traffic report.

3.10.5.3 Groundborne Vibration Levels

Groundborne vibration levels resulting from restoration activities at the Project site were estimated using data published by the FTA in its *Transit Noise and Vibration Impact Assessment* document (FTA 2006). Potential vibration levels are identified for off-site locations that are sensitive to vibration (i.e., residences) based on their distance from the proposed activities.

3.10.6 Direct and Indirect Impacts

3.10.6.1 Alternative 1: Full Tidal Restoration/Proposed Action

Under Alternative 1, a reconfigured Ballona Creek channel would meander closer to the boat slips located north of Area A of the Project site where people could reside on board the boats; new water control structures (e.g., culverts and tide gates) would be installed and maintained closer to residences; and perimeter levees and flood berms would be built and maintained (see Figure 2-41, *Alternative 1, Phase 1: Operations and Maintenance*; see also Figure 2-42, *Alternative 1, Phase 2: Operations and Maintenance*). Operation and maintenance activities would include: continuation (unchanged) of existing trash removal efforts at the existing trash boom system (or trash net) between the Culver Boulevard and Lincoln Boulevard bridges; regular visual inspections of culverts and other water control structures in their new locations; replacement of tide gates on the existing schedule (i.e., every approximately 10 years); sediment removal from the realigned Ballona Creek channel and sediment basins (once every 50 years for the life of the Project); sediment removal from the connector channels between the water control structures and the Ballona Creek channel (potentially during the first 10 years post-construction); and maintenance and repair of levees, access roads, fences, paths, and other public access amenities (as needed) (Appendix B5, Preliminary Operations and Maintenance Plan). Berms would be constructed along lower perimeter elevations of South and Southeast Area B and tied into areas of high ground to maintain the existing level of flood risk protection (e.g., around the SoCalGas facility and along Culver Boulevard and Jefferson Boulevard). Maintenance of the berms would be focused on erosion protection primarily via the establishment and maintenance of vegetation.

1-NOI-1: Alternative 1 would, unless mitigated, result in noise levels that are in excess of standards established by the County of Los Angeles or City of Los Angeles. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Direct noise-related impacts would occur as a result of on-site restoration activities. Restoration-related construction at the Project site under Alternative 1 would be implemented in two phases (i.e., Phase 1 and Phase 2), with various activities sequenced within each phase (see Table 2-6, *Alternative 1 Restoration Sequence Stages*). Use of heavy equipment would be required during the site preparation, restoration-related grading and excavation, utility relocation, and levee deconstruction and construction activities at the Project site. Alternative 1's restoration-related activities also would involve the use of smaller power tools, generators, and other sources of noise. During each restoration sequence stage, there would be a different mix of equipment. As such, noise levels at and near the Project site would fluctuate depending on the particular type, number, and duration of use of the various pieces of equipment. A detailed depiction of the individual pieces of equipment that would be used during the various stages is provided in Appendix B4.

Based on the equipment information provided by PSOMAS and provided in Appendix B4, a total of 15 different construction equipment mixes, which are identified by separate equipment reference numbers, would be deployed at the Project site to perform the restoration activities associated with the various construction sequence stages. Some of the construction equipment mixes include more than 20 pieces of heavy-duty equipment, such as dump trucks, generators, front end loaders, backhoes, cranes, drill rigs, man lifts, and graders. For the purpose of conducting a conservative analysis, the estimated noise levels for each construction equipment mix were calculated for a scenario in which five representative pieces of construction equipment in that mix were assumed to be operating simultaneously at the same location nearest to the affected receptors. This is a highly conservative assumption, as construction activities and equipment typically would be spread throughout the active work area within the Project site and be located further away from the affected receptors. Additionally, while the estimated noise levels at each off-site receptor location would be the loudest when noise-generating activities are occurring at an area within the Project site that is nearest to the off-site location, the majority of the time noise levels at these off-site locations would be reduced as activities conclude or move to another more distant location of the Project site. Furthermore, not all noise-sensitive receptors (i.e., residents) at the identified off-site receptor locations would be affected by the same magnitude of noise levels from Alternative 1's restoration activities, as residential units situated further back from the property line within the same residential building would be afforded a level of noise attenuation from the units that directly face the Project site.

Table 3.10-10, *Construction Equipment Mix Noise Emission Levels*, shows the estimated average (L_{eq}) noise levels associated with the simultaneous operation of the five representative pieces of equipment from each construction equipment mix at a distance of 50 feet.

During Project implementation, the nearest off-site sensitive receptors that would be exposed to increased noise levels would be the existing single-family and multi-family residential and transient lodging (i.e., boat slips and hotel) uses located around the Project site that are identified in the discussion of Sensitive Receptors in Section 3.10.2.2.

Due to the proximity of these off-site sensitive uses to the Project site, Alternative 1's restoration activities would expose these sensitive receptors to increased noise levels. Over the course of a work day, the highest noise levels would be generated when multiple pieces of construction equipment are being operated concurrently.

For this analysis, the noise levels generated by the different equipment mixes shown in Table 3.10-10, *Construction Equipment Mix Noise Emission Levels*, were used to estimate the resulting noise level exposure at the off-site sensitive receptors based on the location of the various construction sequence stages that would occur throughout the Project site. Although a total of 36 construction sequences would occur under Alternative 1, with each sequence employing the use of one or more of the 15 identified equipment mixes, only those sequences occurring in proximity to each of the identified off-site sensitive receptor locations are selected for analysis as these sequences would generate the loudest noise levels at the sensitive receptor. Table 3.10-11, *Estimated Construction Noise Levels at Off-Site Sensitive Uses – Alternative 1*, shows the estimated noise levels that would occur at the nearest off-site sensitive uses over the course of the various construction sequence stages under Alternative 1.

TABLE 3.10-10
CONSTRUCTION EQUIPMENT MIX NOISE EMISSION LEVELS

Equipment Mix Reference Number[a]	Noise Level at 50 Feet (dBA, L_{eq})[b]
1	84.1
2	84.1
3	81.7
4	83.4
5	82.2
6	82.1
7	83.7
8	83.9
9	81.7
10	84.1
11	83.4
12	84.1
13	86.2
14	79.5
15	80.7

NOTES:
[a] Refer to Appendix B4 for the entire inventory of construction equipment associated with each equipment mix reference number.
[b] Represents the composite noise level resulting from the concurrent operation of five representative pieces of construction equipment associated with each equipment mix reference number.

SOURCE: ESA 2015. Calculation data and results provided in Appendix G.

As shown in Table 3.10-11, the nearest off-site sensitive receptors surrounding the Project site would experience a range of noise levels during restoration-phase activities. The different construction sequence stages depicted in Table 3.10-11 only would occur for limited periods of Alternative 1 implementation schedule (5 to 225 days with most activities being 50 days or less, see Appendix B4, *Construction Equipment and Sequencing*), and would not occur continuously throughout the entire restoration period. Additionally, as discussed previously, the estimation of Alternative 1's restoration-related noise levels are conservative as it is assumed that five pieces of construction equipment associated with each equipment mix would be operating simultaneously at the same location. In practice, the operation of each piece of equipment at an active work area within the Project site would not be constant throughout the day, as equipment would be turned off when not in use. Most of the time over a work day, the equipment would be operating at different locations within the active work area and would not be operating concurrently. While the estimated noise levels at each off-site receptor location would be the loudest when the proposed activities are occurring at an area within the Project site that is nearest to the off-site location, the majority of the time noise levels at these off-site locations would be reduced as noise-generating activities conclude or move to another more distant location of the Project site.

TABLE 3.10-11
ESTIMATED CONSTRUCTION NOISE LEVELS AT OFF-SITE SENSITIVE USES – ALTERNATIVE 1

Off-site Sensitive Land Uses	Jurisdiction	Construction Phase[a]	Construction Sequence[b]	Project Restoration Area	Construction Equipment Reference Number[c]	Approximate Distance to Project site (ft.)[d]	Estimated Construction Noise Levels (dBA L_{eq})[e]
Multi-family residential uses located north of North Area C of the Project site, east of Lincoln Boulevard	City	1	5	A & C	9	985	55.8
		1	6	A	10	460	64.8
		1	7	A	11	460	64.1
		1	8	A	12	460	64.8
		1	15	C	11	50	84.1
		1	16	A & C	11	50	83.4
		1	17	C	13	1,005	60.1
		1	23	A & B	7	460	64.4
Boat slips located north of Area A of the Project site, beyond Fiji Way	County	1	6	A	10	360	67.0
		1	7	A	11	360	66.3.
		1	8	A	12	360	67.0
		1	16	A & C	11	360	66.3
		1	23	A & B	7	360	66.6
		1	23	A & B	2	360	67.0
		1	23	A & B	3	360	64.6
		2	25	A	6	1,105	55.2
		2	25	A	4	1,105	56.5
		2	26	A	1	1,105	57.2
		2	27	A	11	1,105	56.5
		2	28	A	1	1,105	57.2
Boat slips located west of Area A of the Project site, beyond Fiji Way	County	1	6	A	10	425	65.5
		1	7	A	11	425	64.8
		1	8	A	12	425	65.5
		1	16	A & C	11	425	64.8
		1	23	A & B	7	425	65.1
		1	23	A & B	2	322	67.9
		1	23	A & B	3	322	65.5
		2	25	A	6	230	68.8

TABLE 3.10-11 (Continued)
ESTIMATED CONSTRUCTION NOISE LEVELS AT OFF-SITE SENSITIVE USES – ALTERNATIVE 1

Off-site Sensitive Land Uses	Jurisdiction	Construction Phase[a]	Construction Sequence[b]	Project Restoration Area	Construction Equipment Reference Number[c]	Approximate Distance to Project site (ft.)[d]	Estimated Construction Noise Levels (dBA L_{eq})
Boat slips located west of Area A of the Project site, beyond Fiji Way (cont.)		2	25	A	4	230	70.1
		2	26	A	1	400	66.0
		2	27	A	11	400	65.3
		2	28	A	1	400	66.0
Multi-family residential uses located west of Area A of the Project site and north of Ballona Creek	County	1	3	A	4	250	69.4
		1	6	A	10	55	83.3
		1	7	A	11	55	82.6
		1	8	A	12	55	83.3
		1	9	B	6	1,314	53.7
		1	9	B	4	265	68.9
		1	16	A & B	11	55	82.6
		1	23	A & B	7	55	82.9
		1	23	A & B	2	1,330	55.6
		2	23	A & B	3	1,330	53.2
		2	25	A	5	395	64.2
		2	25	A	6	106	75.6
		2	25	A	4	106	76.9
		2	26	A	1	395	66.1
		2	27	A	11	395	65.4
		2	28	A	1	395	66.1
		2	29	B	6	882	57.2
		2	29	B	4	1,500	53.9
		2	30	B	1	882	59.2
		2	31	B	1	882	59.2
		2	32	B	10	400	66.0
		2	34	B	11	40	85.3

TABLE 3.10-11 (Continued)
ESTIMATED CONSTRUCTION NOISE LEVELS AT OFF-SITE SENSITIVE USES – ALTERNATIVE 1

Off-site Sensitive Land Uses	Jurisdiction	Construction Phase[a]	Construction Sequence[b]	Project Restoration Area	Construction Equipment Reference Number[c]	Approximate Distance to Project site (ft.)[d]	Estimated Construction Noise Levels (dBA L_{eq})
Multi-family residential uses located west of West Area B of the Project site, fronting Vista Del Mar	City	1	22	B	7	58	82.4
		1	22	B	7	58	82.4
		2	29	B	6	305	66.4
		2	30	B	1	305	68.4
		2	31	B	1	305	68.4
		2	32	B	10	438	65.2
		2	33	B	12	438	65.2
		2	34	B	11	367	66.1
		2	35	B	7	438	64.8
Multi-family residential, park, and hotel uses located along Culver Boulevard and directly south of West Area B of the Project site	City	1	22	B	7	35	86.8
		1	22	B	7	175	72.8
		2	29	B	6	445	63.1
		2	30	B	4	445	64.4
		2	31	B	1	445	65.1
		2	32	B	10	185	72.7
		2	33	B	12	308	68.3
		2	34	B	11	1,535	53.7
		2	35	B	7	308	67.9
Single-family residences located south of West Area B and South Area B of the Project site and south of Culver Boulevard	City	1	1	B	4	723	60.2
		2	29	B	5	430	63.5
		2	29	B	6	950	56.5
		2	30	B	1	950	58.5
		2	31	B	1	950	58.5
		2	33	B	12	785	60.2
		2	34	B	11	2,048	51.2
		2	35	B	7	785	59.8

TABLE 3.10-11 (Continued)
ESTIMATED CONSTRUCTION NOISE LEVELS AT OFF-SITE SENSITIVE USES – ALTERNATIVE 1

Off-site Sensitive Land Uses	Jurisdiction	Construction Phase[a]	Construction Sequence[b]	Project Restoration Area	Construction Equipment Reference Number[c]	Approximate Distance to Project site (ft.)[d]	Estimated Construction Noise Levels (dBA L_{eq})
Single-family residences located along Cabora Drive and south of South Area B and Southeast Area B of the Project site	City	1	2	B	1	656	61.7
Multi-family residential uses located east of Southeast Area B, across Lincoln Boulevard and south of Jefferson Boulevard	City	1	12	B	12	1,092	57.3
		1	13	B	1	475	64.5
		1	14	B	11	475	63.8
		1	18	B	1	435	65.3
		2	31	B	1	1,360	55.4
Multi-family residential uses located east of East Area B, across Lincoln Boulevard between Ballona Creek and Jefferson Blvd.	City	1	4	A & B	8	650	61.6
		1	5	A & C	9	650	59.4
		1	13	B	1	200	72.1
		1	14	B	11	200	71.4
		1	15	C	10	380	66.5
		1	16	A & C	11	380	65.8
		1	17	C	13	380	68.6

NOTES:
[a] The implementation of Alternative 1 would occur in two phases, with Phase 1 beginning as soon as 2017 and Phase 2 beginning as soon as 2022. Using these timeframes, no mechanized activities would occur between 2022 and 2023 to facilitate habitat restoration and plant establishment within the Ballona Reserve. The proposed construction start dates may be adjusted in the Final EIS/EIR.
[b] See Appendix B4 for the description of the Project's construction sequences. Although a total of 36 construction sequences would occur during Project construction, only those sequences occurring nearest to each of the identified off-site sensitive receptor locations are selected for analysis as these sequences would generate the loudest noise levels at the receptor.
[c] See Appendix B4 for the individual pieces of construction equipment under each equipment reference number.
[d] The distance represents the approximate nearest construction area on the Project site where the construction sequence would occur to the property line of the off-site receptor.
[e] The estimated noise levels are for the concurrent operation of five representative pieces of construction equipment at the same location.

With respect to the off-site sensitive receptors located in the County, Section 12.08.440 of the County's Noise Ordinance stipulates that the operation of any tools or equipment that will violate an applicable noise standard across a residential or commercial real-property line is prohibited between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays. Additionally, the County has also defined both the working hours and maximum levels of construction equipment and activity noise that are allowable from both mobile and stationary equipment by land use (refer to Table 3.10-7, *County of Los Angeles Construction Noise Standards*). Alternative 1's restoration activities would utilize predominantly mobile equipment, with only two types of stationary equipment (i.e., generators and drill rigs) being used in some of the construction equipment mixes. Because operation of both these equipment types would be intermixed within the restoration areas within the Project site, it would not be appropriate to regulate each of these two equipment types separately by their respective noise standards. Since the majority of the equipment used at the Project site would be mobile equipment, which in turn would contribute most to the resulting noise levels generated at the site, the allowable maximum noise levels from equipment at receptors that are multi-family residential uses would be 80 dBA from 7:00 a.m. to 8:00 p.m. As shown in Table 3.10-11, *Estimated Construction Noise Levels at Off-Site Sensitive Uses – Alternative 1*, of the three identified off-site sensitive receptors located within the County, only the multi-family residential uses located west of Area A of the Project site and north of Ballona Creek would be exposed to noise levels that exceed 80 dBA at certain times throughout a work day.

With respect to the off-site sensitive receptors located in the City, Section 41.40 of the LAMC regulates noise from construction activities. Exterior construction activities that generate noise are prohibited between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, and between 6:00 p.m. and 8:00 a.m. on Saturdays or national holidays. Demolition and construction are prohibited on Sundays. In terms of construction noise, Section 112.05 of the LAMC limits the operation of powered equipment and powered hand tools to between the hours of 7:00 a.m. to 10:00 p.m., and prohibits the noise levels generated by construction machinery from exceeding 75 dBA at 50 feet from the noise source when located within 500 feet of a residential zone. However, according to Section 112.05 of the LAMC, the noise limitation of 75 dBA does not apply where compliance is technically infeasible, which means that the noise limitation cannot be complied with despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques. As shown in Table 3.10-10, *Construction Equipment Mix Noise Emission Levels*, the noise levels at 50 feet generated by each of the construction equipment mixes, many of which would be used under Alternative 1, would exceed 75 dBA.

As both the County's and the City's construction-related noise standards would be exceeded, this would be a significant impact. Mitigation Measures NOI-1-i through NOI-1-ix are recommended to ensure that all technically feasible measures would be used to reduce Alternative 1's noise levels during restoration. With implementation of these mitigation measures, in particular Mitigation Measure NOI-1-v, noise levels would be reduced to below local noise standards at the off-site sensitive receptors located within the County and the City's requirement that all technically feasible measures be used to reduce Alternative 1's construction equipment noise levels would be satisfied.

Mitigation Measures

Mitigation Measure NOI-1-i: The construction contractor(s) shall locate stationary noise sources as far as possible from noise-sensitive uses, to the extent feasible, and ensure that they are muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible.

Mitigation Measure NOI-1-ii: All mobile off-road construction equipment operating at the Project site shall be equipped with properly operating mufflers.

Mitigation Measure NOI-1-iii: Restoration-phase activities shall, to the extent feasible, be scheduled so as to avoid operating several pieces of heavy diesel-powered equipment simultaneously, which causes high noise levels.

Mitigation Measure NOI-1-iv: Temporary barriers such as plywood structures or flexible sound control curtains at least 8 feet in height shall be erected, to the extent feasible, around the perimeter of the active work area to minimize the amount of noise on the surrounding sensitive receptors during noise-generating restoration activities.

Mitigation Measure NOI-1-v: Project-related noise levels at the property line of the multi-family residential buildings located west of Area A and north of West Area B in the County of Los Angeles shall undergo spot check monitoring with a sound level meter that meets the requirements identified in Chapter 12.08 (Noise Control) of the County of Los Angeles Municipal Code to ensure that noise levels from the Project's implementation activities would not exceed 80 dBA at multi-family residences during active work hours. Where noise levels exceeding 80 dBA are detected, the construction contractor must be notified immediately and corrective actions must be implemented to reduce the noise levels to below 80 dBA. These corrective actions may include, but are not limited to, the erection of a noise barrier along the boundary of the Project site or the reduction in the amount of construction equipment operating concurrently to meet the County's noise standards for mobile equipment.

Mitigation Measure NOI-1-vi: All construction staging areas during site restoration activities shall be located to maximize the distance between staging areas and occupied residential structures.

Mitigation Measure NOI-1-vii: Two weeks prior to the commencement of restoration activities within Area A; North, East, Southeast, South, or West Area B; North or South Area C; or the SoCalGas Property, notification must be provided to all existing off-site residential uses located directly adjacent to the active work area that discloses the general work schedule, including the various types of activities and equipment that would be occurring throughout the duration of the construction period.

Mitigation Measure NOI-1-viii: Signs shall be posted at the Project site that include permitted work days and hours, a contact number for the job site, and a contact number with the appropriate CDFW enforcement officers.

Mitigation Measure NOI-1-ix: All project noise-generating activities occurring in Area A shall be limited to the hours of 7:00 a.m. to 7:00 p.m. from Monday through Saturday and prohibited on Sundays or holidays as permitted under the County of Los Angeles Municipal Code, and all project noise-generating activities occurring in Areas B and C and on the SoCalGas Property shall be limited to the hours of 7:00 a.m. to 9:00 p.m. from Monday through Friday, 8:00 a.m. to 6 p.m. on any Saturday or national holiday, and prohibited on Sundays as permitted under the City of Los Angeles Municipal Code, unless otherwise authorized or exempted under each of the respective municipal codes.

Level of Significance after Mitigation

With mitigation incorporated, Impact 1-NOI-1 would be less than significant. In particular, Mitigation Measure NOI-1-v specifically would require noise monitoring to be conducted at the multi-family residential uses located west of Area A and north of West Area B in the County to ensure that Alternative 1's restoration activities would not exceed 80 dBA at the property line of the residential uses, in compliance with County of Los Angeles requirements. Additionally, because implementation of Mitigation Measures NOI-1-i through NOI-1-ix would reduce the noise levels within the City of Los Angeles associated with implementation of Alternative 1 to the maximum extent technically feasible, noise generated by activities associated with the implementation of Alternative 1 would comply with the noise regulations established in Section 112.05 of the LAMC.

Indirect Impacts

Indirect noise-related impacts would occur as a result of off-site vehicle travel (e.g., haul trucks) associated with restoration and post-restoration activities. Because no local noise standards directly apply to such sources of noise, the impacts of off-site vehicle travel are addressed under Impact 1-NOI-4.

1-NOI-2: Alternative 1 would, unless mitigated, result in vibration levels that exceed the County's 0.01 in/sec perception threshold at four locations, and so could result in vibration and associated groundborne noise-related human annoyance. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Restoration and post-restoration activities at the Project site under Alternative 1 could generate low levels of groundborne vibration associated with the operation of heavy equipment (e.g., graders, loaders, drill rigs, backhoes, haul trucks, etc.), which would generate vibrations that propagate though the ground (although the vibrations diminish in intensity with distance from the source).

No high-impact activities, such as pile driving or blasting, would occur within the Ballona Reserve, although natural gas storage wells would be relocated on the SoCalGas Property using equipment such as a drill rig (see Appendix B4, which identifies the equipment mix that would be used for the gas well relocations).

The various PPV vibration velocities for several types of equipment that can generate perceptible vibration levels are identified in Table 3.10-12, *Vibration Source Levels for Equipment*. These types of equipment would be used during restoration and also could be used during operation and maintenance (see Appendix B5, Preliminary Operation and Maintenance Plan, which identifies excavators, backhoes, cranes, trucks, grading rollers, and other equipment). As shown, vibration velocities could range from 0.003 to 0.089 in/sec PPV at 25 feet from the source of activity.

TABLE 3.10-12
VIBRATION SOURCE LEVELS FOR EQUIPMENT

Equipment	Approximate PPV (in/sec)				
	25 Feet	50 Feet	60 Feet	75 Feet	100 Feet
Large Bulldozer	0.089	0.031	0.024	0.017	0.011
Caisson Drilling	0.089	0.031	0.024	0.017	0.011
Loaded Trucks	0.076	0.027	0.020	0.015	0.010
Jackhammer	0.035	0.012	0.009	0.007	0.004
Small Bulldozer	0.003	0.001	0.0008	0.0006	0.0004

SOURCE: FTA, 2006.

The nearest off-site sensitive receptors to the Project site that could be exposed to vibration levels generated by Alternative 1 include the single- and multi-family residential uses and transient lodging uses (i.e., boat slips and hotel) that surround the Project site. Based on the nearest distances between these off-site sensitive receptors and their respective work areas identified in Table 3.10-11, *Estimated Restoration-Phase Noise Levels at Off-Site Sensitive Uses – Alternative 1*, the vibration levels were estimated for each receptor. For this analysis, it was assumed that vibration levels associated with a large bulldozer, which generates the highest vibration levels shown in Table 3.10-12, *Vibration Source Levels for Equipment*, would occur at the nearest edge of the work areas located closest to each of the off-site sensitive receptors. Table 3.10-13, *Groundborne Vibration Levels at Off-Site Sensitive Uses – Alternative 1*, shows the estimated restoration-related groundborne vibration levels that could occur at the nearest off-site receptors during the implementation of Alternative 1.

As shown in Table 3.10-13, *Groundborne Vibration Levels at Off-Site Sensitive Uses – Alternative 1*, the vibration velocities forecasted to occur at the off-site sensitive receptors would range from less than 0.001 in/sec PPV at the single-family residences located along Cabora Drive, south of South Area B and Southeast Area B, to 0.05 in/sec PPV at the multi-family residential, park, and hotel uses located along Culver Boulevard, directly south of West Area B. For this analysis, the identified off-site residential structures surrounding the Project site are considered to be “non-engineered timber and masonry buildings” based on FTA’s building categories as shown in Table 3.10-5, *Construction Vibration Damage Criteria*. Based on the information shown in Table 3.10-13, *Groundborne Vibration Levels at Off-Site Sensitive Uses – Alternative 1*, none of the nearby off-site structures surrounding the Project site would be exposed to a PPV groundborne vibration level that exceeds 0.2 in/sec during restoration activities. Thus, the vibration levels generated by such activities for Alternative 1 would not result in building damage at the nearby off-site structures. Building damage-related impacts would be less than significant.

TABLE 3.10-13
GROUNDBORNE VIBRATION LEVELS AT OFF-SITE SENSITIVE USES – ALTERNATIVE 1

Off-site Sensitive Land Use	Approximate Distance to Nearest Work Area (ft.)[a]	Estimated PPV (in/sec)
Multi-family residential uses located north of North Area C of the Project site, east of Lincoln Boulevard	50	0.031
Boat slips located north of Area A of the Project site, beyond Fiji Way	360	0.002
Boat slips located west of Area A of the Project site, beyond Fiji Way	230	0.003
Multi-family residential uses located west of Area A of the Project site and north of Ballona Creek	40	0.044
Multi-family residential uses located west of West Area B of the Project site, fronting Vista Del Mar	58	0.025
Multi-family residential, park, and hotel uses located along Culver Boulevard and directly south of West Area B of the Project site	35	0.054
Single-family residences located south of West Area B and South Area B of the Project site and south of Culver Boulevard	430	0.001
Single-family residences located along Cabora Drive and south of South Area B and Southeast Area B of the Project site	656	0.0006
Multi-family residential uses located east of Southeast Area B, across Lincoln Boulevard and south of Jefferson Boulevard	435	0.001
Multi-family residential uses located east of East Area B, across Lincoln Boulevard between Ballona Creek and Jefferson Blvd.	200	0.004

NOTES:
ft. = feet
in/sec = inches per second.

[a] The distances used in this analysis are the closest distances between the off-site sensitive receptors and the active work areas used in Table 3.10-12.

In terms of human annoyance, as shown in Table 3.10-13, *Groundborne Vibration Levels at Off-Site Sensitive Uses – Alternative 1*, the vibration levels would exceed the presumed perception threshold of 0.01 in/sec at four locations, including the multi-family residential uses located north of North Area C, west of Area A, west of West Area B, and south of West Area B.

Because vibration levels would exceed the presumed perception threshold at four identified locations, the human annoyance vibration impact would be significant. Mitigation Measure NOI-2 is recommended to prohibit the use of construction equipment that generates high levels of vibration (e.g., large bulldozers, loaded trucks, and drill rigs) within specified distances from existing off-site residential uses that are located nearby the Project site, and would ensure that the restoration-related vibration levels at these nearby receptors would be reduced to below the County's 0.01 in/sec perception threshold. While compliance with the County's 0.01 in/sec perception threshold would not be necessary from a regulatory standpoint for locations within the City, the requirements of Mitigation Measure NOI-2 also apply to the off-site receptors located within the City to ensure that no off-site receptors would be exposed to any annoyance associated with restoration activity vibration levels.

Mitigation Measure

Mitigation Measure NOI-2: The operation of construction equipment at the Project site that generates high levels of vibration, such as large bulldozers, loaded trucks, and drill rigs, shall be prohibited within 100 feet of existing residential structures in both the County of Los Angeles and City of Los Angeles during restoration activities. Instead, small rubber-tired bulldozers, which generate vibration levels as low as 0.003 in/sec at 25 feet, shall be used within these areas during site preparation, grading, and excavation operations to ensure that vibration levels experienced at the off-site receptors would not be perceptible.

Level of Significance after Mitigation

With mitigation incorporated, Impact 1-NOI-2 would be less than significant.

Indirect Impacts

Indirect vibration-related impacts associated with Alternative 1 would occur as a result of off-site vehicle travel (e.g., haul trucks) primarily associated with restoration activities, but also could occur in support of post-restoration, maintenance-related activities. As disclosed in Table 3.10-12, *Vibration Source Levels for Equipment*, loaded truck vibration levels would be approximately 0.076 in/sec at 25 feet and 0.010 in/sec at 100 feet. Off-site haul truck-related vibration impacts along public roadways are evaluated relative to the County's vibration perception threshold of 0.01 in/sec at 150 feet. At 150 feet, the loaded truck vibration levels would be approximately 0.005 in/sec, which would be less than the perception threshold. Therefore, Project-related off-site hauling would result in vibration and groundborne noise impacts that would be less than significant.

1-NOI-3: Alternative 1 would not result in a substantial permanent increase in ambient noise levels in the project vicinity from post-restoration activities. (Less than Significant Impact)

Direct Impacts

No new stationary, mechanical equipment that generates noise would be located within the Project site under Alternative 1. Once restoration activities have been completed, post-restoration activities at the Project site would include adjustments to and maintenance of water control structures; monitoring and as-needed maintenance of restored habitat and vegetation, levees, and Ballona Creek; and the continuation of the other O&M activities by CDFW and LACFCD that are described in Appendix B5. While the maintenance activities for the channel, levee, and water control structures may require the use of off-road construction equipment, the use of this equipment would only occur on an as-needed basis and the maintenance efforts are only anticipated to require a couple of pieces of heavy off-road equipment as opposed to the amount used for the proposed restoration activities. The type and nature of the O&M activities, including the types of equipment used to implement them, the "continuous" nature of O&M work for the LACDA project facilities, and the proposed intervals of scheduled maintenance activities for the

LACDA and non-LACDA project facilities would be substantially similar to the O&M work that presently occurs within the Ballona Reserve.

While the number of visitors to the Ballona Reserve is expected to increase as a result of Alternative 1, the noise levels associated with such use are not anticipated to result in a substantial increase to the ambient noise levels at the off-site sensitive uses surrounding the Project site. The new pedestrian and bicycle paths would be located far enough from off-site receptors such that any noise generated by pedestrians and bikers would not be audible (see Figure 2-23, *Alternative 1: Public Access Plan Detail*). The two areas where the pedestrian and bicycle paths would be located directly adjacent to off-site sensitive receptor locations would be at the multi-family residential uses located west of Area A and north of Ballona Creek, and at the multi-family residential uses located west of West Area B and directly south of Ballona Creek. However, a bicycle path currently is located next to the multi-family residential uses located west of Area A and north of Ballona Creek. As such, the new path would not be introducing a new noise source near this sensitive receptor location. Furthermore, the short-term daytime noise measurement conducted at this location (refer to location ST 3 in Table 3.10-2, *Summary of Short-term Noise Measurements*) captured the existing ambient noise levels while bikers were using the current bicycle path. As shown in Table 3.10-2, *Summary of Short-term Noise Measurements*, even with constant bikers riding by the location, the daytime noise level measured was only 51.2 dBA L_{eq}, which is the second lowest of 12 measurements located around the Project site. As such, the location of the new pedestrian and bicycle path adjacent to the multi-family residential uses located west of West Area B and directly south of Ballona Creek also is anticipated to result in similar daytime noise levels. In addition, the Ballona Reserve would only be open to the public from dawn to dusk following restoration, and noise would not be generated during nighttime hours. Overall, the recreational features offered by Alternative 1 would be compatible with wildlife-dependent uses and would not introduce noise sources into the Project area that would be a nuisance to the existing off-site sensitive receptors. (Potential noise-related impacts to wildlife are analyzed in Section 3.4, *Biological Resources*).

Furthermore, while a new three-story parking structure would be constructed along Fiji Way, this structure would be constructed over an existing surface parking lot at that location and would only add 39 new parking spaces for a total of 302 spaces. Given the existing uses, the additional parking spaces would not result in a substantial increase in noise at that location. Additionally, given that the new parking structure would be semi-enclosed, the noise levels generated within the new structure would be lower when compared to the existing open surface lot given the partial noise attenuation provided by the walls of the structure. Given the number of existing parking spaces and the nature of the existing parking lot, the additional parking spaces would not result in a substantial increase in noise at that location. Finally, the Project also would include upgrades to the existing West Culver Parking Lot. However, these planned upgrades would only serve to improve drainage and install sidewalks, and thus would not result in a change with respect to noise levels generated at that location. Thus, no substantial increase in noise at the West Culver Parking Lot would occur as a result of Alternative 1.

Furthermore, the hours of operation for public use of the parking facilities would be from sunrise to sunset, with the parking facilities locked after hours. This would limit the period of time during which noise could be generated in those locations and would preclude parking facility use during late evening hours. Overall, Alternative 1 would not be anticipated to result in a substantial permanent increase in the ambient noise levels at the off-site sensitive uses surrounding the Project site during the post-restoration phase. This impact would be less than significant.

Indirect Impacts

Post-Restoration Traffic Noise

With respect to off-site vehicle traffic following restoration, Alternative 1 is estimated to generate a total of 378 daily trips to and from the Project site (Appendix H) after restoration Phase 1 is complete. The increase in traffic resulting from implementation of Alternative 1 would increase the ambient noise levels at land uses fronting the roadways located near the Project site. Generally, in order for the traffic noise increase to be perceivable, there would need to be a 3 dBA CNEL or greater noise increase. In turn, a 3 dBA CNEL increase in ambient noise from traffic is typically achieved when the volume on any given roadway is doubled (Caltrans 2009). In comparing the existing peak hour traffic volumes in the project area against the traffic volume that would be introduced by Alternative 1, it was determined that Alternative 1 would not cause a doubling of traffic volumes on any existing roadways within the project area.

Nonetheless, roadway noise levels were forecasted to further demonstrate that the vehicular traffic that would be associated with Alternative 1 would not result in a substantial permanent increase in ambient noise levels. The FHWA-RD-77-108 model acoustic algorithms, which calculate the noise level for a particular reference set of input conditions, based on site-specific traffic volumes, vehicle type mix, distances, and vehicle speeds, was used to demonstrate that the increase in traffic activity associated with Alternative 1 would not result in a significant increase in traffic-related noise at various roadways in the study area (see Section 3.10.2.1, *Study Area*). Peak hour traffic volume data were used as model input. CNEL is approximately equal to peak hour L_{eq}; therefore the modeled noise levels represent both the peak hour L_{eq} as well as CNEL.

Alternative 1 would only increase local traffic noise levels identified in Table 3.10-4, *Modeled Existing Roadway Noise Levels*, by a maximum of 0.1 dBA CNEL at one roadway segment (i.e., Admiralty Way, north of Fiji Way; see Appendix G, *Noise Measurement Data and Calculations*, for details related to the traffic noise modeling analysis). As this noise increase would not exceed 5 dBA, which is considered as a readily perceptible change in an exterior environment, this impact would be less than significant. In addition, as the other roadway segments that are located even further away from the Project site would experience less traffic increases due to implementation of Alternative 1, the increase in local noise levels at these roadway segments also would not exceed the 5 dBA threshold, and impacts would be less than significant.

1-NOI-4: Alternative 1 would not result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity from on-site restoration activities above levels existing without Alternative 1. (Less than Significant Impact)

Direct Impacts

Given the proximity of the nearest off-site sensitive uses to the Project site, Alternative 1's restoration activities would expose these sensitive receptors to increased noise levels. Over the course of a work day, the highest noise levels would be generated when multiple pieces of construction equipment are being operated concurrently. Based on criteria recommended by the

FTA, a daytime hourly L_{eq} level of 90 dBA has been identified as a noise level where adverse community reaction could occur from construction-related noise levels (FTA 2006). Table 3.10-14, *Highest Noise Levels During Project Restoration – Alternative 1*, shows the estimated highest noise levels experienced by each of the identified off-site sensitive receptors under Alternative 1.

TABLE 3.10-14
HIGHEST NOISE LEVELS DURING PROJECT RESTORATION– ALTERNATIVE 1

Off-site Sensitive Land Uses	Approximate Distance to Project site (ft.)[a]	Estimated Highest Restoration-phase Noise Levels (dBA L_{eq})	Exceed FTA's Recommended Daytime Hourly Noise Criterion of 90 dBA L_{eq}?
Multi-family residential uses located north of North Area C of the Project site, east of Lincoln Boulevard	50	84.1	No
Boat slips located north of Area A of the Project site, beyond Fiji Way	360	67.0	No
Boat slips located west of Area A of the Project site, beyond Fiji Way	230	70.1	No
Multi-family residential uses located west of Area A of the Project site and north of Ballona Creek	40	85.3	No
Multi-family residential uses located west of West Area B of the Project site, fronting Vista Del Mar	58	82.4	No
Multi-family residential, park, and hotel uses located along Culver Boulevard and directly south of West Area B of the Project site	35	86.8	No
Single-family residences located south of West Area B and South Area B of the Project site and south of Culver Boulevard	430	63.5	No
Single-family residences located along Cabora Drive and south of South Area B and Southeast Area B of the Project site	656	61.7	No
Multi-family residential uses located east of Southeast Area B, across Lincoln Boulevard and south of Jefferson Boulevard	435	65.3	No
Multi-family residential uses located east of East Area B, across Lincoln Boulevard between Ballona Creek and Jefferson Blvd.	200	72.1	No

NOTES:

[a] The distance represents the nearest active work area on the Project site to the property line of the off-site receptor. The distances are taken from Table 3.10-12.

As shown in Table 3.10-14, none of the off-site receptors would be exposed to noise levels that exceed 90 dBA from Alternative 1's restoration activities. Thus, impacts associated with a substantial temporary increase in ambient noise levels would be less than significant. In addition, while mitigation is not necessary for this noise impact, the implementation of Mitigation Measures NOI-1-i through NOI-1-ix, which would require the implementation of noise reduction devices and techniques during restoration activities at the Project site (refer to Impact 1-NOI-2, above), would further reduce noise levels associated with the proposed restoration to the maximum extent that is technically feasible. As such, the noise levels shown in Table 3.10-14 for each off-site receptor location would be lower with implementation of those measures.

Indirect Impacts

During the restoration activities proposed under Alternative 1, there is a potential for off-site export of between 10,000 - 110,000 cubic yards of soil depending on final levee design, levee compaction, and final grading in North and South Area C. Where the option of soil export by haul trucks is selected, increases in roadway noise levels along the Project haul route would result. From the Project site, Alternative 1-related trucks would travel onto Lincoln Boulevard and head north before turning onto Mindanao Way to head east to access eastbound State Route (SR) 90. Trucks arriving to the Project site would use the same route but would travel from westbound SR-90 (PSOMAS 2015).

Based on the traffic study prepared for this EIS/EIR (Appendix H), for Alternative 1 an estimated maximum of 240 trucks would be used per day during the soil export activities, resulting in 480 daily one-way truck trips. As discussed in the traffic study, the most likely local landfills that could be used for the soil export include Scholl Canyon Landfill in the City of Glendale, Calabasas Sanitary Landfill in the City of Agoura, and/or the Lancaster Landfill and Recycling Center in Lancaster. Additionally, a total of approximately 809 daily vehicle trips by workers also are estimated during the peak construction period. These additional restoration-related trips would increase the traffic noise levels on the local roadways, especially on Lincoln Boulevard and Mindanao Way as they would be part of the haul route used by trucks to export soil. Given the 480 daily truck trips, it is anticipated that an average of 60 truck trips would occur per hour over an 8-hour work day. To assess the potential traffic noise increase, the additional traffic volumes resulting from the anticipated 30 inbound and 30 outbound haul truck trips along with worker trips during the a.m. peak hour were added to the existing (baseline) a.m. peak hour traffic volumes on the segments of Lincoln Boulevard, Mindanao Way, and SR-90 (eastbound and westbound) to assess the increase in noise levels. The a.m. peak hour traffic volumes were assessed for this analysis because soil export operations would end before the evening peak hour traffic. As such, no truck trips would occur during the p.m. peak hour.

The estimated roadway noise levels resulting from the addition of Alternative 1-related traffic on Lincoln Boulevard, Mindanao Way, and SR-90 during the restoration phase for Alternative 1 are shown in Table 3.10-15, *Off-Site Restoration-Phase Traffic Noise Levels – Alternative 1*.

As shown in Table 3.10-15, the addition of Alternative 1's restoration-related haul truck and worker vehicle trips during the a.m. peak hour of a work day would result in a maximum increase in traffic noise levels of 1.5 dBA L_{eq} on Lincoln Boulevard, 3.1 dBA L_{eq} on Mindanao Way, and 2.1 dBA L_{eq} on SR-90. As discussed previously, a 3 dBA change in noise levels is considered to be a barely perceivable difference while a 5 dBA change in noise levels is considered to be a readily perceptible difference. With the exception of the 3.1 dBA L_{eq} increase on Mindanao Way, which may be barely perceivable but not readily perceivable, the increase in traffic noise levels on the roadways that would be utilized the most for both haul truck and worker trips would be less than 3 dBA, and the associated increase in peak hour and daily traffic noise levels resulting from Alternative 1's off-site restoration phase traffic would not be expected to be perceivable. Impacts would be less than significant.

TABLE 3.10-15
OFF-SITE RESTORATION-PHASE TRAFFIC NOISE LEVELS – ALTERNATIVE 1

Roadway	Roadway Segment	Existing A.M. Peak Hour Traffic Volume Noise Levels (dBA L_{eq})[a,b]	Existing A.M. Peak Hour + Project Construction Traffic Volume Noise Levels (dBA L_{eq})[a,b]	A.M. Peak Hour Increase (dBA L_{eq})
Lincoln Boulevard	South of Mindanao Way	73.2	74.6	1.4
	North of Fiji Way	73.1	74.6	1.5
	South of Fiji Way	71.7	73.2	1.5
Mindanao Way	East of Lincoln Boulevard	67.8	70.9	3.1
	East of SR-90 Eastbound	67.6	69.5	1.9
	East of SR-90 Eastbound	67.5	69.4	1.9
SR-90 Eastbound	North of Mindanao Way	68.1	70.2	2.1
SR-90 Westbound	South of Mindanao Way	71.3	73.3	2.0

NOTES:
[a] Values represent noise levels at approximately 50 feet from the center of the roadway.
[b] The a.m. peak hour traffic volumes are used in assessing the Project's off-site restoration-related noise levels because haul truck trips used for soil export would end before evening peak hour traffic and thus would not occur during the a.m. peak hour.

EXISTING TRAFFIC INFORMATION SOURCE: Raju Associates 2015 (see Appendix H).
TABLE SOURCE: Appendix G.

1-NOI-5: Alternative 1 would not expose people residing or working in the project area to excessive noise levels from a public airport or public use airport. (Less than Significant Impact)

The Los Angeles International Airport (LAX) is located approximately 1 mile south of the Project site. However, the Project site is located outside of the airport influence area and runway protection zones of LAX (LAC ALUC 2003). In particular, the airport influence areas and runway protection zones are oriented to the west and east of LAX and do not extend to the Project site to the north. Although airport-related noise (such as over-flights) would be audible from the Project site, people working on or visiting the Project site would not be exposed to excessive noise levels from operations at LAX. No other public airports are located within 2 miles of the Project site. The next nearest general aviation airport to the Project site is the Santa Monica Municipal Airport, which is located approximately 2.4 miles to the north. Therefore, this impact would be less than significant.

1-NOI-6: Alternative 1 would not locate the project within the vicinity of a private airstrip where it would expose people residing or working in the project area to excessive noise levels. (No Impact)

There are no private airports or airstrips located within 2 miles of the Project site. As such, Alternative 1 would not expose project workers or visitors to excessive noise levels associated with a private airstrip during or following restoration. No impact would result.

TABLE 3.10-16
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
NOI-1: Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? See Impact 1-NOI-1.	☐	☒	☐	☐
NOI-2: Expose persons to or generate excessive groundborne vibration or groundborne noise levels? See Impact 1-NOI-2.	☐	☒	☐	☐
NOI-3: Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? See Impact 1-NOI-3.	☐	☐	☒	☐
NOI-4: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? See Impact 1-NOI-4.	☐	☐	☒	☐
NOI-5: 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? See Impact 1-NOI-5.	☐	☐	☒	☐
NOI-6: For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? See Impact 1-NOI-6.	☐	☐	☐	☒

3.10.6.2 Alternative 2: Restored Partial Sinuous Creek

Alternative 2 is similar to Alternative 1 but with a smaller footprint of habitat restoration and levee construction. Alternative 2 would include the first restoration phase described in Alternative 1, but not the second/final restoration phase and without the stockpiled fill along the Culver Boulevard levee and East Area B in the first phase of Alternative 1. The parking structure, West Culver Parking Lot upgrades, two bicycle/pedestrian bridges, and other visitor amenities would still be constructed, operation and maintenance of the existing LACDA project and non-LACDA project facilities within the Ballona Reserve would continue consistent with the OMRR&R and the existing agreement between CDFW and LACFCD, and the natural gas wells and pipelines within the Ballona Reserve would still be abandoned and/or relocated to the SoCalGas Property. See Table 2-1c, *Summary of Alternatives*, in Chapter 2, *Description of Alternatives*, for further details. Restoration under Alternative 2 would occur between 2017 and 2022.

Under Alternative 2, the reconfigured Ballona Creek channel would meander closer to the boat slips located north of Area A of the Project site, where people could reside on board the boats, and new water control structures (e.g., culverts and tide gates) would be installed closer to residences (see Figure 2-1, *Alternative 1, Phase 2: Proposed Habitats*). Maintenance of Ballona Creek channel and levees under Alternative 2 would be the same as described under Alternative 1 (Appendix B5, Preliminary Operations and Maintenance Plan). Maintenance of water control structures under Alternative 2 would be similar to the description under Alternative 1, but with the following exceptions. Under Alternative 2, West Area B would not be improved. The existing West Area B gates connecting West Area B to Ballona Creek would remain and would continue to be maintained as under the existing conditions (Id.). Maintenance of flood risk management berms under Alternative 2 would be the same as described under Alternative 1. CDFW would conduct the same nature and type of activities to operate and maintain the non-LACDA project facilities within the Ballona Reserve, using the same types of equipment and at the same intervals as the agency does under existing conditions. Such activities would include, for example, inspecting and locking gates, repairing fences, controlling pests and weeds, and removing trash and debris from the non-LACDA project areas within the Ballona Reserve (Id.).

2-NOI-1: Alternative 2 would not result in noise levels that are in excess of standards established by the County of Los Angeles or City of Los Angeles. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Similar to the analysis conducted for Alternative 1, noise levels generated by the different equipment mixes shown in Table 3.10-10, *Construction Equipment Mix Noise Emission Levels*, were used to estimate the resulting noise level exposure at the off-site sensitive receptors based on the location of the various restoration sequence stages that would occur throughout the Project site under Alternative 2. Although a total of 31 construction sequences would occur under Alternative 2, only those sequences occurring in proximity to each of the identified off-site sensitive receptor locations are selected for analysis as these sequences would generate the loudest noise levels at the receptor. Table 3.10-17, *Estimated Construction Noise Levels at Off-site Sensitive Uses – Alternative 2*, shows the estimated noise levels that would occur at the nearest off-site sensitive uses over the course of the various work sequences under Alternative 2.

As shown in Table 3.10-17, *Estimated Restoration-Phase Noise Levels at Off-site Sensitive Uses – Alternative 2*, the nearest off-site sensitive receptors surrounding the Project site would experience a range of noise levels during the restoration activities under Alternative 2. It should be noted that the different construction sequence stages depicted in Table 3.10-17 would occur only for limited periods (5 to 225 days with most activities being 50 days or less, see Appendix B4, Construction Equipment and Sequencing), and would not occur continuously throughout the entire work period. Additionally, as discussed previously, the estimation of restoration-related noise levels is conservative because it assumes that five pieces of construction equipment associated with each equipment mix would be operating simultaneously at the same location. In practice, the operation of each piece of equipment at an active work area within the Project site would not be constant throughout the day, as equipment would be turned off when not in use. Most of the time over a work day, the equipment also would be operating at different locations within the active work area and would not operate concurrently. While the estimated construction noise levels at each off-site receptor location would be the loudest when construction activities are occurring at an area within the Project site that is nearest to the off-site location, the majority of the time noise levels at these off-site locations would be reduced as activities conclude or move to another more distant location of the Project site. While the estimated noise levels at each of the off-site locations would be the loudest when restoration-related construction activities are occurring at an area within the Project site that is nearest to the off-site location, the majority of the time noise levels at these off-site locations would be reduced as activities conclude or move to another more distant location within the Project site. Thus, the noise levels that would be experienced by the off-site receptors shown in Table 3.10-17, which

TABLE 3.10-17
ESTIMATED RESTORATION-PHASE NOISE LEVELS AT OFF-SITE SENSITIVE USES – ALTERNATIVE 2

Off-site Sensitive Land Uses	Jurisdiction	Restoration Sequence[b]	Restoration Area	Construction Equipment Reference Number[c]	Approximate Distance to Project site (ft.)[d]	Estimated Noise Levels (dBA L_{eq})[e]
Multi-family residential uses located north of North Area C of the Project site, east of Lincoln Boulevard	City	5	A & C	9	985	55.8
		6	A	10	460	64.8
		7	A	11	460	64.1
		8	A	12	460	64.8
		15	C	11	50	84.1
		16	A & C	11	50	83.4
		17	C	7	1,005	57.6
		23	A & B	7	460	64.4
Boat slips located north of Area A of the Project site, beyond Fiji Way	County	6	A	10	360	65.0
		7	A	11	360	66.3
		8	A	12	360	67.0
		16	A & C	11	360	66.3
		23	A & B	7	360	66.6
		23	A & B	2	360	67.0
		23	A & B	3	360	64.6
		25	A	6	1,105	55.2
		25	A	4	1,105	56.5
		26	A	1	1,105	57.2
		27	A	11	1,105	56.5
		28	A	1	1,105	57.2
Boat slips located west of Area A of the Project site, beyond Fiji way	County	6	A	10	425	65.5
		7	A	11	425	64.8
		8	A	12	425	65.5
		16	A & C	11	425	64.8
		23	A & B	7	425	65.1
		23	A & B	2	322	67.9
		23	A & B	3	322	65.5
		25	A	6	230	68.8

TABLE 3.10-17 (Continued)
ESTIMATED RESTORATION-PHASE NOISE LEVELS AT OFF-SITE SENSITIVE USES – ALTERNATIVE 2

Off-site Sensitive Land Uses	Jurisdiction	Restoration Sequence[b]	Restoration Area	Construction Equipment Reference Number[c]	Approximate Distance to Project site (ft.)[d]	Estimated Noise Levels (dBA L_{eq})[e]
Boat slips located west of Area A of the Project site, beyond Fiji way (cont.)		25	A	4	230	70.1
		26	A	1	400	66.0
		27	A	11	400	65.3
		28	A	1	400	66.0
Multi-family residential uses located west of Area A of the Project site and north of Ballona Creek	County	3	A	4	250	69.4
		6	A	10	55	83.3
		7	A	11	55	82.6
		8	A	12	55	83.3
		9	B	6	1,314	53.7
		9	B	4	265	68.9
		16	A & C	11	55	82.6
		23	A & B	7	55	82.9
		23	A & B	2	1,330	55.6
		23	A & B	3	1,330	53.2
		25	A	5	395	64.2
		25	A	6	106	75.6
		25	A	4	106	76.9
		26	A	1	395	66.1
		27	A	11	395	65.4
		28	A	1	395	66.1
		29	B	6	882	57.2
		29	B	4	1,500	53.9
		30	B	1	882	59.2
		31	B	1	882	59.2
Multi-family residential uses located west of West Area B of the Project site, fronting Vista Del Mar	City	22	B	7	58	82.4
		22	B	7	58	82.4
		29	B	6	305	66.4
		30	B	1	305	68.4
		31	B	1	305	68.4

TABLE 3.10-17 (Continued)
ESTIMATED RESTORATION-PHASE NOISE LEVELS AT OFF-SITE SENSITIVE USES – ALTERNATIVE 2

Off-site Sensitive Land Uses	Jurisdiction	Restoration Sequence[b]	Restoration Area	Construction Equipment Reference Number[c]	Approximate Distance to Project site (ft.)[d]	Estimated Noise Levels (dBA L_{eq})[e]
Multi-family residential, park, and hotel uses located along Culver Boulevard and directly south of West Area B of the Project site	City	22	B	7	35	86.8
		22	B	7	175	72.8
		29	B	6	445	63.1
		30	B	4	445	64.4
		31	B	1	445	65.1
Single-family residences located south of West Area B and South Area B of the Project site and south of Culver Boulevard	City	1	B	4	723	60.2
		29	B	5	430	63.5
		29	B	6	950	56.5
		30	B	1	950	58.5
		31	B	1	950	58.5
Single-family residences located along Cabora Drive and south of South Area B and Southeast Area B of the Project site	City	2	B	1	656	61.7
Multi-family residential uses located east of Southeast Area B, across Lincoln Boulevard and south of Jefferson Boulevard	City	12	B	12	1,092	57.3
		13	B	10	475	64.5
		14	B	11	475	63.8
		18	B	1	435	65.3
		31	B	1	1,360	55.4
Multi-family residential uses located east of East Area B, across Lincoln Boulevard between Ballona Creek and Jefferson Blvd.	City	4	A & B	8	650	61.6
		5	A & C	9	650	59.4
		13	B	10	200	72.1
		14	B	11	200	71.4
		15	C	10	380	66.5
		16	A & C	11	380	65.8
		17	C	7	380	66.1

NOTES:
[a] Restoration activities under Alternative 2 would occur in a single phase anticipated to be from 2017 to 2022. NA = Not Applicable.
[b] Refer to Appendix B4 for the description of Alternative 2's sequencing. Although a total of 36 sequences would occur during restoration, only those sequences occurring nearest to each of the identified off-site sensitive receptor locations are selected for analysis as these sequences would generate the loudest noise levels at the receptor.
[c] Refer to Appendix B4 for the individual pieces of equipment under each equipment reference number.
[d] The distance represents the approximate nearest work area on the Project site where the sequence would occur to the property line of the off-site receptor.
[e] The estimated noise levels are for the concurrent operation of five representative pieces of construction equipment at the same location.

are based on the nearest distance from the active work area to the property line of the off-site receptor, would only occur for the limited duration when construction equipment is used in that particular area during a work day.

As discussed previously, the County has defined both the working hours and maximum levels of construction equipment and activity noise that are allowable from both mobile and stationary equipment by land use (refer to Table 3.10-7, *County of Los Angeles Construction Noise Standards*) under Section 12.08.440 of its Noise Ordinance. However, because operation of both these equipment types would be intermixed within the restoration areas within the Project site, with the majority of the equipment consisting of mobile equipment, it would not be appropriate to regulate each of these two equipment types separately by their respective noise standards. Since the majority of the equipment used at the Project site would be mobile equipment, which in turn would contribute most to the resulting noise levels generated at the site, the allowable maximum noise levels from equipment at receptors that are multi-family residential uses would be 80 dBA from 7:00 a.m. to 8:00 p.m. As shown in Table 3.10-17, of the three identified off-site sensitive receptors located within the County, only the multi-family residential uses located west of Area A and north of Ballona Creek would be exposed to noise levels that exceed 80 dBA at certain times throughout a work day.

With respect to the off-site sensitive receptors located in the City, Section 41.40 of the LAMC regulates noise from construction activities by prohibiting exterior construction activities between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, and between 6:00 p.m. and 8:00 a.m. on Saturdays or national holidays. Demolition and construction are prohibited on Sundays. Section 112.05 of the LAMC limits the operation of powered equipment and powered hand tools to between the hours of 7:00 a.m. to 10:00 p.m., and prohibits the noise levels generated by construction machinery from exceeding 75 dBA at 50 feet from the noise source when located within 500 feet of a residential zone. However, according to Section 112.05 of the LAMC, the noise limitation of 75 dBA does not apply where compliance is technically infeasible, which means that the noise limitation cannot be complied with despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of the equipment. As shown in Table 3.10-10, *Construction Equipment Mix Noise Emission Levels*, the noise levels generated by all of the different construction equipment mixes, many of which would be used under Alternative 2, at a distance of 50 feet would exceed 75 dBA.

As both the County's and the City's construction-related noise standards would be exceeded, this would be a significant impact.

Mitigation Measure

Implement Mitigation Measures NOI-1-i through NOI-1-ix, as set forth above.

Level of Significance after Mitigation

Following mitigation, Impact 2-NOI-1 would be less than significant. Similar to Alternative 1, Mitigation Measures NOI-1-i through NOI-1-ix are recommended to ensure that all technically feasible measures would be implemented to reduce Alternative 2's restoration noise levels since both the applicable County and City's construction-related noise standards would be exceeded. With implementation of these mitigation measures, in particular Mitigation Measure NOI-1-v, noise levels associated with the proposed restoration activities would be reduced to below the County's noise standard of 80 dBA at multi-family residences. Additionally, implementation of these mitigation measures would satisfy the City's requirement that all technically feasible measures be used to reduce Alternative 2's construction equipment noise levels.

Indirect Impacts

Indirect noise-related impacts would occur as a result of off-site vehicle travel (e.g., haul trucks). Because no local noise standards apply to such sources of noise, the impacts of off-site vehicle travel are addressed under Impact 2-NOI-4.

2-NOI-2: Alternative 2 would result in vibration levels that exceed the County's 0.01 in/sec perception threshold at four locations, and so could result in vibration and associated groundborne noise –related human annoyance. (Less than Significant with Mitigation Incorporated)

Direct Impacts

During and following the restoration phase, Alternative 2 could generate low levels of groundborne vibration associated with the operation of heavy equipment (e.g., graders, loaders, drill rigs, backhoes, and haul trucks) that generate vibrations that propagate though the ground and diminishes in intensity with distance from the source. No high-impact activities, such as pile driving or blasting, would occur within the Ballona Reserve, although natural gas storage wells would be relocated on the SoCalGas Property using equipment such as a drill rig (see Appendix B4, which identifies the equipment mix that would be used for the natural gas well relocations).

The nearest off-site sensitive receptors to the Project site that could be exposed to vibration levels generated from the implementation of Alternative 2 would include the single- and multi-family residential uses and transient lodging uses that surround the Project site. Based on the nearest distances between these off-site sensitive receptors and their respective work areas identified in Table 3.10-17, *Estimated Construction Noise Levels at Off-site Sensitive uses – Alternative 2*, the vibration levels were estimated for each receptor. For this analysis, it was assumed that vibration levels associated with a large bulldozer, which generates the highest vibration levels shown in Table 3.10-12, *Vibration Source Levels for Equipment*, would occur at the nearest edge of the work areas located closest to each of the off-site sensitive receptors. Table 3.10-18, *Groundborne Vibration Levels at Off-site Sensitive Uses – Alternative 2*, shows the estimated restoration-related groundborne vibration levels that could occur at the nearest off-site receptors during the implementation of Alternative 2.

As shown in Table 3.10-18, *Groundborne Vibration Levels at Off-site Sensitive Uses – Alternative 2*, the vibration velocities forecasted to occur at the off-site sensitive receptors would range from less than 0.001 in/sec PPV at the single-family residences located along Cabora Drive, south of South Area B and Southeast Area B, to 0.054 in/sec PPV at the multi-family residential, park, and hotel uses located along Culver Boulevard, directly south of West Area B. For this analysis, the identified off-site residential structures surrounding the Project site are considered to be "non-engineered timber and masonry buildings" based on FTA's building categories as shown in Table 3.10-5, *Construction Vibration Damage Criteria*. Based on the information shown in Table 3.10-18, none of the nearby off-site structures surrounding the Project site would be exposed to a PPV groundborne vibration level that exceeds 0.2 in/sec during restoration-related activities. Thus, the vibration levels generated by restoration activities at the Project site would not result in building damage at the nearby off-site structures. Building damage-related impacts would be less than significant.

TABLE 3.10-18
GROUNDBORNE VIBRATION LEVELS AT OFF-SITE SENSITIVE USES – ALTERNATIVE 2

Off-site Sensitive Land Use	Approximate Distance to Nearest Work Area(ft.)[a]	Estimated PPV (in/sec)
Multi-family residential uses located north of North Area C of the Project site, east of Lincoln Boulevard	50	0.031
Boat slips located north of Area A of the Project site, beyond Fiji Way	360	0.002
Boat slips located west of Area A of the Project site, beyond Fiji Way	230	0.003
Multi-family residential uses located west of Area A of the Project site and north of Ballona Creek	55	0.027
Multi-family residential uses located west of West Area B of the Project site, fronting Vista Del Mar	58	0.025
Multi-family residential, park, and hotel uses located along Culver Boulevard and directly south of West Area B of the Project site	35	0.054
Single-family residences located south of West Area B and South Area B of the Project site and south of Culver Boulevard	430	0.001
Single-family residences located along Cabora Drive and south of South Area B and Southeast Area B of the Project site	656	0.0006
Multi-family residential uses located east of Southeast Area B, across Lincoln Boulevard and south of Jefferson Boulevard	435	0.001
Multi-family residential uses located east of East Area B, across Lincoln Boulevard between Ballona Creek and Jefferson Boulevard	200	0.004

NOTES:
ft. = feet
in/sec = inches per second.

[a] The distances used in this analysis are the closest distances between the off-site sensitive receptors and the active work areas used in Table 3.10-18.

In terms of human annoyance, vibration levels associated with Alternative 2 restoration activities would exceed the perception threshold of 0.01 in/sec at four locations, including the multi-family residential uses north of North Area C, west of Area A, west of West Area B, and south of West Area B. This impact would be significant.

Mitigation Measure

Implement Mitigation Measure NOI-2, as set forth above.

Level of Significance after Mitigation

Following mitigation, Impact 2-NOI-2 would be less than significant. Implementation of Mitigation Measure NOI-2 would ensure that the County's 0.01 in/sec perception threshold would not be exceeded at any of the identified off-site receptor locations surrounding the Project site. While compliance with the County's 0.01 in/sec perception threshold would not be necessary from a regulatory standpoint for locations within the City, the requirements of Mitigation Measure NOI-2 would be extended to the off-site receptors located within the City to ensure that no off-site receptors would be exposed to any annoyance associated with vibration levels.

Indirect Impacts

Indirect vibration-related impacts associated with Alternative 2 would occur as a result of off-site vehicle travel (e.g., haul trucks). As disclosed in Table 3.10-12, *Vibration Source Levels for Equipment*, loaded truck vibration levels would be approximately 0.076 in/sec at 25 feet and 0.010 in/sec at 100 feet. Off-site haul truck-related vibration impacts along public roadways are evaluated relative to the County's vibration perception threshold of 0.01 in/sec at 150 feet. At 150 feet, the loaded truck vibration levels would be approximately 0.005 in/sec, which would be less than the perception threshold. Therefore, off-site hauling associated with Alternative 2 would result in vibration and groundborne noise impacts that would be less than significant.

2-NOI-3: Alternative 2 would not result in a permanent increase in ambient noise levels in the project vicinity from post-restoration activities. (Less than Significant Impact)

Direct Impacts

As discussed for Alternative 1, no new stationary mechanical equipment that would generate noise would be operated under Alternative 2 within the Project site. Once restoration activities have been completed, post-restoration activities at the Project site would include adjustments to and maintenance of water control structures; monitoring and as-needed maintenance of restored habitat and vegetation, levees, and Ballona Creek; and the continuation of the other O&M activities by CDFW and LACFCD that are summarized above and described in Appendix B5. While the maintenance activities for the channel, levee, and water control structures may require the use of off-road construction equipment, the use of these equipment would only occur on an as-needed basis and the maintenance efforts are only anticipated to require a couple of pieces of heavy off-road equipment as opposed to the amount used for the proposed restoration activities. The type and nature of the O&M activities, including the types of equipment used to implement them, the "continuous" nature of O&M work for the LACDA project facilities, and the proposed intervals of scheduled maintenance activities for the LACDA and non-LACDA project facilities under Alternative 2 would be substantially similar to the O&M work that presently occurs within the project area.

While the amount of visitors to the Ballona Reserve would increase as a result of Alternative 2, similar to Alternative 1, the associated noise levels under Alternative 2 are not anticipated to result in a substantial increase to the ambient noise levels at the off-site sensitive uses surrounding the Project site. Furthermore, while the new three-story parking structure along Fiji Way would add 39 new parking spaces for a total of 302 spaces, this new parking structure would be semi-enclosed and would be constructed over an existing surface parking lot. The semi-enclosure of the parking structure would provide partial attenuation of noise levels generated by vehicles inside the structure. Overall, post-restoration activities at the Project site under Alternative 2 would not introduce noise sources that would be a nuisance to the existing off-site sensitive receptors. This impact would be less than significant.

Indirect Impacts

With respect to off-site vehicle traffic following the restoration phase, Alternative 2 is expected to generate a total of 378 daily trips to and from the Project site, which is the same as expected under Alternative 1 (Appendix H). As discussed previously, because Alternative 2's 378 daily trips would not cause a doubling of traffic volumes on any existing roadways within the project area, it would not result in a substantial increase to noise levels along the local roadways. Alternative 2 would only increase local noise levels by a maximum of 0.1 dBA at one roadway segment (i.e., Admiralty Way, north of Fiji Way). As this noise increase would not exceed 5 dBA, impacts would be less than significant.

2-NOI-4: Alternative 2 would not result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity from on-site restoration activities above levels existing without the Project. (Less than Significant Impact)

Direct Impacts

Given the proximity of the nearest off-site sensitive uses to the Project site, the restoration activities under Alternative 2 would expose these sensitive receptors to increased noise levels. Over the course of a work day, the highest noise levels would be generated when multiple pieces of construction equipment would be operated concurrently. Based on criteria recommended by the FTA, a daytime hourly L_{eq} level of 90 dBA has been identified as a noise level where adverse community reaction could occur from construction-related noise levels (FTA 2006). Table 3.10-19, *Highest Noise Levels During Project Restoration – Alternative 2*, shows the estimated highest restoration-related noise levels that would be experienced by each of the identified off-site sensitive receptors under Alternative 2.

As shown in Table 3.10-19, *Highest Noise Levels During Project Restoration – Alternative 2*, none of the off-site receptors would be exposed to noise levels that exceed 90 dBA L_{eq} from the Project's restoration activities. Thus, impacts associated with a substantial temporary increase in ambient noise levels would be less than significant.

In addition, while mitigation is not necessary for this noise impact, implementation of Mitigation Measures NOI-1-i through NOI-1-ix, which would require the implementation of noise reduction devices and techniques during restoration at the Project site, would serve to further reduce the noise levels associated with implementation of Alternative 2 to the maximum extent that is technically feasible. As such, the noise levels shown in Table 3.10-20 for each off-site receptor location would be lower with implementation of those measures.

Indirect Impacts

During restoration, there is a potential for Alternative 2 to export off-site up to 10,000 cubic yards of soil (Table 2-24, Alternative 2 Earthwork Soil Volume). Where the option of soil export by haul trucks is selected, increases in roadway noise levels in the project area would result.

From the Project site, haul trucks would travel onto Lincoln Boulevard and head north before turning onto Mindanao Way to head east to access eastbound SR-90. Haul trucks arriving to the Project site would use the same route but would travel from westbound SR-90 (PSOMAS 2015).

TABLE 3.10-19
HIGHEST NOISE LEVELS DURING PROJECT RESTORATION – ALTERNATIVE 2

Off-site Sensitive Land Uses	Approximate Distance to Project site (ft.)[a]	Estimated Highest Restoration Noise Levels (dBA L_{eq})	Exceed FTA's Recommended Daytime Hourly Noise Criterion of 90 dBA L_{eq}?
Multi-family residential uses located north of North Area C of the Project site, east of Lincoln Boulevard	50	84.1	No
Boat slips located north of Area A of the Project site, beyond Fiji Way	360	67.0	No
Boat slips located west of Area A of the Project site, beyond Fiji way	230	70.1	No
Multi-family residential uses located west of Area A of the Project site and north of Ballona Creek	55	83.3	No
Multi-family residential uses located west of West Area B of the Project site, fronting Vista Del Mar	58	82.4	No
Multi-family residential, park, and hotel uses located along Culver Boulevard and directly south of West Area B of the Project site	35	86.8	No
Single-family residences located south of West Area B and South Area B of the Project site and south of Culver Boulevard	430	63.5	No
Single-family residences located along Cabora Drive and south of South Area B and Southeast Area B of the Project site	656	61.7	No
Multi-family residential uses located east of Southeast Area B, across Lincoln Boulevard and south of Jefferson Boulevard	435	65.3	No
Multi-family residential uses located east of East Area B, across Lincoln Boulevard between Ballona Creek and Jefferson Boulevard	200	72.1	No

NOTES:
[a] The distance represents the nearest active work area on the Project site to the property line of the off-site receptor. The distances are taken from Table 3.10-18.

Alternative 2 would require an estimated maximum of 22 trucks per day during the soil export activities, resulting in 44 daily truck trips. These additional truck trips along with construction worker vehicle trips would increase the traffic noise levels on the local roadways such as Lincoln Boulevard and Mindanao Way. The increase in traffic noise levels along Lincoln Boulevard, Mindanao Way, and SR-90 that would result from Alternative 2's off-site restoration-related traffic would not be expected to be perceivable. This impact would be less than significant.

2-NOI-5: Alternative 2 would not expose people residing or working in the Project area to excessive noise levels from a public airport or public use airport. (Less than Significant Impact)

LAX is located approximately 1 mile south of the Project site. However, the Project site is located outside of the airport influence area and runway protection zones of LAX (LAC ALUC 2003). In particular, the airport influence areas and runway protection zones are oriented to the west and east of LAX, and do not extend to the Project site to the north. As such, neither the workers nor the visitors to the Project site would be exposed to excessive noise levels from operations at LAX. No other public airports are located within 2 miles of the Project site. The next nearest general aviation airport to the Project site is the Santa Monica Municipal Airport, which is located approximately 2.4 miles to the north. Therefore, this impact would be less than significant.

2-NOI-6: Alternative 2 would not locate the project within the vicinity of a private airstrip where it would expose people residing or working in the project area to excessive noise levels. (No Impact)

There are no private airports or airstrips located within 2 miles of the Project site. As such, Alternative 2 would not expose workers at the Project site to excessive noise levels associated with a private airstrip during or following restoration. No impact would result.

TABLE 3.10-20
ALTERNATIVE 2 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
NOI-1: Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? See Impact 2-NOI-1.	☐	☒	☐	☐
NOI-2: Expose persons to or generate excessive groundborne vibration or groundborne noise levels? See Impact 2-NOI-2.	☐	☒	☐	☐
NOI-3: Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? See Impact 2-NOI-3.	☐	☐	☒	☐
NOI-4: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? See Impact 2-NOI-4.	☐	☐	☒	☐
NOI-5: 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? See Impact 2-NOI-5.	☐	☐	☒	☐
NOI-6: For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? See Impact 2-NOI-6.	☐	☐	☐	☒

3.10.6.3 Alternative 3: Levee Culverts and Oxbow

Alternative 3 is similar to Alternatives 1 and 2 but with a substantially smaller footprint of restoration and levee construction. One bicycle/pedestrian bridge would be constructed instead of two. The parking structure, gateway entrances, and educational signage would still be constructed and the natural gas monitoring wells and pipelines within the Ballona Reserve would still be abandoned and/or relocated to the SoCalGas Property. See Table 2-1c, *Summary of Alternatives*, in Chapter 2, *Description of Alternatives*, for further details.

Under Alternative 3, the Ballona Creek channel would not be reconfigured; therefore all channel-related operation and maintenance activities would be the same as under existing conditions (see Figure 2-52, *Alternative 3: Proposed Habitats*; Appendix B5, Preliminary Operations and Maintenance Plan). Maintenance of water control structures under Alternative 3 would be similar to the existing conditions, with the addition of two new banks of culverts and gates connecting Area A to the Ballona Creek channel. The existing West Area B gates connecting West Area B to Ballona Creek would remain and would continue to be maintained as under the existing conditions (Id.). Twelve new tide gates connecting the Ballona Creek channel to Area A would be installed, but not substantially closer to residences or other sensitive receptors than existing water control infrastructure (Id.). The new tide gates would be maintained and replaced at the same frequency as described under Alternative 1. Alternative 3 does not include flood risk management berms and, thus, no new or additional maintenance would be needed (Id.). CDFW would conduct the same nature and type of activities to operate and maintain the non-LACDA project facilities within the Ballona Reserve, using the same types of equipment and at the same intervals as the agency does under existing conditions. Such activities would include, for example, inspecting and locking gates, repairing fences, controlling pests and weeds, and removing trash and debris from the non-LACDA project areas within the Ballona Reserve (Id.).

3-NOI-1: Alternative 3 would not result in noise levels that are in excess of standards established by the County of Los Angeles or City of Los Angeles. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Similar to the analysis conducted for Alternative 1, the noise levels generated by the different equipment mixes shown in Table 3.10-10, *Construction Equipment Mix Noise Emission Levels*, were used to estimate the resulting noise level exposure at the off-site sensitive receptors based on the location of the various construction sequence stages that would occur throughout the Project site under Alternative 3. Although a total of 17 sequences would occur under Alternative 3, only those sequences occurring in proximity to each of the identified off-site sensitive receptor locations are selected for analysis as these sequences would generate the loudest noise levels at the receptor. Table 3.10-21, *Estimated Restoration Phase Noise Levels at Off-site Sensitive Uses – Alternative 3*, shows the estimated restoration phase noise levels that would occur at the nearest off-site sensitive uses over the course of the various construction sequences under Alternative 3.

As shown in Table 3.10-21, the nearest off-site sensitive receptors surrounding the Project site would experience a range of noise levels during the restoration phase under Alternative 3. It should be noted that the different construction sequence stages depicted in Table 3.10-21 would only occur for limited periods (5 to 225 days with most activities being 50 days or less, see

TABLE 3.10-21
ESTIMATED RESTORATION PHASE NOISE LEVELS AT OFF-SITE SENSITIVE USES – ALTERNATIVE 3

Off-site Sensitive Land Uses	Jurisdiction	Construction Sequence[b]	Project Restoration Area	Construction Equipment Reference Number[c]	Approximate Distance to Project site (ft.)[d]	Estimated Construction Noise Levels (dBA L_{eq})[e]
Multi-family residential uses located north of North Area C of the Project site, east of Lincoln Boulevard	City	6	A	10	460	64.8
		7	A	11	460	64.1
		8	A	12	460	64.8
		16	A	11	460	64.1
		17	C	7	1,005	57.6
		23	A & B	7	460	64.4
Boat slips located north of Area A of the Project site, beyond Fiji Way	County	6	A	10	360	67.0
		7	A	11	360	66.3
		8	A	12	360	67.0
		16	A	11	360	66.3
		23	A & B	7	360	66.6
		23	A & B	2	360	67.0
		23	A & B	3	360	64.6
		25	A	6	1,105	55.2
		25	A	4	1,105	56.5
Boat slips located west of Area A of the Project site, beyond Fiji Way	County	6	A	10	425	65.5
		7	A	11	425	64.8
		8	A	12	425	65.5
		16	A	11	425	64.8
		23	A & B	7	425	65.1
		23	A & B	2	322	67.9
		23	A & B	3	322	65.5
		25	A	6	230	68.8
		25	A	4	230	70.1
Multi-family residential uses located west of Area A of the Project site and north of Ballona Creek	County	3	A	4	250	69.4
		6	A	10	55	83.3
		7	A	11	55	82.6
		8	A	12	55	83.3

TABLE 3.10-21 (Continued)
ESTIMATED RESTORATION PHASE NOISE LEVELS AT OFF-SITE SENSITIVE USES – ALTERNATIVE 3

Off-site Sensitive Land Uses	Jurisdiction	Construction Sequence[b]	Project Restoration Area	Construction Equipment Reference Number[c]	Approximate Distance to Project site (ft.)[d]	Estimated Construction Noise Levels (dBA L_{eq})[e]
Multi-family residential uses located west of Area A of the Project site and north of Ballona Creek (cont.)		16	A	11	55	82.6
		23	A & B	7	55	82.9
		23	A & B	2	1,330	55.6
		23	A & B	3	1,330	53.2
		25	A	5	395	64.2
		25	A	6	106	75.6
		25	A	4	106	76.9
		29	B	6	882	57.2
		29	B	4	1,500	53.9
		30	B	1	882	59.2
		31	B	1	882	59.2
Multi-family residential uses located west of West Area B of the Project site, fronting Vista Del Mar	City	29	B	6	305	66.4
		30	B	1	305	68.4
		31	B	1	305	68.4
Multi-family residential, park, and hotel uses located along Culver Boulevard and directly south of West Area B of the Project site	City	29	B	6	445	63.1
		30	B	4	445	64.4
		31	B	1	445	65.1
Single-family residences located south of West Area B and South Area B of the Project site and south of Culver Boulevard	City	1	B	4	723	60.2
		29	B	5	430	63.5
		29	B	6	950	56.5
		30	B	1	950	58.5
		31	B	1	950	58.5
Single-family residences located along Cabora Drive and south of South Area B and Southeast Area B of the Project site	City	2	B	1	656	61.7
Multi-family residential uses located east of Southeast Area B, across Lincoln Boulevard and south of Jefferson Boulevard	City	6	A	10	1,543	54.3
		7	A	11	1,543	53.6
		16	A	11	1,543	53.6
		23	A	7	1,225	55.9

TABLE 3.10-21 (Continued)
ESTIMATED RESTORATION PHASE NOISE LEVELS AT OFF-SITE SENSITIVE USES – ALTERNATIVE 3

Off-site Sensitive Land Uses	Jurisdiction	Construction Sequence[b]	Project Restoration Area	Construction Equipment Reference Number[c]	Approximate Distance to Project site (ft.)[d]	Estimated Construction Noise Levels (dBA L_{eq})[e]
Multi-family residential uses located east of East Area B, across Lincoln Boulevard between Ballona Creek and Jefferson Boulevard	City	16	A	11	620	61.5
		17	C	7	380	66.1

NOTES

[a] Restoration phase activities under Alternative 3 would not occur in separate phases. Mechanized work could begin as soon as 2017. NA = Not Applicable.

[b] Refer to Appendix B4 for the description of the Project's construction sequences. Although a total of 36 sequences would occur during Alternative 3's restoration phase, only those sequences occurring nearest to each of the identified off-site sensitive receptor locations are selected for analysis as these sequences would generate the loudest noise levels at the receptor.

[c] Refer to Appendix B4 for the individual pieces of construction equipment under each equipment reference number.

[d] The distance represents the approximate nearest work area on the Project site where the construction sequence would occur to the property line of the off-site receptor.

[e] The estimated noise levels are for the concurrent operation of five representative pieces of construction equipment at the same location.

Appendix B4, Construction Equipment and Sequencing), and would not occur continuously throughout the entire restoration period. Additionally, as discussed previously, the estimation of restoration activity-related noise levels is conservative as it assumes that five pieces of construction equipment associated with each equipment mix are operating simultaneously at the same location. In practice, the operation of each piece of equipment at an active construction area within the Project site would not be constant throughout the work day, as equipment would be turned off when not in use. Most of the time over a work day the equipment would also be operating at different locations within the active work area and may not operate concurrently. While the estimated noise levels at each off-site receptor location would be the loudest when activities are occurring at an area within the Project site that is nearest to the off-site location, the majority of the time noise levels at these off-site locations would be reduced as noise-generating activities conclude or move to another more distant location of the Project site. While the estimated noise levels at each of the off-site locations would be the loudest when noise-generating activities are occurring at an area within the Project site that is nearest to the off-site location, the majority of the time noise levels at these off-site locations would be reduced as activities conclude or move to another more distant location within the Project site. Thus, the noise levels that would be experienced by the off-site receptors shown in Table 3.10-21, which are based on the nearest distance from the active work area to the property line of the off-site receptor, would only occur for the limited duration when construction equipment is used in that particular area during a work day.

As discussed previously, the County has defined both the working hours and maximum levels of construction equipment and activity noise that are allowable from both mobile and stationary equipment by land use (refer to Table 3.10-7, *County of Los Angeles Construction Noise Standards*) under Section 12.08.440 of its Noise Ordinance. However, because operation of both these equipment types would be intermixed within the restoration areas within the Project site, with the majority of the equipment consisting of mobile equipment, it would not be appropriate to regulate each of these two equipment types separately by their respective noise standards. Since the majority of the equipment used at the Project site would be mobile equipment, which in turn would contribute most to the resulting noise levels generated at the site, the allowable maximum noise levels from equipment at receptors that are multi-family residential uses would be 80 dBA from 7:00 a.m. to 8:00 p.m. As shown in Table 3.10-21, *Estimated Restoration Phase Noise Levels at Off-site Sensitive Uses – Alternative 3*, of the three identified off-site sensitive receptors located within the County, only the multi-family residential uses located west of Area A of the Project site and north of West Area B would be exposed to noise levels that exceed 80 dBA at certain times throughout a work day.

With respect to the off-site sensitive receptors located in the City, Section 41.40 of the LAMC regulates noise from construction activities by prohibiting exterior construction activities between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, and between 6:00 p.m. and 8:00 a.m. on Saturdays or national holidays. Demolition and construction are prohibited on Sundays and all national holidays. Section 112.05 of the LAMC limits the operation of powered equipment and powered hand tools to between the hours of 7:00 a.m. to 10:00 p.m., and prohibits the noise levels generated by construction machinery from exceeding 75 dBA at 50 feet from the noise source when located within 500 feet of a residential zone. However, according to Section 112.05 of the LAMC, the noise limitation of 75 dBA does not apply where compliance is technically infeasible, which means that the noise limitation cannot be complied with despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of the equipment. As shown in Table 3.10-10, *Construction Equipment Mix Noise Emission Levels*, the noise levels generated by all of the different equipment mixes, many of which would be used under Alternative 3, at a distance of 50 feet would exceed 75 dBA.

As both the County's and the City's construction-related noise standards would be exceeded, this would be a significant impact.

Mitigation Measure

Implement Mitigation Measures NOI-1-i through NOI-1-ix, as set forth above.

Level of Significance after Mitigation

Following mitigation, Impact 3-NOI-1 would be less than significant. Similar to Alternatives 1 and 2, Mitigation Measures NOI-1-i through NOI-1-ix would be implemented to ensure that all technically feasible measures would be implemented to reduce project-generated noise levels under Alternative 3 since both the applicable County and City's construction-related noise standards would be exceeded. With implementation of these mitigation measures, in particular Mitigation Measure NOI-1-v, noise levels associated with proposed restoration activities would be reduced to below the County's noise standard of 80 dBA for multi-family residential uses. Additionally, implementation of these mitigation measures would satisfy the City's requirement that all technically feasible measures be used to reduce Alternative 3's equipment noise levels.

Indirect Impacts

Indirect noise-related impacts would occur as a result of off-site vehicle travel (e.g., haul trucks). Because no local noise standards apply to such sources of noise, the impacts of off-site vehicle travel are addressed under Impact 3-NOI-4.

3-NOI-2: Alternative 3 would result in vibration levels that exceed the County's 0.01 in/sec perception threshold at four locations, and so would result in vibration and associated groundborne noise-related human annoyance. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Restoration- and post-restoration-phase activities under Alternative 3 have the potential to generate low levels of groundborne vibration as the operation of heavy equipment (e.g., graders, loaders, drill rigs, backhoes, haul trucks, etc.) generates vibrations that propagate though the ground and diminishes in intensity with distance from the source. No high-impact activities, such as pile driving or blasting, would occur within the Ballona Reserve, although natural gas wells would be relocated on the SoCalGas Property using equipment such as a drill rig (see Appendix B4, which identifies the equipment mix that would be used for the natural gas well relocations).

The nearest off-site sensitive receptors to the Project site that could be exposed to vibration levels generated from implementation of Alternative 3 would include the single- and multi-family residential uses and transient lodging uses that surround the Project site. Based on the nearest distances between these off-site sensitive receptors and the respective work areas identified in Table 3.10-21, *Estimated Construction Noise Levels at Off-site Sensitive Uses –*

Alternative 3, the vibration levels were estimated for each receptor. For this analysis, it was assumed that vibration levels associated with a large bulldozer, which generates the highest vibration levels shown in Table 3.10-12, *Vibration Source Levels for Equipment*, would occur at the nearest edge of the work areas located closest to each of the off-site sensitive receptors. Table 3.10-22, *Groundborne Vibration levels at Off-site Sensitive Uses – Alternative 3*, shows the estimated construction-related groundborne vibration levels that could occur at the nearest off-site receptors during the implementation of Alternative 3.

TABLE 3.10-22
GROUNDBORNE VIBRATION LEVELS AT OFF-SITE SENSITIVE USES – ALTERNATIVE 3

Off-site Sensitive Land Use	Approximate Distance to Nearest Construction Area(ft.)[a]	Estimated PPV (in/sec)
Multi-family residential uses located north of North Area C of the Project site, east of Lincoln Boulevard	460	0.001
Boat slips located north of Area A of the Project site, beyond Fiji Way	360	0.002
Boat slips located west of Area A of the Project site, beyond Fiji Way	230	0.003
Multi-family residential uses located west of Area A of the Project site and north of Ballona Creek	55	0.027
Multi-family residential uses located west of West Area B of the Project site, fronting Vista Del Mar	305	0.002
Multi-family residential, park, and hotel uses located along Culver Boulevard and directly south of West Area B of the Project site	445	0.001
Single-family residences located south of West Area B and South Area B of the Project site and south of Culver Boulevard	430	0.001
Single-family residences located along Cabora Drive and south of South Area B and Southeast Area B of the Project site	656	0.0006
Multi-family residential uses located east of Southeast Area B, across Lincoln Boulevard and south of Jefferson Boulevard	1,225	0.0002
Multi-family residential uses located east of East Area B, across Lincoln Boulevard between Ballona Creek and Jefferson Blvd.	380	0.002

NOTES:
ft. = feet
in/sec = inches per second.

[a] The distances used in this analysis are the closest distances between the off-site sensitive receptors and the active work areas used in Table 3.10-20.

As shown in Table 3.10-22, the vibration velocities forecasted to occur at the off-site sensitive receptors would range from less than 0.001 in/sec PPV to as high as 0.027 in/sec PPV. For this analysis, the identified off-site residential structures surrounding the Project site are considered to be “non-engineered timber and masonry buildings” based on FTA’s building categories as shown in Table 3.10-5, *Construction Vibration Damage Criteria*. Based on the information shown in Table 3.10-22, none of the nearby off-site structures surrounding the Project site would be exposed to a PPV groundborne vibration level that exceeds 0.2 in/sec during restoration-related construction activities. Thus, the vibration levels generated by the activities proposed at the Project site would not result in building damage at the nearby off-site structures. Building damage-related impacts would be less than significant.

In terms of human annoyance, as shown in Table 3.10-22, *Groundborne Vibration Levels at Off-site Sensitive Uses – Alternative 3*, the vibration levels would exceed the presumed perception threshold of 0.01 in/sec at four locations, including the multi-family residential uses located north of North Area C, west of Area A, west of West Area B, and south of West Area B.

Because vibration levels associated with human annoyance would exceed the County's 0.01 in/sec perception threshold at the identified locations, the impact would be significant. As such, Mitigation Measure NOI-2 is recommended to prohibit the use of construction equipment that generates high levels of vibration (e.g., large bulldozers, loaded trucks, and drill rigs) within specified distances from existing off-site residential uses that are located nearby the Project site, and would ensure that the construction-related vibration levels at these nearby receptors would be below 0.01 in/sec.

Mitigation Measure

Implement Mitigation Measure NOI-2, as set forth above.

Level of Significance after Mitigation

Following mitigation, Impact 3-NOI-2 would be less than significant. Mitigation Measure NOI-2 would be implemented, which would prohibit the use of equipment that generates high levels of vibration (e.g., large bulldozers, loaded trucks, and drill rigs) and associated groundborne noise within specified distances from existing off-site residential uses that are located nearby the Project site, which would ensure that Project -related vibration levels at these nearby receptors would be below 0.01 in/sec.

Indirect Impacts

Indirect vibration-related impacts associated with Alternative 3 would occur as a result of off-site vehicle travel (e.g., haul trucks). As disclosed in Table 3.10-12, *Vibration Source Levels for Equipment*, loaded truck vibration levels would be approximately 0.076 in/sec at 25 feet and 0.010 in/sec at 100 feet. Off-site haul truck-related vibration impacts along public roadways are evaluated relative to the County's vibration perception threshold of 0.01 in/sec at 150 feet. At 150 feet, the loaded truck vibration levels would be approximately 0.005 in/sec, which would be less than the perception threshold. Therefore, off-site hauling that would be associated with Alternative 3 would result in vibration and groundborne noise impacts that would be less than significant.

2-NOI-3: Alternative 3 would not result in a substantial permanent increase in ambient noise levels in the project vicinity from post-restoration activities. (Less than Significant Impact)

Direct Impacts

Under Alternative 3, the intent would be to restore a wetland and creek habitat and flood risk management system that is sustained by natural processes and requires minimal O&M activities. O&M activities for the Ballona Creek channel would not change; however, the new Area A water control structures would require O&M as described for water control structures in Alternative 1. The Preliminary Operation and Maintenance Plan (Appendix B5) details post-restoration activities that address: (1) habitat and vegetation, (2) trash removal, (3) water control structures, (4) parking facilities, (5) baseball fields (if they are replaced), and (6) other ongoing and routine maintenance as described for Alternative 1.

Similar to Alternatives 1 and 2, no new stationary, mechanical equipment generating noise levels would be constructed within the Project site under Alternative 3. Once restoration activities have been completed, post-restoration activities at the Project site would include monitoring and the O&M activities summarized above and more fully described in Appendix B5. The type and nature of the O&M activities, including the types of equipment used to implement them, the "continuous" nature of O&M work for the LACDA project facilities, and the proposed intervals of scheduled maintenance activities for the LACDA and non-LACDA project facilities would be substantially similar to the O&M work that presently occurs within the Ballona Reserve.

All maintenance activities at the Project site that may require the use of off-road equipment would only occur on an as-needed basis and the maintenance efforts are only anticipated to require a couple of pieces of heavy off-road equipment as opposed to the amount used for the restoration activities. While the amount of visitors to the Ballona Reserve would increase as a result of Alternative 3, the associated noise levels are not anticipated to result in a substantial increase to the ambient noise levels at the off-site sensitive uses surrounding the Project site. The new pedestrian and bicycle paths would only be provided in Area A, which, with the exception of the multi-family residential uses located south of Fiji Way and directly north of Ballona Creek, would not be located directly adjacent to any noise-sensitive uses. However, the new pedestrian and bicycle path proposed adjacent to this existing off-site receptor would not constitute a new noise source because an existing bicycle path is currently located at the same location. Furthermore, while the new three-story parking structure along Fiji Way would add 39 new parking spaces for a total of 302 spaces, this new parking structure would be semi-enclosed and would be constructed over an existing surface parking lot. The semi-enclosure of the parking structure would provide partial attenuation of noise levels generated by vehicles inside the structure. As such, the new parking structure would not represent a new source of noise at this location. Overall, post-restoration activities at the Project site under Alternative 3 would not introduce noise sources that would be a nuisance to the existing off-site sensitive receptors. This impact would be less than significant.

Indirect Impacts

With respect to off-site vehicle traffic following the restoration phase, Alternative 3 is expected to generate a total of 378 daily trips to and from the Project site after restoration is completed, which is the same as that under both Alternatives 1 and 2 (see Appendix H). As discussed under Alternatives 1 and 2, because the Project's 378 daily trips would not cause a doubling of traffic volumes on any existing roadways within the project area, Alternative 3 would not result in a substantial increase to noise levels along the local roadways in the project area. Furthermore, as discussed for Alternative 1, Alternative 3 would only increase local noise levels by a maximum of 0.1 dBA at one roadway segment (i.e., Admiralty Way, north of Fiji Way; see Appendix G, *Noise Measurement Data and Calculations*, for details related to the traffic noise modeling analysis). As this traffic noise increase would not exceed 5 dBA, impacts would be less than significant.

3-NOI-4: Alternative 3 would not result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity from on-site restoration activities above levels existing without Alternative 3. (Less than Significant Impact)

Direct Impacts

Given the proximity of the nearest off-site sensitive uses to the Project site, Alternative 3's restoration activities would expose these sensitive receptors to increased noise levels. Over the course of a work day, the highest noise levels would be generated when multiple pieces of equipment are being operated concurrently. Based on criteria recommended by the FTA, a daytime hourly L_{eq} level of 90 dBA has been identified as a noise level where adverse community reaction could occur from construction-related noise levels (FTA 2006). Table 3.10-23, *Highest Noise Levels During Project Construction – Alternative 3*, shows the estimated highest noise levels experienced by each of the identified off-site sensitive receptors during the implementation of Alternative 3.

As shown in Table 3.10-23, none of the off-site receptors would be exposed to noise levels that exceed 90 dBA from Alternative 3's restoration activities. Thus, impacts associated with Alternative 3's substantial temporary increase in ambient noise levels would be less than significant.

In addition, while mitigation is not necessary for this noise impact, the implementation of Mitigation Measures NOI-1-i through NOI-1-ix, which would require the implementation of noise reduction devices and techniques during restoration-related construction work at the Project site, would serve to further reduce the noise levels associated with the implementation of Alternative 3 to the maximum extent that is technically feasible. As such, the noise levels shown in Table 3.10-24 for each off-site receptor location would be lower with implementation of those measures.

Indirect Impacts

During the restoration proposed under Alternative 3, there is a potential for off-site export of up to 1,230,000 cubic yards of soil. Where the option of soil export by haul trucks is selected, increases in traffic noise levels along roadways in the Project area would result. From the Project site, the haul trucks would travel onto Lincoln Boulevard and head north before turning onto Mindanao Way to head east to access eastbound SR-90. Haul trucks arriving to the Project site would use the same route but would travel from westbound SR-90 (PSOMAS 2015).

The same as Alternative 1, Alternative 3 would require the use an estimated maximum of 240 trucks per day during the soil export activities, resulting in 480 daily truck trips. However, Alternative 3 would result in an estimated 371 daily worker trips while Alternative 1 would result in an estimated 809 daily worker trips. Thus, during the peak work period the total daily haul truck trips and worker trips under Alternative 3 would be less than that of Alternative 1. Therefore, the increase in traffic noise levels generated by the construction-related traffic volumes under Alternative 3 would be less than that of Alternative 1 (see Table 3.10-15, *Off-site Restoration-Phase Traffic Noise Levels – Alternative 1*, for the estimated increases in traffic noise levels that would be caused by action alternatives), and would not be expected to be perceivable. This impact would be less than significant.

TABLE 3.10-23
HIGHEST NOISE LEVELS DURING PROJECT RESTORATION – ALTERNATIVE 3

Off-site Sensitive Land Uses	Approximate Distance to Project site (ft.)[a]	Estimated Highest Construction Noise Levels (dBA L_{eq})	Exceed FTA's Recommended Daytime Hourly Noise Criterion of 90 dBA L_{eq}?
Multi-family residential uses located north of North Area C of the Project site, east of Lincoln Boulevard	460	64.8	No
Boat slips located north of Area A of the Project site, beyond Fiji Way	360	67.0	No
Boat slips located west of Area A of the Project site, beyond Fiji Way	230	70.1	No
Multi-family residential uses located west of Area A of the Project site and north of Ballona Creek	55	83.3	No
Multi-family residential uses located west of West Area B of the Project site, fronting Vista Del Mar	305	68.4	No
Multi-family residential, park, and hotel uses located along Culver Boulevard and directly south of West Area B of the Project site	445	65.1	No
Single-family residences located south of West Area B and South Area B of the Project site and south of Culver Boulevard	430	63.5	No
Single-family residences located along Cabora Drive and south of South Area B and Southeast Area B of the Project site	656	61.7	No
Multi-family residential uses located east of Southeast Area B, across Lincoln Boulevard and south of Jefferson Boulevard	1,225	55.9	No
Multi-family residential uses located east of East Area B, across Lincoln Boulevard between Ballona Creek and Jefferson Blvd.	380	66.1	No

NOTE:

[a] The distance represents the nearest active construction area on the Project site to the property line of the off-site receptor. The distances are taken from Table 3.10-21.

3-NOI-5: Alternative 3 would not expose people residing or working in the Project area to excessive noise levels from a public airport or public use airport. (Less than Significant Impact)

LAX is located approximately 1 mile south of the Project site. However, the Project site is located outside of the airport influence area and runway protection zones of LAX (LAC ALUC 2003). In particular, the airport influence areas and runway protection zones are oriented to the west and east of LAX, and do not extend to the Project site to the north. As such, neither workers nor visitors to the Project site would be exposed to excessive noise levels from operations at LAX. No other public airports are located within 2 miles of the Project site. The next nearest general aviation airport to the Project site is the Santa Monica Municipal Airport, which is located approximately 2.4 miles to the north. Therefore, this impact would be less than significant.

3-NOI-6: Alternative 3 would not locate the project within the vicinity of a private airstrip where it would expose people residing or working in the project area to excessive noise levels. (No Impact)

There are no private airports or airstrips located within 2 miles of the Project site. As such, Alternative 3 would not expose workers at the Project site to excessive noise levels associated with a private airstrip during or following restoration. No impact would result.

TABLE 3.10-24
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
NOI-1: Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? See Impact 3-NOI-1.	☐	☒	☐	☐
NOI-2: Expose persons to or generate excessive groundborne vibration or groundborne noise levels? See Impact 3-NOI-2.	☐	☒	☐	☐
NOI-3: Result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project? See Impact 3-NOI-3.	☐	☐	☒	☐
NOI-4: Result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project? See Impact 3-NOI-4.	☐	☐	☒	☐
NOI-5: 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? See Impact 3-NOI-5.	☐	☐	☒	☐
NOI-6: For a Project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels? See Impact 3-NOI-6.	☐	☐	☐	☒

3.10.6.4 Alternative 4: No Federal Action/No Project

Under Alternative 4, the Project would not occur and no substantial changes would be made to the physical or human environment within the Project area. The current permitted restoration activities, which include the small-scale control of invasive plant species by hand-tools only and the planting and seeding of native species, would continue at the Project site. Additionally, SoCalGas would continue to manage natural gas wells and associated pipelines within the Ballona Reserve and independently would pursue well and pipeline abandonment and/or relocation based on the company's priorities independent of the management of the Ballona Reserve.

As no new wetlands restoration efforts beyond what currently occurs, no new visitor amenities, and no gas well relocation would occur or be constructed under Alternative 4, no mechanized equipment-related noise levels would be generated at the Project site. Additionally, as the current operations and maintenance activities by CDFW, SoCalGas, and others would continue, no new noise sources would be introduced at the Project site. Alternative 4 would not result in any substantial changes to the Project site, and would not: introduce any activities that would result in the 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; result in the exposure of persons to, or generation of excessive groundborne vibration or groundborne noise levels; result in a substantial permanent increase in ambient noise levels; result in a substantial temporary or periodic increase in ambient noise levels; or expose people residing or working in the Project area to excessive airport-related or private airstrip-related noise levels. Thus, Alternative 4 would result in no impact relating to Noise or vibration.

3.10.7 Cumulative Impacts

As analyzed in Section 3.10.6.4, Alternative 4 would result in no impact relating to noise or vibration. Accordingly, it would not cause or contribute to any related cumulative impact. Therefore, the rest of this analysis focuses on the various restoration alternatives (Alternatives 1, 2, and 3).

As the effects of both noise and vibration levels are localized in nature and are drastically reduced in magnitude as distance from the source increases, the geographic scope for the cumulative restoration phase -related noise and vibration analysis is the maximum reasonable distance within which Project-related noise could be perceived as an increase in ambient conditions at any point from the initiation of on-site activities and throughout the post-restoration period and, for potential vibration-related cumulative impacts, the maximum reasonable distance and time period within which Project-related vibration could be perceptible. This analysis assumes that projects located within 0.25 mile of the Project site could generate noise or vibration that could combine with noise or vibration generated by Alternative 1, 2, or 3 to cause or contribute to cumulative restoration-related environmental effects. The ongoing impacts of past projects within 0.25-mile of the Project site are reflected in Section 3.10.2, *Affected Environment*, which describes existing sound and vibration levels in the relevant geographic area. As identified in Table 3.1-1, *Existing and Reasonably Foreseeable Future Projects,* and shown in Figure 3.1-1, *Cumulative Projects*, cumulative projects No. 1, 2, 11, 19, 23, 25, 31, 36, 38, 43, 44, 45, and 46 are located within 0.25 mile of the Project site.

With respect to traffic noise levels resulting from the Project and the other cumulative projects identified above, the geographic scope for the analysis is the local street system in the Project study area analyzed in the Project's traffic report (Appendix H) and the adjacent residences.

This analysis considers whether Project-generated noise and vibration could combine with the existing noise and vibration levels described in Section 3.10.2 and with noise and vibration levels associated with other present and reasonably foreseeable future projects within 0.25-mile of the Project site to cause or contribute to a significant cumulative impact.

In this context, should the construction activities for any one or more of these cumulative projects overlap with the restoration-related construction for the Project, nearby noise-sensitive receptors to these concurrent activities would be exposed to cumulative noise effects associated with both an exceedance of the applicable (i.e., County or City) construction noise standards and a substantial increase in ambient noise levels. The City of Los Angeles defines normally acceptable land use compatibility noise levels as up to 55 dBA CNEL in single family residential areas, and up to 60 dBA CNEL in residential multi-family areas. As shown in Table 3.10-3, *Summary of Long-Term noise Measurements*, ambient noise levels measured in the project area ranged from approximately 60 dBA to 66 dBA CNEL. In addition, modeled existing traffic noise adjacent to roadways in the project area ranges from approximately 64 dBA to 76 dBA CNEL (see Table 3.10-4, *Modeled Existing Traffic Noise Levels*). Given these elevated ambient noise levels, existing noise conditions in the project area are sufficiently adverse to conclude that a significant cumulative impact exists to which Alternative 1, 2, or 3 could contribute.

3.10.7.1 Restoration-related Cumulative Noise Impacts

This analysis assumes that each of the cumulative projects would be subject to the construction noise regulations of either the County of Los Angeles or the City of Los Angeles. Therefore, as for the analysis of potential direct and indirect effects of Alternatives 1, 2 or 3, this analysis of cumulative effects relies on thresholds of significance for purposes of this analysis. See Section 3.10.4, *Thresholds of Significance*. As discussed in Section 3.10.6, *Direct and Indirect Effects*, Mitigation Measures NOI-1-i through NOI-1-ix would be implemented as part of Alternative 1, 2, and 3 to ensure that all technically feasible measures would be implemented to reduce construction noise levels. Implementation of these mitigation measures would reduce Alternative 1, 2 and 3's potential effects below the County's applicable noise standard and would comply with the City's stipulation that all technically feasible measures be implemented to reduce construction equipment noise levels. Furthermore, while Alternative 1, 2 or 3's restoration activities would result in an increase in ambient noise levels at the surrounding sensitive uses located off-site, none of the off-site receptors would be exposed to noise levels that exceed 90 dBA. Based on criteria recommended by the FTA, a daytime hourly L_{eq} level of 90 dBA has been identified as a noise level where adverse community reaction could occur from construction-related noise levels. This analysis assumes that projects located within 0.25 mile of Alternative 1, 2 or 3's restoration activity could generate noise or vibration that could combine with noise or vibration generated by Alternative 1, 2, or 3 to cause or contribute to cumulative restoration-related environmental effects. The ongoing impacts of past projects within 0.25-mile of the Project site are reflected in Section 3.10.2, *Affected Environment*, which describes existing sound and vibration levels in the relevant geographic area. The restoration -related noise levels generated by Alternatives 1, 2, or 3 combined with noise levels associated with other present and reasonably foreseeable future projects within 0.25-mile of the Project site would not result in significant impacts associated with a substantial temporary increase in ambient noise levels at the off-site receptor locations. Alternative 1, 2 and 3's contribution to construction noise would not be cumulatively considerable.

3.10.7.2 Post-restoration Cumulative Noise Impacts

Overall, Alternatives 1, 2 and 3 would not be anticipated to result in a substantial permanent increase in the ambient noise levels at the off-site sensitive uses surrounding the Project site during the post-restoration phase. Although long-term operations of cumulative projects in the vicinity of the Project site may increase local noise levels, the Project's contribution to long-term noise in the vicinity of the Project site would not be cumulatively considerable.

Cumulative mobile source noise impacts would occur primarily as a result of increased off-site traffic on local roadways due to the Project and cumulative projects within the traffic study area.

Therefore, cumulative traffic-generated noise impacts have been assessed based on the contribution of the Project to future cumulative base traffic volumes on the roadway segments in the Project's traffic study area. The noise levels associated with existing traffic volumes and cumulative traffic volumes with the Project are identified in Table 3.10-25, *Cumulative Traffic Noise Levels With Project*. As shown therein, cumulative development along with the Project would increase local noise levels by a maximum of 2.1 dBA CNEL at roadway segment of Bluff Creek Drive, east of Lincoln Boulevard, which would not exceed 5.0 dBA

CNEL. As the increase in noise levels at all of the analyzed roadway segments would not exceed 5.0 dBA CNEL, the traffic noise increase resulting from cumulative projects, including the Project, would not be substantial. The cumulative effect associated with mobile source noise would be less than significant.

3.10.7.3 Airport and Airstrip Cumulative Noise Impacts

LAX is located approximately 1 mile south of the Project site. However, the Project site is located outside of the airport influence area and runway protection zones of LAX (LAC ALUC 2003). Although airport-related noise (such as over-flights) would be audible from the Project site, people working on or visiting the Project site would not be exposed to excessive noise levels from operations at LAX. The cumulative scenario evaluated in this analysis would have no effect on the operations of LAX, including the airport influence area and runway protection zones. Therefore, there would be no cumulative noise impact associated with the Project and operations at LAX. There are no private airstrips in the vicinity of the Project site; therefore, there would be no cumulative noise impact associated with Alternatives 1, 2, or 3 and operations of private airstrips.

Vibration Cumulative Impacts

With respect to environmental effects associated with vibration levels, the greatest cumulative effect on sensitive receptors in the project area would occur during concurrent implementation activities of Alternative 1, 2, or 3 with other cumulative projects. However, due to the rapid attenuation of vibration levels over distance, potential adverse vibration effects on off-site structures would be site-specific as only receptors located directly adjacent to a construction site would be exposed to perceptible vibration levels. As shown in Table 3.10-12, *Vibration Source Levels for Equipment*, the vibration velocity level associated with a piece of construction equipment at 25 feet would be attenuated by approximately 65% at a distance of 50 feet and 87% at a distance of 100 feet. At a distance of 1,000 feet, the vibration velocity would be attenuated to a level that would be less than 1% of the vibration velocity at 25 feet. With respect to vibration effects associated with building damage, a receptor would need to be located within 15 feet from the operation of heavy off-road equipment (e.g., large bulldozer) before the FTA's vibration criteria of 0.2 in/sec for "non-engineered timber and masonry buildings" would be exceeded. With respect to human annoyance, a receptor would need to be located within 100 feet from the operation of heavy off-road equipment for the County's presumed perception threshold of 0.01 in/sec to be exceeded. Thus, given the rapid attenuation of groundborne vibration, Alternative 1, 2 or 3 and its nearest cumulative projects would not be in close enough proximity to each other to affect the same sensitive receptors should construction for these cumulative projects occur at the

TABLE 3.10-25
CUMULATIVE ROADWAY NOISE LEVELS WITH PROJECT

Roadway Segment	Existing Land Uses Located Along Roadway Segment	Noise Levels in dB CNEL[a]						
		Existing Traffic Volumes (A)	Future Without Project Traffic Volumes (B)	Future With Project Traffic Volumes (C)	Cumulative Increase (C – A)	Significant Threshold[b]	Significant?	Project Contribution to Cumulative Increase (C – B)
Admiralty Way, north of Bali Way	Residential/Library/ Medical	72.4	72.8	72.8	0.4	5.0	No	0.0
Admiralty Way, south of Bali Way	Commercial/Marina	71.6	72.0	72.0	0.4	5.0	No	0.0
Admiralty Way, north of Fiji Way	Commercial/Marina	69.4	69.9	70.0	0.5	5.0	No	0.0
Lincoln Boulevard, north of Washington Boulevard	Commercial	71.7	72.3	72.3	0.6	5.0	No	0.0
Lincoln Boulevard, north of SR-90	Commercial	73.1	73.6	73.6	0.6	5.0	No	0.0
Lincoln Boulevard, north of Bali Way	Commercial/Medical	71.7	72.3	72.3	0.7	5.0	No	0.0
Lincoln Boulevard, north of Mindanao Way	Commercial	72.5	73.2	73.2	0.7	5.0	No	0.0
Lincoln Boulevard, north of Fiji Way	Residential/ Commercial	73.4	74.0	74.0	0.6	5.0	No	0.0
Lincoln Boulevard, north of Culver Boulevard	Commercial	75.6	76.1	76.1	0.5	5.0	No	0.0
Lincoln Boulevard, north of Jefferson Boulevard	Residential/ Commercial	76.2	76.7	76.7	0.5	5.0	No	0.0
Lincoln Boulevard, north of Bluff Creek Drive	Residential	75.5	76.0	76.0	0.5	5.0	No	0.0

TABLE 3.10-25 (Continued)
CUMULATIVE ROADWAY NOISE LEVELS WITH PROJECT

Roadway Segment	Existing Land Uses Located Along Roadway Segment	Noise Levels in dB CNEL[a]						
		Existing Traffic Volumes (A)	Future Without Project Traffic Volumes (B)	Future With Project Traffic Volumes (C)	Cumulative Increase (C – A)	Significant Threshold[b]	Significant?	Project Contribution to Cumulative Increase (C – B)
Lincoln Boulevard, south of Bluff Creek Drive	Residential/Park	76.0	76.7	76.7	0.7	5.0	No	0.0
Mindanao Way, west of Admiralty Way	Marina	56.2	56.6	56.6	0.3	5.0	No	0.0
Mindanao Way, west of Lincoln Boulevard	Commercial	66.3	66.6	66.6	0.3	5.0	No	0.0
Mindanao Way, west of SR-90 EB	Residential/ Commercial	68.5	68.8	68.8	0.3	5.0	No	0.0
Mindanao Way, west of SR-90 WB	Residential/ Commercial	67.4	67.7	67.7	0.3	5.0	No	0.0
Mindanao Way, east of SR-90 Ramp	Commercial	67.5	67.8	67.8	0.3	5.0	No	0.0
Bali Way, west of Admiralty Way	Commercial	57.1	57.5	57.5	0.4	5.0	No	0.0
Bali Way, west of Lincoln Boulevard	Commercial	64.2	64.5	64.5	0.3	5.0	No	0.0
Washington Boulevard, west of Lincoln Boulevard	Hotel/Commercial	70.8	71.1	71.1	0.4	5.0	No	0.0
Washington Boulevard, east of Lincoln Boulevard	Commercial	69.5	69.9	69.9	0.4	5.0	No	0.0
Bluff Creek Drive, east of Lincoln Boulevard	Residential/Park	65.5	67.6	67.6	2.1	5.0	No	0.0
Jefferson Boulevard, east of Lincoln Boulevard	Residential/ Medical	72.6	73.6	73.6	1.0	5.0	No	0.0

TABLE 3.10-25 (Continued)
CUMULATIVE ROADWAY NOISE LEVELS WITH PROJECT

Roadway Segment	Existing Land Uses Located Along Roadway Segment	Noise Levels in dB CNEL[a]						
		Existing Traffic Volumes (A)	Future Without Project Traffic Volumes (B)	Future With Project Traffic Volumes (C)	Cumulative Increase (C – A)	Significant Threshold[b]	Significant?	Project Contribution to Cumulative Increase (C – B)
Culver Boulevard, west of Nicholson Street	Residential/Hotel/ Commercial/Park	68.0	68.6	68.6	0.6	5.0	No	0.0
Culver Boulevard, west of Jefferson Boulevard	Residential	73.8	74.2	74.3	0.5	5.0	No	0.0
Culver Boulevard, west of SR-90 EB	Park	74.1	74.4	74.4	0.3	5.0	No	0.0
Culver Boulevard, east of SR-90 Ramp	Commercial	71.1	71.4	71.4	0.3	5.0	No	0.0
Culver Boulevard, east of Vista del Mar	Residential/ Commercial	69.5	70.0	70.0	0.5	5.0	No	0.0
Vista del Mar, north of Culver Boulevard	Residential/ Commercial	54.2	54.4	54.4	0.2	5.0	No	0.0
SR-90 WB, north of Mindanao Way	Hotel/Commercial		69.2	69.5	69.5	5.0	No	0.3
SR-90 WB, north of Culver Boulevard	Commercial		59.4	59.8	59.8	5.0	No	0.4
SR-90 EB, north of Mindanao way	Commercial		68.0	68.3	68.3	5.0	No	0.3
SR-90 EB, between Mindanao Way and Culver Boulevard	Residential		71.6	71.9	71.8	5.0	No	0.3

NOTES:

[a] Values represent noise levels at the approximate property line of the nearest receptors fronting the roadway.

[b] As discussed previously, an increase of 5 dBA or greater in the noise exposure of sensitive receptors due to traffic is considered to result in a substantial permanent increase in ambient noise levels.

TRAFFIC INFORMATION SOURCE: Raju Associates 2015.
TABLE SOURCE: ESA, 2016. Calculation data and results provided in Appendix G.

same time as Alternative 1, 2, or 3 is implemented. Therefore, Alternative 1, 2 and 3's less-than-significant residual impact would not by itself cause a significant cumulative vibration-related impact and, because it would not combine with the incremental impacts of any of the other cumulative projects, could not contribute to a significant vibration-related impact. Alternatives 1, 2, and 3 would result in a less-than-significant cumulative impact relating to vibration.

3.10.8 References

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3.11 Recreation

3.11.1 Introduction

This section identifies and evaluates adverse impacts and potential beneficial effects related to recreational resources in the context of various restoration alternatives on the Project site and at nearby areas, including proposed improvements to recreational access and opportunities. This analysis describes existing conditions in Section 3.11.2, summarizes applicable laws, regulations, plans, and standards in Section 3.11.3; identifies the criteria used to evaluate the significance of potential impacts (referred to as "thresholds of significance") in Section 3.11.4; describes the methodology used to evaluate these impacts in Section 3.11.5; analyzes the direct and indirect beneficial effects and adverse impacts in Section 3.11.6; analyzes cumulative impacts in Section 3.11.7; and provides references in Section 3.11.8. Because installation, operation, and maintenance of the natural gas wells being relocated onto the SoCalGas Property would have no impact on the use of existing neighborhood and regional parks or other recreational facilities, this analysis focuses primarily on the portion of the Project site that is located within the Ballona Reserve.

3.11.2 Affected Environment

3.11.2.1 Study Area

There is limited information about how far people are willing to travel to use destinations for different types of recreational physical activity (McCormack et al. 2006). Estimates of the National Recreation Association indicate that service radii for the identified types of recreational areas include: play fields including baseball fields (up to 1 mile, although this varies with population density), community parks (up to 2 miles), major parks (30 minute maximum travel distance) (American Society of Planning Officials 1965). The study area for this analysis focuses on the parks, recreational facilities, beaches, and public access amenities (i.e., bicycle and pedestrian paths) that could be adversely impacted by the Project within 0.5 mile of the Project site. In addition, this analysis considers baseball fields within the Project site and within portions of unincorporated Los Angeles County, the community of Marina del Rey, and portions of the City of Los Angeles including the communities of Westchester, Playa del Rey, Del Rey, and the City of Culver City, within a 4-mile radius. This radius was chosen to encompass the baseball fields that could potentially host the Culver Marina Little League should it be relocated during restoration activities.

3.11.2.2 Environmental Setting

The Ballona Reserve represents an important recreational area for the surrounding community because it is located between an urbanized and developed area to the east and the Pacific Ocean to the west. There are no recreational resources on the Southern California Gas Company (SoCalGas) Property. Most of the Ballona Reserve is not publically accessible; although, it is open to guided tours conducted by the Los Angeles Audubon Society, the Friends of Ballona Wetlands, and The Bay Foundation, and allowed only on a pre-arranged, permitted basis. In addition, the Ballona Reserve contains baseball fields exclusively used by the Culver Marina

Little League in South Area C. The Ballona Creek channel, which traverses the Ballona Reserve, is used by collegiate and recreational rowing organizations, recreational kayakers, and recreational, shore-based fisherman. The Ballona Creek Bike Path, a public Class I bike path, parallels the Ballona Creek channel through the Project site and provides a connection from Culver City to the Marvin Braude Bike Trail and the beach areas. These and other recreational facilities and opportunities available near the Project site are described below.

Parks and Recreational Facilities

Although the Ballona Reserve represents one of the largest open space areas within the area, there are several parks and recreational facilities within a 0.5-mile radius. Table 3.11-1 provides a description of parks and recreational facilities within the immediate 0.5-mile area and the agency responsible for them.

TABLE 3.11-1
PARKS AND RECREATIONAL FACILITIES WITHIN 0.5 MILE OF THE PROJECT SITE

Facility	Distance from Project Site (miles)	Type of Park	Acres	Amenities	Operating Agency
Aubrey E. Austin Jr. Park and North Jetty	0.30	Pocket Park	1	Paved walkway out to the ocean and overlook for the Marina lagoon.	County of Los Angeles Department of Beaches and Harbors
Burton Chace Park	0.14	Neighborhood	10	Multi-purpose rooms, picnic tables, barbecues, pergolas, picnic shelters, green space.	County of Los Angeles Department of Beaches and Harbor
Del Rey Lagoon Park	0.05	Pocket Park	13	Baseball diamond, basketball courts, children's play area, green space, lagoon.	City of Los Angeles
Dockweiler Beach	0.19	Regional	255	Fire rings, picnic areas, volleyball courts, swimming, bike paths, restrooms, showers, RV Park, Youth Center.	County of Los Angeles Department of Beaches and Harbor
Glen Alla Park	0.10	Pocket Park	0.12	Basketball courts (lighted/outdoor), children's play area, picnic tables.-	City of Los Angeles
Playa Vista Park	0.15	Neighborhood Park	8	Baseball diamond, basketball courts, multi-purpose fields, tennis courts, children's play area, green space.	Playa Vista Neighborhood Association
Titmouse Park	Adjacent to Project site	Pocket Park	0.23	Benches, granite pathways, native plants, green space.	City of Los Angeles
Minton Street Park	0.5	Pocket Park	1.2	Pedestrian path, shade structures, interpretive panels, bike racks.	Mountain Recreation and Conservation Authority

Regional recreational, park, and open space facilities within 10 miles of the Project site include, but are not limited to, beaches, the Westchester Golf Course in Westchester, the Kenneth Hahn State Recreation Area in Baldwin Hills, and the Santa Monica Mountains National Recreation Area to the north of the Project site. Within open space areas, a wide variety of recreational activities take place including, but not limited to, bird watching, horseback riding, recreational boating, and other active and passive recreational experiences.

Baseball Fields

The Ballona Reserve is home to the Culver Marina Little League baseball fields in South Area C. The site hosts four baseball fields (three of which are functional), which are accessed from a driveway on Culver Boulevard, and include related facilities, such as restrooms, a concessions stand, maintenance facilities, and a dirt parking lot. Use of the baseball fields is permitted under a license agreement between CDFW and the Culver Marina Little League. The Culver Marina Little League uses the baseball fields from February through June between 8:00 a.m. and 7:30 p.m. During the remaining portions of the year, the gates to the baseball fields are locked and the fields are not publically accessible during this time.

In addition, there are three baseball Little League organizations that undertake activities in areas bordering the Project site including: the Culver City Little League; the Del Rey Little League, and the North Venice Little League. The three leagues utilize the following baseball fields for training and competition:

1. ***Culver City Little League***. The Culver City Little League uses the fields at Culver City Park at 9800 Jefferson Boulevard in Culver City, which are located approximately 3.6 miles from the Project site.

2. ***Del Rey American Little League***. Located in Westchester and Playa del Rey, the Del Rey American Little League uses the following fields:

    a) *American Field*. 6705 West 77th Street, City of Los Angeles. Approximately 1.35 miles from the Project site.

    b) *Del Rey Field*. 100 Convoy Street, City of Los Angeles. Approximately 0.25 miles from the Project site.

3. ***North Venice Little League***. Servicing the Venice and Mar Vista communities, the North Venice Little League uses the fields at 3321 Grand View Boulevard in the City of Los Angeles, which are located approximately 2.40 miles from the Project site.

Rowing Activities

The Project site is adjacent to Marina del Rey and is traversed by the Ballona Creek channel, which parallels the Marina. The Marina is home to three rowing organizations and is utilized for training purposes, as described further below. The Ballona Creek channel is also utilized for training purposes and used for competition. Given the 2,000 meter straightaway needed for such activities, competitions only take place in the channel. The following three rowing organizations utilize the Marina and Ballona Creek channel for training and the channel for competition:

1. ***University of California, Los Angeles (UCLA)***. The UCLA Boathouse is located at 14001 Fiji Way at Marina del Rey. The UCLA Boathouse has access to both the Ballona Creek channel and the Marina. The UCLA Rowing Team, which has three teams with approximately 225 competitors, uses the channel for training and competitions for

10 months of the year, from September to June, up to seven days a week. During training, each team uses an average of 5 to 10 boats. Competition events occur from October through May each year and require 2,000 meters of straightaway in the Ballona Creek channel (UCLA 2015).

2. ***Loyola Mary University (LMU).*** The LMU Jane Browne Boathouse is located 13669 Fiji Way at Marina del Rey. The LMU Rowing Team, which has a total of approximately 80 athletes, uses the Ballona Creek channel and the Marina for training, depending on the ocean swells, and the channel during competitions. The Marina and channel are used up to six days a week from September to June, with men's practices from 6:00 a.m. to 8:00 a.m. and women's practice from 7:00 a.m. to 9:00 a.m. During training, the team uses an average of four motor boats and five to six rowing shells. Competitions begin in October and end in May. (LMU 2015)

3. ***Los Angeles Rowing Club (LARC).*** The LARC Boathouse is located along Palawan Way at Mother's Beach at Marina del Rey. The LARC is both a recreational and competitive rowing club and offers novice, intermediate, and competitive rowing programs in both sweep (one oar per person) and scull (two oars per person). The majority of workouts take place on the weekdays (Monday through Friday) from 5:00 a.m. to 7:00 a.m. in the Marina and weekends (Saturday and Sunday) from 6:00 a.m. to 10:30 a.m. in the Ballona Creek channel. Rowing in Ballona Creek channel is limited due to the UCLA rowing team having preference. Most crews row at least twice a week in the Marina, but can be scheduled up to four times a week (LARC 2015).

Bike Paths and Pedestrian Trails

The Ballona Reserve is located within two jurisdictions, the City of Los Angeles on the southern portion (Area B) and the County of Los Angeles in the northern portion (Areas A and C). Both the City and the County have adopted Bicycle Master Plans, in 2010 and 2012, respectively. There are several existing bicycle and pedestrian paths that traverse the Project site and provide public access. The Ballona Creek Bike Path is a Class I, County-maintained bike path that runs for 7 miles along the north levee of Ballona Creek from Syd Kronenthal Park in east Culver City to the point where it joins the western portion of the Marvin Braude Bike Trail along the northern levee of Ballona Creek just west of Area A. Within the Project site, the Ballona Creek Bike Path is on top of the north levee of Ballona Creek, paralleling the south side of both Area A and South Area C (County of Los Angeles 2012). The bike path is not directly accessible from the Ballona Reserve because it is closed to the public and fenced; however, in the vicinity of the Ballona Reserve, it can be accessed at Lincoln Boulevard where it crosses Ballona Creek and from the Marvin Braude Bike Trail at the west end of Fiji Way.

The Marvin Braude Bike Trail is a 22-mile system that runs along the Pacific Coast from Pacific Palisades in the City of Los Angeles to the City of Torrance, which is part of the Pacific Coast Bike Route. The California Coastal Trail runs adjacent to the Marvin Braude Bike Trail to the west of the Project site. The Marvin Braude Bike Trail is a Class I, County-maintained bike path that parallels the Pacific Ocean along the beach for most of its length, except in the vicinity of the Project site. It begins at Will Rogers State Beach in the City of Los Angeles community of Pacific Palisades and extends 22 miles to Torrance County Beach in the City of Torrance. In the vicinity of the Project site, the bike path runs along Admiralty Way in Marina del Rey, turns west onto Fiji Way, and parallels the northern and western perimeter of Area A until it merges with the Ballona Creek Bike Path just west of Area A, traveling west along the northern levee of the creek. The bike path crosses the Pacific Avenue Bridge and travels south along the beach to Torrance. Access to the bike path is widely available.

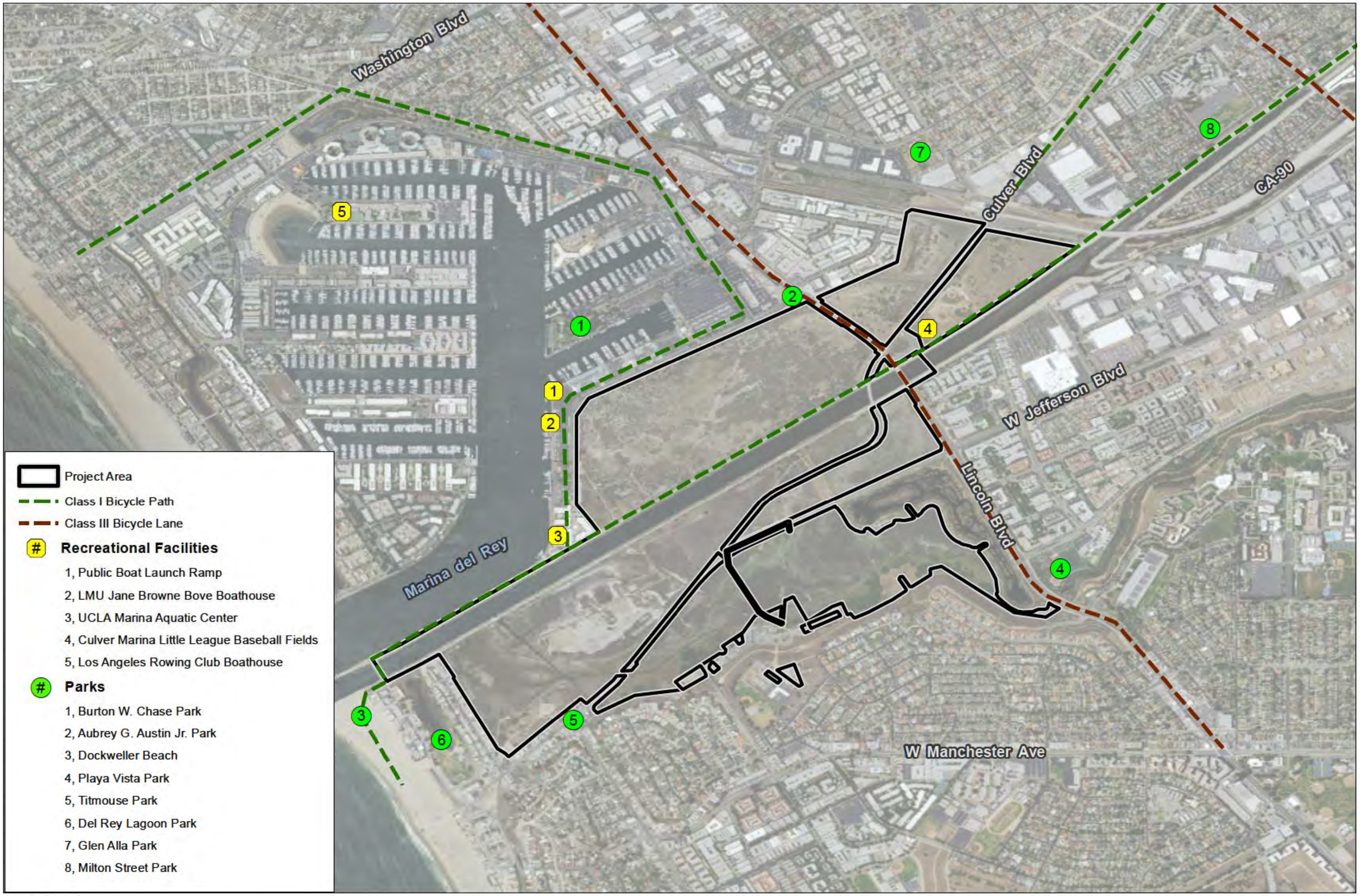
Outside of the Project site, there is a pedestrian trail around the Freshwater Marsh that mostly parallels Lincoln Boulevard and Jefferson Boulevard. The portions of the trail adjacent to Lincoln Boulevard and Jefferson Boulevard are open to the public; however, the remaining portions of the trail are gated and inaccessible to the public. East of Lincoln Boulevard, there is an additional public pedestrian trail known as the Bluffs Trail that follows the western section of the riparian corridor. The trail is accessed off of Cabora Drive and is not easily accessible from the Project site.

In addition to the aforementioned Ballona Creek Bike Path and the Marvin Braude Bike Trail, there are a number of fragmented bicycle lanes and routes in areas surrounding the Project site, including a Class III Bike Route along Lincoln Boulevard that traverses the Ballona Reserve.

The pedestrian trails within the Ballona Reserve are currently not open to the public. The use of these trails is allowed only with CDFW authorization and permitting. Use of the trails in West Area B by the Friends of Ballona Wetlands and the Los Angeles Audubon Society for educational, restoration, and maintenance purposes is currently permitted with several restrictions. Both organizations and The Bay Foundation host guided tours on a pre-arranged basis.

Several regional bike and pedestrian paths traverse the County of Los Angeles and connect to the Project site. As shown in Figure 3.11-1, bicycle lanes within the region connect to the Project site via a series of Class II and III bicycle lanes and route segments that lead to the Ballona Creek and the Marvin Braude bicycle paths, which are adjacent to the Project site.

The National Park Service oversees the National Trails System, which is described as "the network of scenic, historic, and recreation trails created by the National Trails System Act of 1968." Three such trails are in the Los Angeles area. The Pacific Crest National Scenic Trail is an approximately 2,650-mile trial extending from Mexico to Canada; it runs east of Los Angeles along the San Bernardino and Angeles National Forests (USDA Forest Service 2016, Gothamist LLC 2009). The Juan Bautista de Anza National Historic Trail is an approximately 1,210-mile trail extending from Nogales, Arizona to San Francisco, California that generally follows State Route 134, I-5 and I-10 through Los Angeles County (NPS 2016a, Gothamist LLC 2009). Finally, the Old Spanish National Historic Trail is an approximately 2,700-mile long trail extending from Santa Fe, New Mexico, to the San Gabriel Mission immediately east of Los Angeles, California (NPS 2016b; Gothamist LLC 2009). Of these, the Juan Bautista de Anza National Historic Trail is closest to the Project site. At its nearest point, this trail is approximately 12.25 miles from the northeast portion of the Project site.



PublicAccess.mxd

Ballona Wetlands Restoration Project

Ballona Wetlands. D120367

Figure 3.11-1

Existing Parks and Recreational Facilities in the Project Vicinity

3.11.3 Applicable Laws, Regulations, Plans, and Standards

Because there are no recreational opportunities or facilities on the SoCalGas Property, this discussion of the regulatory setting focuses on the Ballona Reserve.

3.11.3.1 Federal

Although there are no generally applicable Federal laws, regulations, plans, or standards governing recreational facilities within the Ballona Reserve, any pedestrian, bike, or equestrian trails planned to be sited on Corps constructed structures, such as levees, or immediately adjacent to flood risk management channels, the Corps would review these recreational features for compatibility with the LACDA project in accordance with applicable Corps regulations and policies.

National Trails System Act

The Act acknowledges the increasing popularity of outdoor recreation and the need to promote access to and enjoyment of outdoor areas, both urban and more remote areas.

Executive Order 13195, Trails for America in the 21st Century

The E.O. directs Federal agencies to the extent permitted by law and where practicable to protect, connect, promote, and assist trails of all types.

3.11.3.2 State

Regulations governing public use of the Ballona Reserve allow for pedestrian and bicycle use, boating, and fishing in designated areas as identified by the California Department of Fish and Wildlife (14 Cal. Code Regs. §630(e), (f), (g)). Further, “Unless the department [CDFW] determines that restoration or other uses… is more appropriate, existing recreational uses may be allowed under license agreement with Playa Vista Little League in that portion of Area C identified in the license agreement and existing parking areas may be allowed under leases to the County of Los Angeles” (14 Cal. Code Regs. §630(h)).

3.11.3.3 Local

There are no applicable local laws or regulations that govern construction, operation and maintenance of recreational facilities on the Ballona Reserve. Local plans and policies are described below; while informative, they do not govern the development of recreational facilities within the Ballona Reserve, which is owned by the State.

Los Angeles County General Plan

The County of Los Angeles updated and approved its General Plan on March 24, 2015, including the Parks and Recreation Element. The Los Angeles County General Plan contains goals, policies, implementation programs, and ordinances that provide a framework of growth through the year 2035. The Parks and Recreation Element provides policy direction for the maintenance and expansion of the County’s parks and recreation system. Policies contained in the Parks and Recreation Element encourage the development of multi-benefit parks and open spaces through the collaborative efforts among entities such as cities, the County, state, and Federal agencies, private groups, schools, private landowners, and other organizations. The following policy found in the Parks and Recreation Element states:

> ***Policy P/R 2.5*:** Support the development of multi-benefit parks and open spaces through collaborative efforts among entities such as cities, the County, state, and Federal agencies, private groups, schools, private landowners, and other organizations.

Westchester-Playa del Rey Community Plan

The Westchester-Playa del Rey Community Plan sets forth land use designations and policies to guide development of the community, while preserving and enhancing the community. The Community Plan addresses the provision of recreational facilities, and identifies policies aimed at ensuring that adequate facilities and services are provided. According to the Westchester-Playa del Rey Community Plan, there remains a significant need for additional new parkland and recreational facilities to serve the Westchester-Playa Del Rey community based on Federal, state and local standards. Therefore, the Community Plan fully supports and encourages continuing efforts to acquire and develop new open space, parkland and recreational facilities in the community. The Ballona Reserve and the private SoCalGas Property are designated as Open Space by the Westchester-Playa Del Rey Community Plan. The following policy found in the Westchester-Playa del Rey Community Plan applies to the Project site:

> ***Policy 5-1.5*:** Preserve and restore the Ballona Wetlands for enjoyment of the public.

Palms–Mar Vista–Del Rey Community Plan

The Palms–Mar Vista–Del Rey Community Plan sets forth land use designations and policies to guide development of the community, while preserving and enhancing the community. The Community Plan addresses the provision of public services and recreational facilities, and identifies policies aimed at ensuring that adequate facilities and services are provided. The Palms-Mar Vista-Del Rey Community Plan states:

> ***Policy 5-1.1*:** Encourage the retention of passive and visual open space which provides a balance to urban development of the community.

3.11.4 Thresholds of Significance

In this analysis, the Corps has elected to evaluate the context and intensity of potential environmental consequences relative to the criteria identified in CEQA Guidelines Appendix G, Section XV, with an additional consideration by both lead agencies of impacts to existing recreational facilities within the Ballona Reserve. In addition, the analysis considers where improvements of the Project would provide a net benefit relative to the conditions described in Section 3.11.2, Affected Environment.

Under CEQA Guidelines Appendix G Section XV(b), a project would have a significant adverse impact on the environment if it would include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. As shown in Figure 2-2, *Alternative 1, Phase 2: Public Access Plan*, Figure 2-18, *Alternative 1, Phase 1: Public Access Plan*, Figure 2-45, *Alternative 2: Public Access Plan*, and Figure 2-54, *Alternative 3: Public Access Plan*, in Chapter 2, *Description of Alternatives*, the various restoration alternatives would include new pedestrian paths and bike paths throughout the Ballona Reserve. The primary purpose of this EIS/EIR is to evaluate the potential impacts of implementing the various restoration alternatives. The pedestrian paths and bicycle paths that would be provided on-site as a part of Alternatives 1, 2, and 3 are considered recreational facilities and, thus, the analysis of the construction or expansion of recreational facilities as it relates to the Project is described and analyzed throughout Chapter 3, *Environmental Consequences*, in Sections 3.2 through 3.14 of this EIS/EIR. Therefore, the potential impacts associated with construction and/or expansion of recreational facilities is not included in this analysis.

For purposes of this analysis, Alternative 1, 2, 3, or 4 would have a significant impact related to Recreation if it would:

REC-1 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.

3.11.5 Methodology

This analysis focuses on potential impacts to existing parks and recreational facilities within the Ballona Reserve as well as existing neighborhood and regional parks or other recreational facilities within the study area during and following restoration for each of the alternatives. These facilities, which are closed to the public except as authorized by CDFW, include the baseball fields in South Area C, pedestrian trails which provide access to Area B, the Ballona Creek Bike Path which travels on the northern levee parallel to Ballona Creek, and Ballona Creek, which is used by collegiate and recreational rowers and others. The analysis includes a qualitative evaluation of direct and indirect adverse impacts and beneficial effects resulting from implementing the various restoration alternatives.

3.11.6 Direct and Indirect Impacts

3.11.6.1 Alternative 1: Full Tidal Restoration/Proposed Action

1-REC-1: Alternative 1 would not increase the use of existing neighborhood and regional parks or other recreational facilities to the extent that substantial physical deterioration of the facilities would occur or be accelerated. (Less than Significant Impact)

Direct Impacts

Restoration

Facilities used for recreational purposes within the Ballona Reserve include: (1) the baseball fields in South Area C; (2) pedestrian trails in West Area B; (3) the Ballona Creek Bike Path, which is situated on the existing north levee; (4) and the Ballona Creek channel. Disruption of access to these facilities during construction of Alternative 1 could result in the increased use of parks and recreational facilities elsewhere within the area described in Section 3.11.2.1, *Study Area*.

(1) Baseball Fields

During Alternative 1, restoration-related grading and other activities would take place in South Area C, where the baseball fields are located. However, as described in Section 2.3.2.3, *Alternative 1: Public Access and Visitor Facilities*, of Chapter 2, *Description of Alternatives*, these activities would be limited to the eastern portion of South Area C and, thus, the baseball fields may not be directly impacted. If closure of these fields is required during restoration activities, CDFW will notify the Culver-Marina Little League in advance of such closure. It is likely that this recreational use would be able to continue during the restoration phase under Alternative 1, but is not guaranteed.

(2) Pedestrian Trails

As described above, under existing conditions, pedestrian paths in West Area B are only accessible by CDFW staff and through pre-arranged guided tours and restoration activities. During restoration activities, CDFW would be able to access these trails; however, use of this area by the Friends of Ballona Wetlands and the Los Angeles Audubon Society would be limited and/or confined to the westernmost trails in West Area B. Closure of this area would disrupt existing tours and restoration activities conducted by these organizations. However, since the Ballona Reserve is not open to the public and CDFW only allows these tours and restoration activities on a pre-arranged, pre-approved basis, closure of this site is within CDFW's discretion. The proposed restoration activities would occur separately within Areas A, B, and C and sequentially over 4 years of active construction activities.[116] During this period it is likely that tours and activities by these organizations could be disrupted on some level. Once restoration is complete, a larger area of the Ballona Reserve would be accessible to these organizations and opened to the public. Thus, while these passive uses would be temporarily displaced during the restoration phase, this displacement would be short term and would result in an overall greater use of the Ballona Reserve, which would be a long-term beneficial effect.

(3) Bike Paths

As a part of Alternative 1, the Ballona Creek channel would be realigned to create a sinuous, meander-shaped channel through the Ballona Reserve. During Phase 1, the Ballona Creek Bike Path (described above) would be temporarily and then permanently rerouted into two routes. The first route would relocate the Ballona Creek Bike Path from its existing location along the northern Ballona Creek channel levee to the northern perimeter of Area A. The bike path could be accessed from two entrances. The first would be from the existing Ballona Creek Bike Path, which would travel under Lincoln Boulevard and connect to the new bike path at Culver Boulevard. The second entrance would be provided via Lincoln Boulevard over a new bridge crossing. The path then would head north along Lincoln Boulevard and west and south along Fiji Way, where it would merge with the existing Marvin Braude Bike Trail that currently follows Fiji Way. In Area B, the second route would consist of a new combined pedestrian and bicycle path along the new Culver Boulevard levee parallel to Culver Boulevard. As shown in Figure 2-18,

[116] Although the restoration phase would last between 2017 and 2023, no mechanized activities would occur between 2020 and 2023 to facilitate habitat restoration and plant establishment.

Alternative 1, Phase 1: Public Access Plan, this portion of the bike path would cross Ballona Creek across a newly constructed bridge into East Area B, would travel along the Culver Boulevard levee to an interim levee that connects to the existing southern Ballona Creek flood channel levee just north of West Area B, and subsequently would connect to the Marvin Braude Bike Trail near Pacific Avenue.

As shown in Figure 2-2, *Alternative 1, Phase 2: Public Access Plan*, during Phase 2 the bike path would cross Ballona Creek into East Area B, would travel along the Culver Boulevard levee along Culver Boulevard, and ultimately would reconnect with the Marvin Braude Bike Trail west of West Area B near Pacific Avenue. In addition as shown in Figure 2-2, during this phase a connection to Vista del Mar and the community of Playa del Rey would be provided in the southwest corner of the Project site, near the West Culver Parking Lot.

Ballona Creek Bike Path access, as reconfigured, would be maintained for the duration of restoration activities. While the Area A Perimeter Levee and Culver Boulevard Levee are under construction, the existing Ballona Creek Bike Path would remain open to the public. Once these levees and the bike paths have been completed, they would open to the public and the existing bike path would be closed. Thus, access would be maintained and there would be no interruption in the availability of these recreational facilities. Reconstruction of the Ballona Creek Bike Path along the re-routed segment would result in a potential beneficial safety-related effect associated with the new surface. Accordingly, no increase in use or resulting physical deterioration of other bike paths within the Project area would occur during construction of Alternative 1.

(4) Ballona Creek Channel

During restoration activities, access to the Ballona Creek channel would remain open and water flow would be maintained at all times. While the majority of the creek would not be interrupted for water-related sporting activities, the reconfiguration of the channel under Alternative 1 once completed would interrupt rowing competitions. As noted above, collegiate and other rowing competitions require a 2,000-meter straightaway (see, e.g., UCLA 2015). Upon completion of Alternative 1, the remaining straightway following the proposed restoration would only be 1,372 meters. Thus, rowing competitions no longer would be able to be held in Ballona Creek channel. However, this does not preclude the use of the channel as a training location during and after restoration activities. Given that the channel would remain open during the restoration phase for Alternative 1, it is also expected that rowers would be able to maintain their non-competition use of the channel during this time. Rowers who normally use the Ballona Creek channel also could use the Marina for training purposes; however, rowing competitions could not take place in the Marina since the Marina does not have a 2,000-meter straightaway (UCLA 2015). At this time it is unknown where these competitions would be relocated and, thus, any evaluation of environmental impacts at these new facilities would be speculative. However, rowing competitions are held at the Port of Los Angeles and the Port of Long Beach so the ports are two potential replacement locations for competitions. Nevertheless, use of the Ballona Creek channel as a recreational facility would continue during the implementation of Alternative 1 and would not require the relocation of rowers to other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated.

In addition to rowing activities, restoration activities have the potential to disrupt recreational, shore-based fisherman and kayakers that access the channel. Once the Ballona Creek Bike Path is closed in the stretch from Lincoln Boulevard to the western terminus of Fiji Way, recreational, shore-based fisherman and kayakers would not be able to access this portion of the channel by foot from the bike path; however, both of these activities could take place in other portions of the channel, in the Marina, and/or in the ocean. In addition to rowers, fisherman, and kayakers, small watercraft[117] also periodically access the channel. As described above, access to the channel would remain open and water flow would be maintained at all times and, thus, small watercraft would have unrestricted access to the channel during restoration. Nonetheless, the construction of the pedestrian bridge could present challenges to mariners of small watercraft trying to access the channel during this time. To avoid such challenges, mariners navigating the channel would be given a 30-day notice of construction activities by the U.S. Coast Guard (U.S. Coast Guard 2016). With this notice, mariners who typically use the channel would be given the option of finding alternative locations to recreate while the bridge is being constructed, should they choose to do so. Thus, restoration activities under Alternative 1 would not require the relocation of fisherman, kayakers, and/or watercraft to other nearby recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated.

Implementation of Alternative 1 would not interfere with existing recreational uses in a manner that would result in substantial physical deterioration of existing parks and recreational facilities in the Project area. Direct impacts would be less than significant.

Post-restoration

Following the restoration phase, Alternative 1 would provide a network of bike and pedestrian paths and public access to portions of the Ballona Reserve that are inaccessible under existing conditions. This would be a long-term beneficial effect. The new (and relocated) bicycle paths and bridge crossings have been described above, under the restoration-phase discussion. As described in Chapter 2 under *Pedestrian Trails and Elevated Boardwalks* in Section 2.3.2.3, *Alternative 1: Public Access and Visitor Facilities*, the new pedestrian paths and elevated boardwalks would include approximately 2,000 linear feet of trails to allow visitors to walk through now-inaccessible areas of the Ballona Reserve and obtain closer habitat views using well-handled management approaches. In general, as shown in Figure 2-3, *Alternative 1, Phase 2: Public Access Plan*, in Chapter 2, *Description of Alternatives*, pedestrian trails would be 6 feet wide and constructed of stabilized decomposed granite, with native vegetation on either side where possible. Where revegetation using native species is not possible, these areas would remain unvegetated. Signage and resting points with seating would be included periodically along the trails. The boardwalks would be 10 feet wide and be constructed of wood floor surface, with guardrails on either side. In addition, as described under *Primary and Secondary Entrances* in Section 2.3.2.3, new entrances, overlooks, and key moments (some of which would include art and educational installations) would be provided throughout the Ballona Reserve to open the site to the public and provide access to pedestrian and bicycle trails and interpretive elements. By providing these enhanced recreational amenities, the Project would increase the use of recreational facilities within the Ballona Reserve and, consequently, could increase the use of existing recreational facilities in the surrounding area. However, the Project would not likely increase use of these facilities to the extent that substantial physical deterioration would occur. It is likely that most users who would visit the Ballona Reserve would remain on-site as opposed to visiting parks and recreational

[117] While Ballona Creek channel is considered a navigable waterway by the U.S. Coast Guard and the Corps, the only watercraft that are able to navigate this channel are logs, log rafts, rowboats, canoes, and small motorboats.

facilities in the vicinity. In addition, while there would likely be an increase in use of the new on-site recreational facilities from existing bike paths, the County of Los Angeles has an ongoing plan to maintain the bike trails subject to budgetary conditions.

Due to the increased availability of recreational amenities at the Ballona Reserve, it is anticipated that new users would primarily stay within the Project site and would not utilize off-site recreational resources. Furthermore, the Culver Marina Little League may be able to continue to use the existing baseball fields, and it is not anticipated that use of the Ballona Creek channel as a recreational facility would significantly increase above current levels. Thus, Alternative 1 would not result in the increased use of existing parks or recreational facilities such that substantial deterioration of these resources would occur or be accelerated. Furthermore, use of the recreational resources provided as a part of the Project would offset or reduce the use of existing parks and recreational facilities and, accordingly, could slow the deterioration of these facilities.

By opening a preserved and restored Ballona Reserve to the public, the Project would allow for wider enjoyment of its recreational and open space amenities and, thereby, expand and enhance recreational opportunities available within the study area. This would be a direct beneficial effect. Therefore, potential adverse impacts on parks and recreational facilities following restoration under Alternative 1 would be less than significant and the overall, long-term effect of Alternative 1 would be beneficial. No mitigation would be required.

Indirect Impacts

Restoration

Up to 122 workers could be present on the Project site at any one time over the course of the restoration period. As described in Section 3.14, *Socioeconomics and Environmental Justice*, it is unlikely that these workers would relocate their households as a consequence of working on the Project (resulting in new users of existing facilities) considering the employment patterns of construction workers in southern California and the operation of the market for construction labor. In addition, the implementation of Alternative 1 could result in the temporary increase in use of public parks and recreational facilities by workers during the restoration phase. However, construction workers move from work site to work site and are more likely to utilize parks and recreational facilities near their places of residence. As such, the temporary increase in the number of workers on the Project site would not result in a notable increase in the residential population of the Project area, nor would there be a corresponding increase in demand for parks and recreational facilities in the study area. Implementation of Alternative 1 would not indirectly generate a demand for park or recreational facilities that could not be adequately accommodated by existing or Project-related improvements. Indirect impacts would be less than significant.

Post-restoration

Existing operation and maintenance activities are expected to continue largely in accordance with existing practice. Alternative 1 would not result in a substantial increase in the number of on-site personnel during the post-restoration phase. Therefore, implementation of Alternative 1 would not indirectly generate a demand for park or recreational facilities that could not be adequately accommodated by existing or Project-related improvements. Indirect impacts would be less than significant.

TABLE 3.11-2
ALTERNATIVE 1 IMPACT SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
REC-1: 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? See Impact 1-REC-1.	☐	☐	☒	☐

3.11.6.2 Alternative 2: Restored Partial Sinuous Creek

2-REC-1: Alternative 2 would not increase the use of existing neighborhood and regional parks or other recreational facilities to the extent that substantial physical deterioration of the facilities would occur or be accelerated. (Less than Significant Impact)

Direct Impacts

Restoration

As described above in the analysis for Alternative 1, recreational facilities that currently exist within the Ballona Reserve include: (1) the baseball fields in South Area C; (2) pedestrian trails in Area B; (3) the Ballona Creek Bike Path, which is situated on the existing north levee; and (4) the Ballona Creek channel. Disruption of access to (with resulting effects on the use of) these facilities during construction of Alternative 2 could result in the increased use of other parks and recreational facilities within the study area but, for the reasons described below, such use is not expected to cause substantial physical deterioration to occur or be accelerated.

(1) Baseball Fields

Alternative 2 would include grading and restoration activities in South Area C that would require the closure of the existing baseball fields. Closure of the baseball fields would cause the relocation of Culver Marina Little League games to other existing facilities in the region, including fields provided by the Culver City Little League, the Del Rey American Little League, and the North Venice Little League (Wind 2014). Reconstruction of the baseball fields would depend on the availability of external funding and other factors. If the factors are not satisfied, then the baseball fields would not be reconstructed within the Ballona Reserve and the relocation of games would be permanent. Whether the move is temporary or permanent, other baseball fields are available within the region to accommodate the games/practices that are currently held in South Area C without substantial physical deterioration to occur or be accelerated.

(2) Pedestrian Trails

Similar to Alternative 1, pedestrian paths in West Area B would be closed during the restoration phase, which would occur between 2017 and 2022. While CDFW would still be able to access these trails, it is likely that public tours and restoration activities would cease and/or be relocated to other nearby open space areas. Once restoration is complete, a larger area of the Ballona

Reserve would be accessible to these organizations and opened to the public. Thus, while these uses would be temporarily displaced while active restoration activities are in progress, this displacement would be limited to a two year period and would result in an overall greater use of the Ballona Reserve. A long-term beneficial effect would result.

(3) Bike Paths

The Ballona Creek channel would be realigned to create a sinuous, meander-shaped channel through the Ballona Reserve as a part of Alternative 2. As a part of this realignment, the existing Ballona Creek Bike Path would be removed and replaced with two alternate routes that provide public access to the shoreline and the Marvin Braude Bike Trail, as described above under Alternative 1. While the Area A Perimeter Levee and Culver Boulevard Levee are under construction, the existing Ballona Creek Bike Path would remain open to the public. Once these levees and the bike paths have been completed, they would open to the public and the existing bike path would be closed. Thus, access would be maintained and there would be no interruption of recreational use of the bike path during construction. Accordingly, Alternative 2 would not result in an increase in use or the resulting physical deterioration of those facilities. Reconstruction of the Ballona Creek Bike Path along the re-routed segment would result in a potential beneficial safety-related effect associated with the new surface.

(4) Ballona Creek Channel

Similar to Alternative 1, during the implementation of Alternative 2, access to the channel would remain open and water flow would be maintained at all times. Once the Ballona Creek Bike Path is closed, fisherman and kayakers would not be able to access this portion of the channel. Although use of the channel for rowing competitions that require a 2,000-meter straightaway (see, e.g., UCLA 2015) would be precluded since the remaining straightway following the proposed restoration would only be 1,372 meters, rowers could use other portions of the channel and all of the available Marina water for training purposes. In addition, the fisherman and kayakers that formerly used the area adjacent to the bike path to access the channel would be able to access other parts of the channel, the Marina, and/or the ocean for recreational activities. Given that the channel would remain open during the restoration phase for Alternative 2, it is expected that non-competition rowing activities would continue in the channel during this time and that, as an alternative, rowing activities could relocate to the Marina without causing physical deterioration of recreational facilities to occur or be accelerated. Therefore, direct impacts on parks and recreational facilities during the restoration phase would be less than significant.

Post-restoration

Following the implementation of restoration, Alternative 2 would be similar to that described under Alternative 1. Under Alternative 2, a network of bike and pedestrian paths and public access would be provided to portions of the Ballona Reserve that are largely inaccessible under existing conditions, as well as to surrounding recreational resources. By providing these enhanced recreational amenities, the Project would increase the use of recreational facilities and resources within the Ballona Reserve and, consequently, could increase the use of existing recreational facilities in the surrounding area. However, the Project would not likely increase use of these resources to the extent that substantial physical deterioration would occur or be accelerated. It is likely that most users who would visit the Ballona Reserve would remain on-site as opposed to visiting parks and recreational facilities in the study area. In addition, while there would likely be an increase in use of the new on-site recreational facilities from existing bike paths, the County of Los Angeles has an ongoing plan to maintain the bike trails subject to budgetary conditions. Thus, with ongoing maintenance, Alternative 2 would not likely result in the increased use of existing parks or recreational facilities such that substantial physical deterioration of these resources would occur or be accelerated.

By opening a preserved and restored Ballona Reserve to the public, the Project would allow for wider enjoyment of its recreational and open space amenities and, thereby, expand and enhance recreational opportunities available within the study area. This would be a beneficial effect. Potential adverse impacts on parks and recreational facilities following restoration under Alternative 2 would be less than significant and the overall, long-term effect of Alternative 2 would be beneficial. No mitigation would be required.

Indirect Impacts

Restoration

Similar to Alternative 1, a temporary increase in the number of workers present on the Project site would occur during construction of Alternative 2. The likelihood that these workers would relocate their households as a consequence of working on the Project is unlikely. As such, the temporary increase in the number of workers on the Project site would not result in a notable increase in the residential population of the Project area, nor would there be a corresponding increase in demand for parks and recreational facilities in the Project vicinity. Implementation of Alternative 1 would not indirectly generate a demand for park or recreational facilities that could not be adequately accommodated by existing or Project-related improvements. Indirect impacts would be less than significant.

Post-restoration

Like Alternative 1, existing operation and maintenance activities are expected to continue largely in accordance with existing practice. Alternative 2 would not result in a substantial increase in the number of on-site personnel during the post-restoration phase. Therefore, implementation of Alternative 2 would not indirectly generate a demand for park or recreational facilities that could not be adequately accommodated by existing or Project-related improvements. Indirect impacts would be less than significant.

TABLE 3.11-3
ALTERNATIVE 2 IMPACT SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
REC-1: 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? See Impact 2-REC-1.	☐	☐	☒	☐

3.11.6.3 Alternative 3: Levee Culverts and Oxbow

3-REC-1: Alternative 3 would not increase the use of existing neighborhood and regional parks or other recreational facilities to the extent that substantial physical deterioration of the facilities would occur or be accelerated. (Less than Significant Impact)

Direct Impacts

Restoration

While restoration-related grading and related activities would take place in South Area C during construction of Alternative 3, these activities may not affect the baseball fields. Therefore, use of the fields could possibly continue uninterrupted and games may not need to be relocated to other existing fields in the area. In addition, the Ballona Creek channel would not be modified and, as such, existing water sports could continue to occur as they do under existing conditions. While the bike path would be realigned to the Area A Perimeter Levee, as described above, this realignment would not occur until restoration has been completed. Thus, access to the Ballona Creek Bike Path would be maintained for the duration of the implementation period for Alternative 3 and recreational uses would not be disrupted.

Similar to Alternative 1, pedestrian paths in Area B would be closed to implement Alternative 3 and, during this time, it is likely that tours and restoration activities would cease and/or be relocated. Once restoration activities have been completed, a larger area of the Ballona Reserve would be accessible to these organizations and open to the public. Thus, while these uses would be temporarily displaced during active restoration, this displacement would be short term and would result in an overall greater use of the Ballona Reserve. Thus, Alternative 3 would result in a long-term beneficial effect.

Alternative 3 would not generate a demand for park or recreational facilities that cannot be adequately accommodated by existing or planned facilities and services, nor would restoration under Alternative 3 interfere with existing recreational uses in a manner that would cause substantial physical deterioration of existing parks and recreational facilities in the Project area to occur or be accelerated. Therefore, direct impacts on parks and recreational facilities during the restoration phase would be less than significant.

Post-restoration

The post-restoration phase for Alternative 3 would be similar to the post-restoration phase for Alternative 1 or Alternative 2. Under Alternative 3, a network of bike and pedestrian paths and public access would be provided to portions of the Ballona Reserve that currently are largely inaccessible and to surrounding recreational resources. By providing these enhanced and new recreational amenities relative to existing conditions, there would be an increase in the use of recreational resources within the Ballona Reserve and, consequently, increased use of existing recreational resources in the study area could occur. However, for the reasons described under Alternative 1, Alternative 3 would not likely increase use of these resources to the extent that substantial physical deterioration would occur or be accelerated. It is likely that most users who would visit the Ballona Reserve would remain on-site as opposed to visiting parks and recreational facilities in the study area. In addition, while there would likely be an increase in use of the new on-site recreational facilities from existing bike paths, the County of Los Angeles has an ongoing plan to maintain the bike trails subject to budgetary conditions. Thus, with ongoing maintenance, Alternative 3 would not likely result in the increased use of existing parks or recreational facilities such that substantial physical deterioration of these resources would occur or be accelerated.

By opening a preserved and restored Ballona Reserve to the public, Alternative 3 would allow for wider enjoyment of its recreational and open space amenities and, thereby, expand and enhance recreational opportunities available within the study area. This would be a long-term beneficial effect. Potential adverse impacts on parks and recreational facilities during operation of Alternative 3 would be less than significant and the overall, long-term effect of Alternative 3 would be beneficial. No mitigation would be required.

Indirect Impacts

Restoration

Similar to Alternatives 1 and 2, a temporary increase in the number of workers present on the Project site would occur during the implementation of Alternative 3. The likelihood that these workers would relocate their households as a consequence of working on the Project is unlikely. As such, the temporary increase in workers on the Project site would not result in a notable increase in the residential population of the Project area, nor would there be a corresponding increase in demand for parks and recreational facilities in the study area.

Post-restoration

Like Alternative 1, existing operation and maintenance activities are expected to continue largely in accordance with existing practice. Alternative 3 would not result in a substantial increase in the number of on-site personnel during the post-restoration phase. Therefore, implementation of Alternative 3 would not indirectly generate a demand for park or recreational facilities that could not be adequately accommodated by existing or Project-related improvements. Indirect impacts would be less than significant.

TABLE 3.11-4
ALTERNATIVE 3 IMPACT SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
REC-1: 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? See Impact 3-REC-1.	☐	☐	☒	☐

3.11.6.4 Alternative 4: No Federal Action/No Project

Under the No Federal Action/No Project Alternative, access to the Ballona Reserve would continue to be limited to tours and restoration activities (with CDFW authorization). Baseball games would continue to be played in South Area C, the existing Ballona Creek Bike Path would not be relocated or improved, and water sports would continue to be pursued within the Ballona Creek channel. No permits or discretionary approvals would be issued. Thus, under this alternative no restoration-related impacts would occur; however, none of the recreation-related benefits of opening the Ballona Reserve for public use would occur either. The creation of new bike paths and hiking trails would not occur and there would be no expansion of general public access to the Ballona Reserve. The Project goal stated in Section 1.2, *Purpose and Need/Project Objectives*, of providing public access for wildlife dependent uses and secondary compatible on-site recreation and educational activities would not be met. No environmental controls beyond those imposed by the local, state, and Federal regulatory agencies would be implemented.

Because no Project-related activities would occur that could increase or otherwise alter existing use of recreation facilities in the study area, deterioration of such facilities would not occur as a result of Alternative 4. No Project-related impacts would occur. However, no Project-related benefits would accrue either.

3.11.7 Cumulative Impacts

Because Alternative 4 would cause no adverse impacts and result in no beneficial effects to Recreation, Alternative 4 would not cause or contribute to cumulative effects.

Regarding the restoration alternatives (Alternatives 1, 2, and 3), the geographic scope for cumulative impacts on recreation is the same as the area described in Section 3.11.2.1, *Study Area*, because this represents the largest area within which the Project's direct and indirect impacts could manifest. This analysis considers cumulative effects that could occur during restoration and post-restoration phases. The analysis considers the ongoing impacts of past projects (which are described in Section 3.11.2.2, *Environmental Setting*), and impacts that would result from the existing and reasonably foreseeable future projects identified in Table 3.1-1, *Existing and Reasonably Foreseeable Future Projects.* Table 3.1-1 identifies 46 projects in the vicinity of the Ballona Reserve that could cause impacts that would combine with the impacts of Alternative 1, 2, or 3 within the existing environmental context to cause or contribute to a cumulative impact. Given that all 46 projects are within a 2-mile radius, all are considered in this cumulative analysis. These related projects include, but are not limited to, waterfront improvements and the development of residential and hotel uses, all of which could contribute to the increase in recreation users in the vicinity of and within the Ballona Reserve. As described above, the study area for the baseball fields is a 4-mile radius around the project site. While the Project's cumulative list does consider projects beyond a 2-mile radius, this analysis assumes that there would be several related projects between 2- and 4-miles from the project site. Similar to those within a 2-mile radius, these projects would include infrastructure improvements and residential and commercial development that could contribute to an increase in demand for recreational opportunities and facilities through the intensification of residential uses. As described in Section 3.11.2, *Affected Environment*, there is remaining service capacity at existing facilities within the study area; therefore, existing conditions do not reflect a significant adverse cumulative condition. As analyzed for Alternatives 1, 2, and 3 (see Sections 3.11.6.1, 3.11.6.2, and 3.11.6.3, respectively) restoration of the Ballona Reserve could contribute an incremental adverse impact to recreation resources while restoration activities are in progress, but would result in long-term benefits once restoration is complete.

While the restoration of the Ballona Reserve would not result in permanent residential or employment growth that could increase the amount of recreational users at the Ballona Reserve, it would provide a network of bike and pedestrian paths and public access to large areas of the Reserve that are largely inaccessible under existing conditions. By providing these enhanced connections and opening them for public use, the restoration of the Ballona Reserve could increase the use of existing recreational facilities and resources at the Reserve and in the Project area. However, as described above, restoration of the Ballona Reserve under Alternatives 1, 2, or 3 would not likely increase use of these resources during the restoration or post-restoration phases to the extent that substantial physical deterioration would occur or be accelerated and, further, would result in an overall, long-term beneficial effect. In light of the Project's long-term recreation benefits, there would be no significant adverse cumulative impact to recreation.

During the proposed restoration, the baseball fields would continue in their current uses under Alternative 1 and 3. However, as described above, Alternative 2 would include grading and restoration activities in South Area C that would require the closure of the existing baseball fields. Closure of the baseball fields would cause the relocation of Culver Marina Little League games to other existing facilities in the region, including fields provided by the Culver City Little League, the Del Rey American Little League, and the North Venice Little League (Wind 2014). Reconstruction of the baseball fields would depend on the availability of external funding and other factors. If the factors are not satisfied, then the baseball fields would not be reconstructed within the Ballona Reserve and the relocation of games would be permanent. Whether the move is temporary or permanent, other baseball fields are available within the region have indicated that they would be able to accommodate the games/practices that currently are held in South Area C. While related projects have the potential to contribute to the intensification of residential uses, the areas within a 2- to 4-mile radius are generally built out and the only projects that could contribute residential uses would be small infill projects that generate a small amount of residents. Thus, the small amount of little league users that these related projects generate would likely not contribute to the substantial physical deterioration of existing little league facilities. Furthermore, there is remaining service capacity in the existing little leagues in the study area and, thus, those little leagues would be able to absorb an increase in residents and the relocation of the Culver Marina Little League games without causing substantial physical deterioration to occur or be accelerated. Thus, there would be no cumulative impact.

During the proposed restoration, when Alternatives 1, 2, and 3 would contribute a less-than-significant adverse impact to cumulative conditions, there are a number of present and foreseeable future projects in the study area that would result in the intensification of residential uses and, thus, could increase the population (and thereby increase the demand for recreational opportunities and facilities) in the vicinity of the Ballona Reserve. As described above, there are 46 related projects within the geographic scope of this cumulative impacts assessment that could contribute to a cumulative impact to recreation. The development of these projects would likely result in an increase in recreational opportunities in the area, including an improved waterfront promenade, improved pedestrian amenities and plazas, and would provide for residential open space and recreational amenities. In addition, the new hotels would provide recreational amenities for their guests including, but not limited to, pools, gyms, and access to the waterfront. Thus, while some of the related projects would increase demand for recreational resources within the vicinity of the Ballona Reserve, others among them would provide new and improved facilities. These new and improved facilities, in combination with the less-than-significant restoration phase impacts of Alternatives 1, 2, or 3 would assure that no significant adverse cumulative impacts would result relating to increased cumulative use of existing parks or recreational facilities such that substantial physical deterioration of these resources would occur or be accelerated.

In summary, the short-term (restoration phase) impacts of restoring the Ballona Reserve under Alternatives 1, 2, or 3, in combination with incremental impacts of past, other present, and reasonably foreseeable future projects, would not cause or contribute to a significant adverse cumulative effect relating to increased use of existing neighborhood and regional parks or other recreational facilities and, in the long-term (following the restoration phase), restoring the Ballona Reserve under Alternatives 1, 2, or 3 would contribute a positive (beneficial) cumulative effect to Recreation in the study area. Therefore, there would be no significant cumulative impact to Recreation.

3.11.8 References

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3.12 Transportation and Traffic

3.12.1 Introduction

This section identifies and evaluates issues related to Transportation and Traffic in the context of various wetland restoration alternatives, including along relevant travel routes. It describes existing conditions in Section 3.12.2, summarizes applicable laws, regulations, plans, and standards in Section 3.12.3; identifies the criteria used to evaluate the significance of potential impacts (referred to as "thresholds of significance") in Section 3.12.4; describes the methodology used to evaluate these impacts in Section 3.12.5; analyzes direct and indirect impacts in Section 3.12.6; analyzes cumulative impacts in Section 3.12.7; and lists references in Section 3.12.8. The impact analysis presented in this section summarizes the full technical analysis prepared by Raju Associates, Inc. (*Traffic Study for the Ballona Wetlands Ecological Reserve Restoration Project*, September 2015), which is provided in Appendix H.

3.12.2 Affected Environment

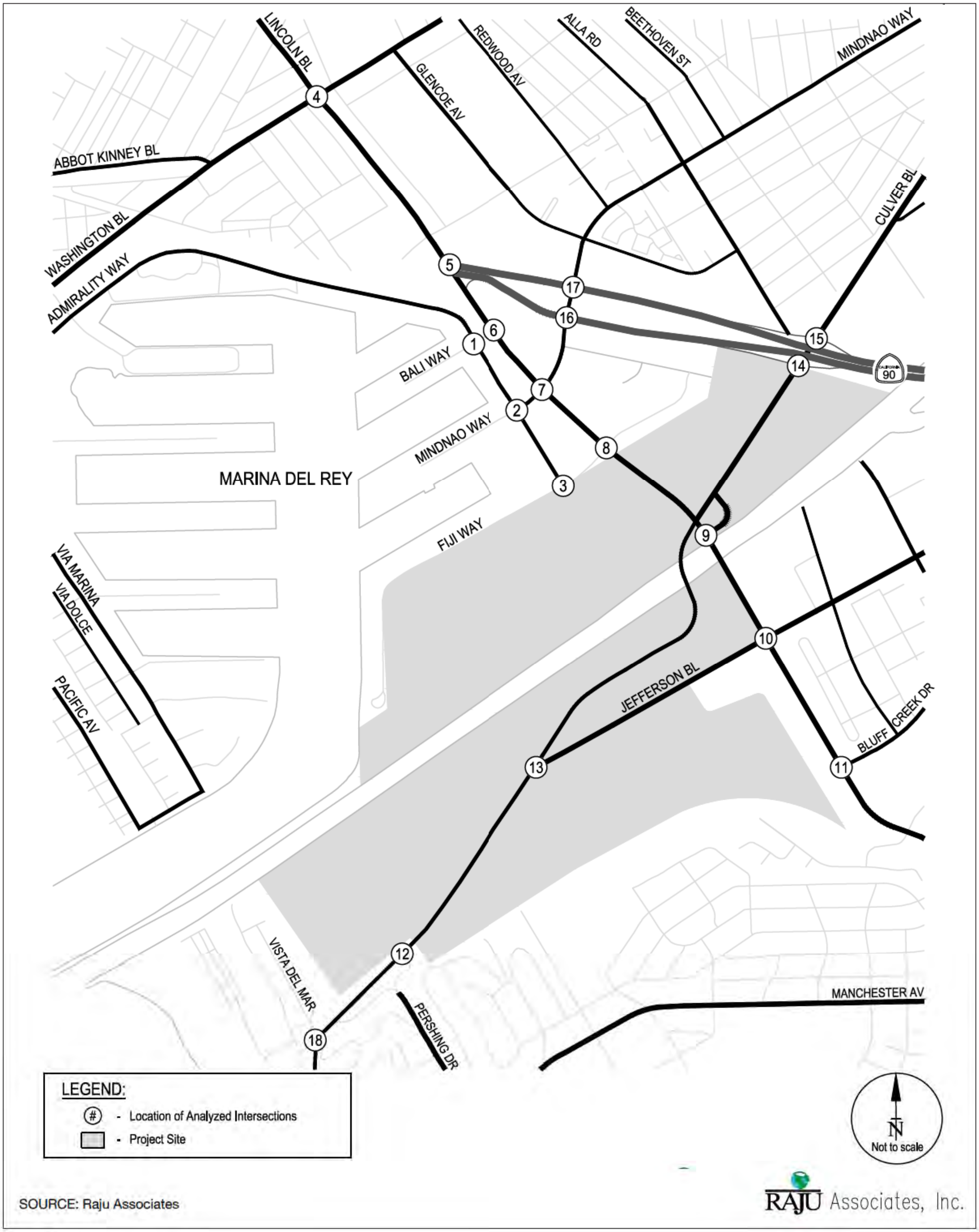
3.12.2.1 Study Area

See Figure ES-2, *Project Site*. For purposes of this analysis of issues related to Transportation and Traffic, the study area is bounded by Washington Boulevard on the north, State Route (SR) 90 on the east, Bluff Creek Drive on the south, and Nicholson Street on the west. The street system within the study area is under the jurisdiction of the City of Los Angeles, County of Los Angeles, and Caltrans. SR 90 is located adjacent to the eastern frontage of the Project site and Interstate (I) 405 (San Diego Freeway) is located approximately 2 miles east of the Project site.

3.12.2.2 Environmental Setting

Roadway Network

The existing roadway system within the study area consists of a regional highway system including major arterials, and a local street system including secondary arterials, collectors, and local streets. I-405 and SR 90 provide the primary regional (freeway) access to the study area; SR 90 is an expressway between Lincoln Boulevard and a point just west of Culver Boulevard. Figure 3.12-1, *Location of Project and Analyzed Intersections*, shows the major and other arterial streets used to access the study area (Washington Boulevard, Lincoln Boulevard (SR 1), Jefferson Boulevard, Culver Boulevard, Bluff Creek Drive, Admiralty Way, and Mindanao Way), all of which have four or more travel lanes. Bali Way, Fiji Way, and Nicholson Street, with two to four lanes, provide local access and circulation. I-405, SR 90, and SR 1 are part of the Los Angeles County Congestion Management Program (CMP) Highway and Roadway System. Figure 3.12-1, *Location of Project and Analyzed Intersections*, also shows the analysis study intersections. The intersection of Lincoln Boulevard and SR 90 is a CMP monitoring location.



Ballona Wetlands Restoration Project

Figure 3.12-1
Location of Project and Analyzed Intersections

Existing Traffic Volumes and Levels of Service

Weekday morning and evening peak-hour traffic counts were conducted at the analyzed intersections in March and April 2015. All of the analyzed intersections are controlled by traffic signals. The traffic volumes in Figure 3.12-2, *Existing (2015) Conditions – Peak Hour Traffic Volumes*, represent, for the purposes of this analysis, the Existing 2015 AM and PM peak hour conditions.

Level of Service (LOS) is used to characterize traffic operating conditions based on traffic volumes and roadway capacity using a series of six letter designations. Generally, LOS A represents free-flow conditions, and LOS F represents forced flow or breakdown conditions. LOS D typically is recognized as the minimum acceptable level of service in urban areas. LOS definitions for signalized intersections are provided in Table 3.12-1, *Signalized Intersection LOS Definitions*.

TABLE 3.12-1
SIGNALIZED INTERSECTION LOS DEFINITIONS

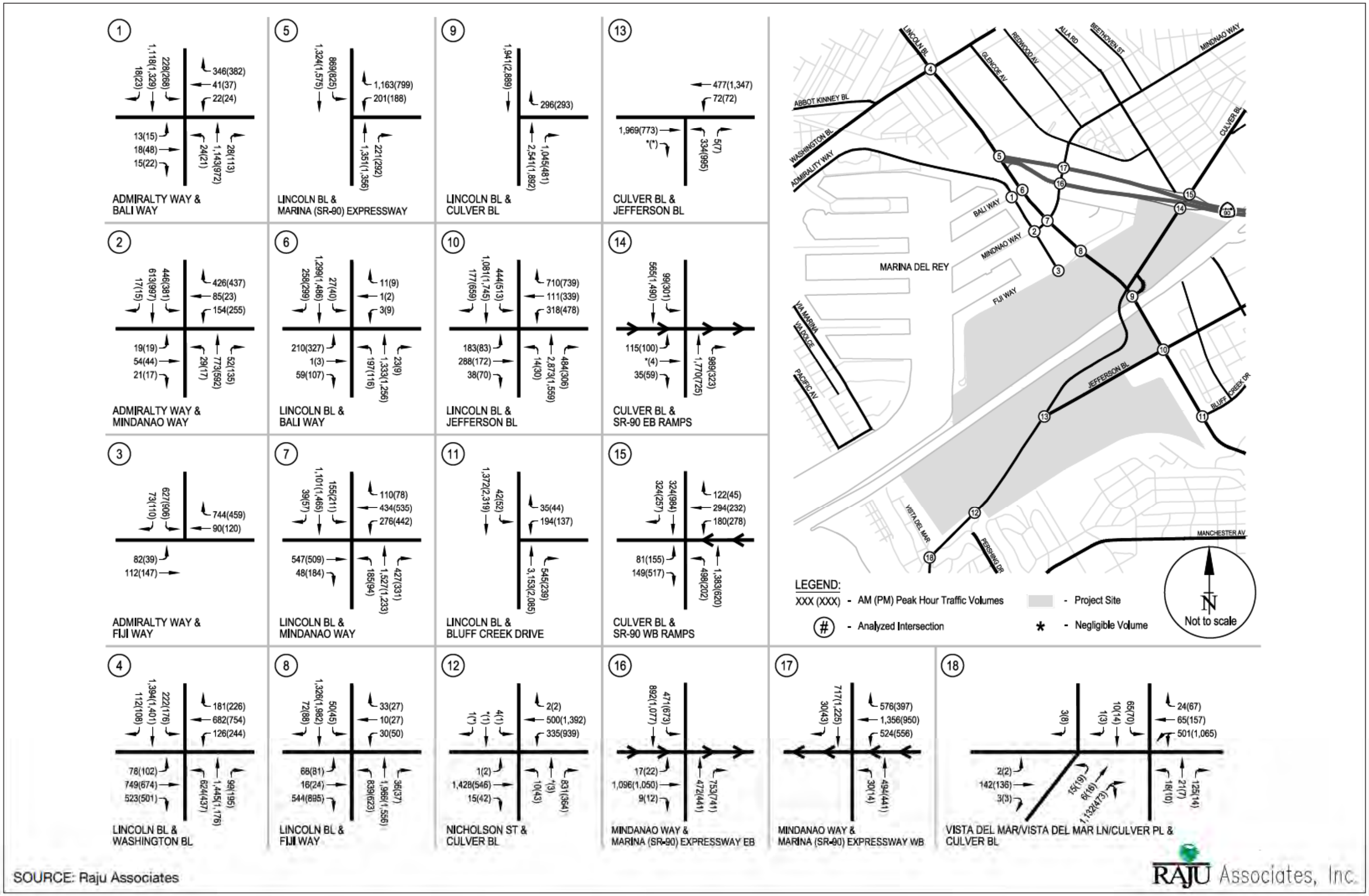
Level of Service	Description	Volume-to-Capacity Ratio
A	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.	0.000 to 0.600
B	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.	0.601 to 0.700
C	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.	0.701 to 0.800
D	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.	0.801 to 0.900
E	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.	0.901 to 1.000
F	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.	$\geq$ 1.001

SOURCE: *Transportation Research Board, Transportation Research Circular No. 212, Interim Materials on Highway Capacity, 1980*

Table 3.12-2, *Summary of Intersection Volume-to-Capacity Ratio (V/C) and Level of Service (LOS) (Baseline Conditions)*, summarizes the results of the intersection capacity analysis for existing conditions at each of the study intersections in the study area. As shown, all 18 of the study intersections currently are operating at LOS D or better during both the morning and evening peak hours.

Transit Service

Nine public transit bus lines operated by public agencies and municipalities serve the study area. Three bus lines (Lines 108, 110, and 358) are operated by the Los Angeles County Metropolitan Transportation Authority (LACMTA), three bus lines (1, 2, and 7) are operated by the Culver City Bus (CC), two bus lines (3, and Rapid 3) are operated by Santa Monica Big Blue Bus (SM)



Ballona Wetlands Restoration Project

Figure 3.12-2
Existing (2015) Conditions - Peak Hour Traffic Volumes

TABLE 3.12-2
SUMMARY OF INTERSECTION VOLUME-TO-CAPACITY RATIO (V/C) AND LEVEL OF SERVICE (LOS) (BASELINE CONDITIONS)

Intersection	AM Peak Hour		PM Peak Hour	
	V/C	LOS	V/C	LOS
Admiralty Way/Bali Way	0.616	B	0.627	B
Admiralty Way/Mindanao Way	0.667	B	0.587	A
Admiralty Way/Fiji Way	0.451	A	0.338	A
Lincoln Boulevard/Washington Boulevard	0.837	D	0.783	C
Lincoln Blvd/Marina Expressway (State Route 90)	0.717	C	0.676	B
Lincoln Boulevard/Bali Way	0.509	A	0.552	A
Lincoln Boulevard/Mindanao Way	0.710	C	0.781	C
Lincoln Boulevard/Fiji Way	0.628	B	0.720	C
Lincoln Boulevard/Culver Loop	0.805	D	0.535	A
Lincoln Boulevard/Jefferson Boulevard	0.840	D	0.639	A
Lincoln Boulevard/Bluff Creek Drive	0.554	A	0.360	A
Nicholson Street/Culver Boulevard	0.652	B	0.798	C
Jefferson Boulevard/Culver Boulevard	0.727	C	0.810	D
Culver Boulevard/SR 90 EB Ramps	0.436	A	0.463	A
Culver Boulevard/SR 90 WB Ramps	0.798	C	0.873	D
Mindanao Way/Marina Expressway (State Route 90) Eastbound	0.756	C	0.873	D
Mindanao Way/Marina Expressway (State Route 90) Westbound	0.572	A	0.559	A
Vista dal Mar/Culver Boulevard	0.782	C	0.653	B

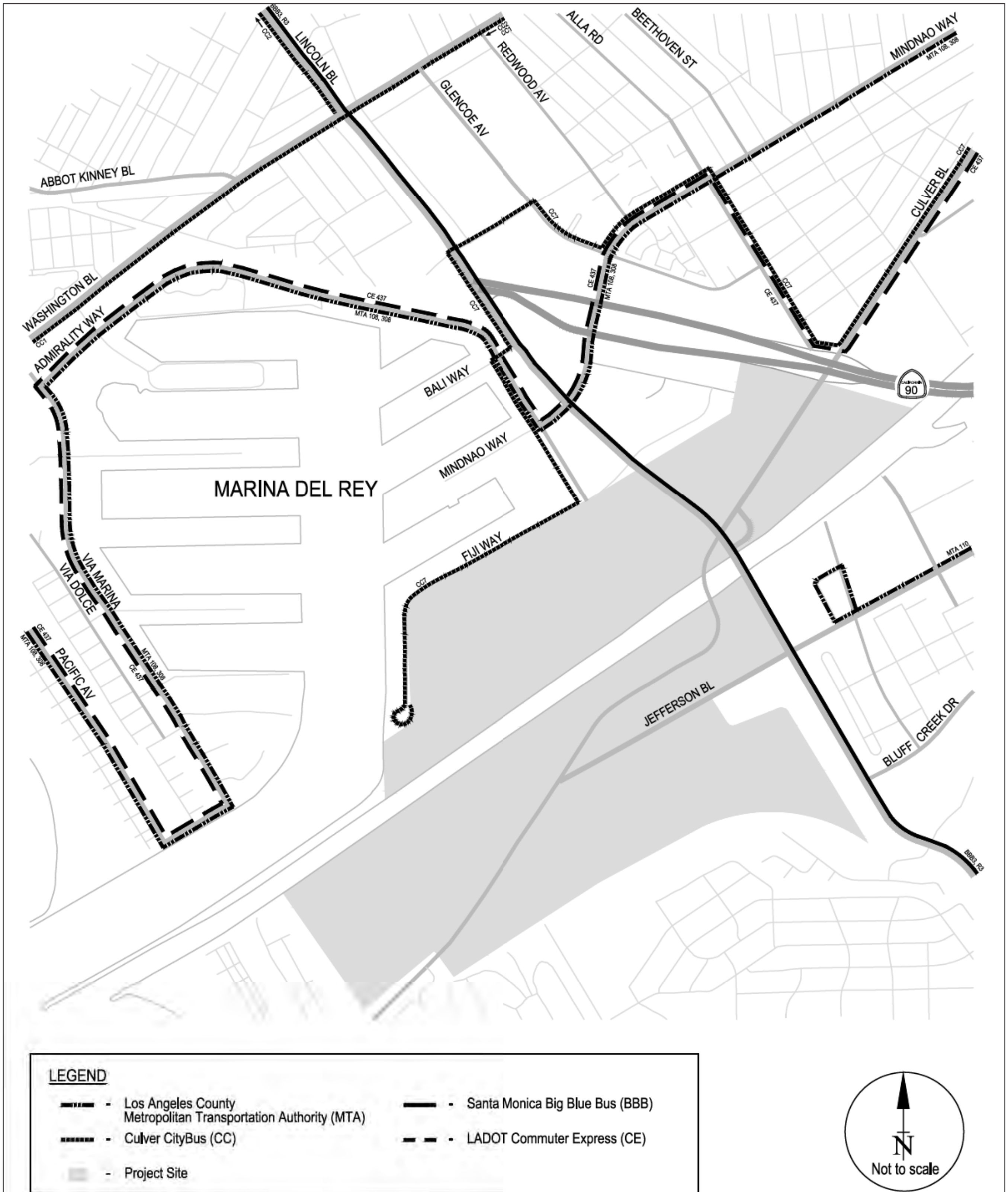
SOURCE: Raju Associates, Inc. 2015

and one bus line (437) is operated by the City of Los Angeles Department of Transportation (CE). These public transit lines within the study area are illustrated in Figure 3.12-3, *Existing Transit Lines*. In addition, private tour operators (e.g., Starline Tours) run buses on roads in the study area.

3.12.3 Applicable Laws, Regulations, Plans, and Standards

3.12.3.1 Federal

Prepared by the Southern California Association of Governments (SCAG), the Federal Transportation Improvement Plan (FTIP) is a capital listing of all transportation projects proposed over a 6-year period for the SCAG region. The projects include highway improvements, transit, rail and bus facilities, high occupancy vehicle lanes, signal synchronization, intersection improvements, freeway ramps, etc. In the SCAG region, a biennial FTIP update is produced on an even-year cycle. The FTIP is prepared to implement projects and programs listed in the Regional Transportation Plan (RTP) and is developed in compliance with state and Federal requirements. The current FIP was adopted by SCAG in September 2014.



SOURCE: Raju Associates

RAJU Associates, Inc.

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Figure 3.12-3
Existing Transit Lines

3.12.3.2 State

The Statewide Transportation Improvement Plan (STIP) is a programming document prepared by Caltrans where program funds are allocated to individual projects and adopted/approved by the California Transportation Commission (CTC). The STIP is a 7-year capital improvement program of projects, on and off the State Highway system, funded with revenues from the State Highway Account, Passenger Rail Bond Fund, and other sources. The purpose is to increase/ enhance the capacity, operations and safety of the transportation system. Projects in the STIP may include projects on State highways, local roads, intercity rail, or local rail systems. The current STIP was adopted by the CTC in 2014.

SCAG Regional Transportation Plan

Prepared by the SCAG, the RTP is a planning document which serves as the Transportation Plan required under state and Federal law. The RTP forecasts long-term transportation demands, and identifies policies actions and funding sources to accommodate these demands. The RTP contemplates the construction of new transportation facilities, transportation system management (TSM) strategies, transportation demand management (TDM) strategies, and land-use strategies.

3.12.3.3 Local

State agencies acting in their sovereign capacity are not subject to local regulations unless the California Constitution says they are, or the Legislature has consented to such regulation. However, local regulations are mentioned in this EIR because this analysis contemplates actions by Southern California Gas Company (SoCalGas) outside of state property. Additionally, the following local plans, policies, and standards help inform the analysis in this section.

Los Angeles County

Los Angeles County Congestion Management Program

As required under Proposition 111 (1990), every county in California is required to develop a Congestion Management Program (CMP) that looks at the links between land use, transportation and air quality. On October 28, 2010, the Metropolitan Transportation Authority adopted the 2010 CMP for Los Angeles County. The 2010 CMP summarizes the results of 18 years of CMP highway and transit monitoring and 15 years of monitoring local growth. CMP implementation guidelines for local jurisdictions are also contained in the 2010 CMP. As described above in the Roadway Network section, there are CMP highway and intersection monitoring locations that are near the Project site.

Marina del Rey Local Coastal Program Land Use Plan

Marina del Rey Local Coastal Program (LCP), which is comprised of the Land Use Plan (LUP) and the Marina del Rey Specific Plan also known as the Local Implementation Plan (LIP), was certified by the California Coastal Commission in December 1986, and last certified, as amended, in February 2012. The LCP provides policies regarding traffic and access for development within the Marina del Rey area and outlines planned roadway improvements at intersections along Admiralty Way and identifies funding for these transportation improvements.

As required by the LUP, all lessees within the Marina that propose projects that result in transportation trips are required to pay fair-share fees based on the number of trips generated.

Marina del Rey Specific Plan

The Marina del Rey Specific Plan constitutes the primary implementation mechanism for the Marina del Rey Land Use Plan (LUP) as first certified by the California Coastal Commission in December 1986, and last certified, as amended, in February 2012. The Marina del Rey Specific Plan establishes parking requirements for the various land uses in the Marina del Rey area, and includes a circulation section that provides guidelines related to the local roadway, pedestrian, and bicycle systems. In addition, the Specific Plan includes identified improvements to the mobility system in Marina del Rey, and states that all developments shall pay fair-share fees to mitigate their impacts at intersections, and for other internal and regional circulation improvements. Furthermore, the Specific Plan identifies that a determination of a significant impact shall be based on the Los Angeles County Department of Public Works' Traffic Impact Analysis Guidelines (provided in Table 3.12-3, *County of Los Angeles Intersection Impact Threshold Criteria*).

TABLE 3.12-3
COUNTY OF LOS ANGELES INTERSECTION IMPACT THRESHOLD CRITERIA

Pre-Project V/C Ratio	Level of Service	Project-Related Increase in V/C Ratio
$\geq$ 0.710 – 0.800	C	Equal to or greater than 0.04
$\geq$ 0.810 – 0.900	D	Equal to or greater than 0.02
$\geq$ 0.910 or more	E/F	Equal to or greater than 0.01

SOURCE: LACDPW Traffic Impact Analysis Report Guidelines, 1997.

Marina del Rey Transportation Improvement Program

The Marina del Rey LUP includes a Transportation Improvement Program, which identifies various circulation improvements that are designed to fully mitigate traffic impacts of all the allowable development in Marina del Rey pursuant to the LUP. The planned improvements include several intersections along Admiralty Way, at the following streets: Via Marina, Palawan Way, Bali Way, and Mindanao Way. The Transportation Improvement Program also identifies a funding mechanism for the improvements, which include Category I (local Marina) and Category III (regional improvements). Each project within Marina del Rey is required to pay a transportation fee, which is considered to be the fair-share contribution toward roadway improvements, and is based upon the number of PM peak hour trips generated by the Project. Currently, the transportation fee is $5,690 per PM peak hour trip.

City of Los Angeles

Transportation Improvement and Mitigation Program (TIMP)

The citywide General Plan framework is a plan for creating a more livable and economically strong City of Los Angeles for the 21st century. The TIMP, an element of the General Plan Framework, provides recommendations and strategies to guide future transportation-related decisions in Los Angeles consistent with the Los Angeles County CMP, the RTP, and STIP. The General Plan Framework envisions an integrated, multi-modal transportation system that provides accessibility and mobility for everyone in Los Angeles.

Coastal Transportation Corridor Specific Plan (CTCSP)

The City of Los Angeles Coastal Transportation Corridor Specific Plan (CTCSP) is a regulatory and planning document adopted by the City Council covering development parcels within central/western portions of the City of Los Angeles, i.e., within the Westchester-Playa del Rey, Palms-Mar Vista-Del Rey and Venice Community Plan areas, and the Los Angeles International Airport Interim Plan area. The CTCSP provides regulatory controls, incentives and funding mechanisms for the systematic execution of the General Plan within the specific plan area. It provides for an infrastructure implementation process, specific transportation improvements, wherever possible, and public transportation needs within the plan area by establishing the Coastal Transportation Corridor Trust Fund and the Coastal Transportation Corridor Impact Fee Assessment process.

Traffic Study Policies and Procedures

The significance of potential Project-generated traffic impacts at intersections under City jurisdiction is determined based on criteria set forth in the City of Los Angeles Department of Transportation's (LADOT) Traffic Study Policies and Procedures (LADOT 2014). According to the LADOT guidelines, a significant transportation impact is determined based on the sliding scale criteria presented in Table 3.12-4, *City of Los Angeles Intersection Impact Threshold Criteria*.

TABLE 3.12-4
CITY OF LOS ANGELES INTERSECTION IMPACT THRESHOLD CRITERIA

Final V/C Ratio	Level of Service	Project-Related Increase in V/C Ratio
≥ 0.701 – 0.800	C	Equal to or greater than 0.040
≥ 0.801 – 0.900	D	Equal to or greater than 0.020
≥ 0.901 – 1.000	E	Equal to or greater than 0.010
Greater than 1.000	F	Equal to or greater than 0.010

SOURCE: LADOT Traffic Study Policies and Procedures, 2014.

Community Plans

The relevant City of Los Angeles Community plans include the Palms-Mar Vista-Del Rey and Westchester-Playa del Rey. Area B and the SoCalGas Property are located within the planning area of the Westchester-Playa Del Rey Community Plan, which is part of the City of Los Angeles's General Plan. Area C is within the Palms-Mar Vista-Del Rey Community Plan and contains open space, multi-family residential, and commercial land use designations (City of Los Angeles 1997, 2007). Area C also is covered by the Playa Vista Area C Specific Plan, which along with applicable land use policies in the Palms-Mar Vista-Del Rey Community Plan constitutes the Local Coastal Program for Playa Vista Area C (City of Los Angeles 2003b).

3.12.4 Thresholds of Significance

In this analysis, the Corps has elected to evaluate the context and intensity of potential environmental consequences relative to the criteria identified in CEQA Guidelines Appendix G, Section XVI.

For purposes of this analysis, Alternative 1, 2, 3, or 4 would have a significant impact related to Transportation and Traffic if it would:

TRANS-1 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.

TRANS-2 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.

TRANS-3 Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks.

TRANS-4 Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

TRANS-5 Result in inadequate emergency access.

TRANS-6 Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

For purposes of this analysis (and to be consistent with County of Los Angeles and City of Los Angeles criteria), the thresholds of significance identified in Table 3.12-5, *Intersection Condition Thresholds of Significance*, were used to determine if the Project would have a significant traffic impact relating to TRANS-1 and TRANS-2 at a signalized intersection:

TABLE 3.12-5
INTERSECTION CONDITION THRESHOLDS OF SIGNIFICANCE

With Project Traffic		Project-Related Increase
LOS	**V/C Ratio**	**in V/C Ratio**
C	0.701 – 0.800	equal to or greater than 0.040
D	0.801 – 0.900	equal to or greater than 0.020
E, F	> 0.900	equal to or greater than 0.010

3.12.5 Methodology

The traffic analyses for this study use the methodologies and assumptions that are consistent with the City of Los Angeles *Traffic Study Guidelines* and *L.A. CEQA Thresholds Guide,* 2006. The scope and geographic coverage, as well as the key assumptions and parameters for this study, are consistent with projects of this nature. The results were used to assess the potential impact of the Project (restoration and post-restoration uses) on the local street system.

3.12.5.1 Intersection Level of Service

The "Critical Movement Analysis-Planning" method of intersection capacity analysis was used to determine the intersection volume to capacity (V/C) ratio and corresponding level of service at the signalized study intersections within both the City of Los Angeles and County of Los Angeles (Transportation Research Board 1980). LOS spreadsheets developed by LADOT were used to implement the CMA (Circular 212 Method) methodology.

As described above (with Table 3.12-1 of LOS definitions and ranges of V/C ratios), LOS is a qualitative measure used to describe the condition of traffic flow, ranging from excellent conditions at LOS A to overloaded conditions at LOS F. LOS D typically is recognized as the minimum acceptable level of service in urban areas.

Fifteen of the 18 study intersections located in the City of Los Angeles are controlled by the City of Los Angeles' Automated Traffic Surveillance and Control (ATSAC) System and Adaptive Traffic Control System (ATCS). In accordance with LADOT procedures, a capacity increase of 10% (0.07 V/C adjustment for ATSAC and 0.03 V/C adjustment for ATCS) was applied to reflect the benefits of ATSAC/ATCS control at these intersections. The following remaining three intersections are located in the County of Los Angeles: Admiralty Way and Bali Way, Admiralty Way and Mindanao Way, and Admiralty Way and Fiji Way; ATSAC/ATCS credit was not taken at these locations.

3.12.6 Direct and Indirect Impacts

3.12.6.1 Alternative 1: Full Tidal Restoration/Proposed Action

Alternative 1 would install a permanent bridge across Ballona Creek and a second permanent bridge across Lincoln Boulevard for pedestrian and bicycle trail crossings. These bridges initially would be used for transporting soil from Area A to Area B and North Area C during construction. Additional methods for transporting soil within the Project site could be used, including a temporary floating crossing or a ford to cross Ballona Creek, or a conveyor system through the existing drainage culvert under Lincoln Boulevard at Fiji Ditch. In addition, a temporary bridge would be installed over Culver Boulevard between North and East Area B, or trucks/scrapers would travel on existing roads with traffic controls (e.g., directly crossing Culver Boulevard between North and East Area B, or traveling on Lincoln Boulevard from Area A to East Area B, returning on Jefferson Boulevard, Lincoln Boulevard, and Fiji Way).

The location of access points within the Ballona Reserve for operation and maintenance activities could be adjusted to accommodate restored habitat areas and relocated infrastructure, including the reconfigured meander-shaped Ballona Creek channel, new water control structures, perimeter levees, and flood berms (see Figure 2-41, Alternative 1, Phase 1: Operations and Maintenance; see also Figure 2-42, *Alternative 1, Phase 2: Operations and Maintenance*). Vehicle entrances to the Ballona Reserve would not change. Vehicle access would be required for operation and maintenance activities, including for the continuation (unchanged) of existing trash removal efforts at the existing trash boom system (or trash net) between the Culver Boulevard and Lincoln Boulevard bridges; regular visual inspections of culverts and other water control structures in their new locations; replacement of tide gates on the existing schedule (i.e., every approximately 10 years); sediment removal from the realigned Ballona Creek channel and sediment basins (once every 50 years for the life of the Project); sediment removal from the connector channels between the water control structures and the Ballona Creek channel (potentially during the first 10 years post-construction); and maintenance and repair of levees, access roads, fences, paths, and other public access amenities (as needed) (Appendix B5, Preliminary Operations and Maintenance Plan). Maintenance of the berms to be constructed along lower perimeter elevations of South and Southeast Area B and tied into areas of high ground to maintain the existing level of flood risk protection (e.g., around the SoCalGas facility and along Culver Boulevard and Jefferson Boulevard) would be focused on erosion protection primarily via the establishment and maintenance of vegetation. CDFW would conduct the same nature and type of activities to operate and maintain the non-LACDA project facilities within the Ballona Reserve at the same intervals as the agency does under existing conditions. Such activities could include vehicle use, for example, pursuant to inspecting and locking gates, repairing fences, controlling and removing pests and weeds, and removing trash and debris from the non-LACDA project areas within the Ballona Reserve (Id.).

1-TRANS-1a: Restoration-phase activities associated with Alternative 1 would require temporary lane and road closures, and would increase traffic volumes at area intersections during and following restoration. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Implementation of Alternative 1 would be accomplished over an approximately 9-year period, scheduled to commence as soon as 2017 and to be complete in 2026.[118] During this period, it is anticipated that all restoration activity would occur on-site with the exception of the construction of the bridge across Lincoln Boulevard (2017), construction of water control structures (storm drains) across Culver Boulevard and Jefferson Boulevard (2019), construction activities associated with gas line relocation across Culver Boulevard (2017-18), natural gas monitoring well relocation work on the SoCalGas Property, construction worker trips, and off-site truck trips. From a traffic perspective, based on the anticipated construction schedule, the greatest

[118] Alternative 1 is proposed to be implemented in two phases consisting of multiple sequences beginning as early as 2017. The proposed construction start date may be adjusted in the Final EIS/EIR. The sequences would be grouped into two periods, with the first period lasting approximately 5 years and the second period starting 1.5 years after the first period concludes. No mechanized activities would occur between the periods to facilitate habitat restoration and plant establishment within the Ballona Reserve.

mount of construction-related peak-hour trips would be generated during Phase 1 in Year 2019. Therefore, to provide the most conservative analysis (greatest potential impact), this section assesses the impacts of Alternative 1's traffic generation based on conditions in 2019. The assessment of Alternative 1's impacts to traffic during construction of the above-mentioned bridge, storm drains, and gas line relocation looks at conditions during the periods of time of those construction activities.

Construction Traffic Impacts of Lincoln Boulevard Bridge Construction

The bridge across Lincoln Boulevard would be constructed in 2017 during the night-time hours of 11:00 p.m. to 4:00 a.m. for a period of 3 to 4 weeks, and would require intermittent closure of Lincoln Boulevard. It is anticipated that cranes would be used to place the bridge segments over the existing abutments or new abutments adjacent to and north of the Culver Boulevard bridge structure. The intermittent night-time closures of Lincoln Boulevard would allow the cranes to swing the bridge segments (structural members) over the travel lanes to place them over the existing or new abutments and secure them. Once the members are in place and secured, the roadway would be opened. Access for emergency vehicles would be maintained at all times. The current number of lanes along Lincoln Boulevard would not be affected between 4:00 a.m. and 11:00 p.m. (when there would be no construction activity), and after the bridge construction is complete, full-time use of Lincoln Boulevard would be restored.

A 24-hour traffic count was conducted on Lincoln Boulevard in the vicinity of the proposed bridge on September 1, 2015. The count reveals that the traffic volume on Lincoln Boulevard between the hours of 11:00 p.m. and 4:00 a.m. ranges from 48 to 347 vehicles per hour (vph) on the northbound lanes, and from 48 to 380 vph on the southbound lanes. Those relatively low traffic volumes would be detoured away from the construction zone (described below). However, for purposes of this analysis, the impact on traffic circulation during road closures is considered to be significant without mitigation.

The potential temporary detour route for northbound Lincoln Boulevard traffic would be to re-route traffic to Culver Boulevard (via the Culver Loop ramp), then to Marina Freeway, and back to Lincoln Boulevard, as well as possibly via Jefferson Boulevard to Centinela Avenue to Marina Freeway and then back to Lincoln Boulevard. The potential detour route for southbound Lincoln Boulevard traffic would be to re-route traffic to Marina Freeway to Culver Boulevard (or Centinela Avenue and Jefferson Boulevard) and then back to Lincoln Boulevard.[119]

With the implementation of Mitigation Measures TRANS-1a and TRANS-1b during the 3- to 4-week period, the construction traffic impacts due to the Lincoln Boulevard bridge construction would be less than significant.

[119] Because Lincoln Boulevard would be closed to traffic north of the Culver Loop ramp during the 11:00 p.m. to 4:00 a.m. period, it would be possible to permit left turns (prohibited at all other times) from the Culver-to-Lincoln ramp onto southbound Lincoln Boulevard.

Construction Traffic Impacts of Gas Line Relocation and Stormwater Drain Installation

Removal and relocation of existing gas lines in Area B, as well as installation of storm drains in Area B, would require partial closure of lanes along Culver Boulevard. Removal and relocation of existing gas lines in Area B would occur in 2017 and would involve lane closures on Culver Boulevard over a 4-week period. The installation storm drains in Area B would occur in 2019 and would require similar lane closures on Culver Boulevard over a 3-week period.

A 24-hour traffic count was conducted along Culver Boulevard west of Lincoln Boulevard on June 10, 2015. Based on that count, the temporal distribution of traffic indicates that the partial closure of Culver Boulevard for construction activity would need to be between the hours of 11:00 p.m. to 4:00 a.m. (i.e., traffic volumes during other hours of the day are too high to be adequately accommodated with lane closures). The traffic volume on Culver Boulevard during those night-time hours ranges from 30 to 154 vph on the northeastbound lane(s), and from 60 to 206 vph on the southwestbound lane(s). Depending on the location of the partial road closure, the relative low night-time traffic volumes either would be accommodated on the two remaining (open) lanes (when closure is in the four-lane section of Culver Boulevard, west of Jefferson Boulevard), or would be detoured away from the construction zone (when closure is in the two-lane section of Culver Boulevard, east of Jefferson Boulevard). Implementation of Mitigation Measure TRANS-1b would ensure that that lane closures on Culver Boulevard would be restricted to the nighttime hours of 11:00 p.m. to 4:00 a.m. In addition, implementation of Mitigation Measure TRANS-1a (a detailed construction traffic management plan including detour routes, signage, traffic control and hours of construction) would ensure that the construction activities and workers follow City-stipulated regulations.

The potential temporary detour route for northeastbound Culver Boulevard traffic would be to re-route traffic to Jefferson Boulevard, and then to Lincoln Boulevard, and back to Culver Boulevard. The southwestbound traffic on Culver Boulevard would continue to use the partially open (half-roadway) Culver Boulevard.

With the implementation of Mitigation Measures TRANS-1a and TRANS-1b during the 3- to 4-week period, the construction traffic impacts due to the gas line relocation and stormwater drain installation components of the Project would be less than significant.

Trip Generation

Depending on final design, soil compaction, and other site-specific conditions, between 10,000 and 110,000 cubic yards of excavated soil could be exported from the Project site either via trucks with disposal at local landfills, or via barge (either to the Port of Los Angeles or Port of Long Beach with transfer to trucks for upland disposal at local landfills, or to an off-shore disposal location). To provide the most conservative analysis (greatest potential impact), this section assesses impacts to traffic based on the highest amount of soil export. Export via trucks would generate the most construction-related trips on the street system, and therefore, that method was assumed for analysis of construction period impacts.

Worker-Generated Trips

During the year of the peak trip generation within Phase 1 (2019), multiple activities would overlap with one another, including off-site soil export. It is estimated that a total of about 351 workers would be on-site on any given day (excluding the drivers of trucks used for the off-site soil export, who would arrive in their dirt-hauler truck from an outside yard to the site on a daily basis). Trip generation by those workers is estimated to be about 810 trips per day, of which about 35 trips would occur during each of the morning and evening peak traffic hours.

Truck-Generated Trips

The soil export activity would result in approximately 480 daily trips, based on a conservative assumption of an average 2-minute headway between trucks leaving the site (accounting for operations and traffic flow impacts), which equates to 240 truck round trips during an 8-hour day, or 480 one-way daily truck trips. Because trucks are bigger and move slower than passenger cars, the 480 truck trips were converted to 1,200 passenger car equivalent (PCE) daily trips (using a PCE factor of one truck equals 2.5 passenger cars). On an average hourly basis, assuming a uniform distribution of trips over an 8-hour work day, these daily trip totals would translate to approximately 150 one-way PCE trips (60 truck trips) during the morning peak hour. Soil export operations would end before evening peak traffic hour. Therefore, no truck trips would occur during the evening peak traffic hour.

Total Trips

Based on the above estimates for worker-and truck-generated trips, the restoration-phase activities would result in a maximum trip generation of approximately 2,010 daily PCE trips, of which about 185 trips would occur during the morning peak hour and 35 trips would occur during the evening peak hour.

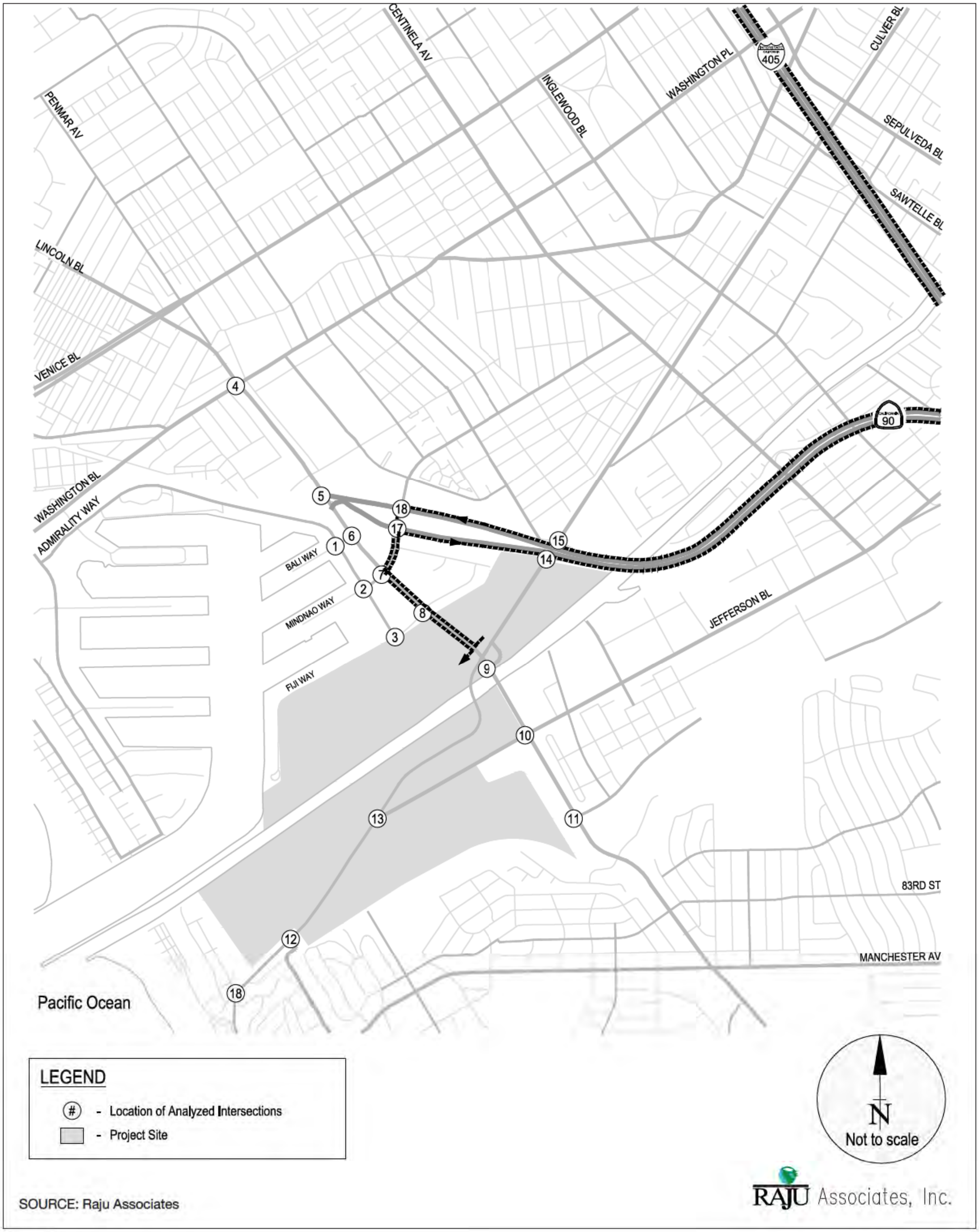
Trip Distribution

The following regional geographic trip distribution for worker trips during the restoration phase was computed based on a number of factors including existing traffic patterns and general distribution of expected worker trips:

1. To and From the North: 25%
2. To and From the South: 25%
3. To and From the West: 40%
4. To and From the East: 10%

The majority of workers would park in a temporary lot located in Area A on the west side of Lincoln Boulevard. The workers would be directed to access this lot from southbound Lincoln Boulevard and exit the lot southbound on Lincoln Boulevard (i.e., right-turn in and right-turn out). Workers constructing the parking structure along Fiji Way would park on-site. A minimal amount of workers would park in Area B.

The haul route to be used by Project trucks is shown in Figure 3.12-4, *Truck Haul Routes*. As shown in this figure, a haul route from the site would require traveling from Area A into North Area C via the Lincoln Boulevard temporary construction bridge and merging onto northbound Lincoln Boulevard, to Mindanao Way onto SR 90. This outgoing route was chosen to eliminate left turns onto Lincoln Boulevard. For the return trips, the empty trucks would enter Area A from Lincoln Boulevard from the south, again to avoid left turns and provide a one-way operation on-site for efficiency.



Ballona Wetlands Restoration Project

Figure 3.12-4
Truck Haul Route

Future Base (2019) Conditions

The Future Base (Year 2019 without construction) traffic projections were developed by using the traffic growth observed in City of Los Angeles' Travel Demand Forecasting Model. The City's Model predicts that traffic in the Project area would increase at a rate of about 0.57% per year during the morning peak hour and 0.64% per year during the evening peak hour. With the expected peak-restoration phase traffic generation in 2019, the existing (2015) traffic volumes were adjusted upward by a factor of 2.28% during the morning peak hour and 2.56% during the evening peak hour to reflect this area-wide regional growth.

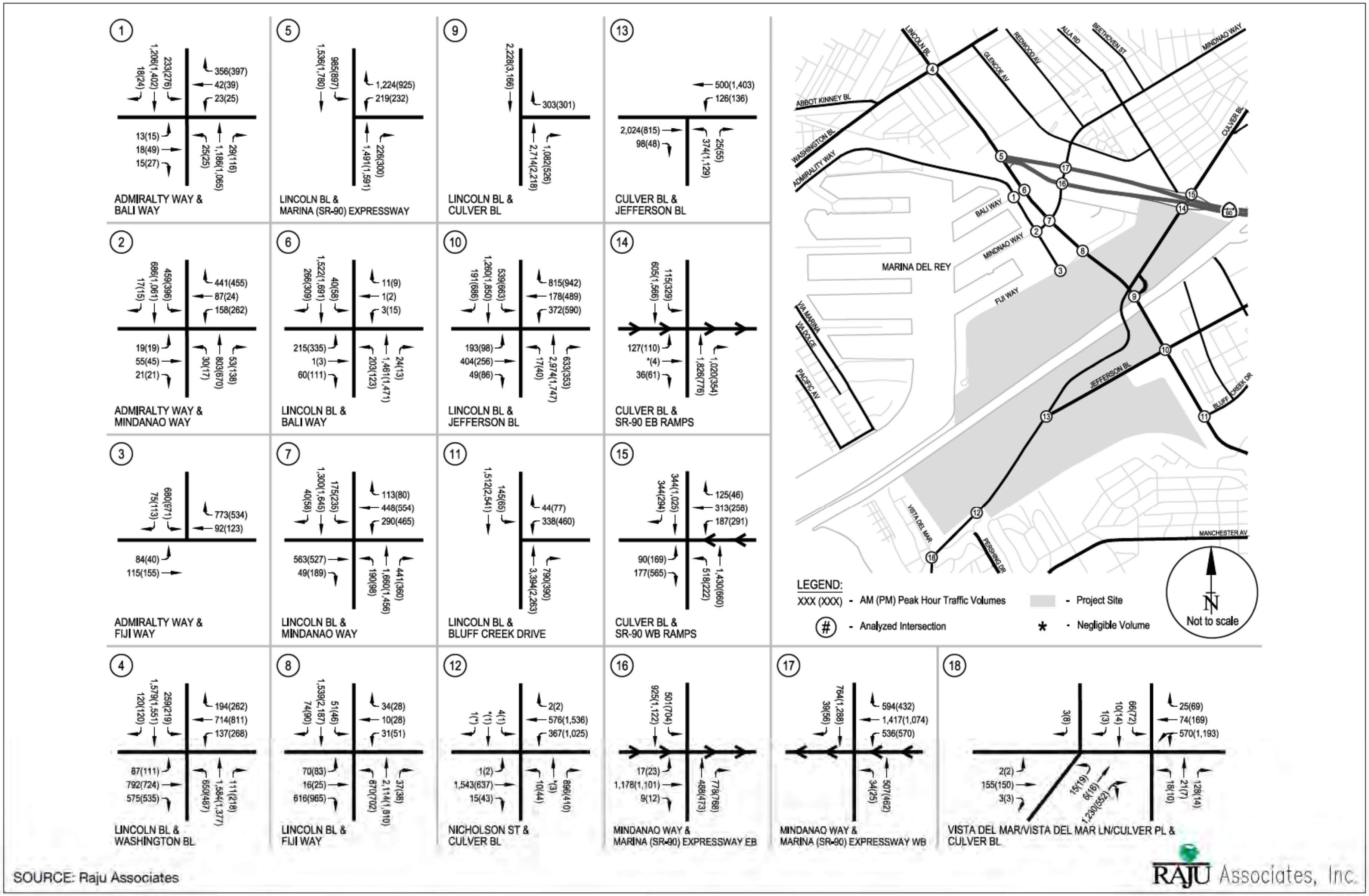
In addition to the above-described background (ambient) growth in traffic, a second potential source of traffic growth in the study area would be generated by 31 specific future development projects in the vicinity. These related projects are those developments that are planned and expected to be in place within the same timeframe as Alternative 1. The related projects are estimated to generate about 13,772 trips during the morning peak hour and 16,737 trips during the evening peak hour. The Future Base (2019) traffic volumes during both the morning and evening peak hours are presented in Figure 3.12-5, *Future (2019) Conditions – Peak Hour Traffic Volumes*.

Future (2019) Plus Restoration-Phase Conditions

Based on the worker trip distribution assumptions, truck haul routes, and construction activity trip generation estimates for Alternative 1, traffic estimates of restoration-phase trips are presented in Figure 3.12-6, *Construction Activity Trips – Peak Hour Traffic Volumes*.

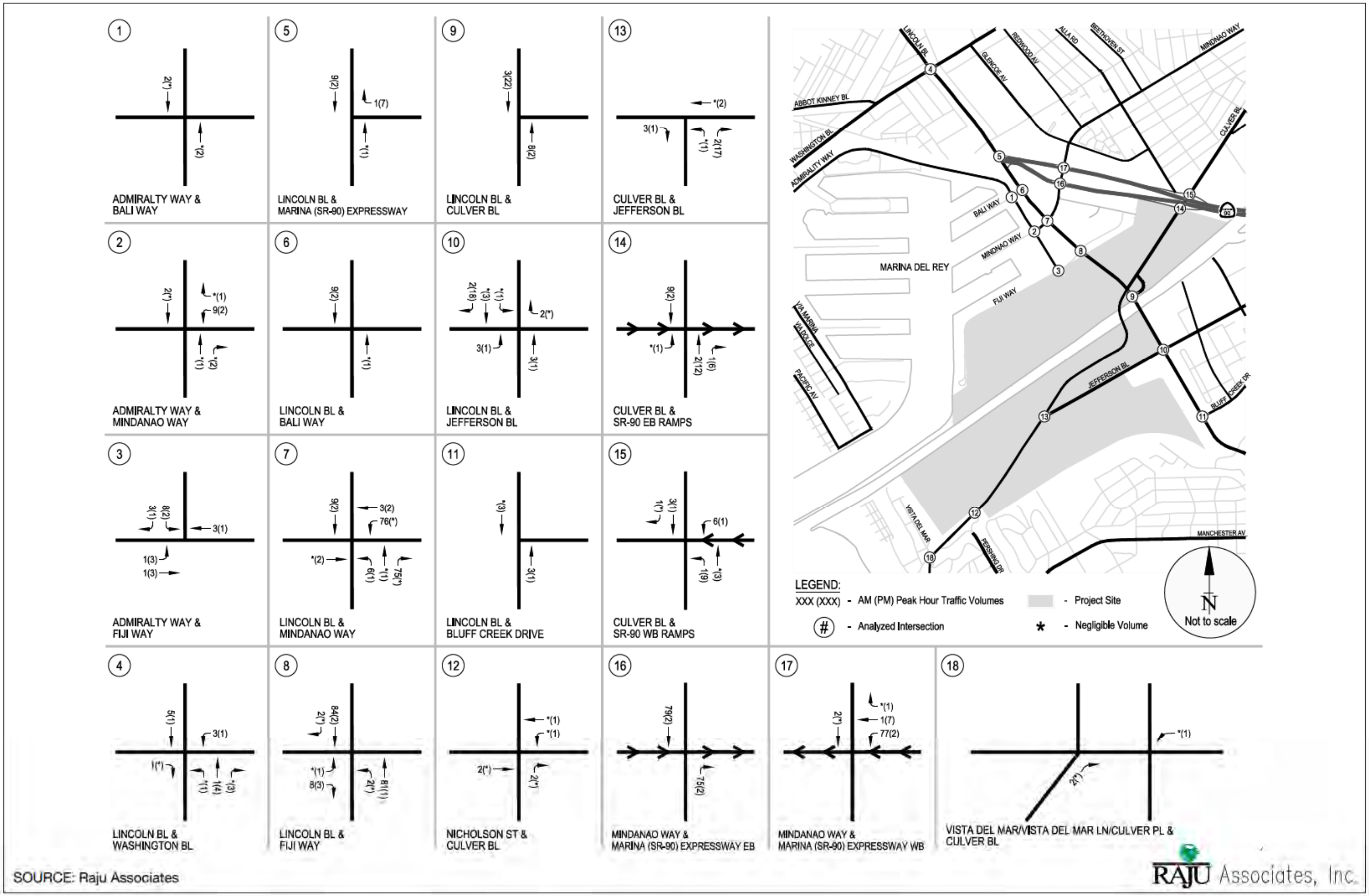
As shown in Table 3.12-6, restoration-related traffic would not change the intersection levels of service from base conditions during the morning and evening peak hours, with the exception of the intersection of Lincoln Boulevard / Fiji Way, which would operate at LOS C during the morning peak hour compared to LOS B under cumulative base conditions. However, the increase in V/C ratio at that intersection would be less than the 0.04 threshold of significance.

As such, Alternative 1 restoration activity would not result in a substantial increase to traffic levels along the local roadways in the Project area. Although increased traffic volumes associated with Alternative 1 would not result in adverse temporary restoration-related impacts, implementation of Mitigation Measures TRANS-1a and TRANS-1b would further ensure that direct Project impacts during the restoration phase would be less than significant.



Ballona Wetlands Restoration Project

Figure 3.12-5
Future (2019) Base Conditions - Peak Hour Traffic Volumes



Ballona Wetlands Restoration Project

Figure 3.12-6
Construction Activity Trips - Peak Hour Traffic Volumes

TABLE 3.12-6
SUMMARY OF INTERSECTION VOLUME-TO-CAPACITY RATIO (V/C) AND LEVEL OF SERVICE (LOS)
(RESTORATION PERIOD ANALYSIS – ALTERNATIVE 1)

Intersection	Peak Hour	Future (2019) Base Conditions		Future (2019) Plus Alternative 1		Increased V/C	Impact?
		V/C	LOS	V/C	LOS		
Admiralty Way/Bali Way	AM PM	0.639 0.672	B B	0.639 0.673	B B	0.000 0.001	No No
Admiralty Way/Mindanao Way	AM PM	0.690 0.634	B B	0.693 0.636	B B	0.003 0.002	No No
Admiralty Way/Fiji Way	AM PM	0.471 0.365	A A	0.472 0.368	A A	0.001 0.003	No No
Lincoln Boulevard/ Washington Boulevard	AM PM	0.915 0.870	E D	0.917 0.871	E D	0.002 0.001	No No
Lincoln Boulevard/SR 90	AM PM	0.774 0.778	C C	0.774 0.779	C C	0.000 0.001	No No
Lincoln Boulevard/Bali Way	AM PM	0.571 0.616	A B	0.573 0.616	A B	0.002 0.000	No No
Lincoln Boulevard/ Mindanao Way	AM PM	0.768 0.870	C D	0.798 0.872	C D	0.030 0.002	No No
Lincoln Boulevard/Fiji Way	AM PM	0.694 0.801	B D	0.714 0.802	C D	0.020 0.001	No No
Lincoln Boulevard/ Culver Loop	AM PM	0.855 0.621	D B	0.857 0.621	D B	0.002 0.000	No No
Lincoln Boulevard/ Jefferson Blvd	AM PM	0.915 0.803	E D	0.915 0.803	E D	0.000 0.000	No No
Lincoln Boulevard/ Bluff Creek Drive	AM PM	0.682 0.523	B A	0.682 0.524	B A	0.000 0.001	No No
Nicholson Street/ Culver Boulevard	AM PM	0.715 0.892	C D	0.715 0.892	C D	0.000 0.000	No No
Jefferson Boulevard/ Culver Boulevard	AM PM	0.796 0.963	C E	0.796 0.965	C E	0.000 0.002	No No
Culver Boulevard/ SR 90 Eastbound Ramps	AM PM	0.467 0.495	A A	0.467 0.497	A A	0.000 0.002	No No
Culver Boulevard/ SR 90 Westbound Ramps	AM PM	0.844 0.948	D E	0.845 0.951	D E	0.001 0.003	No No
Mindanao Way/ SR 90 Eastbound	AM PM	0.807 0.853	D D	0.824 0.853	D D	0.017 0.000	No No
Mindanao Way/ SR 90 Westbound	AM PM	0.609 0.616	B B	0.609 0.619	B B	0.000 0.003	No No
Vista dal Mar/ Culver Boulevard	AM PM	0.856 0.744	D C	0.856 0.744	D C	0.000 0.000	No No

SOURCE: Raju Associates, Inc. 2015 (provided in Appendix H)

Mitigation Measure

Mitigation Measure TRANS-1a: *Construction Traffic Management Plan.* The construction contractor(s) shall prepare a construction traffic management plan for each phase of the Project at the time of final design, prior to commencement of construction. This Plan would address details related to haul routes, dust control, noise control and City and County regulations. The construction management plan ensures that the construction activities and workers follow the City regulations and provides details of activities planned on-site. The Plan shall be developed on the basis of detailed design plans for the approved project, and shall include, but not necessarily be limited to, the elements listed below:

d) Develop circulation and detour plans to minimize impacts on local streets. Haul routes that minimize truck traffic on local roadways and residential streets shall be used. As necessary, warning lights, signage and/or flaggers shall be used to guide vehicles through the construction work areas.

e) Control and monitor construction vehicle movements by enforcing standard construction specifications through periodic on-site inspections.

f) Install traffic control devices where traffic conditions warrant, as specified in the applicable jurisdiction’s standards (e.g., the *California Manual of Uniform Traffic Controls for Construction and Maintenance Work Zones*).

g) Schedule truck trips outside of peak morning and evening commute hours to minimize adverse impacts on traffic flow (i.e., if agencies with jurisdiction over the affected roads identify highly congested roadway segments during their review of the encroachment permit applications).

h) Post detour signs along affected roadways to notify motorists of alternative routes.

f) Perform construction that crosses on-street and off-street bikeways, sidewalks, and other walkways in a manner that allows for safe access for bicyclists and pedestrians. Alternatively, provide safe detours to reroute affected bicycle/pedestrian traffic.

g) At least two weeks prior to construction, post signage along all potentially affected roadways, recreational trails, bicycle routes, and pedestrian pathways, to warn motorists, bicyclists, and pedestrians of construction activities. The signs shall include information regarding the nature of construction activities, duration, and detour routes. Signage shall be composed of or encased in weatherproof material and posted in conspicuous locations for the duration of the closure period. At the end of the closure period, the contractors shall retrieve all notice materials.

h) Construction activities shall be scheduled to minimize impacts during heavy recreational use periods (e.g., weekends and holidays).

i) Implement a public information program to notify motorists, bicyclists, nearby residents, and adjacent businesses of the impending construction activities (e.g., media coverage, email notices, websites, etc.). Notices of the location(s) and timing of road closures shall be published in local newspapers and on available websites to allow motorists to select alternative routes.

j) Store all equipment and materials in designated contractor staging areas.

k) Maintain alternate one-way traffic flow past the construction zones where possible.

l) Install detour signs to direct traffic to alternative routes around the closed road segment if alternate one-way traffic flow cannot be maintained past the construction zone.

m) Limit lane closures during peak hours.

n) Restore roads and streets to normal operation by covering trenches with steel plates outside of normal work hours or when work is not in progress.

o) Comply with roadside safety protocols to reduce the risk of accidents. Provide “Road Work Ahead” warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) to achieve required speed reductions for safe traffic flow through the work zone. Train construction personnel to apply appropriate safety measures as described in the traffic control and safety assurance plan.

p) Maintain access for emergency vehicles at all times. Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, transit stations, hospitals, and schools. Provide advance notification to local police, fire, and emergency service providers of the timing, location, and duration of construction activities that could affect the movement of emergency vehicles on area roadways.

q) Avoid truck trips through designated school zones during the school drop-off and pickup hours to the extent feasible.

r) Provide flaggers in school areas at street crossings to manage traffic flow and maintain traffic safety during the school drop-off and pickup hours on days when pipeline installation would occur in designated school zones.

s) Coordinate with the local transit providers to enable temporary bus routes or bus stops relocations within work zones as necessary. For example, access for Santa Monica Big Blue Bus Line 3 would be maintained at all times through the construction zone on Lincoln Boulevard during bridge construction.

Mitigation Measure TRANS-1b: *Restriction of Lane Closures.* The construction traffic management plan, prepared for Mitigation Measure TRANS-1a, shall stipulate that lane closures on Culver Boulevard would be restricted to nighttime hours of 11:00 p.m. to 4:00 a.m.

Level of Significance after Mitigation

Implementation of Mitigation Measures TRANS-1a and TRANS-1b would ensure that the construction activities and workers follow City- and Caltrans-stipulated regulations, and that impacts during Alternative 1 construction are minimized. This would reduce impacts to less than significant.

Indirect Impacts

The proposed restoration activities under Alternative 1 would only generate traffic from those activities. Because the proposed restoration activities would not generate indirect emissions (i.e., would not generate traffic after restoration activities are completed), there would be no indirect impacts.

1-TRANS-1b: Post-restoration activities associated with Alternative 1, and increased visitorship to the Ballona Reserve, would increase traffic volumes on area roadways, but would not result in a noticeable increase in delays at off-site intersections. (Less than Significant Impact)

Direct Impacts

Alternative 1 would require minimal post-restoration activities, including current and ongoing maintenance routines that do not occur on a daily basis and would not generate any new trips. Other post-restoration activities also would not occur on a daily basis, and any trips associated with those activities would be minimal.

Trip Generation

Utilizing the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 9th Edition, the trip generation associated with Alternative 1's post-restoration increased visitorship to the Ballona Reserve was determined. As shown in Table 3.12-7, *Estimated Weekday Vehicle Trip Generation Associated with Post-Restoration Increased Visitorship to the Ballona Reserve – Alternative 1*, Alternative 1 would generate approximately 378 daily trips, of which 12 trips would occur during the morning peak hour and 52 trips during the evening peak hour.

TABLE 3.12-7
ESTIMATED WEEKDAY VEHICLE TRIP GENERATION ASSOCIATED WITH POST-RESTORATION INCREASED VISITORSHIP TO THE BALLONA RESERVE – ALTERNATIVE 1

			AM Peak Hour			PM Peak Hour		
	Size	Daily	IN	OUT	TOTAL	IN	OUT	TOTAL
Ballona Wetlands Ecological Reserve	581 acres	378	7	5	12	32	20	52
Trip Generation Rates[a] State/County Parks)	Trips per acre	0.65	61%	39%	0.02	61%	39%	0.09

NOTE:
[a] Trip generation was estimated using County Park (Code 412) and State Park (Code 413) trip generation rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, 2012.

Trip Distribution

The geographic distribution for the above-described vehicle trips was assumed to be the following:

1. To and From the North: 25%
2. To and From the South: 25%

3. To and From the East: 40%
4. To and From the West: 10%

Based on these distribution assumptions, location and points of access of the project driveways (both to the proposed County Parking Structure in Area A and the West Culver Parking Lot in Area B), and trip generation estimates for Alternative 1, traffic estimates of Alternative 1-only trips are presented in Figure 3.12-7, *Project Only – Peak Hour Traffic Volumes*.

Existing (2015) plus Post-Restoration Traffic Conditions

The Existing (2015) plus Alternative 1 peak-hour traffic volumes were analyzed at each of the study intersections to determine the V/C ratio and corresponding level of service. As indicated in Table 3.12-8, *Summary of Intersection Volume-to-Capacity Ratio (V/C) and Level of Service (LOS) (Operational Period Analysis – Alternative 1)*, all 18 of the study intersections are projected to continue to operate at LOS D or better during both the morning and evening peak hours. Traffic generated by post-restoration activities under Alternative 1 would not change the intersection levels of service from existing conditions. As such, Alternative 1 would not result in a substantial increase to traffic levels along the local roadways in the project area, and would not conflict with LOS standards established by the City of Los Angeles or the County of Los Angeles. This would be a less-than-significant impact.

Mitigation Measure

None required.

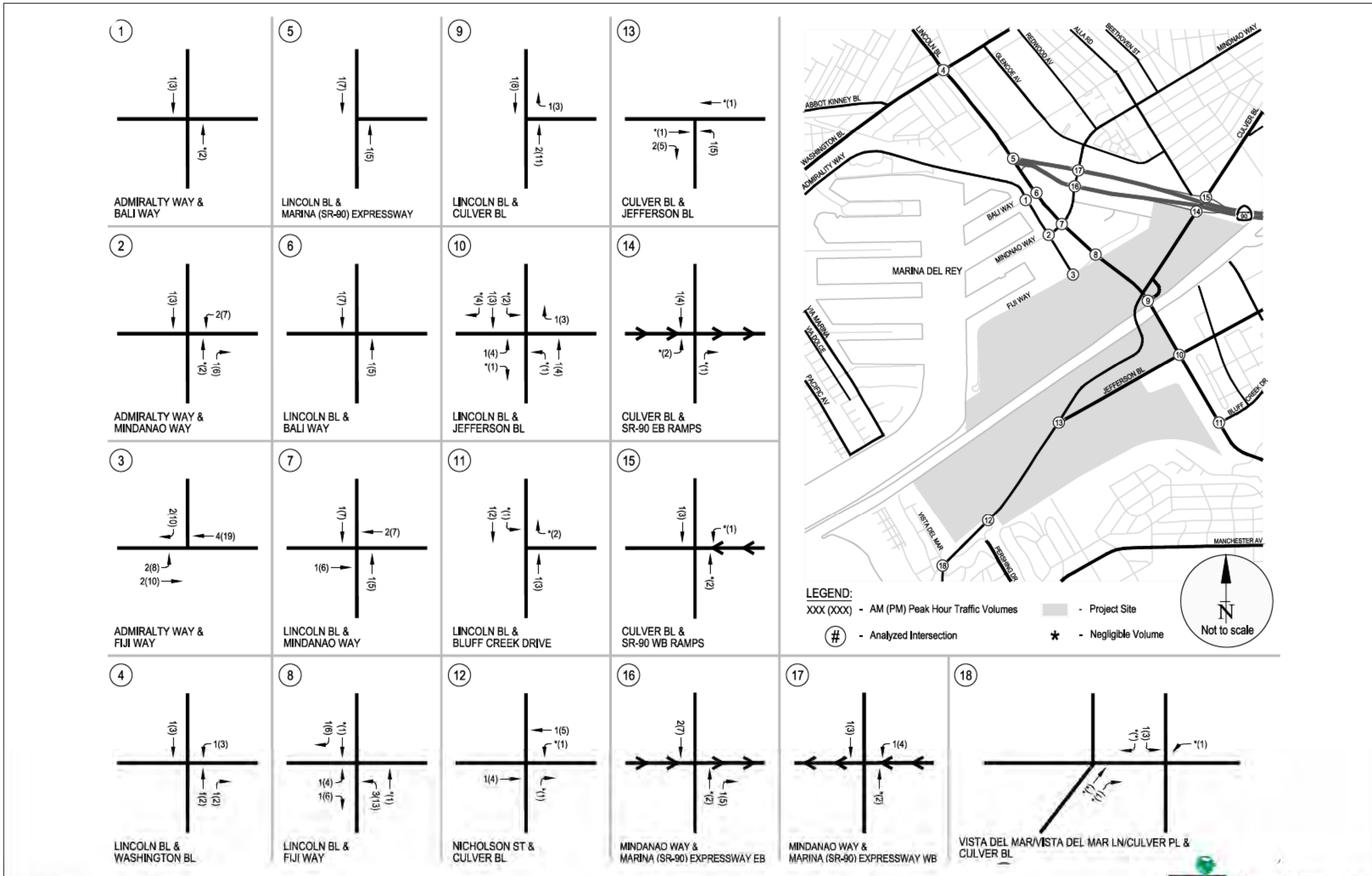
Indirect Impacts

The post-restoration activities under Alternative 1 would only generate traffic from the increased number of visitors to the Ballona Reserve. There would be no indirect generation of traffic, and as such, no indirect impacts.

1-TRANS-2: Post-restoration activities associated with Alternative 1, and increased visitorship to the Ballona Reserve, would increase traffic volumes on area roadways, but would not conflict with level of service standards established by the County of Los Angeles congestion management agency for designated roads or highways. (Less than Significant Impact)

Direct Impacts

As described above in the Roadway Network section, I-405, SR 90, and SR 1 are part of the CMP Highway and Roadway System, and the intersection of Lincoln Boulevard and SR 90 is a CMP monitoring location. Also as discussed above and shown in Table 3.12-7, traffic operations at none of the study intersections would worsen from existing (without Alternative 1) LOS conditions and would not conflict with LOS standards established by the City of Los Angeles or the County of Los Angeles CMP, during post-restoration phase conditions. This would be a less-than-significant impact.



SOURCE: Raju Associates

Ballona Wetlands Restoration Project

Figure 3.12-7
Project Only - Peak Hour Traffic Volumes

TABLE 3.12-8
SUMMARY OF INTERSECTION VOLUME-TO-CAPACITY RATIO (V/C) AND LEVEL OF SERVICE (LOS)
(POST-RESTORATION PHASE ANALYSIS – ALTERNATIVE 1)

Intersection	Peak Hour	Existing (2015) Conditions		Existing (2015) Plus Alternative 1		Increased V/C	Impact?
		V/C	LOS	V/C	LOS		
Admiralty Way/Bali Way	AM PM	0.616 0.627	B B	0.616 0.627	B B	0.000 0.001	No No
Admiralty Way/ Mindanao Way	AM PM	0.667 0.587	B A	0.667 0.593	B A	0.000 0.006	No No
Admiralty Way/Fiji Way	AM PM	0.451 0.338	A A	0.452 0.356	A A	0.001 0.018	No No
Lincoln Boulevard/ Washington Boulevard	AM PM	0.837 0.783	D C	0.838 0.785	D C	0.001 0.002	No No
Lincoln Boulevard/SR 90	AM PM	0.717 0.676	C B	0.717 0.678	C B	0.000 0.002	No No
Lincoln Boulevard/Bali Way	AM PM	0.509 0.552	A A	0.509 0.553	A A	0.000 0.001	No No
Lincoln Boulevard/ Mindanao Way	AM PM	0.710 0.781	C C	0.710 0.785	C C	0.000 0.004	No No
Lincoln Boulevard/Fiji Way	AM PM	0.628 0.720	B C	0.631 0.729	B C	0.003 0.009	No No
Lincoln Boulevard/ Culver Loop	AM PM	0.805 0.535	D A	0.806 0.539	D A	0.001 0.004	No No
Lincoln Boulevard/ Jefferson Blvd	AM PM	0.840 0.639	D B	0.841 0.640	D B	0.001 0.001	No No
Lincoln Boulevard/ Bluff Creek Drive	AM PM	0.544 0.360	A A	0.545 0.360	A A	0.001 0.000	No No
Nicholson Street/ Culver Boulevard	AM PM	0.652 0.798	B C	0.652 0.800	B C	0.000 0.002	No No
Jefferson Boulevard/ Culver Boulevard	AM PM	0.727 0.810	C D	0.727 0.812	C D	0.000 0.002	No No
Culver Boulevard/ SR 90 Eastbound Ramps	AM PM	0.436 0.463	A A	0.436 0.466	A A	0.000 0.003	No No
Culver Boulevard/ SR 90 Westbound Ramps	AM PM	0.798 0.873	C D	0.798 0.875	C D	0.000 0.002	No No
Mindanao Way/ SR 90 Eastbound	AM PM	0.756 0.809	C D	0.757 0.810	C D	0.001 0.001	No No
Mindanao Way/ SR 90 Westbound	AM PM	0.572 0.559	A A	0.572 0.560	A A	0.000 0.001	No No
Vista dal Mar/ Culver Boulevard	AM PM	0.782 0.653	C B	0.783 0.657	C B	0.001 0.004	No No

SOURCE: Raju Associates, Inc. 2015

The intent of CMPs is to monitor and address long-term traffic conditions related to future development that generate permanent (on-going) traffic increases, and that does not apply to temporary impacts associated with construction activities. Restoration activities would be transitory in nature and effects on roadway and intersection operations would be temporary. Therefore, consideration of LOS impacts on CMP roadways during the restoration phase is not applicable.

Indirect Impacts

The post-restoration activities under Alternative 1 would only generate traffic from the increased number of visitors to the Ballona Reserve. There would be no indirect generation of traffic, and as such, no indirect impacts. As discussed above, consideration of impacts to CMP standards during temporary traffic-generating activities is not required. Substantially the same numbers of vehicles would be accessing the Ballona Reserve for operation and maintenance-related purposes using the existing local roadways and existing entrances to the Ballona Reserve that are used under existing conditions. Further, the anticipated number of vehicles required for operation and maintenance purposes is so small and would not conflict with level of service standards established by the County of Los Angeles congestion management agency for designated roads or highways.

1-TRANS-3: Alternative 1 would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks. (No Impact)

The Los Angeles International Airport (LAX) is located approximately 1 mile south of the Project site. However, the Project site is located outside of the airport influence area and runway protection zones of LAX (Los Angeles County Airport Land Use Commission 2003a). The next nearest general aviation airport to the Project site is the Santa Monica Municipal Airport, which is located approximately 2.4 miles to the north. The Project site also is located outside of this airport's influence area and runway protection zones (Los Angeles County Airport Land Use Commission 2003b). There are no private airports or airstrips located within 2 miles of the Project site. Alternative 1 would not generate any air traffic, nor would it result in any structure that extends into air traffic space. Therefore, no impact would result related to a change in air traffic patterns.

In addition, although the Project site is within the Wildlife Hazard perimeters for LAX, which are 10,000 feet and 5 miles from the air operations area, Alternative 1 would not attract additional birds to the Project site in sufficient numbers to result in a change in air traffic patterns. High levels of bird presence are a known occurrence and related risk management activities already occur within and near LAX. The Playa del Rey Beach, which is located at Pacific Avenue and Culver Boulevard, has been identified as among the "Best California Beaches to View Migrating Birds" (California Beaches 2016) and as the source or destination of birds that affect aviation safety at LAX (Pitlik 2012). Whether or not Project area birds are migratory, birds are known to be an aviation risk at LAX. Consistent with federal law, commercial airports assess wildlife hazards and develop management plans to reduce the risk of mammal and bird strikes.

Since the implementation of an integrated wildlife mitigation program at LAX in 1998, bird strike reporting more than doubled, increasing from 27.8 reported bird strikes annually between 1990 and 1997 to 68.3 reported strikes per year between 1998 and 2011 (Pitlik 2012). Avian species struck at LAX typically have included individuals from the following groups: gulls, raptors, owls, larks, waterfowl, and wading birds (Id.). To manage avian-related collision risks at LAX as part of the airport's wildlife hazard mitigation program, a biologist places traps for birds in open spaces, including 6-foot-high metal cages that capture starlings and wood and screen boxes with collapsible roofs that catch kestrels, hawks and falcons (Weikel 2009). To scare birds away from runways and taxiways, a small pistol is used that shoots firecrackers into the air that either explode with a bang or make a whistling or screaming sound (Id.). Further, grassy fields and other vegetation are cut back to remove cover and nesting areas, and vector control is called in occasionally to eliminate rodents and insects hunted by birds of prey (Id.). Specifically to deter gull presence on airport property, perching deterrents have been installed, gull effigies are used, and open dumpsters and trash cans have been removed (Pitlik 2012). Waterfowl typically migrate through the airport environment in the spring and fall and usually are struck by aircraft during early morning hours. Habitat modification, such as the removal of temporary standing water; dispersal, such as pyrotechnics; and lethal control, such as shooting with air rifles, have been the most effective methods for reducing the presence of waterfowl on the airfield itself (Id.). Existing management efforts pursuant to LAX's wildlife hazard mitigation program would continue to be implemented independent of Alternative 1 and would be sufficiently effective to avoid a need to change air traffic patterns as a result of Alternative 1. Therefore, no impact related to a change in air traffic patterns would occur.

For a discussion of potential impacts relating to airports or airstrips, see Section 3.8, *Hazards and Hazardous Materials*.

1-TRANS-4: Alternative 1 would not substantially increase traffic hazards. (Less than Significant Impact)

Direct Impacts

Alternative 1 would not result in any hazards due to design features or incompatible uses. It is anticipated that all restoration-phase activity would occur on-site with the exception of the construction of the bridge across Lincoln Boulevard, construction of water control structures (storm drains) across Culver Boulevard and Jefferson Boulevard, transfer of soil from the north part of Area C to the southern part of Area C across Culver Boulevard, construction activities associated with gas line relocation across Culver Boulevard, natural gas monitoring well relocation work on the SoCalGas Property, construction worker trips, and off-site truck trips. No road closures would be required for this work, although manned flaggers, warning lights and signs, and traffic cones would be used as needed for safety and efficiency. Changes to existing roadways are not part of Alternative 1. Impacts would be less than significant.

Indirect Impacts

Traffic generated during restoration and post-restoration activities would be compatible with the mix of vehicle types (autos and trucks) currently using regional and local roadways, and would not indirectly increase traffic hazards. This impact would be less than significant.

1-TRANS-5: Alternative 1 would, unless mitigated, result in inadequate emergency access. (Less than Significant with Mitigation Incorporated)

Direct Impacts

It is anticipated that all restoration-phase activity would occur on-site with the exception of the construction of the bridge across Lincoln Boulevard (2017), construction of water control structures (storm drains) across Culver Boulevard and Jefferson Boulevard (2019), transfer of soil from the north part of Area C to the southern part of Area C across Culver Boulevard, construction activities associated with gas line relocation across Culver Boulevard (2017-18), natural gas monitoring well relocation work on the SoCalGas Property, construction worker trips, and off-site truck trips. The roadway network serving the Project site currently accommodates the movements of emergency vehicles that travel in the area. Alternative 1 would introduce no permanent impedances to access for emergency vehicles, and implementation of Mitigation Measure TRANS-1a, Construction Traffic Management Plan, would maintain access for emergency vehicles at all times during restoration-phase activities. The impact to emergency vehicle access, therefore, would be less than significant.

Indirect Impacts

Traffic generated during restoration and post-restoration activities would introduce no permanent impedances to access for emergency vehicles, and would not indirectly impede emergency access. This impact would be less than significant.

Mitigation Measure

Implement Mitigation Measure TRANS-1a, Construction Traffic Management Plan.

Level of Significance after Mitigation

Implementation of Mitigation Measure TRANS-1a, Construction Traffic Management Plan, would reduce the direct impacts of restoration-phase activity to less than significant.

1-TRANS-6: Alternative 1 would not adversely affect alternative transportation travel mode (public transit, bicycle, or pedestrian). (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 1 would not permanently eliminate alternative modes of transportation, transportation corridors, or facilities. Further, Alternative 1 would not prevent the use of any roads on which public transit routes operate, nor would it generate increased traffic volumes on roads used as public transit routes to a degree that would cause lengthy delays for transit riders or eliminate and/or reduce access to such transit facilities. Temporary road or lane closures associated with the proposed bridge installations could result in delays for buses traveling along affected routes. However, as described on pages 3.12-13 to 3.12-14, the bridge work, and relocation/installation of gas line / storm drains, resulting in temporary road or lane closures, would be intermittent night work (from 11:00 p.m. to 4:00 a.m.) over 3- to 4-week periods. Implementation of Mitigation Measure TRANS-1a, Construction Traffic Management Plan, would require that access for the Santa Monica Big Blue Bus Line 3 would be maintained at all times on Lincoln Boulevard. Additionally, as discussed in Section 3.11, *Recreation*, the Ballona Creek Bike Path would remain open during restoration activities. Eventually the path would have two different routes for riders to choose between. For these reasons, the impact related to conflicts with policies, plans, or programs related to transit, bicycle, or pedestrian travel would be less than significant.

Indirect Impacts

With implementation of mitigation measures, described above, restoration and post-restoration activities would not conflict with alternative modes of transportation, transportation corridors, or facilities, and would not indirectly conflict with policies, plans, or programs related to alternative modes of transportation. This impact would be less than significant.

TABLE 3.12-9
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
TRANS-1: 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?				
Relating to restoration-phase activities, see Impact 1-TRANS-1a.	☐	☒	☐	☐
Relating to post-restoration activities, see Impact 1-TRANS-1b.	☐	☐	☒	☐
TRANS-2: 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? See Impact 1-TRANS-2.	☐	☐	☒	☐
TRANS-3: Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks? See Impact 1-TRANS-3.	☐	☐	☐	☒
TRANS-4: Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? See Impact 1-TRANS-4.	☐	☐	☒	☐
TRANS-5: Result in inadequate emergency access? See Impact 1-TRANS-5.	☐	☒	☐	☐
TRANS-6: Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? See Impact 1-TRANS-6.	☐	☐	☒	☐

3.12.6.2 Alternative 2: Restored Partial Sinuous Creek

Alternative 2 would have similar restoration-phase characteristics as Alternative 1. As described in Chapter 2 and similar to Alternative 1, the existing armored levees on the Ballona Creek channel adjacent to the Ballona Reserve would be removed under Alternative 2 and Ballona Creek would be realigned to flow in a natural meander-shaped pattern; however, under Alternative 2, the southern levee of the Ballona Creek channel adjacent to West Area B would not be breached, and the existing water control structures would remain. As a result, Alternative 2 restores a mix of fully tidal wetlands and managed wetlands in the Ballona Reserve while retaining existing habitats in West Area B (see Figure 2-43, *Alternative 2: Proposed Habitats*). Alternative 2 would include the first restoration phase described in Alternative 1, but not the second and final restoration phase and without the stockpiled fill along the Culver Boulevard levee and East Area B in the first phase of Alternative 1. The restoration activities proposed under Alternative 2 would occur between 2017 and 2022or later.[120]

Under Alternative 2, the location of access points within the Ballona Reserve for operation and maintenance activities could be adjusted to accommodate restored habitat areas and relocated infrastructure, including the reconfigured meander-shaped Ballona Creek channel, new water control structures, perimeter levees, and flood berms (see Figure 2-1, Alternative 1, Phase 2: Proposed Habitats). Vehicle entrances to the Ballona Reserve would not change. Vehicle access would be required for operation and maintenance activities, including for maintenance of the Ballona Creek channel and levees, which would be the same as described under Alternative 1 (Appendix B5, Preliminary Operations and Maintenance Plan). Maintenance of water control structures under Alternative 2 would be similar to description under Alternative 1, but with the following exceptions. Under Alternative 2, West Area B would not be improved. The existing West Area B gates connecting West Area B to Ballona Creek would remain and would continue to be accessed and maintained as under the existing conditions (Id.). Access for the maintenance of flood risk management berms under Alternative 2 would be the same as described under Alternative 1. CDFW would conduct the same nature and type of activities to operate and maintain the non-LACDA project facilities within the Ballona Reserve at the same intervals as the agency does under existing conditions. Such activities could include vehicle use, for example, pursuant to inspecting and locking gates, repairing fences, controlling pests and weeds, and removing trash and debris from the non-LACDA project areas within the Ballona Reserve (Id.).

2-TRANS-1a: Restoration activities associated with Alternative 2 would require temporary lane and road closures, and would increase traffic volumes at area intersections during and following restoration. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Construction phasing would be the same as described for Phase 1 of Alternative 1. Implementation of Alternative 2 would be implemented in one phase, over an approximately 5-year period, scheduled to commence in 2017 and completed in 2022 (compared to 2026 for Alternative 1). During this period, it is anticipated that all activity would occur on-site with the exception of the construction of the bridge across Lincoln Boulevard (2017), construction of water

[120] Alternative 2 would be implemented in a single phase consisting of multiple sequences over the course of 36 months.

control structures (storm drains) across Culver Boulevard and Jefferson Boulevard (2019), construction activities associated with gas line relocation across Culver Boulevard (2017-18), construction worker trips, and off-site truck trips. From a traffic perspective, based on the anticipated construction schedule, the greatest amount of restoration phase -related peak-hour trips would be generated in Year 2019, similar to Alternative 1. Therefore, to provide the most conservative analysis (greatest potential impact), this section assesses the impacts of Alternative 2's traffic generation based on conditions in 2019. The assessment of Alternative 2's impacts to traffic during construction of the above-mentioned bridge, storm drains, and gas line relocation looks at conditions during the periods of time of those construction activities.

Construction Traffic Impacts of Lincoln Boulevard Bridge Construction

The bridge across Lincoln Boulevard would be constructed in 2017 during the night-time hours of 11:00 p.m. to 4:00 a.m. for a period of 3 to 4 weeks, and would require intermittent closure of Lincoln Boulevard. It is anticipated that cranes would be used to place the bridge segments over the existing abutments or new abutments adjacent to and north of the Culver Boulevard bridge structure. The intermittent night-time closures of Lincoln Boulevard would allow the cranes to swing the bridge segments (structural members) over the travel lanes to place them over the existing or new abutments and secure them. Once the members are in place and secured, the roadway would be opened. Access for emergency vehicles would be maintained at all times. The current number of lanes along Lincoln Boulevard would not be affected between 4:00 a.m. and 11:00 p.m. (when there would be no construction activity), and after the bridge construction is complete, full-time use of Lincoln Boulevard would be restored.

A 24-hour traffic count was conducted on Lincoln Boulevard in the vicinity of the proposed bridge on September 1, 2015. The count reveals that the traffic volume on Lincoln Boulevard between the hours of 11:00 p.m. and 4:00 a.m. ranges from 48 to 347 vph on the northbound lanes, and from 48 to 380 vph on the southbound lanes. Those relatively low traffic volumes would be detoured away from the construction zone (described below). However, for purposes of this analysis, the impact on traffic circulation during road closures is considered to be significant without mitigation.

The potential temporary detour route for northbound Lincoln Boulevard traffic would be to re-route traffic to Culver Boulevard (via the Culver Loop ramp), then to Marina Freeway, and back to Lincoln Boulevard, as well as possibly via Jefferson Boulevard to Centinela Avenue to Marina Freeway and then back to Lincoln Boulevard. The potential detour route for southbound Lincoln Boulevard traffic would be to re-route traffic to Marina Freeway to Culver Boulevard (or Centinela Avenue and Jefferson Boulevard) and then back to Lincoln Boulevard.[121]

With the implementation of Mitigation Measures TRANS-1a and TRANS-1b during the 3- to 4-week period, the construction traffic impacts due to the Lincoln Boulevard bridge construction would be less than significant.

[121] Because Lincoln Boulevard would be closed to traffic north of the Culver Loop ramp during the 11:00 p.m. to 4:00 a.m. period, it would be possible to permit left turns (prohibited at all other times) from the Culver-to-Lincoln ramp onto southbound Lincoln Boulevard.

Construction Traffic Impacts of Gas Line Relocation and Stormwater Drain Installation

Removal and relocation of existing gas lines in Area B, as well as installation of storm drains in Area B, would require partial closure of lanes along Culver Boulevard. Removal and relocation of existing gas lines in Area B would occur in 2017 and would involve lane closures on Culver Boulevard over a four-week period. The installation storm drains in Area B would occur in 2019 and would require similar lane closures on Culver Boulevard over a 3-week period.

A 24-hour traffic count was conducted along Culver Boulevard west of Lincoln Boulevard on June 10, 2015. Based on that count, the temporal distribution of traffic indicates that the partial closure of Culver Boulevard for construction activity would need to be between the hours of 11:00 p.m. to 4:00 a.m. (i.e., traffic volumes during other hours of the day are too high to be adequately accommodated with lane closures). The traffic volume on Culver Boulevard during those night-time hours ranges from 30 to 154 vph on the northeastbound lane(s), and from 60 to 206 vph on the southwestbound lane(s). Depending on the location of the partial road closure, the relative low night-time traffic volumes either would be accommodated on the two remaining (open) lanes (when closure is in the four-lane section of Culver Boulevard, west of Jefferson Boulevard), or would be detoured away from the construction zone (when closure is in the two-lane section of Culver Boulevard, east of Jefferson Boulevard). Implementation of Mitigation Measure TRANS-1b would ensure that that lane closures on Culver Boulevard would be restricted to the nighttime hours of 11:00 PM to 4:00 AM. In addition, implementation of Mitigation Measure TRANS-1a (a detailed construction traffic management plan including detour routes, signage, traffic control and hours of construction would ensure that the construction activities and workers follow City-stipulated regulations.

The potential temporary detour route for northeastbound Culver Boulevard traffic would be to re-route traffic to Jefferson Boulevard, and then to Lincoln Boulevard, and back to Culver Boulevard. The southwestbound traffic on Culver Boulevard would continue to use the partially open (half-roadway) Culver Boulevard.

With the implementation of Mitigation Measures TRANS-1a and TRANS-1b during the 3- to 4-week period, the construction traffic impacts due to the gas line relocation and stormwater drain installation components of Alternative 2 would be less than significant.

Trip Generation

Similar to Alternative 1, it is anticipated that the greatest amount of restoration-related peak hour trips would be generated in Year 2019 and includes overlapping construction sequences. A total of approximately 351 workers would be on-site, the same as for Alternative 1, resulting in a total of approximately 810 daily trips of which 35 trips would occur during each of the morning and evening peak hours, the same as Alternative 1.

As part of the grading process, depending on final Project design, soil compaction, and other site-specific conditions, -up to 10,000 cubic yards of soil could be removed/exported in Alternative 2 compared to 10,000 to 110,000 cubic yards of soil for Alternative 1. In order to provide the most conservative analysis (greatest potential impact), this section assesses impacts to traffic based on the highest amount of soil import, which would require approximately 720 haul trips over 3 days. This results in more truck haul trips overall, over a longer period of time compared to Alternative 1.

However, based on 240 truck trips per day estimated to occur at the site, Alternative 2 would result in approximately 480 truck trips per day (1,200 PCE trips per day), the same as Alternative 1.

Restoration phase activities would result in a maximum trip generation of approximately 2,010 daily PCE trips, of which 185 trips would occur during the morning peak hour and 35 trips during the evening peak hour. This is the same restoration activity trip generation as that of Alternative 1.

Trip Distribution

The regional geographic trip distribution for worker trips during the restoration phase would be the same as for Alternative 1, as follows:

1. To and From the North: 25%
2. To and From the South: 25%
3. To and From the West: 40%
4. To and From the East: 10%

The haul route to be used by trucks (the same as for Alternative 1) is shown in Figure 3.12-4, *Truck Haul Routes*.

Future Base (2019) Conditions

As described above, the Future Base (Year 2019 without construction) traffic projections were developed by using the traffic growth observed in City of Los Angeles' Travel Demand Forecasting Model, and traffic that would be generated by 31 related projects. With the expected peak-construction traffic generation in 2019, the existing (2015) traffic volumes were adjusted upward by a factor of 2.28% during the morning peak hour and 2.56% during the evening peak hour to reflect this area-wide regional growth. The Future Base (2019) traffic volumes during both the morning and evening peak hours are presented in Figure 3.12-5, *Future (2019) Base Conditions – Peak Hour Traffic Volumes*.

Future (2019) Plus Restoration-Phase Conditions

Based on the worker trip distribution assumptions, truck haul routes, and restoration phase activity trip generation estimates, traffic estimates of activity trips are presented in Figure 3.12-7, *Project Only – Peak Hour Traffic Volumes*. The Future (2019) condition, without and with Alternative 2 restoration activities, were analyzed to determine the V/C ratio and LOS at each of the study intersections. The results of this analysis are summarized on Table 3.12-10, *Summary of Intersection Volume-to-Capacity Ratio (V/C) and Level of Service (LOS) (Restoration Phase Analysis – Alternative 2)*. As indicated in the table, all 18 study intersections are projected to operate at LOS D or better under 2019 without Project conditions during both the morning and evening peak hours, except for the following four intersections, which are projected to operate at LOS E:

1. Lincoln Boulevard / Washington Boulevard: AM peak hour
2. Lincoln Boulevard / Jefferson Boulevard: AM peak hour
3. Jefferson Boulevard / Culver Boulevard: PM peak hour
4. Culver Boulevard / SR 90 Westbound Ramps: PM peak hour

TABLE 3.12-10
SUMMARY OF INTERSECTION VOLUME-TO-CAPACITY RATIO (V/C) AND LEVEL OF SERVICE (LOS)
(RESTORATION PHASE ANALYSIS – ALTERNATIVE 2)

Intersection	Peak Hour	Future (2019) Base Conditions		Future (2019) Plus Alternative 2		Increased V/C	Impact?
		V/C	LOS	V/C	LOS		
Admiralty Way/Bali Way	AM PM	0.639 0.672	B B	0.639 0.673	B B	0.000 0.001	No No
Admiralty Way/Mindanao Way	AM PM	0.690 0.634	B B	0.693 0.636	B B	0.003 0.002	No No
Admiralty Way/Fiji Way	AM PM	0.471 0.365	A A	0.472 0.368	A A	0.001 0.003	No No
Lincoln Boulevard/Washington Boulevard	AM PM	0.915 0.870	E D	0.917 0.871	E D	0.002 0.001	No No
Lincoln Boulevard/SR 90	AM PM	0.774 0.778	C C	0.774 0.779	C C	0.000 0.001	No No
Lincoln Boulevard/Bali Way	AM PM	0.571 0.616	A B	0.573 0.616	A B	0.002 0.000	No No
Lincoln Boulevard/Mindanao Way	AM PM	0.768 0.870	C D	0.798 0.872	C D	0.030 0.002	No No
Lincoln Boulevard/Fiji Way	AM PM	0.694 0.801	B D	0.714 0.802	C D	0.020 0.001	No No
Lincoln Boulevard/Culver Loop	AM PM	0.855 0.621	D B	0.857 0.621	D B	0.002 0.000	No No
Lincoln Boulevard/Jefferson Boulevard	AM PM	0.915 0.803	E D	0.915 0.803	E D	0.000 0.000	No No
Lincoln Boulevard/Bluff Creek Drive	AM PM	0.682 0.523	B A	0.682 0.524	B A	0.000 0.001	No No
Nicholson Street/Culver Boulevard	AM PM	0.715 0.892	C D	0.715 0.892	C D	0.000 0.000	No No
Jefferson Boulevard/Culver Boulevard	AM PM	0.796 0.963	C E	0.796 0.965	C E	0.000 0.002	No No
Culver Boulevard/SR 90 EB Ramps	AM PM	0.467 0.495	A A	0.467 0.497	A A	0.000 0.002	No No
Culver Boulevard/SR 90 WB Ramps	AM PM	0.844 0.948	D E	0.845 0.951	D E	0.001 0.003	No No
Mindanao Way/SR 90 EB	AM PM	0.807 0.853	D D	0.824 0.853	D D	0.017 0.000	No No
Mindanao Way/SR 90 EB	AM PM	0.609 0.616	B B	0.609 0.619	B B	0.000 0.003	No No
Vista dal Mar/Culver Boulevard	AM PM	0.856 0.744	D C	0.856 0.744	D C	0.000 0.000	No No

SOURCE: Raju Associates, Inc. 2015

As shown in Table 3.12-10, *Summary of Intersection Volume-to-Capacity Ratio (V/C) and Level of Service (LOS) (Construction Period Analysis – Alternative 2)*, construction-related traffic would not change the intersection levels of service from existing conditions during either the morning and evening peak hours, with the exception of the intersection of Lincoln Boulevard / Fiji Way, which would operate at LOS C during the morning peak hour compared to LOS B under cumulative base conditions. However, the increase in V/C ratio at that intersection would be less than the 0.04 threshold of significance. As such, Alternative 2's restoration activities would not result in a substantial increase to traffic levels along the local roadways in the project area. Although increased traffic volumes associated with Alternative 2 would not result in adverse temporary restoration-phase impacts, implementation of Mitigation Measures TRANS-1a and TRANS-1b (the same as for Alternative 1) would further ensure that direct impacts during restoration would be less than significant.

Indirect Impacts

The proposed restoration activities under Alternative 2 would only generate traffic from those activities. Because the proposed restoration activities would not generate indirect emissions (i.e., would not generate traffic after restoration activities are completed), there would be no indirect impacts.

2-TRANS-1b: Post-restoration activities associated with Alternative 2, and increased visitorship to the Ballona Reserve, would increase traffic volumes on area roadways, but would not result in a noticeable increase in delays at off-site intersections. (Less than Significant Impact)

Direct Impacts

Alternative 2 is similar to Alternative 1 but with a smaller footprint of habitat restoration and levee construction. The parking structure, West Culver Parking Lot upgrades, two bicycle/pedestrian bridges, and other visitor amenities would still be constructed, and the natural gas monitoring wells and pipelines within the Ballona Reserve would still be abandoned and/or relocated to the SoCalGas Property. See Table 2-1c, *Summary of Alternatives*, in Chapter 2, *Description of Alternatives*, for further details. Alternative 2 would require minimal change to existing operation and maintenance activities, including current and ongoing routines that do not occur on a daily basis, and would not generate any new trips. Other post-restoration activities also would not occur on a daily basis and any trips associated with those activities would be minimal.

Trip Generation

Utilizing the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 9th Edition, the trip generation associated with Alternative 2's post-restoration increased visitorship to the Ballona Reserve was determined. As shown in Table 3.12-11, *Estimated Weekday Vehicle Trip Generation Associated with Post-Restoration Increased Visitorship to the Ballona Reserve – Alternative 2*, Alternative 2 would generate approximately 378 daily trips, of which 12 trips would occur during the morning peak hour and 52 trips during the evening peak hour (the same as Alternative 1).

TABLE 3.12-11
ESTIMATED WEEKDAY VEHICLE TRIP GENERATION ASSOCIATED WITH POST-RESTORATION INCREASED VISITORSHIP TO THE BALLONA RESERVE – ALTERNATIVE 2

			AM Peak Hour			PM Peak Hour		
	Size	Daily	IN	OUT	TOTAL	IN	OUT	TOTAL
Ballona Wetlands Ecological Reserve	581 acres	378	7	5	12	32	20	52
Trip Generation Rates[a] State/County Parks)	Trips per acre	0.65	61%	39%	0.02	61%	39%	0.09

NOTE:
[a] Trip generation was estimated using County Park (Code 412) and State Park (Code 413) trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 9th Edition, 2012.

Trip Distribution

The geographic distribution for the above-described vehicle trips was assumed to be the following:

1. To and From the North: 25%
2. To and From the South: 25%
3. To and From the East: 40%
4. To and From the West: 10%

Based on these distribution assumptions, location and points of access of the project driveways (both to the proposed three-story parking structure in Area A and the West Culver Parking Lot in Area B), and trip generation estimates for Alternative 2, traffic estimates of Alternative 2-only trips are presented in Figure 3.12-7, *Project Only – Peak Hour Traffic Volumes*.

Existing (2015) plus Post-Restoration Traffic Conditions

The Existing (2015) plus Alternative 2 peak-hour traffic volumes were analyzed at each of the study intersections to determine the V/C ratio and corresponding level of service. As indicated in Table 3.12-12, *Summary of Intersection Volume-to-Capacity Ratio (V/C) and Level of Service (LOS) (Post-restoration Analysis – Alternative 2)*, all 18 of the study intersections are projected to continue to operate at LOS D or better during both the morning and evening peak hours. Traffic generated by post-restoration under Alternative 2 would not change the intersection levels of service from existing conditions. As such, Alternative 2 would not result in a substantial increase to traffic levels along the local roadways in the project area, and would not conflict with LOS standards established by the City of Los Angeles or the County of Los Angeles. This would be a less-than-significant impact.

Indirect Impacts

The post-restoration activities under Alternative 2 would only generate traffic from the increased number of visitors to the Ballona Reserve. There would be no indirect generation of traffic, and as such, no indirect impacts.

TABLE 3.12-12
SUMMARY OF INTERSECTION VOLUME-TO-CAPACITY RATIO (V/C) AND LEVEL OF SERVICE (LOS)
(POST-RESTORATION ANALYSIS – ALTERNATIVE 2)

Intersection	Peak Hour	Existing (2015) Conditions		Existing (2015) Plus Alternative 2		Increased V/C	Impact?
		V/C	LOS	V/C	LOS		
Admiralty Way/Bali Way	AM PM	0.616 0.627	B B	0.616 0.627	B B	0.000 0.001	No No
Admiralty Way/Mindanao Way	AM PM	0.667 0.587	B A	0.667 0.593	B A	0.000 0.006	No No
Admiralty Way/Fiji Way	AM PM	0.451 0.338	A A	0.452 0.356	A A	0.001 0.018	No No
Lincoln Boulevard/Washington Boulevard	AM PM	0.837 0.783	D C	0.838 0.785	D C	0.001 0.002	No No
Lincoln Boulevard/SR 90	AM PM	0.717 0.676	C B	0.717 0.678	C B	0.000 0.002	No No
Lincoln Boulevard/Bali Way	AM PM	0.509 0.552	A A	0.509 0.553	A A	0.000 0.001	No No
Lincoln Boulevard/Mindanao Way	AM PM	0.710 0.781	C C	0.710 0.785	C C	0.000 0.004	No No
Lincoln Boulevard/Fiji Way	AM PM	0.628 0.720	B C	0.631 0.729	B C	0.003 0.009	No No
Lincoln Boulevard/Culver Loop	AM PM	0.805 0.535	D A	0.806 0.539	D A	0.001 0.004	No No
Lincoln Boulevard/Jefferson Boulevard	AM PM	0.840 0.639	D B	0.841 0.640	D B	0.001 0.001	No No
Lincoln Boulevard/Bluff Creek Drive	AM PM	0.544 0.360	A A	0.545 0.360	A A	0.001 0.000	No No
Nicholson Street/Culver Boulevard	AM PM	0.652 0.798	B C	0.652 0.800	B C	0.000 0.002	No No
Jefferson Boulevard/Culver Boulevard	AM PM	0.727 0.810	C D	0.727 0.812	C D	0.000 0.002	No No
Culver Boulevard/SR 90 EB Ramps	AM PM	0.436 0.463	A A	0.436 0.466	A A	0.000 0.003	No No
Culver Boulevard/SR 90 WB Ramps	AM PM	0.798 0.873	C D	0.798 0.875	C D	0.000 0.002	No No
Mindanao Way/SR 90 EB	AM PM	0.756 0.809	C D	0.757 0.810	C D	0.001 0.001	No No
Mindanao Way/SR 90 EB	AM PM	0.572 0.559	A A	0.572 0.560	A A	0.000 0.001	No No
Vista dal Mar/Culver Boulevard	AM PM	0.782 0.653	C B	0.783 0.657	C B	0.001 0.004	No No

SOURCE: Raju Associates, Inc. 2015

2-TRANS-2: Post-restoration activities associated with Alternative 2, and increased visitorship to the Ballona Reserve, would increase traffic volumes on area roadways, but would not conflict with level of service standards established by the County of Los Angeles congestion management agency for designated roads or highways. (Less than Significant Impact)

Direct Impacts

As described above in the Roadway Network section, I-405, SR 90 and SR 1 are part of the CMP Highway and Roadway System, and the intersection of Lincoln Boulevard and SR 90 is a CMP monitoring location. Also as discussed above and shown in Table 3.12-12, *Summary of Intersection Volume-to-Capacity Ratio (V/C) and Level of Service (LOS) (Post-restoration Analysis – Alternative 2)*, traffic operations at none of the study intersections would worsen relative to the conditions described in Section 3.12.2, Affected Environment (without Alternative 2) LOS conditions and would not conflict with LOS standards established by the City of Los Angeles or the County of Los Angeles CMP, during post-restoration phase conditions. This would be a less-than-significant impact.

The intent of CMPs is to monitor and address long-term traffic conditions related to future development that generate permanent (on-going) traffic increases, and that does not apply to temporary impacts associated with construction activities. Restoration activities would be transitory in nature and effects on roadway and intersection operations would be temporary. Therefore, consideration of LOS impacts on CMP roadways during the restoration is not applicable.

Indirect Impacts

The post-restoration activities under Alternative 2 would only generate traffic from the increased number of visitors to the Ballona Reserve; substantially the same numbers of vehicles would be accessing the Ballona Reserve for operation and maintenance-related purposes using the existing local roadways and existing entrances to the Ballona Reserve that are used under existing conditions. There would be no indirect generation of traffic, and as such, no indirect impacts. As discussed above, consideration of impacts to CMP standards during temporary traffic-generating activities is not required.

2-TRANS-3: Alternative 2 would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks, (No Impact)

LAX is located approximately 1 mile south of the Project site. However, the Project site is located outside of the airport influence area and runway protection zones of LAX (Los Angeles County Airport Land Use Commission 2003a). The next nearest general aviation airport to the Project site is the Santa Monica Municipal Airport, which is located approximately 2.4 miles to the north. The Project site also is located outside of this airport's influence area and runway protection zones (Los Angeles County Airport Land Use Commission 2003b). There are no private airports or airstrips located within 2 miles of the Project site. Alternative 2 would not generate any air traffic, nor would it result in any structure that extends into air traffic space. Therefore, no impact would result related to a change in air traffic patterns.

In addition, although the Project site is within the Wildlife Hazard perimeters for LAX, which are 10,000 feet and 5 miles from the air operations area, Alternative 2 would not attract additional birds to the Project site in sufficient numbers to result in a change in air traffic patterns. High levels of bird presence are a known occurrence and related risk management activities already occur within and near LAX. The Playa del Rey Beach, which is located at Pacific Avenue and Culver Boulevard, has been identified as among the “Best California Beaches to View Migrating Birds” (California Beaches 2016) and as the source or destination of birds that affect aviation safety at LAX (Pitlik 2012). Whether or not Project area birds are migratory, birds are known to be an aviation risk at LAX. Consistent with federal law, commercial airports assess wildlife hazards and develop management plans to reduce the risk of mammal and bird strikes.

Since the implementation of an integrated wildlife mitigation program at LAX in 1998, bird strike reporting more than doubled, increasing from 27.8 reported bird strikes annually between 1990 and 1997 to 68.3 reported strikes per year between 1998 and 2011 (Pitlik 2012). Avian species struck at LAX typically have included individuals from the following groups: gulls, raptors, owls, larks, waterfowl, and wading birds (Id.). To manage avian-related collision risks at LAX as part of the airport’s wildlife hazard mitigation program, a biologist places traps for birds in open spaces, including 6-foot-high metal cages that capture starlings and wood and screen boxes with collapsible roofs that catch kestrels, hawks and falcons (Weikel 2009). To scare birds away from runways and taxiways, a small pistol is used that shoots firecrackers into the air that either explode with a bang or make a whistling or screaming sound (Id.). Further, grassy fields and other vegetation are cut back to remove cover and nesting areas, and vector control is called in occasionally to eliminate rodents and insects hunted by birds of prey (Id.). Specifically to deter gull presence on airport property, perching deterrents have been installed, gull effigies are used, and open dumpsters and trash cans have been removed (Pitlik 2012). Waterfowl typically migrate through the airport environment in the spring and fall and usually are struck by aircraft during early morning hours. Habitat modification, such as the removal of temporary standing water; dispersal, such as pyrotechnics; and lethal control, such as shooting with air rifles, have been the most effective methods for reducing the presence of waterfowl on the airfield itself (Id.). Existing management efforts pursuant to LAX’s wildlife hazard mitigation program would continue to be implemented independent of Alternative 2 and would be sufficiently effective to avoid a need to change in air traffic patterns as a result of Alternative 2. Therefore, no impact related to a change air traffic patterns would occur.

For a discussion of potential impacts relating to airports or airstrips, see Section 3.8, *Hazards and Hazardous Materials*.

2-TRANS-4: Alternative 2 would not substantially increase traffic hazards. (Less than Significant Impact)

Direct Impacts

Alternative 2 would not result in any hazards due to design features or incompatible uses. It is anticipated that all restoration-phase activity would occur on-site with the exception of the construction of the bridge across Lincoln Boulevard (2017), construction of water control structures (storm drains) across Culver Boulevard and Jefferson Boulevard (2019), construction activities associated with gas line relocation across Culver Boulevard (2017-18), natural gas monitoring well relocation work on the SoCalGas Property, construction worker trips, and off-site truck trips, e.g., for off-site soil export. Changes to existing roadways are not part of Alternative 2. Impacts would be less than significant.

Indirect Impacts

Traffic generated during restoration-phase activities would be compatible with the mix of vehicle types (autos and trucks) currently using regional and local roadways, and would not indirectly increase traffic hazards. This impact would be less than significant.

2-TRANS-5: Alternative 2 would not result in inadequate emergency access. (Less than Significant Impact)

Direct Impacts

It is anticipated that all restoration activities would occur on-site with the exception of the construction of the bridge across Lincoln Boulevard (2017), construction of water control structures (storm drains) across Culver Boulevard and Jefferson Boulevard (2019), transfer of soil from the north part of Area C to the southern part of Area C across Culver Boulevard, construction activities associated with gas line relocation across Culver Boulevard (2017-18), natural gas monitoring well relocation work on the SoCalGas Property, construction worker trips, and off-site truck trips, e.g., for off-site soil export. The roadway network serving the Project site currently accommodates the movements of emergency vehicles that travel in the area. The Project would introduce no permanent impedances to access for emergency vehicles, and implementation of Mitigation Measure TRANS-1a, Construction Traffic Management Plan, would maintain access for emergency vehicles at all times during construction activity. The impact to emergency vehicle access, therefore, would be less than significant.

Indirect Impacts

Traffic generated during restoration and post-restoration activities would introduce no permanent impedances to access for emergency vehicles, and would not indirectly impede emergency access. This impact would be less than significant.

2-TRANS-6: Alternative 2 would not adversely affect alternative transportation travel mode (public transit, bicycle, or pedestrian). (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 2 would not permanently eliminate alternative modes of transportation, transportation corridors, or facilities. Further, Alternative 2 would not prevent the use of any roads on which public transit routes operate, nor would it generate increased traffic volumes on roads used as public transit routes to a degree that would cause lengthy delays for transit riders or eliminate and/or reduce access to such transit facilities. Temporary road or lane closures associated with the proposed bridge installations could result in delays for buses traveling along affected routes. However, the bridge work and relocation/installation of gas line / storm drains, resulting in temporary road or lane closures, would be intermittent night work (from 11:00 p.m. to 4:00 a.m.) over 3- to 4-week periods. Implementation of Mitigation Measure TRANS-1a, Construction Traffic Management Plan, would require that access for the Santa Monica Big Blue Bus Line 3 would be maintained at all times on Lincoln Boulevard. Additionally, as discussed in Section 3.11, *Recreation*, the Ballona Creek Bike Path would remain open during restoration activities. Eventually the path would have two different routes for riders to choose between. For these reasons, the impact related to conflicts with policies, plans, or programs related to transit, bicycle, or pedestrian travel would be less than significant.

Indirect Impacts

With implementation of mitigation measures, described above, restoration and post-restoration activities would not conflict with alternative modes of transportation, transportation corridors, or facilities, and would not indirectly conflict with policies, plans, or programs related to alternative modes of transportation. This impact would be less than significant.

TABLE 3.12-13
ALTERNATIVE 2 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
TRANS-1: 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?				
Relating to restoration-phase activities, see Impact 2-TRANS-1a.	☐	☒	☐	☐
Relating to post-restoration activities, see Impact 2-TRANS-1b.	☐	☐	☒	☐
TRANS-2: 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? See Impact 2-TRANS-2.	☐	☐	☒	☐
TRANS-3: Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks? See Impact 2-TRANS-3.	☐	☐	☐	☒
TRANS-4: Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? See Impact 2-TRANS-4.	☐	☐	☒	☐
TRANS-5: Result in inadequate emergency access? See Impact 2-TRANS-5.	☐	☒	☐	☐
TRANS-6: Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? See Impact 2-TRANS-6.	☐	☐	☒	☐

3.12.6.3 Alternative 3: Levee Culverts and Oxbow

Alternative 3 is similar to Alternatives 1 and 2 but with a substantially smaller footprint of restoration and levee construction. Restoration under Alternative 3 would be focused in Area A with removal of invasive, non-native vegetation and replanting in Area C without any grading, whereas Area B would not be actively restored and habitats would remain in their current condition. In Alternative 3, existing armored levees on the Ballona Creek channel adjacent to the Ballona Reserve would remain intact, and no levee breaching would occur. Instead, two new culvert water control structures would be installed within the northern Ballona Creek channel levee to support full tidal restoration in Area A similar to Alternative 1, with an oxbow-shaped channel (Figure 2-52, *Alternative 3: Proposed Habitats*). One bicycle/pedestrian bridge would be constructed instead of two. The parking structure, gateway entrances, and educational signage would still be constructed and the natural gas monitoring wells and pipelines within the Ballona Reserve would still be abandoned and/or relocated to the SoCalGas Property. See Table 2-1c, *Summary of Alternatives*, in Chapter 2, *Description of Alternatives*, for further details.

3-TRANS-1a: Restoration activities associated with Alternative 3 would require temporary lane and road closures, and would increase traffic volumes at area intersections during and following restoration. (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 3 would be implemented in one phase, over an approximately 36-month period, scheduled to commence in 2017. During this period, it is anticipated that all activity would occur on-site with the exception of the construction of the bridge across Lincoln Boulevard (2017), construction of water control structures (storm drains) across Culver Boulevard and Jefferson Boulevard (2019), construction activities associated with gas line relocation across Culver Boulevard (2017-18), construction worker trips, and off-site truck trips. Alternative 3 would be implemented in one phase. From a traffic perspective, based on the anticipated construction schedule, the greatest amount of peak-hour trips would be generated in Year 2019, similar to Alternative 1. Therefore, in order to provide the most conservative analysis (greatest potential impact), this section assesses the impacts of Alternative 3's traffic generation based on conditions in 2019. The assessment of Alternative 3's impacts to traffic during construction of the above-mentioned bridge, storm drains, and gas line relocation looks at conditions during the periods of time of those construction activities.

Under Alternative 3, the Ballona Creek channel would not be reconfigured; therefore access for all channel-related operation and maintenance activities would be the same as under existing conditions (see Figure 2-52, Alternative 3: Proposed Habitats; Appendix B5, Preliminary Operations and Maintenance Plan). Maintenance of water control structures under Alternative 3 would be similar to the existing conditions, with the addition of two new banks of culverts and gates connecting Area A to the Ballona Creek channel. The existing West Area B gates connecting West Area B to Ballona Creek would remain and would continue to be maintained as under the existing conditions (Id.). Twelve new tide gates connecting the Ballona Creek channel to Area A would be installed (Id.). The new tide gates would be maintained and replaced at the same frequency as described under Alternative 1. Alternative 3 does not include flood risk management berms and, thus, no new or additional maintenance would be needed (Id.). Vehicle entrances to the

Ballona Reserve would not change under Alternative 3; however, the location of access points within the Ballona Reserve to reach certain restoration areas or infrastructural elements (such as the new culverts and tide gates) for operation and maintenance purposes. CDFW would conduct the same nature and type of activities to operate and maintain the non-LACDA project facilities within the Ballona Reserve at the same intervals as the agency does under existing conditions. Such activities could require vehicle use, for example, pursuant to inspecting and locking gates, repairing fences, controlling pests and weeds, and removing trash and debris from the non-LACDA project areas within the Ballona Reserve (Id.).

Construction Traffic Impacts of Lincoln Boulevard Bridge Construction

The bridge across Lincoln Boulevard would be constructed in 2017 during the night-time hours of 11:00 p.m. to 4:00 a.m. for a period of 3 to 4 weeks, and would require intermittent closure of Lincoln Boulevard. It is anticipated that cranes would be used to place the bridge segments over the existing abutments or new abutments adjacent to and north of the Culver Boulevard bridge structure. The intermittent night-time closures of Lincoln Boulevard would allow the cranes to swing the bridge segments (structural members) over the travel lanes to place them over the existing or new abutments and secure them. Once the members are in place and secured, the roadway would be opened. Access for emergency vehicles would be maintained at all times. The current number of lanes along Lincoln Boulevard would not be affected between 4:00 a.m. and 11:00 p.m. (when there would be no construction activity), and after the bridge construction is complete, full-time use of Lincoln Boulevard would be restored.

A 24-hour traffic count was conducted on Lincoln Boulevard in the vicinity of the proposed bridge on September 1, 2015. The count reveals that the traffic volume on Lincoln Boulevard between the hours of 11:00 p.m. and 4:00 a.m. ranges from 48 to 347 vph on the northbound lanes, and from 48 to 380 vph on the southbound lanes. Those relatively low traffic volumes would be detoured away from the construction zone (described below). However, for purposes of this analysis, the impact on traffic circulation during road closures is considered to be significant without mitigation.

The potential temporary detour route for northbound Lincoln Boulevard traffic would be to re-route traffic to Culver Boulevard (via the Culver Loop ramp), then to Marina Freeway, and back to Lincoln Boulevard, as well as possibly via Jefferson Boulevard to Centinela Avenue to Marina Freeway and then back to Lincoln Boulevard. The potential detour route for southbound Lincoln Boulevard traffic would be to re-route traffic to Marina Freeway to Culver Boulevard (or Centinela Avenue and Jefferson Boulevard) and then back to Lincoln Boulevard.[122]

With the implementation of Mitigation Measures TRANS-1a and TRANS-1b during the 3- to 4-week period, the construction traffic impacts due to the Lincoln Boulevard bridge construction would be less than significant.

Construction Traffic Impacts of Gas Line Relocation and Stormwater Drain Installation

Removal and relocation of existing gas lines in Area B, as well as installation of storm drains in Area B, would require partial closure of lanes along Culver Boulevard. Removal and relocation of

[122] Because Lincoln Boulevard would be closed to traffic north of the Culver Loop ramp during the 11:00 p.m. to 4:00 a.m. period, it would be possible to permit left turns (prohibited at all other times) from the Culver-to-Lincoln ramp onto southbound Lincoln Boulevard.

existing gas lines in Area B would occur in 2017 and would involve lane closures on Culver Boulevard over a 4-week period. The installation storm drains in Area B would occur in 2019 and would require similar lane closures on Culver Boulevard over a 3-week period.

A 24-hour traffic count was conducted along Culver Boulevard west of Lincoln Boulevard on June 10, 2015. Based on that count, the temporal distribution of traffic indicates that the partial closure of Culver Boulevard for construction activity would need to be between the hours of 11:00 p.m. to 4:00 a.m. (i.e., traffic volumes during other hours of the day are too high to be adequately accommodated with lane closures). The traffic volume on Culver Boulevard during those night-time hours ranges from 30 to 154 vph on the northeastbound lane(s), and from 60 to 206 vph on the southwestbound lane(s). Depending on the location of the partial road closure, the relative low night-time traffic volumes either would be accommodated on the two remaining (open) lanes (when closure is in the four-lane section of Culver Boulevard, west of Jefferson Boulevard), or would be detoured away from the construction zone (when closure is in the two-lane section of Culver Boulevard, east of Jefferson Boulevard). Implementation of Mitigation Measure TRANS-1b would ensure that that lane closures on Culver Boulevard would be restricted to the nighttime hours of 11:00 PM to 4:00 AM. In addition, implementation of Mitigation Measure TRANS-1a (a detailed construction traffic management plan including detour routes, signage, traffic control and hours of construction would ensure that the construction activities and workers follow City-stipulated regulations.

The potential temporary detour route for northeastbound Culver Boulevard traffic would be to re-route traffic to Jefferson Boulevard, and then to Lincoln Boulevard, and back to Culver Boulevard. The southwestbound traffic on Culver Boulevard would continue to use the partially open (half-roadway) Culver Boulevard.

With the implementation of Mitigation Measures TRANS-1a and TRANS-1b during the 3- to 4-week period, the construction traffic impacts due to the gas line relocation and stormwater drain installation components of the Project would be less than significant.

Trip Generation

Similar to Alternative 1, it is anticipated that the greatest amount of restoration phase peak hour trips would be generated in Year 2019 and includes overlapping construction sequences. A total of approximately 161 workers would be on-site on any given day (excluding the drivers of trucks used for the off-site soil export, whom would arrive in their dirt-hauler truck from an outside yard to the site on a daily basis), which would be fewer than for Alternative 1. The Alternative 3 workers would generate a total of approximately 370 daily trips of which 15 trips would occur during each of the morning and evening peak hours.

As part of the grading process, depending on final project design, soil compaction, and other site-specific factors, up to 1,230,000 cubic yards of soil could be removed/exported in Alternative 3 compared to up to 110,000 cubic yards of soil for Alternative 1. In order to provide the most conservative analysis (greatest potential impact), this section assesses impacts to traffic based on the highest amount of soil import, which would require approximately 82,000 haul trips over a 70-week period (more truck haul trips overall, over a longer period of time, compared to Alternative 1). However, based on a conservative assumption of an average 2-minute headway between trucks leaving the site (accounting for operations and traffic flow impacts), which equates to 240 truck round trips during an eight-hour day, Alternative 3 would result in approximately 480 truck trips per day, the same as Alternative 1 during a typical peak work day.

The restoration phase activities for Alternative 3 would result in a maximum trip generation of approximately 1,570 daily trips of which 165 trips would occur during the morning peak hour and 15 trips during the evening peak hour, i.e., fewer construction activity trips than Alternative 1.

Trip Distribution

The regional geographic trip distribution for worker trips would be the same as for Alternative 1, as follows:

1. To and From the North: 25%
2. To and From the South: 25%
3. To and From the West: 40%
4. To and From the East: 10%

The haul route to be used by Project trucks (the same as for Alternative 1) is shown in Figure 3.12-4, *Truck Haul Routes*.

Future Base (2019) Conditions

As described above, the Future Base (Year 2019 without construction) traffic projections were developed by using the traffic growth observed in City of Los Angeles' Travel Demand Forecasting Model, and traffic that would be generated by 31 related projects. With the expected peak-restoration phase traffic generation in 2019, the existing (2015) traffic volumes were adjusted upward by a factor of 2.28% during the morning peak hour and 2.56% during the evening peak hour to reflect this area-wide regional growth. The Future Base (2019) traffic volumes during both the morning and evening peak hours are presented in Figure 3.12-5, *Future (2019) Base Conditions – Peak Hour Traffic Volumes*.

Future (2019) Plus Restoration-Phase Conditions

Based on the worker trip distribution assumptions, truck haul routes, and restoration phase activity trip generation estimates, traffic estimates of activity trips are presented in Figure 3.12-7, *Project Only – Peak Hour Traffic Volumes*. The Future (2019) condition, without and with Alternative 3 activity, were analyzed to determine the V/C ratio and LOS at each of the study intersections. The results of this analysis are summarized on Table 3.12-14, *Summary of Intersection Volume-to-Capacity Ratio (V/C) and Level of Service (LOS) (Restoration Phase Analysis – Alternative 3)*. As indicated in the table, all 18 study intersections are projected to operate at LOS D or better under 2019 without project conditions during both the morning and evening peak hours, except for the following 4 intersections, which are projected to operate at LOS E:

1. Lincoln Boulevard / Washington Boulevard: AM peak hour
2. Lincoln Boulevard / Jefferson Boulevard: AM peak hour
3. Jefferson Boulevard / Culver Boulevard: PM peak hour
4. Culver Boulevard / SR 90 Westbound Ramps: PM peak hour

TABLE 3.12-14
SUMMARY OF INTERSECTION VOLUME-TO-CAPACITY RATIO (V/C) AND LEVEL OF SERVICE (LOS)
(RESTORATION PHASE ANALYSIS – ALTERNATIVE 3)

Intersection	Peak Hour	Future (2019) Base Conditions		Future (2019) Plus Alternative 3		Increased V/C	Impact?
		V/C	LOS	V/C	LOS		
Admiralty Way/Bali Way	AM PM	0.639 0.672	B B	0.639 0.672	B B	0.000 0.000	No No
Admiralty Way/Mindanao Way	AM PM	0.690 0.634	B B	0.691 0.636	B B	0.001 0.002	No No
Admiralty Way/Fiji Way	AM PM	0.471 0.365	A A	0.472 0.368	A A	0.001 0.003	No No
Lincoln Boulevard/Washington Boulevard	AM PM	0.915 0.870	E D	0.916 0.870	E D	0.001 0.000	No No
Lincoln Boulevard/SR 90	AM PM	0.774 0.778	C C	0.774 0.779	C C	0.000 0.001	No No
Lincoln Boulevard/Bali Way	AM PM	0.571 0.616	A B	0.571 0.616	A B	0.000 0.000	No No
Lincoln Boulevard/Mindanao Way	AM PM	0.768 0.870	C D	0.798 0.872	C D	0.030 0.002	No No
Lincoln Boulevard/Fiji Way	AM PM	0.694 0.801	B D	0.713 0.802	C D	0.019 0.001	No No
Lincoln Boulevard/Culver Loop	AM PM	0.855 0.621	D B	0.856 0.621	D B	0.001 0.000	No No
Lincoln Boulevard/Jefferson Blvd	AM PM	0.915 0.803	E D	0.915 0.803	E D	0.000 0.000	No No
Lincoln Boulevard/Bluff Creek Drive	AM PM	0.682 0.523	B A	0.682 0.524	B A	0.000 0.001	No No
Nicholson Street/Culver Boulevard	AM PM	0.715 0.892	C D	0.715 0.892	C D	0.000 0.000	No No
Jefferson Boulevard/Culver Boulevard	AM PM	0.796 0.963	C E	0.796 0.964	C E	0.000 0.001	No No
Culver Boulevard/SR 90 EB Ramps	AM PM	0.467 0.495	A A	0.467 0.497	A A	0.000 0.002	No No
Culver Boulevard/SR 90 WB Ramps	AM PM	0.844 0.948	D E	0.845 0.949	D E	0.001 0.001	No No
Mindanao Way/SR 90 EB	AM PM	0.807 0.853	D D	0.824 0.853	D D	0.017 0.000	No No
Mindanao Way/SR 90 EB	AM PM	0.609 0.616	B B	0.609 0.617	B B	0.000 0.001	No No
Vista dal Mar/Culver Boulevard	AM PM	0.856 0.744	D C	0.856 0.744	D C	0.000 0.000	No No

SOURCE: Raju Associates, Inc. 2015

As shown in Table 3.12-14, *Summary of Intersection Volume-to-Capacity Ratio (V/C) and Level of Service (LOS) (Restoration Phase Analysis – Alternative 3)*, restoration-related traffic would not change the intersection levels of service from base conditions during either the morning and evening peak hours, with the exception of the intersection of Lincoln Boulevard / Fiji Way, which would operate at LOS C during the morning peak hour compared to LOS B under cumulative base conditions. However, the increase in V/C ratio at that intersection would be less than the 0.04 threshold of significance. As such, Alternative 3 construction activity would not result in a substantial increase to traffic levels along the local roadways in the project area. Although increased traffic volumes associated with Alternative 3 would not result in adverse temporary restoration-phase impacts, implementation of Mitigation Measures TRANS-1a and TRANS-1b (the same as for Alternative 1) would further ensure that Alternative 3 impacts during restoration would be less than significant.

Indirect Impacts

The proposed restoration activities under Alternative 3 would only generate traffic from those activities. Because the proposed restoration activities would not generate indirect emissions (i.e., would not generate traffic after restoration activities are completed), there would be no indirect impacts.

3-TRANS-1b: Post-restoration activities associated with Alternative 3, and increased visitorship to the Ballona Reserve, would increase traffic volumes on area roadways, but would not result in a noticeable increase in delays at off-site intersections. (Less than Significant Impact)

Direct Impacts

Alternative 3 would require post-restoration activities, including current and ongoing routines that do not occur on a daily basis and would not generate any new trips. Other future activities also would not occur on a daily basis and any trips associated with those activities would be minimal.

Trip Generation

Utilizing the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 9th Edition, the trip generation associated with Alternative 3's post-restoration increased visitorship to the Ballona Reserve was determined. As shown in Table 3.12-15, *Estimated Weekday Vehicle Trip Generation Associated with Post-Restoration Increased Visitorship to the Ballona Reserve – Alternative 3*, Alternative 3 would generate approximately 378 daily trips, of which 12 trips would occur during the morning peak hour and 52 trips during the evening peak hour (the same as Alternative 1).

Trip Distribution

The geographic distribution for the above-described vehicle trips was assumed to be the following:

1. To and From the North: 25%
2. To and From the South: 25%
3. To and From the East: 40%
4. To and From the West: 10%

TABLE 3.12-15
ESTIMATED WEEKDAY VEHICLE TRIP GENERATION ASSOCIATED WITH POST-RESTORATION INCREASED VISITORSHIP TO THE BALLONA RESERVE – ALTERNATIVE 3

			AM Peak Hour			PM Peak Hour		
	Size	Daily	IN	OUT	TOTAL	IN	OUT	TOTAL
Ballona Wetlands Ecological Reserve	581 acres	378	7	5	12	32	20	52
Trip Generation Rates[a] State/County Parks)	Trips per acre	0.65	61%	39%	0.02	61%	39%	0.09

NOTE:
[a] Trip generation was estimated using County Park (Code 412) and State Park (Code 413) trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 9th Edition, 2012.

Based on these distribution assumptions, location and points of access of the Project driveways (both to the proposed three-story parking structure in Area A and the West Culver Parking Lot in Area B), and trip generation estimates for Alternative 3, traffic estimates of Alternative 3-only trips are presented in Figure 3.12-7, *Project Only – Peak Hour Traffic Volumes*.

Existing (2015) plus Post-Restoration Traffic Conditions

The Existing (2015) plus Alternative 3 peak-hour traffic volumes were analyzed at each of the study intersections to determine the V/C ratio and corresponding level of service. As indicated in Table 3.12-16, *Summary of Intersection Volume-to-Capacity Ratio (V/C) and Level of Service (LOS) (Post-restoration Analysis – Alternative 3)*, all 18 of the study intersections are projected to continue to operate at LOS D or better during both the morning and evening peak hours. Traffic generated by post-restoration activities under Alternative 3 would not change the intersection levels of service relative to the conditions described in Section 3.12.2, Affected Environment. As such, Alternative 3 would not result in a substantial increase to traffic levels along the local roadways in the project area, and would not conflict with LOS standards established by the City of Los Angeles or the County of Los Angeles. This would be a less-than-significant impact.

Indirect Impacts

The post-restoration activities under Alternative 3 would only generate traffic from the increased number of visitors to the Ballona Reserve; substantially the same numbers of vehicles would be accessing the Ballona Reserve for operation and maintenance-related purposes using the existing local roadways and existing entrances to the Ballona Reserve that are used under existing conditions. There would be no indirect generation of traffic, and as such, no indirect impacts. As discussed above, consideration of impacts to CMP standards during temporary traffic-generating activities is not required.

TABLE 3.12-16
SUMMARY OF INTERSECTION VOLUME-TO-CAPACITY RATIO (V/C) AND LEVEL OF SERVICE (LOS)
(POST-RESTORATION ANALYSIS – ALTERNATIVE 3)

Intersection	Peak Hour	Existing (2015) Conditions		Existing (2015) Plus Alternative 3		Increased V/C	Impact?
		V/C	LOS	V/C	LOS		
Admiralty Way/Bali Way	AM PM	0.616 0.627	B B	0.616 0.627	B B	0.000 0.001	No No
Admiralty Way/Mindanao Way	AM PM	0.667 0.587	B A	0.667 0.593	B A	0.000 0.006	No No
Admiralty Way/Fiji Way	AM PM	0.451 0.338	A A	0.452 0.356	A A	0.001 0.018	No No
Lincoln Boulevard/Washington Boulevard	AM PM	0.837 0.783	D C	0.838 0.785	D C	0.001 0.002	No No
Lincoln Boulevard/SR 90	AM PM	0.717 0.676	C B	0.717 0.678	C B	0.000 0.002	No No
Lincoln Boulevard/Bali Way	AM PM	0.509 0.552	A A	0.509 0.553	A A	0.000 0.001	No No
Lincoln Boulevard/Mindanao Way	AM PM	0.710 0.781	C C	0.710 0.785	C C	0.000 0.004	No No
Lincoln Boulevard/Fiji Way	AM PM	0.628 0.720	B C	0.631 0.729	B C	0.003 0.009	No No
Lincoln Boulevard/Culver Loop	AM PM	0.805 0.535	D A	0.806 0.539	D A	0.001 0.004	No No
Lincoln Boulevard/Jefferson Boulevard	AM PM	0.840 0.639	D B	0.841 0.640	D B	0.001 0.001	No No
Lincoln Boulevard/Bluff Creek Drive	AM PM	0.544 0.360	A A	0.545 0.360	A A	0.001 0.000	No No
Nicholson Street/Culver Boulevard	AM PM	0.652 0.798	B C	0.652 0.800	B C	0.000 0.002	No No
Jefferson Boulevard/Culver Boulevard	AM PM	0.727 0.810	C D	0.727 0.812	C D	0.000 0.002	No No
Culver Boulevard/SR 90 EB Ramps	AM PM	0.436 0.463	A A	0.436 0.466	A A	0.000 0.003	No No
Culver Boulevard/SR 90 WB Ramps	AM PM	0.798 0.873	C D	0.798 0.875	C D	0.000 0.002	No No
Mindanao Way/SR 90 EB	AM PM	0.756 0.809	C D	0.757 0.810	C D	0.001 0.001	No No
Mindanao Way/SR 90 EB	AM PM	0.572 0.559	A A	0.572 0.560	A A	0.000 0.001	No No
Vista dal Mar/Culver Boulevard	AM PM	0.782 0.653	C B	0.783 0.657	C B	0.001 0.004	No No

SOURCE: Raju Associates, Inc. 2015

3-TRANS-2: Post-restoration activities associated with Alternative 3, and increased visitorship to the Ballona Reserve, would increase traffic volumes on area roadways, but would not conflict with level of service standards established by the County of Los Angeles congestion management agency for designated roads or highways. (Less than Significant Impact)

Direct Impacts

As described above in the Roadway Network section, I-405, SR 90, and SR 1 are part of the CMP Highway and Roadway System, and the intersection of Lincoln Boulevard and SR 90 is a CMP monitoring location. Also as discussed above and shown in Table 3.12-16, *Summary of Intersection Volume-to-Capacity Ratio (V/C) and Level of Service (LOS) (Post-restoration Analysis – Alternative 3)*, traffic operations at none of the study intersections would worsen from existing (without Alternative 3) LOS conditions and would not conflict with LOS standards established by the City of Los Angeles or the County of Los Angeles CMP, during post restoration phase conditions. This would be a less-than-significant impact.

The intent of CMPs is to monitor and address long-term traffic conditions related to future development that generate permanent (on-going) traffic increases, and that does not apply to temporary impacts associated with construction activities. Restoration activities would be transitory in nature and effects on roadway and intersection operations would be temporary. Therefore, consideration of LOS impacts on CMP roadways during the restoration phase is not applicable.

Indirect Impacts

The post-restoration activities under Alternative 3 would only generate traffic from the increased number of visitors to the Ballona Reserve; substantially the same numbers of vehicles would be accessing the Ballona Reserve for operation and maintenance-related purposes using the existing local roadways and existing entrances to the Ballona Reserve that are used under existing conditions. There would be no indirect generation of traffic, and as such, no indirect impacts. As discussed above, consideration of impacts to CMP standards during temporary traffic-generating activities is not required.

3-TRANS-3: Alternative 3 would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks? (No Impact)

LAX is located approximately 1 mile south of the Project site. However, the Project site is located outside of the airport influence area and runway protection zones of LAX (Los Angeles County Airport Land Use Commission 2003a). The next nearest general aviation airport to the Project site is the Santa Monica Municipal Airport, which is located approximately 2.4 miles to the north. The Project site also is located outside of this airport's influence area and runway protection zones (Los Angeles County Airport Land Use Commission 2003b). There are no private airports or airstrips located within 2 miles of the Project site. Alternative 3 would not generate any air traffic, nor would it result in structure that extends into air traffic space. Therefore, no impact would result related to a change in air traffic patterns.

In addition, although the Project site is within the Wildlife Hazard perimeters for LAX, which are 10,000 feet and 5 miles from the air operations area, Alternative 3 would not attract additional birds to the Project site in sufficient numbers to result in a change in air traffic patterns. High levels of bird presence are a known occurrence and related risk management activities already occur within and near LAX. The Playa del Rey Beach, which is located at Pacific Avenue and Culver Boulevard, has been identified as among the "Best California Beaches to View Migrating Birds" (California Beaches 2016) and as the source or destination of birds that affect aviation safety at LAX (Pitlik 2012). Whether or not Project area birds are migratory, birds are known to be an aviation risk at LAX. Consistent with federal law, commercial airports assess wildlife hazards and develop management plans to reduce the risk of mammal and bird strikes.

Since the implementation of an integrated wildlife mitigation program at LAX in 1998, bird strike reporting more than doubled, increasing from 27.8 reported bird strikes annually between 1990 and 1997 to 68.3 reported strikes per year between 1998 and 2011 (Pitlik 2012). Avian species struck at LAX typically have included individuals from the following groups: gulls, raptors, owls, larks, waterfowl, and wading birds (Id.). To manage avian-related collision risks at LAX as part of the airport's wildlife hazard mitigation program, a biologist places traps for birds in open spaces, including 6-foot-high metal cages that capture starlings and wood and screen boxes with collapsible roofs that catch kestrels, hawks and falcons (Weikel 2009). To scare birds away from runways and taxiways, a small pistol is used that shoots firecrackers into the air that either explode with a bang or make a whistling or screaming sound (Id.). Further, grassy fields and other vegetation are cut back to remove cover and nesting areas, and vector control is called in occasionally to eliminate rodents and insects hunted by birds of prey (Id.). Specifically to deter gull presence on airport property, perching deterrents have been installed, gull effigies are used, and open dumpsters and trash cans have been removed (Pitlik 2012). Waterfowl typically migrate through the airport environment in the spring and fall and usually are struck by aircraft during early morning hours. Habitat modification, such as the removal of temporary standing water; dispersal, such as pyrotechnics; and lethal control, such as shooting with air rifles, have been the most effective methods for reducing the presence of waterfowl on the airfield itself (Id.). Existing management efforts pursuant to LAX's wildlife hazard mitigation program would continue to be implemented independent of Alternative 3 and would be sufficiently effective to avoid a need to change air traffic patterns as a result of Alternative 3. Therefore, no impact related to a change in air traffic patterns would occur.

For a discussion of potential impacts relating to airports or airstrips, see Section 3.8, *Hazards and Hazardous Materials*.

3-TRANS-4: Alternative 3 would not substantially increase traffic hazards. (Less than Significant Impact)

Direct Impacts

Alternative 3 would not result in any hazards due to design features or incompatible uses. It is anticipated that all restoration phase activity would occur on-site with the exception of the construction of the bridge across Lincoln Boulevard, construction of water control structures (storm drains) across Culver Boulevard and Jefferson Boulevard, construction activities associated with gas line relocation across Culver Boulevard, natural gas monitoring well relocation work on the

SoCalGas Property, construction worker trips, and off-site truck trips, e.g., for off-site soil export. Changes to existing roadways are not part of the Project. Impacts would be less than significant.

Indirect Impacts

Traffic generated during restoration phase activities would be compatible with the mix of vehicle types (autos and trucks) currently using regional and local roadways, and would not indirectly increase traffic hazards. This impact would be less than significant.

3-TRANS-5: Alternative 3 would not result in inadequate emergency access. (Less than Significant Impact)

Direct Impacts

It is anticipated that all restoration phase activity would occur on-site except as noted above. The roadway network serving the Project site currently accommodates the movements of emergency vehicles that travel in the area. Alternative 3 would introduce no permanent impedances to access for emergency vehicles, and implementation of Mitigation Measure TRANS-1a, Construction Traffic Management Plan, would maintain access for emergency vehicles at all times during the restoration period. The impact to emergency vehicle access, therefore, would be less than significant.

Indirect Impacts

Traffic generated during restoration and post-restoration activities would introduce no permanent impedances to access for emergency vehicles, and would not indirectly impede emergency access. This impact would be less than significant.

3-TRANS-6: Alternative 3 would not adversely affect alternative transportation travel mode (public transit, bicycle, or pedestrian). (Less than Significant with Mitigation Incorporated)

Direct Impacts

Alternative 3 would not permanently eliminate alternative modes of transportation, transportation corridors, or facilities. Further, Alternative 3 would not prevent the use of any roads on which public transit routes operate, nor would it generate increased traffic volumes on roads used as public transit routes to a degree that would cause lengthy delays for transit riders or eliminate and/or reduce access to such transit facilities. Temporary road or lane closures associated with the proposed bridge installation could result in delays for buses traveling along affected routes. However, the bridge work and relocation/installation of gas line / storm drains, resulting in temporary road or lane closures, would be intermittent night work (from 11:00 p.m. to 4:00 a.m.) over 3- to 4-week periods. Implementation of Mitigation Measure TRANS-1a, Construction Traffic Management Plan, would require that access for the Santa Monica Big Blue Bus Line 3 would be maintained at all times on Lincoln Boulevard. Additionally, as discussed in Section 3.11, *Recreation*, the Ballona Creek Bike Path would remain open during restoration activities. Eventually the path would have two different routes for riders to choose between. For these reasons, the impact related to conflicts with policies, plans, or programs related to transit, bicycle, or pedestrian travel would be less than significant.

Indirect Impacts

With implementation of mitigation measures, described above, restoration and post-restoration activities would not conflict with alternative modes of transportation, transportation corridors, or facilities, and would not indirectly conflict with policies, plans, or programs related to alternative modes of transportation. This impact would be less than significant.

TABLE 3.12-17
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
TRANS-1: 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?				
Relating to restoration-phase activities, see Impact 3-TRANS-1a.	☐	☐	☒	☐
Relating to post-restoration activities, see Impact 3-TRANS-1b.	☐	☐	☒	☐
TRANS-2: 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? See Impact 3-TRANS-2.	☐	☐	☒	☐
TRANS-3: Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks? See Impact 3-TRANS-3.	☐	☐	☐	☒
TRANS-4: Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? See Impact 3-TRANS-4.	☐	☐	☒	☐
TRANS-5: Result in inadequate emergency access? See Impact 3-TRANS-5.	☐	☐	☒	☐
TRANS-6: Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? See Impact 3-TRANS-6.	☐	☐	☒	☐

3.12.6.4 Alternative 4: No Federal Action/No Project

Under Alternative 4, the proposed Federal action would be denied, and state and local permits and other authorizations necessary for the Project also would be denied. No substantial changes would be made to the physical or human environment within the Ballona Reserve and no new wetlands restoration would take place, although the continuation of previously-permitted restoration activities would be allowed, such as the small-scale control of invasive plant species by hand-tools only and the planting and seeding of native species. SoCalGas Company activities on the portion of its property within the Project site would continue in accordance with existing permits and approvals.

See Section 2.3.5 of the Project Description for a detailed discussion of Alternative 4. Because there would be no change to the existing conditions and uses of the Project site, the traffic volumes and conditions for Alternative 4 would be equivalent to the Existing (2015) conditions scenario. Therefore, Alternative 4 would result in no impact relating to Transportation and Traffic.

The LACFCD would continue to maintain and operate existing LACDA project structures and facilities within the Ballona Reserve to obtain the maximum flood protection benefits consistent with the OMRR&R and federal requirements (33 C.F.R. §208.10). Operation of these facilities would continue to involve inspection, operation of field facilities such as gates and staff gages, the implementation of any immediate maintenance or corrective action such as debris removal, and related reporting and documentation. Excavation and dredging maintenance activities would occur as necessary to remove accumulated sediment from the channel area. Maintenance of the LACDA facilities would continue to include routine repair and restoration activities as well as inspections to detect hazardous or malfunctioning conditions (Corps 1999). General maintenance of the Ballona channel and levee system would continue to ensure that they are clear of debris, weeds, and wild growth and that they are not being restricted by the depositing of waste materials, building of unauthorized structures or other encroachments; the capacity of the channel or floodway is not being reduced by the formation of shoals; and the banks are not being damaged by rain or wave wash, and that no sloughing of banks has occurred; riprap sections and deflection dikes and walls are in good condition. General levee maintenance would continue to include, but not be limited to: removal of wild growth and drift deposits; repair of damage caused by erosion or other forces; and proper attention to levee drains, drain gates, revetment work and riprap, and access roads to and on levees (33 C.F.R. §208.10(b)). General drainage structure maintenance would continue to include, but not be limited to the implementation of measures necessary to assure that inlet and outlet channels are kept open and that trash, drift, or debris is not allowed to accumulate near drainage structures; further, flap gates and manually operated gates and valves on drainage structures would continue to be examined, oiled, and trial operated at least once every 90 days (33 C.F.R. §208.10(d)). No change in existing vehicle access or use of local or regional roadways would be required or would result under Alternative 4.

Consistent with the OMRR&R the following actions would continue to occur as necessary to maintain landscaping for LACDA project structures and features: supplemental watering, foliage pruning, root pruning, pest control (potentially including herbicides, insecticides, and fungicides), weed abatement, and plant removal, replacement, and supplementation (Corps 1999). Hardscaping, including gravel and stone ground covers, paving systems, signage and artwork, and removal of graffiti and vandalism also would continue as needed (Corps 1999). Non-routine (or emergency) maintenance would occur consistent with the OMRR&R to insure the serviceability of LACDA project structures and facilities in times of flood (Corps 1999). No change in existing vehicle access or use of local or regional roadways would be required or would result under Alternative 4.

3.12.7 Cumulative Impacts

As analyzed in Section 3.12.6.4, *Alternative 4: No Federal Action/No Project*, Alternative 4 would result in no impact to Transportation and Traffic. Accordingly, it would not cause or contribute to any related cumulative impact. For this reason, the analysis below relates only to Alternatives1, 2, and 3.

As the effects of traffic are generally localized in nature (i.e., the effects are reduced as traffic is dispersed on an expanding network of roadways removed from the Project site), the geographic scope for the cumulative traffic analysis is the study area used for the analysis of traffic effects associated with Alternatives 1, 2 and 3.

In order to properly evaluate the potential cumulative impact of the Project on the local street system, estimates of the Future Year 2023 traffic volumes both with and without the Project were developed; year 2023 being the latest completion date for the various wetland restoration alternatives. The Future Year 2023 without the Project was first developed including estimates for background growth in area-wide trip making and trips generated by future developments (related projects) in the vicinity of the study area. The Future (2023) without Project traffic represents the cumulative base conditions. Next, the traffic generated by the Project was estimated and assigned separately to the street system. The addition of Project traffic and the cumulative base traffic volumes provides traffic volume estimates for the Future Cumulative (2023) plus Project scenario.

3.12.7.1 Area-wide Ambient Traffic Growth

Utilizing the traffic growth observed in City of Los Angeles' Travel Demand Forecasting Model, the traffic in the vicinity of the study area was estimated to increase at a rate of about 0.57% per year during the morning peak hour and 0.64% per year during the evening peak hour. Future increases in background traffic volumes due to regional growth and development are expected to continue at this rate. With the assumed completion date of 2023, the Existing 2015 traffic volumes were adjusted upward by a factor of 4.56% during the morning peak hour and 5.12% during the evening peak hour to reflect this area-wide regional growth.

3.12.7.2 Related Projects Traffic Generation and Assignment

The second source of traffic growth in the study area is that expected from other future development projects in the vicinity. These related or "cumulative" projects are those developments that are planned and expected to be in place within the same timeframe as the Project. Data describing related projects in the area was compiled from the City of Los Angeles, County of Los Angeles and Culver City. Thirty-one related projects were identified within the study area. These projects are listed in Table 4, and shown in Figure 10, of the *Traffic Study for the Ballona Wetlands Ecological Reserve Restoration Project* (Appendix H).

The trip generation estimates for the related projects were based on different sources including trip generation rates contained in ITE's *Trip Generation Manual*, 9th Edition and trip generation estimates provided by the recently completed traffic studies for projects in the City of Los Angeles. The related projects are expected to generate approximately 13,772 trips during the morning peak hour and 16,737 trips during the evening peak hour.

3.12.7.3 Cumulative (2023) Base Traffic Volumes

The related projects' traffic estimates were added to the Existing plus Ambient Growth traffic to obtain the Cumulative (2023) Base traffic volumes. Figure 3.12-8, *Cumulative (2023) Base Conditions – Peak Hour Traffic Volumes*, provides the Cumulative (2023) Base traffic volumes at each of the analysis intersections during both AM and PM peak hours.

3.12.7.4 Cumulative (2023) Traffic Conditions

The Cumulative (2023) Base without Project peak-hour traffic volumes were analyzed at each of the study intersections to determine the V/C ratio and corresponding level of service. As indicated Table 3.12-18, *Summary of Intersection Volume-to-Capacity Ratio (V/C) and Level of Service (LOS) (Cumulative Operational Analysis – Alternatives 1, 2, and 3)*, 13 of the 18 study intersections are projected to operate at LOS D or better during both the morning and evening peak hours. The following five intersections are projected to degrade from LOS D to LOS E:

1. Lincoln Boulevard/Washington Boulevard: AM peak hour
2. Lincoln Boulevard/Jefferson Boulevard: AM peak hour
3. Nicholson Street/Culver Boulevard: PM peak hour
4. Jefferson Boulevard/Culver Boulevard: PM peak hour
5. SR 90 Freeway Westbound Ramps/Culver Boulevard: PM peak hour

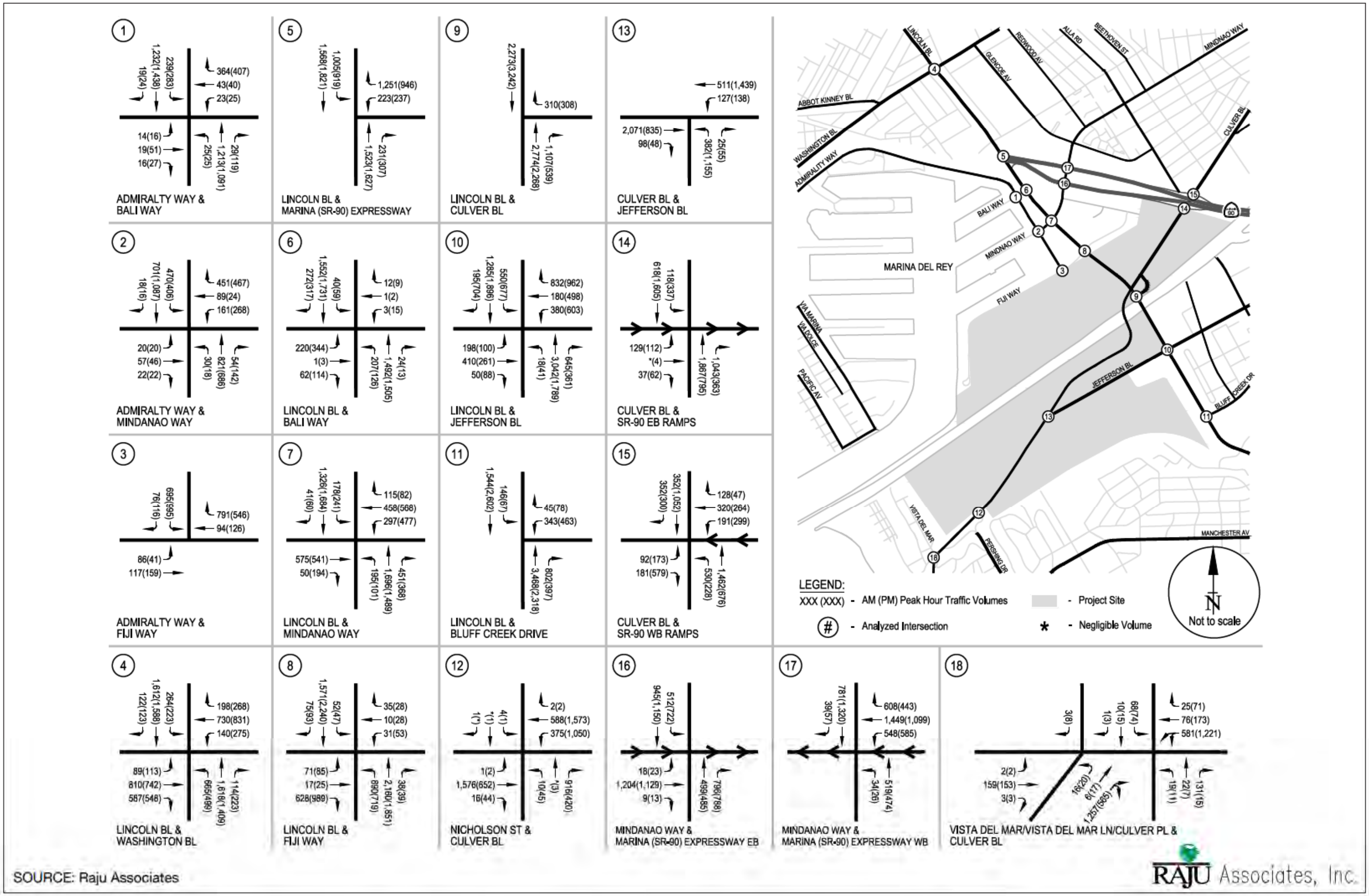
As shown in Table 3.12-18, *Summary of Intersection Volume-to-Capacity Ratio (V/C) and Level of Service (LOS) (Cumulative Operational Analysis – Alternatives 1, 2, and 3),* traffic generated by the Project would not change the intersection levels of service from cumulative base conditions at the study intersections during either the morning and evening peak hours, and would increase the V/C ratio by no more than 0.003 at the above-cited five intersections projected to operate at LOS E. The Project's contribution to the cumulative impact at the five intersections would not be cumulatively considerable (i.e., would be less than significant).

3.12.7.5 Cumulative (2023) Impacts on Air Traffic Patterns

As described under Impact 1-TRANS-3, the Project would result in no impact related to air traffic patterns. Because all of the alternatives would result in no impact with respect to this criterion, Alternative 1, 2, and 3 would not cause or contribute to any cumulative impact.

3.12.7.6 Cumulative (2023) Impacts on Traffic Hazards

As described under Impacts 1-TRANS-4, 2-TRANS-4, and 3-TRANS-4, the Project would result in less-than-significant impacts related to traffic hazards due to design features or incompatible uses. There is no foreseeable changes to the area's road network or to the mix of vehicle types (i.e., no incompatible uses) related to cumulative development, and therefore, in the context of existing conditions, the Project's contribution to cumulative impacts on traffic hazards under Alternatives 1, 2, or 3 would not be cumulatively considerable (i.e., would be less than significant).



Ballona Wetlands Restoration Project

Figure 3.12-8

Cumulative (2023) Base Conditions - Peak Hour Traffic Volumes

TABLE 3.12-18
SUMMARY OF INTERSECTION VOLUME-TO-CAPACITY RATIO (V/C) AND LEVEL OF SERVICE (LOS)
(CUMULATIVE OPERATIONAL ANALYSIS – COMMON TO ALTERNATIVES 1, 2, AND 3)

Intersection	Peak Hour	Cumulative (2023) Base Conditions		Cumulative (2023) Plus Project Conditions		Increased V/C	Impact?
		V/C	LOS	V/C	LOS		
Admiralty Way/Bali Way	AM PM	0.656 0.692	B B	0.656 0.692	B B	0.000 0.000	No No
Admiralty Way/Mindanao Way	AM PM	0.709 0.652	C B	0.709 0.658	C B	0.000 0.006	No No
Admiralty Way/Fiji Way	AM PM	0.485 0.376	A A	0.486 0.394	A A	0.001 0.018	No No
Lincoln Boulevard/Washington Boulevard	AM PM	0.937 0.893	E D	0.938 0.896	E D	0.001 0.003	No No
Lincoln Boulevard/SR 90	AM PM	0.793 0.798	C C	0.793 0.799	C C	0.000 0.001	No No
Lincoln Boulevard/Bali Way	AM PM	0.585 0.634	A B	0.585 0.635	A B	0.000 0.001	No No
Lincoln Boulevard/Mindanao Way	AM PM	0.787 0.894	C D	0.787 0.898	C D	0.000 0.004	No No
Lincoln Boulevard/Fiji Way	AM PM	0.711 0.822	C D	0.712 0.832	C D	0.001 0.010	No No
Lincoln Boulevard/Culver Loop	AM PM	0.877 0.637	D B	0.877 0.640	D B	0.000 0.003	No No
Lincoln Boulevard/Jefferson Blvd	AM PM	0.937 0.821	E D	0.937 0.824	E D	0.000 0.003	No No
Lincoln Boulevard/Bluff Creek Drive	AM PM	0.697 0.536	B A	0.697 0.536	B A	0.000 0.000	No No
Nicholson Street/Culver Boulevard	AM PM	0.732 0.915	C E	0.733 0.918	C E	0.001 0.003	No No
Jefferson Boulevard/Culver Boulevard	AM PM	0.815 0.987	D E	0.816 0.989	D E	0.001 0.002	No No
Culver Boulevard/SR 90 EB Ramps	AM PM	0.479 0.510	A A	0.479 0.513	A A	0.000 0.003	No No
Culver Boulevard/SR 90 WB Ramps	AM PM	0.866 0.974	D E	0.866 0.975	D E	0.000 0.001	No No
Mindanao Way/SR 90 EB	AM PM	0.827 0.877	D D	0.827 0.879	D D	0.000 0.002	No No
Mindanao Way/SR 90 WB	AM PM	0.624 0.634	B B	0.625 0.636	B B	0.001 0.002	No No
Vista dal Mar/Culver Boulevard	AM PM	0.878 0.765	D C	0.879 0.768	D C	0.001 0.003	No No

SOURCE: Raju Associates, Inc. 2015

3.12.7.7 Cumulative (2023) Impacts on Emergency Access

As described under Impacts 1-TRANS-5, 2-TRANS-5, and 3-TRANS-5, the Project would result in less-than-significant impacts related to emergency vehicle access. There is no foreseeable impedances to access for emergency vehicles related to cumulative development, and therefore, in the context of existing conditions, the Project's contribution to cumulative impacts on emergency access under Alternatives 1, 2, or 3 would not be cumulatively considerable (i.e., would be less than significant).

3.12.7.8 Cumulative (2023) Impacts on Alternative Travel Modes

As described under Impacts 1-TRANS-6, 2-TRANS-6, and 3-TRANS-6, the Project would not permanently eliminate alternative modes of transportation, transportation corridors, or facilities, and would not conflict with policies, plans, or programs related to alternative modes of transportation. There is no foreseeable elimination of alternative modes of transportation, transportation corridors, or facilities, nor conflict with policies, plans, or programs related to cumulative development, and therefore, in the context of existing conditions, the Project's contribution to cumulative impacts on alternative transportation modes under Alternatives 1, 2, or 3 would not be cumulatively considerable (i.e., would be less than significant).

3.12.8 References

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3.13 Utilities and Service Systems

3.13.1 Introduction

This section describes the utilities and service systems that serve the Project site and surrounding area, including those relating to water supplies, water and wastewater treatment, and solid waste. This analysis describes existing conditions in Section 3.13.2; summarizes applicable laws, regulations, plans, and standards in Section 3.13.3; identifies the criteria used to evaluate the significance of potential impacts (referred to as "thresholds of significance") in Section 3.13.4; describes the methodology used to evaluate these impacts in Section 3.13.5;analyzes direct and indirect beneficial effects and adverse impacts in Section 3.13.6; analyzes cumulative impacts in Section 3.13.7; and lists references in Section 3.13.8. Because installation, operation, and maintenance of the natural gas wells being relocated onto the SoCalGas Property would have no impact on water or wastewater treatment, water supply availability, or solid waste generation or disposal, this analysis focuses primarily on the portion of the Project site that is located within the Ballona Reserve.

3.13.2 Affected Environment

3.13.2.1 Study Area

The study area for this analysis of potential impacts to utilities and service systems consists of the service area for each of the utility or service providers that would provide service to the Project site.

3.13.2.2 Environmental Setting

The Project site is split between two local land use jurisdictions. North of Ballona Creek and west of Lincoln Boulevard (Area A), the Project site is within the unincorporated County of Los Angeles community of Marina del Rey. The remainder of the Project site (Area B, Area C, and the SoCalGas Property) is within the City of Los Angeles.

Water

The City of Los Angeles Department of Water and Power (LADWP) supplies water to the City of Los Angeles. It serves a 465-square-mile area and approximately 676,000 water customers (LADWP 2012). An existing 24-inch-diameter LADWP water main is located along Culver Boulevard near the Project site. In addition, as described in more detail in Section 2.3.2.5, *Alternative 1: Implementation and Construction Process*, there are several domestic and/or recycled water mains that surround the Project site, including a 16-inch diameter main along Lincoln Boulevard and a 12 inch diameter main along Fiji Way; however, these mains do not currently connect to the Project site. South Area C utilizes water supplied by LADWP for use in the restrooms associated with the Culver Marina Little League baseball fields and irrigation between February and June annually. No other portion of the Project site within the City of Los Angeles uses water or is connected to the LADWP water supply system.

The Los Angeles County Waterworks District (LACWD) operates and maintains the Marina del Rey Water System (MDRWS). MDRWS currently serves approximately 7,800 people through 300 metered connections in the Marina del Rey area (Los Angeles County Department of Public Works 2014). As described above, there is a domestic water main along Fiji Way; however, Area A does not currently use water and is not connected to this main or any water supply system.

Wastewater

The LADWP's Bureau of Sanitation (BOS) is responsible for operating and maintaining the City of Los Angeles's wastewater collection and treatment system, which is the largest sewer system in the nation, serving a population of over four million within a 600 square mile service area (City of Los Angeles 2015b). The Hyperion System is the largest of the City's three sanitary sewer systems. Water reclamation plants in the Hyperion System include the Donald C. Tillman and Los-Angeles Glendale Water Reclamation Plants as well as the Hyperion Treatment Plant (HTP) located in Playa Del Rey (Id.).

South Area C currently is connected to a BOS sanitary sewer that extends along the eastern perimeter of South Area C and State Route 90 (SR-90) (Swatt Miers Architects 2013). Wastewater generated by the restroom facilities on the Culver Marina Little League baseball fields is conveyed via the City's sanitary sewer system to be treated at the HTP. City of Los Angeles Ordinance No. 166,060 (Sewer Allocation) limits annual increases in wastewater flows discharged into the HTP system to 5 million gallons per day (mgd) (City of Los Angeles 2006). The HTP experiences average daily flows of 362 million gallons, has a 450-million-gallon-per-day capacity, and typically operates at 80% of capacity (City of Los Angeles 2015). As described in more detail in Section 2.3.2.5, *Alternative 1: Implementation and Construction Process*, there are several sewer lines that surround the Project site.

Solid Waste

Within the Project site, the Culver Marina Little League's use of the baseball fields on South Area C generates solid waste. The Culver Marina Little League contracts with Republic Services (formerly Consolidated Disposal Services) to collect waste from South Area C between the months of February and June, when the baseball fields are in use (Wilson 2015, personal communication). In addition, approximately 1,000 lbs. (0.5 ton) of homeless-related trash and other illegally dumped debris per month is removed from the Ballona Reserve, primarily from Area B and Area C North (CDFW 2016). Republic Services owns and operates the Scholl Canyon Landfill, which serves both the City and the County of Los Angeles. As of December 31, 2012, the Scholl Canyon Landfill had an estimated remaining permitted capacity of 74.37 million tons of solid waste. In 2012, this landfill accepted approximately 2.22 million tons of solid waste (Los Angeles County Department of Public Works 2013).

Landfill and Ocean Disposal

The permitted landfill and ocean disposal facilities that would be active during the time of the proposed export of fill from the Project include:

Scholl Canyon Landfill. The Scholl Canyon Landfill is located in the City of Glendale and has an estimated available capacity of 59.9 million cubic yards and a closure date of April 1, 2030. It can receive a maximum intake of materials of 3,400 tons per day (approximately 2,000 cubic yards per day). A haul route from the site would require traveling from Area A into North Area C using the Lincoln Boulevard temporary construction bridge and merging onto Lincoln Boulevard north, which would eliminate left turns onto Lincoln Boulevard. For the return trips, the empty trucks would enter Area A from Lincoln Boulevard south to avoid left turns and provide a one-way operation on site for efficiency. The one-way distance from the site to the landfill would be approximately 32.3 miles and a round trip would take approximately 2.5 hours. A truck could make three round trips to the landfill during an 8-hour period (PSOMAS 2015). Unpublished, anecdotal accounts of longer trips at peak travel times also have been reported.

Lancaster Landfill and Recycling Center. The Lancaster Landfill and Recycling Center has an estimated available capacity of 27.7 million cubic yards and a closure date of March 1, 2044. It can receive a maximum intake of materials of 5,100 tons per day (approximately 3,000 cubic yards per day). The haul route from the site also would require traveling from Area A into North Area C using the Lincoln Boulevard temporary construction bridge and merging onto Lincoln Boulevard north. The outgoing route would be approximately 78.6 miles and a round trip would take approximately 3.5 hours. For the return trips, empty trucks would enter Area A from Lincoln Boulevard south to avoid left turns and provide a one-way operation on site for efficiency. A truck could make two round trips to the landfill during an 8-hour period (PSOMAS 2015).

Los Angeles/Long Beach Ocean Dredged Material Disposal Site (LA-2). The Los Angeles/ Long Beach Ocean Dredged Material Disposal Site is managed by United States Environmental Protection Agency (USEPA) and is approximately 30 miles (26 nautical miles) off the coast from San Pedro. This ocean disposal site has a maximum annual dredged material disposal quantity of 1,000,000 cubic yards (Federal Register 2005). A permit from the Corps must be obtained to transport dredged material for disposal at this site pursuant to Marine Protection, Research and Sanctuaries Act Section 103. The Corps would be required to seek, and EPA would need to concur with, disposal at this site. Soil sampling and analysis would be required to secure the appropriate dredge disposal permit. Dredged material would not be allowed to be disposed of in the ocean unless the material meets strict environmental criteria established by USEPA and the Corps.

Newport Bay Ocean Dredged Material Disposal Site (LA-3). The Newport Bay Ocean Dredged Material Disposal Site also is managed by USEPA. It is approximately 55 miles (48 nautical miles) off the coast of Newport Beach. This ocean disposal site has a maximum annual dredged material disposal quantity of 2,500,000 cubic yards (Federal Register 2005). A permit from the Corps must be obtained to transport dredged material for disposal at this site. Soil sampling and analysis would be required to secure the appropriate dredge disposal permit. Dredged material would not be allowed to be disposed of in the ocean unless the material meets strict environmental criteria established by USEPA and the Corps.

3.13.3 Applicable Laws, Regulations, Plans, and Standards

3.13.3.1 Federal

Clean Water Act (33 USC 1251 et seq.)

The Clean Water Act was enacted with the primary purpose of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters.

Section 319 of the Act mandates specific actions for the control of pollution from nonpoint sources.

Section 401 of the Act requires any applicant for a Federal license or permit to conduct any activity that may result in a discharge of a pollutant into navigable waters to obtain a certification from the state in which the discharge originates that the discharge will comply with the applicable effluent limitations and water quality standards. The State agency responsible for implementing Section 401 in California is the Regional Water Quality Control Board (RWQCB).

Section 404 of the Act regulates discharges of dredged or fill material into waters of the U.S.

Section 402 of the Act requires a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of pollutants into waters of the U.S. from any point source. In 1987, Section 402 was amended to require that the USEPA establish regulations for permitting municipal and industrial storm water discharges under the NPDES program. The USEPA has delegated responsibility to the State Water Resources Control Board (SWRCB), the nine RWQCBs, and water quality control planning and control programs to implement and enforce the NPDES Program within California. As described in greater detail in Section 3.9, *Hydrology and Water Quality*, the Project is subject to the NDPDES General Construction Permit which includes measures to eliminate or reduce pollutant discharges during construction activities through implementation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP describes the implementation and maintenance of BMPs to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the site during construction.

Section 303(c)(2)(b) of the Act requires states to adopt water quality standards for all surface waters of the U.S. based on the water body's designated beneficial use. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based upon bio-monitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. Water quality standards applicable to the Project are listed in the RWQCB's Basin Plan for the Los Angeles region. See the discussion of the Los Angeles RWQCB (LARWQCB) in Section 3.13.3.2, *State*, for information about the Basin Plan and applicable water quality standards.

3.13.3.2 State

California Integrated Waste Management Act of 1989 (Assembly Bill [AB] 939)

The California Integrated Waste Management Act of 1989, which commonly is known as AB 939, was the first recycling legislation in the country to mandate recycling diversion goals. Codified in the Public Resources Code (Public Resources Code §40050 et seq.), AB 939 emphasizes a reduction of waste disposed of in California landfills by requiring cities and counties to reduce the production of solid waste through recycling and reuse of solid waste. To achieve a reduction of waste in California landfills, AB 939 (as amended) requires local governments to divert 50% of all solid waste.

Los Angeles Regional Water Quality Control Board (LARWQCB)

The Project site, including the Ballona Creek channel, is located within the jurisdiction of the LARWQCB, which is one of the nine state RWQCBs under the purview of the SWRCB. The jurisdiction of the LARWQCB includes the coastal watersheds of Los Angeles and Ventura Counties and limited portions of Kern and Santa Barbara Counties (State of California 2016). The SWRCB sets statewide policy and, together with the nine state RWQCBs, implements state and Federal laws and regulations that pertain to water quality. The LARWQCB implements state and Federal laws and regulations within its jurisdiction and continuously maintains its Water Quality Control Plan, the *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (the “Basin Plan”) (LARWQCB 1994).

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Water Code §13000 et seq.) requires protection of water quality by appropriate design, sizing, and construction of erosion and sediment controls. The Porter-Cologne Act established the SWRCB and divided California into nine regions, each overseen by a RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state’s surface and groundwater supplies and has delegated primary implementation authority to the nine RWQCBs. The Porter-Cologne Act assigns responsibility for implementing Clean Water Act Sections 401 through 402 and 303(d) to the SWRCB and the nine RWQCBs.

The Porter-Cologne Act requires the development and periodic review of water quality control plans (Basin Plans) that designate beneficial uses of California’s major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters, provide the technical basis for determining waste discharge requirements, identify enforcement actions, and evaluate clean water grant proposals. Basin Plans are updated every 3 years. Compliance with Basin Plans is achieved primarily through implementation of the NPDES, which regulates waste discharges as discussed above.

The Project site is located within the jurisdiction of the LARWQCB- Region 4. The Basin Plan for the Los Angeles region defines a variety of water quality objectives for the hydrologic units (watersheds) within the Project area (LARWQCB 1994). The Project would have to follow the Basin Plan to avoid impacts to water quality.

3.13.3.3 Local

State agencies acting in their sovereign capacity are not subject to local regulations unless the California Constitution says they are or the Legislature has consented to such regulation. However, local regulations are mentioned in this EIS/EIR because some may apply to a state agency or this analysis contemplates actions by Southern California Gas Company (SoCalGas) outside of state property. Moreover, local plans and policies help inform this analysis related to utilities and service systems.

Hyperion Sanitary Sewer System Management Plan (SSMP)

The Hyperion SSMP was prepared for the Hyperion Sanitary Sewer System in accordance with the Statewide General Waste Discharge Requirements (City of Los Angeles 2015b). The Waste Discharge Requirements apply to publicly owned sanitary sewer systems that are greater than 1 mile in length and collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in California. The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system to help reduce and prevent sanitary sewer overflows and to mitigate any overflows that do occur.

County of Los Angeles

Code of Ordinances

The County of Los Angeles Code of Ordinances contains the County's building, electrical, plumbing, and green building standards applicable to the construction, alteration, moving, demolition, repair, use of any building or structure, and grading within the unincorporated territory of the County of Los Angeles. These codes regulate the design, grading, construction, quality, installation, occupancy, location, and maintenance of all buildings, structures, and equipment including, for example, the proposed three-story parking structure. The County's Green Buildings Standard encourages sustainable construction practices related to energy efficiency, water efficiency and conservation, and material conservation and resource efficiency, among other things.

Construction and Demolition Debris Recycling and Reuse Ordinance (Ordinance No. 2005-0004)

The purpose of this ordinance, included as Los Angeles County Code of Ordinances Chapter 20.87, is to increase the recycling and reuse of construction and demolition debris, consistent with the goals of the AB 939. This ordinance requires that at least 50% of all soil, rock, and gravel removed from a project site or all project construction and demolition debris must be recycled or reused unless a lower percentage is approved upon a determination that recycling or reuse of 50% of all such materials is not reasonably feasible. Compliance with this ordinance is ensured through the review and approval of a recycling and reuse plan prior to issuance of a permit, and regular progress reports must be submitted.

Countywide Integrated Waste Management Plan

AB 939 requires each county within California to prepare and administer a Countywide Integrated Waste Management Plan. The Countywide Integrated Waste Management Plan is composed of the county's and cities' solid waste reduction planning documents, an Integrated Waste Management Summary Plan, and a Countywide Siting Element. The Summary Plan describes the steps to be taken by local agencies to achieve the mandated state diversion rate by integrating strategies aimed toward reducing, reusing, recycling, diverting, and marketing solid waste generated within the County of Los Angeles (County of Los Angeles 1997). The Countywide Siting Element identifies how, for a 15-year planning period, the County and incorporated cities within the County would meet their long-term disposal capacity needs to safely handle solid waste generated in the County that cannot be reduced, recycled, or composted.

Local Urban Water Management Plans

The California Urban Water Management Planning (UWMP) Act (Water Code §§10610-10656) requires that every urban water supplier prepare and adopt a UWMP every 5 years. The main goal of the UWMP is to forecast future water demands and water supplies under average and dry-year conditions, identify future water supply projects such as recycled water projects, provide a summary of water conservation best management practices, and provide a single- and multi-dry-year management strategy. UWMPs succinctly summarize agencies' water supplies, demands and plans to ensure future reliability.

City of Los Angeles Department of Water and Power 2015 UWMP

LADWP's 2015 UWMP is intended to achieve full compliance with California's Urban Water Management Planning Act requirements, is consistent with the City's goals and policy objectives for reliable water supply, and serves as a master plan for water supply and resources management (LADWP 2015, 2016). It is based on a 25 year planning horizon (2015-2040) (Id.).

Marina Del Rey Water System Urban Water Management Plan 2010 and 2015

The Board of Supervisors, as the governing body of the Los Angeles County Waterworks Districts (LACWD), is scheduled to consider adoption of the 2015 Urban Water Management Plans for the districts within its jurisdiction on October 25, 2016. The Marina Del Rey Water System Urban Water Management Plan 2015 was being developed, but had not yet been finalized, while this EIS/EIR was being drafted (LACWD 2016). Accordingly, this analysis relies on data and other information provided in Marina Del Rey Water System Urban Water Management Plan 2010 (LADPW 2011). The stated purpose of the 2010 UWMP is "to plan for future water supply and demand within the District's service areas… to ensure an appropriate level of reliability in its water service to meet the needs of its customers during normal, single dry and multiple dry years." (Id.).

3.13.4 Thresholds of Significance

In this analysis, the Corps has elected to evaluate the context and intensity of potential environmental consequences relative to the criteria identified in CEQA Guidelines Appendix G, Section XVII.

Under CEQA Guidelines Appendix G Section XVII(c), a project would have a significant adverse impact on the environment if it would require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Due to the nature of the Project, *which is the improvement of existing stormwater management facilities*, this criterion is analyzed on a resource by resource basis throughout this EIS/EIR and not specifically in this section.

For purposes of this analysis, Alternative 1, 2, 3, or 4 would have a significant impact related to Utilities and Service Systems if it would:

UTIL-1 Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;

UTIL-2 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;

UTIL-3: Have insufficient water supplies available to serve the project site from existing entitlements and resources, or require new or expanded entitlements;

UTIL-4 Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or

UTIL-5 Not comply with federal, state, and local statutes and regulations related to solid waste.

CEQA Guidelines Appendix G, Section IV criterion e suggests that a project would have a significant adverse impact to utilities and service systems if it would result in a determination by the wastewater treatment provider which services the project site that is does not have adequate capacity to serve the project site's projected demand, in addition to the provider's existing commitments. Alternative 1, 2, 3, or 4 do not involve any activities that would require service from a wastewater treatment provider. Therefore, there would be no impact with regard to wastewater treatment service capacity and this potential criterion is not analyzed in detail in Section 3.13.6, *Direct and Indirect Resources*.

3.13.5 Methodology

The evaluation of Project impacts is based on professional judgment and significance criteria established in Appendix G of the *CEQA Guidelines*, which as described above, was determined to be appropriate for use in this analysis.

3.13.6 Direct and Indirect Impacts

3.13.6.1 Alternative 1: Full Tidal Restoration/Proposed Action

1-UTIL-1: Alternative 1 would not exceed wastewater treatment requirements of the Los Angeles Regional Water Quality Control Board. (Less than Significant Impact)

Direct Impacts

As discussed in Section 3.13.3.1 and in greater detail in Section 3.9, *Hydrology and Water Quality*, the SWRCB and the LARWQCB are responsible for establishing statewide and local policies and regulations for the implementation of water quality control programs mandated by the Clean Water Act and the Porter-Cologne Water Quality Control Act. All water discharged from the Project, including restoration phase-related wastewater, wastewater from proposed structures, and storm water runoff, would be subject to NPDES Construction General Permit requirements, as administered by the LARWQCB. The Project's potential to conflict with any water quality standards or waste discharge requirements is evaluated in Section 3.9, *Hydrology and Water Quality*. Implementation of the NPDES Construction General Permit would ensure that Alternative 1 would not exceed wastewater treatment requirements of the SWRCB and the LARWQCB. Therefore, impacts during Alternative 1 implementation would be less than significant.

As described further in Section 3.9, *Hydrology and Water Quality*, wastewater from proposed new structures, including a three-story parking structure in the west corner of Area A along Fiji Way and improvements to the West Culver Parking Lot in the southwest corner of West Area B, would generate stormwater runoff that has the potential to enter the Ballona Reserve. The new parking structure would be built on the site of the existing Department of Beaches and Harbor operated parking lot and would replace the existing surface lot. Given the replacement of this lot, Alternative 1 would reduce the footprint of the original parking and would increase the area available for reclamation as upland habitat. Thus, the new structure would potentially result in a reduction of stormwater runoff following completion of construction as compared to existing conditions. Improvements to the West Culver Parking Lot would include paving, striping, improved drainage, and the installation of sidewalks. Although the West Culver Parking Lot improvements would increase impervious surface, which has the potential to result in an increase in stormwater runoff, this lot would be graded to divert stormwater runoff to planted bio-swales before it enters the Ballona Reserve. Thus, this proposed improvement would reduce the volume and the pollutant load of stormwater runoff that enters surface waters within the Ballona Reserve following completion of the proposed work. Given that the new structures and improvements would reduce stormwater runoff, the handling and conveyance of stormwater runoff associated with the proposed parking structure would remain in compliance with all applicable regulations of the LARWQCB during and following construction/restoration, consistent with the existing uses.

Alternative 1 would not generate sewage during the post-restoration phase beyond what currently is generated. The existing restroom facilities located at the baseball fields and existing portable restroom facilities near the CDFW office near the new parking structure and near the West Culver Parking Lot gate are expected to continue current levels of accessibility and use would remain unchanged by Alternative 1. Furthermore, given the reduction in stormwater runoff and the maintenance of existing sewage levels, existing wastewater service providers would have existing capacity to serve the Project's demand. Alternative 1 would not exceed the wastewater treatment requirements of the LARWQCB. A less-than-significant impact would result.

Indirect Impacts

No indirect impact related to wastewater treatment requirements would occur during or following restoration under Alternative 1.

1-UTIL-2: Alternative 1 would not result in the construction of new water or wastewater treatment facilities or in the expansion of existing facilities. (Less than Significant Impact)

Direct Impacts

Implementation activities would require drinking water for workers and dust suppression during restoration-related grading activities, and also temporarily could require water for irrigation. These needs would result in a direct impact.

OSHA recommends that construction workers should drink up to 2 gallons of water per day when the heat index is between 103°F and 115°F (OSHA 2016). Because the heat index rarely if ever achieves this range in the vicinity of the Project site,[123] an assumption of 2 gallons of water per day per worker would result in a very conservative use estimate for this analysis. Phase 1 restoration under Alternative 1 could begin as early as 2017 and would last 5 years; Phase 2 restoration could begin as soon as 2023.[124] Assuming the estimated 122 restoration and construction workers would work every day of every active restoration year (minus Federal holidays), the Project would result in a demand of up to a total of 346,480 gallons of drinking water under Alternative 1. Bottled drinking water would be brought on-site during the restoration phase. Following restoration, Project activities would not require potable water service for drinking.

In addition to drinking water, implementation activities could require water for temporary irrigation needs in dry years to help establish target species and would require water for dust suppression and various construction-related activities during the restoration phase. Table 2-4, *Irrigation Methods and Water Use Estimates*, projects that the implementation of Alternative 1 could require anywhere between a maximum of 4,033,000 gallons per acre per year for irrigation and zero. Dust suppression needs and other disturbance-related water demand would vary depending on the weather and soils conditions.

As outlined in the discussion of Water Sources for Construction and Irrigation in Section 2.3.2.5, *Alternative 1: Implementation and Construction Process*, reclaimed water may be used for

[123] The "heat index" is what the temperature feels like to the human body when the air temperature is combined with the relative humidity. The Los Angeles International Airport (LAX) is located approximately 1 mile south of the Project site. According to climate normals published for the Los Angeles International Airport by the National Oceanic and Atmospheric Administration's National Centers for Environmental Information (NCEI 2016a), annual maximum temperatures at the Los Angeles International Airport reach peak at 74.9°F in August; the humidity in August peaks at 85% in the morning and drops to 64% by early afternoon (Osborn 2016). Based on the National Weather Service's Heat Index Calculator, the heat index on the hottest days of the year would be only 76°F (NOAA National Weather Service 2016).

[124] The proposed construction start date may be adjusted in the Final EIS/EIR.

temporary irrigation, dust suppression, and various construction-related activities, thereby reducing the potential demand for potable water. It is unlikely that such water use would exceed the available supply, given the current utilization of recycled water serving the Project area (i.e., recycled water customers currently consume only about 58.7% of recycled water produced) (Sanitation Districts of Los Angeles County 2015). Reclaimed water could be supplied via a meter service connection to the existing recycled water main located near the intersection of Lincoln Boulevard and Jefferson Boulevard and onward to the site, for example, via a distribution piping system routed across public streets by temporarily fastening pipes near the soffit of existing storm drains crossing Culver and Jefferson to provide water to Area B, and across and along the Ballona Creek to provide water to Area A and Area C South. A further extension could be provided to Area C North through an existing storm drain line under either Lincoln Boulevard or Culver Boulevard. Temporary and permanent connections through storm drain pipes are allowed in the City of Los Angeles as long as hydraulic capacity is not compromised (PSOMAS 2014). Potable water also could be used for irrigation by installing meters from the existing domestic water mains surrounding the project boundary (Id.).

Given the variety of water sources available with existing capacity for additional users, including potable and recycled water (see Section 3.13.2.2, Environmental Setting, under the heading “Water”), the temporary nature of the anticipated water use, and the expectation that water demands associated with Alternative 1 activities would not exceed available supplies or the existing distribution infrastructure, it is expected that there are sufficient water supplies available to serve Alternative 1 from existing resources. Impacts with respect to water supplies would be less than significant.

Furthermore, water used for dust suppression and irrigation would be absorbed by the soil and/or evaporate and, therefore, would not runoff the Project site and create any new demand for wastewater treatment or disposal.

During the post-restoration phase, Alternative 1 would not require any new connections to local or regional water or wastewater treatment systems. In addition, no new sewage or other types of wastewater would be generated relative to existing conditions. The existing restroom facilities by the baseball fields and the existing portable restroom facilities near the CDFW office and near the Culver gate are expected to continue existing levels of accessibility and use would remain unchanged by the Project. Given the availability of water sources, the temporary nature of the proposed water use, and the limited wastewater that would be generated during and following restoration, Alternative 1 would not result in the need for new water treatment facilities and/or generate wastewater such that new wastewater treatment facilities would be required. Therefore, impacts would be less than significant.

Indirect Impacts

Because Alternative 1 would not stimulate significant population growth, remove obstacles to population growth, or necessitate the construction of new infrastructure or community facilities that would lead to additional growth in the surrounding area, it would not indirectly result in the construction of new water or wastewater treatment facilities or in the expansion of existing facilities. Therefore, no indirect impact would occur during or following restoration under Alternative 1.

1-UTIL-3: Alternative 1 would have sufficient water supplies available to serve the project from existing entitlements and resources, and new or expanded entitlements would not be needed. (Less than Significant Impact)

Given the variety of water sources available to provide water during restoration and construction activities (see Section 3.13.2.2, Environmental Setting, under the heading "Water") and the temporary nature of proposed water usage, no new or expanded water supplies are expected to be needed; sufficient water supplies would be available to serve Alternative 1's construction- and revegetation-related water needs from existing resources. Irrigation during dry years would greatly improve the success of restoration plantings particularly during the first two to three years after planting in high marsh, transition, and upland habitats; however, if irrigation water is not available from among the existing, available sources, the proposed restoration would still proceed. Impacts with respect to water supplies would be less than significant.

1-UTIL-4: Alternative 1 would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. (Less than Significant Impact)

Direct Impacts

Under Alternative 1, up to 110,000 cubic yards of excavated soil and debris could be exported from the site (Table 2-8, *Alternative 1 Earthwork Soil Volume*). The exported soil and debris would likely be hauled to Scholl Canyon Landfill and/or the Lancaster Landfill and Recycling Center. Some or all of the dredged soil could also be deposited at the LA-2 and LA-3 Ocean Dredged Material Disposal Sites. CDFW would conduct sampling and analysis prior to securing the appropriate dredge disposal permits for the ocean disposal sites. The current available capacities at the two landfills range from 27.7 million to 59.9 million cubic yards of material, and the daily maximum intake of materials range from 2,000 to 3,000 cubic yards of material per day. The anticipated off-haul from the restoration area at approximately 3,600 cubic yards per day exceeds the maximum daily intake capacity of any one of these landfills. Therefore, hauling to multiple landfills each day would be required. The potential ocean disposal sites have an available capacity of 1,000,000 and 2,500,000 cubic yards of dredged material per year. Given the variety of disposal sites available to receive exported soil and debris, and the current available capacities at these disposal sites, it is anticipated that Alternative 1 would be served by landfills and ocean disposal sites with sufficient permitted capacity to accommodate the Alternative 1's disposal needs. Following restoration, existing trash collection activities would continue. The Project would result in a small increase in solid waste generation associated with increased visitation to the Ballona Reserve due to improvements to passive recreational resources, which would be readily accommodated by the Scholl Canyon Landfill or one of the other two landfills identified above. Post-restoration activities would consist of routine site maintenance and emergency repair; however, these activities are not expected to generate solid waste. Accordingly, Alternative 1's solid waste disposal needs during and following restoration would be less than significant.

Indirect Impacts

No indirect impact related to Alternative 1's solid waste disposal needs would occur during or following restoration under Alternative 1.

1-UTIL-5: Alternative 1 would comply with Federal, state, and local statutes and regulations related to solid waste. (No Impact)

Direct Impacts

Once restoration commences, illegal activity that generates solid waste under existing conditions, which are described in Section 3.13.2, Affected Environment, (and which primarily include homeless people's encampments and illegal dumping) would decrease substantially due to increased on-site restoration activity and worker presence. The proposed restoration activities would comply with applicable regulations related to solid waste. During the restoration phase, Alternative 1 would generate solid waste, including the removal and off-site disposal of dredged material, on-site disposal of vegetation, and incidental trash generated by construction workers that would be disposed of in trash receptacles for proper disposal. Following restoration, illegal activity that generates solid waste (e.g., road-side dumping) is expected to generate less than 200 lbs per month – a fraction of what occurs under existing conditions (CDFW 2016). The reduction in on-site solid waste generation would be offset by a slight increase as a result of an anticipated increase in the number of visitors. Because less illegal solid waste would be generated and all restoration-phase waste and post-restoration phase waste would be disposed of in compliance with Federal, state, and local statutes and regulations related to solid waste, no adverse impact related to Alternative 1's solid waste disposal needs would occur.

Indirect Impacts

Alternative 1 would result in no indirect impacts related to compliance with Federal, state, and local statutes and regulations governing solid waste during or following restoration.

TABLE 3.13-1
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
UTIL-1: Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? See Impact 1-UTIL-1.	☐	☐	☒	☐
UTIL-2: 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? See Impact 1-UTIL-2.	☐	☐	☒	☐
UTIL-3: Have insufficient water supplies available to serve the project site from existing entitlements and resources, or require new or expanded entitlements? See Impact 1-UTIL-3.	☐	☐	☒	☐
UTIL-4: Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs? See Impact 1-UTIL-5.	☐	☐	☒	☐
UTIL-5: Not comply with federal, state, and local statutes and regulations related to solid waste? See Impact 1-UTIL-6.	☐	☐	☐	☒

3.13.6.2 Alternative 2: Restored Partial Sinuous Creek

2-UTIL-1: Alternative 2 would not exceed wastewater treatment requirements of the Los Angeles Regional Water Quality Control Board. (Less than Significant Impact)

Direct Impacts

Similar to Alternative 1, Alternative 2 would require significant restoration-related grading activities, which could result in erosion, sedimentation, and other water quality issues. However, Alternative 2 would have a slightly smaller footprint than Alternative 1 and would require less grading. Alternative 2's potential to conflict with any water quality standards or waste discharge requirements is evaluated in Section 3.9, *Hydrology and Water Quality*. As described therein, restoration related activities, such as grading, has the potential to result in stormwater runoff to Ballona Creek. However, Alternative 2 would be required to comply with the NPDES Construction General Permit which includes adequate stormwater protection through the implementation of BMPs and monitoring, to limit increased turbidity and decreased water quality from sediment and other pollutants leaving the work site. Implementation of the NPDES Construction General Permit would ensure that the implementation of Alternative 2 would not exceed wastewater treatment requirements of the SWRCB and the LARWQCB and impacts during the restoration phase would be less than significant.

The same visitor amenities as proposed under Alternative 1 also are proposed under Alternative 2, including a three-story parking structure and improvements to the West Culver Parking Lot. Like Alternative 1, the handling and conveyance of stormwater runoff associated with proposed parking structures would be in compliance with all applicable regulations of LARWQCB. Similar to Alternative 1, Alternative 2 would not generate sewage following the restoration phase beyond existing amounts. While there are existing restroom facilities located at the baseball fields, these facilities would remain closed after the restoration of Alternative 2, pending funding and other factors affecting reconstruction of the baseball fields. If funding is not secured, then this facility would remain closed indefinitely. In addition, existing portable restroom facilities near the CDFW office and near the Culver gate are expected to continue existing levels of accessibility and use would remain unchanged by Alternative 2. Given that there would be no increase in wastewater during the post-restoration phase, Alternative 2 would not exceed the wastewater treatment requirements of LARWQCB and impacts would be less than significant.

Indirect Impacts

No indirect impact related to wastewater treatment requirements would occur.

2-UTIL-2: Alternative 2 would not result in the construction of new water or wastewater treatment facilities or in the expansion of existing facilities. (Less than Significant Impact)

Direct Impacts

Like Alternative 1, Alternative 2 would require drinking water for workers and dust suppression and related grading activities, and temporarily could require irrigation water. Restoration activities under Alternative 2 would require less water than Alternative 1 because the restoration phase would be a year shorter (Alternative 2 would be implemented over a 5-year period, which could begin as early as 2017) and because Alternative 2 would be implemented in a smaller footprint than Alternative 1. Drinking water for workers would require up to a conservative total of approximately 259,860 gallons over a 60 month restoration phase. Dust suppression and other disturbance-related water demands would depend on weather and soil conditions. Irrigation could be required in dry years for plantings associated with habitat restoration in Area A, North Area B, South/Southeast Area B and/or for upland habitat restoration in East Area B, North Area C, and South Area C. This analysis assumes that the same range of potential irrigation water demand would exist for Alternative 2 as Alternative 1 (i.e., between zero and a maximum of 4,033,000 gallons per acre per year) and, because the implementation period would be a year shorter for Alternative 2, concludes that Alternative 2 overall could reduce irrigation-related water demand relative to Alternative 1. Given the variety of water sources available with existing capacity for additional users, including potable and recycled water, the temporary nature of the anticipated water use, and the expectation that water demands associated with Project activities would not exceed available supplies or the existing distribution infrastructure, it is expected that there are sufficient water supplies available to serve Alternative 2 from existing resources. Impacts with respect to water supplies would be less than significant.

During the post-restoration phase, Alternative 2 would not require any new connections to local or regional water or wastewater treatment systems. In addition, no new sewage or other types of wastewater would be generated relative to existing conditions. Given the availability of water sources and the limited wastewater that would be generated during and following restoration, Alternative 2 would not result in the need for new water treatment facilities and/or generate wastewater such that new wastewater treatment facilities would be required. Therefore, impacts would be less than significant.

Indirect Impacts

Because Alternative 2 would not stimulate significant population growth, remove obstacles to population growth, or necessitate the construction of new infrastructure or community facilities that would lead to additional growth in the surrounding area, it would not indirectly result in the construction of new water or wastewater treatment facilities or in the expansion of existing facilities during or following restoration under Alternative 2.

2-UTIL-3: Alternative 2 would have sufficient water supplies available to serve the project from existing entitlements and resources, and new or expanded entitlements would not be needed. (Less than Significant Impact)

Given the variety of water sources available, including potable and recycled water from LADWP and potable water from LACWD, it is expected that there are sufficient water supplies available to serve Alternative 2 from existing resources during or following restoration under Alternative 2. Impacts with respect to water supplies would be less than significant.

2-UTIL-4: Alternative 2 would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. (Less than Significant Impact)

Direct Impacts

Alternative 2 would require off-site disposal of between 0 and10,000 cubic yards of excavated/ dredged soil and debris (Table 2-24, *Alternative 2 Earthwork Soil Volume*). This would result in less impacts to landfills and ocean disposal sites as described under Alternative 1 due to the comparative reduction in the amount of materials to be exported for offsite disposal. Alternative 2 would result in a small increase in solid waste generation associated with increased visitation to the Ballona Reserve due to improvements to recreational opportunities within the Ballona Reserve, which would be readily accommodated by Scholl Canyon Landfill or the Lancaster Landfill identified above. Post-restoration activities during Alternative 2 would consist of routine site maintenance and emergency repair; however, these activities are not expected to generate solid waste. Accordingly, Alternative 2's solid waste disposal needs during construction and operations would be less than significant.

Indirect Impacts

No indirect impact related to Alternative 2's solid waste disposal needs would occur during restoration or operation.

2-UTIL-5: Alternative 2 would comply with Federal, state, and local statutes and regulations related to solid waste. (No Impact)

Direct Impacts

Once restoration commences, illegal activity that generates solid waste under existing conditions (primarily homeless people's encampments and illegal dumping) would decrease substantially due to increased on-site restoration activity and worker presence. The proposed restoration activities would comply with applicable regulations related to solid waste. During the restoration phase, Alternative 2 would generate solid waste, including the removal and off-site disposal of dredged material, on-site disposal of vegetation, and incidental trash generated by construction workers that would be disposed of in trash receptacles for proper disposal. Following restoration, illegal activity that generates solid waste (e.g., road-side dumping) is expected to generate less than 200 lbs per month – a fraction of what occurs under existing conditions (CDFW 2016). The reduction in on-site solid waste generation would be offset by a slight increase as a result of an anticipated increase in the number of visitors. Because less illegal solid waste would be generated and all restoration-phase waste and post-restoration phase waste would be disposed of in compliance with Federal, state, and local statutes and regulations related to solid waste, no adverse impact related to Alternative 2's solid waste disposal needs would occur during or following restoration.

Indirect Impacts

Alternative 2 would result in no indirect impacts related to compliance with Federal, state, and local statutes and regulations governing solid waste during or following restoration.

TABLE 3.13-2
ALTERNATIVE 2 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
UTIL-1: Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? See Impact 2-UTIL-1.	☐	☐	☒	☐
UTIL-2: 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? See Impact 2-UTIL-2.	☐	☐	☒	☐
UTIL-3: Have insufficient water supplies available to serve the project site from existing entitlements and resources, or require new or expanded entitlements? See Impact 2-UTIL-3.	☐	☐	☒	☐
UTIL-6: Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs? See Impact 2-UTIL-5.	☐	☐	☒	☐
UTIL-7: Not comply with federal, state, and local statutes and regulations related to solid waste? See Impact 2-UTIL-6.	☐	☐	☐	☒

3.13.6.3 Alternative 3: Levee Culverts and Oxbow

3-UTIL-1: Alternative 3 would not exceed wastewater treatment requirements of the Los Angeles Regional Water Quality Control Board. (Less than Significant Impact)

Direct Impacts

The restoration-related grading activities proposed under Alternative 3 would occur on a much smaller scale than proposed for Alternative 1 and Alternative 2, but still could result in erosion, sedimentation and other water quality issues. Alternative 3 would be subject to NPDES Construction General Permit requirements, as administered by the LARWQCB. As a part of this permit, Alternative 3 would be required to implement BMPs and monitoring to limit increased turbidity and decreased water quality from sediment and other pollutants leaving the work site. Implementation of the NPDES Construction General Permit would ensure that Alternative 3 would not exceed wastewater treatment requirements of the SWRCB and the LARWQCB and impacts during the restoration phase would be less than significant. The same visitor amenities as proposed under Alternatives 1 and 2 also are proposed under Alternative 3, including a three-story parking structure and improvements to the West Culver Parking Lot. Like Alternative 1, the handling and conveyance of stormwater runoff associated with the proposed parking structures would be in compliance with all applicable regulations of LARWQCB. Given that there would be no increase in wastewater during the post-restoration phase, Alternative 3 would not exceed the wastewater treatment requirements of LARWQCB and impacts would be less than significant.

Indirect Impacts

No indirect impact related to wastewater treatment requirements would occur during or following restoration under Alternative 3.

3-UTIL-2: Alternative 3 would not result in the construction of new water or wastewater treatment facilities or in the expansion of existing facilities. (Less than Significant Impact)

Direct Impacts

Like Alternative 1, the implementation of Alternative 3 would require drinking water for workers, water for dust suppression and related grading activities, and also could require water for irrigation use to establish plantings if needed. Among Alternatives 1, 2, and 3, Alternative 3 would have the smallest restoration footprint, although the analysis assumes that the work (like Alternative 2) would require three years to implement (which could begin as early as 2017). Alternative 3 would require drinking water for workers (up to a total of 259,860 gallons over a 60 month construction period), water for dust suppression and other restoration and construction-related needs (with the total amount dependent on a variety of factors, including weather and soil conditions), and also temporarily could rely on irrigation to establish plantings. This analysis conservatively assumes that the same range of potential irrigation water demand would exist for Alternative 3 as for Alternatives 1 and 2 (i.e., between zero and a maximum of 4,033,000 gallons per acre per year). Nonetheless, because the implementation period would be a year shorter for Alternatives 2 and 3 than for Alternative 1, concludes that Alternative 3 overall would have the same irrigation-related water demand relative to Alternative 2 and reduced irrigation-related water demand relative to Alternative 1. Given the variety of water sources available during Project implementation (including potable and recycled water), the temporary nature of the anticipated water use, and the expectation that water demands associated with Alternative 3 activities would not exceed available supplies or the existing distribution infrastructure, it is expected that there are sufficient water supplies available to serve Alternative 3 from existing resources. Impacts with respect to water supplies would be less than significant.

During the post-restoration phase, Alternative 3 would not require any new connections to local or regional water or wastewater treatment systems. In addition, no new sewage or other types of wastewater would be generated relative to existing conditions. Given the availability of water sources and the limited wastewater that would be generated during and following restoration, Alternative 3 would not result in the need for new water treatment facilities and/or generate wastewater such that new wastewater treatment facilities would be required. Therefore, impacts would be less than significant.

Indirect Impacts

Because Alternative 3 would not stimulate significant population growth, remove obstacles to population growth, or necessitate the construction of new infrastructure or community facilities that would lead to additional growth in the surrounding area, it would not indirectly result in the construction of new water or wastewater treatment facilities or in the expansion of existing facilities during or following restoration.

3-UTIL-3: Alternative 3 would have sufficient water supplies available to serve the project from existing entitlements and resources, and new or expanded entitlements would not be needed. (Less than Significant Impact)

Given the variety of water sources available, including potable and recycled water from LADWP and potable water from LACWD, and temporary nature of this water use, it is expected that there are sufficient water supplies available to serve Alternative 3 from existing resources. Impacts with respect to water supplies would be less than significant during or following restoration under Alternative 3.

3-UTIL-4: Alternative 3 would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. (Less than Significant Impact)

Direct Impacts

Alternative 3 would generate substantially more excavated/dredged soil that would be disposed off-site than Alternative 1 or Alternative 2. Specifically, Alternative 3 would generate up to 1,230,000 cubic yards of excavated/dredged soil that would be disposed at a landfill and/or ocean disposal site (Table 2-28, *Alternative 3 Earthwork Soil Volume*). The same potential landfills and ocean disposal sites proposed under Alternative 1 would be used under Alternative 3. These disposal sites have enough available capacity to accept the quantity of excavated/dredged material proposed under Alternative 3. Like Alternative 1, Alternative 3 would also result in a small increase in solid waste generation associated with increased visitation to the Ballona Reserve due to improvements to recreational opportunities, which could be readily accommodated by Scholl Canyon Landfill or other permitted landfill. Accordingly, Alternative 3's solid waste disposal needs during construction and operations would be less than significant.

Indirect Impacts

No indirect impact related to Alternative 3's solid waste disposal needs would occur during or following restoration.

3-UTIL-5: Alternative 3 would comply with Federal, state, and local statutes and regulations related to solid waste. (No Impact)

Direct Impacts

Once restoration commences, illegal activity that generates solid waste under existing conditions (primarily homeless people's encampments and illegal dumping) would decrease substantially due to increased on-site restoration activity and worker presence. The proposed restoration activities would comply with applicable regulations related to solid waste. During the restoration phase, Alternative 3 would generate solid waste, including the removal and off-site disposal of dredged material, on-site disposal of vegetation, and incidental trash generated by construction workers that would be disposed of in trash receptacles for proper disposal. Following restoration, illegal activity that generates solid waste (e.g., road-side dumping) is expected to generate less than 200 lbs per month – a fraction of what occurs under existing conditions (CDFW 2016). The reduction in on-site solid waste generation would be offset by a slight increase as a result of an anticipated increase in the number of visitors. Because less illegal solid waste would be generated and all restoration-phase waste and post-restoration phase waste would be disposed of in compliance with Federal, state, and local statutes and regulations related to solid waste, no adverse impact related to Alternative 3's solid waste disposal needs would occur.

Indirect Impacts

Alternative 3 would result in no indirect impacts related to compliance with Federal, state, and local statutes and regulations governing solid waste during or following restoration.

TABLE 3.13-3
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
UTIL-1: Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? See Impact 3-UTIL-1.	☐	☐	☒	☐
UTIL-2: 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? See Impact 3-UTIL-2.	☐	☐	☒	☐
UTIL-3: Have insufficient water supplies available to serve the project site from existing entitlements and resources, or require new or expanded entitlements? See Impact 3-UTIL-3.	☐	☐	☒	☐
UTIL-4: Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs? See Impact 3-UTIL-5.	☐	☐	☒	☐
UTIL-5: Not comply with federal, state, and local statutes and regulations related to solid waste? See Impact 3-UTIL-6.	☐	☐	☐	☒

3.13.6.4 Alternative 4: No Federal Action/No Project

Under Alternative 4, no substantial changes would be made to the physical or human environment within the Ballona Reserve or the adjacent SoCalGas Property: no change in water use, no irrigation, and continued off-site disposal of approximately 1,000 lbs. (0.5 ton) of homeless-related trash and other illegally dumped debris per month would continue to occur. Wastewater, solid waste, and potable water services associated with the existing baseball fields in South Area C otherwise would be the only usage of public utilities service systems at the Project site. There would be no additional solid waste associated with increased public visitation because the Ballona Reserve would remain closed to the general public. Alternative 4 would result in no change relative to existing water use.

Because no activities would occur that could result in a new source of wastewater or otherwise increase the existing generation of wastewater, Alternative 4 would not conflict with the wastewater treatment requirements of the LARWQCB. Alternative 4 would not result in an increase of water use or of wastewater generation on the Project site and, thus, would not result in the construction of new water or wastewater treatment facilities, the construction of which could cause significant environmental effects. This alternative would not result in new construction and would not increase the use of water within the Project site. The baseball fields within South Area C are the only existing use that connects to the existing water supply. It is not expected that use of these facilities would increase under Alternative 4 and, as such, there would be sufficient water supply to serve these facilities from existing resources. Alternative 4 would not generate wastewater that would require service from a wastewater treatment provider. Therefore, Alternative 4 would have no impact with regard to wastewater treatment service capacity. Further, solid waste would not increase under Alternative 4 and, thus, landfills that serve the Project site would have sufficient permitted capacity to continue to accommodate solid waste from the Ballona Reserve. Finally, given that solid waste would continue to be generated and disposed of consistent with existing practices, Alternative 4 would continue to comply with Federal, state, and local statutes and regulations related to solid waste. For these reasons, Alternative 4 would result in no impact relating to any of the criteria identified in Section 3.13.4, *Thresholds of Significance*.

3.13.7 Cumulative Impacts

As analyzed in Section 3.13.6.4, Alternative 4 would result in no impact relating to Utilities and Service Systems, and so could not cause or contribute to any potential cumulative effect relating to related resources.

The geographic scope of the cumulative analysis for the various restoration alternatives (i.e., Alternatives 1, 2, and 3) varies for each public utility topic discussed in this section.

The geographic scope of the cumulative analysis for impacts to water supply would include the service area of LADWP and LACWD (MDRWS). LADWP currently serves 676,000 water customers and MDRWS currently serves approximately 7,800 customers. Table 3.1-1, *Existing and Reasonably Foreseeable Future Projects*, identifies 46 projects near the Ballona Reserve that could contribute to a cumulative impact in addition to myriad other projects, currently known and unknown, that would be accommodated by the 25-year planning horizon projected in LADWP's 2015 UWMP (LADWP 2015) and in the Marina Del Rey Water System Urban Water Management Plan 2010 (LADPW 2011). This analysis considers the list of projects as well as compliance with LADWP's overarching water supply planning documents. Because the Project would have a variety of water sources available to supply water for restoration activities, has the flexibility not to irrigate at all, and would require new water use relative to existing conditions only during the restoration phase, the Project would not cause or contribute any significant cumulative impact related to water supply sources.

For wastewater, the geographic scope of the cumulative analysis is the service area of the HTP. This analysis considers cumulative effects that could occur during restoration and post-restoration phases. Table 3.1-1, *Existing and Reasonably Foreseeable Future Projects*, identifies 46 projects near the Ballona Reserve that, together with the incremental impacts of myriad other projects, currently known and unknown, that would be accommodated by the SSMP for the Hyperion Sanitary Sewer System (City of Los Angeles 2015b), could contribute to a cumulative impact. This cumulative analysis considers the list of projects as well as consistency with the City of Los Angeles' SSMP. As described in Section 3.13.2, *Affected Environment*, there is no evidence that the ongoing impacts of past projects have resulted in an existing significant adverse wastewater treatment condition. As analyzed in Section 3.13.6, *Direct and Indirect Impacts*, Alternatives 1, 2, and 3 each would have an incremental negligible impact on wastewater generation and treatment capacities and the related demand on sewer system capacity is well-within service projections considered in the City of Los Angeles' SSMP. Therefore, these negligible contributions to cumulative conditions, combined with existing levels of demand on the system and projected demands of other present and reasonably foreseeable future projects in the service area, would not cause a significant adverse cumulative effect relating to wastewater. Cumulative impacts would be less than significant in this regard.

The Ballona Creek watershed constitutes the geographic scope for cumulative stormwater impacts. The related projects' cumulative effects involving stormwater are described in detail in Section 3.9, *Hydrology and Water Quality*. In addition, projects outside of the 2-mile radius for cumulative projects, but within the watershed would also be included. While the incremental impacts of the Project in combination with past and other projects in the watershed would result in increased erosion and sedimentation during construction, all projects would be required to comply with the NPDES Construction General Permit and implement SWPPPs and/or BMPs which would reduce potential cumulative impacts and ensure that the projects are in compliance with requirements of the LARWQCB. Therefore, the cumulative impact would be less than significant.

For cumulative impacts involving landfill and ocean disposal site capacities, the geographic scope of the cumulative analysis would include the Scholl Canyon Landfill, Lancaster Landfill and Recycling Center, and LA-2 and LA-3 ocean disposal sites. The proposed landfills each have planned future closure dates and maximum daily intake capacities. Together these landfills have a combined available capacity of 87.6 million cubic yards and there is no evidence of an existing significant adverse condition relating to landfill capacity. Alternatives 1, 2, and 3 each would be required to comply with the maximum daily intake capacities established for the relevant landfills, ensuring that each would not contribute to a cumulatively significant scenario resulting in an unplanned increased depletion rate of available landfill capacity. In addition, related projects within the geographic scope would be required to dispose of waste in compliance with Federal, state, and local statutes and regulations related to solid waste. To dispose dredged material at the LA-2 and LA-3 ocean disposal sites, all projects must first obtain a permit from the Corps. The permit would ensure that cumulative disposal volumes would not exceed anticipated volumes (the planned maximum annual dredged material disposal quantity is 1 million cubic yards for LA-2 and 2.5 million cubic yards for LA-3). Given the existing capacity at the landfills and disposal sites and required compliance with solid waste disposal requirements, cumulative impacts related to solid waste would be less than significant.

Under the cumulative scenario, impacts related to wastewater, water supply, and solid waste would be less than significant.

3.13.8 References

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3.14 Socioeconomics and Environmental Justice

3.14.1 Introduction

This section identifies and evaluates issues related to socioeconomics and environmental justice in the context of various wetland restoration alternatives under NEPA which, along with associated guidance from the Council on Environmental Quality (CEQ), requires that Federal agencies consider the effects of their regulations, policies, and programs on the environment, including social and economic impacts; and avoid, minimize, or mitigate environmental impacts to the extent practicable (42 U.S.C. §4321; 40 C.F.R. §§1500.2, 1508.8, and 1508.14). The purpose of the socioeconomics analysis is to establish the social and demographic characteristics of the Project's area and to determine the Project's impacts related to potential changes to economic output, labor income, and employment in the area of analysis. The purpose of the environmental justice analysis is to determine whether the environmental and human health-related impacts of the alternatives would disproportionately affect minority and low-income populations. This section provides a discussion of environmental justice in accordance with Executive Order (E.O.) 12898 and related CEQ guidance and of the protection of children from environmental health risks in accordance with E.O. 13045. This section identifies and evaluates issues related to socioeconomics and environmental justice and discusses existing socioeconomic and environmental justice conditions in Section 3.14.2, the applicable regulatory setting in Section 3.14.3, identifies the criteria used to evaluate the significance of potential impacts (referred to as "thresholds of significance") in Section 3.14.4, the methods used to analyze impacts in Section 3.14.5, and potential impacts related to socioeconomics and environmental justice in Section 3.14.6, including population growth and movement, housing, employment, community character, and the potential for disproportionately high and adverse impacts on communities of environmental justice concern. Cumulative impacts related to socioeconomics and environmental justice are described in Section 3.14.7. References are provided in Section 3.14.8.

As described in Chapter 3, *Introduction*, Section 3.1.3.4, *Population and Housing*, population growth would not be induced, either directly or indirectly, and the displacement of housing or people would not occur as a result of the alternatives; therefore, these criteria are not discussed in this section.

As described in Section 3.14.3.2, below, a CEQA lead agency may use information about the economic or social impacts of a project to determine the significance of physical changes caused by the project. However, because the socioeconomic effects of the Project are minor and beneficial, as described below in Section 3.14.5.1, they do not contribute to the determination of significance of the Project's physical changes on the environment. Therefore, socioeconomic impacts under CEQA are not discussed further in this section.

CEQA does not use the term "environmental justice" or require the evaluation of disproportionately high and adverse impacts on minority or low-income communities in the way required by E.O.1 2898. The Office of the California Attorney General (OAG) has clarified that environmental justice concerns are relevant to the analysis of a project under CEQA, but has recommended that lead agencies address environmental justice by evaluating whether a project's impacts would affect a community whose residents are particularly sensitive to the impact (i.e., sensitive receptors) and whether a project would have significant effects on communities when considered together with any environmental burdens those communities already are bearing, or may bear from probable future projects (i.e., cumulative impacts) (OAG 2012). The impacts of this Project on sensitive receptors are analyzed where appropriate (e.g., in Section 3.3, *Air Quality*, and in Section 3.8, *Hazards and Hazardous Materials*). The cumulative effects of the Project's impacts considered together with existing or foreseeable environmental burdens experienced by nearby communities are analyzed throughout Chapter 3 in the Cumulative Impacts subsection of each resource section. Further, the OAG indicates that a lead agency must be clear and transparent in its Statement of Overriding Considerations about the balances it has struck in approving a project, such as whether the benefits of the project will be enjoyed widely, but the environmental burdens of a project will be felt particularly by the neighboring communities (OAG 2012). The information presented in this section will inform such a statement if and when the Project is approved in the event that a significant unavoidable impact is identified. However, there are no CEQA significance criteria relevant to the discussion of environmental justice impacts addressed in this section. Therefore, the significance criteria provided in Section 3.14.4, below, are relevant to the NEPA analysis only, and impact statements do not identify a significance determination under CEQA.

3.14.2 Affected Environment

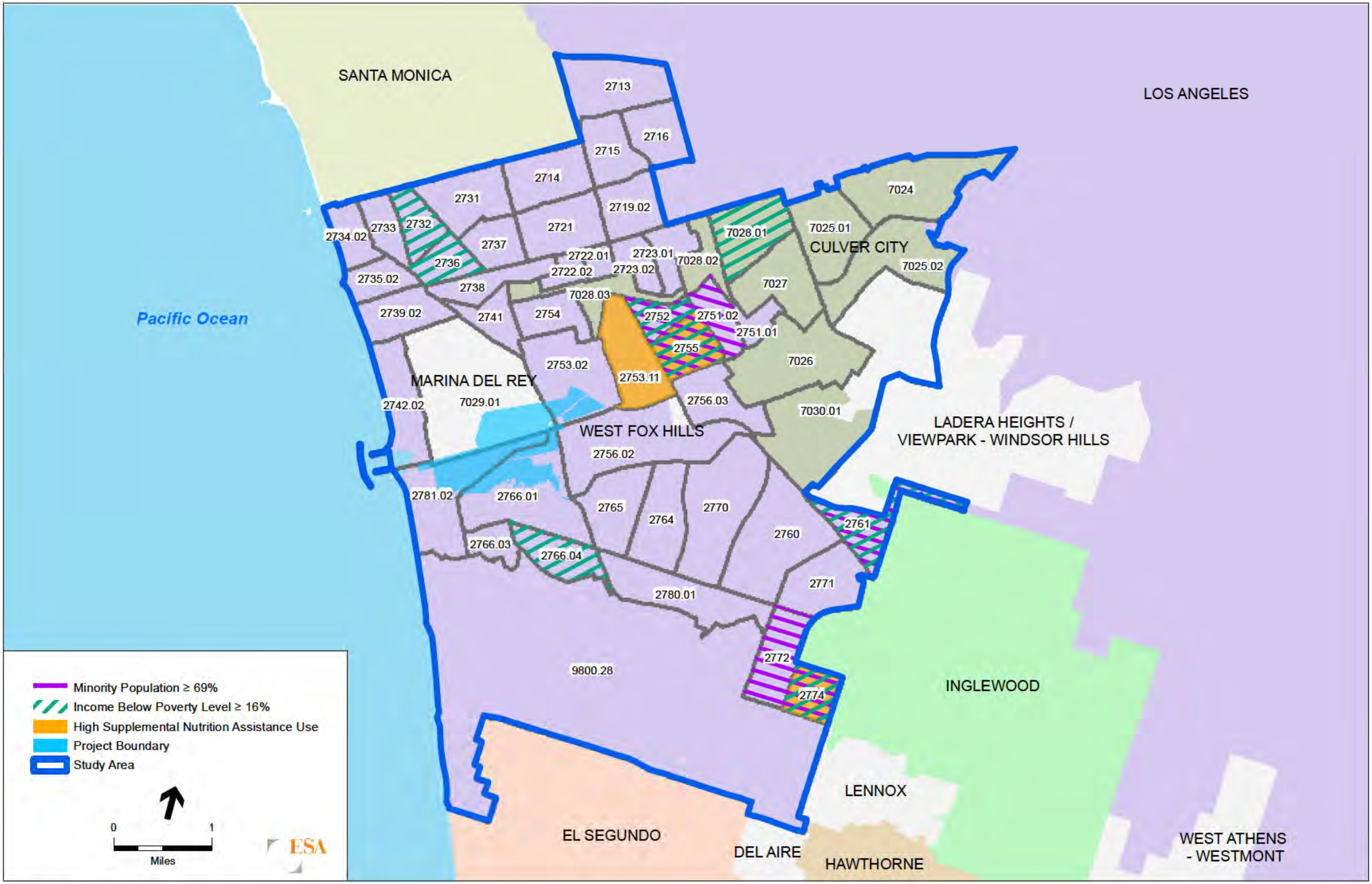
The local study area for socioeconomics and environmental justice includes the cities and neighborhoods that surround the Project site, including Culver City, the unincorporated community of Marina del Rey, and the City of Los Angeles neighborhoods of Playa del Rey, Westchester, Playa Vista, Del Rey, Mar Vista, and Venice. These communities are located in a densely populated area of Los Angeles County that is bounded approximately by the Los Angeles International Airport (LAX) to the south, the San Diego Freeway (Interstate 405 [I-405]) to the east, the Pacific Ocean to the west, and the City of Santa Monica to the north. The local study area primarily consists of residential and commercial land uses. Figure 3.14-1, *Socioeconomics and Environmental Justice Local Study Area*, shows the local study area, and demographic information for the census tracts in this study area is provided in Appendix I. Additionally, the regional study area includes Los Angeles County, and information about the City of Los Angeles is also provided. Census tract, city, and regional-level socioeconomic and demographic data are presented in this section.

3.14.2.1 Socioeconomics

Population

Population estimates and projections for Los Angeles County and the cities of Los Angeles and Culver City are summarized in Table 3.14-1, *Historical and Projected Population of Selected Geographies in the Study Area*. No projections are available at the census tract or neighborhood level for the neighborhoods and unincorporated communities in the local study area.

As shown in Table 3.14-1, both Los Angeles County and the City of Los Angeles experienced moderate annual growth between 2000 and 2010. The most recent Southern California Association of Governments (SCAG) population projections indicate that annual growth is expected to accelerate through 2040 (SCAG 2014). Culver City experienced almost no growth between 2000 and 2010, and is projected to grow at a slower rate than either Los Angeles County as a whole or the City of Los Angeles.



Ballona Wetlands Restoration Project

Figure 3.14-1
Socioeconomics and Environmental Justice Local Study Area

TABLE 3.14-1
HISTORICAL AND PROJECTED POPULATION OF SELECTED GEOGRAPHIES IN THE STUDY AREA

	U.S. Census		SCAG Projections		
	2000	**2010**	**2020**	**2035**	**2040**
Los Angeles County	9,519,338	9,818,605	10,325,102	11,148,679	11,517,421
Average Annual Growth Rate	--	*0.31%*	*0.50%*	*0.51%*	*0.65%*
City of Los Angeles	3,694,820	3,792,621	4,016,714	4,443,439	4,610,468
Average Annual Growth Rate	--	*0.26%*	*0.58%*	*0.68%*	*0.74%*
Culver City	38,816	38,883	39,452	40,292	40,687
Average Annual Growth Rate	--	*0.02%*	*0.15%*	*0.14%*	*0.20%*

NOTE: Annual growth rate represents compound annual growth rate during the measurement interval (e.g., between 2020 and 2035).
SOURCES: U.S. Census 2000, 2010; SCAG 2014.

California Department of Finance (CA DOF) projections show more rapid growth for Los Angeles County by 2020, with growth rates then slowing through 2040 (CA DOF 2014); however, CA DOF does not provide city-level projections.

The total population in the local study area (including the populations of Culver City and Marina del Rey shown in Table 3.14-1) was 211,754 in 2010 (U.S. Census 2010; see Appendix I, *Local Study Area Census and Survey Data*).

Housing

Housing information for the regional and local study areas is summarized in Table 3.14-2. In 2010, Los Angeles County had nearly 3,500,000 housing units, with a vacancy rate of 5.9 %, while the City of Los Angeles had just over 1,400,000 housing units with a vacancy rate of 6.8%. Of those housing units that were occupied, 47.7% of Los Angeles County units were owner-occupied, while 38.2% of those in the City of Los Angeles were owner-occupied.

TABLE 3.14-2
HOUSING PROFILE OF THE REGIONAL AND LOCAL STUDY AREAS (2010)

Area	Total Housing Units	Percent Owner Occupied	Percent Vacant
County of Los Angeles	3,445,076	47.7	5.9
City of Los Angeles	1,413,995	38.2	6.8
Local Study Area			
Playa del Rey	9,073	45.0	6.6
Playa Vista	4,918	45.9	6.0
Del Rey	12,177	43.3	6.2
Mar Vista	18,041	41.0	4.6
Venice	21,568	34.7	11.9
Westchester	13,769	55.4	9.3
Culver City	17,491	54.3	4.1
Marina del Rey	6,742	11.5	16.9
Total Local Study Area	**103,779**	**43.1**	**7.9**

SOURCES: U.S. Census Bureau 2010.

In the local study area, there were 103,779 housing units, with an overall vacancy rate of 7.9%. Two coastal communities, Venice and Marina del Rey, had relatively high vacancy rates of 11.9% and 16.9%, respectively, as a result of the large number of vacant housing units for seasonal, recreational, or occasional use. Marina del Rey also had a larger percentage of vacant units for rent (9.5%) compared to the rest of the local study area (ranging from 2.1 to 4.0%). Owner occupancy for the local study area as a whole (43.1%) was lower than for Los Angeles County. Owner occupancy for the local study area without Marina del Rey, where only 11.5% of occupied units are owner-occupied as a result of its high-density rental and seasonal/recreational housing developments, was slightly higher at 45.1%.

Vacancy rates for both owner-occupied and rental units can reflect changes in the local housing market. More recent data on rental units show that despite construction of thousands of new units, as of the second quarter 2014, the vacancy rate in Los Angeles County had dropped to 3.3% (Green et al. 2014). Los Angeles is widely considered to have a housing shortage (City of Los Angeles 2015; Legislative Analyst's Office 2015).

As of the 2010 Census, there were approximately 3,300 vacant units for rent in the local study area, with over 100,000 for rent throughout Los Angeles County and over 50,000 for rent in the City of Los Angeles (U.S. Census Bureau 2010; see Appendix I). However, as noted above, vacancy rates have declined throughout Los Angeles County. While recent vacancy and housing data are not available at the census tract level, this analysis assumes that fewer than 2,000 units may be available for rent within these communities, commensurate with the 44% decline in vacancy countywide between 2010 and 2014.

Numerous transient encampments (typically of one to three people) have been located within the Ballona Reserve, particularly in the upland scrub habitats north of Ballona Creek. Such uses are unauthorized, illegal, and are the subject of active and ongoing efforts to relocate individuals from these encampments. Recent reporting indicates that between 2013 and 2014, the number of encampments was reduced from approximately 30 to just two or three (Krishnakumar 2014). These relocation efforts are wholly independent from this Project. However, because the changes in topography, vegetation, and site management that would occur under the Project would make reestablishment of such encampments less likely, this analysis considers the long-term impacts of relocating up to 10 individuals who may remain on the site.

Employment and Income

The economy of Los Angeles County is diverse, with a gross annual product in 2013 of approximately $583 billion, or approximately 27% of the state's gross annual product (LAEDC 2014). Table 3.14-3, *Employment by Industry Group (2009-2013)*, provides the employment by industry for Los Angeles County, the City of Los Angeles, and the communities in the local study area. As these data show, the largest industries in Los Angeles County by employment are educational services, health care and social assistance, professional services, manufacturing, trade, and entertainment. In the local study area, a smaller percentage of people are employed in the construction, manufacturing, trade, and transportation and warehousing industries, while a larger percentage are concentrated in services, including professional, educational and health care, and information. The presence of Loyola Marymount University, the Otis College of Art and Design, and Pepperdine University's West Los Angeles campus within the local study area geographies, as well as the proximity of the local study area to the University of California,

TABLE 3.14-3
EMPLOYMENT BY INDUSTRY GROUP (2009-2013)

Industry	Los Angeles County		City of Los Angeles		Local Study Area	
	Number of workers	Percent of total	Number of workers	Percent of total	Number of workers	Percent of total
Agriculture, forestry, fishing and hunting, and mining	22,433	*0.5%*	8,273	*0.5%*	413	*0.3%*
Construction	255,359	*5.7%*	107,969	*6.0%*	3,418	*2.8%*
Manufacturing	483,592	*10.8%*	163,336	*9.1%*	7,292	*6.1%*
Wholesale trade	162,995	*3.6%*	51,433	*2.9%*	2,568	*2.1%*
Retail trade	478,076	*10.6%*	184,895	*10.3%*	9,784	*8.1%*
Transportation and warehousing, and utilities	235,944	*5.3%*	73,396	*4.1%*	3,932	*3.3%*
Information	195,741	*4.4%*	103,400	*5.8%*	12,352	*10.3%*
Finance and insurance, and real estate and rental and leasing	286,163	*6.4%*	114,028	*6.4%*	8,500	*7.1%*
Professional, scientific, and management, and administrative and waste management services	551,858	*12.3%*	243,804	*13.6%*	22,042	*18.3%*
Educational services, and health care and social assistance	930,098	*20.7%*	352,970	*19.8%*	27,373	*22.8%*
Arts, entertainment, and recreation, and accommodation and food services	457,287	*10.2%*	211,740	*11.8%*	13,388	*11.1%*
Other services, except public administration	278,039	*6.2%*	128,454	*7.2%*	5,657	*4.7%*
Public administration	152,389	*3.4%*	43,385	*2.4%*	3,550	*3.0%*
Total--All Industries	**4,489,974**		**1,787,083**		**120,269**	

SOURCE: U.S. Census Bureau 2013.

Los Angeles, and the University of Southern California, likely accounts for the greater percentage of workers employed in the educational services, health care, and social assistance industry. In the Westchester neighborhood in particular, over 30% of workers are employed in this industry (U.S. Census Bureau 2013).

Recent (December 2014) unemployment estimates from the California Employment Development Department (EDD) show unemployment rates of 7.5% for Los Angeles County and 8.3% for the City of Los Angeles (EDD 2015). Culver City and Marina del Rey had relatively lower unemployment rates as of December 2014 (5.1% and 4.0%, respectively). The EDD does not provide census tract- or neighborhood-level data.

Table 3.14-4, *Median Household Income of the Regional and Local Study Areas*, shows estimates for median household income for the regional and local study area. Although the communities within the local study area vary in median household income from $69,000 per year to $95,000 per year, each community, as well as the overall local study area, has a much higher median household income than Los Angeles County or the City of Los Angeles. However, within the local study area, census tract-level data vary widely. Section 3.14.2.2, *Environmental Justice,* addresses some of these disparities among neighboring census tracts.

TABLE 3.14-4
MEDIAN HOUSEHOLD INCOME OF THE REGIONAL AND LOCAL STUDY AREAS

Area	Median Household Income
Los Angeles County	$55,909
City of LA	$49,497
Local Study Area	
Playa del Rey	$88,603
Playa Vista	$69,095
Del Rey	$71,586
Mar Vista	$72,545
Venice	$87,431
Westchester	$84,877
Culver City	$77,333
Marina del Rey	$95,248
Weighted Average of Local Study Area Median Incomes	**$80,373**

NOTE: Because the U.S. Census Bureau does not publish individual-level data, a median income for the entire local study area cannot be estimated. The weighted average of the median incomes of local study area neighborhoods is provided as an approximation, and is weighted by the number of households in each neighborhood.

SOURCE: U.S. Census Bureau 2013.

3.14.2.2 Environmental Justice

Minority Population

According to the CEQ Guidance (1997), minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population, for the purposes of this environmental justice analysis, is identified when the minority population of the potentially affected area is greater than 50% and/or meaningfully greater than the percentage of the minority population in the general population or other appropriate unit of geographical analysis (CEQ 1997).[125] A "meaningfully greater" percentage is defined as being 1.5 times or more than that of the general population.

Table 3.14-5, *Racial Characteristics for Minority Communities within the Study Area*, presents the minority population composition of Los Angeles County, the City of Los Angeles, and the local study area as described above, based on the 2010 Census. There are a total of 55 census tracts within the local study area, for which detailed demographic information is included in Appendix I. Because the local study area does not have a minority population greater than 50% (46.4%), nor is this population meaningfully greater than the general population of Los Angeles County or the City of Los Angeles (in fact, it is substantially lower), Table 3.14-5 presents data for several specific census tracts that do have minority populations greater than 50%. Because

[125] According to the CEQ guidelines, "Minority" is defined as all persons except non-Hispanic whites. In other words, minority is defined as any racial groups other than white, and all persons of Hispanic origin, regardless of race.

TABLE 3.14-5
RACIAL CHARACTERISTICS FOR MINORITY COMMUNITIES WITHIN THE STUDY AREA

	Los Angeles County	City of Los Angeles	Local Study Area	CT 2756.02 (Playa Vista)	CT 2756.03 (Playa Vista)	CT 2751.01 (Del Rey)	CT 2751.02 (Del Rey)	CT 2752 (Del Rey)	CT 2753.11 (Del Rey)	CT 2755 (Del Rey)	CT 2716 (Mar Vista)	CT 2719.01 (Mar Vista)	CT 2722.01 (Mar Vista)	CT 2722.02 (Mar Vista)
Total Population	9,818,605	3,792,621	211,754	6,470	2,711	1,177	4,226	3,887	4,993	5,207	4,475	3,087	2,411	3,378
Hispanic or Latino (All Races)	47.7%	48.5%	23.1%	11.4%	34.9%	28.1%	67.1%	49.4%	28.0%	71.0%	10.1%	28.2%	38.0%	43.4%
Non-Hispanic White	27.8%	28.7%	53.6%	49.6%	34.9%	41.6%	19.8%	30.9%	43.5%	13.0%	48.8%	44.2%	44.0%	39.2%
Non-Hispanic Black or African American	8.3%	9.2%	7.4%	11.0%	3.8%	7.3%	2.3%	5.0%	3.2%	6.2%	2.1%	7.1%	4.4%	3.9%
Race, alone or in combination with one or more other races:														
White	53.9%	53.6%	69.8%	60.9%	56.6%	58.8%	56.5%	60.3%	61.1%	44.8%	59.3%	61.7%	64.5%	59.8%
Black or African American	9.7%	10.6%	9.2%	14.0%	5.2%	9.2%	3.6%	6.6%	4.6%	7.4%	3.5%	8.7%	6.3%	5.4%
American Indian and Alaska Native	1.4%	1.4%	1.6%	1.3%	0.8%	2.5%	1.8%	2.0%	1.2%	1.8%	1.1%	2.2%	2.4%	3.0%
Asian	15.3%	12.8%	14.8%	25.9%	25.1%	19.5%	9.8%	13.0%	23.9%	8.8%	37.7%	19.0%	11.7%	11.5%
Native Hawaiian and Other Pacific Islander	0.6%	0.4%	0.6%	0.6%	0.6%	1.7%	0.8%	0.6%	0.9%	0.9%	0.3%	0.6%	0.1%	0.6%
Some Other Race	24.0%	26.2%	10.2%	4.5%	17.5%	14.9%	32.9%	23.7%	14.4%	41.0%	3.4%	13.7%	20.1%	25.2%
Percent Total Minority (Other Than Non-Hispanic White)	72.2%	71.3%	46.4%	50.4%	65.1%	58.4%	**80.2%**	**69.1%**	56.5%	**87.0%**	51.2%	55.8%	56.0%	60.8%

TABLE 3.14-5 (Continued)
RACIAL CHARACTERISTICS FOR MINORITY COMMUNITIES WITHIN THE STUDY AREA

	CT 2723.01 (Mar Vista)	**CT 2723.02 (Mar Vista)**	**CT 2732 (Venice)**	**CT 2733 (Venice)**	**CT 2761 (West-chester)**	**CT 2772 (West-chester)**	**CT 2774 (West-chester)**	**CT 2780.01 (West-chester)**	**CT 7024 (Culver City)**	**CT 7025.02 (Culver City)**	**CT 7028.01 (Culver City)**	**CT 7028.02 (Culver City)**	**CT 7028.03 (Culver City)**	**CT 7030.01 (Culver City)**
Total Population	2,941	4,074	3,711	3,695	5,592	2,490	1,533	2,458	4,541	4,048	5,205	2,282	2,963	5,889
Hispanic or Latino (All Races)	31.0%	50.1%	64.5%	32.8%	14.1%	30.8%	22.9%	25.5%	32.1%	12.3%	31.1%	40.4%	43.6%	12.0%
Non-Hispanic White	48.4%	33.9%	47.7%	49.5%	20.1%	20.5%	8.2%	49.3%	46.4%	46.0%	41.2%	41.8%	42.0%	38.4%
Non-Hispanic Black or African American	4.9%	4.6%	11.9%	10.3%	49.4%	32.2%	53.9%	8.5%	4.8%	20.2%	4.8%	2.7%	3.2%	28.1%
Race, alone or in combination with one or more other races:														
White	68.7%	59.5%	66.0%	68.4%	29.3%	36.3%	18.9%	70.5%	68.2%	58.1%	60.6%	68.1%	68.0%	49.5%
Black or African American	6.0%	5.8%	13.6%	12.7%	54.0%	37.2%	58.6%	10.4%	6.7%	23.6%	6.3%	4.3%	4.3%	31.9%
American Indian and Alaska Native	1.8%	2.5%	1.9%	2.3%	1.6%	2.2%	1.7%	1.3%	1.5%	1.6%	1.3%	1.7%	2.2%	1.8%
Asian	14.2%	10.4%	3.9%	4.9%	13.0%	12.6%	11.5%	15.3%	14.4%	19.1%	22.0%	13.5%	10.2%	18.3%
Native Hawaiian and Other Pacific Islander	0.6%	0.2%	0.3%	0.6%	0.6%	1.3%	0.8%	1.8%	1.2%	0.7%	0.4%	0.6%	0.9%	0.4%
Some Other Race	14.9%	26.6%	19.1%	17.6%	7.8%	18.6%	14.0%	7.2%	16.5%	4.5%	15.7%	17.6%	20.0%	5.2%
Percent Total Minority (Other Than Non-Hispanic White)	51.6%	66.1%	52.3%	50.5%	**79.9%**	**79.5%**	**91.8%**	50.7%	53.6%	54.0%	58.8%	58.2%	58.0%	61.6%

NOTE: Census Tract (CT) 9800.28 (Westchester), which encompasses the Los Angeles International Airport (LAX), had one housing unit as of the 2010 Census. Detailed racial characteristics and poverty and income statistics are not provided to protect residents' privacy. However, this census tract is included among those analyzed for potential environmental justice impacts.

SOURCE: U.S. Census Bureau 2010.

the overall local study area has a total minority population of 46.4%, any population that would be "meaningfully greater" than that of the local study area would be greater than approximately 69%; therefore, these census tracts are considered minority populations for the purposes of this analysis.

Within the local study area, the Hispanic or Latino population made up a smaller percentage of the population than in Los Angeles County or the City of Los Angeles, where people identifying as Hispanic or Latino represent nearly half of the total population. However, as shown in Table 3.14-5 and Appendix I, the percentage of Hispanic or Latino residents in the local study area varied greatly by census tract, from just 6.3% in one Venice census tract to 71% in CT 2755 (in Del Rey). Similarly, the population identifying as Black or African American (including those of Hispanic or Latino origin) varied from 1.9% in an area of Mar Vista to 54% and 58.6% in parts of Westchester (CTs 2761 and 2774, respectively). This suggests that while some parts of the local study area have racially and ethnically diverse populations, there are concentrations of minority populations that should be recognized as communities where adverse environmental justice impacts could occur. Because the Los Angeles region as a whole has a minority population much greater than 50% and much greater than the local study area on average, this analysis focuses on those census tracts with a minority population that is meaningfully greater than that of the local study area – 69% or greater. As shown in Table 3.14-5, this includes CTs 2751.02, 2752, and 2755 in Del Rey and CTs 2761, 2772, and 2774 in Westchester (Percent Total Minority given in bold text). Figure 3.14-1, *Socioeconomics and Environmental Justice Local Study Area*, shows the locations of the tracts in the local study area.

Low-Income Populations

Unlike the CEQ (1997) guidance on minority populations, none of the environmental justice guidance documents contain a quantitative definition of what proportion of low-income individuals defines a low-income population.

USEPA guidance (1998) recommends the use of Census data on poverty income as one indicator, as well as other available data. This analysis uses the percentage of individuals with income below the Census-defined poverty level. The percentage is compared to that of the general population, and the affected area is included in the analysis if the percentage of low-income population is meaningfully greater than that of the general population, based on the same thresholds as in the case of minority population.

For this analysis, proportions of people living in poverty were obtained from the 2009-2013 ACS (U.S. Census Bureau 2013). The U.S. Census Bureau defines poverty using standards set by the U.S. Office of Management and Budget's Statistical Policy Directive 14 (U.S. Office of Management and Budget 1978). Family income is compared to thresholds that vary according to family size, age, and number of children under 18 years old. If a family's total income is less than the applicable threshold, then every person in the family is considered to be in poverty. Poverty thresholds are the same for all geographic areas and are adjusted annually by the Consumer Price Index.

According to the 2009-2013 ACS, 17.8% of all people in Los Angeles County and 22.0% of people in the City of Los Angeles had incomes below the poverty level in the 12 months prior to completing the survey (U.S. Census Bureau 2013). By comparison, only 10.5% of people in the local study area had incomes below the poverty level. However, there were pockets of higher concentrations of poverty within the local study area at the census tract level. Table 3.14-6, *Poverty in the Local Study Area*, shows census tracts with percentages 1.5 times or greater that of the local study area as a whole (i.e., 15.8% or higher), considered to be meaningfully greater than the population of the local study area for purposes of this analysis.

TABLE 3.14-6
POVERTY IN THE LOCAL STUDY AREA

	CT 2766.04 (Playa del Rey)	CT 2752 (Del Rey)	CT 2755 (Del Rey)	CT 2732 (Venice)	CT 2736 (Venice)	CT 2761 (West-chester)	CT 2774 (West-chester)	CT 7028.01 (Culver City)
Percent of people whose income in the past 12 months is below the poverty level	17.4%	22.0%	28.0%	16.4%	16.4%	19.4%	22.1%	16.5%

SOURCE: U.S. Census Bureau 2013

In addition to poverty data, the percentage of households that received Supplemental Nutrition Assistance Program (SNAP) benefits (i.e., food stamps) in the 12 months prior to completing the survey was collected for Los Angeles County (7.8%), the City of Los Angeles (8.3%), and the local study area (2.4%). Within the local study area, outliers included CTs 2753.11 (11.1%), 2755 (16.8%), and 2774 (16.7%). CTs 2755 and 2774 previously were identified as having both a minority population and a percentage of people with incomes below the poverty line that are meaningfully greater than the local study area; CT 2753.11 in Del Rey is included as an additional community of concern for the environmental justice analysis[126] (see Appendix I for detailed information).

Indian Tribes

As described in Section 3.5.2.4, *Ethnographic Setting*, the Project site is located in a region traditionally occupied by the Native American group known as the Gabrielino-Tongva. Native Americans living in the region, whether or not they are part of an identified minority or low-income community, represent a community that may be at risk for environmental justice impacts related to physical impacts on cultural resources.

Children

In accordance with E.O. 13045, this analysis addresses the protection of children from environmental health risks. As E.O. 13045 notes,

> A growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health risks and safety risks. These risks arise

[126] These numbered tracts do not have individual neighborhood names. They are within neighborhoods, but don't make up an entire neighborhood. Neighborhood affiliations are provided in Table 3.14-6, *Poverty in the Local Study Area*.

> because: children's neurological, immunological, digestive, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weight than adults; children's size and weight may diminish their protection from standard safety features; and children's behavior patterns may make them more susceptible to accidents because they are less able to protect themselves (§1-101).

According to the 2009-2013 ACS, children make up approximately 24% of the population in Los Angeles County and 22.6% of the population in the City of Los Angeles (U.S. Census Bureau 2013). The local study area had a lower percentage of children, at approximately 16.8%. Among the 35 census tracts in the local study area with a greater percentage of children than the local study area as a whole, 11 census tracts were among those identified above as meaningfully greater minority and/or low-income populations. Census Tracts (CTs) 2751.02, 2752, and 2755 in the Del Rey Neighborhood had a greater percentage than the County as a whole; between 24.1 and 26.5%. CTs 2721 in Mar Vista and 7027 in Culver City had 25.9 and 25.6%, respectively; neither of these census tracts was previously identified as being a minority or low-income population.

Similarly, the percentage of young children (i.e., those below age 5) in the local study area (6.0%) is lower than both Los Angeles County (6.5%) and the City of Los Angeles (6.6%). Most census tracts in the local study area were below or near the average of 6.0%, though several had greater than 10%: 2756.02 (Playa Vista), 2754 (Del Rey), and 2716 and 2721 (Mar Vista). Of these, none were identified as meaningfully greater minority or low-income populations above.

3.14.3 Applicable Laws, Regulations, Plans, and Standards

3.14.3.1 Federal

Civil Rights Act

Title VI of the Civil Rights Act of 1964 (42 U.S.C. §2000d et seq.) prohibits discrimination on the basis of race, color, or national origin in all programs or activities receiving Federal financial assistance.

National Environmental Policy Act of 1969

NEPA and associated CEQ guidelines require that federal agencies consider the effects of their regulations, policies, and programs on the environment; and avoid, minimize, or mitigate environmental impacts to the extent practicable. (42 U.S.C. §4321; 40 C.F.R. §1500.2). This includes the need to review social and economic impacts. (40 C.F.R. §§1508.8, 1508.14.)

Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

E.O. 12898 (59 FR 7629; Feb. 16, 1994) focuses Federal attention on the environment and human health conditions of minority and low-income communities and calls on agencies to achieve environmental justice as part of its mission. The order requires the USEPA and all other Federal agencies (as well as state agencies receiving Federal funds) to develop strategies to address this issue as part of the NEPA process. The agencies are required to identify and address, as appropriate, any disproportionately high and adverse human health or environmental impacts of their programs, policies, and activities on minority and low-income populations. The order makes clear that its provisions apply fully to programs involving Native Americans.

Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks

E.O. 13045 (62 FR 19885; Apr. 23, 1997) acknowledges that children may suffer disproportionately from environmental health risks and safety risks, and stipulates that to the extent permitted by law and consistent with the agency's mission, each Federal agency shall prioritize the identification and assessment of environmental health risks and safety risks that may disproportionately affect children; and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

Council on Environmental Quality Environmental Justice Guidance

The CEQ has oversight responsibility for the Federal government's compliance with E.O. 12898 and NEPA. The CEQ, in consultation with the USEPA and other agencies, has developed guidance to assist Federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed. According to the CEQ's Environmental Justice Guidance Under the National Environmental Policy Act, agencies should consider the composition of the affected area to determine whether minority populations or low-income populations are present in the area affected by the proposed action, and if so whether there may be disproportionately high and adverse human health or environmental impacts (CEQ 1997).

3.14.3.2 State

CEQA Guidelines Section 15131

Per CEQA guidelines Section 15131, "Economic or social information may be included in an EIR or may be presented in whatever form the agency desires." The section continues:

(a) Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes.

(b) Economic or social effects of a project may be used to determine the significance of physical changes caused by the project. For example, if the construction of a new freeway or rail line divides an existing community, the construction would be the physical change, but the social effect on the community would be the basis for determining that the effect would be significant. As an additional example, if the construction of a road and the resulting increase in noise in an area disturbed existing religious practices in the area, the disturbance of the religious practices could be used to determine that the construction and use of the road and the resulting noise would be significant effects on the environment. The religious practices would need to be analyzed only to the extent to show that the increase in traffic and noise would conflict with the religious practices. Where an EIR uses economic or social effects to determine that a physical change is significant, the EIR shall explain the reason for determining that the effect is significant.

(c) Economic, social, and particularly housing factors shall be considered by public agencies together with technological and environmental factors in deciding whether changes in a project are feasible to reduce or avoid the significant effects on the environment identified in the EIR. If information on these factors is not contained in the EIR, the information must be added to the record in some other manner to allow the agency to consider the factors in reaching a decision on the project.

As described in Section 3.14.1, above, the analysis presented in this section and throughout Chapter 3 satisfies the requirements to consider social, economic, and environmental justice impacts under CEQA.

3.14.3.3 Local

There are no local regulations or policies related to socioeconomics or environmental justice that apply to the Project.

3.14.4 Threshold of Significance

3.14.4.1 Socioeconomics

For purposes of this analysis, the Corps has determined that Alternative 1, 2, 3, or 4 would have a significant impact related to socioeconomics under NEPA if it would:

SE-1 Result in adverse employment-related or economic effects, including effects on the availability or affordability of housing;

SE-2 Result in substantial social change affecting people or communities;

SE-3 Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or

SE-4 Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

For a discussion of why all of the alternatives would have no impact relative to SE-3 and SE-4, see Section 3.1.3.4, Population and Housing. Briefly, none of the alternatives would displace existing housing or substantial numbers of people, necessitating the construction of replacement housing elsewhere because there is no existing housing or other residential use within the Project site. Therefore, none of the alternatives would result in a need to construct replacement housing elsewhere. Because no impact would result from any of the alternatives related to the displacement of substantial numbers of housing units or people, none of the alternatives could cause or contribute to any potential cumulative impact related to these issues, and these impact significance criteria are not considered further in this analysis.

3.14.4.2 Environmental Justice

For purposes of this analysis, the Corps has determined that Alternative 1, 2, 3 or 4 would have a significant impact related to environmental justice under NEPA if it would:

EJ-1 Result in disproportionately high and adverse environmental effects on a minority or low-income population.

3.14.5 Methodology

3.14.5.1 Socioeconomics

The CEQ's regulations for implementing the procedural provisions of the NEPA (40 CFR Parts 1500-1508; reprinted in CEQ 2005) provide standards for addressing social and economic impacts in preparing an environmental impact statement. Section 1508.14 of these regulations states: "'Human environment' shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment."

In Section 1508.8(b), the CEQ regulations state that indirect impacts of an action "may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems."

Consistent with these regulations, this analysis of socioeconomic impacts will examine potential impacts with respect to employment, housing availability, local economic conditions, and the potential for growth inducement.

3.14.5.2 Environmental Justice

The USEPA guidance states that the analysis of environmental justice should determine if the affected area of minority population and/or low-income population is subject to "disproportionately high and adverse human health or environmental effects" from the Project. The guidance suggests that a comparative analysis be performed on potential Project impacts to the affected population and a reference population to determine the type of high and adverse impacts and the extent of disproportionality (USEPA 1998).

Additionally, consistent with E.O. 12898 and in response to scoping comments requesting consultation with the Native American Heritage Commission and the Tongva, as described in Section 3.5, *Cultural Resources*, this analysis examines the potential impacts on Indian tribes that could result from the direct or indirect impacts on human graves and on cultural, historical, and religious resources. Native Americans living in the region, whether or not they are part of an identified minority or low-income community, represent a community that may be at risk for environmental justice impacts related to physical impacts on cultural resources.

The findings and analysis contained in the following sections of this EIS/EIR have been reviewed as part of this analysis of environmental justice issues: Section 3.2, *Aesthetics*; Section 3.3, *Air Quality*; Section 3.4, *Biological Resources*; Section 3.5, *Cultural Resources*; Section 3.6, *Geology, Soils, and Seismicity*; Section 3.7, *Greenhouse Gas Emissions*; Section 3.8, *Hazards and Hazardous Materials*; Section 3.9, *Hydrology and Water Quality*; Section 3.10, *Noise*; Section 3.11, *Recreation*; Section 3.12, *Transportation/Traffic;* and Section 3.13, *Utilities and Service Systems*. In reviewing each of these sections, this environmental justice analysis considers potential impacts and mitigation measures and whether a "disproportionately high and adverse" (CEQ 1997) impact would result for the minority or low-income communities identified in Tables 3.14-5 and 3.14-6.

Consistent with E.O. 13045, the analysis also considers the potential for disproportionate environmental health or safety risks for children, which are defined as "risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to)." Accordingly, the analyses below identify potential impacts on these resources that could adversely affect children.

3.14.6 Direct and Indirect Impacts

3.14.6.1 Alternative 1: Full Tidal Restoration/Proposed Action

Socioeconomics

1-SE-1: Alternative 1 would not result in significant adverse employment-related or economic impacts, including on the availability or affordability of housing. (Less than Significant Impact)

Direct Impacts

A peak of approximately 120 temporary jobs would be created during the implementation of Alternative 1. As shown in Table 3.14-3, there are over 250,000 construction workers in Los Angeles County. With unemployment rates between approximately 4% and 8%, several thousand construction industry workers would be available, and it is expected that restoration-phase jobs would be filled from the local and/or regional (County) labor force, and would not result in adverse effects on the employment rate or the availability of construction industry workers. Because workers would be drawn from areas close to the Project site, they would likely commute daily to the site and would not use local housing resources. No direct impact on the availability or affordability of housing would occur during the restoration phase.

Indirect Impacts

Short-term restoration-phase employment of construction workers would result in a minor positive economic and employment beneficial effect in the communities in which workers reside and/or make purchases. This minor indirect beneficial effect of Alternative 1-related restoration and construction employment and income would not be substantial enough to have secondary or long-term effects on the local economies. Furthermore, though the wages paid to workers would be subject to income taxes, and their purchases subject to sales taxes as applicable, due to the generally temporary nature of the proposed work, these tax revenues would not represent an increase over baseline conditions.

In the event that any workers move temporarily or permanently to be closer to the Project site during restoration, the available housing resources described in Section 3.14.2.1 are adequate to accommodate the needed workers without causing a noticeable increase in demand for housing. No indirect impact on the availability or affordability of housing would occur during the restoration phase.

Although the cost of materials and equipment needed for the proposed restoration and construction is not yet known, Project-related spending in the local and regional study areas would result in beneficial direct and indirect economic effects, including direct revenues to local suppliers, contractors; and providers of services and induced revenues to the retail and services sectors that receive the household expenditures of the directly and indirectly affected businesses.

Following restoration, no new long-term employment opportunities would be created, and no new infrastructure would be created that could serve new or more dense development. Therefore, no growth inducing impacts would occur. Minor beneficial economic effects for businesses in the communities surrounding the Project site may occur as a result of increased visitor use after the completion of restoration. No impact on housing availability would occur as a result of operation of Alternative 1.

1-SE-2: Alternative 1 would not result in substantial social change affecting people or communities. (Less than Significant Impact)

Direct Impacts

Beginning with restoration activities and following completion of restoration, Alternative 1-related changes in topography, vegetation, and site management within the Ballona Reserve could result in long-term impacts associated with transient encampment relocation. The permanent displacement of the up to 10 homeless people estimated to be living in encampments in the Ballona Reserve at any given time, despite ongoing efforts to relocate them, may result in adverse impacts on the displaced people. Some previous attempts by CDFW to relocate transient encampments have included the assistance of professional and volunteer homeless advocates as a means to connect displaced people with resources such as temporary housing. However, displacement could result in adverse health and safety impacts on people who move from the Ballona Reserve to a potentially less safe location. As described above, these relocation efforts are wholly independent from Alternative 1. However, because the changes in topography, vegetation, and site management that would occur under implementation of Alternative 1 would make reestablishment of such encampments less likely, the long-term impacts of relocation may be attributable to Alternative 1. To minimize the potential for these impacts, CDFW has committed to contact the Los Angeles Homeless Services Authority (LAHSA) to provide an opportunity to partner with CDFW during relocation efforts. CDFW would notify LAHSA of planned dates and times for removal of homeless encampments throughout the restoration phase and would allow LAHSA representatives permission to access the Project area, accompanied by CDFW staff, for the purposes of outreach to people being removed from the Project site.

Indirect Impacts

The permanent displacement of homeless people living in encampments in the Ballona Reserve may result in indirect adverse impacts on the communities to which they would relocate. Additionally, if those displaced through these efforts relocated to places such as parks, residents of those communities may experience adverse impacts as a result of deterioration of park facilities, increased litter and theft (such as that experienced near the Ballona Reserve), and other impacts on community character. Many such impacts would not be new, but would be moved from the Ballona Reserve to other locations. As described above, CDFW would minimize the potential for these impacts by providing an opportunity for LAHSA to partner with CDFW during relocation efforts.

Environmental Justice

1-EJ-1: Alternative 1 could, unless mitigated, result in disproportionately high and adverse environmental impacts on a minority or low-income population, i.e., Native American groups, associated with restoration-related impacts on cultural resources. (Less than Significant with Mitigation Incorporated)

The potential for human health and environmental impacts associated with Alternative 1 to result in disproportionately high and adverse impacts on environmental justice communities or to create disproportionate health of safety risks for children is described below. Because the environmental justice impacts described below would be the consequences of the direct and indirect impacts on the environment described throughout Chapter 3, all environmental justice impacts are considered indirect impacts of Alternative 1.

Aesthetics

As described in Section 3.2, *Aesthetics*, views of the Ballona Reserve generally are limited to those areas within 0.5 mile of the site. Of the minority and low-income communities identified in Section 3.14.2.2, those encompassed by CTs 2753.11 in Del Rey and 2766.04 in Playa del Rey are the nearest communities of concern for environmental justice to the Ballona Reserve. While a portion of CT 2766.04 is within 0.5 mile of the site, no views of the Ballona Reserve are available from this neighborhood due to intervening topography and development. Similarly, the Ballona Reserve is not visible from locations within CT 2753.11. No adverse impacts on the residents of these census tracts would occur as a result of changes in the aesthetics of the Project site during or following restoration.

Additionally, although some temporary construction lighting is proposed for evening work during restoration, the distance and topography between active work sites and the nearest minority and low-income communities substantially reduces the potential for such lighting to be visible from these areas. Residents in these communities would not have the potential to experience substantial light and glare during the evening as described in Impact 1-AE-4 in Section 3.2, Aesthetics, because such potential impacts would occur only in areas with direct views of the site, which do not include the identified minority or low-income communities. Therefore, no adverse impacts on the residents of these communities would occur. Furthermore, with implementation of Mitigation Measure AE-1 in Section 3.2, which would require that temporary lighting be shielded and oriented away from residential areas, nighttime lighting impacts on the nearest minority and low-income communities would be further reduced to a negligible level; however, this mitigation is not necessary to avoid or minimize a disproportionately high and adverse environmental justice impact.

Following restoration, nighttime lighting for the parking structure and West Culver Parking Lot would be minimal and, for the same reasons of distance and topography, not visible from these communities. Overall, aesthetic impacts would not be disproportionately high and adverse for environmental justice communities.

Air Quality

As described in Section 3.3, *Air Quality*, diesel PM and other pollutants generated from restoration and construction activities would be limited to the active work period and would occur at the various construction locations throughout the Ballona Reserve; therefore, restoration- and construction-related emissions would be short-term and would not be concentrated near nearby sensitive receptors. Given the limited duration of exposure and the spatial distribution of emissions, it was determined that there would be little health risk to the nearby residences from exposure to construction-related diesel PM and other emissions. Furthermore, the communities closest to the Project site that would experience the greatest concentrations of construction emissions are not among those identified as environmental justice communities (the nearest, CT 2753.11, is approximately 1,000 feet from the nearest portion of the Project site). Post-restoration activities would not create new substantial sources of diesel PM or other emissions. Therefore, impacts related to air quality would not be disproportionately high and adverse for environmental justice communities.

Additionally, as described in Section 3.3, Alternative 1 would not result in traffic conditions that would generate CO hotspots during or following restoration. Therefore, Alternative 1 would not cause disproportionately high and adverse impacts related to CO concentrations for environmental justice communities.

As described in E.O. 13045, children may suffer disproportionately from environmental health risks from air pollutants because they breathe more air in proportion to their body weight than adults, and their bodies are still developing. As shown in Table 3.3-1, the average ambient air quality as measured at the nearest monitoring station is within state and national standards, with the exception of ozone, for which several exceedances of both state and national standards were recorded in 2014. Although any air pollutant emissions with potential adverse health impacts may adversely affect children, based on ambient air quality, the greatest impact from the Project would be from emissions of ozone precursors during restoration and construction activities. These emissions may contribute to adverse health impacts on children, including increased risk of asthma and other respiratory illnesses to which children are particularly susceptible. As described in Section 3.3, Alternative 1 would not result in emissions that would exceed the annual General Conformity applicability rate or SCAQMD's public health-protective thresholds. Therefore, Alternative 1 would not result in a disproportionately high and adverse environmental justice impact related to children's health.

As described above, the communities of concern for the environmental justice analysis are located farther from the Project site than other non-minority and low-income communities. Odors from equipment exhaust would be localized and generally confined to the immediate area surrounding the Project site, and as a result would affect only those communities near the site that are not minority or low-income communities. Therefore, Alternative 1 would not cause a disproportionately high and adverse environmental justice impact related to objectionable odors. Furthermore, implementation of Mitigation Measure AQ-5, Odor Management Plan, in Section 3.3 would minimize objectionable odors adjacent to the Project site; however, this mitigation is not necessary to avoid or minimize a disproportionately high and adverse environmental justice impact.

Biological Resources and Hydrology and Water Quality

This analysis considered the potential environmental justice impacts of physical impacts to biological resources on subsistence fishing at Ballona Creek. Although no information was found about subsistence fishing specific to Ballona Creek, fishing from the Ballona Creek Bridge and jetty is known to occur regularly (Friends of Ballona Wetlands 2015). A study of subsistence fishing in Los Angeles County noted that individuals engaged in subsistence fishing often are members of low-income and/or minority populations, and found that at four sites where angler surveys were conducted, 42% of respondents "identified sustenance intentions over a recreational pursuit in their pier fishing activities," despite a high "general awareness" among anglers of potential health risks associated with contamination (Pitchon and Norman 2012). As described in Section 3.9, *Hydrology and Water Qualit*y, the Project would not degrade water quality associated with increased soil erosion and inadvertent releases of toxic chemicals during general construction activities, and would not alter drainage patterns such that there is a resultant increase in erosion or deposition of contaminated sediment in Ballona Creek. Therefore, Alternative 1 would not cause a disproportionately high and adverse environmental justice impact related to the health effects of consuming fish with potential contamination risks.

Cultural Resources

As described in Section 3.5, *Cultural Resources*, there is potential for Alternative 1 to result in direct impacts on archaeological site CA-LAN-54, a prehistoric archaeological site with known human burials, and the prehistoric archaeological district to which this site is a contributor (the Ballona Lagoon Archaeological District or BLAD). Although CA-LAN-54 is currently under 3 to 10 feet of fill and would not be subject to further ground disturbance, there is the potential for inadvertent impacts to occur as a result of placing more fill on this site. Additionally, inadvertent impacts to previously unidentified cultural resources could occur. Such impacts could result in a disproportionate adverse impact on members of Native American groups traditionally and culturally affiliated with the Project site. Mitigation Measures CR-1 and CR-2 in Section 3.5, which outline requirements for archaeological and Native American monitoring, respectively, as well as protocols for resource assessment and treatment, would reduce the impact of Alternative 1 on any cultural resources that might be encountered during Alternative 1 implementation.

Specifically, CR-1 requires that the Cultural Resources Monitoring Plan (CRMP) be based in part on input from Native American representatives and provide measures for Native American monitoring and Native American coordination and input, and that the CRMP be a component of a Historical Properties Treatment Plan (HPTP), per Section 106 of the NHPA, should an HPTP be required. This measure requires that the CRMP/HPTP specify the duration and timing of monitoring within 100 feet of archaeological site CA-LAN-54 and other sensitive areas, and state that avoidance or preservation in place shall be the preferred means of mitigating impacts.

Mitigation Measure CR-2 requires the retention of a Native American monitor who is traditionally and culturally affiliated with the Project site to carry out the CRMP monitoring requirements. Thus, Mitigation Measures CR-1 and CR-2 would ensure the involvement of representatives of Native American groups traditionally and culturally affiliated with the Project site in the protection of burial and other sites.

Mitigation Measures

Mitigation Measure EJ-1: Implement Mitigation Measures CR-1 and CR-2.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1 and CR-2 would reduce this impact to less than significant.

Because potential impacts to these sites would be avoided or minimized with input and monitoring support from these Native American groups, no disproportionately high and adverse impact would occur as a result of the disturbance or loss of sites of importance to Native Americans.

Geology, Soils, and Seismicity

Section 3.6, *Geology, Soils, and Seismicity*, was reviewed to determine whether Alternative 1 would expose people or structures within the identified communities to a disproportionately high and adverse risk of loss, injury, or death, involving geologic and seismic safety hazards. As described in Section 3.6.6.1, *Alternative 1: Full Tidal Restoration/Proposed Action*, the relocation of natural gas storage wells to the SoCalGas Property would not involve a change to the existing use of the property and would therefore not result in an increased risk of loss, injury, or death. The Newport-Inglewood fault is located approximately 4.5 miles east of the Project site, and the extensive previous geotechnical investigations conducted at the Ballona Reserve and for the existing SoCalGas Company facility operations reduce the possibility of an undiscovered fault within the Project area. Based on the minimal risk associated with relocating natural gas infrastructure and the distance of most environmental justice communities from the SoCalGas Property, no disproportionately high and adverse impact would occur during or following restoration.

Greenhouse Gas Emissions and Climate Change

Section 3.7, *Greenhouse Gas Emissions*, was reviewed to determine whether Alternative 1 would result in GHG emissions contributing to climate change effects that could expose the identified communities to disproportionately high and adverse impacts. As described in Section 3.7, climate change effects are expected to occur based on observed trends in global GHG emissions. Alternative 1 GHG emissions would not have a substantial contribution to global GHG concentrations that cause climate change. However, localized effects of global climate change are addressed because they have the potential to disproportionately affect minority and low-income communities.

As described in Section 3.7 under the subheading “Potential Effects of Climate Change in California and in the Project Area,” predictions of climate change effects that are specific to the

Los Angeles area include increases in extreme heat conditions, decreased snow resulting in reduced water supplies, changes in storm events, changes in crop quality and yield, and rising sea levels. Increases in the frequency and duration of heat waves could disproportionately affect low-income communities that may lack access to or be unable to afford increases in the use of air conditioning, potentially resulting in health hazards from extreme heat. Similarly, decreased water availability may disproportionately affect low-income households due to the economic effects of drought-related water utility pricing, and changes in crop quality and yield could result in higher food prices that low-income households would be less able to afford. Changes in storm frequency, intensity, and duration, as well as sea level rise, could result in increased flooding in coastal and low-lying areas. However, none of the identified minority or low-income communities is located within the 100-year or 500-year flood zone, and so they are not likely to experience flooding even with changes in the frequency, intensity, and duration storm events. However, a map prepared for the *Sea Level Rise Vulnerability Report for the City of Los Angeles* suggests that a portion of CT 2736 could be subject to flooding under a 10-year storm event and a sea level rise of 1.4 meters, or approximately 55 inches, which is within the range of sea level rise possible by 2100 as discussed in Section 3.7.2 (University of Southern California Sea Grant Program 2013, Figure 3). Although other communities to the west and south of CT 2736 that do not have identified minority or low-income populations would experience similar or increased flooding because they are closer to the coast, CT 2736 may experience disproportionately high and adverse economic and social impacts of flooding compared to wealthier communities. Flooding could result in disruptions in transportation, repair costs, housing displacement, and other potential impacts that would disproportionately affect low-income households.

Hazards and Hazardous Materials

Section 3.8, *Hazards and Hazardous Materials*, was reviewed to determine whether Alternative 1 would create hazards that could expose the identified communities to a disproportionately high and adverse risk, or could result in health or safety hazards that could disproportionately affect children. The potential impacts related to contaminated soils or groundwater and to the potential for wildland fire at the Ballona Reserve would be site-specific and would not disproportionately affect off-site communities. Additionally, because the potential to emit hazardous emissions or release hazardous materials near a school or daycare facility is low, as described in Section 3.8, the potential health and safety impact on children from such emissions or releases would be low.

The relocation of natural gas storage wells to the SoCalGas Property would involve the transport, storage, use, and disposal of hazardous materials during restoration, but these activities would be governed by the Hazardous Materials Business Plan, Emergency Response Plan, and Stormwater Pollution Prevention Plan, reducing the risks due to the routine use or the accidental release of hazardous materials. Risks generally would be site-specific and limited to the area of use of hazardous material, but also could occur along haul routes. I-405, a major route through the region, and several of the major arterials connecting the Ballona Reserve to I-405 traverse or are adjacent to several environmental justice communities as well as neighborhoods with higher concentrations of children. If an accidental release were to occur along one of these haul routes, the potential for health or safety hazards may be disproportionately high and adverse in these communities. However, implementation of the plans described above would prevent or immediately address the risks associated with a release, and would be compliant with laws intended to protect the health and safety of workers and the public. No mitigation to further reduce these risks is necessary, and impacts related to the transport of hazardous materials would not be disproportionately high and adverse for environmental justice communities.

The potential temporary road and lane closures described in Section 3.8 are addressed below under Transportation/Traffic.

Noise

The communities closest to the Ballona Reserve that would experience the greatest levels of construction noise are not among those identified as environmental justice communities (the nearest community of concern, CT 2753.11, is approximately 1,000 feet from the nearest portion of the Project site). As shown in Table 3.10-14 in Section 3.10, *Noise*, the greatest level of noise generated during restoration would be 91.8 dBA at 50 feet. At 1,000 feet or more, based on an attenuation rate of 7.5 dBA per doubling of distance, any construction-related noise would attenuate to levels near ambient noise and below applicable thresholds before reaching sensitive receptors in the identified environmental justice communities. Therefore, impacts related to noise would not be disproportionately high and adverse for environmental justice communities.

Recreation

As described in Section 3.11, *Recreation*, restoration-related grading and other activities would take place in South Area C where the baseball fields are located; however, these activities would be limited to the eastern portion of South Area C and, thus, the baseball fields may not be directly impacted. If closure of these fields is required during restoration activities, CDFW would notify the Culver-Marina Little League in advance of such closure. It is likely that this recreational use would be able to continue during the restoration phase under Alternative 1, but is not guaranteed.

While the Area A Perimeter levee and Culver Boulevard levee are under construction, the existing Ballona Creek Bike Path would remain open to the public. Once these levees and the new bike paths have been completed, they would open to the public and the existing bike path would be closed. Thus, access could be maintained and there would be only limited interruption in the availability of the bike path. The Ballona Creek flood channel would remain available for recreational uses throughout construction. Once Alternative 1 is operational, it would provide a network of bike and pedestrian paths and public access to portions of the Project site that are inaccessible under baseline conditions. This would be a beneficial effect to the public following restoration.

Because implementation of Alternative 1 would result in minimal interference with existing recreational uses, it would not displace users in a manner that would substantially reduce the service quality of existing parks and recreational facilities in the project area. Accordingly, no disproportionately high and adverse impacts on environmental justice communities would occur.

Transportation/Traffic

The potential temporary road and lane closures during restoration described in Section 3.12, *Transportation/Traffic*, would have no impact on emergency response times via Lincoln Boulevard, a designated emergency route, because emergency vehicle access would remain available at all times in all scenarios. Regarding other temporary road and lane closures described in Section 3.12, *Transportation and Traffic*, Alternative 1 could adversely affect emergency response times if emergency service vehicles are detoured and/or experience traffic congestion during a response. The identified environmental justice communities are served by police and fire stations that, due to their locations, are unlikely to rely on the potentially closed routes to respond to emergencies. Therefore, no disproportionately high and adverse impacts on environmental justice communities would occur as a result of inadequate emergency access. Additionally, route closures would be short-term, and implementation of the Traffic Control and Safety Assurance Plan in Mitigation Measure TRANS-1 in Section 3.12 would provide advance notification to local police, fire, and emergency service providers of the timing, location, and duration of construction activities that could affect the movement of emergency vehicles on area roadways, allowing emergency responders to choose alternate routes as needed; however, this mitigation is not necessary to avoid or minimize a disproportionately high and adverse environmental justice impact.

Utilities and Service Systems

As described in Section 3.13, *Utilities and Service Systems*, Alternative 1 would not result in adverse impacts with respect to water supply, wastewater treatment, or solid waste disposal. Therefore, this alternative would not result in disproportionately high and adverse impacts on environmental justice communities.

TABLE 3.14-7
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
SE-1: Result in adverse employment-related or economic effects, including effects on the availability or affordability of housing? See Impact 1-SE-1.	☐	☐	☒	☐
SE-2: Result in substantial social change affecting people or communities? See Impact 1-SE-2.	☐	☐	☒	☐
EJ-1: Result in disproportionately high and adverse environmental effects on a minority or low-income population? See Impact 1-EJ-1.	☐	☒	☐	☐

3.14.6.2 Alternative 2: Restored Partial Sinuous Creek

Socioeconomics

2-SE-1: Alternative 2 could result in adverse employment-related or economic effects, including effects on the availability or affordability of housing. (Less than Significant Impact)

Like Alternative 1, during restoration Alternative 2 would employ a small number of locally available workers and would result in local spending on materials and equipment, resulting in minor, short-term beneficial direct and indirect economic and employment effects, and no direct or indirect impact on the availability or affordability of housing.

2-SE-2: Alternative 2 could result in substantial social change affecting people or communities. (Less than Significant Impact)

The potential direct and indirect impacts of permanently displacing transient encampments within the Ballona Reserve during and following restoration would be as described for Alternative 1.

Environmental Justice

2-EJ-1a: Alternative 2 could result in disproportionately high and adverse environmental impacts on a minority or low-income populations, i.e., Native American groups associated with restoration-related impacts on cultural resources. (Less than Significant with Mitigation Incorporated)

Under Alternative 2, the potential impacts to aesthetics; air quality; cultural resources; biological resources and water quality; geology, soils, and seismicity; greenhouse gas emissions and climate change; hazards and hazardous materials; noise; transportation and traffic; and utilities and service systems that could result in disproportionately high and adverse impacts on environmental justice communities would be similar to the impacts of Alternative 1, and therefore would have similar environmental justice impacts.

As shown in Tables 3.3-16 and 3.3-18, Alternative 2 would result in lower restoration-phase air and GHG emissions than Alternative 1 because no restoration-related emissions would occur in 2023. Because the restoration phase would be shorter for Alternative 2 than for Alternative 1, restoration-related impacts of Alternative 2 to transportation and traffic also would be reduced relative to Alternative1.

Specifically regarding cultural resources, there is potential for Alternative 2 to result in impacts on archaeological site CA-LAN-54 as a result of placing additional fill on this site. Inadvertent impacts to previously unidentified cultural resources also could occur. Such impacts could result in a disproportionately high and adverse impact on members of Native American groups traditionally and culturally affiliated with the project site. Mitigation Measures CR-1 and CR-2 in Section 3.5, which outline requirements for archaeological and Native American monitoring, respectively, as well as protocols for resource assessment and treatment, would reduce the impact on any cultural resources that might be encountered during the implementation of Alternative 2.

Mitigation Measures

Mitigation Measure 2-EJ-1a: Implement Mitigation Measures CR-1 and CR-2.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1 and CR-2 would reduce this impact to less than significant.

Because potential impacts to these sites would be avoided or minimized with input and monitoring support from these Native American groups, Alternative 2 would result in no disproportionately high and adverse impact associates with the disturbance or loss of sites of importance to Native Americans.

2-EJ-1b: Alternative 2 could result in disproportionately high and adverse environmental impacts on minority or low-income populations associated with access to organized recreational activities if use of the ballfields in South Area C is discontinued. (Potentially Significant Impact)

The impacts of Alternative 2 on the Ballona Creek bike path and Ballona Creek channel would be the same as described for Alternative 1. However, under Alternative 2, restoration-related grading and related activities would require the closure of the baseball fields in South Area C. Closure of the baseball fields would cause the relocation of Culver Marina Little League games to other existing facilities in the region, including fields provided by the Culver City Little League (Bill Botts Field), the Del Rey American Little League (American Field and Del Rey Field), and the North Venice Little League. Reconstruction of the baseball fields would depend on the availability of external funding and other factors. If the factors are not satisfied, then the baseball fields would not be reconstructed within the Ballona Reserve and the relocation of games would be permanent. The Culver Marina Little League serves the communities of Marina Del Rey, Mar Vista, Playa Vista, Del Rey, and sections of Los Angeles and Culver City with league boundaries defined by Jefferson Boulevard and Ballona Creek to the south, the 405 freeway to the east, Washington Boulevard and Washington Place to the north, and the Pacific Ocean to the west (Culver Marina Little League 2014). As described above in Section 3.14.2.2, several census tracts in the Del Rey area of the league's boundaries are identified as minority and/or low-income populations for the environmental justice evaluation.

Table 3.14-8 shows estimated minimum afternoon travel times with less than 1 mile of walking from CT 2755 in Del Rey, a representative minority and low-income census tract within the Culver Marina Little League boundaries, to the Culver Marina baseball fields and to other fields that may be used as an alternative location if Alternative 2 results in the closure of the Culver Marina baseball fields.

TABLE 3.14-8
ESTIMATED AFTERNOON TRAVEL TIMES FROM DEL REY TO LITTLE LEAGUE FIELDS BY MODE

Mode	Culver Marina Field (13120 Culver Blvd.)	Bill Botts Field (Duquesne Ave.)	American Field (6705 W. 77th St.)	Del Rey Field (100 Convoy St.)	North Venice Little League (3321 Grand View Blvd.)
Car	3 minutes	8 minutes	9 minutes	7 minutes	7 minutes
Bus	9 minutes (including 0.3 mile walk)	51 minutes (including 0.9 mile walk)	51 minutes (including 0.8 mile walk)	39 minutes (minimal walking)	28 minutes (including 0.3 mile walk)

SOURCE: Google 2016

As indicated in the table above, if Culver Marina Little League games were relocated to other little league fields in the area, driving times to alternative fields would be longer by several minutes than to the Culver Marina Little League field, but due to the overall short distance and travel time, this change would not result in an adverse effect on baseball field access for people traveling by car. However, for people traveling by bus, the travel time would increase substantially and, for some fields, would require walking a much greater distance compared to bus access to the Culver Marina Little League field. According to the 2010-2014 American Community Survey, in CT 2755, 10% of households with 2 or more people reported having no vehicle available (U.S. Census Bureau 2014). Based on the information available for this representative census tract within the minority and low-income neighborhoods identified in Section 3.14.2.2, it is reasonable to expect that some participants that currently use or would use the Culver Marina Little League field for recreation would experience a disproportionately high and adverse impact related to access to organized recreational activities as a result of Alternative 2.

TABLE 3.14-9
ALTERNATIVE 2 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
2-SE-1: Result in adverse employment-related or economic effects, including effects on the availability or affordability of housing? See Impact 2-SE-1.	☐	☐	☒	☐
2-SE-2: Result in substantial social change affecting people or communities? See Impact 2-SE-2.	☐	☐	☒	☐
2-EJ-1a: Result in disproportionately high and adverse environmental effects on a minority or low-income population? See Impact 2-EJ-1a relating to Native American groups and restoration-related impacts on cultural resources.	☐	☒	☐	☐
2-EJ-1b: Result in disproportionately high and adverse environmental effects on a minority or low-income population? See Impact 2-EJ-1b relating to access to organized recreational activities.	☒	☐	☐	☐

3.14.6.3 Alternative 3: Levee Culverts and Oxbow

Socioeconomics

3-SE-1: Alternative 3 could result in adverse employment-related or economic effects, including effects on the availability or affordability of housing. (Less than Significant Impact)

Like Alternative 1, Alternative 3 would employ a small number of locally available workers and would result in local spending on materials and equipment, resulting in a minor, short-term beneficial economic and employment effect, and no impact on the availability or affordability of housing.

3-SE-2: Alternative 3 could result in substantial social change affecting people or communities. (Less than Significant Impact)

The potential impacts of permanently displacing transient encampments within the Ballona Reserve would be as described for Alternative 1.

Environmental Justice

3-EJ-1: Alternative 3 could result in disproportionately high and adverse environmental effects on a minority or low-income population, i.e., Native American groups associated with restoration-related impacts on cultural resources. (Less than Significant with Mitigation Incorporated)

Under Alternative 3, the potential impacts to aesthetics; air quality; cultural resources; biological resources and water quality; geology, soils, and seismicity; greenhouse gas emissions and climate change; hazards and hazardous materials; noise; recreation; transportation and traffic; and utilities and service systems that could result in disproportionately high and adverse impacts on environmental justice communities would be similar to the impacts of Alternative 1, and therefore would have similar environmental justice impacts.

Alternative 3 could result in impacts on archaeological site CA-LAN-54 as a result of placing additional fill on this site. Inadvertent impacts to previously unidentified cultural resources also could occur. Such impacts could result in a disproportionately high and adverse impact on members of Native American groups traditionally and culturally affiliated with the project site. Mitigation Measures CR-1 and CR-2 in Section 3.5, which outline requirements for archaeological and Native American monitoring, respectively, as well as protocols for resource assessment and treatment, would reduce the impact on any cultural resources that might be encountered during the implementation of Alternative 3.

Mitigation Measures

Mitigation Measure 3-EJ-1: Implement Mitigation Measures CR-1 and CR-2.

Level of Significance after Mitigation

Implementation of Mitigation Measures CR-1 and CR-2 would reduce this impact to less than significant.

Because potential impacts to these sites would be avoided or minimized with input and monitoring support from these Native American groups, Alternative 3 would result in no disproportionately high and adverse impact associates with the disturbance or loss of sites of importance to Native Americans.

TABLE 3.14-10
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
3-SE-1: Result in adverse employment-related or economic effects, including effects on the availability or affordability of housing? See Impact 3-SE-1.	☐	☐	☒	☐
3-SE-2: Result in substantial social change affecting people or communities? See Impact 3-SE-2.	☐	☐	☒	☐
3-EJ-1: Result in disproportionately high and adverse environmental effects on a minority or low-income population? See Impact 3-EJ-1.	☐	☒	☐	☐

3.14.6.4 Alternative 4: No Federal Action/No Project

No impacts to socioeconomics or environmental justice would occur under this alternative because the proposed ecosystem restoration, flood risk and stormwater management, public access and visitor amenities, and other aspects of the Project would not occur. Furthermore, no economic or employment beneficial effects would occur. As described in Chapter 2, under Alternative 4, CDFW would continue to remove trash and debris, remove transient encampments, and monitor and enforce other unauthorized or illegal activities. The potential impacts of removing transient encampments within the Ballona Reserve would be similar to those described for Alternative 1, but because the proposed changes in topography, vegetation, and site management would not occur, such encampments may continue to occur in the Ballona Reserve.

3.14.7 Cumulative Impacts

3.14.7.1 Socioeconomics

As described above, the various restoration alternatives (Alternatives 1, 2, and 3) would result in minor, short-term, beneficial employment and economic effects during the restoration phase. None of these benefits would accrue from Alternative 4. As described under criterion SE-1, no adverse employment, housing, or economic impacts would occur as a result of any of the Alternatives that could contribute to adverse cumulative impacts, and these are not discussed further.

As described under criterion SE-2, the permanent displacement of transient people from the Ballona Reserve that would begin with the start of restoration and continue indefinitely under Alternatives 1, 2, and 3 could contribute to existing adverse conditions within Los Angeles related to the large homeless population throughout the region. Because the places to which displaced people would move cannot be known, the geographic scope of the cumulative impact to which the Project could contribute is difficult to define. Displaced people may move to nearby Venice, a local shelter, or other locations. This analysis assumes that displaced people would remain within Los Angeles County. The County has an estimated homeless population of over

44,000, an increase of 12% over the 2013 estimate (LAHSA 2015). Approximately 65% of the total homeless population in the County is unsheltered, like those living in encampments in the Ballona Reserve (LAHSA 2015). None of the projects identified in Table 3.1-1 are known to have the potential to displace homeless people or to otherwise directly exacerbate impacts associated with homelessness. Because Alternative 4 would result in no change relative to baseline conditions regarding transient encampments, Alternative 4 would not cause or contribute to any cumulative impact in this regard.

3.14.7.2 Environmental Justice

As described under criterion EJ-1, no disproportionately high and adverse impacts on environmental justice communities would occur as a result of the various restoration alternatives' impacts on aesthetics; air quality; biological resources and water quality; geology, soils, and seismicity; hazards and hazardous materials; noise; transportation and traffic; or utilities and service systems, and such environmental justice impacts are not discussed further. The impacts related to climate change would result from global GHG concentration, and are thus inherently cumulative impacts; no further discussion of the cumulative impact of climate change resulting from localized GHG emissions is warranted.

As described under criterion EJ-1, Mitigation Measures CR-1 and CR-2 are recommended to minimize impacts on cultural resources that may result in disproportionate adverse impacts on members of Native American groups traditionally and culturally affiliated with the project site. As described in Section 3.5.7, none of the projects identified in Table 3.1-1 has the potential to impact known cultural resources, previously unidentified resources, or undiscovered human remains in the same geographic area as the restoration alternatives. Therefore, none of these projects would result in impacts that could combine with the impacts of Alternative 1, 2, or 3 to result in a disproportionately high and adverse cumulative impact with respect to cultural resources.

The geographic scope for potential cumulative impacts related to the disproportionately high and adverse impacts from the potential permanent closure of the Culver Marina Little League baseball fields includes the environmental justice communities located in Del Rey. As described in Section 3.14.5.2, some participants that currently use or would use the Culver Marina Little League baseball field for recreation could experience a disproportionately high and adverse impact related to access to little league facilities by public transportation. This impact is relevant to Alternative 2. Although Alternative 2 may result in a disproportionately high and adverse impact on recreation access, no other projects identified in Table 3.1-1 would directly affect little league facilities or directly or indirectly affect access to these facilities from Del Rey. Therefore, no cumulative effect beyond the Project-level effect is reasonably foreseeable.

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CHAPTER 4
Other Considerations

Public Resources Code Section 21100 requires an environmental impact report (EIR) to identify five things: (i) all significant effects on the environment of the Project; (ii) any significant unavoidable or significant irreversible effect on the environment; (iii) mitigation measures proposed to minimize significant effects on the environment; (iv) alternatives to the proposed project; and (v) growth-inducing impact of the proposed project. Council on Environmental Quality (CEQ) regulations (40 C.F.R. §1502.16) require environmental impact assessments to identify any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented. Potential significant environmental effects of the Project are identified by resource throughout Chapter 3, *Environmental Consequences*. See also Executive Summary Table ES-1, *Summary Impacts and Mitigation Measures for Alternative 1* (p. ES-18), which summarizes potential impacts and their significance prior to any mitigation, recommends mitigation measures that could, if implemented, reduce or avoid potential significant effects, and then summarizes the significance of the impact following the implementation of recommended mitigation measures. Alternatives 1, 2, 3, and 4 are described in Chapter 2, *Description of Alternatives*, and their potential effects are described and analyzed in Chapter 3, *Environmental Consequences*.

This Chapter 4 describes significant irreversible adverse impacts on the environment in Section 4.1 and growth-inducing impacts in Section 4.2. It analyzes potential adverse impacts related to Energy Conservation in Section 4.3.

4.1 Significant Irreversible Impacts

In accordance with Section 21100(b)(2)(B) of CEQA and Section 15126.2(c) of the CEQA Guidelines, an EIR must identify any significant irreversible environmental changes that could result from implementation of a project. This may include current or future uses of non-renewable resources, and secondary or growth-inducing impacts that commit future generations to similar uses. The irreversible and irretrievable commitment of resources is the permanent loss of resources for future or alternative purposes. Irreversible and irretrievable resources are those that cannot be recovered or recycled, or those that are consumed or reduced to unrecoverable forms. According to the CEQA Guidelines, irretrievable commitments of resources are evaluated to ensure that such current consumption is justified.

CEQ regulations (40 C.F.R. §1502.16) require environmental impact assessments to identify any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented.

Implementation of Alternative 1, 2, or 3 would result in the irreversible and irretrievable commitment of energy and material resources during restoration and post-restoration activities for the Project. The Project includes restoration, enhancement, and establishment of estuarine and associated habitats and processes to support a natural range of habitat structures and functions in the Ballona Reserve. The Project also seeks to enhance public access and compatible on-site recreation and educational activities by the public through the construction of gateway entrances and pedestrian and bicycle paths around much of the Ballona Reserve.

Short-term uses of the environment that would occur as a result of the Project include restoration-related activities in and around the existing wetlands and habitat including restoration-related grading and soil transport to remove soil dumped in Area A during the construction of Marina del Rey; levee lowering and breaching; realignment of Ballona Creek to remove the concrete channelization and create a more meander-shaped, naturalized flow; clearing and grubbing to remove invasive nonnative plants and revegetation with native species; construction of flood risk and stormwater management facilities to reduce flood risk to the surrounding communities; utility modifications to abandon and/or relocate natural gas well and pipeline infrastructure as necessary to implement the Project; and construct public access features such as a three-story parking garage, bridges over Culver Boulevard and Lincoln Boulevard, gateway entrances, trails and paths on top of the levees, and educational signage. The short-term impacts would require the burning of fossil fuels, including diesel and gasoline for vehicles and equipment, and the use of nonrenewable materials and components used to construct the public access features.

Long-term impacts would be associated with post-restoration activities and ongoing maintenance of public access amenities, which also would require the burning of fossil fuels, including diesel and gasoline for vehicles and equipment. The use of fossil fuels in the form of diesel oil and gasoline during the restoration and post-restoration phases would be irretrievable and irreversible. The non-recoverable materials that would be used during restoration, construction of the public access amenities and levees, and ongoing maintenance activities would be accommodated by existing supplies. Although the temporary increase in the amount of materials used would be limited, they nevertheless would be unavailable for other uses.

Generally, irreversible environmental changes would occur as a result of the removal of the fill that was dumped in Area A, construction of the levees, and any off-site (potentially including off-shore) disposal of the material. Changes in the diversity of habitat types and species also would occur as a result of Alternative 1, 2, or 3; these changes would continue to evolve in response to sea level rise and other environmental factors unrelated to the activities undertaken to implement the Project. Some soil and aquatic bottom-dwelling organisms (e.g., plants and invertebrates) in the Ballona Reserve would be affected by the restoration activities. Evidence indicates that recolonization and recovery of these species would occur; however, the length of time can be variable and the specific recolonized species would be determined by the type of habitat created. Recovery of wetland areas would rely on natural processes, such as immigration and tidal dispersal of plant propagules. Overall the Project would create a net gain in more biologically productive wetland habitats than presently exist in the Project area.

Consequently, implementation of the Project would result in irreversible changes due to the use of some nonrenewable materials, energy resources, and fossil fuels during the implementation of restoration and construction activities and during the post-restoration phase for on-going maintenance activities. For example, some soil-dwelling and aquatic organisms would be affected by the proposed levee breaches and reconstruction. However, these changes would be less than significant under CEQA and NEPA because the Project overall would return the Ballona Reserve to a substantially more productive condition for habitat and wildlife functions and values.

4.2 Growth-Inducing Impacts

CEQ regulations (40 C.F.R. §1508.8(b)) state that indirect impacts of an action “may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.”

Section 15126(d) of CEQA Guidelines requires that an EIR discuss the ways in which a project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Projects that are traditionally or most commonly considered growth inducing are those that would remove obstacles to population growth (e.g., an expansion of a wastewater treatment plant that would allow for more development in its service area or a new freeway that may encourage growth at freeway exits). A project also could induce growth by creating an amenity that attracts new population or economic activity, such as a major employment center. CEQA Guidelines Section 15126.2(d) requires a discussion of the characteristics of projects that may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. Finally, the CEQA Guidelines state that it must not be assumed that growth in an area is necessarily beneficial, detrimental, or of little significance to the environment (Id.).

Growth itself does not result in physical environmental impacts; however, growth foreseeably could lead to physical environmental effects, such as increased demand for public services, increased traffic and noise, degradation of air or water quality, or conversion of agricultural and open space land to urban uses.

Implementation of Alternative 1, 2, or 3 would restore tidal wetlands, rehabilitate upland habitats, and improve physical and biological functions within the Ballona Reserve. In addition, each would enhance existing levels of flood protection for Culver Boulevard and the developed areas to the south and would abandon and/or relocate natural gas wells as necessary to implement the restoration work. The wetland restoration aspects of Alternatives 1, 2, and 3 would not directly induce economic growth through the creation of permanent employment, removal of obstacles to population growth through the construction of new housing, or necessitate the construction of new infrastructure or community facilities due to an increased population that would lead to additional growth in the surrounding area. None of the alternatives would indirectly foster economic growth through the creation of employment opportunities during restoration. It is likely that the workers who would implement the restoration activities and construct the levees, trails, paths, and parking garage would be drawn from the existing workforce within the southern California region and would not relocate to the Project area. Thus, none of the alternatives would result in distributional changes in population and housing in the local area or in the region.

In addition to restoring wetlands, Alternatives 1, 2, and 3 would open the Ballona Reserve to the public and provide public access for wildlife dependent uses and secondary compatible onsite recreation and educational activities. Related work would include the construction of three gateway entrances, construction of a new three-story parking garage, improvements to the existing West Culver parking lot, construction of new bicycle paths and pedestrian trails on top of levees that would replace the existing ones on the current levees, and new interpretive features and amenities. Public access to the Project site would be allowed from dawn to dusk daily and restricted after hours. It is assumed that the people who would access the Ballona Reserve would be drawn from the local area; that is, they would be existing residents or visitors to the area. Therefore, these new and enhanced amenities would not stimulate significant population growth, remove obstacles to population growth, or necessitate the construction of new infrastructure or community facilities that would lead to additional growth in the surrounding area. Furthermore, implementation of the Project would neither induce substantial economic activity nor remove an obstacle that would allow more growth to occur on the site or in the local or regional area. Regarding socioeconomics and the Project, see Section 3.14, *Socioeconomics and Environmental Justice*.

4.3 Energy Conservation

While NEPA offers no specific guidance with respect to energy conservation,[127] CEQA §21100(b) requires that an EIR discuss and consider mitigation measures for the potential energy impacts of a proposed project, with emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. Appendix F of the CEQA Guidelines provides guidance for assessing energy impacts of projects. It identifies three goals:

1. Decreasing overall per capita energy consumption;
2. Decreasing reliance on natural gas and oil; and
3. Increasing reliance on renewable energy sources.

Consistent with Appendix F, environmental impacts considered in this analysis include:

EC-1 The Project's energy requirements by amount and fuel type for each stage of the Project including restoration and/or post-restoration;

EC-2 The effects of the Project on local and regional energy supplies and on requirements for additional capacity;

EC-3 The effects of the Project on peak and base period demands for electricity and other forms of energy;

EC-4 The degree to which the Project complies with existing energy standards;

[127] Per Corps regulations (33 C.F.R. § 320.4(a)), the Corps is required to conduct a Public interest review. The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest. Consideration of energy needs is one of the public interest factors the Corps must evaluate in making a permit decision. In general, a permit will not be granted if the district engineer determines that it would be contrary to the public interest.

EC-5 The effects of the Project on energy resources; and

EC-6 The Project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

As provided below, this Project would not conflict with these objectives and would not result in changes in overall per capita energy consumption.

4.3.1 Affected Environment

4.3.1.1 California's Energy System

With a relatively mild Mediterranean climate and strict energy efficiency and conservation requirements, California's per capita energy consumption ranked 49th in the nation, indicating a low per capita use of energy; the state's low use of energy was due in part to this mild climate and its energy efficiency programs (USEIA 2015a). Nevertheless, with a population of 38.8 million people, California is the second largest energy-consuming state in the U.S. (USEIA 2015b).

The production of electricity requires the consumption or conversion of energy resources including water, wind, oil, gas, coal, solar, geothermal, and nuclear sources. Of the electricity generated in California, 44.3% is generated by natural gas-fired power plants, 7.8% is generated by coal-fired power plants, 7.8% comes from large hydroelectric dams, 8.4% comes from nuclear power plants, and 18.8% renewable sources including solar and wind power (CEC 2014). The remaining balance (12.9%) would come from unspecified sources of power (CEC 2014).

4.3.1.2 Local Energy Systems

Electricity

Electricity is provided to the City of Los Angeles by Los Angeles Department of Water and Power (LADWP). LADWP serves approximately 1,461,344 power customers within its 465-square-mile service area. Its sources of energy include renewable, coal, natural gas, nuclear, and large hydroelectric. The net maximum plant capability of LADWP is 7,300 megawatts. LADWP maintains 3,507 miles of transmission lines, 6,800 miles of overhead distribution lines, and 3,597 miles of underground distribution lines (LADWP 2015). South Area C currently consumes electricity from LADWP associated with the restrooms, snack bar, and scoreboard on the Culver Marina Little League baseball fields. No other portion of the Project site within the City of Los Angeles consumes electricity or is connected to the LADWP power grid.

Southern California Edison (SCE) is the local electrical energy supplier for Area A, and produces and purchases electricity from both renewable and nonrenewable resources. SCE serves approximately 14 million people in a 50,000 square-mile area of central, coastal, and Southern California (including Fresno, Imperial, Inyo, Kern, Kings, Los Angeles, Madera, Mono, Orange, Riverside, Santa Barbara, San Bernardino, Tulare, Tuolumne, and Ventura counties) (SCE 2015).

Natural Gas

The City and County of Los Angeles are served by investor-owned Southern California Gas Company (SoCalGas), a unit of Sempra Energy. SoCalGas serves approximately 21.4 million customers through 5.9 million meters of gas lines within a 20,000-square-mile service area. The SoCalGas service area includes over 500 cities in central and Southern California (Southern California Gas Company 2015). No portion of the Project site currently consumes natural gas. However, SoCalGas owns and operates natural gas storage wells and associated pipelines that would be affected by the Project and holds additional easements within the Ballona Reserve.

4.3.2 Applicable Laws, Regulations, Plans, and Standards

Federal and state agencies regulate energy use and consumption through various programs. On the federal level, the U.S. Department of Transportation (USDOT), U.S. Department of Energy (USDOE), and U.S. Environmental Protection Agency (USEPA) are three agencies with substantial influence over energy policies and programs. Generally, Federal agencies influence transportation energy consumption through establishment and enforcement of fuel economy standards for automobiles and light trucks, through funding of energy related research and development projects, and through funding for transportation infrastructure projects. On the state level, the California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are the two agencies with authority over different aspects of energy.

4.3.2.1 Federal

Energy Policy and Conservation Act

The Energy Policy Act of 1975 was established in response to the oil crisis of 1973, which increased oil prices due to a shortage of reserves. The Act required that all vehicles sold in the U.S. meet certain fuel economy goals. Since 1990, the fuel economy standard for new passenger cars has been 27.5 miles per gallon. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 miles per gallon. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not subject to fuel economy standards. The Act indirectly applies to the Project due to its requirements for increased fuel economy standards, particularly for the construction equipment to be used to remove old fill material from Area A, construct the levees, paths, trails, etc.

Energy Policy Act of 2005

The Energy Policy Act of 2005 seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under the Act, consumers and businesses can attain Federal tax credits for purchasing fuel-efficient appliances and products, buying hybrid vehicles, building energy efficient buildings, and improving the energy efficiency of residential and commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

4.3.2.2 State and Local

State agencies acting in their sovereign capacity are not subject to local regulations unless the California Constitution says they are or the Legislature has consented to such regulation.

However, local regulations are mentioned in this EIS/EIR because this analysis contemplates actions by SoCalGas outside of state property.

State of California Integrated Energy Policy

In 2002, the Legislature passed Senate Bill 1389, which required the CEC to develop an integrated energy report biannually for electricity, natural gas, and transportation fuels, for the California Energy Report. The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for Zero Emission Vehicles and their infrastructure needs, and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

The *2014 Integrated Energy Policy Report Update* was adopted by the CEC on February 25, 2015 (CEC 2015) and provides the results of the CEC's assessments of a wide variety of energy issues currently facing California, as well as focusing on next the steps for transforming transportation energy use in California.

County of Los Angeles

Area A of the Project site (where the three-story parking structure is proposed) is within the County of Los Angeles. The County of Los Angeles General Plan is the guide for long-term physical development and conservation through a framework of goals, policies, and programs. Policies of the General Plan address the provision of sufficient services and infrastructure. The County recently updated its General Plan. The Conservation and Natural Resources Element of the General Plan, last updated in 2015, describes conditions related to energy resources and include objectives and policies to conserve energy resources and develop alternative energy sources.

The County of Los Angeles Code of Ordinances contains the County's building, electrical, plumbing, and green building standards codes applicable to the construction, alteration, moving, demolition, repair, use of any building or structure, and grading within the unincorporated territory of the County of Los Angeles. These codes regulate the design, grading, construction, quality, installation, occupancy, location, and maintenance of all buildings, structures, and equipment. The County's Green Buildings Standard Code encourages sustainable construction practices related to energy efficiency, water efficiency and conservation, and material conservation and resource efficiency, among other things.

City of Los Angeles

Areas B and C and the SoCalGas Property portions of the Project site are within the City of Los Angeles. The City's General Plan is a "comprehensive, long-range declaration of purposes, policies, and programs for the development of the City of Los Angeles" (City of Los Angeles 2015a). The goals, objectives, and policies of the General Plan's Framework Element address water supply, storage, and delivery infrastructure, wastewater collection infrastructure and treatment capacity, and solid waste disposal and landfills.

The Los Angeles Municipal Code (LAMC) contains the City's building regulations, water conservation plan, and emergency energy curtailment plan, among other regulations, ordinances, and requirements applicable to the provision and consumption of utilities for both new and existing development. LAMC Chapter IX, Building Regulations, contains a number of codes including the Building Code, Plumbing Code, and Green Building Code. These codes establish procedures for the connection of new development to utilities, regulate water and energy usage, and require the inclusion of green building measures into building design.

4.3.3 Direct and Indirect Effects

4.3.3.1 Alternative 1: Full Tidal Restoration/Proposed Action

1-EC-1: Alternative 1 would result in the consumption of energy, but would not cause a significant adverse impact on local and regional energy supplies or requirements. (Less than Significant Impact)

Consistent with Appendix F, this analysis addresses environmental impacts considered under EC-1 and EC-6, as described above under Section 4.3, *Energy Conservation*.

Restoration

Although restoration- and construction-related energy consumption would be short-term in duration, it would represent irreversible consumption of fossil fuel energy resources. Restoration and construction-related energy expenditures would include both direct and indirect uses of energy in the form of fuel (typically diesel and gasoline).[128] Indirect energy use typically represents about three-quarters of total construction-related energy consumption, while direct energy represents about one-quarter of consumption (Hannon et al. 1978). Direct energy use would include the consumption of petroleum fuels for operation of vehicles. Energy consumed by power equipment used during restoration and construction would be relatively minimal, as would be the energy required for any required lighting and operation of ancillary electrical equipment (such as portable generators, lighted signs, etc.). Indirect energy use includes the energy required to make the materials and components used in implementing the Project. This includes energy used for extraction of raw materials, manufacturing, and transportation associated with manufacturing.

Alternative 1's energy requirements would result in a significant impact if applicable building code energy efficiency requirements were not implemented or if specific ways to reduce fuel use and to conserve energy were not implemented. Alternative 1's anticipated transportation energy use requirements and its overall use of efficient transportation alternatives would be considered significant if, again, there were no commitments to reduce or conserve transportation fuel usage or if implementation of the alternative were to generate large numbers of new transportation trips without consideration of whether more efficient transportation options could reasonably and feasibly meet the need. As part of the project specifications for construction activities (See Section 3.3.5.1 for details), fuel energy consumed in the restoration and construction phase of Alternative 1would not be wasted through unnecessary idling or through the operation of poorly

[128] Construction-related energy expenditures typically include the use of energy in the form of electricity; however, as shown in Table 2-8, *Proposed Construction Equipment*, in Chapter 2, *Description of Alternatives*, the equipment proposed for this Project would not require a connection to an electrical source. For equipment that would require a power source, diesel generators would be provided to provide the necessary power.

maintained vehicles and equipment. Thus, Alternative 1's construction-related energy use would be less-than-significant.

Post-restoration

The exact amount of energy usage that would be required in the post-restoration phase is unknown; however, because the type and nature of activities to be implemented during that phase are substantially the same as the activities that occur under baseline conditions, related energy needs are expected to be substantially similar to the energy needed to support current activities. Direct energy impacts from Alternative 1 would result from any nighttime security lighting, potentially including lighting the new parking structure, and indirectly as a result of motorized travel to and from the Project site by visitors. However, these energy uses would be necessary for safety and security or would reflect use of the proposed public access amenities. None of the proposed energy-consuming activities associated with this phase would be a wasteful, inefficient, or unnecessary use of energy because local building codes require use of energy efficient measures and because changes in traffic to and from the area are not considered significant. See Section 3.12, *Transportation and Traffic*, for related details. Therefore, impacts resulting from post-restoration related activities associated with energy conservation would be less than significant.

Impact 1-EC-2: Restoration and post-restoration activities would, if mitigated, cause no adverse effect on local and regional energy supplies or requirements for additional capacity, would have a neutral effect on peak and base period demands, would comply with existing energy standards by directly supporting and furthering efforts toward achieving those standards, and would have no adverse effect on energy resources. (Less than Significant with Mitigation Incorporated)

Consistent with Appendix F, this analysis addresses environmental impacts considered under EC-2 through EC-5, as described above under Section 4.3, Energy Conservation.

As discussed in the context of Impacts 1-EC-1, above, the precise amount of energy usage including petroleum fuel demand and electrical energy usage that would be required to implement Alternative 1 is uncertain; however, it is anticipated that gasoline and diesel would be used for construction equipment and worker and haul vehicles but that this consumption would not have a measurable effect on local and regional energy supplies.

Following construction of the three-story parking garage, Alternative 1 would result in energy use associated with its operation, including security lighting and exhaust fans. The garage would represent a new source of energy demand relative to baseline conditions. Parking garages generally are lit (and sometimes overlit) 24 hours a day, 7 days a week. Unless appropriate lighting levels (e.g., 1-2 footcandles) and energy-efficient fixtures (e.g., LED or other lighting that provides efficiency comparable to or better than 55-watt induction lamps, which draw 58 watts per fixture) are used in the proposed garage, the potential exists to overlight the area. For example, the use of 100-watt high pressure sodium lamps, which draw 128 watts per fixture, would require 70 additional watts per fixture, more than doubling the power draw relative to more efficient fixtures. The use of inefficient fixtures would result in a significant impact relating to energy conservation. Potentially significant energy inefficiency also could result if unneeded lights remained on in the garage during the daytime in areas where ambient light is sufficient. (Lights in emergency exit pathways would remain on at all times for safety). The use of appropriate lighting levels, fixtures, and ambient light have been determined to result in energy efficiencies (see, e.g., Illinois Department of Commerce & Economic Opportunity 2012).

Further, in the event that the installation of fans is necessary to disperse exhaust fumes in the parking garage, a demand-control ventilation (DCV) system would be more efficient than an “on/off” system. A DCV system continuously operates fans at less than 3% of the full-speed power draw and only increases the air flow when prompted by a sensor; by comparison, an on-off system is configured so that all fan motors are activated and operate at full power until safe conditions resume and then they shut off. DVC systems can reduce energy use by more than 90% relative to an on/off system (Morton 2011). The use of an on/off system would result in a significant impact relating to energy efficiency.

During post-restoration activities, the consumption of diesel and/or gasoline and electricity usage would be substantially similar to levels of consumption and use associated with existing (baseline) activities, which include travel to, from, and within the Project site related to habitat and vegetation maintenance, trash removal, channel and levee maintenance, water control structure monitoring and maintenance, SoCalGas well operation and maintenance activities, parking facility oversight, use and maintenance of the ball fields, vector control, site security, operation of the site management trailer and maintenance yard, and other ongoing and routine maintenance activities (see Section 2.3.1.7, *Post-restoration Activities*).

This energy use would be necessary to implement Alternative 1. Because it would be substantially similar to existing demands, it would not be a wasteful, inefficient, or unnecessary use of energy. Compliance with local energy efficiency standards and (for restoration and construction) the implementation of Mitigation Measures EC-1, EC-2, and EC-3 would further reduce potential impacts to energy conservation by ensuring energy efficient methods and approaches are implemented. Therefore, Alternative 1 would not result in a significant impact with respect to fuel and electrical energy requirements or on local or regional energy supplies.

Mitigation Measure EC-2a: The parking garage operator shall use appropriate lighting levels for safety (estimated to be 1-2 foot candles) and shall use energy-efficient fixtures (e.g., LED or other lighting that provides efficiency comparable to or better than 55-watt induction lamps, which draw 58 watts per fixture).

Mitigation Measure EC-2b: Parking garage operators shall turn off unneeded lights in the garage during the daytime in areas where ambient light is sufficient. Lights in emergency exit pathways shall remain on at all times for safety.

Mitigation Measure EC-2c: If fans are installed to disperse exhaust fumes in the parking garage, a demand-control ventilation (DCV) system shall be installed rather than an “on/off” system. The DCV system shall continuously operate fans at less than 3% of the full-speed power draw and only increase the air flow when prompted by a sensor.

Significance of Impact with Mitigation Incorporated: Less than Significant.

TABLE 4-1
ALTERNATIVE 1 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 1:				
EC-1: Result in consumption of energy and cause adverse effect on local and regional energy supplies or requirements. See Impact 1-EC-1.	☐	☐	☒	☐
EC-2: Involve restoration and post-restoration activities that would cause an adverse effect on local and regional energy supplies or requirements for additional capacity, an adverse effect on peak and base period demands, comply with existing energy standards by directly supporting and furthering efforts toward achieving those standards, or an adverse effect on energy resources. See Impact 1-EC-2.	☐	☒	☐	☐

4.3.3.2 Alternative 2: Restored Partial Sinuous Creek

Alternative 2 would result in less restoration and construction impacts relating to energy conservation than Alternative 1 because less of the Project site would be affected by Alternative 2 than Alternative 1. Post-restoration impacts would be essentially the same as for Alternative 1. Like Alternative 1, the impacts of Alternative 2 relating to energy conservation considerations, with the implementation of mitigation measures, would be less than significant.

TABLE 4-2
ALTERNATIVE 2 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 2:				
EC-1: Result in consumption of energy and cause adverse effect on local and regional energy supplies or requirements. See Impact 1-EC-1.	☐	☐	☒	☐
EC-2: Involve restoration and post-restoration activities that would cause an adverse effect on local and regional energy supplies or requirements for additional capacity, an adverse effect on peak and base period demands, comply with existing energy standards by directly supporting and furthering efforts toward achieving those standards, or an adverse effect on energy resources. See Impact 1-EC-2.	☐	☒	☐	☐

4.3.3.3 Alternative 3: Levee Culverts and Oxbow

Alternative 3 would result in less construction impacts related to energy conservation considerations than Alternatives 1 and 2. Post-restoration impacts would be essentially the same as for Alternatives 1 and 2. Accordingly, the impacts of Alternative 3 related to energy conservation considerations also would be less than significant.

TABLE 4-3
ALTERNATIVE 3 IMPACTS SUMMARY

Considerations	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Would Alternative 3:				
EC-1: Result in consumption of energy and cause adverse effect on local and regional energy supplies or requirements. See Impact 1-EC-1.	☐	☐	☒	☐
EC-2: Involve restoration and post-restoration activities that would cause an adverse effect on local and regional energy supplies or requirements for additional capacity, an adverse effect on peak and base period demands, comply with existing energy standards by directly supporting and furthering efforts toward achieving those standards, or an adverse effect on energy resources. See Impact 1-EC-2.	☐	☒	☐	☐

4.3.3.4 Alternative 4: No Federal Action / No Project

Alternative 4 would not require any new energy usage to be expended relative to baseline conditions as no change to existing management approaches and no new construction would occur. Existing conservation efforts would continue using unpowered hand tools, the Ballona Reserve would not be opened to the public, and no new parking structure, improvements to the West Culver Parking Lot, or other visitor amenities would be provided. No impact would occur relative to energy conservation.

4.4 Environmentally Superior Alternative

CEQA Guidelines Section 15126.6(e)(2) states, "[i]f the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." Although Alternative 4: No Federal Action/No Project would have no change to existing conditions resulting from restoration activities, it is not the environmentally superior alternative when compared to Alternatives 1-3, which are intended to improve the environment (stop further habitat degradation and improve native habitat function). Over half of the vegetated areas within the Ballona Reserve are heavily infested with invasive species (nonnative species that are invading as defined by Cal-IPC). Under Alternative 4, no substantial restoration changes would occur and, thus, invasive species would continue to thrive and spread on the Project site and there would not be improvement to the hydrologic function of the ecological reserve. Under Alternative 4, continued management of the existing Area B tide gates to provide some hydrologic function would be possible temporarily; however, eventually, the tide gates would have to be closed permanently to avoid flooding in West Area B and behind Culver Boulevard due to projected sea-level rise. As a result, the existing tidal wetland habitats would be cut off from the estuary and would convert to mudflat or open water habitat.

Alternatives 1, 2, and 3 would all improve the environment as compared to existing conditions, but Alternatives 1 and 2 would result in a greater quantity of aquatic and wetland habitats as compared to Alternative 3. More specifically, there would be little change in the quality of the existing marsh under Alternative 3 and therefore non tidal salt marsh and non tidal marsh would be prevalent. Despite Alternative 3 having less environmental effects related to restoration actions, it is not environmentally superior to Alternatives 1 or 2 because those two alternatives would provide greater environmental benefits than Alternative 3.

Alternative 2 would provide long-term restoration benefits similar to those provided by Alternative 1, Phase 1. It also would reduce some impacts as compared to Alternative 1 because Alternative 2 would avoid the impacts of Alternative 1, Phase 2. Because Alternative 2 would avoid the environmental impacts of Alternative 1, Phase 2 while still achieving significant amounts of restoration without impacting marginally functioning tidal wetland habitat, CDFW preliminarily identified Alternative 2 as the Environmentally Superior Alternative.

CDFW, as the CEQA lead agency, requested comments on the Draft EIS/EIR via the State Clearinghouse from other public agencies including responsible agencies; trustee agencies; other state, Federal, and local agencies that have jurisdiction over resources that could be affected by the Project; and from the County of Los Angeles and the City of Los Angeles because the Project site is located within these local agencies' municipal boundaries. In addition to these requests for input, CDFW also has sought input from individuals with special expertise regarding the potential environmental impacts of the Project and from members of the general public. After CDFW has considered all substantive input provided in response to these requests it can confirm the alternative that is the environmentally superior alternative for purposes of CEQA. The Final EIS/EIR, which will be prepared following consideration of all substantive comments received on this Draft EIS/EIR, will finalize its identification of the Environmentally Superior Alternative.

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CHAPTER 5
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Though individuals have primary responsibility for preparing sections of this Draft EIS/EIR, the document is an interdisciplinary team effort. Technical experts from United States Army Corps of Engineers (Corps), California Department of Fish and Wildlife (CDFW), and the California State Coastal Conservancy (SCC), with the support of their consultants and sub-consultants, have supplied information, provided valuable input, or reviewed initial drafts of the analysis. Preparers and contributors are listed below.

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