FINAL
PROGRAM ENVIRONMENTAL IMPACT REPORT
FOR THE
LOS PEÑASQUITOS LAGOON ENHANCEMENT PLAN
SAN DIEGO, CALIFORNIA

SCH # 2017121036

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Prepared for:
San Diego Coast District
California Dept. of Parks and Recreation
4477 Pacific Highway
San Diego, CA 92110
CEQA Contact: Cindy Krimmel

Administrated by:
Los Peñasquitos Lagoon Foundation
P.O. Box 940
Cardiff by the Sea, CA 92007

Prepared by:
AECOM
401 West A Street, Suite 1200
San Diego, CA 92101

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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

This Program Environmental Impact Report (EIR) has been prepared by the California Department of Parks and Recreation (State Parks) to evaluate potential environmental effects associated with implementation of the actions described in the Los Peñasquitos Lagoon Enhancement Plan (proposed project). This Program EIR has been prepared in conformance with the California Environmental Quality Act of 1970 (CEQA) statutes (California Public Resources Code, Section 21000 et seq., as amended) and the CEQA Guidelines (California Code of Regulations, Title 14, Section 15000 et seq., 2016). State Parks is identified as the lead agency for the proposed project under CEQA.

Los Peñasquitos Lagoon (or "the Lagoon") is a 565-acre coastal estuary designated as a State Natural Preserve that is part of the Torrey Pines State Natural Reserve located in coastal north county San Diego, which is owned and managed by State Parks. The proposed project would enhance the Lagoon through reconfiguration of the channel network in the Lagoon to provide better freshwater management and enhanced tidal exchange/influence. The project also identifies vector and trails management opportunities. Beginning in 2012, an updated Los Peñasquitos Lagoon Enhancement Plan (Enhancement Plan; Appendix A) was developed to provide guidance on restoring the Lagoon's habitats, protecting listed species, reducing threats to public health, and involving stakeholder groups with regard to coastal resource stewardship. In general, actions in the Enhancement Plan focus on restoring salt marsh and transition habitats to allow for upslope migration of salt marsh in responses to sea level rise using various strategies.

This Program EIR provides a framework for future projects proposed as part of the Enhancement Plan. Parts of the proposed project may be implemented individually or in phases but will be consistent with this Program EIR. Depending on future design needs, additional CEQA analysis may be required prior to implementation of project components. During supplemental CEQA review, baseline conditions may be updated to reflect current conditions using recent studies and best available information, if necessary, to provide an accurate comparison of a proposed project's impacts relative to "change from existing conditions" as is required by CEQA review.

ES. 2 PROJECT LOCATION AND SETTING

The Lagoon lies primarily within the jurisdictional boundary of the City of San Diego (City), with a small portion within the boundaries of the City of Del Mar. The City of Poway and the County of San Diego are part of upland areas in the Lagoon watershed. The Lagoon and its associated uplands provide important habitat for five listed bird species and 35 sensitive and rare plant species. The Lagoon also serves as an important refuge for migratory birds using the Pacific Flyway and is the closest coastal estuary to the La Jolla State Marine Conservation Area and San Diego-Scripps State Marine Conservation Area. Based on its importance in providing California Coastal Commission-designated Environmentally Sensitive Habitat Areas, the Lagoon has been afforded the highest level of protection by the State of California through its designations as a State

Natural Preserve and Critical Coastal Area. Additionally, the Lagoon is almost entirely within the City of San Diego's Multi-Habitat Planning Area (MHPA). The MHPA is a regional preserve area designated by a Habitat Conservation Plan called the Multiple Species Conservation Program.

Due to large-scale anthropogenic alteration, the Lagoon has become a coastal estuary surrounded by urban uses that requires ongoing management to protect the Lagoon's historic habitats and sensitive species. Based on a 2014 analysis comparing historical aerial photography, the Lagoon has lost over half of the historic salt marsh habitats with acreage reduced from approximately 430 acres in 1973 to approximately 262 acres in 2010. Increased sedimentation rates from the watershed and hydrologic modification of its three tributaries have been the key drivers for habitat conversion in the eastern portion of the Lagoon. Non-tidal salt marsh, salt flat, and salt panne that were historically present in the Lagoon have been replaced by an advancing riparian corridor, freshwater marsh, invasive grasses, and areas of brackish water that transition into the remaining salt marsh habitat to the west. Furthermore, the degradation and impairment of the Lagoon have greatly reduced its ability to support ecological functions such as bird foraging and fish refugia, among others.

The Lagoon's status as a State Natural Preserve requires controlled access that is limited to protect rare species and habitats. Only passive recreation along the Lagoon boundaries is permitted. Current public access is available along trails, as well as roadways that border the Lagoon including Highway 101, Carmel Valley Road, Sorrento Valley Road, Roselle/Flintkote Road, and the Marsh Trail.

ES. 3 LOS PEÑASQUITOS LAGOON ENHANCEMENT PLAN UPDATE PROCESS

The Los Peñasquitos Lagoon Foundation (LPLF) worked with stakeholders to develop the original Enhancement Plan certified in 1985 and identify priority management needs and strategies along with actions and projects to address lagoon health. During this process, sediment management was identified as the key management priority with emphasis on inputs from both the watershed and ocean inlet and the determination that ongoing inlet maintenance would be needed to restore and maintain tidal connectivity with the ocean since frequent and extended inlet closures were a lead driver for lagoon impairment.

Since 2012, LPLF has undertaken an effort to update the Enhancement Plan to provide a comprehensive approach that addresses impacts still present within the Lagoon from the original Enhancement Plan and new ones generated by the build-out of the watershed and associated changes in land use. The updated Enhancement Plan was developed through an intensive stakeholder process. While sedimentation was still a concern and inlet management a priority, the updated Enhancement Plan also needed to consider impacts associated with daily dry weather inputs of freshwater becoming a key contributor to habitat conversion, establishment of invasive grasses, and public health concerns from vector-borne illness by a freshwater mosquito species, *Culex tarsalis*. Inlet management remained a key priority to maintain and protect lagoon health, along with the need to continue the long-term, continuous monitoring program developed as a result of the original Enhancement Plan and initiated in 1987. New components developed during the update include lagoon restoration and enhancement, improvements to public access around the Lagoon, and providing improved vector management in a manner consistent with natural wetland

processes. Additionally, potential impacts from climate change are becoming better understood, including accepted projections for sea level rise that must be integrated into both current and future management strategies and restoration efforts.

ES. 4 PROJECT OBJECTIVES

The overarching purpose of the Enhancement Plan is to develop a set of updated guidelines to support the establishment of a dynamic coastal wetland system capable of being resilient to sea level rise, self-sustaining, and as close to native/natural as possible while maintaining a relatively high degree of functionality. Updating the Enhancement Plan also actively sought involvement and participation from stakeholder groups during the planning phase to provide input and perspectives from different user groups through the context of coastal resource stewardship.

Objectives of the proposed project include restoration of salt marsh habitat and wetland conversion zones that support it, improvements to public access around Los Peñasquitos Lagoon, and improvements to vector management within the Lagoon in a manner consistent with management guidelines for a State Natural Preserve.

ES. 5 PROJECT DESCRIPTION

The Enhancement Plan represents a series of actions, collectively referred to as the "proposed project" throughout this Program EIR, that would be implemented over time to address lagoon enhancement, public access, and vector management. An overarching environmental analysis is included within this Program EIR that reflects the level of detail provided in the Enhancement Plan and the information available at this time.

Several alternatives for restoring and enhancing the Lagoon's native habitats were developed as part of the process and are identified in the updated Enhancement Plan. These included the No Action (referred to as Lagoon Concept 1 in the Enhancement Plan); Freshwater Management (Channel Improvements; Lagoon Concept 2); Expanding Tidal Reach (Elevation Reduction; Lagoon Concept 3); and Elevation Reduction and Freshwater Management (Lagoon Concept 4). The Freshwater Management option within the updated Enhancement Plan was identified as the proposed project using evaluation criteria that included impacts to habitat and sensitive species during construction, contribution to climate change, and sustainability with consideration to projected sea level rise for Southern California.

The proposed project, detailed in Section 3.4, represents a series of actions developed for a program-level approach to restore salt marsh and other habitats historically present in the Lagoon, improve public access and public safety around the Lagoon's perimeter, and present a "natural system approach" for more effective management of *Culex tarsalis*, a freshwater mosquito that breeds within the Lagoon and transmits brain encephalitis to human hosts. In general, the actions focus on restoring salt marsh and transition habitats to allow for upslope migration of salt marsh in response to sea level rise using various strategies. A phased approach would be used to facilitate adaptive management, respond to availability of funding, and meet regulatory requirements that include a lagoon compliance target for the Los Peñasquitos Lagoon Sediment Total Maximum

Daily Load. The proposed project has three primary elements: Lagoon Enhancement, Public Access, and Vector Management, as outlined below.

The proposed project specifies a program to restore native habitats historic to the Lagoon and supports their biological functions and value. Subsequently, an effort has been made to proactively incorporate measures into the project to minimize and avoid, where possible, impacts to resources. These project design features represent a commitment to construct the project in an environmentally sensitive way and are detailed in Section 3.4.4. Additionally, construction methods for the proposed project and other anticipated work within the lagoon complex were developed based on project requirements and site constraints, as well as experience with similar previous projects.

ES. 5.1 Lagoon Restoration and Enhancement Activities

Proposed lagoon enhancement would focus on modifications to the Lagoon's channel network to enhance areas of historic salt marsh through improved draining of freshwater and increased tidal prism. These areas of historic salt marsh have converted to a brackish system from both surface freshwater and groundwater inputs and, in some areas, elevations increased by sediment loading from the watershed. Channel improvements would provide features in areas where salt marsh is expected to develop over time due to increased soil salinities and, eventually, in response to sea level rise. Freshwater management measures would include decreases of input through watershed runoff reduction, sediment management, potential diversion, and beneficial use of these flows ~~where feasible~~. The following lists the broad actions areas to be undertaken as part of lagoon enhancement:

- Sediment management
- Riparian corridor enhancement
- Channel improvements
- Focused grading
- Wetland conversion
- Salt marsh restoration
- Inlet improvements
- Cordgrass establishment
- Floodplain restoration
- Treatment wetlands
- Salt marsh enhancement and expansion
- Living shoreline

ES. 5.2 Public Access Activities

Proposed public access improvements would focus on enhancements to existing formal trails and pathways, identification of trails that are anticipated to become inundated with sea level rise, and opportunities to create linkages to regional trail networks and public transit centers. The following list outlines the proposed activities for public access improvements:

- Marsh Trail Improvements
  - Marsh Trail Realignment
  - Improved Marsh Trail Access (Northwest Trailhead)
    - Underpass Crossing
  - Improved Marsh Trail Access (Southeast Trailhead)
  - Hilltop Staging Area

- Hilltop Trail Connections

- Highway 101 Improvements
  - Head-In Parking

- Carmel Valley Road Improvements
  - Closing User Created Trails
  - Pedestrian Improvements
  - Bicyclist Improvements

- Sorrento Valley Road Improvements
  - Multi-Use Path Improvements
  - Regional Trail Integration and Connectivity

ES. 5.3 Vector Management Activities

Proposed vector management would incorporate structural improvements to reduce stagnant water within storm drain systems, channel modifications to improve tidal circulation, and channel creation to connect areas of inundation to reduce residence time. Main areas identified for improvements include the channel enhancements identified under ES.1 and the proposed project in Section 3.4, as well as the following focused actions:

- Improving flow through McGonigle Road culvert
- Storm outfall modification to reduce impoundment of discharged waters near Vector Control Program (VCP) Site 626
- Dewatering of VCP Site 577
- Modification to storm drain outfalls at Tripp Court and Sorrento Valley Road

ES. 6 ALTERNATIVES

CEQA requires that a project consider alternatives to a proposed project as a part of its evaluation. For the proposed project, alternatives to lagoon restoration and enhancement, public access, and vector alternatives were evaluated.

Lagoon Restoration and Enhancement Activities were developed through the public involvement process described in Chapters 6 and 7 of the Enhancement Plan (Appendix A) with the focus on hydrologic improvements needed to support salt marsh restoration, establishment, and long-term resiliency to sea level rise. The following alternatives were developed for the Lagoon and subjected to technical analysis that included modeling habitat trajectories with consideration of watershed inputs and projected sea level rise rates for Southern California:

- No Action
- Expanding Tidal Reach (Elevation Reduction)
- Elevation Reduction and Freshwater Management

Public Access Activities were developed for the perimeter of the Lagoon to improve passive recreation and safety, as described in Chapters 6 and 8 of the Enhancement Plan (Appendix A). Alternative improvement strategies considered during the Enhancement Plan update process were:

- Marsh Trail Improvements
  - Improved Marsh Trail Access (Northwest Trailhead)
    - At-Grade Crossing (Alternative 1)
    - Overpass Crossing (Alternative 3)

- Highway 101 Improvements
  - Parallel Parking (Alternative B)
  - No Parking (Alternative C)

- North Beach Access Improvements
  - On-site Improvements (Alternative A)
  - Retreated Location (Alternative B)
  - Off-site Location (Alternative C)

The Vector Management Activities listed above in Section ES.5.3 were developed for the Enhancement Plan (Chapters 6 and 9) and are fully evaluated as part of the proposed project in this Program EIR. Two alternatives were developed after the initiation of the Enhancement Plan:

- Increased Inlet Management
- Increased Vector Treatments

ES. 7 ISSUES RAISED BY THE PUBLIC AND AGENCIES

Throughout the proposed project development process, LPLF assisted State Parks in soliciting input on preparation of the updated Enhancement Plan and other key issues and concerns relevant to the environmental process from public agencies, stakeholder and interest groups, and the general public. A Notice of Preparation was distributed on December 8, 2017, for an extended 45-day public scoping period and a scoping meeting was held January 6, 2018, to solicit comments specifically regarding the environmental issues and concerns that may need to be addressed in the Program EIR.

General issues of concern and areas of known controversy include addressing programmatic components of enhancement proposed for both short-term and long-term timeframes, addressing biological impacts associated with project implementation, ensuring project implementation does not result in worsened mosquito/vector health concerns with respect to *Culex tarsalis*, and consistency with tribal consultation requirements. Table 1-1 of the Program EIR provides a summary of the public comments received during the public scoping process.

ES. 8 SUMMARY OF ENVIRONMENTAL IMPACTS

An analysis of environmental impacts that may be caused by the proposed project has been conducted and is contained in this Program EIR. Fourteen environmental issue areas are analyzed in detail in Chapter 4. Table ES-1 provides a summary of the potentially significant environmental impacts that would result during construction and operation of the proposed project, mitigation measures that would lessen potential environmental impacts, and the level of significance of the environmental impacts that would remain after implementation of the proposed mitigation.

The proposed project would result in significant and unavoidable impacts to the topic areas of Air Quality and Biological Resources due to construction activities and the potential temporary loss or disturbance of habitat during implementation of the proposed project.

The Program EIR identified potentially significant impacts requiring mitigation that could be reduced to less than significant to the following topics: Water Quality, Cultural Resources, and Paleontological Resources.

The Program EIR identified less than significant impacts for the proposed project for Land Use, Public Access and Recreation, Hydrology, Geology and Soils, Transportation, Public Services and Utilities, Public Health and Safety, Climate Change and Greenhouse Gas Emissions, and Energy.

The following topic areas were found not to be significant and were not included in the full analysis of the Program EIR: Visual Resources, Noise, Agricultural and Forestry Resources, Mineral Resources, Population and Housing, and Wildfire.

ES. 9 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires the identification of an environmentally superior alternative. The environmentally superior alternative is the alternative that would result in the least damage to the environment. If the No Action Alternative is environmentally superior, identification of a superior alternative among the other alternatives is required (CEQA Guidelines Section 15126.6[e][2]). Thus, even though the No Action Alternative for lagoon restoration and enhancement would reduce many of the potential temporary or permanent environmental impacts as compared to the proposed project, it is reasonably expected that, in the foreseeable future, the No Action Alternative would result in the continued deterioration of the lagoon habitat and hydraulic function and would provide none of the positive and beneficial outcomes that would result from the proposed project or other restoration and enhancement alternatives. Because there are three focused areas of improvement (*e.g.*, lagoon restoration and enhancement, public access, and vector management), the following analysis identifies an environmentally superior alternative for each of the various components.

Because of increased excavation activity, lengthened construction time, and the increased amount of disturbance to the lagoon setting relative to the proposed project, many of the temporary impacts that would result from lagoon restoration and enhancement alternatives would occur to a greater degree and extent than those resulting from the proposed project. Thus, among the action

alternatives, the proposed project with respect to lagoon enhancement is identified as the environmentally superior alternative.

Based solely on a comparison of adverse impacts, the At-Grade Crossing may be considered the environmentally superior alternative under CEQA for the Marsh Trail Access. This conclusion is due to the lessened potential for impact of multiple issue areas from the At-Grade Crossing. However, the At-Grade Crossing does not provide the safest pedestrian access compared to the other two crossing alternatives (Underpass Crossing; proposed project; and Overpass Crossing).

With nominal differences in impacts between the Highway 101 Improvement alternatives, the Head-In Parking option as included in the proposed project is considered the environmentally superior alternative as it best minimizes potential public safety impacts and transportation hazards.

The North Beach Access, On-site Improvements Alternative would generally not result in new development beyond the footprint of the existing lot, the potential for impact is limited and there are multiple issues areas that would have lessened impact potential relative to the other North Beach Access alternatives. Thus, based solely on a comparison of adverse impacts, the On-site Improvements Alternative is considered the environmentally superior North Beach Access alternative.

The Increased Vector Treatments Alternative would lessen many of the potential impacts associated with the vector management proposed in the project as there would be no construction or other ground disturbance necessary to continue the already ongoing vector treatments at an increased frequency. Based solely on a comparison of adverse impacts, the Increased Vector Treatments Alternative may be considered the environmentally superior alternative for vector management under CEQA provided that guidelines are followed to avoid impacts to sensitive plants and nesting birds.

Table ES-1. Summary of Environmental Impacts

Activity	Significance Determination	Mitigation Measure Summary	Level of Significance after Mitigation
Land Use			
Lagoon Restoration/ Enhancement	Less than Significant	None required	Less than Significant
Public Access Improvements	Less than Significant	None required	Less than Significant
Vector Management	Less than Significant	None required	Less than Significant
Public Access and Recreation			
Lagoon Restoration/ Enhancement	Less than Significant	None required	Less than Significant
Public Access Improvements	Less than Significant	None required	Less than Significant
Vector Management	Less than Significant	None required	Less than Significant

Activity	Significance Determination	Mitigation Measure Summary	Level of Significance after Mitigation
Hydrology			
Lagoon Restoration/ Enhancement	Less than Significant	None required	Less than Significant
Public Access Improvements	Less than Significant	None required	Less than Significant
Vector Management	Less than Significant	None required	Less than Significant
Water Quality			
Lagoon Restoration/ Enhancement	Significant (temporary)	**Water Quality-1** Compliance with regulatory requirements intended to address turbidity impacts (*e.g.*, Construction General Permit, Municipal Permit) shall be implemented to ensure impacts would be reduced to a less than significant level. Compliance with those permit conditions shall be monitored through the construction monitoring program and the contractor shall certify to the engineer of record that they have been completed.	Less than Significant
Public Access Improvements	Less than Significant	None required	Less than Significant
Vector Management	Less than Significant	None required	Less than Significant
Geology and Soils			
Lagoon Restoration/ Enhancement	Less than Significant	None required	Less than Significant
Public Access Improvements	Less than Significant	None required	Less than Significant
Vector Management	Less than Significant	None required	Less than Significant
Biological Resources			
Lagoon Restoration/ Enhancement	Potentially Significant (temporary)	**Biological-1** Confirm presence of suitable habitat within the proposed project limits and an appropriate buffer. If suitable habitat is present for sensitive species: a. Conduct pre-construction surveys to confirm presence/absence of sensitive species. b. If sensitive species are present, implement the following measures: 1. For impacts to species identified as candidate, sensitive, or special-status species in the Multiple Species Conservation Program (MSCP), specific management priorities will be undertaken as part of MSCP implementation	Significant (temporary)

Activity	Significance Determination	Mitigation Measure Summary	Level of Significance after Mitigation
		requirements to ensure that covered species are adequately protected. Priority 1 actions identified in the City of San Diego MSCP Subarea Plan Section 1.5 Framework Management Plan, specifically actions which concerns the Northern Area, will be undertaken to adequately protect covered species (City of San Diego 1997). The actions identified as Priority 2 may be undertaken as applicable. 2. For impacts to state and/or federally listed species not covered under the MSCP, complete coordination with wildlife agencies as required. **Biological-2** An evaluation for no net loss of ~~each~~ sensitive habitat ~~type~~ would occur. The net changes of habitat ~~in acreage of habitat within each tiered habitat~~ as defined by MSCP or other sensitive natural habitats would be quantified. If a net loss of ~~tiered or other~~ sensitive habitat is confirmed, ~~then~~ the following would be implemented with priority given to lands within or adjacent to the Lagoon: a. ~~a.~~ Contribution to an appropriate funding mechanism for habitat acquisition; and/or b. ~~or~~Restoration/enhancement within the Torrey Pines State Natural Reserve. ~~or the City of San Diego's Habitat Acquisition Fund (Fund #10571), as established by City Council Resolution R-275129, adopted on February 12, 1990 (City of San Diego 2012); and/or~~ ~~b. Coordination with the City to complete a boundary line adjustment to the MHPA Preserve.~~	

Activity	Significance Determination	Mitigation Measure Summary	Level of Significance after Mitigation
Public Access Improvements	Potentially Significant (temporary)	See **Biological-1 and Biological-2**	Significant (temporary)
Vector Management	Less than Significant	None required	Less than Significant
Transportation			
Lagoon Restoration/ Enhancement	Less than Significant	None required	Less than Significant
Public Access Improvements	Less than Significant	None required	Less than Significant
Vector Management	Less than Significant	None required	Less than Significant
Air Quality			
Lagoon Restoration/ Enhancement	Significant (temporary)	**Air Quality-1** The construction contractor shall implement the following measures as deemed appropriate by State Parks for implementation within a State Natural Preserve to reduce fugitive dust emissions associated with off-road equipment and heavy-duty vehicles: • Water the grading and exposed areas as necessary to control fugitive dust; • Stabilize stockpiles in accordance with City grading ordinance requirements for stabilization of exposed soils to minimize fugitive dust; • Stabilize unpaved roads to limit dust emissions by using chemical stabilizers, dust suppressants, and/or watering; • Remove visible track-out into traveled public streets as necessary; • Wet wash the construction access point at the end of each workday if vehicle travel on unpaved surfaces has occurred and caused track-out; • Provide sufficient perimeter erosion control to prevent washout of silty material onto public roads; • Cover haul trucks or maintain at least 12 inches of freeboard to reduce blow-off during hauling on public roads; • Suspend grading operations when wind speeds are high enough to result in dust emissions crossing the property line, despite the application of dust mitigation	Significant (temporary)

Activity	Significance Determination	Mitigation Measure Summary	Level of Significance after Mitigation
		measures; and • Enforce speed limit of 15 miles per hour or less on unpaved surfaces.	
Public Access Improvements	Significant (temporary)	See **Air Quality-1**	Significant (temporary)
Vector Management	Significant (temporary)	See **Air Quality-1**	Significant (temporary)
Cultural Resources			
Lagoon Restoration/ Enhancement	Significant	**Cultural-1** requires pre-construction studies and records search, monitoring during ground disturbance as determined necessary, and specific actions if resources are discovered. Specifications of Cultural-1 are outlined fully in Section 4.9.4 of this Program EIR.	Less than Significant
Public Access Improvements	Significant	See **Cultural-1** outlined fully in Section 4.9.4 of this Program EIR.	Less than Significant
Vector Management	Significant	See **Cultural-1** outlined fully in Section 4.9.4 of this Program EIR.	Less than Significant
Paleontological Resources			
Lagoon Restoration/ Enhancement	Significant	**Paleo-1** A paleontological monitor shall be on site during initial cuttings of previously undisturbed deposits of moderate to high paleontological significance, as defined in Paleontological Resources, County of San Diego California (Deméré and Walsh 1993), to inspect exposures for contained fossils. If significant paleontological resources are encountered during excavation or other ground-disturbing activities, work in the area of the discovery shall be temporarily halted, and a qualified paleontologist shall be contracted to properly assess the resource(s) and develop and implement a paleontological resource monitoring and fossil recovery program. The monitoring and recovery program may include monitoring of future ground disturbance, worker training, resource assessment and recovery, proper documentation, curation, and/or other measures as deemed appropriate. A paleontological monitor is defined as an individual who has experience in the collection and salvage of fossil materials and works under the direction of a qualified paleontologist.	Less than Significant

Activity	Significance Determination	Mitigation Measure Summary	Level of Significance after Mitigation
		As ground disturbance progresses, the qualified paleontologist and paleontological monitor shall have the authority to reduce the scope of the monitoring program to an appropriate level if it is determined that the potential for impacts to paleontological resources is lower than anticipated.	
Public Access Improvements	Significant	**See Paleo-1**	Less than Significant
Vector Management	Significant	**See Paleo-1**	Less than Significant
Public Services and Utilities			
Lagoon Restoration/ Enhancement	Less than Significant	None required	Less than Significant
Public Access Improvements	Less than Significant	None required	Less than Significant
Vector Management	Less than Significant	None required	Less than Significant
Public Health and Safety			
Lagoon Restoration/ Enhancement	Less than Significant	None required	Less than Significant
Public Access Improvements	Less than Significant	None required	Less than Significant
Vector Management	Less than Significant	None required	Less than Significant
Climate Change and Greenhouse Gas Emissions			
Lagoon Restoration/ Enhancement	Less than Significant	None required	Less than Significant
Public Access Improvements	Less than Significant	None required	Less than Significant
Vector Management	Less than Significant	None required	Less than Significant
Energy			
Lagoon Restoration/ Enhancement	Less than Significant	None required	Less than Significant
Public Access Improvements	Less than Significant	None required	Less than Significant
Vector Management	Less than Significant	None required	Less than Significant

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CHAPTER 1
INTRODUCTION

1.1 PURPOSE AND SCOPE OF THE EIR

This Program Environmental Impact Report (Program EIR) addresses the potential environmental impacts associated with the Los Peñasquitos Lagoon Enhancement Plan (Enhancement Plan) (Appendix A). Los Peñasquitos Lagoon (or "the Lagoon") is a 565-acre coastal estuary designated as a State Natural Preserve that is a part of the Torrey Pines State Natural Reserve (TPSNR) located in northern San Diego County. Through a stakeholder-driven process beginning in 2012, alternatives for restoring and enhancing the Lagoon's native habitats were developed as part of the process and are identified in the updated Enhancement Plan. The Enhancement Plan represents a series of actions that would be implemented over time to address lagoon enhancement, public access, and vector management in phases; these actions are collectively referred to throughout this Program EIR as the "proposed project." The Program EIR is being undertaken to conduct an overarching environmental analysis to reflect the level of detail provided within the Enhancement Plan. Since details regarding the design of Lagoon enhancement, public access, and vector management activities are not finalized, further project-specific analysis may be necessary.

This introduction addresses the purpose and intended uses of the Program EIR, provides an overview of the California Environmental Quality Act (CEQA) process, summarizes comments received during the public scoping period, and informs the reader how to provide comments on this document.

1.1.1 Purpose of the EIR

As indicated in Section 15002 of the CEQA Guidelines, the purpose of this Program EIR is to inform governmental decision-makers and the public about potential significant environmental effects of proposed activities and identify ways environmental harm can be avoided or significantly reduced to prevent significant, unavoidable damage to the environment by incorporating changes in projects through alternatives or mitigation measures when feasible.

This is a Program EIR for the Enhancement Plan and does not contain project-specific analysis of project components proposed in the plan. Because the Enhancement Plan is a long-range planning document and encompasses areas under ownership of different agencies, additional planning, modeling, and design components would be completed, as necessary, prior to project implementation. Future projects would undergo subsequent CEQA review by California Department of Parks and Recreation (State Parks) or other lead agencies, as appropriate. It is anticipated project-specific environmental compliance documents would tier off of and be reasonably consistent with this Program EIR for the Enhancement Plan. As specific phases and projects identified in the Enhancement Plan move to design, project elements ~~may be~~ identified as having significant impacts ~~requiring mitigation measures not defined in this Program EIR~~may be mitigated with other project-specific mitigation measures.

1.1.2 Scope of the EIR

The CEQA scope of analysis for the Program EIR includes the proposed project and is primarily based on thresholds of significance as identified in Appendix G of the CEQA Guidelines and as provided by the City of San Diego (City). For some issue areas, these thresholds were modified or supplemented to accommodate project-specific conditions.

This Program EIR evaluates the direct, indirect, permanent, temporary, and cumulative effects of the proposed project and alternatives, and proposes mitigation measures to minimize those effects~~, as feasible~~. The following issues were determined potentially significant and are therefore evaluated in Sections 4.1 through 4.14 of this Program EIR:

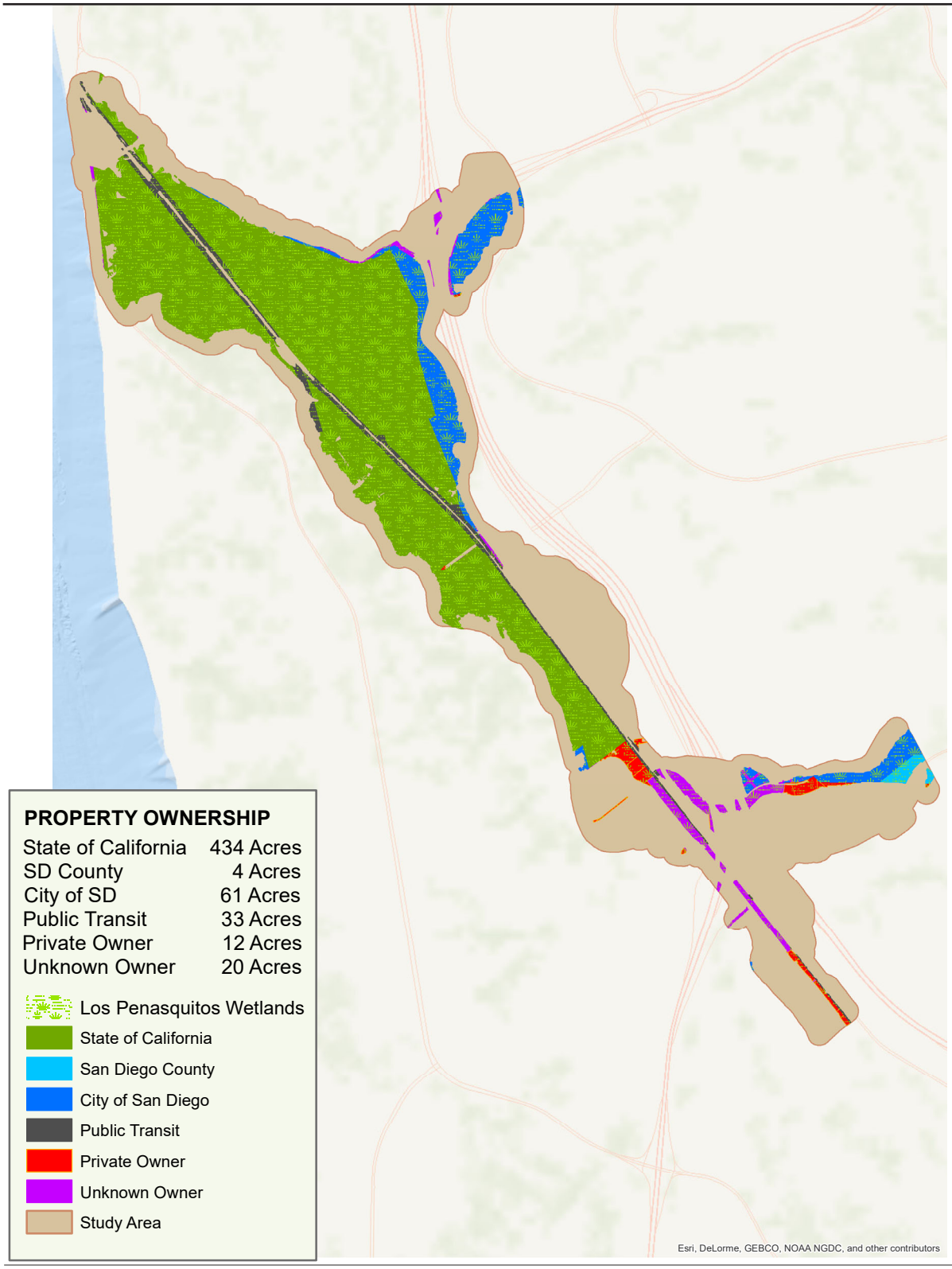
- Land Use
- Public Access and Recreation
- Hydrology
- Water Quality and Sediment Management
- Geology/Soils
- Biological Resources
- Transportation
- Air Quality
- Cultural Resources
- Paleontological Resources
- Public Services and Utilities
- Public Health and Safety
- Climate Change and Greenhouse Gas Emissions
- Energy

1.1.3 Lead Agency

As primary landholder (see Figure 1-1, Los Peñasquitos Lagoon Ownership), State Parks is also the local lead agency responsible for compliance with CEQA statutes (California Public Resources Code [PRC] Section 21 et seq., as amended) and implementing guidelines (California Code of Regulations, Title 14, Section 15000 et seq., 1998). State Parks has prepared the Program EIR, as lead agency.

1.1.4 Responsible and Trustee Agencies

State law requires that Program EIRs be reviewed by Responsible and Trustee Agencies. A Responsible Agency, defined pursuant to CEQA Guidelines Section 15381, includes public agencies other than the lead agency, which have discretionary approval power over the proposed project. A Trustee Agency is defined in Section 15386 of the CEQA Guidelines as a state agency having jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California. Implementation of the proposed project would require subsequent actions or



Source: Dept. of Parks and Recreation- San Diego Coast District 2016

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Figure 1-1
Los Peñasquitos Lagoon Ownership

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consultation from Responsible or Trustee Agencies such as the California Department of Fish and Wildlife (CDFW), the California Coastal Commission (CCC), the City, and the State Lands Commission, among others.

Specific permits, approvals, and consultations anticipated for project approval are identified in Section 1.3.

1.2 OVERVIEW OF CEQA

1.2.1 The CEQA Environmental Review Process and Intended Uses

As discussed, this document provides the required evaluation under CEQA. There are legally defined steps that must be completed, from the initial notice that a Program EIR is going to be prepared through to a certification that the document and process are complete. These steps are described in more detail below.

The Program EIR includes mitigation measures which, when implemented, would substantially lessen or avoid significant effects of the project on the environment, when feasible. Alternatives to the proposed project are presented to evaluate alternative enhancement schemes that would further reduce or avoid significant impacts associated with the project. By acknowledging the environmental impacts of the proposed project and its alternatives, decision-makers will have a better understanding of the physical and environmental changes that would accompany project approval.

This Program EIR provides a framework for future projects proposed as part of the Enhancement Plan (Appendix A). Parts of the proposed project may be implemented individually or in phases but will be reasonably consistent with this Program EIR. Depending on future design needs, additional CEQA analysis may be required prior to implementation of project components. As specific phases and projects identified in the Enhancement Plan move to design, elements may be identified as having significant impacts requiring mitigation measures not defined in this Program EIR. During supplemental CEQA review, baseline conditions may be updated to reflect current conditions using recent studies and best available information, if necessary, to provide an accurate comparison of a proposed project's impacts relative to "change from existing conditions" as is required by CEQA review.

1.2.2 Organization of the EIR

This Program EIR is organized as follows:

Executive Summary: provides an overview of the information provided in detail in subsequent chapters. It consists of an introduction; a brief description of the proposed project and alternatives considered; a discussion of issues raised by the public and agencies relative to project construction and operations; and a table that summarizes the potential environmental impacts in each category, the significance determination for those impacts, mitigation measures, and significance after mitigation.

Chapter 1 – Introduction: provides the project background, an overview of the public involvement and CEQA environmental review processes, including anticipated permitting needs, and a description of the organization of the document.

Chapter 2 – Environmental Setting: describes the project location and setting, community plan designations, and existing zoning. This chapter also describes the physical environmental conditions of the proposed project site generally at the time of publication of the Notice of Preparation (NOP). This establishes baseline conditions to determine whether anticipated specific project-related impacts would be significant under CEQA.

Chapter 3 – Project Description: outlines the proposed project components, including the project's purpose and objectives, anticipated phasing for implementation, and project and construction features. The project is discussed in terms of management zones and phasing, as developed during the Enhancement Plan process.

Chapter 4 – Environmental Impact Analysis: describes the potential environmental effects of implementing the proposed project. The discussion in Chapter 4 is organized into 14 environmental issue areas as follows:

- Land Use
- Public Access and Recreation
- Hydrology
- Water Quality and Sediment Management
- Geology/Soils
- Biological Resources
- Transportation
- Air Quality
- Cultural Resources
- Paleontological Resources
- Public Services and Utilities
- Public Health and Safety
- Climate Change and Greenhouse Gas Emissions
- Energy

For each environmental issue, the analysis and discussion are organized into four subsections as described below:

Impact Thresholds – This subsection identifies a set of thresholds against which the level of impact under CEQA is determined.

Impact Analysis – This subsection provides information on the environmental effects of the proposed project based on existing site conditions described in Chapter 2. It documents whether the impacts of the proposed project would meet or exceed the established CEQA significance criteria.

Significance of Impacts – This subsection provides a brief summary of the CEQA impacts identified for each resource.

Mitigation Measures – This subsection identifies feasible mitigation measures that would avoid or substantially reduce significant project-related impacts. This subsection also indicates whether project-related impacts would be reduced to below a level of significance

under CEQA with implementation of the mitigation measures identified in the Program EIR. Residual significant and unavoidable impacts of the proposed project that would result, even after the mitigation measures have been implemented, are also identified.

Chapter 5 – Significant Irreversible Environmental Changes: identifies changes in the local environment that would result from implementation of the proposed project.

Chapter 6 – Growth Inducement: describes the potential of the proposed project to induce economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment.

Chapter 7 – Cumulative Impacts: addresses the potentially significant cumulative impacts that may result from the proposed project when considering other past, present, and reasonably foreseeable future projects.

Chapter 8 – Effects Found Not to Be Significant: identifies and summarizes the issue areas that were determined to have no adverse environmental effect, or a less than significant environmental effect, given the established significance criteria. The discussion in Chapter 8 is organized into six environmental issue areas that were eliminated from full analysis as follows:

- Visual Resources
- Noise
- Agricultural and Forestry Resources
- Mineral Resources
- Population and Housing
- Wildfire

Chapter 9 – Alternatives: provides a description of alternatives to the proposed project, including a No Action Alternative. Two enhancement alternatives are described in this chapter, including the two that were not selected, and potential impacts of each are disclosed. Additional public access and vector management concepts and potential impacts are discussed in this chapter.

Chapter 10 – Mitigation, Monitoring, and Reporting Program: consolidates mitigation measures specified in the Program EIR.

Chapter 11 – Preparers of this EIR: identifies those persons responsible for the preparation of this EIR.

Chapter 12 – Agencies and Individuals Consulted: provides a list of those agencies and individuals consulted in the preparation of this Program EIR.

Chapter 13 – References: provides a bibliography of reference materials used in preparation of this Program EIR.

Chapter 14 – List of Acronyms and Abbreviations: provides a list of acronyms and abbreviations used throughout the document.

Appendices: The NOP and various technical studies/reports prepared for the proposed project are provided as appendices to this Program EIR.

1.2.3 Notice of Preparation and Public Scoping Period

In accordance with the CEQA Guidelines, an NOP was distributed on December 8, 2017, to approximately 100 public agencies, interested organizations, and members of the general public. The purpose of the NOP was to provide notification that State Parks planned to prepare a Program EIR and to solicit input on the scope and content of the Program EIR. A total of three written comment letters as well as five responses from California Native American Tribes responding to coordination required under Assembly Bill (AB) 52 were received from various agencies, organizations, and individuals.

A scoping meeting was held near the project site at the Scripps Institution of Oceanography on January 6, 2018, during the extended 45-day public scoping period. The purpose of this meeting was to seek input from public agencies and the general public regarding the environmental issues and concerns that may potentially result from the proposed project to be addressed in the Program EIR. Written comments were accepted at this meeting and via phone, mail, and e-mail during the scoping period. A copy of the NOP and written comments received are included as Appendix B of this Program EIR.

Throughout development of the Enhancement Plan and the environmental process, State Parks has solicited input on key issues and concerns relevant to the project from public agencies, stakeholder and interest groups, and the general public. State Parks has also attended additional meetings when requested by stakeholders to provide progress updates and assist in developing project alternatives. Some of these stakeholders include not only individuals, but the following agencies and organizations:

- U.S. Fish and Wildlife Service (USFWS)
- U.S. Army Corps of Engineers (Corps)
- National Oceanic and Atmospheric Administration (NOAA)
- State Coastal Conservancy (SCC)
- CCC
- CDFW
- California Department of Transportation (Caltrans)
- Native American Heritage Commission (NAHC)
- San Diego Regional Water Quality Control Board (RWQCB)
- San Diego Association of Governments (SANDAG)
- County of San Diego
- City of San Diego
- City of Del Mar
- City of Poway

- Torrey Pines Community Planning Board
- Torrey Pines Association
- Torrey Pines Docents

1.2.4 Comments Received and Areas of Known Controversy

As discussed above, comments received during the 45-day public scoping period included written comments. The primary issues raised during the scoping process are summarized by topic in Table 1-1.

Table 1-1. Summary of Public Comments Received during the Public Scoping Process

Public Comments by Environmental Topic or Issue Area	Section Where Considered in EIR
Biological Resources	
Discuss potential impacts to federally listed species and their habitat.	Section 4.6.2
Estimate size and descriptions of existing habitat that would most likely be impacted by each alternative.	Sections 4.6.2 and 9.5
Clearly define "transition zone" habitat category as upland or wetland, and what vegetation community would be expected over time.	Section 2.2.10
Explain the relationship of the Enhancement Plan with the City's Multiple Species Conservation Program Subarea Plan (SAP) and what components of the project can be covered under the City's SAP.	Sections 2.1.5 and 2.2.10
Public Health and Safety	
Address potential impacts from possible mosquito breeding sources for *Culex tarsalis* created by lagoon enhancements and/or during the construction process. Enhancements should be designed and constructed in a manner to minimize those impacts.	Sections 4.12.2 and 9.5
Ensure construction-related depressions created by grading activities, vehicle tires, and excavation do not result in areas that would hold standing water.	Section 3.4.4
If habitat remediation is required, the design should be consistent with guidelines for preventing mosquito habitat creation for *Culex tarsalis*.	Section 3.4.3
Program EIR Analysis	
Address short- and long-term actions identified in the Enhancement Plan instead of focusing on one project or alternative.	Chapters 4 and 9
Identify overall vision and goals based on the comprehensive, programmatic nature of the proposed project. Goals should be specific and measurable, so they can be used as a metric to compare to other alternatives or management actions identified in the Enhancement Plan. These goals should also be incorporated into an adaptive management program for evaluating implementation success and planning future actions.	Section 2.3
Cultural Resources	
Consult with California Native American Tribes adherent to Assembly Bill 52 and Senate Bill 18, as well as compliance with other applicable laws and policies (*e.g.,* State Parks' consultation policy).	Section 2.2.11
Discuss having cultural monitors on site during survey and ground-disturbing activities.	Section 4.9.4

Areas of known controversy include addressing programmatic components of enhancement proposed for both short-term and long-term timeframes, addressing biological impacts associated with project implementation, ensuring project implementation does not result in worsened mosquito/vector health concerns with respect to *Culex tarsalis*, and consistency with tribal consultation requirements.

1.2.5 Public Comments on Draft Program EIR

Theis Draft Program EIR wasis being circulated for 45 days for public review and comment. The timeframe of the public review period is identified in the Notice of Availability attached to this Draft Program EIR. During this period, comments from the general public, agencies, and organizations regarding environmental issues analyzed in the Draft Program EIR, and the accuracy and completeness of the Draft Program EIR, weremay be submitted to the lead agency as follows:

Cindy Krimmel
Park and Recreation Specialist, San Diego Coast District
California Dept. of Parks and Recreation
4477 Pacific Highway
San Diego, CA 92110
Email: SDCD.CEQA@parks.ca.gov
Phone: (619) 278-3771

State Parks has prepared written responses to all comments received during this period. These responses are included in the Final Program EIR as Appendix E, Public Comment Letters and Responses.General questions about this Program EIR or the EIR process should also be submitted to the lead agency at the address above. State Parks will prepare written responses to comments pertaining to environmental issues raised in the Draft Program EIR review if they are submitted in writing and postmarked by the last day of the public review period identified in the Notice of Availability. Mailed or e-mailed comments will be accepted.

1.2.6 EIR Certification Process

Prior to approval of the proposed project, State Parks, as the lead agency and decision-making entity, is required to certify that this Program EIR has been completed in accordance with CEQA, that the proposed project has been reviewed and the information in this Program EIR has been considered, and that this Program EIR reflects the independent judgment of State Parks. CEQA also requires State Parks to adopt "findings" with respect to each significant environmental effect identified in the Program EIR (PRC Section 21081; California Code of Regulations, Title 14, Section 15091). For each significant effect, CEQA requires the approving agency to make one or more of the following findings:

- Alterations have been made to avoid or substantially lessen significant impacts identified in the Final Program EIR.
- The responsibility to carry out such changes or alterations is under the jurisdiction of another agency.
- Specific economic, legal, social, technological, or other considerations are present that make infeasible the mitigation measures or alternatives identified in the Final Program EIR.

If State Parks concludes that the proposed project would result in significant effects that cannot be substantially lessened or avoided by feasible mitigation measures and alternatives, State Parks must adopt a Statement of Overriding Considerations prior to approval of the proposed project (PRC

Section 21081[b]). Such statements are intended under CEQA to provide a written means by which the lead agency balances the benefits of the proposed project and the significant and unavoidable environmental impacts. Where the lead agency concludes that the economic, legal, social, technological, or other benefits outweigh the unavoidable environmental impacts, the lead agency may find such impacts "acceptable" and approve the proposed project.

In addition, public agencies, when approving a project, must also adopt a Mitigation Monitoring and Reporting Program (MMRP) describing the changes that were incorporated into the proposed project or made a condition of project approval in order to mitigate or avoid significant effects on the environment (PRC Section 21081.6). The MMRP is adopted at the time of project approval and is designed to ensure compliance during project implementation.

1.3 REQUIRED APPROVALS

One of the objectives of the CEQA process is to ensure that a project is consistent with relevant regulations, policies, and plans. Various approvals and permits may be necessary for implementation of the Enhancement Plan, depending on design requirements identified prior to implementation.

Table 1-2 lists additional applicable statutes and permits or approvals that would potentially be required prior to project implementation. The analysis of how each regulation, policy, or plan applies to components of the Enhancement Plan and its alternatives at this conceptual level is included in each appropriate individual resource discussion in Chapter 4. Additional coordination would occur with applicable agencies at the time of project-specific design. Stakeholder engagement between the project proponent and agencies across multiple ownerships and applicable agency jurisdictions is anticipated. For example, project proponents would coordinate with Caltrans and the City of San Diego and/or the Federal Emergency Management Agency (FEMA) if proposed activities include design elements that have a potential to influence Caltrans infrastructure and/or may alter the floodplain.

Table 1-2. Federal, State, and Local Project Approvals and Permits Potentially Required

Agency	Permit/Approval
Federal	
U.S. Army Corps of Engineers (Corps)	• Permit under Section 404 of the Clean Water Act, 33 United States Code (USC) Section 1344 • Section 10 of the Rivers and Harbors Act of 1899, 33 USC Section 403 • Fish and Wildlife I Act, 16 USC Sections 661–666
National Marine Fisheries Service	• Magnuson-Stevens Fishery Conservation and Management Act, as amended 1996 (Public Law 104-267); Consultation • Endangered Species Act, 16 USC Sections 1531–1544 Section 7 Consultation with the federal lead agency
State Historic Preservation Officer/Tribal Historic Preservation Officer	• National Historic Preservation Act of 1966, Section 106 Consultation with State Historic Preservation Officer/Tribal Historic Preservation Officer (36 Code of Federal Regulations Part 800)
U.S. Fish and Wildlife Service	• Endangered Species Act, 16 USC Sections 1531–1544 Section 7 Consultation with the federal lead agency (*i.e.*, Corps) • Fish and Wildlife ~~I~~ Act • Migratory Bird Treaty Act

Agency	Permit/Approval
Federal Emergency Management Agency	• Approval of Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR), if applicable
State	
California Coastal Commission	• Coastal Development Permit • Consistency Certification, Section 30600(a) of the California Coastal Act, or Waiver of Federal Consistency Provisions
California Department of Fish and Wildlife	• Streambed Alteration Agreement, Section 1601 of the California Fish and Game Code • California Endangered Species Act Section 2081 Incidental Take Permit • Letter of Non-Objection
Regional Water Quality Control Board	• Water Quality Certification under Section 401 of the Clean Water Act
State Lands Commission	• Lease for access
California Department of Transportation	• Right-of-Way (ROW) Encroachment~~Entry~~ Permit or Agreement
State Parks	• Right of~~OW~~ Entry Permit
Regional/Local	
San Diego Air Pollution Control District	• Authority to Construct/Permit to Operate
City of San Diego	• Local Coastal Program (LCP) coastal development permit • Site Development Permit • Noise variance or exemption letter • Encroachment and grading permits • Stormwater permits • Multiple Species Conservation Program Plan consistency and compliance with subarea plan(s), if applicable • CLOMR and LOMR, if applicable
City of Del Mar	• Encroachment and grading permits • Stormwater permits • Noise variance or exemption letter
North County Transit District	• Encroachment permit for access to railroad ROW

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CHAPTER 2
ENVIRONMENTAL SETTING

2.1 PROJECT BACKGROUND

2.1.1 Regional Location

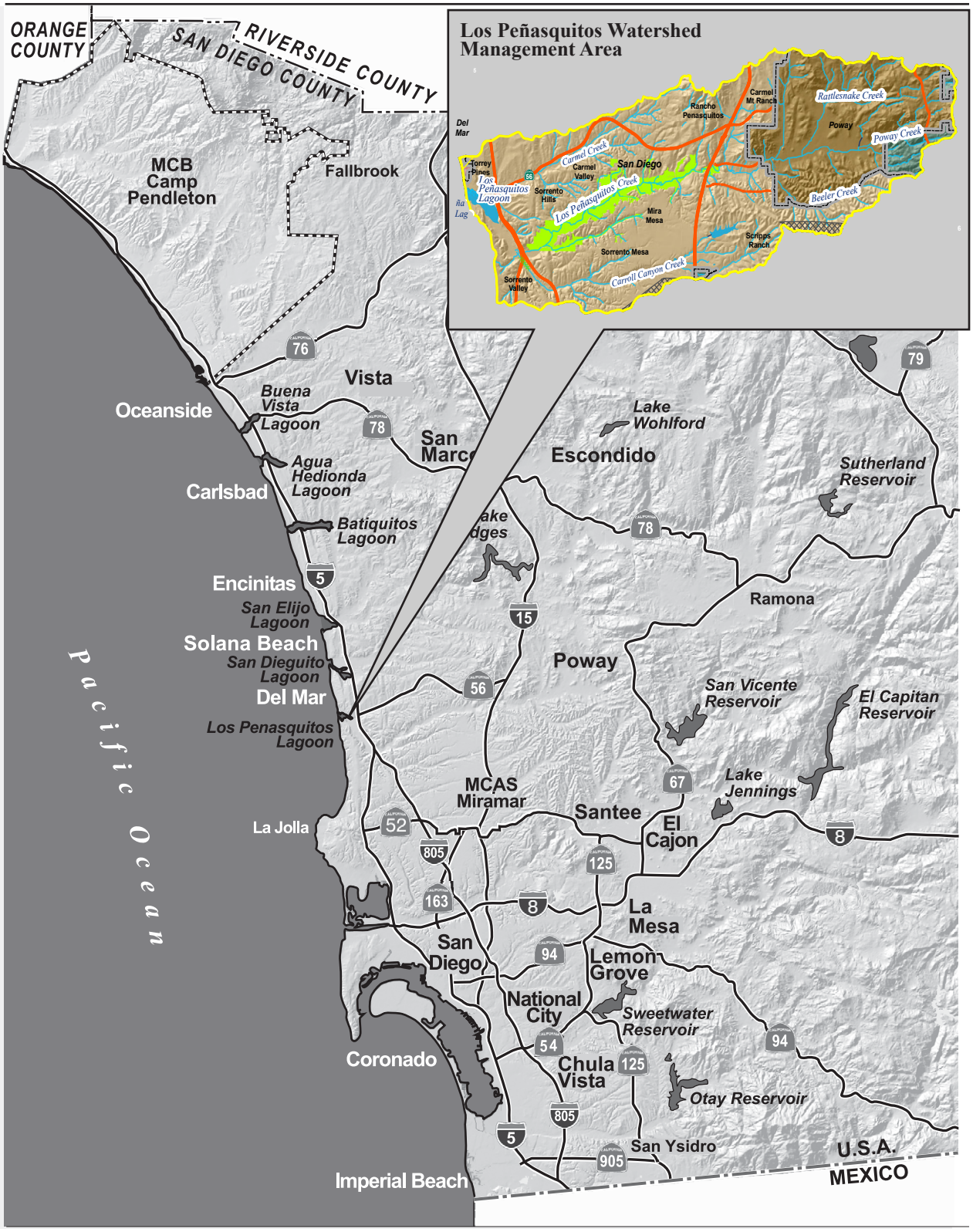
Los Peñasquitos Lagoon is a State Natural Preserve that is part of Torrey Pines State Natural Reserve (TPSNR) located in the north coastal portion of San Diego County, which is largely owned and managed by State Parks (Figure 2-1). The City of San Diego owns a smaller portion of the Lagoon adjacent to several road rights-of-way (ROWs) and commercial developments. The Lagoon is a 565-acre coastal estuary that receives drainage from an approximately 59,212-acre watershed comprising three primary sub-drainages: Carmel Valley, Los Peñasquitos Canyon, and Carroll Canyon (Figure 2-2). The Lagoon and its associated uplands provide important habitat for five listed bird species and 35 sensitive and rare plant species. The Lagoon also serves as an important refuge for migratory birds using the Pacific Flyway and is the closest coastal estuary to the La Jolla State Marine Conservation Area (ASBS #29) and San Diego-Scripps State Marine Conservation Area (ASBS #31). The Lagoon lies primarily within the jurisdictional boundary of the City of San Diego, with a small portion within the boundaries of the City of Del Mar. The City of Poway and the County of San Diego are part of the upland areas in the Lagoon watershed (Figure 2-3).

2.1.2 Context of Coastal Estuaries in San Diego

Located along the Southern California Bight, coastal estuaries provide critical functions in support of wildlife and plant species that include migratory shorebird habitat, habitat for various federal- and state-listed species, nursery and refugia for fish species, erosion protection for shorelines, and littoral sand delivery to the coast (Zedler 1996). While many of San Diego's coastal estuaries appear similar, the specific range of functions provided by each estuary can depend on numerous factors that include the site's hydrology, elevation gradients, salinity levels, and resultant habitat types. Once a vast network of coastal wetlands, development and urban pressures within the San Diego Region have fragmented this network and impaired the coastal estuaries that remain. No longer able to properly function without human intervention, coastal estuaries in San Diego have become managed systems and Los Peñasquitos Lagoon is no exception.

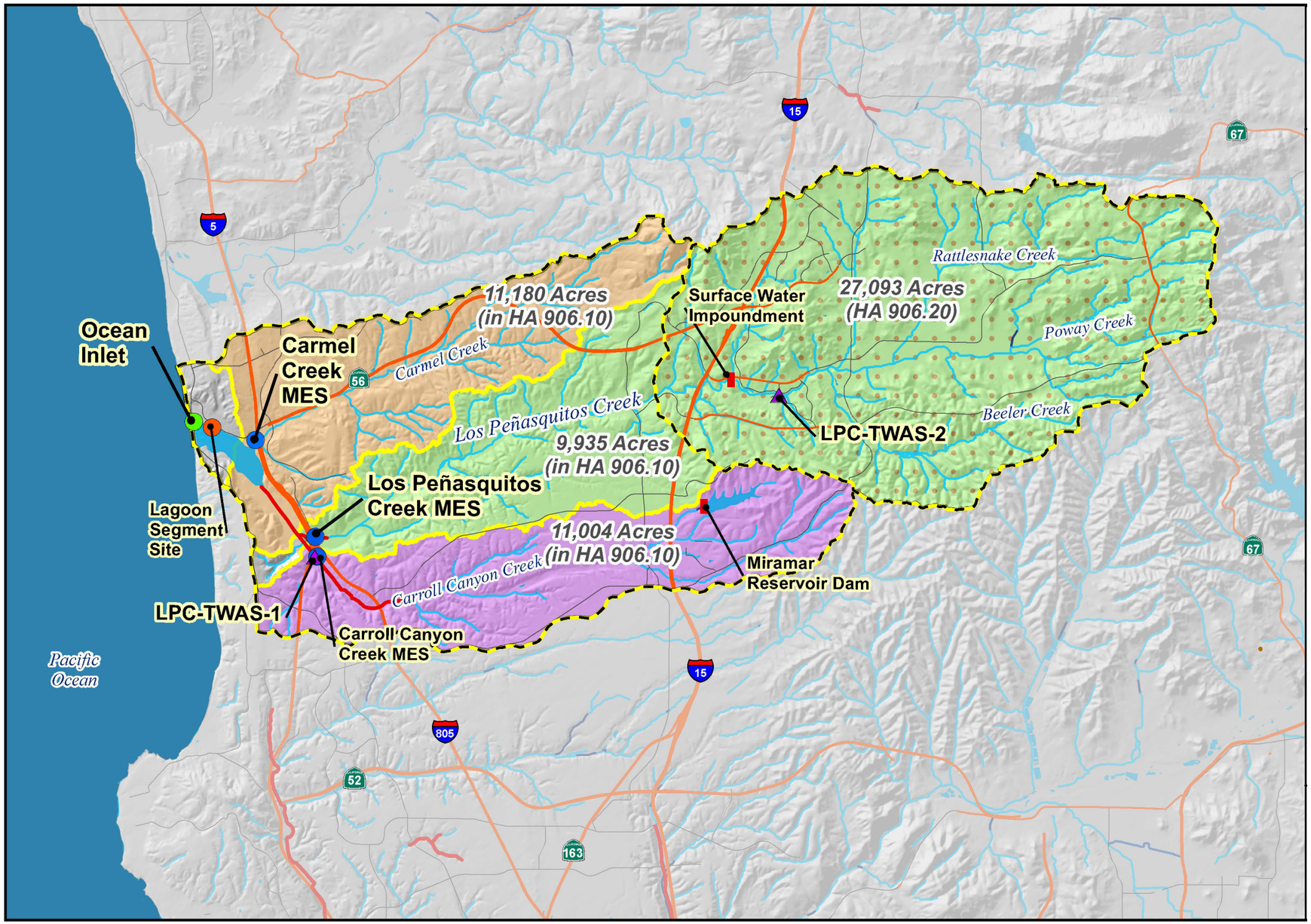
2.1.3 Evolution of Los Peñasquitos Watershed and Lagoon

Due to large-scale anthropogenic alteration, the Lagoon has become a coastal estuary surrounded and impacted by urban development that requires ongoing management to protect historic habitats and sensitive species, value as a refuge for migratory birds using the Pacific Flyway, and ecosystem services for local residents and visitors. Aerial photographs of the Lagoon from 1941, 1973, and 2010 illustrate many of the changes that the Lagoon and surrounding watershed have gone through in the past 50 years. Figure 2-4 presents these images, which are described in more detail below.



Source: Western Solutions (2007)

Figure 2-1
Los Peñasquitos Location Map



Legend

Sampling Sites

- Mass Emission Station (MES)
- Lagoon Segment Site
- Ocean Inlet
- Temporary Watershed Assessment Station (TWAS)

NHD Flowline Data (USGS)

- Canal/Ditch
- Connector
- Stream/River
- NHD Waterbodies/Areas
- USGS Stream Gauge
- Dam/Impoundment
- Drain Channel
- Freeway/Highway
- Hydrologic Areas (SanGIS)

Creek Drainage Areas

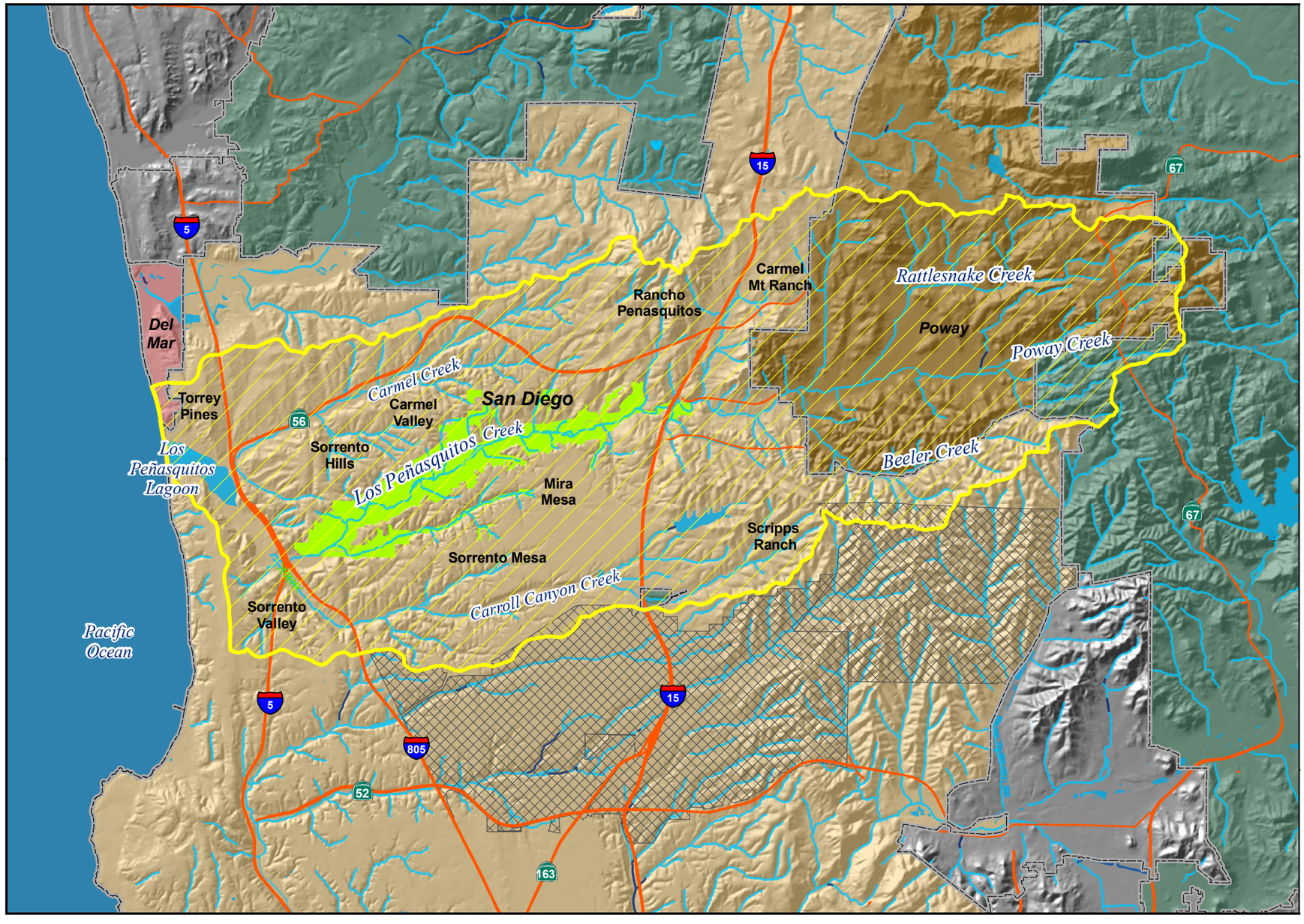
- Carmel Creek
- Carroll Canyon Creek
- LP Creek/Miramar Reservoir HA
- LP Creek/Poway HA

Total of two LP Creek HAs above is 37,028 acres
Sources: SanGIS and USGS (NHDPlus Data)

Source: Western Solutions (2007)

0 1 2 4 Miles

Figure 2-2
Los Peñasquitos Watershed Drainage Areas



Legend

- Los Peñasquitos Watershed
- Municipal Boundaries
  - City of San Diego
  - Poway
  - Del Mar
  - San Diego County
  - Other Municipalities
- Military (MCAS Miramar)
- Del Mar
- Los Peñasquitos Canyon Preserve
- San Diego County
- Highways/Freeways
- Military (MCAS Miramar)
- Cement Channel
- Los Peñasquitos Canyon Preserve

NHD Flowline Data (USGS)

- Canal/Ditch
- Cement Channel

NHD Flowline Data (USGS)

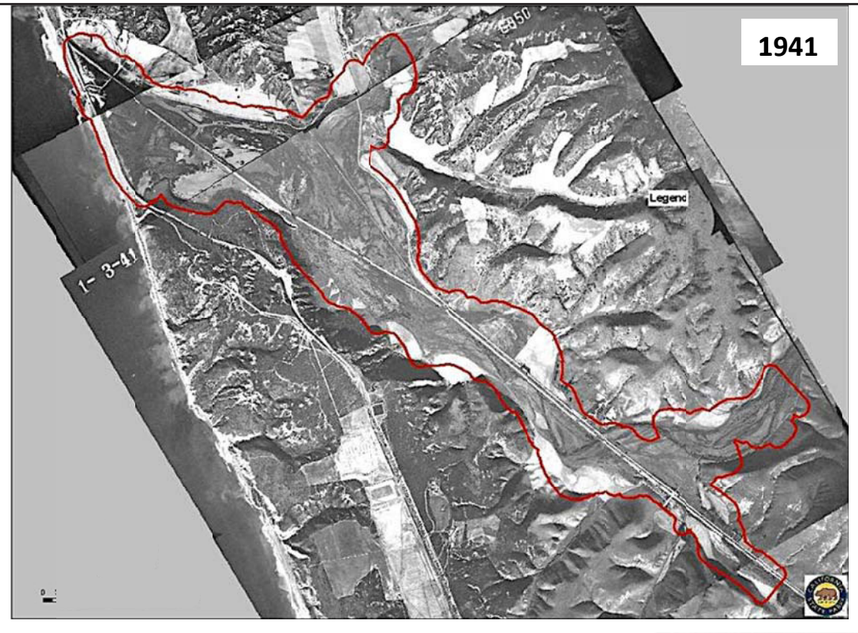
- NHD Waterbodies/Areas

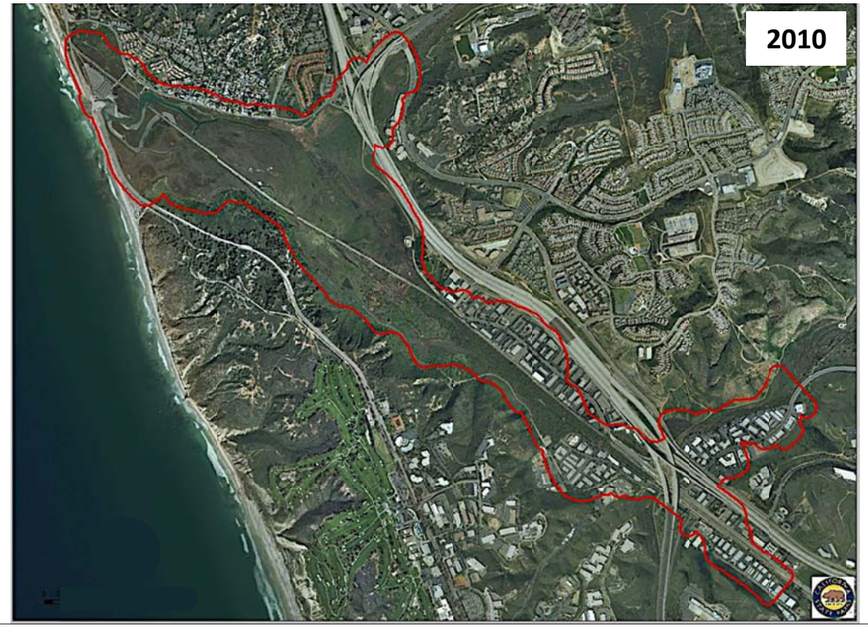
Sources: SanGIS and USGS (NHDPlus Data)

Source: Tetra Tech (2016)

0 1 2 4 Miles

Figure 2-3
Jurisdictions and Primary Creeks within the Los Peñasquitos Lagoon Watershed





Source: Tetra Tech (2010), ESA (2016)

No Scale

Figure 2-4
Los Peñasquitos Watershed Land Uses over Time

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By 1941, Highway 101 ran along the barrier beach as well as two railway alignments that were completed in 1888 and 1925 (Figure 2-4). The mesa tops surrounding the Lagoon were still undeveloped, aside from Camp Callan, which covered a portion of what is now the Torrey Pines Golf Course. As shown in Figure 2-4, the floodplain was also relatively undeveloped at this point, with the terminus of each of the Lagoon's main three tributaries showing branching stream networks stretching across a relatively wide floodplain. Large salt pannes (*i.e.*, a wetland consisting of a small depression, with or without standing water, often in a salt marsh or other coastal wetland) were visible within the mid and upper reaches of the Lagoon, most likely as a result of evaporation of impounded waters during extended inlet closures and/or storm runoff. Areas disked for dry farming are also visible along the southern edges of the Lagoon adjacent to what is now the Marsh Trail.

Figure 2-4 also provides an overview of the Lagoon in 1973. While the watershed was still relatively undeveloped, development has altered the Lagoon's borders and floodplains as well as portions of the Lagoon itself. The community of Torrey Pines is now visible along the northern border of the Lagoon along with the Torrey Pines Golf Course along coastal bluffs to the south of the Lagoon in an area formerly occupied by Camp Callan between 1941 and 1945. The detention ponds of the Sorrento Wastewater Plant are visible along the southern edge of the Lagoon, adjacent to the Marsh Trail. The North Beach parking lot is also visible near the lagoon inlet, relocated to the lower bridge span with the completion of Highway 101 in 1932. Floodplains in the southeastern portion of the Lagoon and the lower reaches of Los Peñasquitos Canyon and Carroll Canyon have been developed for industrial and commercial land use. As a result, the meandering, branching system that was present for both Los Peñasquitos Creek and Carroll Canyon Creek prior to 1975 has been replaced by more linear and narrowed single channels. A 1-mile section of Carroll Canyon Creek has been replaced with a concrete-lined channel through Sorrento Valley in an attempt to protect nearby structures from flooding. Habitats within the Lagoon still seem to be predominantly salt marsh, although areas of expansive mud flats are now more visible than in the 1941 aerial.

Figure 2-4 presents a recent aerial graphic of the Lagoon depicting the Lagoon and surrounding areas in 2010. The watershed just east of the Lagoon has been built out, as well as the community of Torrey Pines and the science parks just east of the Torrey Pines Golf Course. Development and riparian corridors have replaced sandy washes present within the floodplain and western portions of the watershed. Habitat conversion is now more visible within the Lagoon. Areas of historic salt marsh in the eastern portion of the Lagoon and within the floodplain have been converted to freshwater-influenced wetland habitat types that include brackish marsh and riparian species. Once held behind the 1888 railway/sewer berm, brackish and riparian habitats within Carmel Valley extended farther into the Lagoon after the berm was removed in the late 1990s. Expansive mud flats readily visible throughout the Lagoon in the 1941 and 1973 aerials (Figure 2-4a and b) are now vegetated and difficult to see.

2.1.4 Project Rationale

As discussed in Section 2.1.3 and shown in Figure 2-4, the Lagoon has lost over half of the historic habitat with salt marsh acreage reduced from approximately 430 acres in 1973 to approximately 262 acres in 2010. Furthermore, the degradation and impairment of the Lagoon has greatly reduced

its ability to support ecological functions such as bird foraging and fish refugia, among others. As a result, the Los Peñasquitos Lagoon Foundation (LPLF) worked with stakeholders to develop the original Enhancement Plan (Coppock 1985) to identify priority management needs and strategies along with actions and projects to address lagoon health. During this process, sediment management was identified as the key management priority with emphasis on inputs from both the watershed and ocean inlet and the determination that ongoing inlet maintenance would be needed to restore and maintain tidal connectivity with the ocean since frequent and extended inlet closures were a lead driver for lagoon impairment. An approach was developed to excavate the inlet area using heavy equipment and beneficial reuse of excavated material (sand) through the placement of spoils on Torrey Pines State Beach at a location south of the inlet. The original Enhancement Plan was also instrumental in establishing the Lagoon's long-term monitoring program set up by Joy Zedler and other wetland scientists from the Pacific Estuarine Research Lab (PERL) and land acquisition that includes a large parcel previously owned by San Diego Gas & Electric (SDGE) within the Lagoon east of the railway berm.

LPLF has undertaken an effort to update the Enhancement Plan, included as Appendix A to this Program EIR, to provide a comprehensive approach that addresses impacts still present within the Lagoon from the original Enhancement Plan and new ones generated by the build-out of the watershed and associated changes in land use. While sedimentation was still a concern and inlet management a priority, the updated Enhancement Plan also needed to consider impacts associated with daily dry weather inputs of freshwater becoming a key contributor to habitat conversion, establishment of invasive grasses, and public health concerns from vector-borne illness by a freshwater species of mosquitos, *Culex tarsalis*. Furthermore, potential impacts from climate change are becoming better understood, including accepted projections for sea level rise that must be integrated into both current and future management strategies and restoration efforts. The updated Enhancement Plan was developed through an intensive stakeholder process and represents the basis for the proposed project addressed within this Program EIR. Inlet management remained a key priority to maintain and protect lagoon health, along with the need to continue the monitoring program developed as a result of the original Enhancement Plan and initiated in 1987. New activities focused on three key issue areas developed during the update include lagoon restoration and enhancement, improvements to public access around the Lagoon, and providing improved vector management in a manner consistent with natural wetland processes. Lagoon restoration and enhancement include potential activities focused on increasing tidal exchange into the interior of the Lagoon, reducing freshwater impoundment within the Lagoon, sediment management, and enhancing riparian areas within the Lagoon. Public Access Activities focuses on providing additional, sustainable, formal trail access to and around the Lagoon and reducing informal, user-generated trail usage in sensitive areas. Managing vector concerns in the Lagoon would be addressed by reducing areas of freshwater impoundment that currently occurs in the upper lagoon and improving stormwater facilities that drain into the Lagoon. Actions associated with lagoon enhancement would also help address current vector concerns by increasing tidal mixing in areas of the Lagoon currently dominated by freshwater and restoring salt marsh since this habitat is less conducive to the breeding of *Culex tarsalis*.

2.1.5 Regional Planning Considerations

Applicable regulations and jurisdictions for the proposed project are discussed below.

Coastal Zone

The Lagoon is located within the Coastal Zone as designated by the CCC. The coastal jurisdiction is complex where some areas remain under CCC permitting authority, including some deferred certification zones, and others under the City of San Diego and City of Del Mar's Local Coastal Programs (LCPs). Permitting authority within the Lagoon and beach includes both appealable and non-appealable zones. Due to the multiple jurisdictions overlaying the project site, a Consolidated Coastal Development Permit (CDP) may be requested from the CCC for actions spanning both local and state permitting authority, streamlining permitting processes.

Regional Water Quality Control Board

San Diego Basin Plan

The San Diego Basin Plan divides the watershed into two hydrologic areas (HAs): Miramar Reservoir (HA 906.10) and Poway (HA 906.20). The Miramar Reservoir HA comprises the western portion and contains the drainage areas of Carmel Creek and Carroll Canyon Creek as well as the lower portion of Los Peñasquitos Creek. The Poway HA, located to the east, is covered entirely by the upper Los Peñasquitos Creek watershed (Figure 2-2). The San Diego Basin Plan provides a framework for designated beneficial uses, water quality objectives, and an implementation plan to achieve water quality objectives for the lagoon ecosystem.

Los Peñasquitos Lagoon Sediment Total Maximum Daily Load (TMDL)

The Lagoon is a 303(d)-listed waterbody for sediment and siltation. As such, the San Diego RWQCB adopted an amendment incorporating the Los Peñasquitos Lagoon Sediment TMDL (Lagoon Sediment TMDL) into the San Diego Basin Plan on June 13, 2012. As a third-party TMDL, Responsible Parties, landowners, and other key stakeholders (*e.g.,* LPLF) worked collaboratively with the U.S. Environmental Protection Agency (EPA) and San Diego RWQCB staff to establish compliance targets. The proposed project would support and provide strategies for meeting compliance targets set by the Lagoon Sediment TMDL for both load reduction and salt marsh restoration to restore the impaired waterbody to meet applicable water quality standards.

Los Peñasquitos Watershed Management Area Water Quality Improvement Plan (WQIP) and Comprehensive Load Reduction Plan

The Los Peñasquitos Watershed Management Area WQIP was prepared by the City and other Responsible Parties for the Los Peñasquitos watershed to propose "a comprehensive watershed-based program to improve surface water quality in the Los Peñasquitos Watershed Management Area, in receiving water in the Los Peñasquitos Lagoon, and at nearby beaches." It serves as the lead compliance document for the regional National Pollutant Discharge Elimination System, Lagoon Sediment TMDL, and San Diego County Bacteria TMDL. The Los Peñasquitos Watershed

Management Area WQIP was developed to be complementary with the Enhancement Plan, with the latter providing the key guidance document for lagoon management and restoration needed to meet the lagoon compliance target of the Lagoon Sediment TMDL with the WQIP providing supporting efforts (*e.g.,* load reduction) in the watershed. The Los Peñasquitos Watershed Management Area WQIP identifies sediment, bacteria, and dry weather flows of freshwater as the highest priority conditions/pollutants to be addressed through structural and non-structural strategies.

Southern California Wetlands Recovery Project's (SCWRP) Work Plan

Los Peñasquitos Lagoon is included within the SCWRP work plan. SCWRP is an advisory body that identifies priority projects and efforts within the region as they apply to the preservation of coastal wetlands and their watersheds. Candidate projects and programs are evaluated against ecological, policy, and feasibility criteria that are based on regional goals, and are vetted by an 18-member Wetland Managers group composed of representatives from resource agencies, land managers, research reserves, and academia. Since 2014, implementation of the updated Enhancement Plan has been on the SCWRP Work Plan with emphasis on restoration planning and design.

San Diego County Department of Environmental Health – Vector Control Program (VCP)~~Habitat Remediation Program (VHRP) Implementation Plan~~

San Diego County's Department of Environmental Health (DEH) currently operates an integrated vector management program that combines public education/outreach, surveillance, control (*e.g.,* larvicide applications) and the ~~County of San Diego VHRP~~VCP, which includes treatment areas within the Lagoon. The proposed lagoon restoration and enhancement along with Vector Management Activities are consistent with the DEH's ~~Wetland Design Guidelines for Vector Control~~VCP and would continue to work in coordination with DEH for ongoing Lagoon treatments. ~~with regard to managing natural wetlands, including wetland design, water management, and vegetation manipulation~~.

San Diego Coastal State Park System

General Plan (Vol. 8 Torrey Pines State Beach and Torrey Pines State Natural Reserve)

State Park General Plans provide inventory of resources, resource policy formulation based on classification statutes contained in Title 14 of the PRC (State Reserve, State Natural Preserve, State Beach), resource management policies, land acquisition, and interpretive elements to enhance public education at State Parks facilities and parks. Volume 8 of the San Diego Coastal State Park System General Plan guides policy formulation and development alternatives for TPSNR and defines the purpose of the Lagoon being a State Natural Preserve to "provide for the protection and perpetuation of natural resource values associated with the lagoon and wetlands." Volume 8 sets primary values of significance for natural resources at the Lagoon (*e.g.,* native estuarine plant and animal communities, listed species) over recreational opportunities with the principal, long-range management objective "to restore and maintain the estuarine water cycle in a regime which approaches that which existed prior to 1925."

Wildlife Management Plan for Torrey Pines State Natural Reserve

The purpose of the Wildlife Management Plan is to inform State Parks management of fauna within TPSNR and be complementary to the City's MSCP. This plan aims "to ascertain the current status of several suites of sensitive or ecologically important species and to compare this information with that gained from previous studies in order to determine population trends and to recommend appropriate management actions for the curtailment of the loss of species. "

Torrey Pines State Natural Reserve Vegetation Management Statement (VMS)

The purpose of the VMS is to disclose current goals and objectives that guide vegetation management decisions and actions in the park. The VMS serves as a guiding document for staff and provides continuity in management. The purpose of the VMS at TPSNR is to maintain or enhance the long-term viability (conservation) of the unique biota at TPSNR while allowing reasonable public access and safety. The VMS is designed to be a living document and is to be revised every 5 years.

California Department of Transportation (Caltrans) and San Diego Association of Governments (SANDAG) – North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program (NCC PWP/TREP)

Caltrans and SANDAG have identified the closed portion of Sorrento Valley Road for improvements to be funded through the NCC PWP/TREP.

San Diego Gas & Electric – Sub-Regional Natural Community Conservation Plan

The SDGE Sub-Regional Natural Community Conservation Plan is used to streamline the regulatory process for ongoing maintenance and expansion efforts of the gas and electric energy system in SDGE properties and easements that provide habitat connectivity in areas where little natural habitat remains. The plan covers 110 plant and animal species and emphasizes avoidance of impacts while also providing mechanisms for mitigation measures when avoidance cannot occur. Portions of Los Peñasquitos Canyon are covered within SDGE's regional conservation plan, and proposed lagoon enhancement would complement this planning effort, if implemented~~feasible~~.

City of San Diego – Multiple Species Conservation Program Subarea Plan and Multiple Habitat Planning Area (MSCP/MHPA)

The overarching goal of the MSCP is to maintain and enhance biological diversity in the region and conserve viable populations of endangered, threatened, and key sensitive species and their habitats to prevent local extirpation and ultimate extinction while minimizing the need for future listings and enabling economic growth in the region. To achieve this goal, the MSCP creates a regional habitat preserve system designated as the MHPA, while allowing development projects to occur with a streamlined development review system that avoids the traditional project-by-project review by regulatory agencies. Aside from the western corridor of the Lagoon, which includes the beach and Highway 101 infrastructure, the Lagoon is within the MHPA.

Restoration, maintenance, and monitoring plans for the proposed project would be prepared in accordance with the goals and guidelines of the MSCP SAP (City of San Diego 1997), and in consultation with the wildlife agencies. The SAP addresses topics applicable to the proposed project such as fencing, materials storage, flood control, restoration, public access, and invasive exotics control, among others.

City of San Diego – Torrey Pines Community Plan (TPCP)

The TPCP provides guidance and opportunity for public comment regarding the management, development, and/or improvements to land use within the community of Torrey Pines that includes residential, commercial, industrial, and open space. Objectives of the TPCP include the following: designate and preserve as open space the exceptional topography and ecosystem of the Lagoon; encourage the restoration and the natural resources of the Lagoon as a tidal estuary; and permit only those recreational activities that do not have a negative impact on the lagoon ecosystems. The TPCP also states that future improvements to railway, highway embankments, and bridges traversing the Lagoon should be designed and constructed to minimize their impact on natural characteristics of the area, particularly the blockage of the Lagoon to tidal action and disturbance of wildlife by rail and vehicular traffic.

2.2 PROJECT LOCATION AND SETTING

2.2.1 Status as Preserve in Torrey Pines State Natural Reserve

The majority of the Lagoon is located within a State Natural Preserve (Los Peñasquitos Marsh Natural Preserve) that is part of TPSNR located in northern San Diego County as shown in Figure 2-1.

2.2.2 Site Location and Land Uses

Los Peñasquitos Lagoon

Los Peñasquitos Lagoon is a coastal estuary within northern San Diego County and represents one of the few remaining coastal salt marsh habitats in Southern California. The Lagoon and its transitional areas are home to 35 sensitive plant species, five state and federally listed bird species, and the important habitats needed to support them. The Lagoon also serves as an important refuge for migratory birds following the Pacific Flyway, and provides Essential Fish Habitat (EFH) for several coastal fish species, being the closest coastal estuary to the only Areas of Special Biological Significance (ASBSs) located within San Diego County: La Jolla State Marine Conservation Area (ASBS #29) and the San Diego-Scripps State Marine Conservation Area (ASBS #31) (Figure 2-5). Based on its importance in providing "Environmentally Sensitive Habitat Areas" (ESHAs) under Coastal Commission jurisdiction, the Lagoon has been afforded the highest level of protection by the State of California through its designations as a State Natural Preserve and Critical Coastal Area #77.

Source: ESRI, RTNERR (2014)

0 5,000 10,000 20,000 Feet

Figure 2-5
Areas of Special Biological Significance near Los Peñasquitos Lagoon

Locally, the Lagoon is also designated as a core area with high to moderate habitat values within the City's MSCP Subarea Plan.

Hydrologic modification of the Lagoon's three tributaries has resulted in encroachment of freshwater marsh and areas of brackish water into what was formerly salt marsh and salt panne in the southeastern portion of the Lagoon (Crooks et al. 2019; Greer 2001; White and Greer 2002). Similar modification of Carmel Creek has resulted in increased freshwater flows and sediment deposition in the eastern end of the Lagoon and rapid conversion of salt marsh and salt panne to riparian habitats. Most of the Lagoon's floodplains have been lost to commercial development that converted a wide network of braided streams to linear armored channels bordered by business parks and light industry. The Lagoon itself has been impacted by this infrastructure since 1888, including the construction of two railway alignments and Highway 101 that greatly contribute to the Lagoon's impairment due to resultant hydrologic modifications that reduce tidal prism, impound freshwater, and increase periods of flooding following storm events. Construction of the North Beach parking lot, Interstate (I-) 5, State Route 56 (SR 56) and I-805 have generated additional impacts to the Lagoon. Additionally, three wastewater treatment plants discharged primary-treated sewage daily into the Lagoon between 1950 and 1972. These flows were later diverted away from the Lagoon by two pump stations, one of which (Pump 65) was built in the upper lagoon adjacent to Sorrento Valley Road.

Los Peñasquitos Watershed

The Lagoon receives drainage from the Los Peñasquitos watershed (approximately 59,212 acres). This watershed includes portions of the City, Poway, Del Mar, and San Diego County (Figure 2-2). The San Diego Basin Plan divides the watershed into two HAs: Miramar Reservoir (HA 906.10) and Poway (HA 906.20). The Miramar Reservoir HA comprises the western portion of the Lagoon and contains the drainage areas of Carmel Creek and Carroll Canyon Creek as well as the lower portion of Los Peñasquitos Creek. The Poway HA, located to the east, is covered entirely by the upper Los Peñasquitos Creek watershed (Figure 2-2). The drainage areas for the three major creeks are shown in Table 2-1.

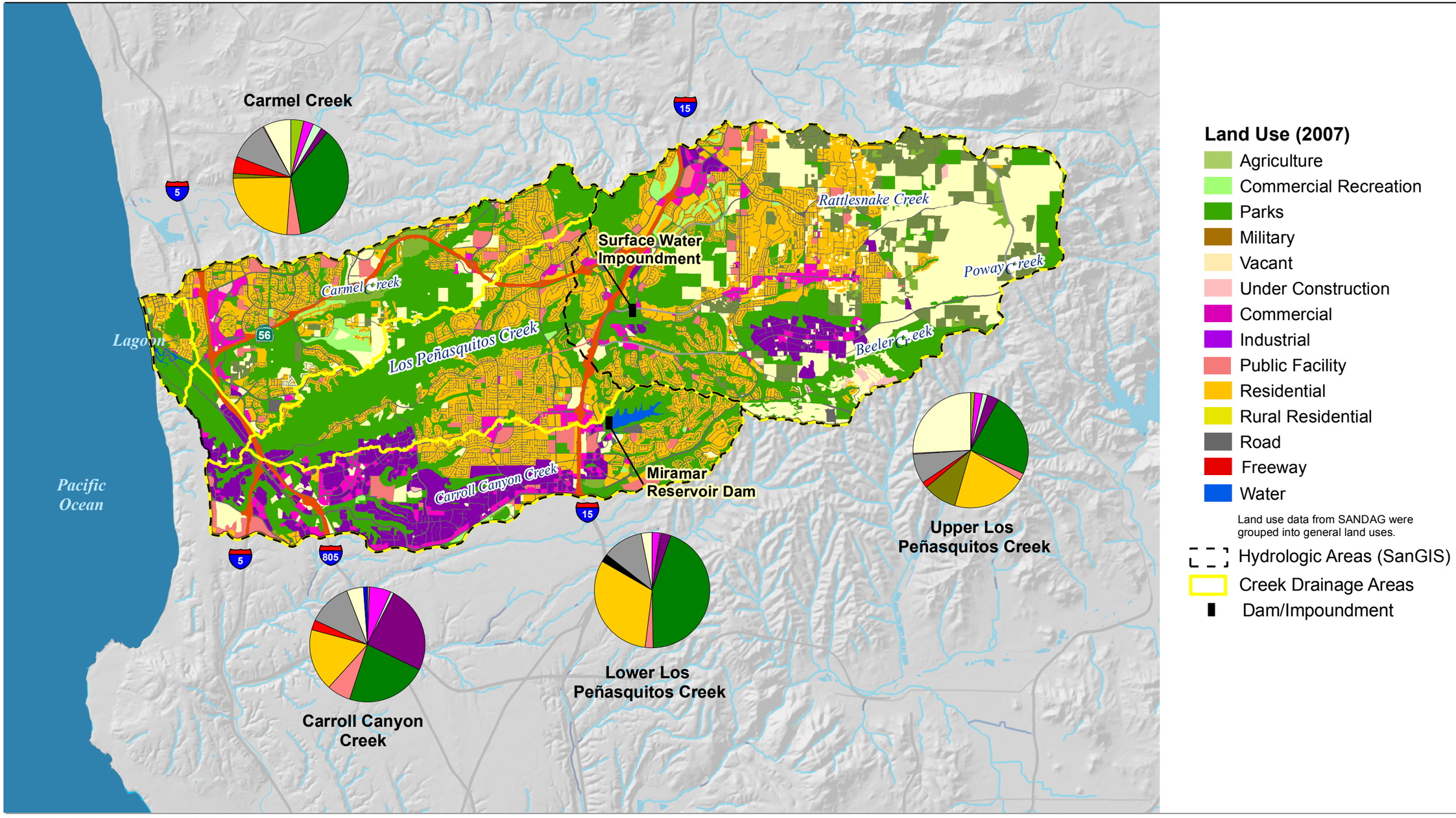
Table 2-1. Drainage Area for the Main Tributaries to Los Peñasquitos Lagoon

Drainage Area	Hydrologic Area	Acres
Carmel Creek	906.10	11,180
Los Peñasquitos Creek	906.10 and 906.20	37,028
Carroll Canyon Creek	906.10	11,004

Source: Weston 2009

Land Use

The primary land uses within the Los Peñasquitos watershed are open space park/preserve (Parks) (30%), residential (27%), rural residential (9%), vacant/undeveloped (15%), freeway (2%), and other roads and utilities (10%) (Weston 2009). Other groupings of land use classes within the watershed include agriculture, commercial recreation, industrial, public facility, water, and areas under construction (Figure 2-6, Table 2-2).



Source: Western Solutions Inc. (2009 TMDL Monitoring Report), ESA (2016)

Figure 2-6
Land Use in the Los Peñasquitos Watershed (2007)

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Table 2-2. Land Use Percentages by Sub-Watershed Adapted from Weston 2009

Land Use Class	Percent (%) of Drainage Area				
	Los Peñasquitos – Upper Watershed (Poway Hydrologic Area)	Los Peñasquitos – Lower Watershed (Miramar Reservoir Hydrologic Area)	Los Peñasquitos Sub-Watershed Total	Carroll Canyon Sub-Watershed	Carmel Valley Sub-Watershed
Agriculture	1.1	0	0.8	0.4	3.7
Commercial	2.4	2.2	2.3	6.3	2.8
Commercial recreation	1.2	0.3	0.9	0.7	2.5
Industrial	3.4	2.7	3.2	24.9	2.0
Open Space/Park Preserve	23.6	44.5	29.2	22.7	36.2
Public facility	2.0	2.1	2.1	6.6	4.1
Residential	20.8	31.6	23.7	17.6	23.4
Rural residential	9.6	0.0	7.0	0.0	1.4
Freeway	1.46	2.2	1.66	2.72	4.69
Other roads and utilities	8.29	11.48	9.15	12.18	11.15
Under construction	0.5	0.0	0.4	0.1	0.2
Vacant	25.7	2.9	19.6	4.6	7.9
Water	0.0	0.0	0.0	1.2	0.0
Total (%)	100	100	100	100	100

Source: Weston 2009

Several notable differences in land use composition and topography among the three creek drainage areas warrant an individual assessment of each sub-watershed. Carmel Valley, Los Peñasquitos, and Carroll Canyon sub-watersheds are discussed in the following subsections.

Carmel Valley Sub-Watershed

Carmel Valley was the most recently developed of the three sub-watersheds, beginning in the 1990s, with most development in the western portion of this sub-watershed occurring between 2001 and 2002. The watershed shifted from expansive open spaces to more residential and transportation land uses (Table 2-2, Figure 2-6). Parks are still the dominant land use type at 36%, followed by residential (23%) and transportation (16%), including both freeway and other roads and utilities. Impervious

surfaces in Carmel Valley comprise approximately 36% of this drainage area (Weston 2009). The watershed extends from Black Mountain in the east, under I-5, and into the Lagoon through three 12-foot by 10-foot reinforced-concrete box culverts, north of the Los Peñasquitos Creek watershed. The watershed has well-vegetated slopes and a gentle gradient, which results in a low sediment yield.

The Carmel Valley Restoration and Enhancement Project (CVREP), implemented in the early 2000s by the City as part of the construction of SR 56, helps to abate sediment flows from this sub-watershed. Designed to preserve an open space corridor along Carmel Creek, CVREP implemented structural best management practices (BMPs) both within and along Carmel Creek that appear to have successfully reduced annual sediment loads delivered to the Lagoon. Thick stands of willows within the creek help to abate sediment loads from entering the Lagoon from this tributary. However, increased freshwater input and non-native plant propagules from residential areas and golf courses within this drainage have remained a management issue (Williams et al. 1997).

Los Peñasquitos Sub-Watershed

Los Peñasquitos Canyon is the largest of the three sub-watersheds, representing approximately 61% of the total watershed area (Weston 2009). Land use in the upper watershed is primarily undeveloped land (26%) and parks (24%; Table 2-2). However, with the growth and development of Poway over the last 20 years, residential land use has grown to 21% in the upper portion of the sub-watershed (Figure 2-6). Impervious surfaces in the upper watershed comprise approximately 29% of this drainage area (Weston 2009). In the lower watershed, parks are the dominant land use type, comprising 44.5% of total land use because of the presence of Los Peñasquitos Canyon Preserve. Residential is the second most prominent land use type in the lower watershed at 32% of total land use, followed by transportation (*i.e.,* freeways, roads, and utilities) at 14%. Industrial and commercial land use types are present along the southern edge of Los Peñasquitos Canyon, although at a relatively small percentage of overall land use. Impervious surfaces in the lower watershed comprise approximately 37% of this drainage area (Weston 2009).

Unlike the other two sub-watersheds, a wide alluvial plane characterizes the lower portion of Los Peñasquitos Canyon. While this creates a larger source of sediment and exotic plant species, it also serves to slow transport rates to the Lagoon and delay response times in Los Peñasquitos Creek to rain events. The lower reach of Los Peñasquitos Creek is channelized just before its confluence with Carroll Canyon Creek to protect adjacent business parks and access roads within the Preserve from flooding. Channelization of this creek was likely performed to protect grazing land for cattle in the lower portion of Los Peñasquitos Canyon.

Carroll Canyon

Characterized by steep, incised canyons and drainages, Carroll Canyon has the greatest concentration of industrial (24.9%) and commercial (6.3%) land uses within the entire Los Peñasquitos watershed (Table 2-2). Impervious surfaces in Carroll Canyon comprise approximately 54% of this drainage area (Weston 2009). The presence of two large sand mining

facilities located within the floodplain of this sub-watershed and a cement channel that accelerates flows from Carroll Canyon Creek through Sorrento Valley increases storm flows and sediment transport to the Lagoon.

2.2.3 Active System Management

The LPLF 1985 Enhancement Plan developed a set of action items to guide restoration, enhancement, and ongoing management of Los Peñasquitos Lagoon (Coppock 1985). Although not all the action items from the 1985 Enhancement Plan have been implemented, the Lagoon has been greatly improved due to completed or ongoing efforts, described in detail in the updated Enhancement Plan. Restoring tidal mixing and increasing the tidal prism within the Lagoon was a key measure and priority for the 1985 Enhancement Plan, as it was seen as the most important factor in restoring lagoon health and reducing populations of mosquitoes and midges that thrived during past extended inlet closures. Prior to the 1985 Enhancement Plan, mouth closures at the Lagoon not only occurred frequently, but also often extended for several months to a year, with some cases of inlet closures extending beyond a year (see Section 4.4.3 in Enhancement Plan). Compounding the impacts that generally occurred during extended inlet closures (*e.g.,* dissolved oxygen [DO] depleted to levels toxic to aquatic animals) were the daily discharges of primary-treated sewage into the Lagoon from three separate sewage treatment plants (see Section 3.1.6 in Enhancement Plan) from 1950 to the early 1970s. Planned discharges of treated effluent were eventually discontinued by the City and redirected away from the Lagoon to the City's main sewage infrastructure through two pump stations (Pump Station 64 and Pump Station 65). However, numerous sewage spills from Pump Station 64 continued to impact water quality within the Lagoon and contributed to legacy pollutants entrained in the Lagoon's sediments from decades of effluent discharges and spills that still affect water quality during extended inlet closures.

Inlet Management and Maintenance

Since the 1985 Enhancement Plan, LPLF has continued the adaptive management approach to maintain the Lagoon's inlet and restore its tidal prism. Project permits determine when inlet maintenance can occur through environmental conditions that include threshold values of dissolved oxygen and salinity, as well as conditions favorable for freshwater mosquito breeding. The current program involves measuring and monitoring water quality parameters and remote viewing of inlet channel morphology to determine if the inlet is trending toward closure and if environmental conditions will be met to implement inlet maintenance. Material excavated from the inlet area is placed on Torrey Pines State Beach for beneficial re-use provided that grain type and size are determined by the Corps to be suitable for beach disposal. The program was initiated in the 1985 Enhancement Plan and subsequently reviewed and modified in two separate efforts in 1997 and 2006, which examined previous efforts, results, and lessons learned. Programmatic-level changes occurred during both of these efforts, focusing on key elements during the progression of maintenance efforts. Furthermore, the dynamic nature of the inlet coupled with additional factors (*e.g.,* nesting season for listed bird species, regional beach nourishment efforts) necessitated that annual efforts also take an adaptive approach (*e.g.,* use of equipment) to maximize efficiency and benefits, while minimizing project impacts and adhering to annual budgets. Project needs, priorities, and constraints have been assessed prior to implementing annual maintenance efforts, as well as throughout the duration of each inlet maintenance effort.

The current approach for inlet maintenance uses heavy equipment that consists of excavators, wheeled front loaders, and dump trucks. Project permits dictate environmental thresholds that must be met to trigger inlet work and include:

- when DO reaches 5 milligrams per liter (mg/L), or
- when water salinity levels in the Lagoon are below 25 parts per thousand (ppt) and DO levels are determined by a qualified biologist to be likely to drop below 5 mg/L within the next 2-week sampling interval, or
- when water salinity levels in the Lagoon are above 33 ppt (hypersaline), or
- when correspondence is received from the County DEH indicating concerns over public safety.

Additional resource agency compliance measures for the inlet maintenance include the following:

- Grain size analysis from grab samples taken within the project area indicating >80% sand and cobbles to avoid chemical analysis of dredged materials dictated by EPA's Inland Testing Manual.
- Monitoring for listed bird species when inlet work is performed during nesting season (March through September).
- Monitoring for grunion within the proposed disposal area when inlet work is performed during grunion spawning season.
- Performing beach profile surveys to determine if beach disposal impacts grunion spawning through augmentation of beach elevations beyond natural conditions.

Once thresholds are met and permits activated, work is performed, typically taking between 7 and 10 days to excavate, stockpile, and haul out areas of shoaled sand for approximately 1,000 feet east of the lower bridge to reestablish tidal connectivity. On average, approximately 24,000 cubic yards (cy) of sand is removed from the inlet and placed on the beach south of the inlet to provide beneficial reuse in conjunction with limiting the ability of this sand to reenter the inlet area. However, following regional beach nourishment activities, both volume and frequency of inlet work can increase greatly, with volume of excavated sand exceeding 75,000 cy per year over multiple efforts rather than just once. Typically, inlet maintenance is performed during the spring months to maximize benefits to aquatic organisms and protect areas used by listed birds for nesting. Performing inlet work in the spring also helps to minimize the risk of closures that typically occur during winter months and avoids summer months when beach use by the public is at its maximum. However, inlet work may be performed outside of the spring when concerns for public safety from vector-borne illness and/or flooding of nearby areas are justified and funding is available.

Flood Channel Management

The City's Transportation and Stormwater Department provides flood channel management and maintenance services at the base of the three tributaries that empty into the Lagoon using their Master

Channel Maintenance Plan. Flood management within urbanized watersheds can be extremely difficult since efforts to optimize diversion and dewatering efforts can generate impacts to natural drainages and creeks, as well as receiving waterbodies downstream. This holds true especially within Sorrento Valley, where the historic floodplain has been reduced to a narrow pilot channel cut through the middle of a commercial business park developed in the 1960s and 1970s before delineation of the ~~Federal Emergency Management Agency (~~FEMA~~)~~ floodplain. As a result, many of the businesses in Sorrento Valley are highly vulnerable to flooding once capacity of the channel has been exceeded during storm events with moderate to excessive precipitation. Understanding the need to protect local business, LPLF has been working with the City to modify their approach to improve flood management within Sorrento Valley while minimizing downstream impacts. Rather than focus solely on maximizing capacity within the pilot channel, restoring elements of the natural floodplain (*e.g.,* construct meandering channels) would be considered. This approach has been developed to provide restoration and enhancement opportunities within the riparian corridor that dominates the lower portion of the pilot channel and to provide protection to sensitive downstream habitats within the Lagoon that include the area designated for large-scale recovery of salt marsh.

2.2.4 Site Topography

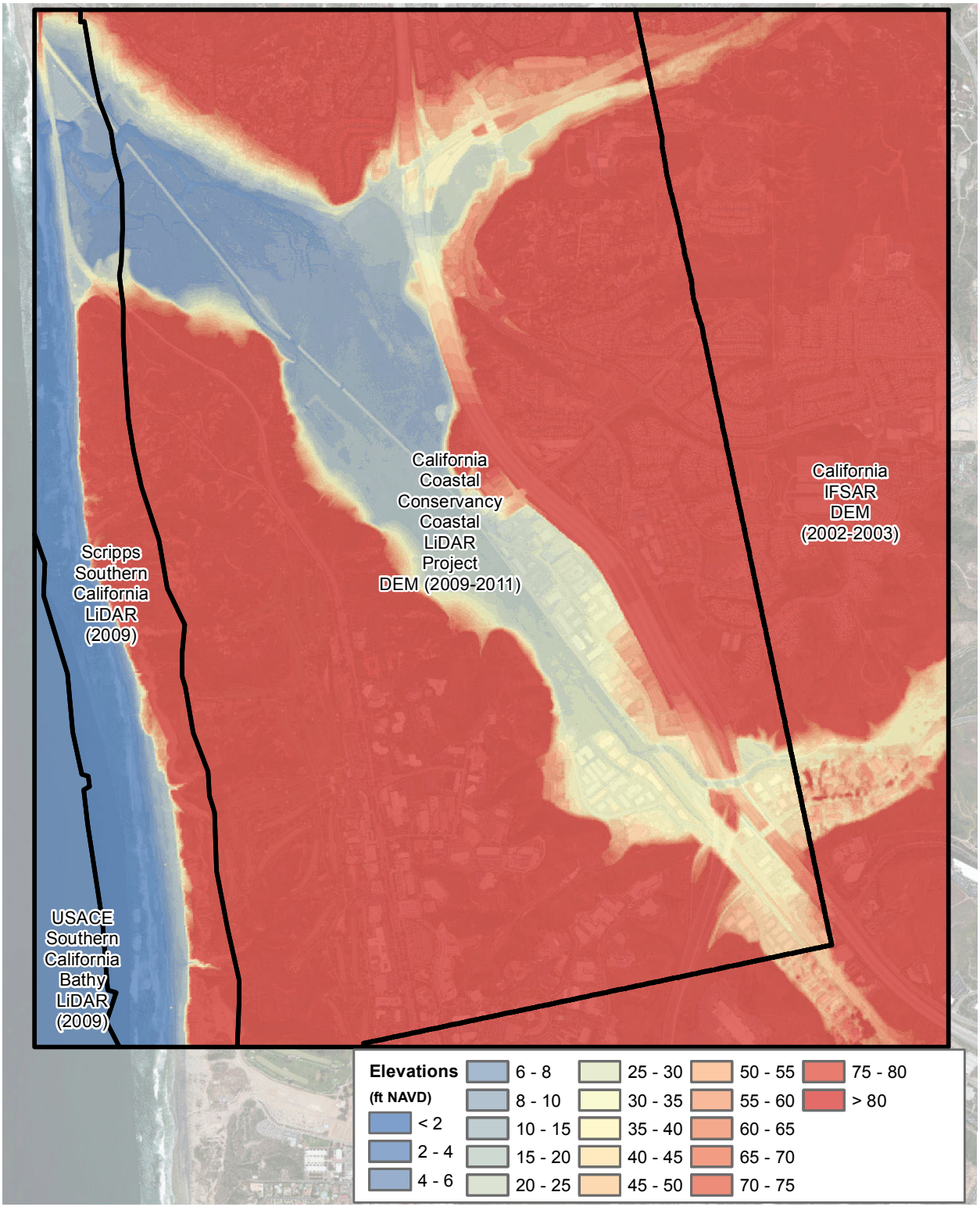
Elevation ranges within the Lagoon have been consistently monitored since 1995, when transects were established to provide a coarse measure of baseline topography and sediment accretion within the Lagoon (Appendix B of the Enhancement Plan). A more precise approach to measuring topography within the Lagoon was implemented during vegetation association surveys and development of the Lagoon's baseline model, which occurred between 2012 and 2014. Existing topography at the Lagoon was compiled from multiple sources, as shown in Figure 2-7. Off the coast, the Corps Southern California Bathy Light Detection and Ranging (LiDAR) (2009) was used for bathymetric data, while the Scripps Southern California LiDAR (2009) provided more detailed data along the shore and into the lagoon mouth. The rest of the Lagoon was covered with the SCC Coastal LiDAR Project Digital Elevation Model (DEM) (2009–2011). The remaining area within the site boundary was covered with the California Interferometric Synthetic Aperture RadarDEM (2002–2003), which is lower resolution than the other data sets.

2.2.5 Land Use

The Lagoon is jointly managed by State Parks, as primary landowner, and LPLF, a 501 (c)(3) non-profit established in 1983 by SCC to facilitate the development and implementation of the original Lagoon Enhancement Plan certified in 1985. State Parks and LPLF work together for ongoing maintenance and management efforts at the Lagoon.

Surrounding Land Uses

Various land uses surround the Lagoon. The northern end of the Lagoon is bounded by Carmel Valley Road. Residential development is located immediately to the northeast of Carmel Valley Road. South of Carmel Valley Road and SR 56, Sorrento Valley Road continues as the eastern boundary of the Lagoon with I-5 also immediately to the east. The City Pump Station 65 is inset into the eastern boundary of the Lagoon adjacent to Sorrento Valley Road. Developed research parks with large



Source: ESRI, USACE (2009), Scripps (2009), CA State Coastal Conservancy (2009-2011), IFSAR (2002-2003), ESA (2016)

0 1,000 2,000 4,000 Feet

Figure 2-7
Elevation Ranges in Los Peñasquitos Lagoon

buildings and impervious parking lots are adjacent to the southern half of the eastern boundary along Sorrento Valley Road. I-5 curves across the southern edge of the Lagoon, near where Carroll Canyon Creek enters the Lagoon. Additional research parks border the southwestern edge of the Lagoon. Most of the western edge of the Lagoon is bounded by natural undeveloped upland areas that rise out of the lagoon basin and form TPSNR. Public recreation, including trails and overlooks, traverse TPSNR. North Torrey Pines Road (Highway 101) passes north/south through TPSNR and along the northwestern boundary of the Lagoon. The South Beach parking lot is adjacent to Highway 101 and the Lagoon at the northern end of TPSNR, and the North Beach parking lot is located near the northern tip of the Lagoon. The North County Transit District (NCTD) railroad corridor passes through the entire north/south length of the Lagoon.

2.2.6 Public Access and Recreation

Overview

Los Peñasquitos Lagoon's status as a State Natural Preserve requires controlled access that is limited to protect its rare species and habitats. Direct access to the Lagoon is limited to scientific research efforts that support understanding and protection of coastal salt marshes, which are granted through a Right of Entry Permit or Scientific Collection Permit issued by State Parks. For this reason, only passive recreation along the Lagoon boundaries is permitted. Neither fishing nor recreational kayaking are permitted within lagoon channels due to potential impacts to sensitive/rare vegetation, EFH, and listed bird species.

Currently, public access is available along trails, as well as roadways that border the Lagoon at the following locations: Highway 101, Carmel Valley Road, Sorrento Valley Road, Roselle/Flintkote Road, and the Marsh Trail (see Figure 2-8). Public access around the Lagoon can be considered fragmented in nature and poorly integrated with regional trail networks. Only Sorrento Valley Road (Multi-Use Trail, City of San Diego) and the Marsh Trail (established trail within TPSNR) are dedicated trails. Additional informal trails also extend through areas within the Lagoon, as shown in Figure 2-9.

Highway 101

Constructed in 1932, Highway 101 runs north-south along the western edge of the Lagoon where it is referred to as North Torrey Pines Road. This area is within the City of San Diego's ROW. There are no pedestrian facilities along the eastern edge of the roadway and the undeveloped shoulder is too narrow to accommodate improvements on the segment before dropping off to the Lagoon, short of an elevated walkway or modifications to the roadway alignment and bicycle lane. The bike lane provided along the eastern edge (northbound) provides an appropriate level of access. Along the western edge, the current configuration often places bicyclists and pedestrians in conflict with vehicles entering or leaving parking spaces, especially during peak days (*e.g.,* weekends, holidays). The bike lane runs within a few feet of the back of the parking stalls, giving very little warning to a cyclist when a vehicle backs out of a parking space. Pedestrians must choose to walk behind the parked cars or along the unimproved shoulder in front of the parked cars. Some pedestrians elect to walk along Torrey Pines State Beach, though access from Highway 101 can be difficult because of riprap located along the edge of the eroded coastal bluff. The shoulder varies in width as a result of active erosion of the slope

at the back of the beach and bluff failures, evidenced by broken pavement. Compounding the issue of public safety, vehicles often stop within the bike lane to wait for potential parking spots or dart in from the right lane of Highway 101. During peak use, vehicles attempting to enter the south lot often back up into the bike lane.

Carmel Valley Road

Carmel Valley Road runs along the northeastern edge of the Lagoon. Bike lanes are provided along both sides for most of the length of the road, except for the stretch between Portofino Drive and Sorrento Valley Road in the southeast. A pedestrian sidewalk runs along the northeastern edge of Carmel Valley Road from Sorrento Valley Road, past McGonigle Road (with access to the North Beach parking lot), up to Via Mar Valle where it stops. There is no fully improved pedestrian access along the Lagoon edge of Carmel Valley Road. From Via Borga to Via Mar Valle (where free parallel parking is offered), a narrow (less than 4 feet) dirt path within the City's ROW has been improved immediately adjacent to the curb. Outside of this area, only narrow user-created trails exist along the shoulder, which is located within the City and City of Del Mar's ROWs and is not a dedicated trail within TPSNR.

The northern portion of the Lagoon includes a 22.5-acre triangle of open space situated between the railroad, Carmel Valley Road, and the North Beach parking lot. This portion of the preserve slopes downward from Carmel Valley Road to the north and east and flattens out to the Lagoon along the rail line and entryway. There are currently no identified dedicated trails within TPSNR through this portion of the park; however, user-generated trails originating at various points along Carmel Valley Road cross the area (Figure 2-9). These trails converge at the Highway 101 bridge over the railroad tracks and are used as informal access to the beach under the northern bridge span. A 1,600-foot portion of the trail extending from the North Beach parking lot to the railroad undercrossing follows an SDGE ROW to an abandoned pump station. Signs are posted at many of these trails, informing visitors to stay out of the wildlife area. The trails are frequently used as a shortcut to the beach for visitors who park for free along Carmel Valley Road or within the adjacent neighborhood rather than paying a fee in the North Beach parking lot.

Sorrento Valley Road

Sorrento Valley Road runs along the eastern edge of the Lagoon with a Caltrans easement where it borders I-5 and is managed by the City. Approximately 1 mile of the road is closed to vehicular traffic between the Caltrans Park and Ride lot near Carmel Valley Road and Pump Station 65 located just north of Carmel Mountain Road. This closure occurred in the 1990s, when Caltrans built an interchange between SR 56 and I-5. While the City attempted to reopen it for vehicular traffic, this effort was abandoned due to pressure from the environmental community. In 1998, the closed section of Sorrento Valley Road was reopened for pedestrian and bike use only, and in 2001, it was dedicated by the City as a Class I Multi-Use Path. South of Carmel Mountain Road, bike lanes and sidewalks are provided on both sides. Free parking is provided at the Caltrans Park and Ride lot and along Sorrento Valley Road, just north of Carmel Mountain Road. The closed section of Sorrento Valley Road is currently under consideration for improvements by Caltrans as part of their Public Works Plan/Transportation Resource Enhancement Plan for the North Coast Corridor that extends from La Jolla to Oceanside.

Source: Google Earth (2019), ESA (2016)

0 500 1,000 2,000 Feet

Figure 2-8
Existing Public Access

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Source: ESRI, RTNERR (2014)

Figure 2-9
Existing Conditions along Carmel Valley Road

Roselle Street/Flintkote Avenue

Roselle Street and Flintkote Avenue run north-south near the southeastern edge of the Lagoon and are connected by Estuary Way, which borders open space areas adjacent to TPSNR. TPSNR includes a large parcel owned by the SCC and managed by State Parks. Because of the low volume of vehicular traffic on these streets, no formal bicycle facilities exist. Sidewalks exist on both sides of Roselle Street and then along the western edge of Flintkote Avenue. Free parking is provided along Roselle Street and Flintkote Avenue. Access for authorized vehicles into TPSNR from Flintkote Avenue is provided through a locked gate operated by State Parks that allows for pedestrian and bike traffic. Access to the State Park portions of Flintkote Avenue/Marsh Trail is often limited after rain events, as sediment deposition from natural drainages located just north of the General Atomics property obstructs the trail.

Flintkote Avenue is the primary access point to two State Parks residences that are used by ranger and operations/maintenance staff. In 2015, a section of Flintkote Avenue was realigned upslope of its original location in a joint project between SANDAG, Caltrans, and State Parks. This road also provides access to the southeastern trailhead for the Marsh Trail through a second gate located just northwest of the State Parks residences.

Marsh Trail

The Marsh Trail is the only dedicated trail within the State Parks-owned portion of the Lagoon. Bicycles are allowed on the paved portion of the trail but not on the earthen portion that connects Flintkote Avenue to North Torrey Pines Road. The Marsh Trail runs a northwest-southeast route along the base of the hillside, immediately adjacent to and congruent with the intertidal marsh in areas. There is a portion of the trail that ascends at the northern end and is situated on a flat terrace, which sits approximately 10 feet below road grade and is reached by descending a steep embankment. The area sits 14 to 20 feet above the marsh plain and provides an excellent viewing location; however, that the elevated trail segment of the Marsh Trail is a user-generated segment and the officially dedicated trail runs along the marsh edge. The trail descends to the edge of the marsh as it proceeds to the southeast. Once at the marsh edge, the trail continues three-quarters of a mile to the point at which it becomes pinched between a tidal channel, the railroad berm, and a hillside spur. Continuing south from this point, the trail gradually gains elevation and distance from the Lagoon's edge.

The Marsh Trail provides some unique views of the Lagoon and the cliffs of TPSNR. However, it does present some challenges with regard to protecting the Lagoon's habitats. This is especially true in the first mile south of Highway 101, where the trail follows the edge of salt marsh habitat. Along this segment, the trail drops below the current high tide line for the first thousand feet of trail. As a result, sections of trail along this segment are often submerged during high tide and pedestrian traffic is diverted off-trail to upslope areas to circumvent areas of inundation or mud.

Existing Trail Access

The north end of the Marsh Trail terminates on the east side of Highway 101 about 600 feet south of Torrey Pines Park Road (Figure 2-10), which provides access to the South Beach parking lot

Source: ESRI, RTNERR (2014)

Figure 2-10
Current Marsh Trail Access from the South Beach Parking Lot

and continues on to the State Reserve Visitor Center and trailheads at the top of the bluffs. The South Beach parking lot is intended to be the primary departure point for users of the Marsh Trail. The entrance to the Marsh Trail is a little over 100 feet from the South Beach parking lot. However, Highway 101 creates a substantial barrier rising from 6 to over 20 feet high (Photo 2 in Figure 2-10), with four to six travel lanes wide, no pedestrian facilities to cross or walk along, and carries high-speed vehicular and bicycle traffic. On the east side of Highway 101, the trail immediately drops 12 feet from the road edge, down a steep embankment, to the trail (Photo 1 in Figure 2-10). A trail marker is mounted toward the bottom of the embankment, concealing it from view for most visitors. Even with a map, the trail location is difficult to detect and is unsafe to access.

The south end of the Marsh Trail ends at a gate near the State Parks residences. While there is no signage or informational kiosks, interpretive panels were installed at this location to inform trail users about the Lagoon's unique species. From the State Parks residences, the Marsh Trail continues as a shared path along the park road to the gate near Flintkote Avenue and Estuary Way.

Other Public Access Planning Efforts

Several public access planning efforts are proposed by others to traverse some portion of the Lagoon study area, including:

- Trans-County Trail: The County of San Diego is leading an effort to create a 110-mile trail traversing San Diego County from the desert, over the mountains, and down valleys to the coastal bluffs.
- Sea to Sea Trail: The San Diego Sea to Sea Trail Foundation, in conjunction with nine government agencies, is creating a 140-mile walking, cycling, and horseback riding trail, running from the Salton Sea to the Pacific Ocean.
- California Coastal Trail: In 1975, the California Coastal Plan, Policy 145, specifically called for the establishment of a Coastal Trail System: "A hiking, bicycle, and equestrian trails system shall be established along or near the coast… Ideally, the trails system should be continuous and located near the shoreline, but it may be necessary for some trail segments to be away from the oceanfront area to meet the objective of a continuous system."
- Coastal Rail Trail: The six coastal cities in San Diego County (Oceanside, Carlsbad, Encinitas, Solana Beach, Del Mar, and San Diego) along with the ~~North San Diego County Transit Development Board~~North County Transit District, the ~~Metropolitan Transit Development Board~~San Diego Metropolitan Transit System, SANDAG, and Caltrans are partnering to create a multi-use pathway within or adjacent to the San Diego Northern Railway ROW.

2.2.7 Hydrology and Sediment

Coastal Processes

Coastal areas are often divided into natural compartments referred to as littoral cells. Each cell serves as a system composed of a complete cycle of sedimentation that includes sources, transport paths, and sinks (Flick et al. 2011). The Lagoon is part of the Oceanside Littoral Cell. The Oceanside Littoral Cell is located within the Southern California Bight (a curve or recess in a coastline, river, or other geographical feature), bounded on the north by Dana Point and on the south by the Scripps/La Jolla Submarine Canyon System. Sediment in the cell travels south from Dana Point past the six San Diego County lagoons to the Scripps Submarine Canyon, which acts as a sink. Sediment stops along man-made structures (Oceanside Harbor), fringe reefs, offshore sand bars, beaches, and within the lagoons that act as temporary sinks until freshwater flows can flush out the mouths. Historically, the major sources of sediment (*e.g.,* sand and cobbles) for this cell have been ephemeral rivers and drainages, as well as erosion from coastal bluffs (Flick 2006). However, many of these sediment sources have been reduced and, in some cases, eliminated due to alterations of coastal tributaries by anthropogenic structures (*e.g.,* dams), armoring of coastal bluffs, and gravel-mining facilities. Movement of marine sediment within the Oceanside Littoral Cell is driven primarily by waves generated in the North Pacific Ocean during the winter months and the predominant longshore current that moves in a southerly direction (Flick et al. 2011). While a seasonal shift in transport direction during summer months occurs to a degree in beaches within the northern reach of the Oceanside Littoral Cell, this does not occur at Torrey Pines State Beach under most circumstances due to a shadowing effect of the La Jolla headland and refraction of wave energy by offshore marine canyons located south of the Lagoon.

The fixed inlet and increased sedimentation have decreased the ability of the Lagoon to flush sediment out of the inlet area that accumulates over time from coastal processes. As a result, cobbles transported along the coast tend to remain in the Lagoon's inlet area, creating a hardened structure, or sill, that facilitates further accretion by marine-originated sand (Boland 1993; Coppock 1985). As discussed in Section 2.2.3, the inlet is now mechanically excavated to be kept open and restore tidal circulation with lagoon channels.

Tidal Characteristics

The San Diego coast experiences mixed semidiurnal tides, with two high and two low tides of unequal heights each day. In addition, the tides exhibit strong spring-neap tide variability; spring tides exhibit the greatest difference between high and low tides, while neap tides show a smaller-than-average range. The spring-neap tides also vary on an annual cycle, with the highest spring tides occurring in June–July and December–January and the weakest neap tides occurring in March–April and September–October.

Tidal Datums

When the Lagoon is open to the ocean, tidal flows propagate through the inlet of the Lagoon back through the tidal channels. However, tidal volume and extent within the Lagoon can be constricted when the inlet is occluded with marine sediments (cobbles and sand) that modify inlet dimensions.

After inlet maintenance occurs and sand is removed to enlarge the inlet, low tides can drain to below mean sea level (MSL), but as sand fills in the mouth, water cannot drain out on low tide and only high tides enter the Lagoon.

From September 2013 through May 2014, tidal datums were collected by scientists from the Tijuana River National Estuarine Research Reserve (TRNERR) to perform a comparative analysis looking at tidal elevations offshore and within the Lagoon's channels. Comparisons of the La Jolla tide gauge and bridge gauge show that the mean high high water (MHHW) and mean high water datums are similar during the period analyzed (September 2013–May 2014) when the inlet at the Lagoon is open and not very constrained. This effort was later expanded during technical analysis to provide a more comprehensive representation of tidal range and elevations within the lagoon channels. Three additional gauges were established within primary tidal channels along with the placement of HOBO sensors in channel segments (Figure 2-11). Data collected at these locations were then analyzed in conjunction with elevation mapping of the Lagoon provided by the CCC LiDAR Project (2009–2011) (see Figure 2-7) to map the extent of tidal influence within the Lagoon at the time of data collection (see Figure 2-12). The data also showed variation in tidal elevation at each of the four locations in comparison to the La Jolla gauge with muted tidal influence in a channel segment located west of McGonigle Road.

Sea Level Rise

Historical trends in relative sea level are measured at tide gauges, which capture relative vertical movements of land as well as changes in the global, or eustatic, sea level. These records measure the local rates of sea level rise relative to the coast. NOAA estimates that relative sea levels have been rising at a rate of 2.07 millimeters per year at the La Jolla tide gauge (1924–2006).

The State of California Sea-Level Rise Guidance Document (State of California 2013) provides guidance for California projects on how to use predictions of global sea level rise for long-term planning purposes. The document recommends using the estimates provided by the National Research Council's report on *Sea-Level Rise for the Coasts of California, Oregon, and Washington* (2012) as a starting place to select values. Accepted predictions used for technical analysis conducted as part of the proposed project were:

- 1.6 to 16 inches of sea level rise by 2030,
- 5 to 24 inches of sea level rise by 2050, and
- 17 to 66 inches of sea level rise by 2100.

Extreme high-water levels may change more than MSLs as a result of alterations in the occurrence of strong winds and low pressures. This has not been extensively studied for the project area but has been considered in design for the proposed project. It should also be noted that predicted rates for sea level rise have been revised since the completion of the Enhancement Plan in 2018 and would be applied for projects that tier off of this Program EIR. Guidance outlined in the Ocean Protection Council's (OPC) State of California Sea-Level Rise Guidance updated in 2018 may be used as a potential updated source of sea level rise predictions (OPC 2018); other updated guidance or recommendations at the time of project-level design may be evaluated, as applicable.

Source: ESA (2017), GoogleEarth (2014)

0 250 500 1,000 Feet

Figure 2-11
Locations of Tidal Gauges within Los Peñasquitos Lagoon

Source: ESA (2017)

0 330 760 1,520 Feet

Figure 2-12
Spatial Extent of Tidal Influence in Los Peñasquitos Lagoon (2016-2017)

Lagoon Inlet

Historic evidence that includes mollusk middens left by indigenous people, railroad maps from 1888, notes by Spanish explorers, sediment cores, and photographs indicates that the Lagoon was a marine-dominant system with the inlet most likely remaining open consistently throughout the year (Beller et al. 2014; Cole and Wahl 2000; Crooks et al. 2014). However, it is likely there were periods of mouth restriction and temporary closures (Beller et al. 2014; Crooks et al. 2014). With the current inlet location fixed under the lower bridge span and unable to meander, it is vulnerable to occlusion by marine sediments resulting in more frequent closures and for longer durations. Compounding this issue, Lagoon outflows have been substantially muted by other structures within the Lagoon (*e.g.,* railway berms and the North Beach parking lot) that limit the ability to remove these sediments even following moderate to large storm events. As a result, efforts to excavate the inlet area using heavy equipment to maintain the Lagoon's tidal prism have occurred since 1965. Identified as a key priority for lagoon health, inlet maintenance was formalized in the 1985 Lagoon Enhancement Plan, and adaptive approaches using heavy equipment (*e.g.,* equipment type, timing, methods) have been utilized and refined up to the current approach, typically implemented on an annual basis.

Creek Input and Flooding

Creek Input

Freshwater inflow to wetlands has a major influence on the type of vegetation present and helps establish the internal channel network. The potential amount of water contributed, frequency of contributions, and type of water contributed (*e.g.,* saline, fresh, polluted) are important in the consideration of the hydrologic functions of the wetlands. The hydrology of the three creeks that feed into the Lagoon—Los Peñasquitos Creek, Carmel Creek, and Carroll Canyon Creek—is discussed below and on the following pages. Overarching plans and programs that influence upland watershed management include the City of San Diego Municipal Waterways Maintenance Plan as well as the Stormwater Municipal Waterways Maintenance Plan, which includes Jurisdictional Run Off Management Plans, Water Quality Improvement Plans, and BMPs. Additionally, the CVREP area, as guided by the CVREP Master Plan and Natural Resource Management Plan, is aimed at preventing sedimentation of the Lagoon. These program-level documents influence upstream activities and have an effect on subsequent freshwater and sedimentation inputs within the Lagoon; however, projects and activities that affect upstream resources located outside of the project limits are not included as part of the proposed project and would be implemented separately.

Los Peñasquitos Creek

Los Peñasquitos Creek receives drainage from the largest of the Lagoon's three sub-watersheds and enters the Lagoon from the southeast after it joins Carroll Canyon Creek in Sorrento Valley. The creek bed has become heavily vegetated with riparian species over the last decade, most likely as a result of continuous freshwater flows from urban sources (White and Greer 2002). The average base flow for Los Peñasquitos Creek is estimated to be between 1.0 and 2.17 cubic feet per second (cfs) (Coastal Environments 2003; Crooks and Uyeda 2010; Weston 2009). During storms, the creek's response to

rainfall is delayed when compared to the other two creeks, likely a result of dense vegetation, a dam upstream that may restrict flow, and the wide floodplain that characterizes the lower section of the canyon. The estimated annual wet-weather load for Los Peñasquitos Creek is 419,219 pounds (lbs)/season, which results in a sediment volume of 155 cy during a typical year (Weston 2009).

The U.S. Geological Survey (USGS) maintains a long-term flow gauge (Station #11023340) in the upper Los Peñasquitos Creek watershed, the only long-term and continuous gauge within the entire watershed. Daily discharge rates from this gauge are available for 1964 through present and have successfully captured an episodic flood event that occurred in December 2010 that was estimated to be a 50-year event. It should be noted that daily discharge rates recorded at this USGS gauge are not representative of discharge rates in the lower Los Peñasquitos Creek watershed. The City has operated a mass loading station near the base of Los Peñasquitos Creek for monitoring discharge rates during storm events, but only during select years and not during dry weather.

Additional streamflow data were collected at the base of Los Peñasquitos Creek between 2007 and 2008 as part of the Lagoon Sediment TMDL monitoring study (Weston 2009). Weston created transformations to calculate flows based on the USGS gauge data (Table 2-3). Under base flow conditions, the downstream gauge showed slightly larger flows than the USGS gauge. However, under storm events, the downstream gauge showed noticeably smaller flows (even smaller than would be expected with infiltration upstream), which may indicate that the stream flows are underestimated. The Weston transformations were applied to the return rates from the USGS gauge to calculate approximate returns for the three creeks (Table 2-3).

Table 2-3. USGS and Weston-Calculated Runoff Flow Conditions

Return Period (year)	Upper Los Peñasquitos Streamflow[1] (cfs)	Lower Los Peñasquitos Streamflow[2] (cfs)	Carmel Creek Streamflow[2] (cfs)	Carroll Canyon Creek Streamflow[2] (cfs)
50	7,233	5,240	1,703	8,075
10	503	364	118	562
5	260	188	61	290
1	49	36	12	55

cfs = cubic feet per second
[1] Calculated from USGS gauge #11023340.
[2] Calculated using Weston 2009 transformations.

FEMA (2012) also modeled flow return rates in a 1976 Hydrology for Flood Insurance Study, Soledad Canyon, and Tributaries study. These flows are presented in Table 2-4 and are an order of magnitude larger than those calculated using the transformations. Although the Weston study is more site specific and current than the FEMA analysis, future flood modeling that goes through FEMA would be required to use the FEMA values as a starting point, so these values are included as well.

Table 2-4. FEMA Runoff Flow Conditions

Return Period (year)	Lower Los Peñasquitos Streamflow (cfs)	Carmel Creek Streamflow (cfs)	Carroll Canyon Creek Streamflow (cfs)
500	37,600	21,300	18,700
100	16,800	9,800	6,700
50	11,300	6,500	4,500
10	3,700	2,100	1,500

cfs = cubic feet per second
Source: FEMA 2012

Carmel Creek

Carmel Creek enters the Lagoon from the northeast corner. The creek is heavily vegetated with riparian species up to I-5 with its major tributary streams including Deer Canyon, Shaw Valley, El Camino Canyon, and Bell Valley. Average base flow in Carmel Creek is estimated to between 0.47 cfs and 0.78 cfs (Coastal Environments 2003; Crooks and Uyeda 2010).

The USGS maintained a streamflow gauge on Carmel Creek between 1985 and 1986 (Station #11023450). Greer and Stow (2003) took streamflow measurements at the same location between 1999 and 2000 and observed an order of magnitude increase in dry season flows. Table 2-3 shows the return period flows as calculated from the USGS gauge with the Weston transformation, while Table 2-4 shows the much larger FEMA values. Flow at the three creeks has also been measured monthly since 1995 for the Los Peñasquitos Lagoon Monitoring (TRNERR 2012). As urbanization of the watershed has continued, the once perennial freshwater flows have increased and become year-round and have led to an increase in freshwater and brackish species (*e.g., Typha* spp., *Schoenoplectus* spp., and *Bolboshoenus* spp.) where Carmel Creek enters the Lagoon.

The estimated annual wet-weather load for Carmel Creek is 193,701 lbs/season, which is about half as much as Los Peñasquitos Creek and represents the smallest load to the Lagoon. The sediment volume contributed by the creek in a typical year is 72 cy. Photographic evidence from State Parks in the 1980s shows that Carmel Creek was once a major contributor of sediment to the Lagoon. However, it is believed that sediment transport from the creek has dropped greatly since the implementation of the CVREP in the early 1990s (Kimley-Horn 2003). Designed to offset impacts generated by the development of Carmel Valley and SR 56, CVREP incorporated several BMPs within the creek to reduce sediment transport to the Lagoon.

Carroll Canyon Creek

Carroll Canyon Creek enters the Lagoon from the southeast after its confluence with Los Peñasquitos Creek. The creek bed is heavily vegetated with riparian species in some areas and bare in others, showing exposed cobbles and sand. The lower section of Carroll Canyon Creek is a cement channel that runs for just under 0.5 mile through Sorrento Valley. Carroll Canyon Creek also is the only tributary with two active aggregate mining facilities operated by Vulcan Materials

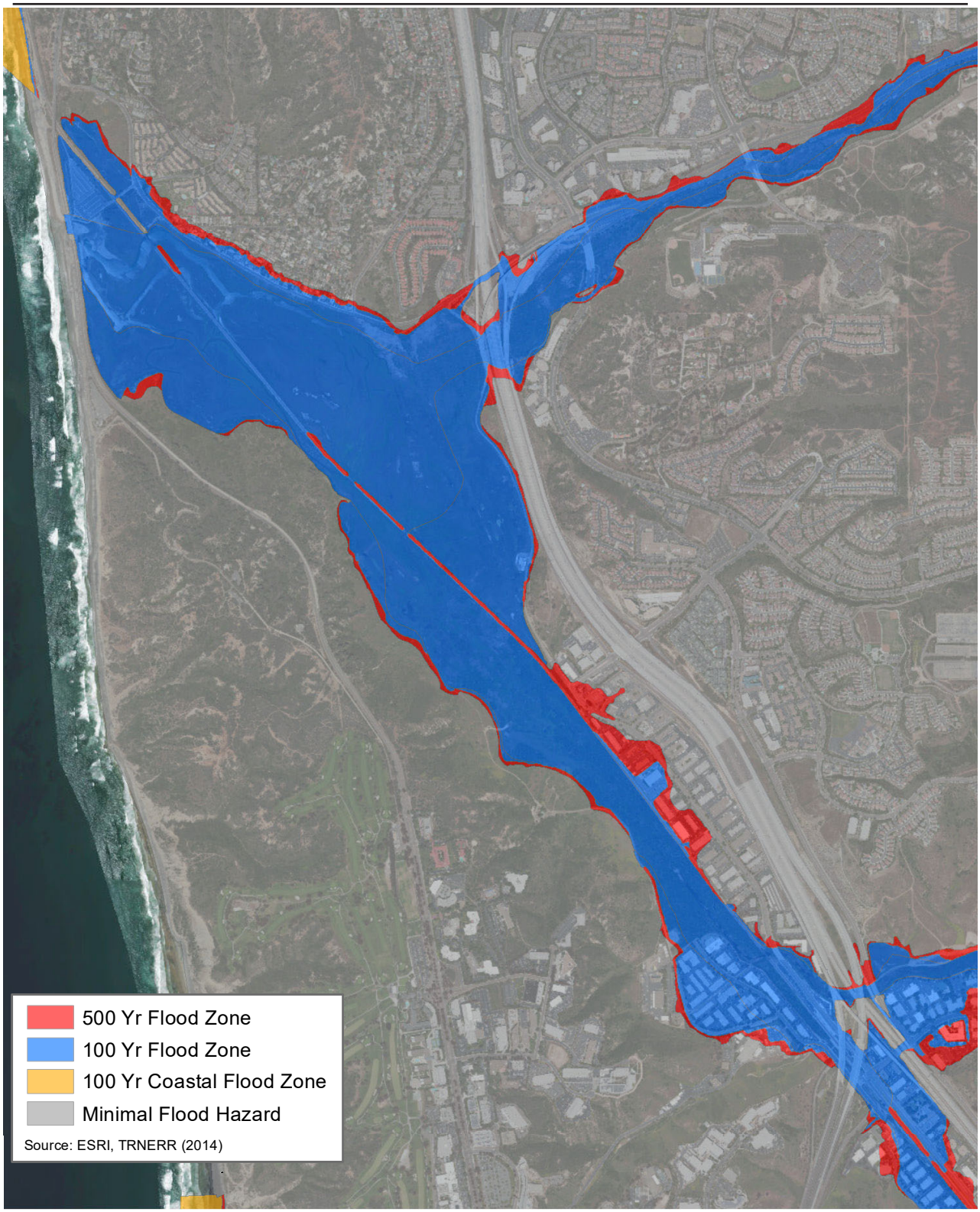
Company and Hanson Aggregates. While the Vulcan site is currently scheduled for decommission, the Hanson facility continues to operate in the bed of Carroll Canyon Creek.

Table 2-3 provides the return event flows for Carroll Canyon Creek based on the Weston transformations, while Table 2-4 presents the FEMA values. Monthly streamflow measurements have also been taken since 1995 for the Los Peñasquitos Lagoon Monitoring (TRNERR 2012). While having a smaller drainage area than both Los Peñasquitos Creek and Carmel Creek, Carroll Canyon Creek appears to yield the highest peak flows during storm events, according to Weston, as shown in Table 2-3. This is due to several factors unique to the Carroll Canyon sub-watershed, including larger areas of impervious surfaces along the mesa tops; steep incised canyons and drainages that receive discharges from stormwater system outfalls, referred to as Municipal Separate Storm Sewer System (MS4); and a cement channel that expedites storm runoff through Sorrento Valley. Because the watershed has become so impervious, flows are quick to respond to rainfall events and result in larger peak flow rates, as water runs directly off the impervious surfaces and into the channel. These larger flows have incised the channel upstream and now contribute to the increased sedimentation downstream. While it is the smallest drainage, Carroll Canyon Creek provides 36 times the amount of sediment to the Lagoon than Carmel Creek and 18 times the amount as Los Peñasquitos Creek (7,486,267 lbs/wet season and 2,733 cy sediment volume per typical year; Weston 2009). Field surveys conducted in 2009 indicated that the primary sources of sediment within Carroll Canyon include canyon walls and drainages that receive direct discharges from MS4 outfalls as well as creek channel bed and banks (Weston 2009). Field mapping and sediment transport modeling performed by Environmental Science Associates and Philip Williams & Associates (2011) support these findings. In addition to increased peak flows from MS4 discharges, the cement channel located within Sorrento Valley also contributes to elevated rates of sediment transport to the Lagoon from Carroll Canyon. During a preliminary monitoring program for the Lagoon Sediment TMDL, hydrographs generated for Carroll Canyon Creek showed the flashy nature of this sub-watershed, as opposed to hydrographs that showed gradual increases and a decline in discharge rates for Los Peñasquitos Creek (Weston 2009).

Flooding

Flooding within the Lagoon and adjacent areas can result from extreme water levels caused by storm surges occurring at high tides, high outflows from creeks, or the joint occurrence of these processes. Flooding within the Lagoon is greatly exacerbated by structural impediments within the Lagoon that include the railway alignment and occlusion of the inlet by marine sediments that reduce drawdown times of impounded water.

FEMA (2012) mapped the Lagoon within the 100-year floodplain, with a base flood elevation of 14 feet North American Vertical Datum (NAVD) back to the southernmost railroad bridge. Beyond the railroad bridge, flood levels rapidly increase to 37 feet NAVD at the mouth of Los Peñasquitos Creek, likely because of the backflow caused by the bottleneck between the toe of the canyon wall and the railroad berm. The FEMA 100-year floodplain extends up each of the three creeks. The FEMA 100-year coastal wave runup elevation is 10.9 feet NAVD. Figure 2-13 provides the 100- and 500-year flood zones for the Lagoon.



Source: ESA

0 860 1,720 3,440 Feet

Figure 2-13
FEMA Flood Map

Marsh Sedimentation

Stormwater and tidal flushing are the primary sources of sediment input into the Lagoon, contributing to sediment deposition within lagoon channels and terrestrial habitats. Sediment from marine origins can occlude and sometimes completely block the inlet area of the Lagoon, resulting in a diminished or lost tidal prism. When this occurs, suspended fluvial sediments can settle within the Lagoon's tidal channels, over the marsh plain, and/or in transitional areas located behind the railway berm. The 1925 railway berm reduces the conveyance of runoff during lesser storm events to rates that favor deposition of suspended sediments over the scouring of channels. Conversely, runoff during large storm events can overtop and erode an inlet berm, rapidly scouring marine sediments that may have accumulated in the lagoon inlet and channels. High tides can also overtop the inlet berm, causing water levels within the Lagoon to rise enough to erode the inlet berm but without the scouring of lagoon channels that can occur from runoff during large storm events.

Fluvial Accretion

The watershed sediment load was estimated for the Lagoon Sediment TMDL by modeling the current and historic sediment loads using data on catchments, streams, soil characteristics, irrigation, land use, and meteorological conditions. Current (2000) and historic (mid-1970s) land uses were modeled using the same meteorological conditions from a critical wet period to determine the change over time. Table 2-5 presents these values.

Table 2-5. Sediment Loads Based on TMDL

	Current Load (2000) (cy/yr)	Historic Load (mid-1970s) (cy/yr)	Required Load Reduction
TMDL	7,620	2,550	67% or 2,520 cy/yr

TMDL = Total Maximum Daily Load
cy/yr = cubic yards per year
Source: Tetra Tech 2010

The pattern and volume of fluvial sediment deposition in the Lagoon are due to the sediment load that enters the Lagoon from the creeks, which includes deposition of coarser- and finer-grained sediment as storm flows spread out over the Lagoon, and the amount of sediment that is deposited versus exported to the ocean (*i.e.,* sediment trapping efficiency). The pattern and volume of deposition observed in the topography provide empirical information on the net deposition. The existing topography of the Lagoon indicates two sloping fans of sediment: one extending from Carmel Creek and another extending from the confluence of Los Peñasquitos Creek and Carroll Canyon Creek. It should be noted that the sediment fan from Los Peñasquitos Creek and Carroll Canyon Creek extends into the Lagoon in a northward trajectory facilitated by two railway bridges that create gaps in the earthen railway berm rather than a northwest trajectory that would most likely occur if the railway berm were not present. Two sources of trash and sediment input also occur at storm drains along the perimeter of the Lagoon. Outfall 1 primarily deposits sediment into the Lagoon while outfall 2 transports mainly trash and other potential pollutants from I-5.

Tidal Accretion

Suspended sediment from storm flows or resuspension of sediment by tidal flows is deposited across the marsh plain and intertidal habitats when they are inundated by sediment-laden tidal water. As the tidal waters rise and fall, areas that are low with respect to the tidal range are covered with sediment-laden water for a longer period of time and accrete at a faster rate than higher elevations. At the higher end of the tidal range, the frequency and duration of flooding by high tides are diminished and the rate of sediment accumulation is less. This provides an inverse relationship between sediment accretion and elevation. The maximum accretion rate occurs at low elevations (below mean lower low water) and little to no tidal accretion occurs above MHHW.

2.2.8 Water Quality

Water Quality

Water quality is one of the most important factors affecting the health of the Lagoon, with tidal exchange playing the key role. Tidal exchange promotes flushing of lagoon channels, which restores water quality parameters (*e.g.,* salinity, temperature, DO, pH) to levels required for native estuarine species and facilitates drawdown times of freshwater inputs from the watershed. During optimal conditions, tidal exchange is unrestricted. Restricted tidal exchange (*e.g.,* when the inlet area is occluded with sand) or complete loss of tidal exchange (*i.e.,* during a lagoon mouth closure) causes water within lagoon channels to stagnate (*i.e.,* vertical stratification). When stagnation occurs, DO levels can drop to lethal levels for fish and invertebrates, sometimes within a few days during summer months since DO is sensitive to temperature and the influence of legacy nutrients in channel sediments.

DO is perhaps one of the most important water quality parameters for aquatic species residing in the Lagoon's channels and is the most used parameter for triggering opening of the lagoon inlet during closures. During prolonged inlet closures, DO can drop to levels considered stressful to most marine organisms (5 mg/L) and continue to trend toward anoxic conditions (0 mg/L) resulting in fish kills and loss of invertebrate populations, a key food source for both migratory birds and native species that include the federally listed light-footed Ridgway's rail (*Rallus obsoletus levipes*). For this reason, DO is used as one of the environmental triggers to justify inlet maintenance through existing resource agency permits (see Inlet Management and Maintenance under Section 2.2.3).

Historic discharges of primary-treated wastewater have also impacted the Lagoon. From 1950 to 1972, three sewage treatment plants discharged into the Lagoon, with the Sorrento Treatment Plant alone discharging 0.5 to 1.0 million gallons per day. As a result, nutrient loading and reduced salinity levels within the Lagoon occurred on a frequent basis and were compounded during inlet closures (Nordby and Zedler 1991). While this practice was discontinued in 1972 through the use of pump stations connected to the metropolitan sewage system, legacy contaminants of nitrate and phosphate loads still greatly impact water quality and contribute to eutrophic conditions within the Lagoon during inlet closures. Numerous sewage spills from Pump Station 64 between 1972 and 2011 have compounded the issue of legacy nutrients in channel sediments in the Lagoon, including a spill in 1987 that released 20 million gallons of untreated sewage directly into the Lagoon (*San Diego Union Tribune* 2011; *Los Angeles Times* 1987).

Salinity

Salinity in the Lagoon's tidal channels and soils plays a key role in the health and survival of its historic habitats and halophytic plant species. Historically, water in the marsh remained near ocean salinity levels while the lagoon inlet was open during dry weather. During rain events, the salinity would lower as freshwater entered the Lagoon from the watershed, and then rise as the tidal waters reentered during incoming tides. Historically, water trapped within the Lagoon during mouth closures would often become hypersaline and most likely contributed to the expansive salt flat believed to have characterized the middle portion of the Lagoon's habitats along with areas of salt panne to the east since the late 1800s. Since 1995, year-round freshwater input from the urbanized watershed has converted the Lagoon's tributaries from seasonal to perennial. This has precluded hypersaline conditions for the most part, even during summer months with no precipitation. As a result, salinity in the Lagoon's waters ranges from <5 to 35 ppt depending on the tides and freshwater flow.

Reduction of soil salinity is a key precursor to major shifts in species compositions in coastal salt marshes (Bertness 1991; Zedler and Magdych 1984; Zedler et al. 1990). This is due in most part to prolonged inundation of freshwater that makes conditions favorable for glycophytes (salt-intolerant species), including *Typha* (cattail) and *Salix* (willow) (Greer and Stow 2003). Daily discharges of freshwater dry-weather flows from urbanized areas within the watershed have caused the Lagoon's terrestrial habitats to change rapidly, with areas of salt marsh, salt flat, and salt panne converting to riparian and brackish marsh (Greer and Stow 2003). Additionally, reduced soil salinities from freshwater and deposition of sandy loam soils have facilitated the invasion of ryegrass (*Festuca perennis*) in non-tidal high marsh habitats (Anderson 2018).

2.2.9 Geology/Soils

The geology of the Lagoon and its western drainages are characterized by thick non-marine sedimentary rocks, which are clearly exposed in the steep cliffs of TPSNR. The oldest formation in the area is the Delmar Formation, which is exposed in the lower part of the bluffs near the mouth of the Lagoon and characterized by greenish siltstones and deposits of fossil oysters. Above the Delmar Formation is the Torrey Sandstone, a white, beach-type deposit that weathers into distinctive caverns and hollows. This formation accounts for the spectacularly eroded cliffs bounding the Lagoon. The formation is especially susceptible to landslides and slope failures. The Linda Vista Formations are relatively thin layers of striking red rock that overlie the older Torrey Sandstone deposits on the flat ridge tops. They form a cap which, when removed by grading, exposed the highly erodible and porous rocks below. The eastern portion of the watershed in the vicinity of Poway is underlain by uplifting granite, the Santiago Peak volcanic rocks, and some non-marine conglomerates. The volcanic rocks are more resistant to erosion, appearing in outcrops, waterfalls, and stone-mantled hilltops.

The basin of the Lagoon itself is underlain by marine or river sand to a depth of more than 50 feet, covered in most areas by approximately 6 feet of fine silts and clays. Four types of soils occur within the Lagoon, with each derived from a different type of sediment washed into the Lagoon from its watershed. Silts and clay are the predominant soil types within the Lagoon's eastern channels, while sand from coastal sources is the predominant sediment type within the inlet area. Terrestrial soils

within the Lagoon tend to be a mix of sandy substrate, loamy soil (a mixture of sand, silt, and clay), and areas of clay that help to create the Lagoon's salt pannes.

The Soil Conservation Service's index of erodibility identifies virtually all the soils outside the Lagoon's floodplains as having "severe" erosion potential. Figure 2-14 shows the soil erodibility factor (K-factor) from the Soil Survey Geographic Databases (USDA 1973). Soils with low K values (<0.2) have low soil erodibility, while light-textured soils have the highest K values (>0.4) and produce high rates of runoff (Institute of Water Research 2002; Weston 2009).

2.2.10 Biological Resources

State Parks delineated vegetation boundaries on an aerial image flown by Lenska in the winter of 2013 and vegetation polygons were delineated at a scale of 1:600. Most polygons were verified in the field. Additional data used to assist with the delineation of vegetation boundaries included:

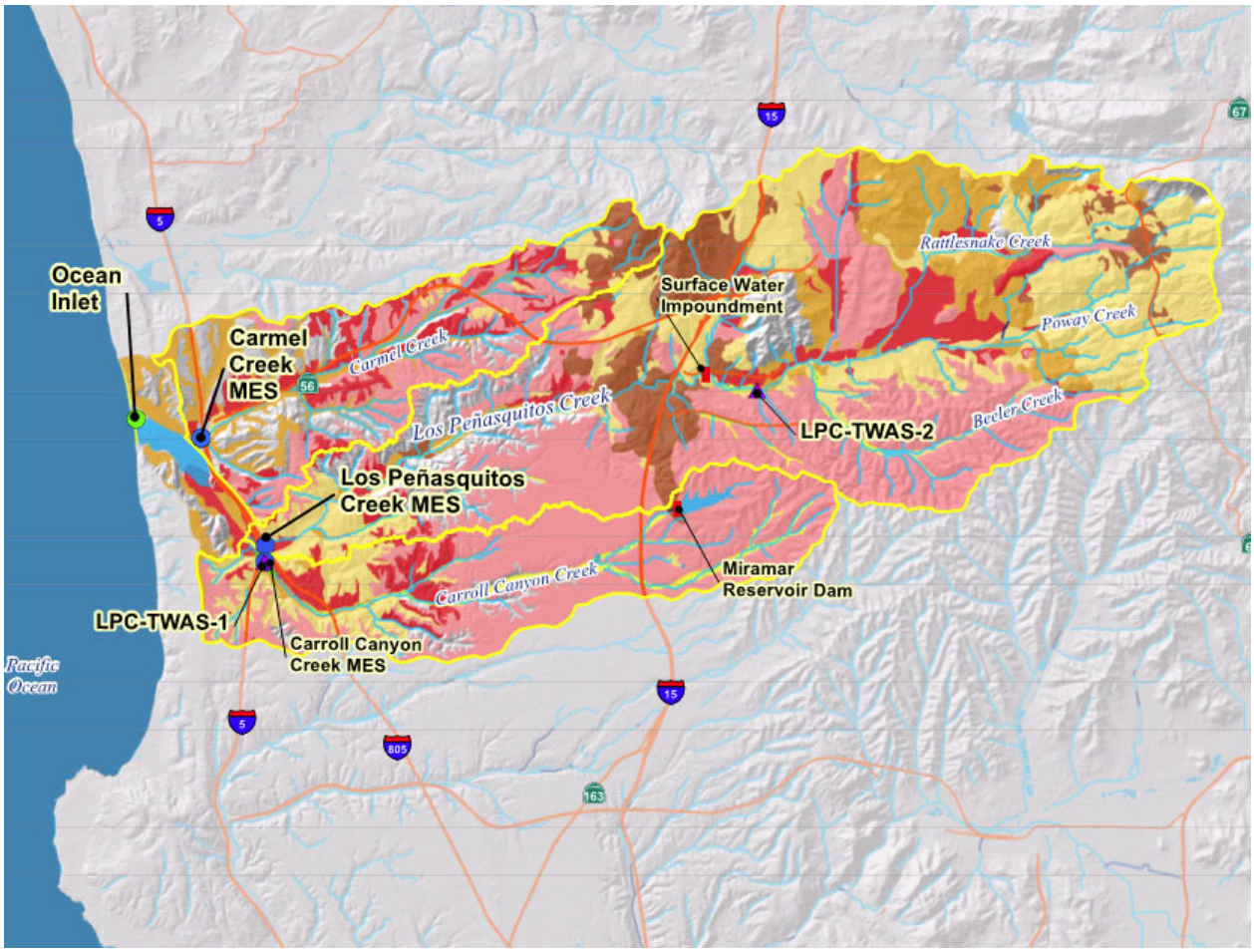
2013 LiDAR vegetation height data from SCC,
2009–2011 SCC Coastal LiDAR DEM,
2011 Bing Imagery,
Oblique Imagery from Google Maps and Bing Maps, and
Images from ArcGIS.

Dominant species cover was estimated in the field and categorized using the Vegetation Classification Manual for Western San Diego County, which was modified to account for the presence of invasive species (AECOM/CDFG 2011). Vegetation was categorized into habitat types according to a habitat crosswalk. The crosswalk was developed based on inundation frequency, salinity preferences, and expected evolution under sea level rise for each vegetation type. Salt pannes were not included in the initial runs of the habitat evolution model (HEM).

Vegetation Communities

Although it has been degraded through impacts that include physical disturbances and modified hydrology, the Lagoon still supports a variety of native vegetation communities that support many plant and animal species. Vegetation observed in the Lagoon includes a mosaic of saline, brackish, freshwater, riparian, and transitional habitats. Many of these communities have been greatly reduced in Southern California. As a result, several plant and wildlife species that rely on them for survival are now threatened with extinction. Coastal salt marsh associated with Southern California lagoons and estuaries is considered particularly valuable as approximately 91% of coastal wetlands in the state of California have been lost to development (California Department of Fish and Game 2001).

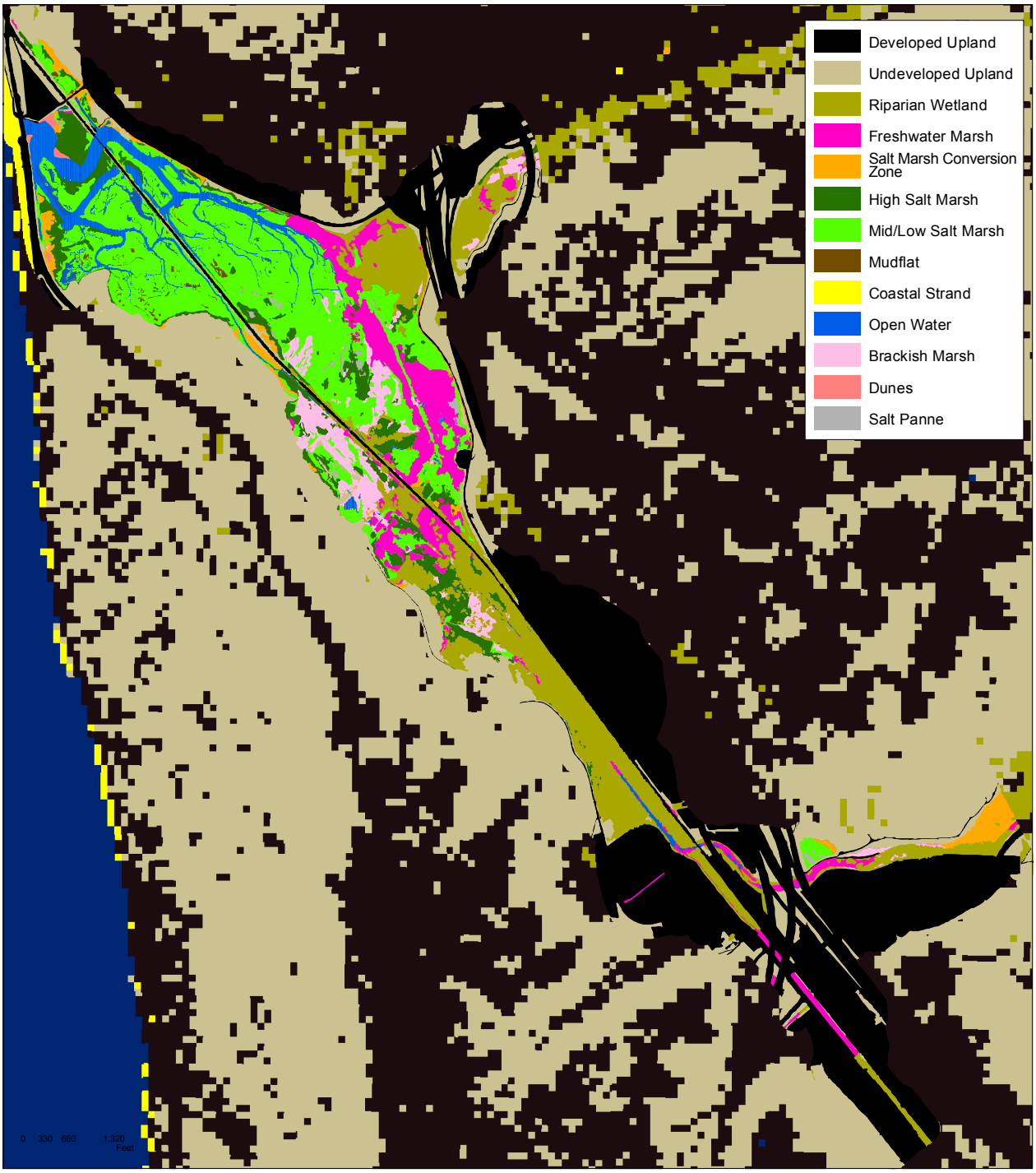
The 2014 distribution of the vegetation communities observed in the Lagoon and TPSNR is illustrated in Figure 2-15. The following discussion is based on the crosswalk of vegetation communities as compared to modified Holland categories, which resulted in nine vegetation communities/landforms in the Lagoon:



Source: Western Solutions Inc. (2009); ESA (2016)

0 1 2 4 Miles

Figure 2-14
Soil Erodibility



Source: Lagoon vegetation mapping by State Parks 2015. Upland mapping from NOAA 2006.

0 1,320 2,640 Feet

Figure 2-15
Los Peñasquitos Vegetation Map

- Southern foredunes,
- Southern coastal salt marsh,
- Salt panne,
- Coastal brackish marsh,
- Riparian habitats (southern willow scrub and mulefat scrub),
- Coastal freshwater marsh,
- Transitional habitat,
- Non-native grassland, and
- Disturbed upland habitat.

Coastal sage scrub also exists within TPSNR in upland areas around the Lagoon. The comparison of the changes in vegetation incurred after 1973 demonstrates the impacts of sedimentation, with the greatest impacts occurring in the eastern and southern portions of the Lagoon. The riparian corridor has since expanded in the southern portions of the Lagoon, pushing freshwater marsh and brackish waters farther west. The expanse of salt marsh has decreased, with encroachments of freshwater and riparian areas along Carmel Creek and Carroll Canyon Creek.

Within each habitat type, the proportion of native and exotic plant species varies greatly, from relatively undisturbed native communities to habitats that support a high percentage of exotic species. Generally, there is a sharp gradient of invasive species increasing from tidal to non-tidal influenced habitats. The rapid advance of invasive plant species into the Lagoon was caused by decades of daily freshwater inflows and accelerated sediment deposition from the watershed following expansive urban development that commenced in the 1980s (Crooks et al. 2019; Greer 2001; White and Greer 2002). A complete list of plant species observed in the project area is presented in Appendix J of the Enhancement Plan (Appendix A of this Program EIR).

Southern Foredune

Southern foredune is a sparsely vegetated community dominated by plants that are suffrutescent (*i.e.,* having a base that is somewhat woody and does not die down each year) (Holland 1986). Plant species characteristic of this habitat includes beach evening primrose (*Camissoniopsis cheiranthifolia*), red sand-verbena (*Abronia maritima*), beach sand-verbena (*Abronia umbulata*), and beach-bur (*Ambrosia chamissonis*). Within the Lagoon, this vegetation community also supports some cover of high salt marsh species, such as saltgrass (*Distichlis spicata*) and Pacific pickleweed (*Salicornia pacifica*, formerly *Salicornia virginica*), as well as invasive non-native species, such as sea fig (*Carpobrotus edulis*), crystalline iceplant (*Mesembryanthemum crystallinum*), and annual veldtgrass (*Ehrharta longiflora*). This vegetation supports several special-status plants, including Nuttall's acmispon (*Acmispon prostratus*) and coast woolly heads (*Nemacaulis denudata* var. *denudata*).

Southern Coastal Salt Marsh

Coastal salt marsh can be described as a highly productive habitat, dominated by herbaceous and suffrutescent halophytes that form moderate to dense cover and grow up to 1 meter in height (Holland 1986). Plant species typical of coastal salt marsh include Pacific pickleweed, alkali heath (*Frankenia salina*), fleshy jaumea (*Jaumea carnosa*), western marsh rosemary (*Limonium californicum*), and

California cordgrass (*Spartina foliosa*) (Holland 1986). This vegetation community is usually segregated by elevation, with California cordgrass occurring at lower elevations, Pacific pickleweed and other halophytic succulents occurring at mid-littoral elevations, and an assemblage of species occurring at the upper littoral elevations. Southern coastal salt marsh habitat supports an intricate food web rich in both invertebrate and vertebrate species. In addition, this vegetation community provides habitat for the federally listed endangered light-footed Ridgway's rail and stated-listed endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*).

A total of 10 vascular plant species and one parasitic species were observed in the salt marsh of the Lagoon during annual monitoring of the vegetation communities (Crooks et al. 2014). All are native to the region. Dominant species included Pacific pickleweed, alkali heath, fleshy jaumea, and saltgrass. Two special-status species occur in southern coastal salt marsh: salt marsh daisy (*Lasthenia glabrata* ssp. *coulteri*) and spiny rush (*Juncus acutus* ssp. *leopoldii*). California cordgrass is currently not present at the Lagoon, though sediment cores taken from the Lagoon indicate that it appears to have been present in the past (Cole and Wahl 2000). Reasons for its absence are likely related to a loss of intermediate elevation substrates between mudflats and areas dominated by Pacific pickleweed along with prolonged inlet closures that frequently occurred at the Lagoon following the completion of the 1925 railway alignment and relocation of the lagoon inlet in 1932. Annual inlet maintenance at the Lagoon did not occur until 1985, though periodic mechanized efforts occurred as far back as 1965.

There are approximately 390 acres of coastal salt marsh within the Lagoon, with 180 acres considered impaired (Smith 2009). Resilient southern coastal salt marsh occurs primarily within the tidally influenced areas of the northwest portion of the Lagoon while remnant, impaired patches persist in the southern portion in association with more freshwater-influenced habitats. Historically, this vegetation community extended over a greater area than it does today and supported very few invasive species (SFEI 2014). Today, the extent of coastal salt marsh was diminished due to sedimentation and freshwater input. In the southern portion of the Lagoon, much of this remnant habitat is non-tidal, persisting on rainfall and runoff, and has been invaded by weedy, non-native species such as Italian ryegrass (*Festuca perennis*), Turkish wheatgrass (*Elymus ponticus*), annual beardgrass (*Polypogon monspeliensis*), and bristly ox-tongue (*Helminthotheca echioides*). As such, the function of this typically productive habitat has been compromised.

Salt Flat and Salt Panne

Salt flat is a general term for flat expanses of ground covered by salt and other minerals when evaporation of impounded waters exceeds input. Salt panne habitat occurs in areas of the upper marsh where a basin or depression traps saline waters during the highest spring tides and rainfall during wet periods. During the summer months, the water in these basins rapidly evaporates, resulting in hypersaline soils devoid of vegetation. During the winter, the pannes hold water and support algae and aquatic insects (Zedler et al. 1992). Typically, salt pannes hold water only for a short period each year. Consequently, the productivity and complexity of the communities associated with this habitat are not well understood (Zedler et al. 1992). Surveys conducted in the late 1800s indicate that extensive salt flats occupied the center of the Lagoon and salt panne habitat was historically most prevalent in the eastern portion. Today, portions of the former salt panne habitat have been elevated above tidal influence by sediment deposition associated with Carmel Creek and no longer impound

seasonal rainfall. The area has been invaded by freshwater marsh and riparian species and has converted to cattail (*Typha* sp.)-dominated freshwater marsh and southern willow scrub habitat.

Coastal Brackish Marsh

Coastal brackish marsh is a vegetation community dominated by perennial, emergent herbaceous monocots approximately 2 meters in height (Holland 1986). Vegetative ground cover is often complete and dense. This vegetation community is intermediate between coastal salt marsh and freshwater marsh with some plant characteristic of each. Historically, coastal brackish marsh is representative of coastal marshes in Central and Northern California due to the relatively arid nature of Southern California that precludes steady inputs of freshwater. However, nuisance flows of freshwater from urbanized watersheds that often occur on a daily basis have led to the appearance of this habitat type in the Lagoon and other coastal estuaries in San Diego.

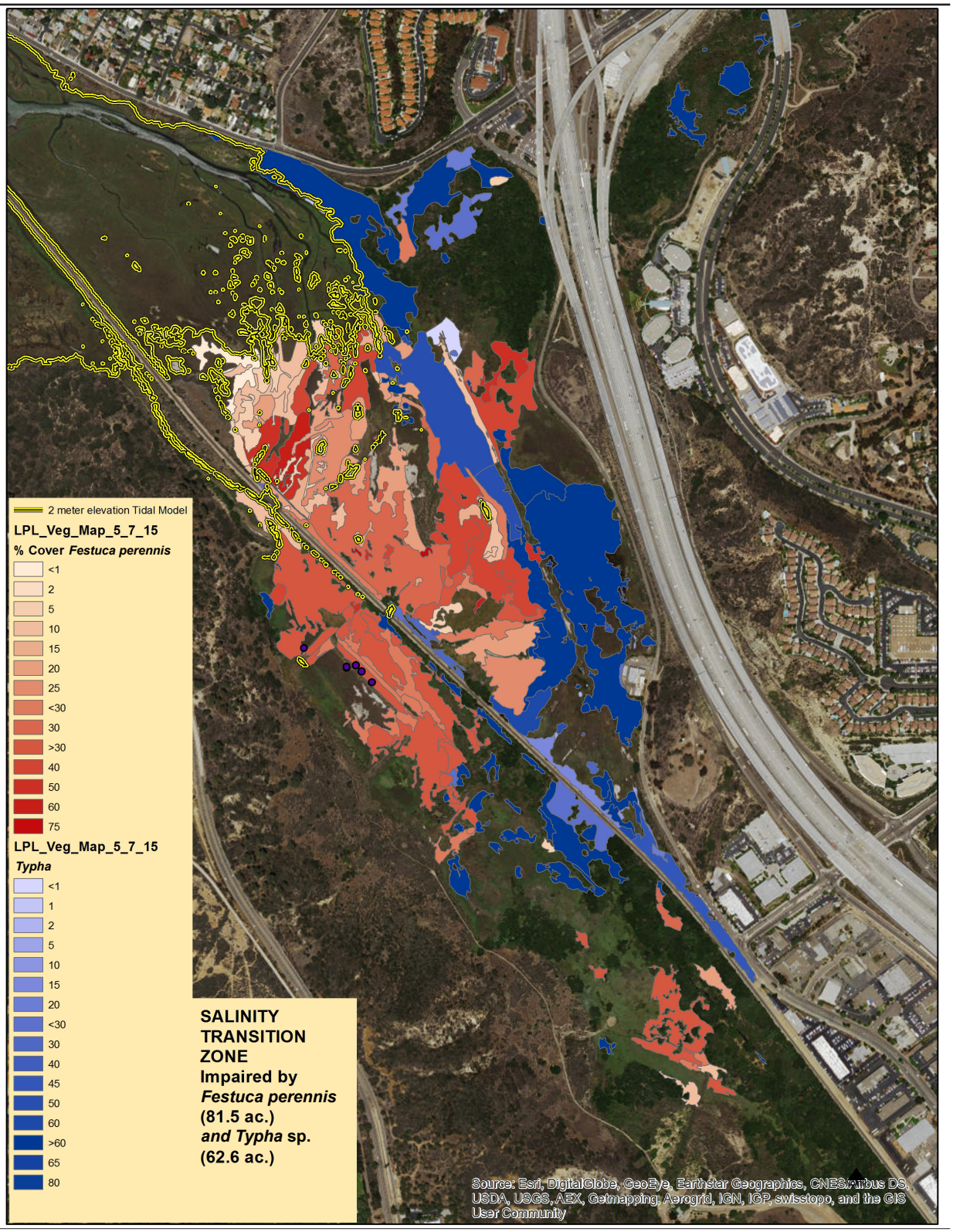
Vegetation surveys performed as part of the annual monitoring program indicate that coastal brackish marsh in the Lagoon is better characterized as a lens of brackish water between freshwater marsh and salt marsh habitats due to plant types present within this area that include Olney's bulrush (*Schoenoplectus americanus*), narrow-leaved cattail (*Typha angustifolia*), cocklebur (*Xanthium strumarium*), curly dock (*Rumex crispex*), annual beard grass, Italian rye grass, and yerba mansa (*Anemopsis californica*). Coastal brackish marsh within the Lagoon is low-quality habitat due to low native species diversity and the presence of invasive species such as Italian rye grass. Figure 2-16 presents the distribution of *Typha* and the invasive *F. perenne* within the upper reaches of the Lagoon. This area was historically tidal, non-tidal salt marsh, or salt panne before rapidly converting to its current state in the early 2000s due to daily dry weather flows from the watershed and adjacent urban areas.

Riparian Habitats

Much of the acreage of riparian habitats is fairly new to the Lagoon resulting from anthropogenic inputs of sediment since the 1980s and freshwater since the mid-1990s. There is currently approximately 110 acres of these riparian habitats within the Lagoon in areas that formerly supported non-tidal salt marsh, brackish marsh, and salt panne habitats (Smith 2009).

Southern Willow Scrub

Most of the tree-dominated riparian vegetation is best described as southern willow scrub or southern arroyo willow riparian forest. This vegetation is mainly composed of arroyo willow (*Salix lasiolepis*) but also supports smaller patches of taller-statured species including red willow (*Salix laevigata*), black willow (*Salix goodingii*), and western sycamore (*Platanus racemosa*). The understory of this vegetation is variable based on exposure to sedimentation and freshwater storm flows. The understory of southern willow scrub within Sorrento Valley has been subjected to frequent sedimentation and scouring and is heavily infested with non-native invasive plants including giant reed (*Arundo donax*), Cape ivy (*Delairea odorata*), pampas grass (*Cortaderia selloana*), castor bean (*Ricinus communis*), white top (*Lepidium draba*), periwinkle (*Vinca major*), and others.



Source: State Parks (2017)

0 150 300 600 Meters

Figure 2-16
Areas Dominated by *Typha* and *Festuca perennis* in Los Peñasquitos Lagoon

Mulefat Scrub

Mulefat scrub is a riparian scrub dominated by mulefat (*Baccharis salicifolia*; Holland 1986). This early seral community is maintained by frequent flooding and is rapidly colonizing salt marsh and brackish marsh habitats within the Lagoon below the confluence of Los Peñasquitos Creek and Carroll Canyon Creek. At the Lagoon, mulefat scrub sometimes co-occurs with San Diego marsh elder (*Iva hayesiana*) and sometimes supports and understory of alkali heath that remains from the former non-tidal salt marsh.

Other species typically observed in this vegetation community include arrow weed (*Pluchea sericea)*, coyote bush (*Bacharris pilularis*), Canada horseweed (*Erigeron canadensis*), and cattail (*Typha* sp.).

Coastal Freshwater Marsh

Coastal freshwater marsh is dominated by perennial, emergent monocots 4 to 5 meters tall, often forming completely closed canopies (Holland 1986). Plant species characteristic of this community include cattails and viscid bulrush (*Scirpus acutus = Schoenoplectus acutus*). Like southern willow scrub, freshwater marsh was historically confined to freshwater riparian areas upstream of the Lagoon. This vegetation community has been expanded by freshwater inflows and is no longer confined to the river channels but occurs where the freshwater sheet flows in the southern and eastern portions of the Lagoon. In the Lagoon, coastal freshwater marsh is dominated by cattail or bulrushes; for example, viscid bulrush, California bulrush (*Schoenoplectus californicus*), and Olney's bulrush. In addition to extending the range of this vegetation community within the Lagoon, freshwater inflows, sedimentation, and other disturbances have resulted in the colonization of exotic plant species with Italian rye grass prevalent (Figure 2-16). As a result, coastal freshwater marsh can be currently described as disturbed. Exotic plant species observed in this habitat type also include water iris (*Iris pseudacorus*), annual sweet clover (*Melilotus indicus*), and curly dock.

Transitional Habitat

Although not a Holland category, wetland biologists have used the term transitional habitat to describe areas that support high elevation coastal salt marsh elements and upland plant species. Typically, this habitat type occurs as a narrow band where upland habitats and wetland habitats overlap (Zedler et al. 1992) though modern usage of this term includes a wider range to account for areas conducive to upslope migration of salt marsh plants in response to sea level rise.

At the Lagoon, transitional habitat occurs primarily in small patches in the extreme northwestern portion. Additional transition zone habitat occurs in the south-central part of the Lagoon in association with man-made structures such as berms and dikes. Eleven taxa were recorded in transition zone habitats during annual vegetation monitoring of the Lagoon, 10 to species and one to genus (Crooks et al. 2014). All plants identified to species level were native. Coast goldenbush (*Isocoma menziesii*) is usually the dominant species with a variety of facultative species

(*e.g.,* saltgrass, beardless wildrye (*Elymus triticoides*), alkali weed (*Cressa truxillensis*), coyote bush, mulefat, annual grasses, and fairy mist (*Pterostegia drymarioides*).

Non-Native Grassland

Non-native grassland is described as a dense to sparse cover of annual grasses with flowering culms 0.2 to 0.5 meters high. Germination occurs with the onset of the late fall rains; growth, flowering, and seed-set occur from winter through spring (Holland 1986). In the Lagoon, non-native grassland is used to describe areas that once supported high elevation salt marsh habitat that, as a result of sedimentation and freshwater flows, are now dominated by non-native grasses. Sparsely distributed salt marsh elements, such as Pacific pickleweed and alkali heath, were also observed; however, non-native grasses were the dominant species. Plant species observed in this vegetation community included mainly Italian rye grass. In transition zones or areas subject to former disturbance or heavy sedimentation, ripgut grass (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), and foxtail chess (*Bromus madritensis* ssp. *rubens*) are also present. Some of the areas dominated by Italian ryegrass also support low abundances of Parish's pickleweed, alkali heath, and other salt marsh species.

Coastal Sage Scrub

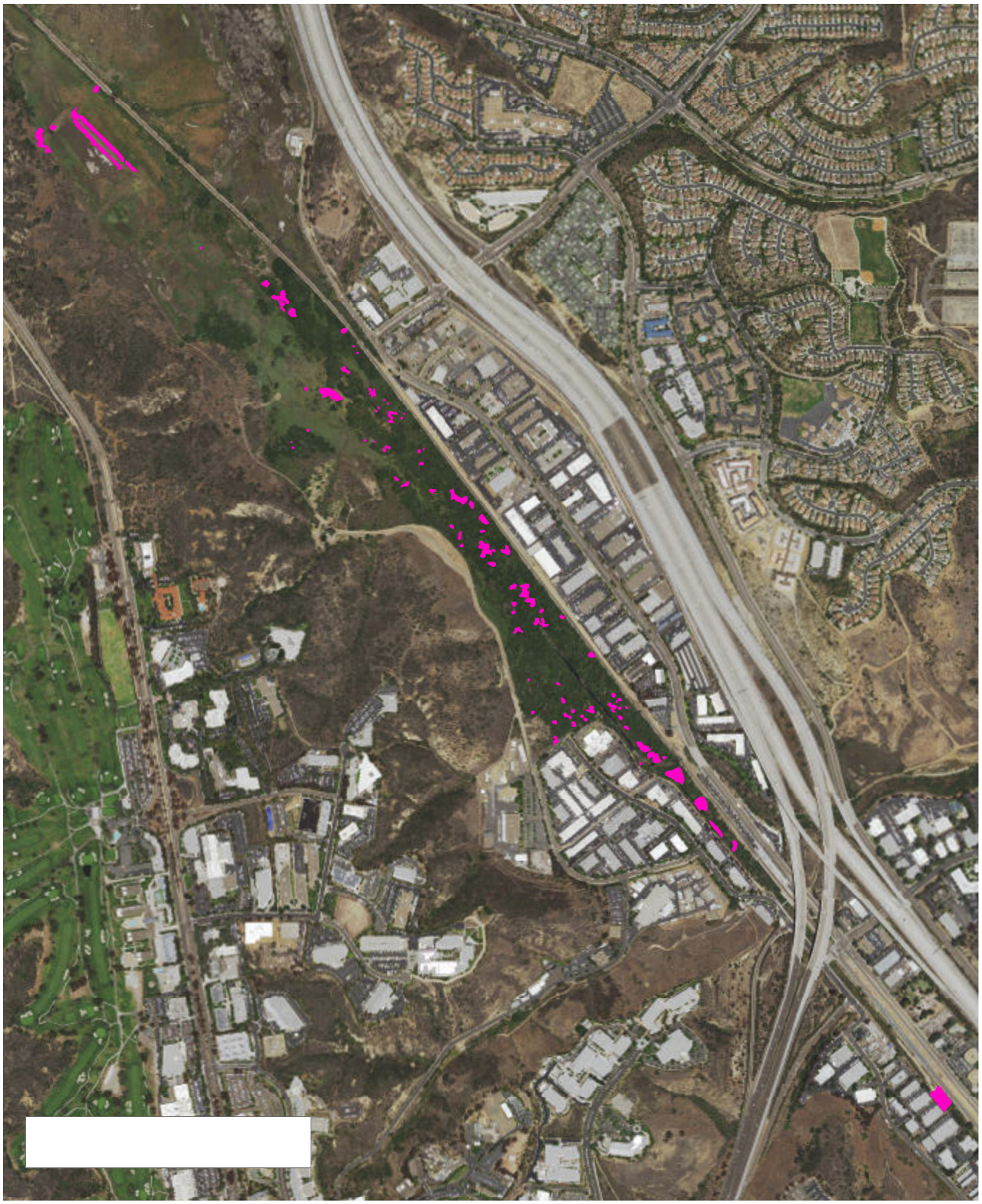
Coastal sage scrub habitat is an upland native habitat generally composed of a variety of low, soft aromatic shrubs dominated by drought-deciduous species such as California sagebrush (*Artemisia californica*), flat-top buckwheat (*Eriogonum fasciculatum* var. *fasciculatum*), white sage (*Salvia apiana*), and black sage (*Salvia mellifera*). Typically, there are also scattered evergreen shrubs including lemonadeberry (*Rhus integrifolia*), laurel sumac (*Malosma laurina*), and toyon (*Heteromeles arbutifolia*). The understory is diverse and includes a rich variety of annual forbs, and both annual and perennial grasses. Coastal sage scrub occurs in the upland areas around the Lagoon and may intergrade with transitional habitat at the wetland ecotone.

Disturbed Upland Habitat

Disturbed upland habitat is described as areas that are recovering from agricultural practices or other disturbances. These areas are composed of ruderal, non-native forbs, or very low cover of native shrub species, including spreading goldenbush and coyote bush. The disturbed uplands occur mostly upstream of the tidal areas, mostly within Sorrento Valley in between developments; on highway overpasses, the railway berm, and North Torrey Pines road embankment; and adjacent to Flintkote Avenue. Figure 2-17 provides locations of invasive plant species mapped in the upland habitat by the City in 2017–2018.

Wildlife

Despite the impacts of extended inlet closures at the Lagoon, sedimentation, and increased freshwater inflows, faunal resources of the Lagoon are both diverse and abundant. Although many studies of the Lagoon focus on birds, numerous species of mammal, reptiles, amphibians, and invertebrates inhabit the Lagoon.



Source: ESRI

0 550 1,100 2,200 Feet

Figure 2-17
Invasive Plant Species

Mammals

The presence of medium to large mammal species in the Lagoon was documented during a 2-year period of focused surveys conducted by K. Crooks (Crooks 1997). In addition, observations by Hubbs et al. (1991) were consulted for a number of faunal taxa. These sources include studies published prior to the project NOP; however, no substantial changes to these baseline characteristics described in earlier studies have occurred. Therefore, components of these studies referred to in this analysis can be considered suitable baseline information.

Crooks used four standard sampling techniques to estimate the distribution, relative abundance, movement patterns, and potential wildlife corridors used by medium to large mammals visiting the Lagoon. These included (1) scat transect surveys, (2) track counts of animals attracted to scent lures, also along transects, (3) remotely triggered cameras located at track stations, and (4) questionnaires distributed to residents in the area. Five areas were surveyed, including the main reserve, the Torrey Pines Natural Reserve Extension, the Lagoon, Crest Canyon, and the Sorrento Valley corridor. Results from the study indicated one functional wildlife corridor (*i.e.,* Sorrento Valley Corridor) to areas outside of TPSNR while most remaining corridors evaluated were considered fragmented or non-functional (Crooks 1997). Additional information from Crooks's study is provided in Section 2.3.2.

Track and scat surveys revealed similar trends and correlated well to questionnaires. Scat evidence of coyote (*Canis latrans*) visitation was by far the most abundant, followed by bobcat (*Lynx rufus*) and fox (*Urocyon* sp.). Evidence of mesopredator visitation was also abundant, with striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), domestic dog (*Canis familiaris*), and domestic cat (*Felis catus*) common.

Hubbs et al. (1991) adds observations of mule deer (*Odocoileus hemionus*) tracks in the southern part of the Lagoon as an additional large mammal and notes numerous small mammals typical of regional coastal wetlands. These include ornate shrew (*Sorex ornatus*), western harvest mouse (*Reithrodontomys raviventris*), deer mouse (*Peromyscus maniculatus*), California vole (*Microtus californicus*), San Diego pocket mouse (*Chaetodipus fallax*), house mouse (*Mus musculus*), California ground squirrel (*Otospermophilus* [*Spermophilus*] *beecheyi)*, and desert cottontail (*Sylvilagus audubonii*), among others. California vole, ornate shrew, and gray shrew (*Notiosorex crawfordi*) were among the numerically dominant species inadvertently captured in pitfall trap arrays during herpetofaunal surveys of the Lagoon.

The presence of domestic cats and dogs in the project vicinity has had a negative effect on native fauna. Domestic cats are known to hunt reptiles, small mammals, and bird species. Although efforts to remove these species from the area continue year-round, domestic cats and dogs remain a problem.

Avifauna

The avifauna of the Lagoon is diverse, exhibiting temporal and spatial variation in their abundance, distribution, and activity. Crooks (1997) summarized 17 avifauna surveys between 1969 and 1997, including TPSNR monthly bird counts conducted between 1983 and 1994. More than 164 bird

species were documented in the Lagoon in a 1984 study conducted for the Los Peñasquitos Lagoon Management Plan (Copper and Webster 1984, as cited in Crooks 1997). This diversity in bird species can be attributed to the availability of a variety of habitats, including salt marsh, intertidal mudflats, coastal scrub, dunes, and riparian habitats. Weedy areas that are of lower biological value than native communities also provide foraging grounds for several species of raptor.

Currently, five listed bird species utilize the Lagoon and adjacent uplands. These are the federally listed and state-listed endangered light-footed Ridgway's rail, and least Bell's vireo (*Vireo bellii pusillus*); the federally listed threatened western snowy plover (*Charadrius alexandrinus nivosus*) and coastal California gnatcatcher (*Polioptila californica californica*); and the state-listed endangered Belding's savannah sparrow. Individual least Bell's vireo have been observed in the riparian habitats within the Lagoon but there have been no observations of nesting or breeding pairs in the last two decades. Western snowy plovers have not been observed to nest in the Lagoon or the adjacent beach in several decades. Historically, populations of snowy plover have been observed on Torrey Pines State Beach during winter months, but ongoing monitoring efforts conducted on behalf of State Parks indicate that this has not occurred since 2015 due to narrowing of the beach. California gnatcatcher does not nest in the Lagoon but does nest in adjacent upland habitats, including southern maritime chaparral and coastal sage scrub. Light-footed Ridgway's rail and Belding's savannah sparrow have been observed nesting within the Lagoon habitats. The status of each of these species is presented in Table 2-8.

Historically, nesting habitat for federally listed endangered California least tern (*Sterna antillarum browni*) was present in the western reaches of the Lagoon near the North Beach parking lot and along the western edge of the 1888 railway berm (Copper and Webster 1984). However, this species has not been observed nesting in the Lagoon since the 1980s because of human disturbance, predation of fledglings, and encroachment of vegetation over open areas that served as viable nesting sites (Copper and Webster 1984; Coppock 1985).

Reptiles and Amphibians

Focused surveys for reptiles and amphibians were conducted in 1995–1997 to collect baseline data for management of TPSNR (Fisher and Case 1997, as cited in Crooks 1997). TPSNR was divided into three areas for sampling: Broken Hills, Lagoon/Guy Fleming Trail/Parry Grove, and the Extension. Thirty-five sites were sampled for the presence of reptiles and amphibians using arrays of seven 5-gallon buckets as pitfall traps connected by drift fencing to funnel the organisms into the pitfall traps. Trapping was conducted for 10 consecutive days every 6 weeks for a total of 50 to 60 days per year distributed evenly across seasons.

Twenty-one species and over 1,500 specimens representing 10 families were collected over the 2-year period. The majority of these were collected in upland habitats adjacent to the Lagoon; however, three species were collected at the Lagoon that were not collected elsewhere. These were western toad (*Bufo boreas*), western yellow-bellied racer (*Colubur constrictor* [*mormon*]), and two-striped garter snake (*Thamnophis hammondii*). Other species collected within the Lagoon included orange-throated whiptail (*Cnemidophorus hyperythrus*), Coronado skink (*Eumeces skiltonianus interparietalis*), California legless lizard (*Anniella pulchra*), San Diego ring-necked snake (*Diadophis punctatus*), and coastal western whiptail (*Cnemidophorus tigris multiscutatus*).

Although not captured in pitfall traps, red diamond rattlesnake (*Crotalus ruber*) was observed in the Lagoon near the Marsh Trail and in cattail stands near the base of Carmel Creek.

Data on reptiles and amphibians associated with freshwater habitats in the eastern end of the Lagoon were not recorded as no pitfall arrays were located there. The authors speculated that two additional species could occur there: Pacific pond turtle (*Clemmys marmorata*) and western spadefoot toad (*Spea* [*Scaphiopus*] *hammondii*).

As the surveys focused on pitfall trapping and not on vocalizations, it is likely that some common amphibian species were missed. It is likely that California tree frog (*Pseudacris* [*Hyla*] *cadaverina*) and Pacific chorus frog (*Pseudacris* [*Hyla*] *regilla*) occur in the freshwater marshes of the Lagoon.

Sensitive reptile species observed within the Lagoon include California legless lizard, a Federal Species of Concern and California Special Concern Species, and Coronado skink, orange-throated whiptail, two-striped garter snake, and red diamond rattlesnake, which are California Special Concern Species. The status of each of these species is presented in Table 2-8.

Fish

Fish are an essential part of the wetland trophic structure because of their role in nutrient cycling and because, as prey items, they have the potential to transfer energy from a marine environment to a terrestrial environment. This is especially important at the Lagoon, where fish are prey to endangered birds such as the California least tern and the light-footed Ridgway's rail.

Because of its history of periodic inlet closures and sewage spills, the fish assemblage at the Lagoon fluctuated in terms of diversity and relative abundance. Inlet closure during warm periods led to rapid deterioration of water quality and resulted in mortality of fishes, sometimes on a massive scale. Once the inlet opened naturally or was opened mechanically, fish eggs, larvae, juveniles, and adults recruited from the shallow nearshore habitat and prospered in the Lagoon until the inlet closed again. With inlet management by LPLF, fish populations have become more stabilized. Sewage spills in the Lagoon have also contributed to periodic large-scale fish kills as DO quickly dropped to toxic levels. The most recent occurrence happened on September 9, 2011, during a region-wide power failure that resulted in an estimated 2.3 million gallons of raw sewage discharged just upstream of the Lagoon. As a result, State Parks and the San Diego Coastkeeper documented widespread fish kills.

Shortly after the completion of the 1985 Lagoon Enhancement Plan and inlet maintenance by LPLF, a 2-year study of the Lagoon's fish and invertebrate populations was undertaken by scientists at the PERL. From June 1987 to March 1989, quarterly surveys were conducted at three stations representing a spatial continuum from the tidal inlet to the tidal creeks in the eastern end of the Lagoon. These stations were sampled using beach seines and blocking nets (Nordby and Zedler 1991). During this period, sewage spills on the order of 20 million gallons occurred as pump stations failed to convey sewage to the Point Loma treatment facility. In addition, floods occurred during the wet seasons of 1986, 1987, and 1988 that impacted the Lagoon in many ways,

including decreasing the diversity and densities of channel organisms. Nordby and Zedler (1991) addressed the impacts of these disturbances on the channel biota.

During the 2-year period (1987–1989), 13 species of fish from 10 families were collected from the Lagoon (Table 2-6). Numerically dominant species included topsmelt (*Atherinops affinis*; 36% of total), mosquitofish (*Gambusia affinis*; 18%); longjaw mudsucker (*Gillichthys mirabilis*; 17%) and arrow goby (*Clevelandia ios*; 16%). Other noteworthy species included California halibut (*Paralichthys californicus*), although numbers were low (12 individuals). The high numbers of mosquitofish collected are indicative of the degree of freshwater intrusion into the Lagoon and were introduced to the Lagoon to control mosquito populations. Over the 2-year period, fish densities peaked in spring and summer and crashed each year to near zero during winter as a result of floods.

Table 2-6. Fish Collected at Los Peñasquitos Lagoon, 1987–1989

Family	Scientific Name	Common Name	Number Collected
Atherinidae	*Atherinops affinis*	topsmelt	1,875
Bothidae	*Paralichthys californicus*	California halibut	12
Cottidae	*Leptocottus armatus*	staghorn sculpin	346
Cyprinodontidae	*Fundulus pavipinnis*	California killifish	107
Engraulidae	*Anchoa compressa*	deepbody anchovy	67
Gobiidae	*Clevelandia ios*	arrow goby	816
Gobiidae	*Gillichthys mirabilis*	longjaw mudsucker	877
Gobiidae	*Ilypnus gilberti*	cheekspot goby	22
Gobiidae	*Lepidogobius lepidus*	bay goby	9
Mugilidae	*Mugil cephalus*	striped mullet	3
Pleuronectidae	*Hypsopsetta guttulata*	diamond turbot	14
Poeciliidae	*Gambusia affinis*	mosquitofish	937
Syngnathidae	*Syngnathus leptorhynchus*	bay pipefish	2
Total			**5,087**

Irregular sampling of the fishes of the Lagoon has been conducted since 1990 by scientists at the PERL and later by TRNERR using similar methods. Regular minnow trap sampling was implemented more recently. Species composition remained similar to that encountered during the period reported by Nordby and Zedler.

A recent survey completed in October 2017 collected 10 species. The numerically dominant species included mosquitofish (40%), topsmelt (37%), arrow goby (7%), barred pipefish (7%), and shadow goby (6%). Occasionally, a new species will appear during a year and then quickly disappear. Yellowfin goby (*Acanthogobius flavimanus*), an invasive, non-native species, was collected for the first time in 1993 and was present during most subsequent surveys. It was not collected in October 2017.

Between 1986 and 2006, 28 species of fish were recorded at the Lagoon based on regular sampling (Crooks et al. 2006). Ten of those occurred in only 1 year.

Benthic Invertebrates

Much like fish, benthic invertebrates are essential to wetlands because of their role in nutrient cycling and because, as prey items, they also have the potential to transfer energy from a marine environment to a terrestrial environment. They are especially important prey items for migratory and resident shorebirds.

Nordby and Zedler (1991) collected macrobenthic invertebrates quarterly from three stations in the Lagoon between 1987 and 1989. Invertebrates were collected using a 15-centimeter-diameter coring device pressed into the sediment to a depth of 20 centimeters and sieved through a 1-millimeter mesh screen. Polychaetes were the numerically dominant taxa with 1,207 individuals collected representing 11 families and 20 species. Polychaetes of the species *Baccardia* and *Polydura* made up the majority of those collected.

Twelve species of bivalve mollusks were collected at low numbers. Only 95 individuals were collected. The numerically dominant was the California jackknife clam (*Tagelus californianus*; 42%), followed by an unidentified species of surf clam (*Spisula* sp.; 18%).

The authors concluded that the macrobenthic assemblage at the Lagoon was dominated by species that can survive salinity shock and very low levels of DO, are easily reintroduced during brief periods of inlet opening, or are introduced from freshwater inflows.

The most recent survey of benthic invertebrates was conducted by TRNERR in 2014. Only one station was sampled by corer and it was dominated by California jackknife clam. Additional invertebrate taxa were collected during fish collecting activities, including seines and enclosure nets. Invertebrates collected included yellow shore crab (*Hemigrapsus oregonensis),* striped shore crab (*Pachygrapsus crassipes*), Xantus' swimming crab (*Portunus xantusii*), California green shrimp (*Hyppolyte californiensis*), western mud snail (*Nassarius tegula*), and bubble snail (*Bulla gouldiana*). Invasive species detected in the Lagoon include *Palaemon macrodactylus* (oriental shrimp), *Musculista senhousei* (Asian mussel), and, more recently, *Crassostrea gigas* (Pacific oysters), whose presence has grown rapidly within the last few years.

Insects and Arthropods

Insects serve as an important source of prey, pollinators to plants, and predators that aid in the management of potentially detrimental species (Atkins 1978; Daly 1978). They can also be a nuisance to humans and other animals and, in some cases, transmit disease to human hosts and other mammals. Historically, the Lagoon has been a source of populations of biting midges and saltwater mosquitoes that include aggressive "day biters" from the genus Aedes that typically breed in ponded areas of saltwater following higher high tides during spring tidal series (Coppock 1985). Although not currently known to transmit human disease in the region, *Aedes taeniorhynchus* is a potential vector of emerging diseases, such as Rift Valley Fever and Venezuelan Equine Encephalitis (County of San Diego 2020b). With the Lagoon's tributaries

becoming perennial after 1997 due to dry weather flows from urban areas, freshwater mosquitos from the genus Culex are now present within the Lagoon. Three species (*Culex tarsalis*, *C. pipiens*, and *C. peus*) found within the Lagoon are known vectors that can transmit brain encephalitis, such as West Nile virus (WNV) to human hosts and other mammals. Please refer to Section 2.2.14, Public Health and Safety, for more information.

One taxon of insect wandering skipper (*Panoquina errans*) occurs in the Lagoon and is found only along the coasts of Southern California, Baja California, and northwestern mainland Mexico. The status of this species is discussed in further detail in the next subsection, Sensitive Species.

Sensitive Species

Sensitive species are those listed as such by federal or state resource agencies, or by special interest groups such as the California Native Plant Society (CNPS). At least 48 sensitive species are known to occur within the Lagoon and adjacent uplands. These include 35 plants, one insect, five reptiles, and seven birds.

Sensitive Plant Species

Sensitive plant species that have been observed in the Lagoon and adjacent uplands are summarized in Table 2-7. The majority of these occur in upland habitats or at the wetland/upland transition. Most are considered rare, threatened, or endangered by the CNPS; however, three upland species are federally listed as endangered.

Table 2-7. Sensitive Plant Species in Los Peñasquitos Lagoon and Adjacent Uplands

Species Number/Association	Species Name	Common Name	Sensitivity Code & Status
1U	*Chaenactis glabriuscula* var. *orcuttiana* (RE–1B)	Orcutt's Pincushion	
2U	*Coreopsis maritima* (RE-2)	Sea Dahlia	
3U	*Erysimum ammophilum*	Coast Wallflower	
4U	*Lepidium virginicum* var. *robinsonii* (RE-1B)	Robinson's Peppergrass	
5U	*Ferocactus viridescens* (RE-2)	Coast Barrel Cactus	
6U	*Atriplex pacifica* (RE-1B)	South Coast Saltscale	
7U	*Dichondra occidentalis* (RE-4)	Ponyfoot, Western Dichondra	
8U	*Quercus dumosa* (RE-1B)	Nuttall's Scrub Oak	
9U	*Pinus torreyana* (RE-1B)	Torrey Pine	MSCP (native populations)
10U	*Chorizanthe procumbens* (RE-4)	Spine-Flower	
11U	*Mucronea californica* (*Chorizanthe californica*) (RE-4)	California Spine-Flower	
12U	*Calandrinia maritima* (RE-4)	Seaside Red Maids	

Species Number/Association	Species Name	Common Name	Sensitivity Code & Status
13U	*Ceanothus verrucosus* (RE-2)	Wart-stemmed Ceanothus	MSCP
14L	*Artemisia palmeri* (RE-2)	Palmer Sagewort	
15L	*Iva hayesiana* (RE-2)	San Diego Marsh-Elder	
16L	*Lasthenia glabrata* ssp. *coulteri* (RE-1B)	Coulter's Salt Marsh Daisy	
17L	*Suaeda esteroa* (S. californica) (RE-1B)	California Sea-Blite	
18L	*Suaeda taxifolia* (RE-4)	Woolly Sea-Blite	
19L	*Acmispon prostratus* (formerly *Lotus nuttallianus*) (RE-1B)	Nuttall's Acmispon (formerly Nuttall's Lotus)	
21L	*Abronia maritima* (RE-4)	Red Sand-Verbena	
22L	*Nemacaulis denudata* var. *denudata* (RE-1B)	Coast Wooly-Heads	
23U**	*Berberis nevinii* (RE-1B)	Nevin's Barberry	FE; SE
24U	*Bergerocactus emoryi* (RE-2)	Golden-Club Cactus	
25U	*Aphanisma blitoides* (RE-1B)	Aphanisma	MSCP
26U	*Dudleya brevifolia* (RE-1B)	Short-Leaved Dudleya	SE; MSCP
27U	*Dudleya variegata* (RE-1B)	Variegated Dudleya	MSCP
28U**	*Arctostaphylos glandulosa* ssp. *crassifolia* (RE-1B)	Del Mar Manzanita	FE; MSCP
29U	*Comarostaphylis diversifolia* ssp. *diversifolia* (RE-1B)	Summer-Holly	
30U	*Agave shawii* (RE-2)	Shaw's Agave	MSCP
31U	*Muilla clevelandii* (RE-1B)	San Diego Goldenstar	MSCP
32U	*Orobanche parishii* ssp. *brachyloba* (RE-4)	Short-Lobed Broomrape	
33U**	*Chorizanthe orcuttiana* (RE-1B)	Orcutt's Spineflower	FE; SE
34U	*Chorizanthe polygonoides* ssp. *longispina* (RE-1B)	Long-Spined Spineflower	
35U	*Myosurus minimus* ssp. *apus* (RE-3)	Little Mousetail	

** Status:
Federal
FE = Federally Endangered
State
SE = State Endangered
Local
MSCP = Species covered by the City of San Diego

Multiple Species Conservation Program
RE = Rare & Endangered Classification
1B = Plants Rare, Threatened or Endangered in California and elsewhere
U = Wet/Upland Transition
L = Lagoon/Dunes
2 = Plants Rare, Threatened or Endangered in California but more common elsewhere
4 = Plants of Limited Distribution – a Watch List

Sensitive Wildlife

Listed animal species currently present in the Lagoon are provided in Table 2-8. All of the reptile species are listed as California Species of Special Concern. Bird species are either federally listed threatened and endangered, or state-listed endangered and California Species of Special Concern.

Table 2-8. Sensitive Wildlife Species in Los Peñasquitos Lagoon and Adjacent Uplands

Species	Status	Habitat	Distribution at Los Peñasquitos Lagoon
Reptiles[1]			
Northern red diamond rattlesnake (*Crotalus ruber ruber*)	Federal Status: Threatened State Status: Species of Special Concern	Chaparral, woodland, grassland, desert areas with rocky areas and dense vegetation	Observed in Lagoon. Probable in adjacent uplands.
Coronado Island skink (*Plestiodon skiltonianus interpareitalis*)	Federal Status: None State Status: Species of Special Concern	Grassland, chaparral, pinyon-juniper woodland, juniper sage woodland, pine-oak and pine forests	Observed in Lagoon and adjacent uplands.
Coast horned lizard (*Phrynosoma blainvillii)*	Federal Status: Endangered State Status: Species of Special Concern Local Status: MSCP	Lowlands along sandy washes with scattered bushes	Observed in uplands; appropriate habitat does not occur on the project site.
Two-striped garter snake (*Thamnophis hammondii*)	Federal Status: None State Status: Species of Special Concern	In or near permanent freshwater; stream courses	Not observed; appropriate habitat does not occur on the project site.
California legless lizard (*Anniella pulchra*)	Federal Status: None State Status: Species of Special Concern	In loose, sandy soils or leaf litter, typically in sand dunes along the coast	Observed in Lagoon.
Birds			
Belding's savannah sparrow (*Passerculus sandwichensis beldingi*)	Federal Status: None State Status: Endangered Local Status: MSCP	Nests in pickleweed in coastal salt marshes	Observed in Lagoon. Nests in Lagoon.
Coastal cactus wren[2] (*Campylorhynchus brunneicapillus sandiegensis*)	Federal Status: None State Status: Species of Special Concern Local Status: MSCP	Coastal sage scrub	One individual observed in adjacent uplands in 1984.
Coastal California gnatcatcher (*Polioptila californica californica*)	Federal Status: Threatened State Status: Species of Special Concern Local Status: MSCP	Coastal sage scrub	Observed and nests in adjacent uplands.
Light-footed Ridgway's rail (*Rallus obsoletus levipes*)	Federal Status: Endangered State Status: Endangered Local Status: MSCP	Coastal salt marshes and brackish marshes	Observed in Lagoon. Nests in Lagoon.

Species	Status	Habitat	Distribution at Los Peñasquitos Lagoon
California least tern (*Sturnula antillarum browni*)	Federal Status: Endangered State Status: Endangered Local Status: MSCP	Sandy beaches, alkali flats, landfills, paved areas	Observed in Lagoon in 1980s. Does not nest in Lagoon.
Western snowy plover (*Charadrius alexandrinus nivosus*)	Federal status: Threatened State status: Species of Special Concern Local Status: MSCP	Sandy dunes, salt pannes, mudflats	Infrequent visitor to Lagoon. Does not nest in Lagoon.
Least Bell's vireo (*Vireo bellii pusillus)*	Federal Status: Endangered State Status: Endangered Local Status: MSCP	Summer resident of riparian habitats near water	Observed in Lagoon. Does not nest in Lagoon.
Insects			
Wandering skipper (*Panoquina errans*)	Federal Status: None State Status: None Local Status: MSCP	High salt marsh with saltgrass as larval host plant	Observed and breeds in Lagoon.

[1] Orange-throated whiptail (*Aspidoscelis hyperythra*) is included in the Enhancement Plan but has since been removed from the Species of Special Concern. Therefore, it is not being considered special status in this Program EIR.
[2] Coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*) is included in the Enhancement Plan but has a low potential to occur within TPSNR. Therefore, it is not being considered in this Program EIR.
MSCP = Species covered by the City of San Diego Multiple Species Conservation Program

Although observed in various habitats at the Lagoon, western snowy plover, California least tern, and least Bell's vireo do not currently nest there. Suitable breeding habitat exists for each of these species; however, human use of the beach and predation have discouraged nesting by terns and plovers, and the salt panne habitat formerly used by terns as a nesting site has been elevated and converted to riparian habitats. The expansion of riparian habitats in the eastern and southern portions of the Lagoon have created habitat that appears suitable to nesting by least Bell's vireo. However, it is hypothesized that this habitat lacks lower-statured vegetation structure preferred by this species (Patton R., pers. comm., 2019), and that possible predation by crow (*Corvus brachyrhynchos*) and brown headed cowbird (*Molothrus ater*) may be limiting its presence in this area (Patton R., pers. comm., 2019).

Crooks et al. (1997) cite the western snowy plover as a once common visitor and infrequent nester in the mudflats/salt pannes and coastal sand dunes in and around the Lagoon. Nesting was documented in 1981 on the beach north of the Lagoon mouth (Copper and Webster 1984, as cited in Crooks et al. 1984). Unitt (2004) cites no record of nesting by this species at the Lagoon from 1997 to 2003. Ongoing surveys performed by State Parks indicate that western snowy plover still frequent the Lagoon's inlet area for foraging, but nesting activities remain near the Lagoon's historic inlet location under the upper bridge along Highway 101.

Belding's savannah sparrow and light-footed Ridgway's rail are year-round residents of the Lagoon and breed within the wetland habitats. Both species are surveyed periodically, Ridgway's rails every year and savannah sparrows every 5 years by the permitted monitors hired by CDFW. State Parks recently funded a study for the 2019 nesting season to provide a general population

estimate and distribution for both Belding's savannah sparrow and light-footed Ridgway's rail in the Lagoon. The coastal California gnatcatcher has the potential to occur in the upland areas surrounding the Lagoon. A brief description of these species and summarized results from the aforementioned studies are provided below.

Belding's savannah sparrow

- Federal Status: None
- State Status: Endangered

The Belding's savannah sparrow is a member of the Emberizidae family. This small dark-brown songbird is heavily streaked, with distinctive black streaks on a white breast, back color tinged with olive green, and a yellow wash to the lores and face (Unitt 2004). A year-round resident of Southern California, Belding's savannah sparrow nests and forages almost exclusively in the coastal salt marsh environment dominated by Pacific pickleweed. Nests are usually built in natural depressions in the ground and are concealed by overhanging vegetation. The decline of Belding's savannah sparrow can be attributed to habitat loss resulting from the development of the Southern California coastline, competition with song sparrows (*Melospiza melodia*), and prolonged inlet closures during which nesting areas are inundated by rising water levels within the Lagoon due to continuous freshwater inputs from the watershed. Appropriate habitat for this species occurs throughout much of the Lagoon, though competition with song sparrows has limited it to specific areas located mostly near the inlet.

Surveys conducted on behalf of CDFW at the Lagoon (Zembal et al. 2015) since 1973 have recorded between 52 and 203 nesting pairs (or breeding territories) within the Lagoon (see Table 2-9). Breeding territories of Belding's savannah sparrow are greatly influenced by the status of the inlet at the Lagoon, with lower numbers occurring during years of frequent or prolonged inlet closures and higher numbers of nesting pairs occurring when the inlet has remained open for most of the year with the help of active inlet maintenance. The largest number of breeding territories recorded in the Lagoon (203 pairs) occurred in 2006 during the replacement of the lower bridge at North Torrey Pines when the inlet remained open for the entire year due to active excavation of the inlet area to maintain tidal connectivity. Results from 2019 survey detected 79 nesting territories for Belding's savannah sparrow within the Lagoon (Schaefer Ecological Solutions 2019).

Table 2-9. Number of Observed Territories in Los Peñasquitos Lagoon

Number of Observed Territories in Los Peñasquitos Lagoon (Zembal et al. 2015)									
Year	**1973**	**1977**	**1986**	**1991**	**1996**	**2001**	**2006**	**2010**	**2015**
Number	160	52	156	108	115	129	203	101	105

Source: Zembal et al. 2015

Coastal California gnatcatcher

- Federal Status: Threatened
- State Status: Species of Special Concern

The coastal California gnatcatcher is a small, non-migratory songbird that eats mainly insects and spiders. The subspecies ranges from Southern California into northern Baja California establishing territories within drought-deciduous shrublands commonly known as coastal sage scrub. This species is threatened by loss of habitat due to the development of much of the land supporting coastal sage scrub. Currently, coastal California gnatcatcher is protected within the context of several large-scale habitat conservation plans, including the City MSCP, which includes TPSNR.

Based on a number of *ad hoc* surveys (non-protocol surveys by USFWS permitted biologists), coastal California gnatcatcher have been observed within coastal sage scrub at TPSNR (see coastal California gnatcatcher location map in Appendix C). Many of the observations of coastal California gnatcatcher are within shrublands adjacent to the Lagoon. Coastal California gnatcatcher typically establishes breeding territories and nests in uplands and not within the wetland habitats within the Lagoon. It is expected that the coastal California gnatcatcher occasionally uses Lagoon transition zones and uplands for foraging and dispersal.

Light-footed Ridgway's rail

- Federal status: Endangered
- State status: Endangered

The light-footed Ridgway's rail is known to nest in cordgrass-dominated low marsh habitat and forage at the edge of salt marsh, mudflats, and tidal channels. The loss of cordgrass and salt marsh habitat in Southern California has threatened this species with extinction. Despite management practices, the status of this species remains critical. It is believed that fewer than 600 individuals are left in the wild.

The light-footed Ridgway's rail population of the Lagoon has been monitored annually since 1980 though no rails were observed until 1994, when a single pair was documented (Zembal and Hoffman 2014). From 2006 through 2015, the Lagoon was the recipient of captive-bred light-footed Ridgway's rails. During that time, the number of breeding pairs varied from two to 12. It is assumed that most of the rails surveyed between 2006 and 2015 were either transplanted captive-bred birds or their offspring. In 2016, results of surveys indicated three breeding pairs were active in the Lagoon, with two pairs observed on the eastern side of the railway alignment near the middle railway bridge and one pair at the terminus of Carmel Creek (Zembal et al. 2016). Table 2-10 provides the annual results for light-footed Ridgway's rail. The 2019 survey detected four nesting pairs of rail and five single males within the Lagoon (Schaefer Ecological Solutions 2019).

Many salt marsh restoration projects target creation of cordgrass-dominated marsh, the preferred breeding habitat of the light-footed Ridgway's rail. A glimpse of successful salt marsh creation is provided by the Model Marsh. The Model Marsh was part of the first phase of the Tijuana Estuary

Tidal Restoration Project (Entrix et al. 1991) and was constructed during the winter of 1999–2000. Five pairs of breeding Ridgway's rails were detected in the 20-acre Model Marsh in fall 2004.

Table 2-10. Census of the Light-footed Ridgway's Rail in Los Peñasquitos Lagoon, 1980–2016

Number of Pairs Detected in Los Peñasquitos Lagoon									
Year	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**
Number	0	0	0	0#	0#	0#	1	1	1
Year	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Number	2	2#	2	1	1	2	1#	2#	2
Year	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Number	7#	12#	2#	4#	9#	12#	11#	12	5
Year	**2015**	**2016**							
Number	5	21							

# indicates detection of unpaired rails (used beginning in 1987)
Source: Zembal et al. 2016

Wandering skipper

- Federal status: None
- State status: Special-Status Species

The wandering skipper is a small butterfly. The larval host plant for this species, saltgrass, is found in the transitional habitats along the edge of the high marsh. Nectar sources include wild heliotrope (*Heliotropium* spp.), Pacific pickleweed, California sea lavender (*Limonium californicum*), and alkali heath.

Thirty-nine individual wandering skippers were observed in a focused survey of the Lagoon in August 2010 (Greer and Roeland 2010). Two methods were used to estimate the population of wandering skipper at the Lagoon in 2013. These included the "distance method" and mark-recapture method (Greer and McCutcheon 2013). The distance method indicated that population in the 3.86-acre study area located east of the North Beach parking lot was 451 individuals with a 95% confidence interval of 419 to 485 individuals. The mark-recapture method indicated an average population of 658 individuals.

2.2.11 Cultural Resources

Cultural Setting

Early Prehistoric Period (Paleoindian Period)

The earliest well-documented prehistoric sites in the Southern California region show evidence of human presence dating back over 9,000 years ago and 8,000 years ago in the San Diego region. Dating back to the early Holocene Epoch, the Early Prehistoric Period, or Paleoindian period has been referred to locally as the San Dieguito Complex or Tradition (Pigniolo et al. 2010; Rogers 1966). People of the San Dieguito Complex were previously thought to have been almost exclusively "big game hunters" (Pourade 1966) and highly mobile in order to follow large mammals. However, more recent evidence suggests that they were also gatherers and, along the coast, exploiters of marine resources (Gallegos 1992). The San Dieguito Complex is generally divided into four "aspects" (major zones of concentration)—the Western, Central, Southwestern, and Southeastern Aspects—with the San Diego coastal region falling into the Western Aspect (Rogers 1966). The first documented coastal site (*i.e.,* Harris site) in the San Diego region was found along the San Dieguito River, which is located just north of the Los Peñasquitos watershed.

Early Archaic Period

During the Early Archaic Period, it is believed that the Native Americans had a generalized economy that focused on hunting and gathering (Pigniolo et al. 2010) with coastal Southern California economies remaining largely based on wild resource use until European contact (Willey and Phillips 1958). Sites dated between approximately 8,000 and 1,500 years before present (BP or prior to 1950) indicate increased use of ground stone artifacts and dart points, along with a mixed core-based tool assemblage, that identify a range of adaptions to a more diversified set of plant and animal resources that include marine invertebrates in coastal areas (Pigniolo et al. 2010). Around 6000 BP, the lagoons of northern San Diego County supported large populations (Gallegos and Kyle 1988; Pigniolo et al. 1993). However, there appears to be a decline in the numbers of sites in northern San Diego County from around 3000 to 1500 BP, which has been attributed to the siltation of the lagoons and the depletion of lagoon resources that include shellfish (Gallegos 1992; Gallegos and Kyle 1988). The end of the Early Period in present-day San Diego County has been estimated to be around 1300 BP (Gallegos 1992).

Late Archaic or Late Prehistoric Period

The Late Prehistoric Period (also known as the Late Archaic or Yuman Period) lasted from 1300 BP up to European contact. This period has been distinguished from earlier periods by the appearance of small projectile points, ceramics, and the introduction of bow and arrow, as well as the practice of cremating the dead (Christenson 1992; Gallegos and Kyle 1988). Some researchers believe that the drying up of the large inland lakes (Lake Cahuilla and others) instigated or contributed to the migration of peoples from the eastern deserts to the western portion of San Diego County (*e.g.,* Pourade 1966). Yuman Period sites have been found mainly in the inland portion of the County, with only 2% located within the coastal strip (Christenson 1992). These results may be in part skewed due to the loss of site data because of coastal development prior to the instigation

of standard site recording practices (Christenson 1992). Although Christenson (1992) concludes that Late Prehistoric people of present-day western San Diego County used a wide variety of environmental settings for settlement and subsistence, maritime resources never became an emphasis, as reported for other groups living along coastal areas of California. However, proof of shoreline and offshore fishing was observed in bone assemblages of fish found in four Early Period sites located near the Lagoon that span a period from approximately 7000 to 2800 BP (Noah 1998).

TPSNR, including the Lagoon, is within the ethnographic territory of the Kumeyaay, formerly referred to as Diegueño, who are direct descendants of the early Yuman hunter-gatherers. Their territory encompassed a large diverse environment that included marine, foothill, mountain, and desert resource zones. The Kumeyaay were mainly hunters and gatherers, making seasonal rounds to take advantage of various resources. However, they also developed horticultural/ agricultural techniques including burning, seed broadcasting, transplanting, and planting (Bean and Lawton 1973; Gee 1972; Luomala 1978; Shipek 1982). Acorns were the single most important food source used by the Kumeyaay, and villages were usually located near water sources to facilitate the leaching of tannic acid out of the acorn meal (Pigniolo et al. 2010). Seeds from grasses, manzanita, sage, sunflowers, lemonade berry, chia, and other plants were also used along with various wild greens and fruits. Deer, small game, and birds were hunted, and fish and marine resources were used as food sources. Hunting implements used by the Kumeyaay included bow and arrow, curved throwing sticks, nets, snares, and fishhooks made of shell or bone (Pigniolo et al. 2010).

The Kumeyaay were organized into autonomous bands with a hereditary (patrilineal) clan chief as well as at least one assistant chief (Luomala 1978). Each band had a central primary village and a number of outlier homesteads located at small water sources, springs, or at the mouths of secondary creeks (Shipek 1982). They also claimed prescribed territories but did not own resources except for some minor plants and eagle aeries (Luomala 1978; Spier 1923).

Historic Period

European contact with the Kumeyaay in coastal San Diego began on September 28, 1542, when Juan Rodriguez Cabrillo entered San Diego Harbor and named it San Miguel. A subsequent contact with Spanish explorers occurred later in 1602 when Sebastian Vizcaino sailed into the bay and renamed it San Diego de Alcalá. Kumeyaay culture and society remained stable until the advent of the mission system and displacement by Hispanic populations during the eighteenth century (Pigniolo et al. 2010). Establishment of the mission system in San Diego was initiated with the building of the Mission San Diego de Alcalá in 1769, located in modern-day Mission Valley just east of I-15. While many of the Kumeyaay initially resisted missionization, the introduction of European diseases greatly reduced the native population during this period and contributed to the breakdown of cultural institutions. De facto Native American control of the Southern California region ended several decades later.

The Spanish Period (1769–1821) represents a time of European exploration and settlement that involved dual military and religious contingents based out of the San Diego Presidio and the missions located in San Diego and San Luis Rey. Most of the remaining Kumeyaay during this time period were forced to convert and relocate to the mission, where they were used as a source of labor. The mission system introduced horses, cattle, agricultural goods, and implements from

Europe, as well as new construction methods and architectural styles. While Spanish control of the Southern California region ended with the separation of Mexico from Spain in 1821, many of the Spanish institutions and laws remained.

The Mexican Period (1821–1848) began with Mexico's independence in 1821. At that time, cowhides were one of the few items in California that could be produced in abundance and shipped long distances (Wade et al. 2009). Rancho Peñasquitos, the first private land grant in San Diego, was established in 1823 when Captain Francisco Maria Ruiz, the San Diego Presidio Commandant, was awarded 4,243 acres that included eastern portions of Los Peñasquitos Canyon (Wade et al. 2009). When the mission system was secularized in 1834, many Native Americans were dispossessed, and Mexican settlement was further expanded on lands previous under mission control (Mealey and Ruston 2010). During this period, Rancho Peñasquitos was expanded by an additional 4,243 acres to the west toward the Lagoon that included the remaining portions of Los Peñasquitos Canyon. An early settler of San Diego, Francisco Maria Alvarado, Ruiz's nephew, purchased Rancho Peñasquitos in 1837 (Wade et al. 2009). The proximity of Rancho Peñasquitos to the main road between San Diego and Yuma most likely helped the rancho to prosper in its early years since it could provide hides, tallow, and beef to both travelers and military personnel during the Mexican-American War (Wade et al. 2009). Historic reports mention that the United States Army collected over 100 head of cattle from Rancho Peñasquitos in 1846 when General Stephan Watts Kearny chose the rancho as a resting place for his Army of West after the Battle of San Pasqual (Wade et al. 2009). The Mexican Period ended when Mexico ceded California to the United States after conclusion of the Mexican-American War in 1848.

Shortly after the United States took control, gold was discovered in California. This resulted in a rapid influx of American and Europeans that quickly displaced the cultural influences and institutions developed during the Spanish and Mexican Periods. Remaining pockets of de facto Native American control were eliminated by the time of the Garra uprising in the early 1850s (Phillips 1975). While cattle ranching prospered to meet the demands of the growing populations of Central and Northern California, the prosperity was short-lived and declined after the 1850s due to several factors that included drought, disease, and changing land use priorities (farming and homesteads over large ranches) facilitated by the United States control over California (Wade et al. 2009). Few Mexican ranchos remained intact due to land use claim disputes caused by the homestead system that facilitated American settlement within the Southern California region (Wade et al. 2009). Rancho Peñasquitos stayed within the Alvarado family after the Mexican American War, when the United States Congress reassessed and confirmed land ownership in California beginning in 1851 (Wade et al. 2009). Approval for the land ownership title for Rancho Peñasquitos was granted to the Alvarado family in 1876 by the U.S. Congress and their Board of California Land Commissioners (Wade et al. 2009). The rancho was sold to Colonel Jacob Taylor in 1888, most likely to offset the debt incurred during negotiations to prove ownership of the land (Wade et al. 2009). The U.S. Government's establishment of the reservation system between 1877 and 1891 forced the relocation of the Kumeyaay, took away many of their freedoms, and forever changed what remained of their lifestyle (Carrico 1987; Castillo 1978; Shipek 1987).

Prior Research at Los Peñasquitos Lagoon and its Watershed

At least 77 archaeological investigations have taken place in the vicinity of the Lagoon and the western reaches of its watershed that indicate the presence of prehistoric settlement and historic period occupation (Pigniolo et al. 2010). Twenty-six recorded sites have been identified relatively close to the Lagoon that include Early Period sites in Sorrento Valley (SDI-1103, SDI-197, SDI-4513) and Carmel Valley (Site: SDI-4615) that span approximately 7000–2080 BP (Noah 1998; Pigniolo et al. 2010).

Marine Resource Use by Native Americans around Los Peñasquitos Lagoon

There are a number of recorded archaeological sites near the Lagoon and several of these provide evidence for the exploitation of marine resources. Four sites in particular (SDI-1103, SDI-197, SDI-4513, SDI-4615) indicate both the Lagoon and its nearshore environs played a role in the Native American diet consisting, in part, of marine faunal species. SDI-1103 (6310–5020 BP) is located along the inland edge of the Lagoon. Termed the Bank Robber Site, SDI-197 (4590–3820 BP) is also located on the inland side of the Lagoon approximately 800 meters south of SDI-1103. Located within Sorrento Valley with an estimated age of 5040–2820 BP, the Rimbach Site (SDI-4513) contained a portion of the ethnohistorically recorded Kumeyaay village of Ystagua (SDI-4609). SDI-4615 (7150–3065 BP) occupies a low rise on a northern creek bank in Carmel Valley located just over 0.5 mile from the Lagoon. Faunal assemblages at the four sites indicate a diet that consisted of lagoonal shellfish species; elasmobranchs (rays and sharks) found in shallow sandy or muddy-bottom areas; and fish species typical of kelp beds, rocky areas, and open waters (Noah 1998).

It should be noted that the success of harvesting marine resources around the Lagoon was most likely shaped, in part, by the delayed transformation of the Lagoon from a deep embayment to brackish marsh and, eventually, to a salt marsh. During the post-glacial period, sea level rise transformed the deeply incised stream valley of Los Peñasquitos Canyon into a deep-water embayment with a rocky beach along the outer coast (Inman 1983). Between 8,000 and 6,000 years ago, sea level rise slowed and sediment input from the local watershed and streams to the north within the Oceanside Littoral Cell acted to transform the rocky coastline near the Lagoon into sandy beach (Masters 2005; Masters and Gallegos 1997). By 5,000 years ago, the primary source of mollusks available for Native Americans shifted from rocky coast species to sandy beach species (Masters 2005; Masters and Gallegos 1997). As sea levels stabilized, sediments built within the Lagoon, transforming the Lagoon into a brackish marsh by 3600 BP and salt marsh by 2800 BP (Cole and Wahl 2000). Episodic floods associated with major winter storms and El Niño Southern Oscillation events acted to deepen the channels and reestablish tidal flows.

Kumeyaay Village of Ystagua (SDI-4609)

Located within modern-day Sorrento Valley and dating back to 1295 BP, the Kumeyaay village of Ystagua spans the Late Prehistoric Period up to European Contact. Father Juan Crespí and Miguel Costansó captured early encounters with the Kumeyaay at Ystagua on March 15, 1769, during a Spanish exploration party led by Don Gaspár de Portolá (Carrico 1977). Crespí described the encounter as being friendly and recorded one of the first observations of clay pottery, leading

many anthropologists to argue that Native American manufacturing of pottery occurred prior to Spanish contact (Carrico 1977). Archaeological excavations conducted at Ystagua have yielded extensive grinding technology and faunal collections that include 19 fish species dominated by Pacific mackerel and sheephead (Noah 1998). Other pelagic fish found at this site included albacore, skipjack, bonito, yellowtail, and barracuda, indicating that residents of Ystagua ventured offshore to kelp beds off Del Mar and, potentially, farther out into open coastal waters (Noah 1998).

Archaeological evidence indicates that many of the late prehistoric villages within the Oceanside Littoral Cell moved inland, away from the coastline. This large migration occurred as early as 2,000 years before Portolá's arrival and was most likely due to a drastic decrease in the quantity of shellfish that provided a major food source (Warren 1964). However, Ystagua appears to have been an exception, most likely due to its location near the Lagoon and its three sub-watersheds that provided the Kumeyaay at Ystagua opportunities for both shellfish harvesting along the coast and hunting/gathering opportunities in the nearby coastal canyons (Carrico 1977). Furthermore, natural springs located in Los Peñasquitos Canyon most likely contributed to stability by providing a source of freshwater for both the Kumeyaay and the large mammals they hunted.

Tribal Cultural Resources Consultation

AB 52 (Chapter 532, Statutes 2014) requires a lead agency to provide formal notification to designated contact or tribal representatives of affiliated California Native American Tribes of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated. California Native American Tribes are those included "on the contact list maintained by the Native American Heritage Council (NAHC) for the purposes of Chapter 905 of the Statutes of 2004a" (PRC Section 21073). Under AB 52, a Tribal cultural resource is identified as a site, feature, place, cultural landscape, sacred place or object, which is of cultural value to a Tribe; and is either on or eligible for the California Historic Register or a local historic register; or the lead agency, at its discretion chooses to treat the resource as a Tribal cultural resource (PRC Section 21074).

LPLF worked closely with State Parks, the lead agency, to contact the NAHC and to identify and contact representatives from appropriate Native American tribes and their associated bands. A Sacred Site Search was requested from the NAHC on October 11, 2017. A formal response from the NAHC was provided on October 12, 2017, that indicated a negative finding with regard to the presence of sacred sites within the area of potential project effect. On January 8, 2018, Native American representatives were contacted regarding the release of the NOP. Of the 14 Tribes on the consultation list, four have requested formal consultation with State Parks during the preparation of this Program EIR: San Pasqual Band of Mission Indians, Campo Band of Mission Indians, Mesa Grande Band of Mission Indians, and Iipay Nation of Santa Ysabel. Responses also stated that the proposed project footprint was within tribal ancestral territory and requested that Native American monitors be present during ground-disturbing activities. The NAHC sacred lands file search was negative; however, continued communication with Tribes will be ongoing throughout the Program EIR process, as requested by the four Tribes mentioned above. A consultation meeting was held on January 14, 2018, and a representative from the San Pasqual Band of Mission Indians Tribe, LPLF, and State Parks were present. The proposed project and environmental setting were summarized and discussed. Both natural and cultural concerns were discussed and noted. Tribal consultation was inititated for the

Program EIR in 2018 and was reinitiated in 2021 to include most recent NAHC consultation list. A letter was received from the Jamul Band of Indians requesting consultation. Due to schedualing difficulties, a meeting was not held before the end of the consultation period. The consultation process will continue beyond that date and will be reinitiated for subsequent project level planning. A detailed description and comment letters received from the AB 52 consultation processes from 2018 and 2021 are included in Appendix D.

2.2.12 Paleontological Resources

Based on past studies and findings throughout the San Diego region, local geologic formations have been assigned paleontological resource sensitivities, which indicate their potential to contain paleontological resources of scientific importance. Several studies have been completed to characterize geologic formations in the region, as well as their potential for containing paleontological resources. The following analysis is based on the baseline conditions established in Paleontological Resources, San Diego County, California (Deméré and Walsh 1993).

As described in the Enhancement Plan and Section 2.2.9, the geology of Los Peñasquitos Lagoon and its western drainages are characterized by thick nonmarine sedimentary rocks (ESA 2018). The oldest formation within the Lagoon setting is the Delmar Formation, which is exposed in the lower part of the bluffs near the lagoon mouth. Above the Delmar Formation is the Torrey Sandstone formation, a white, beach-type deposit that weathers into distinctive caverns and hollows and accounts for the eroded cliffs bounding the Lagoon. The Lindavista Formations are relatively thin layers of striking red rock that overlie the older Torrey Sandstone deposits on the flat ridge tops. The Lagoon basin itself is underlain by marine or river sand to a depth of more than 50 feet. However, more recent deposits cover most underlain areas by approximately 6 feet of fine silts and clays.

2.2.13 Public Services and Utilities

The Lagoon has been impacted by urban infrastructure since 1888, including construction of two railway alignments, Highway 101, commercial development within the floodplain, the North Beach parking lot, I-5, and I-805 (Figure 2-18). Additionally, three wastewater treatment plants and pump stations have operated within the Lagoon or along its boundaries since the 1950s. Currently, sewage lines run along the perimeter of the Lagoon and within nearby drainages, connecting adjacent communities and business parks to Pump Station 65, located in the southeast corner of the Lagoon, and Pump Station 64, located within Sorrento Valley. Stormwater conveyance systems are also located along the boundaries of the Lagoon, including outfalls that discharge directly into the Lagoon, represented as outfalls 1 and 2 shown in Figure 2-18. SDGE operates underground gas lines along the Lagoon boundaries and aerial power lines that cross the Lagoon on support poles, though a decommissioned power line alignment was removed in 2004. The City manages an underground water main near the Carmel Valley Road and Portofino Road intersection that is within the Lagoon. The City recently decommissioned and abandoned in place a portion of the water main that crosses the marsh from Flintkote Avenue to the closed portion of Old Sorrento Valley Road.

Source: Imagery – Microsoft (2015), ESA (2016)

0 1,000 2,000 4,000 Feet

Figure 2-18
Infrastructure in Los Peñasquitos Lagoon

2.2.14 Public Health and Safety

Hazardous Materials

Based on the California Department of Toxic Substances Control (DTSC) EnviroStor Database, and Cortese List, the Lagoon is not listed as a hazardous materials site on State of California Hazardous Waste and Substances lists compiled pursuant to Government Code Section 65962.5 (DTSC 2019a, 2019b). There are no known existing or historical aboveground storage tanks or underground storage tanks on the project site. There is no evidence of on-site hazardous waste generation, and the site is not listed as a generator of hazardous waste in the site-specific databases. The nearest listed hazardous material sites are east of the Lagoon in the adjacent research park developments. One site listed as Kyocera America Inc. (71002420) is a Tiered Permit site and the site history states that trichloroethylene (TCE) with concentrations over 100,000 parts per billion was detected in groundwater and the TCE plume has migrated off site to the wetland area and to neighboring properties. The site investigation is not complete as chemicals of concern have not been determined and vertical and horizontal extent of contamination have not been delineated. Another site, Spin Physics Inc. (CAD990738981), east of Sorrento Valley Road, is listed as a closed hazardous waste site. Two additional sites, Idec Pharmaceuticals (71002885) and Alliance Pharmaceuticals (71003083), are southwest of the Lagoon near Torreyana Road and are both listed as Tiered Permits that are inactive or no action needed. The last site listed is the General Atomics Property (80001461) located at 11222 Flintkote Avenue. The General Atomics Property is undergoing soil and groundwater cleanup for volatile organic compounds (VOC) constituents in concert with the DTSC. Based on analytical data collected to date, there are no impacts of the VOC-constituents from the General Atomics Property to the wetland areas.

Vectors

The Lagoon is a known location of mosquitoes within San Diego County resulting from areas of stagnant, ponded water that provide ideal breeding habitat. During extended inlet closures, the populations of mosquitoes can explode exponentially as the entire Lagoon becomes viable for breeding of freshwater and/or brackish tolerant species in the absence of tidal circulation due to daily discharges of dry weather flows of freshwater from the three main tributaries. While a nuisance to nearby communities and park visitors, several of the mosquito species found in the Lagoon also pose a threat to public health and safety because of their disease-transmitting capabilities. The 1985 Lagoon Enhancement Plan identified populations of *Culex tarsalis*, *C. pipiens*, and *C. peus* as common to the Lagoon, with large populations of day-biting mosquitoes of the genus *Aedes* occurring intermittently emerging from the Lagoon (Coppock 1985). *Culex* species were known vectors capable of transmitting WNV, Western Equine Encephalitis, and St. Louis Encephalitis to both human and equine hosts. Attempts to control mosquitoes at the Lagoon included inlet maintenance to keep water conveyance and tidal mixing active in lagoon channels, as well as eliminating discharges of treated effluent that occurred on a daily basis between 1950 and 1972.

Currently, San Diego County DEH operates a vector management program with its primary species of concern being *C. tarsalis* due to its ability to spread Western Equine Encephalitis and WNV within a 2-mile radius of its preferred habitat. Originating in Uganda, WNV is a form of

brain encephalitis that is relatively new to the San Diego region, making its first appearance in California in 2003 (DEH 2020a) DEH has identified numerous, ongoing instances of WNV infections in avian populations within the Lagoon and currently maintains a population of sentinel chickens within the Lagoon. While not fatal to avian species, WNV can be transmitted to *C. tarsalis* and then transferred to human hosts with sometimes fatal results. In 2008, two human cases of WNV that occurred near the Lagoon and a third within 2 miles from the Lagoon were recorded by DEH staff, making management of this species at the Lagoon a priority within San Diego County. While often misdiagnosed as the flu, WNV can be fatal to the young and elderly in human populations, which DEH refers to as "sensitive receptors." Even when not fatal, brain encephalitis can lead to lifelong neurologic disorders that can vary in symptomology and severity. More information related to brain encephalitis can be found at encephalitisglobal.org or through a short video: Fighting Encephalitis (https://www.youtube.com/watch?v=g1oFPdzjyl8).

Anthropogenic Drivers for Vector Presence in Los Peñasquitos Lagoon

While the Lagoon's natural environs provide habitat for mosquitoes, the presence, species type, and magnitude of the mosquito populations have been greatly influenced by human activities and development that have altered hydrologic processes and native habitats within both the watershed and the Lagoon. Daily inputs of freshwater from the watershed since 1995 have caused rapid expansion of brackish and freshwater habitats into the Lagoon, as discussed in Section 2.2.7. Rapid sedimentation within the Lagoon caused by development within the watershed has increased elevations within the marsh plain and transitional zones, precluding these areas from tidal inundation and creating additional areas for freshwater ponding. Sedimentation has also altered freshwater conveyance away from tidal channels at the base of Carmel Creek, resulting in an expanding area of constant freshwater inundation along old Sorrento Valley Road that extends southward to Pump Station 65. Structural impediments (*e.g.,* railway berm, Highway 101) also have greatly affected freshwater conveyance within the Lagoon's channels, increasing drawdown times of flood waters impounded within the lagoon channels, greatly diminishing tidal circulation, and impairing the ability of the Lagoon to maintain an open inlet. As a result, *C. tarsalis* and other freshwater mosquitoes have become further established in the Lagoon and at greater concentrations due to the expansion of preferred breeding habitat and complications associated with on-site vector management.

Sensitive Receptors

As mentioned previously, *C. tarsalis* can infect human and other mammal hosts for up to a 2-mile radius from its core habitat areas. This exposes large human populations located within urban areas and that spend time in open space areas that border the Lagoon, such as TPSNR, to the possibility of contracting WNV. Numerous sensitive receptors (elderly and children) can be present within 2 miles of the Lagoon in local communities and at other locations. In 2012, a survey performed by LPLF identified the following areas within 2 miles of the Lagoon that present a strong likelihood for ongoing or frequent presence of sensitive receptors:

Bright Horizons Preschool and Kindergarten
San Diego Jewish Academy
San Raphael Daycare
A Brighter Future Daycare

After School Learning Trees
Torrey Pines Montessori School
Carmel Valley Creek Bike Path and Park
TPSNR, Torrey Pines Extension and State Beach
Carmel Del Mar Park

Managing Populations of Culex tarsalis in the Lagoon

The County of San Diego currently treats approximately 77 acres of the upper lagoon to reduce populations of *C. tarsalis*, the primary freshwater mosquito of concern given its ability to act as a vector and infect human hosts with WNV within a 2-mile proximity of its breeding habitat. During prolonged inlet closures, populations of *C. tarsalis* can multiply exponentially as the Lagoon becomes inundated by fresh and brackish waters caused by daily freshwater inputs that dilute salinity levels at the surface of impounded waters, pushing the denser saltwater to the bottom of lagoon channels. Three recorded cases of human infection of WNV in San Diego County in 2008 occurred in communities near the Lagoon following an inlet closure at the Lagoon that lasted approximately 2 months.

2.2.15 Climate Change and Greenhouse Gas Emissions

Scientific Basis of Climate Change

Certain gases in the earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. A portion of the solar radiation that enters the earth's atmosphere is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. This infrared radiation (*i.e.,* thermal heat) is absorbed by GHGs within the earth's atmosphere. As a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on the earth.

GHGs are present in the atmosphere naturally, are released by natural and anthropogenic sources, and are formed from secondary reactions taking place in the atmosphere. Natural sources of GHGs include the respiration of humans, animals, and plants; decomposition of organic matter; and evaporation from the oceans. Anthropogenic sources include the combustion of fossil fuels, waste treatment, and agricultural processes. The following are GHGs widely accepted as the principal contributors to human-induced global climate change:

Carbon dioxide (CO_2)
Methane (CH_4)
Nitrous oxide (N_2O)
Hydrofluorocarbons (HFCs)
Perfluorocarbons (PFCs)
Sulfur hexafluoride (SF_6)
Nitrogen trifluoride (NF_3)

Emissions of CO_2 are byproducts of fossil fuel combustion. CH_4 is the main component of natural gas and is associated with agricultural practices and landfills. N_2O is a colorless GHG that results from industrial processes, vehicle emissions, and agricultural practices. HFCs are synthetic chemicals used as a substitute for chlorofluorocarbons in automobile air conditioners and refrigerants. PFCs are produced as a byproduct of various industrial processes associated with aluminum production and the manufacturing of semiconductors. SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable GHG used for insulation in electric power transmission and distribution equipment, and in semiconductor manufacturing. NF_3 is used in the electronics industry during the manufacturing of consumer items, including photovoltaic solar panels and liquid-crystal-display television screens.

Global warming potential (GWP) is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to CO_2. The GWP of a GHG is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time (*i.e.,* lifetime) that the gas remains in the atmosphere ("atmospheric lifetime"). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of 1. The other main GHGs attributed to human activity include CH_4, which has a GWP of 28, and N_2O, which has a GWP of 265. For example, 1 ton of CH_4 has the same contribution to the greenhouse effect as approximately 28 tons of CO_2. GHGs with lower emissions rates than CO_2 may still contribute to climate change because they are more effective at absorbing outgoing infrared radiation than CO_2 (*i.e.,* high GWP). The concept of CO_2 equivalent (CO_2e) is used to account for the different GWP potentials of GHGs to absorb infrared radiation.

Although the exact lifetime of any particular GHG molecule is dependent on multiple variables, it is understood by scientists who study atmospheric chemistry that more CO_2 is emitted into the atmosphere than is absorbed by ocean uptake, vegetation, and other forms of sequestration. GHG emissions related to human activities have been determined as "extremely likely" to be responsible (indicating 95% certainty) for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's atmosphere and oceans, with corresponding effects on global circulation patterns and climate. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; however, no single project is expected to measurably contribute to a noticeable incremental change in the global average temperature, or to a global, local, or microclimate.

Global Climate Trends and Associated Impacts

The Intergovernmental Panel on Climate Change (IPCC) is now 95% certain that humans are the main cause of current global warming. Human influence on the climate system is clear, and recent anthropogenic emissions of GHGs are the highest in history. Recent climate changes have had widespread impacts on human and natural systems (IPCC 2014).

Global surface temperature has increased by approximately 1.53 degrees Fahrenheit (°F) over the last 140 years; however, the rate of increase in global average surface temperature has not been consistent. The last three decades have warmed at a much faster rate per decade.

During the same period when increased global warming has occurred, many other changes have occurred in other natural systems. Sea levels have risen; precipitation patterns throughout the world

have shifted, with some areas becoming wetter and others drier; snowlines have risen in elevation, resulting in changes to the snowpack, runoff, and water storage; and numerous other conditions have been observed.

Additional changes related to climate change can be expected by the year 2050 and on to the end of the century, including the following:

- California's mean temperature may rise by 2.7°F by 2050 and by 4.1°F to 8.6°F by the end of the century. Temperatures in San Diego County may rise by 3.1°F to 5.8°F during that same period.
- A consistent rise in sea level has been recorded worldwide over the last 100 years. Rising average sea level over the past century has been attributed primarily to warming of the world's oceans, the related thermal expansion of ocean waters, and the addition of water to the world's oceans from the melting of land-based polar ice. Sea level rise is expected to continue, and the most recent climate science report, *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*, has estimated that sea levels along the U.S. Pacific coast will increase by up to 66 inches by 2100 (National Research Council 2012). Various California climate models provide mixed results regarding forecasted changes in total annual precipitation in the state through the end of this century. However, recent projections suggest that 30-year statewide average precipitation will decline by more than 10%.
- Historically, extreme warm temperatures in the San Diego region have mostly occurred in July and August, but as climate warming continues, the occurrences of these events will likely begin in June and could continue to take place into September. Simulations indicate that hot daytime and nighttime temperatures (heat waves) will increase in frequency, magnitude, and duration.

Existing GHG Emission Sources

GHG emissions contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, electric utility, residential, commercial, and agricultural categories. Emissions of CO_2 are byproducts of fossil fuel combustion, and CH_4, a highly potent GHG, is the primary component in natural gas and is associated with agricultural practices and landfills. N_2O is also largely attributable to agricultural practices and soil management.

For purposes of accounting for and regulating GHG emissions, sources of GHG emissions are grouped into emission categories. The California Air Resource Board (ARB) identifies the following main GHG emission categories that account for most anthropogenic GHG emissions generated within California:

- *Transportation:* On-road motor vehicles, off-road equipment, recreational vehicles, aviation, ships, and rail
- *Electric Power:* Use and production of electrical energy

- *Industrial:* Mainly stationary sources (*e.g.,* boilers and engines) associated with process emissions
- *Commercial and Residential:* Area sources, such as landscape maintenance equipment, fireplaces, and consumption of natural gas for space and water heating
- *Agriculture:* Agricultural sources that include off-road farm equipment; irrigation pumps; crop residue burning (CO_2); and emissions from flooded soils, livestock waste, crop residue decomposition, and fertilizer volatilization (CH_4 and N_2O)
- *High GWP:* Refrigerants for stationary and mobile-source air conditioning and refrigeration, electrical insulation (*e.g.,* SF_6), and various consumer products that use pressurized containers
- *Recycling and Waste:* Waste management facilities and landfills; primary emissions are CO_2 from combustion and CH_4 from landfills and wastewater treatment

California

ARB performs an annual GHG inventory for emissions and sinks of the six major GHGs. In 2013, California produced 459 million metric tons (MT) of CO_2e. Combustion of fossil fuel in the transportation category was the single largest source of California's GHG emissions in 2013, accounting for 37% of total GHG emissions in the state. The transportation category was followed by the industrial category, which accounts for 23% of California's total GHG emissions, and the electric power category (including in-state and out-of-state sources), which accounts for 20% of total GHG emissions in California.

City of San Diego

The City emitted approximately 15.5 MT of GHGs in 1990. Citywide emission levels were previously projected to result in an increase to 22.5 MT per year by 2010. The most recent GHG inventory for the year 2010 estimated the total emissions at 13.0 MT CO_2e per year. Transportation is the largest emissions sector, accounting for approximately 55% of total emissions. Energy consumption is the next largest source of emissions, at 40% of the total. Accounting for future population and economic growth, the City estimates that GHG emissions will increase to approximately 14.1 MT CO_2e in 2020 and 16.4 MT CO_2e in 2035.

Los Peñasquitos Lagoon

As a natural open space, the Lagoon is not a generator of GHG emissions. Nominal emissions may result from the use of vehicles or equipment during occasional maintenance activities, such as inlet maintenance or vector control actions, associated with the Lagoon. In addition, freshwater marsh habitats that have increased in extent in the Lagoon with urbanization may be net emitters of GHGs due to their potential for CH_4 production (Kroeger et al. 2017). As discussed below in Section 2.3.6, restoring salt marsh in the Lagoon would reduce the potential for GHG emission by Lagoon habitats (Kroeger et al. 2017).

2.3 KEY VALUES

2.3.1 Sensitive Species

The Lagoon is a coastal wetland with ecological resources that are important to the region with recreational and visual amenity for the community. At least 48 sensitive species are known to occur within the Lagoon and adjacent uplands, including 35 plants, one insect, five reptiles, and seven birds. Biological surveys of the Lagoon's study area identified three upland species that are federally listed as endangered as described in Section 2.2.10. Belding's savannah sparrow and light-footed Ridgway's rail are year-round residents of the Lagoon and breed within the wetland habitats. A mosaic of habitat and ecosystem occurs, from open saltwater to freshwater marsh and upland habitat. The existing habitat is linked directly to tidal inundation and frequency, as well as freshwater inputs.

2.3.2 Habitat Connectivity – Wildlife Corridors

Wildlife corridors and linkages are important features in the landscape, and the viability and quality of a corridor or linkage are dependent on site-specific factors. Topography and vegetative cover are important factors for corridors and linkages and should provide cover for both predator and prey species. Wildlife corridors and linkages should direct animals to areas of contiguous open space or resources and away from humans and development. The corridor or linkage should be buffered from human encroachment and other disturbances (*e.g.,* light, loud noises, domestic animals) associated with developed areas that have caused habitat fragmentation (Schweiger et al. 2000).

Width and connectivity are assumed the primary factors of a "good" corridor (Forman et al. 1986); "stepping stone reserves" for pollinators, seed dispersers, and other flying species such as birds, bats, and insects should also be included as "good" factors (Soulé et al. 2003). The level of connectivity needed to maintain a population of a particular species will vary with the demography of the population, including population size, survival and birth rates, and genetic factors such as the level of inbreeding and genetic variance (Rosenberg et al. 1997). Areas not considered as functional wildlife dispersal corridors or linkages are typically obstructed or isolated by concentrated development and heavily traveled roads, known as "chokepoints." One of the worst scenarios for dispersing wildlife occurs when a large block of habitat leads animals into "cul-de-sacs" of habitat surrounded by development. These habitat cul-de-sacs frequently result in adverse human/animal interface.

Several wildlife corridors link the Lagoon with surrounding open space areas that include sections of TPSNR, such as the Extension, and the watershed. Efforts to monitor these wildlife corridors have been fairly fragmented with focus on specific corridors (*e.g.,* Carmel Valley) or animal type (*e.g.,* bobcats). A survey of predator and mesopredator presence and movement within TPSNR and surrounding areas (*e.g.,* Sorrento Valley) was performed by Kevin Crooks 1995–1996 and provides the most comprehensive effort to date for TPSNR (Crooks 1997). Building upon work performed in TPSNR by Ogden in 1992, Crooks studied seven wildlife corridors within or connecting to TPSNR as part of the 1997 Wildlife Management Plan for Torrey Pines State Reserve (see Figure 2-19). Crooks surveyed corridor use by tracking presence and movement of target species that included deer, mountain lion, bobcat, and coyote. Based on use by target species, each corridor (*i.e.,* route) was given the following designation:

Source: County of San Diego 2008

Figure 2-19
Wildlife Corridors in Los Peñasquitos Lagoon

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Functional – consistent usage by target species
Partially Functional – not used by the largest mammals (deer and mountain lion)
Non-Functional – not used by target species

Crooks noted that each of the seven corridors was affected to some degree by urban land use (*e.g.,* streets, culverts, housing). Some corridors have been cut off or appear to no longer serve as viable routes for wildlife due to fragmentation, obstruction by buildings, channels that are heavily occluded with vegetation, and bridge spans obstructed by sediment. Proximity to urban areas also presents impacts related to lighting and noise, and sometimes forces wildlife to cross roadways without protected access points. Summarized results from the Crooks study for each wildlife corridor within TPSNR and the Lagoon are provided below.

Sorrento Valley Corridor (Functional)

Results of Crooks's surveys indicate the Sorrento Valley Corridor was the only functional wildlife corridor to areas outside of TPSNR (Crooks 1997). Use of this linkage was not detected in surveys performed by Ogden in 1992 (Ogden 1992). Crooks speculates that construction within the watershed between 1992 and 1997 may have played a role in that the Carmel Mountain Corridor was used previously with animals switching to the Sorrento Valley Corridor (Crooks 1997).

Crooks identified at least two routes used by predators and mesopredators through the Sorrento Valley Corridor. Both routes follow the natural riparian channel that connects Los Peñasquitos Canyon to the Lagoon by way of Sorrento Valley. The northern route starts at the west end of Los Peñasquitos Canyon, passes under I-805 and I-5, and continues along the lawn south of the business complex on Sorrento Valley Road, passes under Sorrento Valley Road, and ends in the Lagoon. The southern route starts on the east side of Los Peñasquitos Canyon, passes under I-805 and I-5, goes past J&R Lumber on Sorrento Valley Road, goes under Sorrento Valley Road, and ends in the Lagoon. Species found using this corridor frequently (nightly to monthly) include bobcats, coyotes, foxes, racoons, opossums, and skunks. Deer tracks were not found during the study with Crooks speculating that the low underpass limited use of this corridor by mule deer. Mountain lion tracks were also not detected, but presence of this species is considered a rare event for TPSNR and lack of detection during Crook's study may be due to the short time span of monitoring (Crooks 1997).

As the only functional corridor between TPSNR and other core areas during the study, Crooks considered this route as vital for the species using it, as well as for potential use by mountain lion and mule deer.

Portofino Corridor (Functional)

The Portofino Corridor begins at the southeast corner of the TPSNR Extension, goes across Portofino Road and Carmel Valley Road, and ends at the Lagoon. This corridor was designated as Functional with coyotes, foxes, and (occasionally) bobcats use detected, despite no evidence of mule deer or mountain lion. Crooks considered this route the best linkage between the Extension and larger natural areas within TPSNR. Therefore, he felt that maintaining and enhancing this functional corridor was imperative.

North Torrey Pines Rd/Highway 101 (Functional)

North Torrey Pines Road bisects TPSNR and is considered an active corridor, though it also experiences a high degree of road kills as mule deer and large carnivores cross this road to access other portions of TPSNR. Crooks suggested that plans to increase traffic or widen the North Torrey Pines Road could severely impact the connectivity offered by this route.

Crest Canyon (Non-Functional)

The Crest Canyon corridor does not have direct connection to the Lagoon, but instead connects the neighboring San Dieguito watershed to the north end of the Extension. Information related to this corridor is included here, since wildlife movement between these two systems could be served by this route.

Results from Crooks's study indicate that this corridor is non-functional for the most part. Coyotes may be able to navigate between the Extension and Crest Canyon, but it is believed that extensive housing and traffic on Del Mar Heights Road appear to prohibit use of this corridor.

Los Peñasquitos Creek (Non-Functional)

This corridor was considered non-functional by both Ogden and Crooks, due to the high risk for mortality caused by traffic on Genesee Avenue.

Carmel Mountain (Non-Functional)

During Ogden's study, this route was designated as Functional with use by mule deer, mountain lions, bobcats, and coyotes (Ogden 1992). This route connected Del Mar Mesa to the Lagoon, following roadways and narrow bands of vegetation that included coastal sage scrub. During Crooks's study, this route was determined non-functional due to the land use changes that severed it. Changes in land use included the construction of office buildings along the west side of I-5, widening/paving of Carmel Mountain Road through the I-5 underpass, and housing developments on the east side of I-5.

Carmel Valley (Partially Functional)

Ogden surveyed this corridor in 1992 and found it functional for mountain lions, bobcats, coyotes, and foxes. Crooks was unable to survey this route due to freeway construction. This route currently runs through a box culvert under I-5 and just south of the Park and Ride off Carmel Valley Road. The culvert is relatively occluded with sediment and may serve most mammals other than mule deer, due to height restrictions. Both State Parks and Caltrans have conducted wildlife surveys at this location since the Crooks study and (through personal communication) indicated that this corridor is actively used by mammals, though it was not clear if mule deer still used this corridor due to low elevations within the box culvert under I-5. In 2014, a study found that mule deer tracks were present within the corridor but genetic testing indicated that it was most likely the same individuals rather than different populations of this species (Bohonak and Mitelberg 2014). For this reason, the Carmel Valley corridor has been designated as Partially Functional. Efforts to improve the Carmel Valley corridor may be

available in the near future in conjunction with proposed improvements to I-5 where it spans Carmel Creek that would include replacing the box culvert with a bridge span.

2.3.3 Pacific Flyway

The Lagoon is an important stop along the Pacific Flyway, a migratory route used by birds traveling between breeding sites in Arctic and sub-Arctic regions and southern wintering sites. Along this flyway, the Lagoon serves as a foraging and resting area. Although many birds continue to travel south during the late summer and fall months, many shorebird, waterfowl, passerine, and raptor species winter at the Lagoon and other regional lagoons and estuaries. The Lagoon's invertebrate population serves as a key food source for many of the migratory birds.

2.3.4 Essential Fish Habitat

EFH includes types of aquatic habitat where fish spawn, breed, feed, or grow to maturity. EFH is also a management term used by NOAA Fisheries to facilitate the conservation and enhancement of species regulated under a Federal Management Plan (FMP). For the Pacific West Coast (excluding Alaska), there are three FMPs, covering groundfish, coastal pelagic species, and Pacific salmon. Pacific salmon are not present in the Lagoon or other coastal estuaries within San Diego County, though both groundfish and coastal pelagic species can be present at some stage of their life cycle.

EFHs are grouped into seven units called composite EFHs to focus on ecological relationships among species and between the species and their habitat. Composite EFHs within the Lagoon and adjacent marine waters include estuarine and rocky shelf.

2.3.5 Areas of Special Biological Significance

ASBSs are State Water Quality Protection Areas in ocean waters. These are 34 ocean areas monitored and maintained for water quality by the State Water Resources Control Board (SWRCB). Two ASBS sites are in the vicinity of the proposed project: La Jolla ASBS #29 and the Scripps ASBS #31. In 1983, the SWRCB Ocean Plan officially prohibited polluted runoff and discharges into an ASBS by requiring that runoff and discharge sources be located a sufficient distance to maintain natural water quality conditions. Stormwater and runoff, and coastal river discharges can cause large turbidity plumes and reduce near-surface salinity up to several miles, while adding suspended sediments, nutrients, bacteria/pathogens, and chemical contaminants to nearshore waters during storm events. The Lagoon is approximately 3 miles north of the Scripps ASBS and the La Jolla ASBS.

2.3.6 Ecosystem Services

Ecosystem services are direct and indirect contributions of ecosystems to human well-being (BISE 2019). The Lagoon provides numerous ecosystem services to surrounding communities and within the region as a whole. These ecosystem services include supporting native habitats and wildlife, open space, opportunities for passive recreation, improved water quality of coastal waters, and buffering inundation from storm surges and rainfall. The protection and, where possible, enhancement of these ecosystem services will require stakeholder coordination and collaboration. Some key ecosystem services provided by the Lagoon are briefly summarized below.

Water Quality

Coastal wetlands can provide improvements to water quality by filtering out excess nutrients and sediments, as well as pollutants entrained in stormwater before they can reach the ocean. This helps to protect coastal environments that include nearshore ecosystems. Improved water quality afforded by the Lagoon helps to protect rare and sensitive nearshore ecosystems located to the south of the lagoon inlet, including reef and eelgrass, offshore kelp beds, and two ASBSs.

Floodwater Conveyance and Attenuation

Coastal estuaries provide natural conveyance and attenuation of flood waters to protect urban areas and commercial properties from inundation by storm runoff and/or coastal flooding. The Lagoon's storage capacity of floodwaters helps to protect urban areas that include the community of Torrey Pines and business parks located within Sorrento Valley. However, the constrained nature of the Lagoon's floodplains, hardened structures along its borders, and the current railway alignment have diminished its ability to maximize stormwater attenuation.

Climate Change Abatement

Restoring tidal salt marshes in North America is "one of the most effective measures for sequestering carbon" (Trulio et al. 2007). This is due mostly to their ability to "sequester carbon at a rate about 10-fold higher on an area basis than other wetland ecosystems due to high sedimentation rates, high soils carbon content, and constant burial due to sea level rise" (Brigham et al. 2006). Salt marsh is also highly effective in trapping CH_4 due to high salinity rates that abate the release of this GHG. Brackish and freshwater marsh have lower salinities and are not as effective with regard to capturing GHGs. Therefore, recovering salt marsh even at the expense of brackish and freshwater marsh provides far greater value with regard to abating climate change through the sequestering of GHGs.

Recent efforts have been made to quantify carbon sequestration rates for wetland habitats using methods provided by the ARB in 2014/2015, recently updated in June 2019. Using the 2014/2015 methodology, it has been estimated by project proponents that the UC Santa Barbara North Campus Open Space Wetland Restoration will sequester an estimated 540 metric tons of carbon over 100 years, following the restoration of just 34 acres of wetland and 20 acres of upland (CDFW 2014). Efforts should be made to calculate sequestration rates for the Lagoon under existing conditions using methodologies developed by the ARB as applicable (*i.e.,* current acreage by habitat classification).

Education, Science, and Outreach

The Lagoon provides numerous opportunities for science and education. One of the most studied coastal estuaries in Southern California, the Lagoon's biological monitoring program was established by the PERL in 1987 and has run continuously ever since. Scientists from the TRNERR currently run the monitoring program at the Lagoon with input from LPLF and State Parks to help guide management decisions. While not officially part of the TRNERR, data collected from the Lagoon are used in comparative analyses between the TRNERR and other coastal estuaries and lagoons in San Diego County. Data and results from the Lagoon are captured and summarized in annual monitoring reports submitted to LPLF.

State Parks staff and volunteer docents carry out an interpretive program at TPSNR that currently does not bring visitors to the Lagoon. While the education and outreach program is being expanded, LPLF provides opportunities to local schools for science-based research and field studies to support their environmental science curriculum. State Parks, with support from LPLF, provides opportunities for research and applied science to local universities that include Scripps Institution of Oceanography and the University of California, San Diego. Current projects at the Lagoon include improving the understanding of climate change through studies that look at the effects of El Niño Events on lagoon hydrodynamics and water quality parameters; how wave propagation interacts with water chemistry and other parameters within lagoon channels; accretion and erosion along barrier beaches at coastal lagoons in Southern California; and how coastal estuaries interact with coastal ecosystems in the nearshore on both a local and regional scale.

The Lagoon provides the closest opportunity for members of disadvantaged communities to enjoy the natural and recreational resources of the Lagoon in conjunction with other areas within TPSNR. Implementation of the updated Enhancement Plan would provide education and outreach opportunities regarding the value of tidal salt marsh and coastal resources through enhanced local and regional trail networks, safe viewpoints, and educational opportunities (*e.g.,* information panels) to support coastal stewardship efforts.

A disadvantaged community is defined as "a community with an annual median household income that is less than 80% of the statewide annual median household income" (California Water Code Section 79505[a]). Based on this definition, several disadvantaged communities are located near the Lagoon identified by the State of California accordingly:

- Disadvantaged Community Tracts – (ID #0607300830, #06073008361, and #06073017035)
- Disadvantaged Community Blocks (ID #060730083052, #060730083612, #060730083643, #060730083632, #060730083433, #060730083432, #060730083403, and #060730170353)

Passive Recreation

Since the Lagoon is a dedicated State Natural Preserve, only passive recreation is allowed along its boundaries and from overlooks in TPSNR. Passive recreation at the Lagoon typically consists of wildlife observation and photography, hiking along dedicated trails within TPSNR, and plein air landscape painting. Direct entry into Los Peñasquitos Lagoon by foot or water vessel must be approved beforehand by State Parks through a Right of Entry Permit, Science Collection Permit, or Memorandum of Understanding for approved, ongoing activities that occur beyond a year's timeframe.

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CHAPTER 3
PROJECT DESCRIPTION

This chapter identifies ongoing management and maintenance efforts along with the history of project development and the identification of the following proposed project components to be evaluated in the context of CEQA for this programmatic document: Lagoon Restoration and Enhancement, Public Access Improvements, and Vector Management. These project components were developed through an iterative process involving input from key stakeholders, public outreach, and technical analysis to address the effects of inputs from an urbanized watershed, sea level rise, and transportation infrastructure on Los Peñasquitos Lagoon's native salt marsh, public access around the Lagoon perimeter, and public health from vector-borne illness as described in Chapter 2. Selection of the proposed project is also described below. These activities represent a program anticipated to be implemented over the next 50 years, generally broken into three phases and with activities in various designated management zones in the Lagoon, as identified in Table 3-1 and shown in Figure 3-1.

3.1 PROJECT PURPOSE

The overarching purpose of the Enhancement Plan is to develop an updated plan that helps to establish a coastal wetland that is a dynamic system capable of being resilient to future long-term climate impacts such as sea level rise, self-sustaining, and as close to native/natural as possible to maintain a relatively high degree of functionality. Objectives of the proposed project include restoration and enhancement of salt marsh habitat and wetland conversion zones, improvements to public access around Los Peñasquitos Lagoon, and vector management within the Lagoon in a manner consistent with management guidelines for a State Natural Preserve. Wetland conversion zones would support ecological function of the proposed Restoration and Enhancement Activities while providing resiliency for future sea level rise.

3.2 ONGOING MAINTENANCE AND MANAGEMENT

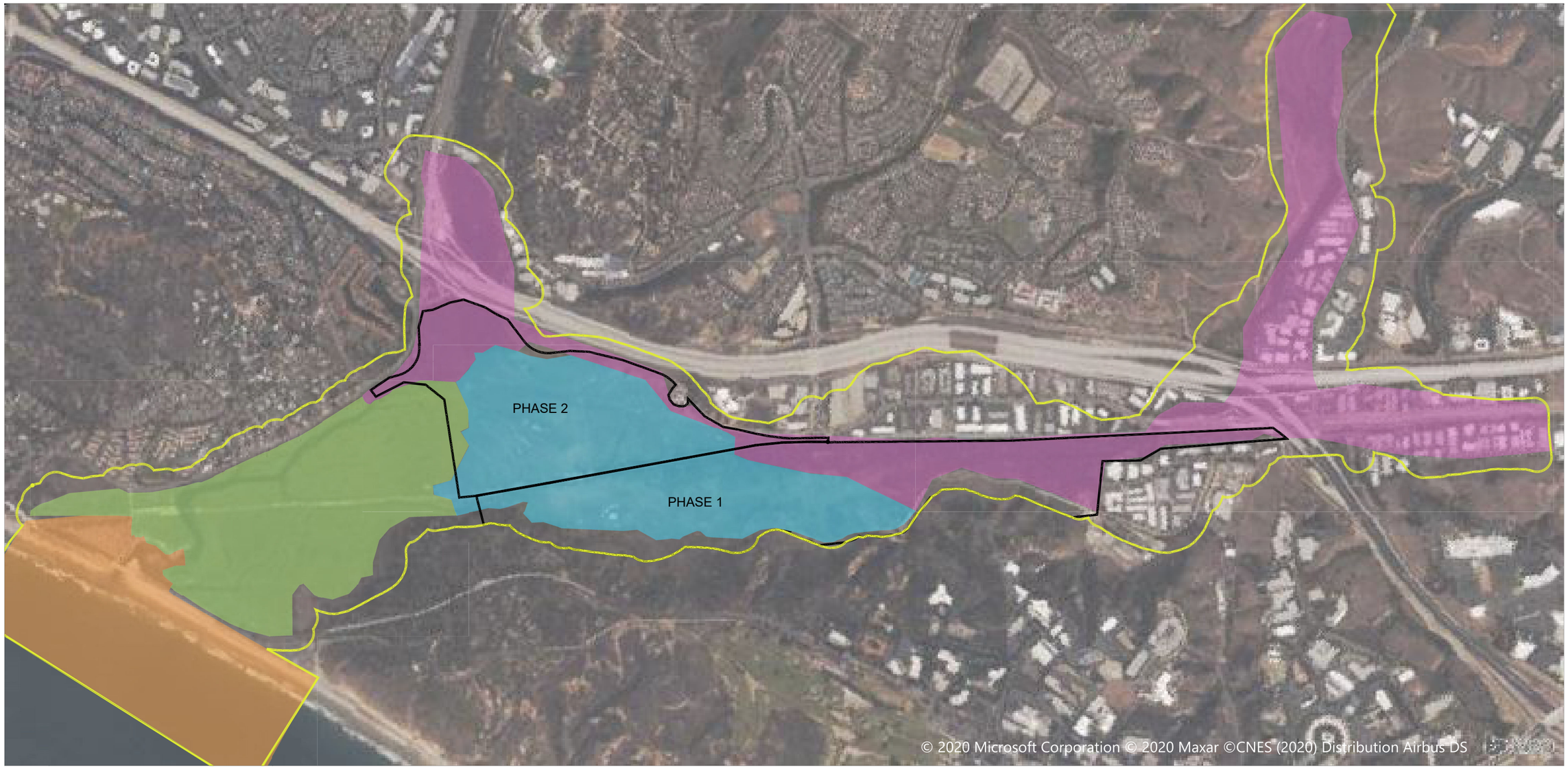
A dedicated State Natural Preserve, the Los Peñasquitos Lagoon is jointly managed by State Parks, as primary landowner, and LPLF, a 501 (c)(3) non-profit established in 1983 by SCC to facilitate the development and implementation of the original Lagoon Enhancement Plan certified in 1985. State Parks and LPLF work together for ongoing maintenance and management efforts at the Lagoon that include annual inlet maintenance using heavy equipment to restore tidal connectivity with lagoon channels, annual water quality and biological monitoring, vegetation and habitat mapping, invasive species management, and coordinating with land owners within the Lagoon and within the watershed to foster collaborative watershed management. More information pertaining to ongoing maintenance and management within the Lagoon can be found in Section 2.2.3.

Los Peñasquitos Lagoon's designation as a State Natural Preserve requires strict management of access into the Lagoon to protect sensitive species that include rare and endangered plants, birds, reptiles, and insects in accordance with PRC Section 5019.71, which states:

> *The purpose of natural preserve shall be to preserve such features as rare or endangered plant and animal species and other supporting ecosystems, representative examples of plant or animal communities existing in California prior to the impact of Euro-American modifications, geological features illustrative of geological processes, significant fossil occurrence or ecological feature of cultural interest, or topographic features illustrative of representative or unique biographical patterns. Areas set aside as natural preserves shall be of sufficient size to allow, where possible, the natural dynamics of ecological interaction to continue without interference, and to provide in all cases a practicable management unit. Habitat manipulation shall be permitted only in those areas found by scientific analysis to require manipulation to preserve the species or associations that constitute the basis for the establishment of the natural preserves.*

Therefore, active aquatic recreation including swimming, kayaking, and boating is not permitted within the Lagoon as it is inconsistent with the Lagoon's classification as a State Natural Preserve. Its inherent management restrictions prioritize the protection of sensitive habitats, rare and endangered animal species, and other sensitive/rare resources over direct public access. Prohibition of active recreation in Los Peñasquitos Lagoon was not enforced until approximately 2000 when a District Superintendent's order was issued to begin enforcing and precluding active recreation and unpermitted entry within the State Natural Preserve. While direct public access to the Lagoon is not permitted, improving access around the Lagoon is a management priority identified within the updated Enhancement Plan to foster coastal stewardship and passive recreation.

The County of San Diego Vector Control Program has actively managed the mosquito population in Los Peñasquitos Lagoon. Activities include monitoring and broadcast of larvicides using helicopters and on foot. Both State Parks and LPLF have requested that the County ~~develop a~~ assist with reviewing vector management plans specific to the Lagoon, especially for hand-distributed larvicide, to avoid impacts to sensitive habitats, plants, and listed birds during nesting season.



LEGEND

- PHASE BOUNDARY
- STUDY AREA
- ZONE 1 - NEARSHORE & INLET AREA
- ZONE 2 - TIDAL SALT MARSH
- ZONE 3 - TRANSITIONAL
- ZONE 4 - RIPARIAN/UPLAND

Source: ESA 2016; State Parks/LPLF 2020

Figure 3-1
Management Zones in Los Peñasquitos Lagoon

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Table 3-1. Summary of Proposed Project with Phasing and Management Zones[1]

Proposed Project	Phase 1 (0–5 Years)	Phase 2 (5–25 Years)	Phase 3 (25–50 Years)
Lagoon Restoration and Enhancement Activities			
Floodplain Enhancements/Sediment Management[2]	• Maintenance of existing sediment management facilities. • Construction of new sediment management facilities and expansion of floodway channel capacity in Zone 4 (Sorrento Valley). • Consideration of on-site sediment storage for beneficial reuse (trails, elevation modifications, *etc.*).	• Maintenance of existing sediment management facilities. • Construction of new sediment management facilities within Zone 4 (Carmel Valley). • Consideration of on-site sediment storage for beneficial reuse.	• Continued maintenance and monitoring. • Sediment monitoring to inform future adaptive management efforts. • On-site reuse of sediment from management facilities.
Riparian Corridor[2] Enhancement	• Invasive species removal and restoration/enhancement with native species in Zone 4 (Sorrento Valley). • Update surveys to identify potential wildlife corridor enhancement opportunities. • Conduct wildlife corridor enhancement.	• Update surveys to identify potential wildlife corridor enhancement opportunities. • Conduct wildlife corridor enhancement.	• Ongoing monitoring and maintenance of riparian and wildlife corridors.
Channel Improvements[2]	• Creation of new channels and extension of existing channels in Zone 3 and Zone 4 to improve hydrology and drain areas of ponded water southwest of the railway berm. • Channel bank modifications (*e.g.,* benching) to support salt marsh in Zone 3, southwest of railway berm. • Channel dimension modification in Zone 1 and Zone 2 to increase tidal circulation and improve freshwater drainage from Zone 3 and Zone 4 into the Southern Channel.	• Creation of new channels and extension of existing channels in Zone 3 and Zone 4 to improve hydrology and drain areas of ponded water northeast of the railway berm. • Channel bank modifications (*e.g.,* benching) to support salt marsh in Zone 3, northeast of railway berm. • Channel dimension modification in Zone 1 and Zone 2 to enhance tidal circulation and improve freshwater drainage from Zone 3 and Zone 4 into the Northern Channel. • Modify or remove railway berm to improve hydrology and restore/enhance native habitats. • Modify or remove North Beach parking lot to improve hydrology and restore/enhance native habitats in Zone 1. • Improve hydrologic connectivity to the area north of the North Beach parking lot to support salt marsh.	• Implement activities from prior phases that are still considered feasible.
Focused Grading[2]	• Remove areas of established invasive grass within Zone 3 and Zone 4, southwest of the railway berm. • Create contours, gradients, and elevations in Zone 3, southwest of railway berm to support salt marsh restoration.	• Restore areas that currently support invasive grasses within Zone 3 and Zone 4, northeast of the railway berm. • Create contours, gradients, and elevations in Zone 3, northeast of railway berm, to support salt marsh restoration and resiliency to sea level rise.	• No action anticipated.
Wetland Conversion Restoration[2]	• Plant and maintain native species in wetland conversion areas within Zone 3 and Zone 4, southwest of the railway berm.	• Plant and maintain native species in wetland conversion areas within Zone 3 and Zone 4, northeast of the railway berm.	• Ongoing monitoring and maintenance of wetland conversion areas.
Salt Marsh Restoration[2]	• Following Channel Improvements and Focused Grading, restore up to 23 acres of salt marsh through site preparation, temporary irrigation, plantings of native species, and site maintenance in an area southwest of the railway berm in Zone 3.	• Following Channel Improvements and Focused Grading, restore approximately 50 acres of salt marsh through site preparation, temporary irrigation, plantings of native species, and site maintenance in an area northeast of the railway berm in Zone 3.	• Ongoing monitoring and maintenance of restored salt marsh areas.
Inlet Improvements[2]	• Implement inlet improvements to support lagoon health and upstream salt marsh restoration.	• Implement inlet improvements to support lagoon health and upstream salt marsh restoration.	• Implement inlet improvements to support lagoon health and upstream salt marsh restoration.
Cordgrass Establishment	• No action expected during this phase.	• Restore, enhance, and preserve areas of cordgrass within the Lagoon in conjunction with other project components.	• Maintain and potentially expand cordgrass areas within the Lagoon.
Floodplain Restoration	• Identify areas and property parcels that would provide opportunities for floodplain improvements.	• Acquire properties within the floodplain identified during Phase 1 that provide potential opportunities to expand floodplain improvements. • Design and implement floodplain restoration and enhancement efforts to convert developed areas back to natural features of wide floodplain with braided channel networks.	• Continue property acquisition and floodplain restoration and enhancement efforts to convert developed areas back to natural features of wide floodplain with braided channel networks.
Treatment Wetlands	• Identify areas that would provide opportunities for treatment wetlands.	• Design and construct treatment wetlands at the base of lagoon tributaries in areas identified during Phase 1.	• Design and construct treatment wetlands at the base of lagoon tributaries in areas identified during Phase 1.
Salt Marsh Enhancement and Expansion	• No action expected during this phase.	• Enhance areas of existing and restored salt marsh in Zones 1 through 3. • Expand salt marsh into salt marsh conversion zone areas between Zone 3 and Zone 4.	• Enhance areas of existing salt marsh in Zones 1 through 3 and between Zone 3 and Zone 4. • Expand salt marsh into salt marsh conversion zone areas into Zone 4.

Proposed Project	Phase 1 (0–5 Years)	Phase 2 (5–25 Years)	Phase 3 (25–50 Years)
Living Shoreline	• No action expected during this phase.	• Construct a Living Shoreline along Torrey Pines State Beach.	• Construct a Living Shoreline along Torrey Pines State Beach.
Public Access Activities			
Marsh Trail Realignment Improvements	• Close user-generated trails and install native plantings, temporary fencing, and signage to discourage continued usage. • Conduct project-level planning and design for the Marsh Trail realignment that is consistent with resource protection and the Trail Management and Maintenance Plan for TPSNR.	• Initiate and/or complete efforts identified in Phase 1. • Implement realignment of the Marsh Trail.	• Complete improvements not implemented during Phase 2.
Northwest Trailhead Marsh Trail Access	• Conduct project-level planning and design for improving the Marsh Trail's northwest trailhead that is consistent with resource protection and the Trail Management and Maintenance Plan for TPSNR.	• Initiate and/or complete efforts identified in Phase 1. • Construct underpass crossing and related components to improve access to the northwest trailhead of the Marsh Trail from the South Beach parking lot at TPSNR. • Close user-generated trails near the improved Marsh Trail's northwest trailhead and establish a clear delineated trail and access to trail facilities (*e.g.,* overlooks, information panels). • Connect the Marsh Trail to the California Coastal Trail.	• Complete improvements not implemented during Phase 2.
Southeast Trailhead Marsh Trail Access	• Conduct project-level planning and design for improving the Marsh Trail's southeast trailhead that is consistent with resource protection and the Trail Management and Maintenance Plan for TPSNR.	• Initiate and/or complete efforts identified in Phase 1. • Construct improved trail access and related components at the southeast trailhead of the Marsh Trail. • Close user-generated trails near the improved Marsh Trail's southeast trailhead and establish a clear delineated trail and access to trail facilities (*e.g.,* overlooks, information panels). • Create linkages between the Marsh Trail and the Sorrento Valley Coaster Station. • Integrate with other trails around the Lagoon. • Integrate with regional trail networks located within Carmel Valley.	• Complete improvements not implemented during Phase 2.
Hilltop Trail Education Overlook and Marsh Trail Connection	• Conduct project-level planning and design Hilltop Trail Education Overlook and Marsh Trail Connection that is consistent with resource protection and the Trail Management and Maintenance Plan for TPSNR.	• Initiate and/or complete efforts identified in Phase 1. • Construct Hilltop Staging Area, Hilltop Education Overlook, and Marsh Trail Connection along with related features (*e.g.,* information panels). • Close user-generated trails and establish a clear delineated trail and access to trail facilities (*e.g.,* overlooks, information panels).	• Complete improvements not implemented during Phase 2.
Highway 101 Improvements	• Conduct project-level planning and design for Highway 101 improvements.	• Initiate and/or complete efforts identified in Phase 1. • Construct western and eastern edge improvements. • Integrate with other trails around the Lagoon. • Integrate with regional trail networks that include the California Coastal Trail. • Close user-generated trails and establish clear delineated pathways, promenades, and access to trail facilities (*e.g.,* overlooks, information panels).	• Complete improvements not implemented during Phase 2.
Carmel Valley Road Improvements	• Close user-generated trails and install native plantings, temporary fencing, and signage to discourage continued usage. • Conduct project-level planning and design for public access improvements along Carmel Valley Road.	• Initiate and/or complete efforts identified in Phase 1. • Construct pedestrian and bicycle improvements. • Integrate with other trails around the Lagoon. • Integrate with regional trail networks located within Carmel Valley and the California Coast Trail.	• Complete improvements not implemented during Phase 2.
Sorrento Valley Road Improvements	• Conduct project-level planning and design for public access improvements along Sorrento Valley Road. • Implement improvements to pedestrian access (*e.g.,* replace gate and chain-link fence at the northern trailhead, and install information kiosks and educational panels). • Improve the wildlife corridor and connect the bike path between the Lagoon and Carmel Valley.	• Initiate and/or complete efforts identified in Phase 1. • Construct improvements to multi-use trail designed and permitted during Phase 1. • Improve or relocate existing stormwater facilities that discharge pollutants and trash directly into the Lagoon. • Integrate the Sorrento Valley Multi-Use Path with other regional trail networks within Carmel Valley and Sorrento Valley.	• Complete improvements not implemented during Phase 2.

Proposed Project	Phase 1 (0–5 Years)	Phase 2 (5–25 Years)	Phase 3 (25–50 Years)
Vector Management Activities			
Improving Flow through McGonigle Road Culvert (Zone 2)[3]	• Conduct project-level planning and design for improving flow through McGonigle Road Culvert.	• Initiate and/or complete efforts identified in Phase 1. • Replace existing culvert under McGonigle Road or replace roadway section with a bridge. • Deepen adjacent lagoon channel to improve tidal flow and drawdown times of impounded water north of McGonigle Road.	• Complete improvements not implemented or completed in Phase 2.
Storm Outfall Modification to Reduce Impoundment of Discharged Waters Near VCP Site 626 (Zone 2)[3]	• Conduct project-level planning and design for storm outfall modifications near VCP Site 626.	• Initiate and/or complete efforts identified in Phase 1. • Implement improvements to the stormwater outfall that may include removal of the headwall to eliminate ponding of stagnant waters that contribute to vector breeding. • Deepen adjacent lagoon channel to improve tidal flow and drawdown times of impounded water.	• Complete improvements not implemented or completed in Phase 2.
Dewatering of VCP Site 577[3]	• Conduct project-level planning and design for dewatering of VCP Site 577 with consideration to opportunities to integrate with channel modifications and habitat restoration proposed for Freshwater Management (Channel Improvements).	• Initiate and/or complete efforts identified in Phase 1. • Construct channels that extend from Site 577 to existing lagoon channels within the area or channels created during Phase 1 implementation of Lagoon Concept 2 to reduce freshwater ponding that contributes to vector breeding.	• Complete improvements not implemented or completed in Phase 2.
Modification to Storm Drain Outfalls at Tripp Court and Sorrento Valley Road (Zone 4)[3]	• Conduct project-level planning and design for modifications to storm drain outfalls at Tripp Court and Sorrento Valley Road with consideration to opportunities to integrate with channel modifications and habitat restoration proposed for Freshwater Management (Channel Improvements). • Include design features to reduce contaminant loading and discharges of trash into the Lagoon.	• Initiate and/or complete efforts identified in Phase 1. • Implement improvements to the stormwater facility at Tripp Court to reduce impoundment of waters that contribute to vector breeding in a manner that does not impact native habitats located downstream within the riparian corridor.	• Complete improvements not implemented or completed in Phase 2.

TPSNR = Torrey Pines State Natural Reserve
VCP = Vector Control Program
[1] Management Zones are represented in Figure 3-1.
[2] At the initiation of Lagoon restoration and enhancement planning, a monitoring program would be developed with pre-defined success criteria to inform adaptive management and future enhancement actions. The monitoring program would be implemented throughout restoration and enhancement activities in all phases, as appropriate.
[3] At the initiation of vector management planning and design, a monitoring plan would be developed with pre-defined success criteria to inform vector management, stormwater, and habitat management needs and priorities and adaptive management. The monitoring plan would be implemented throughout Vector Management Activities in all phases, as appropriate.

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3.3 DEVELOPMENT OF PROJECT ALTERNATIVES

During the early planning stages of the Enhancement Plan update, efforts were made to solicit input from key stakeholder groups that included members of the public, primary land owners, local and regional planning groups, resource managers, wetland experts, law enforcement, representatives from local municipalities within watershed, and partner non-profits that operate in TPSNR (*i.e.,* Torrey Pines Docents and Torrey Pines Association). More detailed information on stakeholder participation through public workshops is included in Chapter 6 of the Enhancement Plan (Appendix A).

Based on the results of the public workshops and other stakeholder outreach efforts, project alternatives for each component of the overarching program (*i.e.*, lagoon restoration and enhancement, public access, and vector management) were then developed through technical analysis and preliminary designs. To differentiate between lagoon restoration and enhancement project alternatives, habitat trajectory modeling using data sets generated from the Lagoon's long-term continuous monitoring program, (field verified) updated vegetation association and habitat mapping, watershed inputs of freshwater and sediment, and established sea level rise rates calibrated specifically for projected surface elevations within the Lagoon were utilized. This process is described in further detail in Chapters 7 through 9 of the Enhancement Plan. Additionally, an extensive evaluation, ranking, and selection of improvement projects was established and applied for each of the proposed projects. For more information describing evaluation and ranking of proposed project alternatives, refer to Chapter 10 of the Enhancement Plan (Appendix A).

Based on the iterative screening process described in the Enhancement Plan, the proposed project activities were identified and recommended for detailed evaluation in this Program EIR, as included below. Alternatives addressed in this Program EIR are described and analyzed within Chapter 9 of this document.

Lagoon Restoration and Enhancement Activities

Alternatives developed for restoring and enhancing the Lagoon's native habitats include the following: No Action (referred to as Lagoon Concept 1 in the Enhancement Plan); Freshwater Management (Channel Improvements; Lagoon Concept 2); Expanding Tidal Reach (Elevation Reduction; Lagoon Concept 3); and Elevation Reduction and Freshwater Management (combination of Lagoon Concepts 2 and 3). The Freshwater Management (Channel Improvements) activity is identified as the proposed project due to salt marsh and conversion zone recovery, focused impacts, and long-term resiliency in response to sea level rise.

Public Access Activities

A series of proposed Public Access Activities were evaluated in the Enhancement Plan and focus on improvements/enhancements to existing trails and pathways, opportunities for regional trail integration and connectivity, and identification of anticipated inundation from sea level rise. The following outlines the proposed activities for public access improvements:

- Marsh Trail Improvements
  - Marsh Trail Realignment
  - Improved Marsh Trail Access (Northwest Trailhead)
    - Underpass Crossing
  - Improved Marsh Trail Access (Southeast Trailhead)
  - Hilltop Staging Area
  - Hilltop Trail Connections

- Highway 101 Improvements
  - Head-In Parking

- Carmel Valley Road Improvements
  - Closing User Created Trails
  - Pedestrian Improvements
  - Bicyclist Improvements

- Sorrento Valley Road Improvements
  - Multi-Use Path Improvements
  - Regional Trail Integration and Connectivity

Vector Management Activities

Proposed Vector Management Activities would incorporate structural improvements, channel modifications, and channel creation to reduce stagnant water within storm drain systems, improve tidal circulation, and connect to areas of inundation to reduce residence times. Proposed channel modifications are identified under Lagoon Restoration and Enhancement Activities (*e.g.*, Freshwater Management [Channel Improvements]) as well as the following focused activities:

- Improving flow through McGonigle Road culvert (referred to as Vector Concept 1 in the Enhancement Plan)
- Storm outfall modification to reduce impoundment of discharged waters near Vector Control Program (VCP) Site 626 (Vector Concept 2)
- Dewatering of VCP Site 577 (Vector Concept 3)
- Modification to storm drain outfalls at Tripp Court and Sorrento Valley Road (Vector Concept 4)

3.4 PROPOSED PROJECT

The proposed project represents a series of actions developed for a program-level approach to restore salt marsh and other habitats historically present in Los Peñasquitos Lagoon, improve public access and public safety around the Lagoon's perimeter, and present a "natural system approach" for more effective management of *Culex tarsalis*, a freshwater mosquito that breeds within the Lagoon and transmits brain encephalitis to human hosts. As such, the proposed project has been broken into three

main parts (Lagoon Restoration and Enhancement, Public Access, and Vector Management) to facilitate planning, CEQA analysis, and eventual implementation. A phased approach would be used for each activity to facilitate adaptive management, respond to availability of funding, and meet regulatory requirements that include a lagoon compliance target for the Los Peñasquitos Lagoon Sediment TMDL. This phased approach would use three phases: Phase 1 (0–5 years), Phase 2 (5–25 years), and Phase 3 (25–50 years). Ongoing maintenance and management activities summarized in Section 3.2 and described under Existing Conditions within Chapter 2 are expected to continue through the three phases because the urban land use surrounding the Lagoon has rendered it a managed system, though magnitude and frequency may vary over time. New efforts and key activities that would be pursued for the proposed project during the three phases and within all management zones include:

- Protect and preserve native species within Los Peñasquitos Lagoon and the habitats that support them through efforts that include improved hydrology, maintaining existing buffer zones, and (where possible) creation of additional buffer zones in new areas or through expansion of existing ones. Emphasis would be given to protecting and preserving sensitive species, many of which are rare and endangered.
- Integrating salt marsh restoration and enhancement with vector management through hydrologic improvements and improved public access where project footprints overlap and funding is available.
- Monitoring project performance to see if success criteria for each project are being met and to inform adaptive management.

Developed and adopted during the stakeholder process, management zones within the Lagoon are referenced where appropriate to help better define spatially where activities associated with the proposed project would occur (see Figure 3-1). This was done since each zone is influenced by different development pressures (*e.g.,* sand migration and/or infrastructure constriction versus freshwater inputs and impoundment) and would benefit from different management and enhancement strategies. It should be noted that some activities, such as invasive species management, would occur within all Lagoon management zones. Public Access Activities do not reference management zones as these improvements would not occur within the Lagoon, but along its boundaries.

Each project and its main components are summarized below with more detail provided in Chapters 7 through 10 of the Enhancement Plan (Appendix A). Table 3-1 has been provided for a quick reference and visual breakout of the key elements for each project component and phasing, along with references to management zones where applicable.

3.4.1 Lagoon Restoration and Enhancement Activities

The proposed project would implement channel improvements and focused grading to create channels and slopes that direct dry weather flows into existing tidal channels and minimize sheet flows that currently are impounded and inundate large areas within the upper lagoon that includes the marsh plain. Channel improvements consist of lengthening, widening, and deepening sections of the main north channel and south channel within the Lagoon (see Figure 3-2). It is expected that additional

channel improvements (*e.g.,* creation of secondary and tertiary channels, lowering of channel banks) and focused grading would be integrated into the project-level design to address site-specific needs and eliminate impounded areas of brackish water in the upper lagoon.

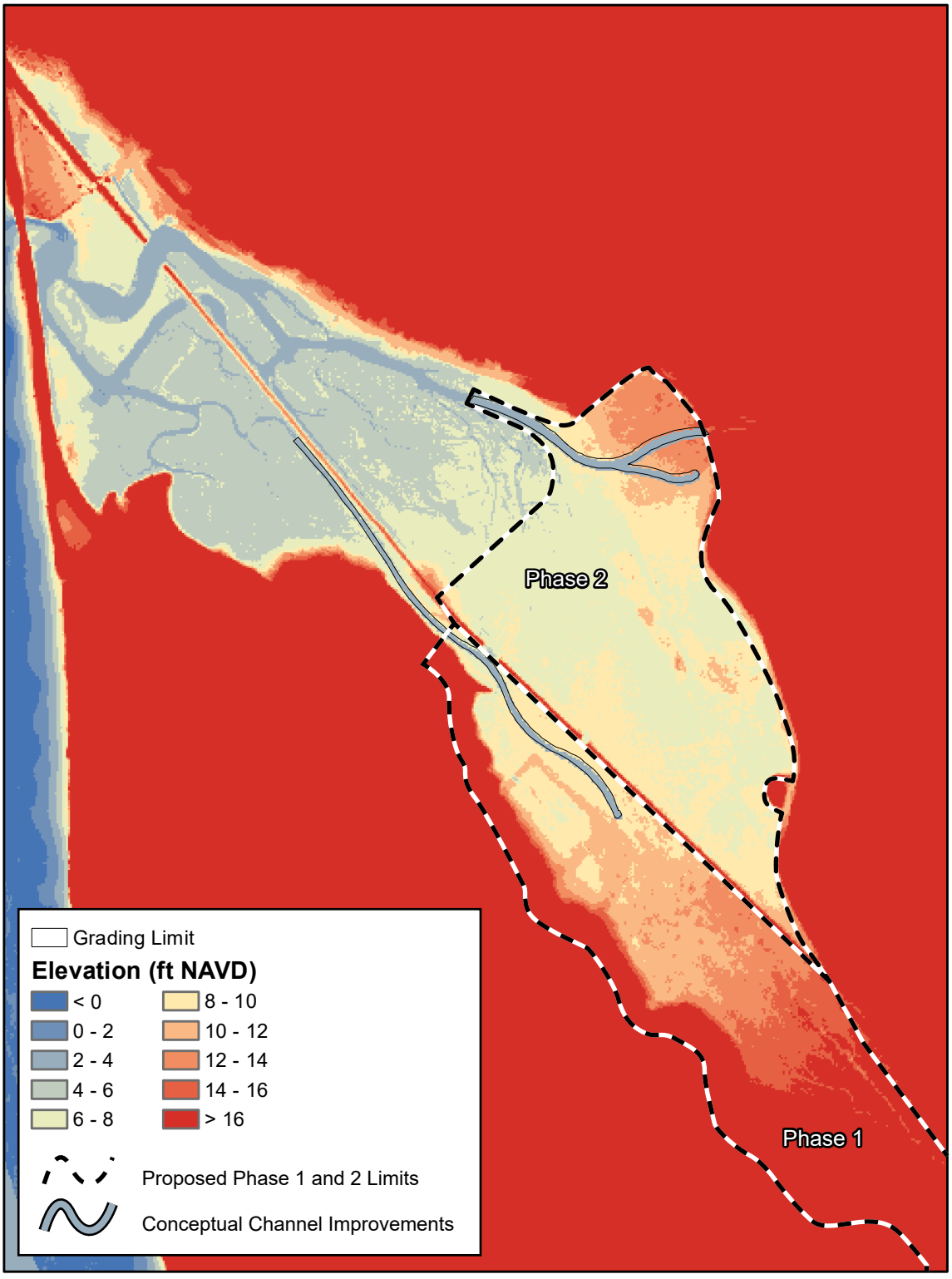
Focusing on hydrology, the proposed project provides a freshwater management approach to reduce the impacts to Los Peñasquitos Lagoon caused by dry weather inputs of nuisance, freshwater flows from its urbanized watershed. Since 1997, daily inputs of freshwater and its impoundment have been a key driver to loss of coastal salt marsh habitat and salt marsh conversion zones historic to Los Peñasquitos Lagoon and created a serious threat to public safety from vector-borne brain encephalitis. The proposed project has been developed to initiate CEQA review on a program level and help guide the progression toward project-level design that would be further analyzed as the project is developed. Key project components for the proposed project along with a phased timeline for implementation are summarized below and provided in Table 3-1. This timeline is provided as a general guide and is flexible in the sense that component implementation may occur outside of the phase listed below as opportunities and/or constraints arise.

3.4.1.1 Floodplain Enhancement/Sediment Management

Sediment management would play an important role in protecting salt marsh and conversion zones in the Lagoon. Abatement strategies (e.g., floodplain enhancements and sediment management facilities) implemented at the terminus of lagoon tributaries and along Flintkote Avenue would be needed in the short term while load reduction and source control efforts within the watershed are pursued to provide a better long-term solution. Abatement strategies would not attempt to eliminate sediment from entering the Lagoon but would be designed to reduce loads back toward levels that are beneficial for lagoon health and function. Efforts would be made to coordinate ongoing management and maintenance of existing sediment management facilities, as shown in Figure 3-3, and those to be constructed to improve their efficiency in intercepting and detaining sediment and to reduce costs associated with maintenance (e.g., sediment disposal). Sediment management facilities would be built features designed to minimize impervious surfaces and would be localized. Sediment management would consider opportunities for on-site storage of sediment for beneficial reuse (e.g., trail maintenance, mitigating sea level rise through elevation augmentation).

3.4.1.2 Riparian Corridor Enhancement

Enhancement of the riparian corridors within Zone 4 would be needed to remove invasive vegetation on site while also reducing establishment further into Los Peñasquitos Lagoon, as well as improving these areas currently used as wildlife corridors and critical habitat for listed species. Enhancement of the riparian corridors extending into Los Peñasquitos Lagoon from Sorrento Valley and Carmel Valley would focus on the removal of invasive plants that dominate the understory and replanting of native species, along with removal of trees infected by shot hole borer beetles. Native tree species to be considered for plantings are black willow, red willow, western sycamore, and coast live oak (*Quercus agrifolia*). Native understory plants to be considered include Palmer sagewort (*Artemisia palmeri*), San Diego marsh elder, narrowleaf willow (*Salix exigua),* alkali heath, mulefat, indigo bush *(Amorpha fruticose)*, and California wildrose *(Rosa californica)*. Enhancement of wildlife corridors



Source: ESA 2016

Figure 3-2
Proposed Project, Lagoon Restoration and Enhancement

Source: ESRI

0 1,050 2,100 4,200 Feet

Figure 3-3
Location of Sediment Management Facilities

would also be integrated into enhancements of the riparian corridor where possible to reduce habitat fragmentation and allow for improved connectivity between the Lagoon and its three sub-watersheds, as well as other areas within TPSNR. Measures to be considered for enhancement of wildlife corridors include:

- Develop and implement a monitoring program that incorporates camera traps to document movement along wildlife corridors and crossings.
- Develop a management and maintenance plan that accounts for the differences between species with regard to needs and preferences for the use of corridors and crossings.
- Clear exotic weeds that block channels and surrounding areas to:
    - Open areas to encourage wildlife movement along travel routes.
    - Provide as-needed improvements to visual corridors to encourage use of the route.
    - Provide opportunities to revegetate with native plant species (Crooks 1997).
- Revegetate channels and surrounding areas with native species to improve refuge and coverage for wildlife along the route (Crooks 1997).
- Clear and/or maintain animal travel routes (*e.g.,* small dirt trails) while also providing dense, moderately high vegetation adjacent to travel routes to allow animals to hide themselves from view (Ogden 1992).
- Drain stagnant water and excavate sediment from channels to lower water levels and increase elevations and bank-width to facilitate animal movement through underpasses (Crooks 1997).
- Acquire land vital for corridor use and enhancements. Properties of interest include the manicured lawns of office complexes and surrounding parcels (Crooks 1997).

3.4.1.3 Channel Improvements

Channel improvements for the proposed project would include the following: modifying channel dimensions of the main northern and southern channels within Los Peñasquitos Lagoon, altering channel bank elevations and gradients, and expanding the Lagoon's channel network in Zone 3 and Zone 4 through the creation of secondary and tertiary channels.

Channel Dimension Modification

Channel improvements under the proposed project include modifying the dimensions of the Lagoon's main northern and southern channels primarily within Zone 3 and Zone 4 to improve hydrologic connectivity between the watershed, lagoon, and ocean. Improved connectivity between these three systems would reduce residence times for impounded waters within Los Peñasquitos Lagoon that are associated with both nuisance dry weather flows and floodwaters from storm runoff. Connectivity would be improved in a manner that would support the health and resiliency of the coastal salt marsh and other native habitats historically present in the Lagoon. Considerations related to the modification and potential removal of the current railway alignment would be examined and potentially integrated

into final design given the role this transportation infrastructure plays with regard to impounding flood waters within Zone 3 and Zone 4 beyond natural residence times and its contribution to inlet closures. In 2017, SANDAG completed replacement of four aging timber trestle railway bridges within the Lagoon along the existing alignment to continue rail services. In 2020, SANDAG initiated a study of potential realignment alternatives from the current railway corridor through the City of Del Mar, including potential tunneling. The final realignment as well as redirectioning through the Lagoon has not been determined and would be identified with future funding and design phases. The timing of this realignment study would be considered with proposed implementation of channel dimension modifications, as noted above.~~SANDAG currently plans to implement modifications to or removal of the railway alignment through the Lagoon in 2030 as the final improvement to the North Coast Transportation Corridor.~~

Modified channel dimensions under the proposed project are provided in Table 3-2 and were identified using hydraulic geometry relationships based on data from tidal channels in mature natural marshes located throughout San Francisco Bay and Southern California. Under the preliminary design of the proposed project, a segment of the main northern channel located north of the railway berm within Zone 3 and Zone 4 would be extended approximately 2,100 feet from the existing channel toward the mouth of Carmel Creek, and a segment of the main southern channel that runs along the southern edge of the railway berm within Zone 3 and Zone 4 would be extended 3,800 feet toward Sorrento Valley. The southern channel segment may need to be widened and deepened due to its relatively constrained dimensions (see Figure 3-2). Modifying the dimensions of both main channels within Zone 1 and Zone 2 may also be needed to support lagoon restoration and enhancement under the proposed project through improved hydrology. However, specific locations and final design for channel improvements (*e.g.,* modification of channel dimensions and/or banks) and related improvements (*e.g.,* focused grading, channel creation) in Zone 1 and Zone 2 would be identified during project-level design.

Table 3-2. Proposed Project Channel Dimensions (Preliminary)

	Marsh Area (acres)	Channel Depth (feet)	Channel Width (feet)	Channel Cross-Sectional Area (square feet)
Northern Channel toward Carmel Creek	50	7.9	60	260
Southern Channel toward Carroll Canyon and Los Peñasquitos Creeks	40	7.5	50	220

Source: Williams et al. (2002)

North Beach Parking Lot

Identified for Phase 2 implementation, channel improvements proposed near the North Beach parking lot include replacing the damaged culvert under McGonigle Road with either a new culvert or short bridge span to improve hydrologic connectivity and wildlife movement to the northwestern corner of the Lagoon. Additional channel improvements near the North Beach parking lot include deepening and/or extending channels on both sides of McGonigle Road to improve water movement and reduce impoundment of stormwater through enhanced tidal connectivity. Modified channel dimensions

would be designed at the detailed project level and may be implemented on their own, as part of Phase 2 restoration, and/or in conjunction to modifications to the North Beach parking lot that may occur in the future as part of relocation due to coastal flooding and sea level rise.

Channel Bank Modifications

Under current conditions in Los Peñasquitos Lagoon, water does not overtop channel banks and inundate the marsh plain regularly because of bank elevations above MHHW. Therefore, the proposed project would include modifications to channel banks to improve tidal inundation needed for salt marsh restoration and enhancement in the near term, and to facilitate resiliency to climate change through improving opportunities for upslope migration of salt marsh in response to projected sea level rise. Channel bank modifications would be selected during project-level design and may include lowering bank elevations or benching to facilitate overtopping of tidal waters onto the marsh plain, altering bank gradients to ratios conducive to salt marsh expansion and resiliency to projected sea level rise through upslope migration, and/or benching to provide additional salt marsh habitat at lower elevations in the near term. Benching is a term used to describe lowering the channel bank to increase the total horizontal surface area exposed to tidal inundation during high tides while extending a salinity gradient that promotes upslope migration of tidal salt marsh in response to sea level rise. Depending on the bench elevation, revegetation may be necessary to avoid colonization by invasive vegetation, though mudflat may also develop depending on duration of inundation by tidal waters.

Channel Creation

Secondary and tertiary channels are included in the project description within Zone 3 and Zone 4 to expand the Lagoon's channel network to better capture dry weather flows of freshwater and reduce periods of inundation across the marsh plain by directing these inputs into the Lagoon's main channels. It is expected that intercepting freshwater inputs while increasing tidal flows within lagoon channels and over the marsh plain would convert existing areas of brackish and freshwater habitats in Zone 3 and Zone 4 to salt marsh and other wetland habitats historically present in the Lagoon. These areas are referred to as salt marsh conversion zones in this Program EIR.

Excavated Materials and Disposal

Preliminary estimates of excavated material quantities for work along the two main channels are provided in Table 3-3. Materials disposal options include on-site disposal such as placement within Los Peñasquitos Lagoon or stockpiled in the near vicinity of the Lagoon for beneficial reuse such as raising the parking lot or access roads, filling unnatural erosion features, or improving elevations and/or ecotones for salt marsh preservation in response to sea level rise, as areas are available on site. Additionally, disposal options available would depend on the suitability of material excavated. Off-site disposal, such as transporting material to a nearby landfill (*e.g.*, Miramar), must also be considered. At this stage, it is assumed that placement within the Lagoon would not be compatible with ecological objectives and may also not be permitted by regulatory agencies. Off-site disposal of up to approximately 51,200 cy for Lagoon Restoration and Enhancement Activities, as shown in Table 3-3 below, is considered a conservative scenario and therefore the presumption ~~and is~~ evaluated in this document.

Table 3-3. Proposed Project Earthwork Quantities (Preliminary)

	Channel Cross-Sectional Area (square feet)	Channel Length (feet)	Excavation Volume (cubic yard)
Northern Channel toward Carmel Creek	260	2,100	20,200
Southern Channel toward Carroll Canyon and Los Peñasquitos Creeks	220	3,800	31,000[1]
Total			**51,200**

[1] There is an existing channel in this area that would be deepened and extended, so this is a conservative estimate of volume for that channel; this also provides more flexibility as a more complete channel network including secondary and tertiary channels is identified.

3.4.1.4 Focused Grading

Focused grading would occur in select areas within Zone 3 and Zone 4 of the Lagoon to remove invasive grass, lower elevations, and improve drainage of impounded freshwater and storm runoff into the main tidal channels and to bring tidal waters farther back into the eastern reaches of Los Peñasquitos Lagoon. Proposed Channel Improvements described under Section 3.4.1.3 would complement the focused grading. Specific locations, methods, and designs would be determined later through subsequent project-level design and CEQA analysis.

3.4.1.5 Wetland and Conversion

Habitat trajectory modeling indicates that improving the marsh plain within Zone 3 and Zone 4 would provide opportunities for the eastward migration of salt marsh in response to sea level rise while also providing short-term benefits by replacing invasive grasses and other non-natives with wetland plant species native to Los Peñasquitos Lagoon. Therefore, the proposed project would include the restoration of native salt marsh conversion zones between salt marsh in Zone 3 and riparian habitats in Zone 4 that are currently dominated by cattails (*Typha* spp.) and invasive species that include large areas of Italian rye grass. Modeling results indicate that areas of brackish and freshwater marsh (cattails) within the Lagoon would be replaced by salt marsh conversion zones, such as cismontane alkali marsh and salt panne, both of which were historically present within the Lagoon with an increase from 38 acres to 141 acres in 2030 for an increase of 370% from baseline conditions.

It is anticipated that establishment of salt marsh conversion zones within the Lagoon would be implemented in conjunction with channel improvements (3.4.1.3), focused grading (3.4.1.4), and salt marsh restoration (3.4.1.6). This component does not reduce overall wetland acreage (*i.e.,* converting wetland to upland habitat) but simply reduces the area of brackish waters caused by nuisance flows of freshwater from the watershed through improved freshwater management that includes better drainage of impounded non-tidal waters and the extension of tidal inundation onto the marsh plain.

3.4.1.6 Salt Marsh Restoration

With implementation of channel improvements and focused grading, salt marsh in Los Peñasquitos Lagoon is projected by habitat trajectory modeling to increase from the existing 158 acres to 232 acres, with a net increase of approximately 74 acres of salt marsh by 2030 and 114 acres by 2050.

Primary considerations in the selection of this proposed activity included the restoration and enhancement of a gradient of habitat that would be resilient against future impacts from sea level rise. Figure 3-4 illustrates anticipated habitat distribution over time from model results for 2030 and 2050 with future habitat conversion due to sea level rise taken into consideration. Increases in salt marsh acreage are expected to occur by 2030 due to improved freshwater management and reduced residency times for impounded stormwater that would restore hydrology in a manner that supports salt marsh restoration, enhancement, and long-term resiliency. Additional increases to salt marsh by 2050 are attributed to migration of salt marsh into salt marsh conversion zones in response to sea level rise, offering refugia during future climate change scenarios. Salt marsh restoration would be designed and implemented using a phased approach that includes a small-scale pilot project in Phase 1 that would be performed in conjunction with channel maintenance and riparian enhancements in Sorrento Valley. Results from the pilot project would be used to inform design and implementation of the larger-scaled salt marsh restoration in Phase 2.

Restoration of salt marsh vegetation would be actively managed to facilitate recovery of native habitat. Active restoration includes site preparation, removal of non-native vegetation, planting of native species grown from stocks taken from the Lagoon, temporary irrigation, and site maintenance.

3.4.1.7 Inlet Improvements

Improvements to the inlet at Los Peñasquitos Lagoon will be made in Phase 1 and/or Phase 2 to enhance salt marsh restoration, enhancement, and long-term resiliency through improved tidal connectivity. Opportunities for inlet improvements may also occur as a result of structural changes or removal of the current railway alignment and/or North Beach parking lot. Modifications to the Highway 101 alignment that may occur in response to coastal erosion and sea level rise could present additional opportunities to implement inlet improvements. Improvements to the inlet will include the following individual efforts or combination of the efforts:

- More frequent excavation of the inlet area to expand and maintain an increased tidal prism needed to support salt marsh restoration and establishment.
- Increasing the amount of sand volumes removed from the inlet to support salt marsh restoration and establishment through expansion of tidal reach and prism.
- Increasing the amount of sand volumes removed from the inlet to reduce the frequency of inlet closures through improved storage capacity for marine sediment deposition.
- Expansion of the current project footprint for inlet maintenance farther up the northern and southern channels to improve tidal reach and expand the tidal prism.
- Removal of sections of compacted fill along the Highway 101 alignment near the lower bridge to allow for inlet migration.
- Relocation of the inlet to its historic location to the north.

3.4.1.8 Cordgrass Establishment

Pollen samples from sediment cores taken within Los Peñasquitos Lagoon indicate that cordgrass was once present in the Lagoon. Cordgrass is a valued low-marsh habitat for light-footed Ridgway's rail and other coastal marsh species. Efforts to restore this species would be pursued during Phase 2 when conditions are more suitable for cordgrass establishment.

3.4.1.9 Floodplain Restoration

Increased flooding of commercial and industrial parks built within the Lagoon's floodplain would most likely occur due to the higher frequency of intense storm events that is expected to occur as a result of climate change. Costs associated with ongoing flood damage, repairs, maintenance of floodway channels, and litigation may outweigh the costs for removing structures and hardscape to restore the floodplain back to its natural state of braided channels instead of its current state of constrained drainages and channelized creeks. Opportunities for floodplain restoration would most likely occur during Phase 3, but could possibly occur as early as Phase 2, should storm events generate flooding events that overwhelm channel maintenance and other flood management practices with a frequency and intensity that justifies removal of existing structures and hardscapes.

Restoration of the floodplain would require additional project-level planning, design, and permitting prior to implementation.

3.4.1.10 Treatment Wetlands

Constructing water quality treatment wetlands within Zone 4 during Phase 3 would buffer contaminant loading from the watershed. Restoration with species native to Los Peñasquitos Lagoon would be utilized to reduce the introduction and establishment of non-native species. Construction of treatment wetlands is anticipated to occur in Phase 3, though they may be implemented during Phase 2 for load reduction needs. Construction of treatment wetlands would require additional project-level planning, design, and permitting prior to implementation.

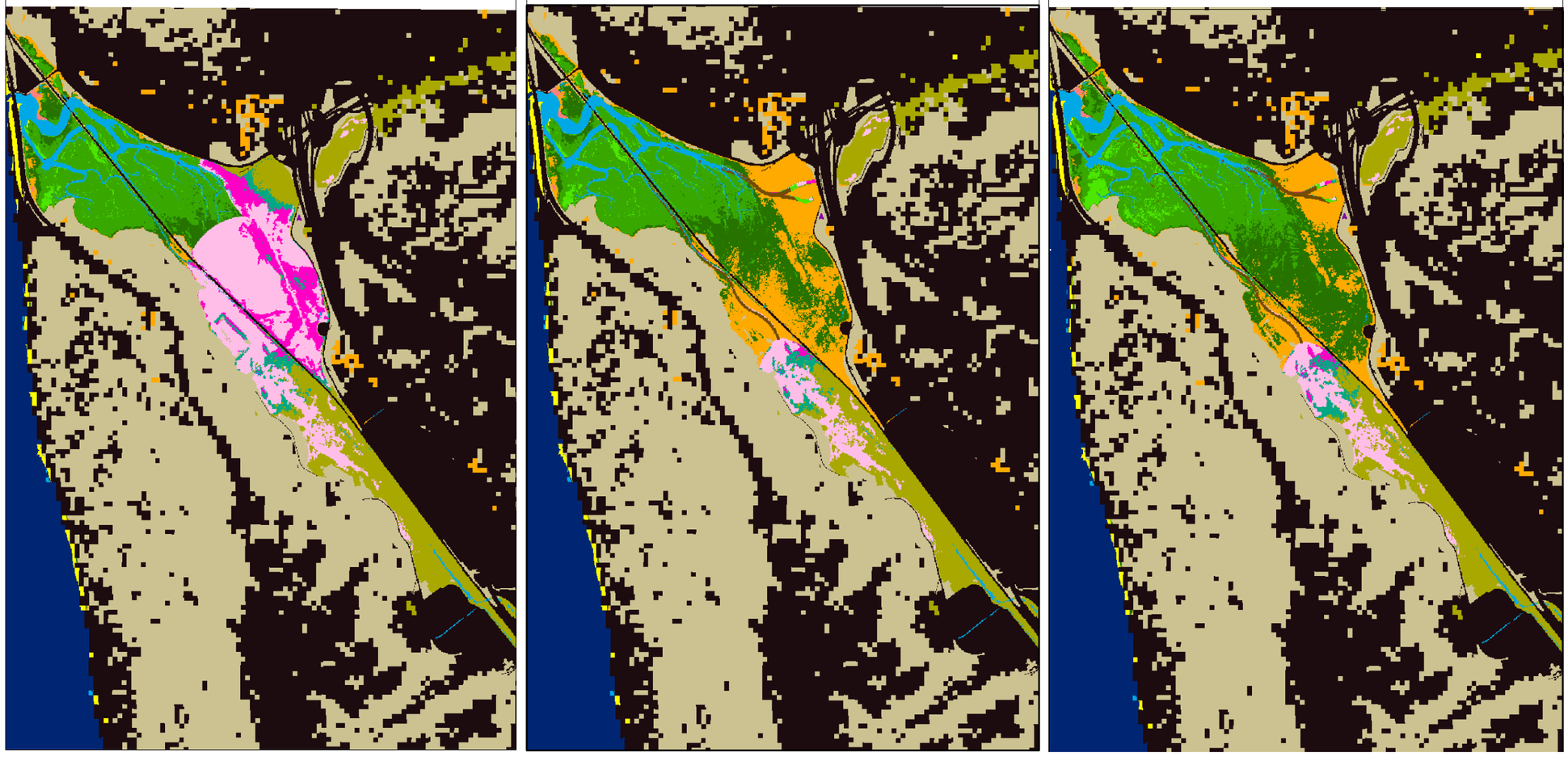
3.4.1.11 Salt Marsh Enhancement and Expansion

The proposed project would provide opportunities for salt marsh enhancement and expansion during Phase 2 and Phase 3, based on the results of habitat trajectory monitoring. Improved freshwater management and focused grading would allow for enhancement of existing salt marsh and provide opportunities for upslope migration in response to sea level rise. Enhancement efforts would include removal of invasive and other non-native species, promoting the establishment of native salt marsh plants and diversifying salt marsh habitats dominated by a single species. Expansion of salt marsh may occur naturally but would most likely need to be supported through revegetation and maintenance (*e.g.,* weeding of areas followed by plantings of salt marsh species) and would occur in Phase 3 though it may occur as early as Phase 2.

Baseline

Habitat Trajectory Modeling of Proposed Project Through 2030

Habitat Trajectory Modeling of Proposed Project Through 2050



Legend

- Developed Upland
- Undeveloped Upland
- Riparian Wetland
- Freshwater Marsh
- Salt Marsh Conversion Zone
- High Salt Marsh
- Mid Salt Marsh
- Low Salt Marsh
- Mudflat
- Beach
- Subtidal
- Open Ocean
- Brackish Marsh
- Arroyo/Gravel/Shore
- Riparian Transition Zone
- Dunes

Source: ESA 2016; ESRI

No Scale

Figure 3-4
Habitat Trajectory Modeling of Proposed Project, Lagoon Restoration and Enhancement

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3.4.1.12 Living Shoreline

Rising sea levels and increased frequency of intense storm events caused by climate change are predicted to have disastrous effects on the coastline in San Diego. Additional opportunities include implementing a Living Shoreline design similar to the one created along the coastal edge of San Elijo Lagoon that would provide a beneficial reuse of sand excavated from Los Peñasquitos Lagoon through the creation of coastal dunes. Construction of a Living Shoreline would require additional project-level planning, design, and permitting prior to implementation.

3.4.2 Public Access Activities

Since direct access is limited due to the Lagoon's status as a State Natural Preserve (see Section 3.1 of the Project Description), Public Access Activities were developed for the perimeter of Los Peñasquitos Lagoon to improve passive recreation and safety. Trail and pathway improvements were developed for consideration and possible inclusion in the Draft TPSNR Trail Management Plan. The following list outlines the proposed activities for public access improvements~~four trail and pathway segments considered for improvement are~~:

- Marsh Trail Improvements
    - Marsh Trail Realignment
    - Improved Marsh Trail Access (Northwest Trailhead)
        - Underpass Crossing
    - Improved Marsh Trail Access (Southeast Trailhead)
        - Hilltop Staging Area
        - Hilltop Trail Connections
- Highway 101 Improvements
    - Head-In Parking
- Carmel Valley Road Improvements
    - Closing User Created Trails
    - Pedestrian Improvements
    - Bicyclist Improvements
- Sorrento Valley Road Improvements
    - Multi-Use Path Improvements
    - Regional Trail Integration and Connectivity

It should be noted that only the Marsh Trail is a dedicated trail within TPSNR and falls entirely within the jurisdiction of State Parks. The other trail and pathway alignments considered in the Enhancement Plan fall partially or entirely within the jurisdiction of the City of San Diego. Improvement to those segments would likely need to follow the City's established CEQA process with the City as lead agency.

The Marsh Trail is the only dedicated trail within TPSNR that borders Los Peñasquitos Lagoon that is authorized by State Parks for pedestrian use. Proposed Public Access Activities for consideration are provided below, along with phased activities for each trail segment. Integrating the Public Access Activities into neighboring trail networks and transportation hubs is also briefly discussed to

acknowledge and highlight potential opportunities to reduce trail fragmentation within the region and improved pedestrian access in lieu of vehicular transportation needs.

3.4.2.1 Marsh Trail Improvements

Marsh Trail Realignment

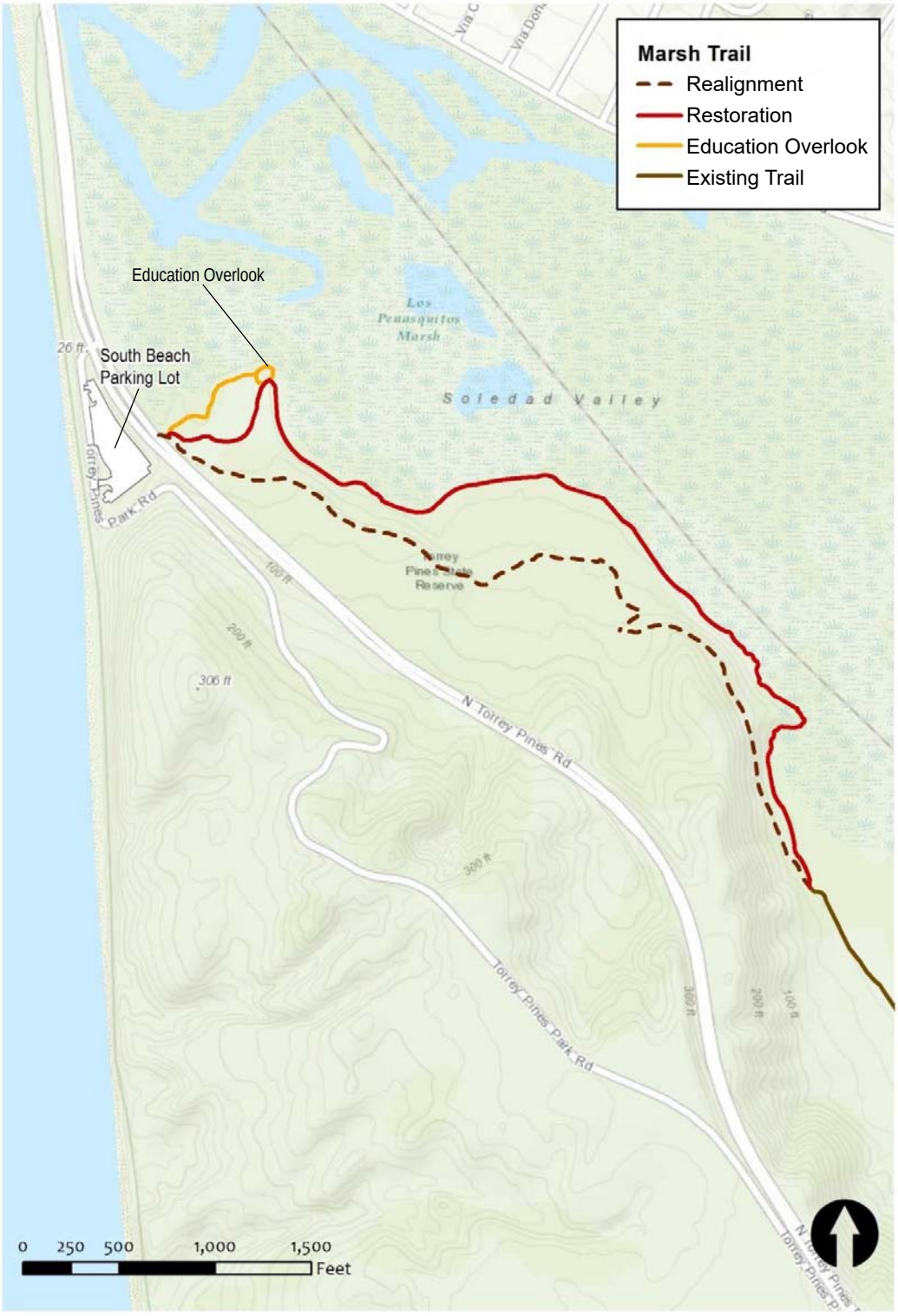
The proposed Marsh Trail re-route would be designed to support only pedestrians and would follow an alignment that traverses the area further upslope from the Lagoon edge at elevations ranging from 30 to 80 feet before reconnecting to the existing trail about 1 mile south (Figure 3-5). The first quarter-mile of trail would gain nearly 50 feet of elevation while following the edge of a small bluff providing views to the east of the marsh plain and lagoon channels below. The new trail would then descend a short steep slope before angling east again. The trail would turn south once more where it would begin another climb to get above the escarpment at the edge of the Lagoon. Once above the top of the escarpment, the trail would flatten out and provide another opportunity for views overlooking the Lagoon below. From this point, the trail would begin a gradual descent to the south, where it would rejoin the existing trail at the base of the hillside. The remainder of the existing trail would need minor improvements made to allow for safe usage by pedestrians. The new alignment would provide an elevated perspective for viewing the Lagoon and its wildlife while reducing direct adverse impacts on habitat and indirect impacts on wildlife. This trail would also be more sustainable and require less maintenance.

Actions to be included as necessary to discourage continued usage of unauthorized or closed trails would include installation of fencing and signage and placing additional native plantings in exposed areas. Trail realignment efforts conducted during Phase 2 include linkage trails to the Hilltop Education Overlook and other trail networks nearby as State Parks determines that impacts to sensitive habitat can be avoided and public safety measures (*e.g.,* daily ranger patrols) can be implemented and funded through the long term.

Proposed approaches for Marsh Trail realignment projects are preliminary in nature. Actual location and dimensions of new trail segments, along with surface material and fencing, for the Marsh Trail realignment would require project-level planning and design before implementation.

Improved Marsh Trail Access (Northwest Trailhead)

Marsh Trail access improvement at the northern trailhead would involve the creation of an underpass from the South Beach parking lot under Highway 101. Implementation would most likely need to be integrated with improvements to Highway 101 and would occur during Phase 2 (Figure 3-6). There is an elevation change of about 6 feet from the parking lot to the beginning of the Marsh Trail. The underpass would be cut at the south end of the parking lot, where the existing elevation of Highway 101 would provide adequate vertical clearance for pedestrians. The anticipated construction method would be to cut a wide trench across the roadway, followed by reconstructing the road over the crossing. The path would run approximately 150 feet to the northeast under Highway 101, where it would emerge onto the flat area above Los Peñasquitos Lagoon at the beginning of the Marsh Trail. The underpass would also provide the best access for emergency vehicles to the western reaches of



Source: ESA 2016

Figure 3-5
Marsh Trail Realignment and Education Overlook

Source: ESA 2016

* Identified as the Preferred Alternative

Figure 3-6
Northwest Trailhead – Improved Access to Marsh Trail

the Marsh Trail. Additional efforts would include installing improved trail access features and related interpretive components such as mobile device-guided walks or educational panels. Trail improvements would also be designed to improve connectivity with the California Coastal Trail located along Torrey Pines State Beach.

The proposed improvement to the Marsh Trail's northwest trailhead is preliminary in nature and would require project-level planning and design before implementation.

Improved Marsh Trail Access (Southeast Trailhead)

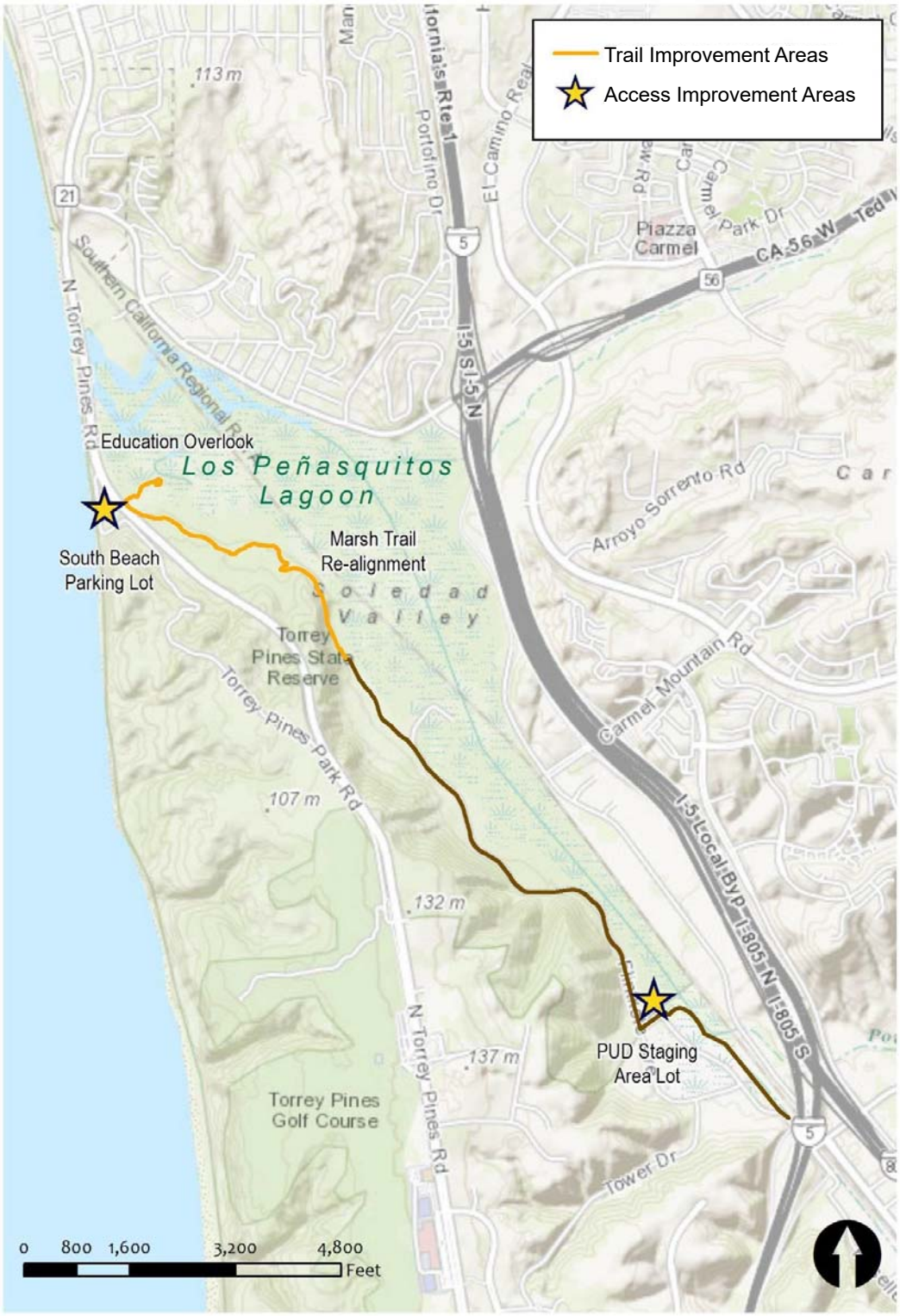
There is an unimproved parcel owned by the City that is currently used infrequently as a construction staging area mainly by the Public Utilities Department (PUD) (Figure 3-7). Installing an entrance sign near the intersection of Flintkote Avenue and Estuary Way and converting a portion of this area into a gated gravel parking lot with an informational kiosk would provide substantial benefit to the public accessing TPSNR (Figure 3-8). Shared access with the PUD could be maintained as needed. In addition to these staging area improvements, a wayfinding program would be created to bring potential visitors from the Sorrento Valley Coaster Station that is approximately 0.75 mile away to TPSNR. The proposed improvement to the Marsh Trail's southeast trailhead is preliminary in nature and would require project-level planning and design before implementation.

Hilltop Trail Education Overlook and Marsh Trail Connection Improvements

The proposed Hilltop Trail improvements consist of establishing three new trail alignments along the ridge above the proposed Marsh Trail realignment, as well as a staging area at the southern trailhead where the three trails converge. The hilltop trail connections would require opening an undeveloped and steeply sloped area to public use and could present challenges to avoiding impacts to sensitive habitats. Additional public safety measures (*e.g.,* daily ranger patrols) would also need to be considered. Figure 3-9 illustrates the proposed trail alignments.

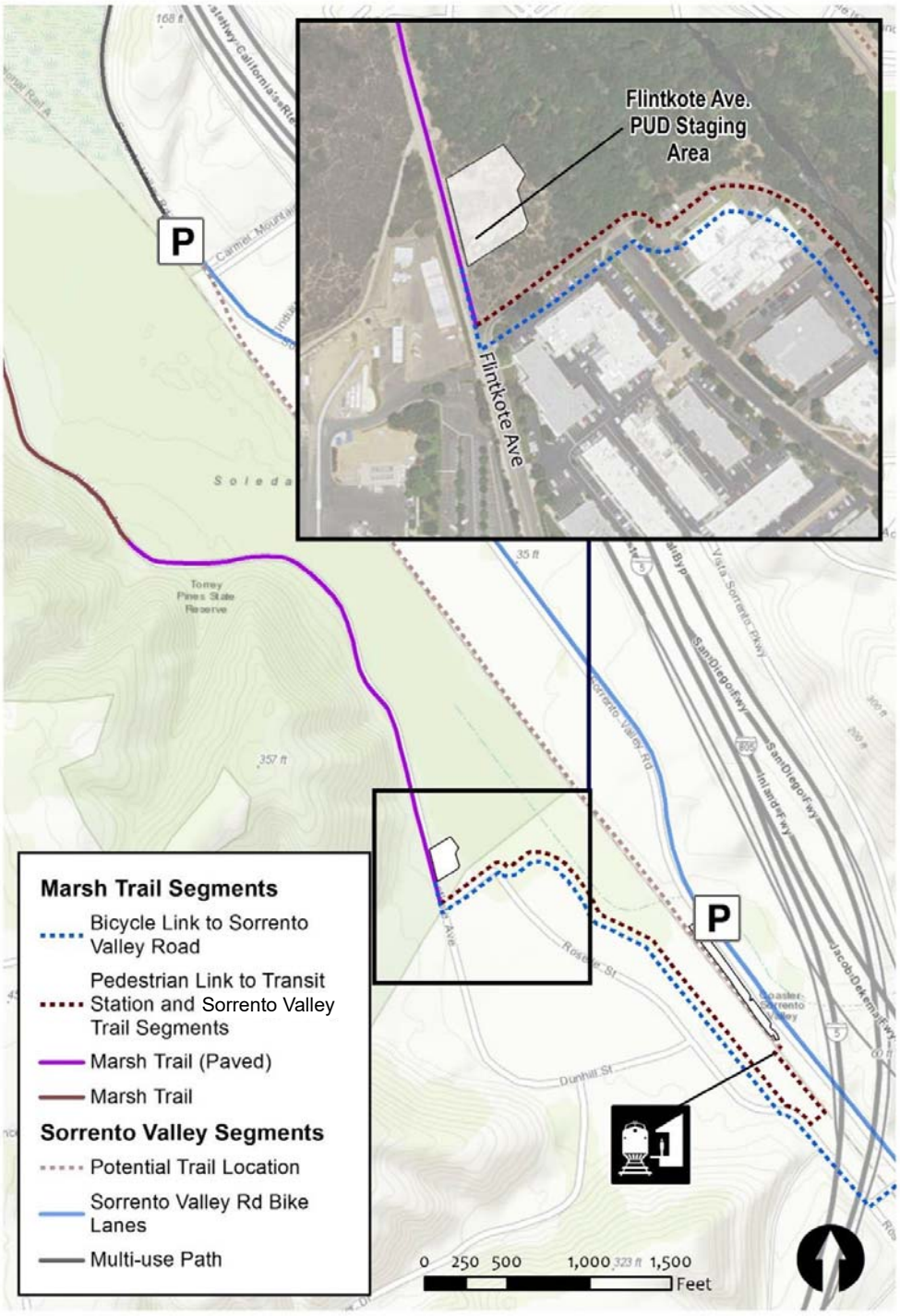
- The Hilltop Education Overlook would provide an out-and-back trail along a ridgeline to an observation point that provides an elevated view 200 feet above Los Peñasquitos Lagoon.
- The Marsh Trail Connection would connect the Hilltop Education Overlook to the Marsh Trail while also providing direct access to the Marsh Trail from the newly created staging area located along North Torrey Pines Road.
- The North Torrey Pines Road Pedestrian Connection would utilize the eastern shoulder of North Torrey Pines Road (Highway 101) to create a pedestrian linkage from the South Beach parking lot up to the new Hilltop Staging Area and recommended overlook trail.

The proposed Hilltop Education Overlook and Marsh Trail Connection would require project-level planning and design before implementation.



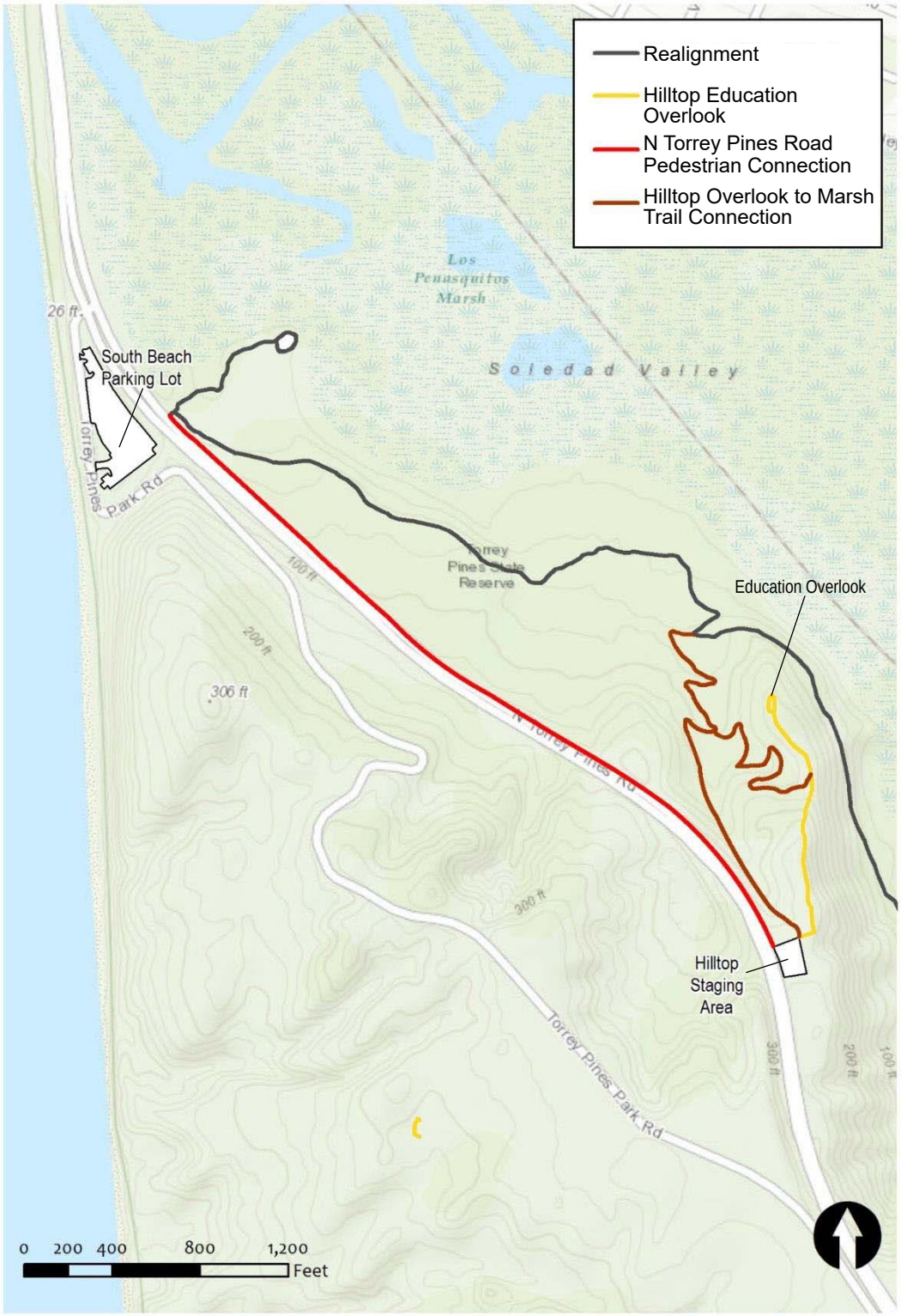
Source: ESA 2016

Figure 3-7
Marsh Trail Improvement Areas



Source: ESA 2016

Figure 3-8
Southwest Trailhead – Improved Access to Marsh Trail



Source: ESA 2016

Figure 3-9
Hilltop Trail Access Connections

Phasing

Phase 1 (0–5 Years)

- Conduct project-level planning and design Hilltop Trail Education Overlook and Marsh Trail Connection consistent with resource protection and the Trail Management and Maintenance Plan for TPSNR.
- Acquire CEQA determination and permits.

Phase 2 (5–25 Years)

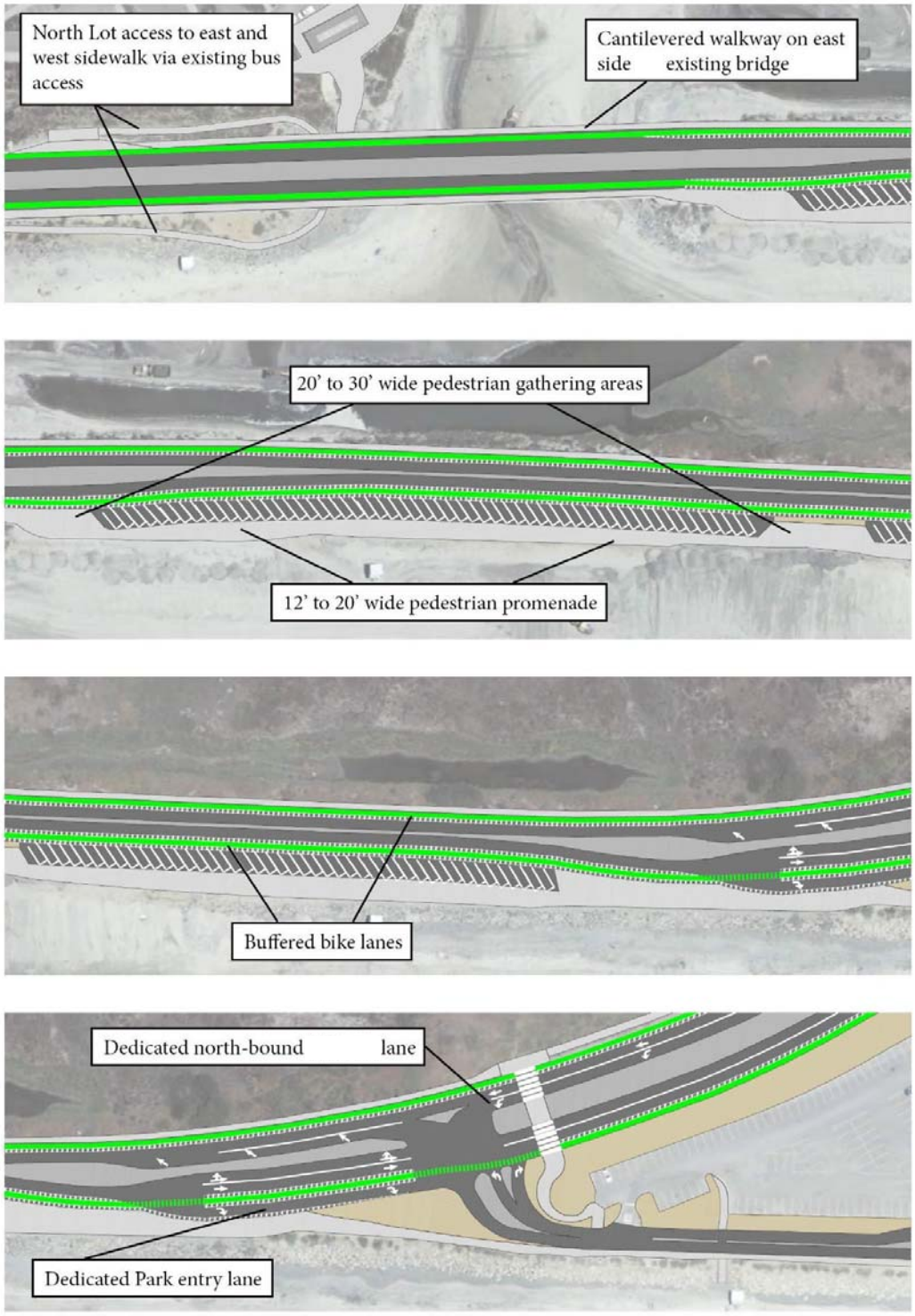
- Initiate and/or complete efforts identified in Phase 1.
- Construct Hilltop Staging Area, Hilltop Education Overlook and Marsh Trail Connection along with related features (*e.g.,* information panels).
- Close user-generated trails and establish a clear delineated trail and access to trail facilities (*e.g.,* overlooks, information panels).

Phase 3 (25–50 Years)

- Complete trail improvements not implemented or completed in Phase 2.

3.4.2.2 Highway 101 Improvements

Improvements along the western edge of Highway 101 would include a promenade with widths ranging from 15 to 25 feet for pedestrians and slow-moving cyclists, along with pedestrian gathering areas on either end with widths that range from 20 to 30 feet (Figure 3-10). Improvements would occur in City-owned property adjacent to Highway 101. Head-in diagonal parking spaces would be provided along most of the length of the promenade to enhance coastal and lagoon public access. A buffered bicycle lane would be provided between the parking and southbound travel lane. A dedicated entry to the South Beach parking lot for southbound traffic would also be included to improve flow into the parking lot to reduce vehicular congestion on Highway 101, minimizing safety issues for pedestrian, bicycle, and vehicle traffic. Improvements along the eastern edge of Highway 101 would physically separate pedestrian traffic from bicycles and vehicles, enhancing public safety along the roadway corridor. The northbound travel lane would include a buffered bicycle lane and construction of a suspended cantilever walkway to provide a separate pedestrian sidewalk along the edge of Los Peñasquitos Lagoon. Access to the South Beach parking lot could be provided by a dedicated left-turn lane directly into the lot, or for improved traffic safety a U-turn lane could be dedicated in lieu of the dedicated left-turn lane, just before the lower bridge that spans the lagoon inlet. A dedicated exit lane for northbound traffic would be included to improve flow in and out of the parking lot and reduce vehicular congestion on Highway 101 that presents safety issues for pedestrian, bicycle, and vehicle traffic. Additional features for consideration could include designated ride-share areas and enhanced access from existing bus stops to Torrey Pines State Beach and public amenities located in the North Beach parking lot.



Source: ESA 2016

No Scale

Figure 3-10
Head-In Parking Option

The proposed Highway 101 improvements would require project-level planning and design before implementation. Furthermore, most of the proposed improvements for Highway 101 occur within the City ROW and related roadway easements. Planning efforts through to implementation of the proposed improvements would require coordination with the City.

3.4.2.3 Carmel Valley Road Improvements

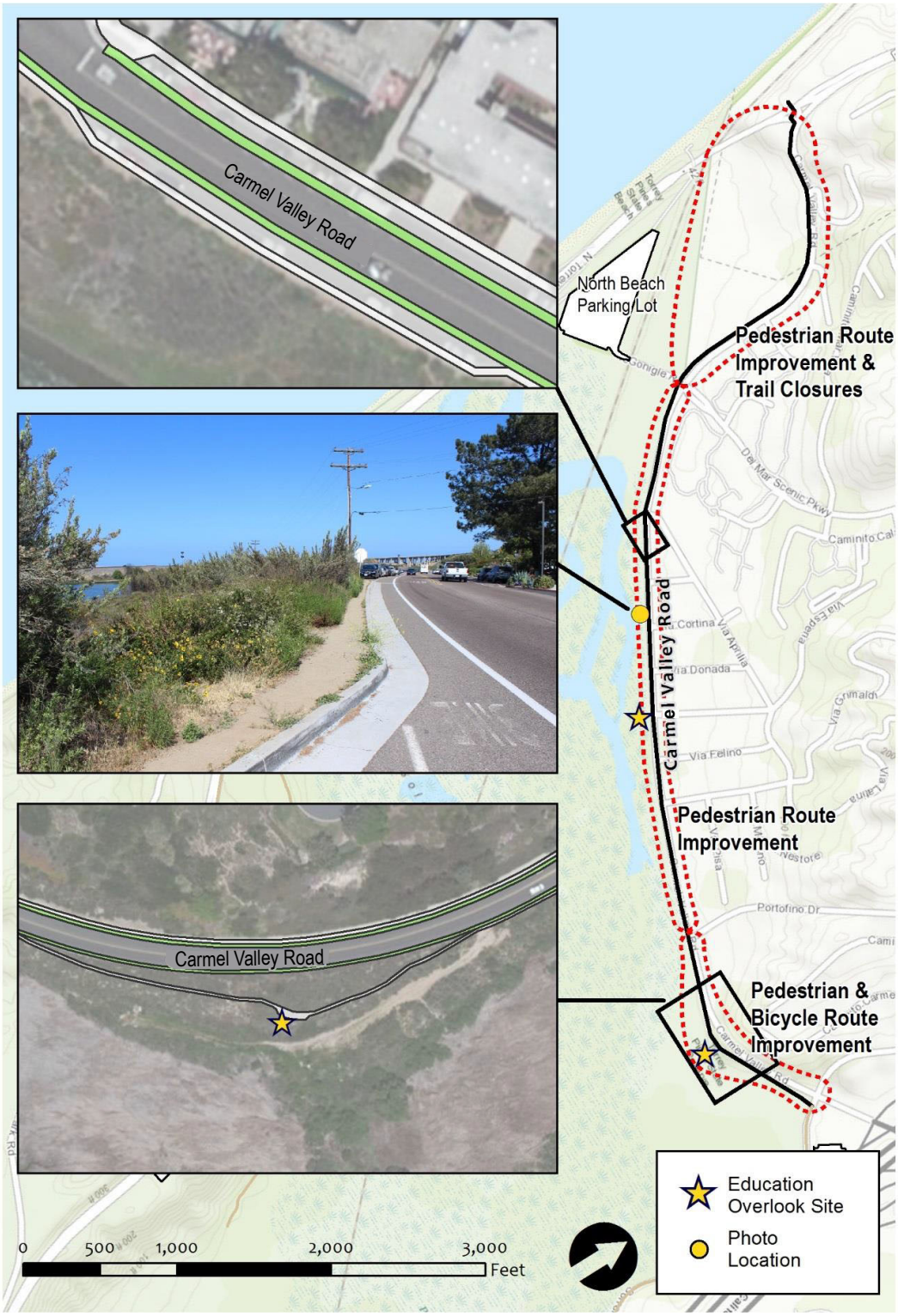
Improvements to public access along Carmel Valley Road between Highway 101 and I-5 would include closing user-generated trails, improvements to pedestrian and bicycle facilities, integration with regional trail networks, and improving habitat connectivity through wildlife corridor enhancement (Figure 3-11). These improvements could be implemented separately or as part of a larger project and are presented below.

Closing User Created Trails

Informal, user-generated trails total over 4,000 feet in length in the northern portion of TPSNR between the railroad, Carmel Valley Road, and the North Beach parking lot. As part of the proposed project, informal trails would be revegetated and closed to the public, with signage redirecting pedestrian traffic to the formal enhanced trail system. Some of these trails may not be actively used today and just have not revegetated, but others show visible signs of frequent use. Depending on trail conditions, revegetation (particularly near the ends of the trails to obscure the remainder of the trail) could be implemented. In addition to more active closures/revegetation and increased enforcement, installing a sidewalk along the southwest side of Carmel Valley Road to the intersection with Highway 101 and a connector trail from Highway 101 down to the bluff on the west side of the railroad would help discourage the user perception that user-generated trails are acceptable in the absence of legitimate pedestrian facilities. It should be noted that much of this area is within the City of San Diego's ROW and there is no formal trail or mechanism to support its maintenance or improvement.

Pedestrian Improvements

Providing formalized pedestrian access along the southern edge of Carmel Valley Road between McGonigle Road and Sorrento Valley Road would most likely require a phased approach. Phase 1 and 2 improvements would include replacing existing user-generated narrow foot trails by extending shoulder improvements between McGonigle Road and Via Borgia southeast to Sorrento Valley Road to improve user safety and provide an opportunity to define the edge of allowed public access along Los Peñasquitos Lagoon. Phase 2 or 3 improvements would involve reconfiguration of the street ROW to better accommodate pedestrian and bicycle activity along the lagoon perimeter and would be incorporated into efforts to adjust the elevation of Carmel Valley Road to accommodate sea level rise. With improved access, the trail would be incorporated into the Draft TPSNR Trail Management Plan and provide additional formal authorized public access to the Lagoon and coast.



Source: ESA 2016

Figure 3-11
Carmel Valley Road Improvements Overview

Bicyclist Improvements

Recent improvements along Carmel Valley Road include a dedicated bike lane; however, the eastbound bike lane terminates at Portofino Drive and does not reemerge until past the on-ramp for southbound I-5 traffic, providing a disconnect along this section and for access to Sorrento Valley Road. While westbound bike traffic can use a pedestrian sidewalk, the eastbound lane is delineated by a guardrail that forces bicyclists into vehicular traffic. Integration of a dedicated bike lane along Carmel Valley Road between I-5 and the coast would improve access along the Lagoon. Sufficient width to accommodate a dedicated bike lane doesn't currently exist along the roadway alignment; therefore, improvements would be integrated into future improvements to Carmel Valley Road as it is designed to accommodate sea level rise.

The proposed public access improvements for Carmel Valley Road would require project-level planning and design before implementation. Furthermore, some of the proposed improvements occur within the City ROW and related roadway easements. Planning efforts through project initiation to implementation of the proposed improvements would require coordination with the City.

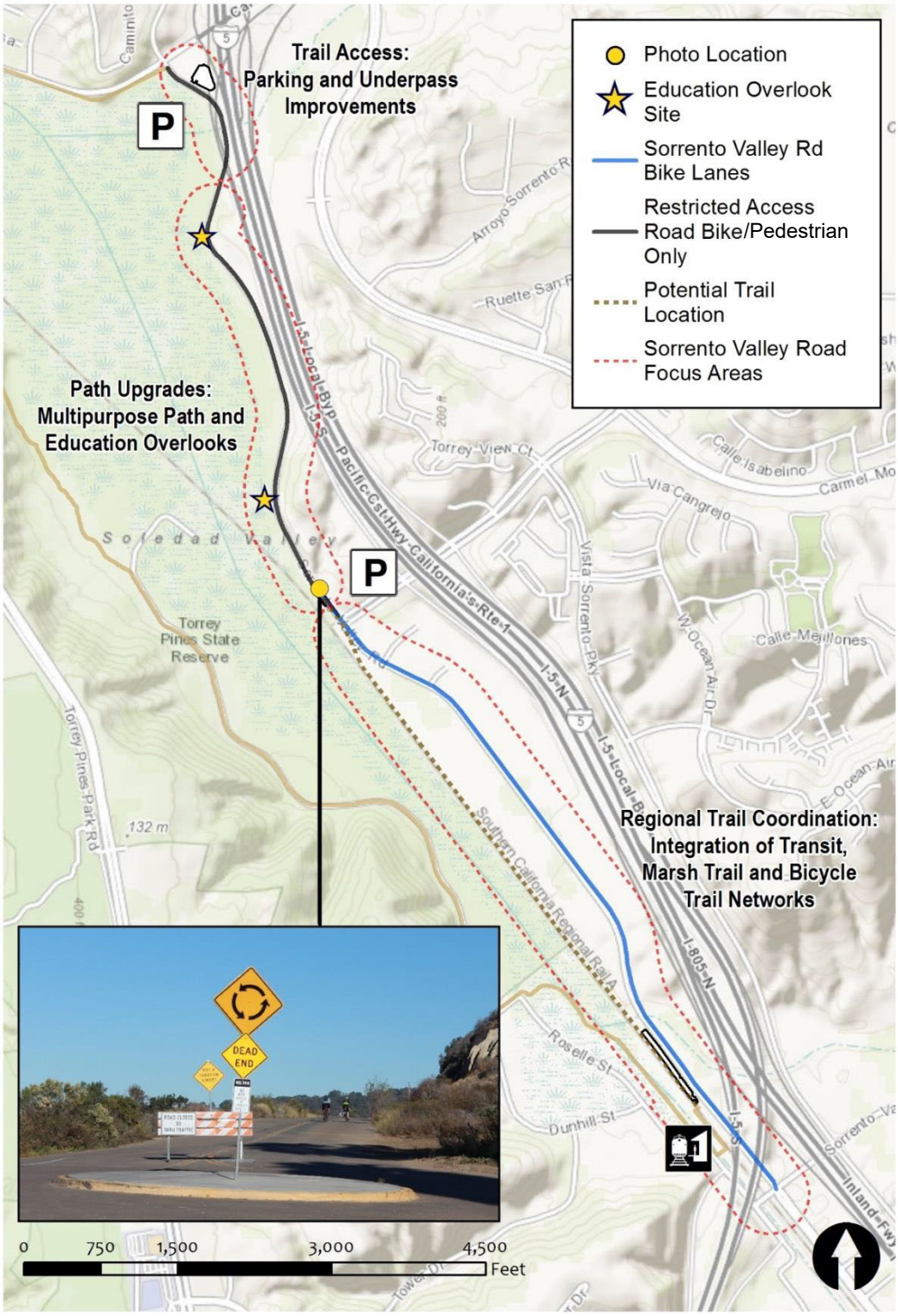
3.4.2.4 Sorrento Valley Road Improvements

Three improvement opportunities have been identified along Sorrento Valley Road, which include both the closed and open portions of this roadway (Figure 3-12). Short-term efforts (Phase 1) would focus on improvements to the closed portion since it is a dedicated Multi-Use Path and identified by SANDAG and Caltrans for potential enhancement in coordination with roadway improvements to I-5 and SR 56. Phase 2 or 3 improvements to the open portion of Sorrento Valley Road would need to coincide with roadway improvements and potential railway realignment.

The proposed public access improvements for Sorrento Valley Road would require project-level planning and design before implementation. Furthermore, most of the proposed improvements for Sorrento Valley Road occur within the City ROW and related roadway easements. Planning efforts through to implementation of the proposed improvements would require coordination with the City.

Multi-Use Path Improvements

The existing multi-use path between the Sorrento Valley Park and Ride lot in the north and the City's Pump Station 65 in the south is currently a closed asphalt road. Opportunities exist along this section to create one or more educational and interpretive features about TPSNR. The existing pavement is also much wider than required to function as a Class I Multi-Use Path and maintenance access road for most of its length. The segment would be reconfigured to reduce the width of pavement and provide a separate soft surface trail that parallels the paved path. This approach would also provide opportunities to improve existing stormwater BMPs, which currently discharge debris and mud onto the existing roadway.



Source: ESA 2016

Figure 3-12
Sorrento Valley Road Improvements Overview

Regional Trail Integration and Connectivity Improvements (Trail Networks and Transportation Hub)

Providing connectivity to neighboring trail networks and bike paths would be strongly considered and integrated into the proposed Public Access Activities in order to reduce fragmentation within the region. Some key opportunities are highlighted below.

California Coastal Trail

The California Coastal Trail passes along Torrey Pines State Beach located along the western edge of Los Peñasquitos Lagoon. Opportunities exist to integrate this regional trail into Public Access Activites identified for Carmel Valley Road, Highway 101, and the Marsh Trail at its northwest trailhead.

Sea to Sea Trail

Improving the connection to the Sea to Sea Trail and bike path within the CVREP to the Los Peñasquitos Lagoon trails in Zone 4 is a crucial long-term goal for improved public access and regional recreation. This connectivity would require improving a portion of one of the box culverts under I-5 to provide recreational access during dry weather. The connection would need to be closed during storm events for public safety. Caltrans and SANDAG have identified this area for potential improvements as part of the PWP/TREP for the North Coast Corridor that may include retrofitting the box culverts under I-5 or replacing them with a short bridge span, so efforts should be made to coordinate and collaborate with the appropriate staff. It has not been determined at this point if improvements to Sorrento Valley Road at this location and connectivity to CVREP/Sea to Sea Trail are dependent upon improvements to I-5/SR 56 that include a flyover lane to connect southbound traffic on I-5 to eastbound traffic on SR 56.

Coastal Rail Trail and Transportation Hubs

The Sorrento Valley Road corridor is included as part of the Coastal Rail Trail being implemented by SANDAG. SANDAG and NCTD are also moving forward with improvement plans for the railroad within this area. Improved connectivity between the multi-use trail segment of Sorrento Valley Road and transportation hubs such as the Sorrento Valley Coaster Station may be considered through the context of the Coastal Rail Trail.

3.4.3 Vector Management Activities

The proposed project would focus on freshwater management and improved tidal mixing, which would improve vector management as well as provide habitat enhancement. In addition, specific actions focused on vector control would also be implemented, as described below. Modifications to existing facilities would be integrated solutions designed to improve water circulation and reduce areas of impounded water. Vector Management Activities would require additional project-level planning, design, and permitting prior to implementation. At the initiation of vector management planning and design, a monitoring plan would be developed with pre-defined success criteria to inform vector management, stormwater, and habitat management needs and priorities and adaptive

management. The monitoring plan would be implemented throughout Vector Management Activities in all phases, as appropriate.

3.4.3.1 Improving Flow through McGonigle Road Culvert

With implementation planned for Phase 2, improving flow through the McGonigle Road culvert would reduce potential mosquito breeding habitat that has been previously documented by DEH at VCP Site 626 near McGonigle Road (shown in Figures 9-1 and 9-2 of the Enhancement Plan [Appendix A]). The roadway improvement would replace the damaged culvert with either a new culvert that is more structurally sound or a short bridge span over the tidal channel to allow improved circulation of tidal flows and reduced drawdown times after flood events.

Modification of the tidal channels that would occur in Phase 2 as described under Section 3.4.1 would support the improved connectivity and further reduce vector concerns. Channel modifications could include deepening and/or extending channels on both sides of McGonigle Road to improve water movement through the roadway to reduce impoundment of both freshwater and saltwater. Improved circulation and reduced impoundment of storm and tidal flows would reduce favorable mosquito breeding habitat in an area adjacent to local residences, businesses, and park facilities located along Carmel Valley Road. These improvements would also increase the acreage of tidal wetlands.

3.4.3.2 Storm Outfall Modification to Reduce Impoundment of Discharged Waters near VCP Site 626

With implementation planned for Phase 2, this activity would modify the existing storm drain outfall near McGonigle Road and Carmel Valley Road to reduce favorable mosquito breeding habitat within that area (shown in Figure 9-3 of the Enhancement Plan [Appendix A]). Improvements would modify the outfall, stilling basin, and concrete weir to allow for greater tidal exchange and reduce ponding of freshwater behind the current concrete weir that creates favorable mosquito breeding habitat for *C. tarsalis*. Improvements would be designed to ensure system capacity is maintained for flood management, and would minimize long-term maintenance of the storm sewer system and potentially divert storm flows to a different section of the municipal stormwater conveyance system. The improvements would prevent tidal backflows into the storm drain while maintaining storm flow capacity of the system, improve water quality entering Los Peñasquitos Lagoon, and reduce favorable mosquito breeding habitat.

3.4.3.3 Dewatering of VCP Site 577

With implementation planned for Phase 1 or Phase 2, dewatering VCP Site 577 would reduce impoundment of water at the area along Old Sorrento Valley Road within Zone 4 currently identified by the County DEH as a priority area for managing mosquito breeding within Los Peñasquitos Lagoon (VCP 577, shown in Figures 9-4 and 9-5 of the Enhancement Plan [Appendix A]). Freshwater inputs in this area have converted historic salt marsh into perennially open water with thick stands of emerging and established cattails. Reducing impounded water from this area would reduce breeding habitat for *C. tarsalis* and facilitate restoration of salt marsh habitat while maintaining aesthetic value associated with open water areas that appeal to the public (*e.g.,* duck ponds). Methods considered include creation of additional channels that connect to lagoon channels to convert areas of annual

inundation to seasonal ponding. Actual methods would be determined and designed at the project level and potentially integrated into the design of the pilot restoration project proposed for Phase 1 under the preferred Lagoon Restoration and Enhancement Activity.

3.4.3.4 Modification to Storm Drain Outfalls at Tripp Court and Sorrento Valley Road

With implementation planned for Phase 1, modifications to storm drain outfalls at Tripp Court and Sorrento Valley Road would provide redesign and maintenance for the storm drain outfall and channel associated with the Tripp Court Outfall (shown in Figure 9-6 of the Enhancement Plan [Appendix A]). This improvement considers potential design elements that include collecting and diverting groundwater from the retaining wall drainage system to landscaped areas along Sorrento Valley Road or other beneficial uses. Other design elements for consideration include measures to address sediment loading that has built up and blocked the outfall, such as a sediment removal and stormwater treatment system that would be installed upstream of the outfall. New designs would consider facilities needed to intercept trash, debris, and sediment before they could reach the outfall to avoid discharges into waterways that lead to Los Peñasquitos Lagoon. In addition, improvements to the Tripp Court outfall would consider improved connectivity to the concrete channel that runs adjacent to the basin to improve drainage and substantially reduce the ponding of water and the favorable mosquito breeding habitat.

3.4.4 Project Design Features and Standard Construction Procedures

Project Design Features

Due to the restoration nature of the proposed project, an effort has been made to proactively incorporate measures into the project to minimize and avoid, where possible, impacts to resources. These project design features (or PDFs) represent a commitment by the project to construct the project in an environmentally sensitive way. Some project design features are incorporated to avoid or minimize a potential significant impact proactively through design, but others are additional measures that support the overall enhancement objectives of the project without being tied to a specific potential impact. Many features also represent regulatory or code requirements that the project would need to comply with to be approved by various agencies and/or implemented legally.

The project applicant commits to the inclusion of these features, which would be implemented by the contractor or other parties before, during, and after construction. Inclusion of these project design features is considered in the determination of CEQA impact significance as discussed in Chapter 4. These features are summarized in Table 3-4 and include the purpose, timing, and responsibility for implementation of each project design feature.

Table 3-4. Project Design Features

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
1	Manufactured slopes would be planted with appropriate native vegetation and maintained, and drainage would be installed in order to reduce erosion. Slope irrigation would be limited to the amount required to support vegetation cover and would only be required until vegetation is established.	Reduce potential for erosion of exposed soils.	During construction	Contractor
2	Until adequate erosion-control native vegetation is established on exposed soils. Erosion and sediment control devices used for the project, including fiber rolls and bonded fiber matrix, would be made from biodegradable materials such as jute, with no plastic mesh, to avoid creating a wildlife entanglement hazard.	Reduce potential for erosion of exposed soils.	During construction	Contractor
3	Exposed soil at the disposal site would be hydroseeded and/or planted with appropriate native vegetation once the material is placed and appropriately compacted.	Reduce potential for erosion of exposed soils.	During construction	Contractor
4	Recommendations of the geotechnical reports for the project would be incorporated into the design of manufactured slopes, berms, or other features.	Ensure geologic stability of manufactured features.	Engineering and design	Engineer
5	Simultaneous use of the trails by construction equipment and recreationalists would not be allowed and affected trail segments would be closed to public use when construction would occur. Signs would be placed at the trail heads to notify trail users of these closures.	Minimize public safety hazards due to construction vehicle use of trails.	During construction	Contractor
6	Restrict public access at sand placement sites during active construction as necessary.	Ensure public safety during construction.	During construction	Contractor, in coordination with State Parks lifeguards
7	Maintain alternative access to beaches adjacent to placement sites and portions of beach access trails not under active construction.	Minimize impact on public access.	During construction	Contractor
8	Prior to opening areas of beach with placed materials, spread the materials and check for potential hazards (*e.g.,* foreign objects in the sand). Removal and relocation or disposal of hazards would be coordinated with LPLF and State Parks.	Reduce risks to public health and safety.	During construction	Contractor

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
9	Maintain horizontal and vertical access on either side of the active sand placement area if public safety is not compromised.	Maintain public beach access.	During construction	Contractor
10	Temporarily relocate mobile lifeguard towers, if necessary.	Ensure public safety during construction.	During construction	Contractor, in coordination with State Parks lifeguards
11	Unless directed otherwise, sand would be placed along the waterline on Torrey Pines State Beach between Lifeguard Tower 4 and Lifeguard Tower 3. Sand placed on the upper beach or on top of exposed rip rap would avoid blocking line-of-sight at lifeguard towers. Sight lines from the viewing platforms of the lifeguard towers would be maintained. Beach disposal planning and implementation would be coordinated with LPLF and State Parks. Beach profile monitoring and grain-size analysis may be required based on the scale of disposal efforts to assess potential impacts to the lagoon inlet, beach and nearshore habitats and processes. Monitoring for western snowy plover within and adjacent to the beach disposal site(s) would be required with the appropriate avoidance measures put in place should this species be observed.	Ensure public safety during construction.	During construction	Contractor, in coordination with State Parks lifeguards
12	Prior to initiating construction, identify sensitive “no construction zones” and fence or flag those areas. Limit construction equipment and vehicles to within these limits of disturbance.	Reduce public safety hazards.	During construction	Contractor
13	Contractors shall maintain equipment and vehicle engines in good condition and properly tuned per manufacturers’ specifications.	Minimize air quality impacts and greenhouse gas (GHG) emissions.	During construction	Contractor
14	Native or sensitive habitats outside and adjacent to the construction limits would be designated as Environmentally Sensitive Areas (ESAs) on project maps. ESAs would be temporarily fenced during construction with orange plastic snow fence or orange silt fencing along staging areas and access routes, and with stakes and flagging in areas of flowing water and active construction zones. No personnel, equipment, or debris would be	Minimize impacts to sensitive habitat areas.	Prior to construction Prior to vector management	Qualified biologist/Contractor

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
	allowed within the ESAs. Fencing and flagging would be installed in a manner that does not impact habitats to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment. Access routes/staging areas adjacent to identified sensitive bird species habitat may require special fencing or barriers (*e.g.*, stacked straw bales) pursuant to recommendations and requirements set forth by State Parks in consultation with Wildlife Agencies. Access routes used for vector management would require approval by LPLF and State Parks and meet conditions set by a Right of Entry Permit and the Lagoon's status as a State Natural Preserve.			
15	Site staging areas and access roads at existing access points and areas that do not contain native habitat~~, where feasible~~.	Minimize impacts to native habitat and reduce site preparation requirements.	Final design	Engineer
16	Restrict vegetation clearing and grubbing, and material placement, to the extent possible, to outside the special-status bird breeding season (February 15–September 15). Work conducted during the breeding season would be designed to avoid or minimize disturbances to breeding birds. Such measures could include maintaining effective buffers to active nests and would require the on-site presence of a qualified biologist before and during clearing and grubbing activities and other manipulations of habitat. Work conducted outside of breeding season may require monitoring and avoidance measures for special-status birds; this would be determined by State Parks in consultation with Wildlife Agencies (U.S. Fish and Wildlife Service and California Department of Fish and Wildlife).	Minimize impacts to sensitive wildlife species and their habitats.	During construction	Contractor/Qualified biologist

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
	Proposed clearing and grubbing along with monitoring and avoidance measures would be reviewed and approved by State Parks in consultation with Wildlife Agencies prior to the commencement of clearing and grubbing, or habitat manipulation within TPSNR.			
17	Have a qualified biological monitor on site prior to and during construction to coordinate with contractors to minimize impacts to habitat and wildlife; frequency may vary depending upon activity but could be daily during breeding season or every other week at other time periods. Monitor vegetation clearing activities and flush wildlife prior to clearing, as appropriate, and in compliance with the ESA where applicable.	Confirm implementation of biological permit conditions, design features, mitigation measures, and applicable construction specifications.	During construction	Qualified biologist
18	Stockpile high-quality topsoil from previously undisturbed areas for placement on top of fill areas after soil placement to facilitate planting success.	Aid in successful revegetation.	During construction	Contractor
19	Incorporate soil amendments in saline soils prior to capping and/or planting, as needed.	Aid in successful revegetation.	During construction	Contractor
20	Use temporary irrigation of freshwater for planted areas, as required.	Aid in successful revegetation.	During and post construction	Contractor
21	No invasive non-native plant species shall be planted, seeded, or otherwise introduced to habitats adjacent to the project site. Plant material shall be native species appropriate to the site and approved by State Parks. Perennial plants used in restoration shall be from genetic stock at TPSNR. For wide-ranging perennial species, plants may be from sources within 3 miles from the coast between Camp Pendleton and Mission Bay if none are readily available from Los Peñasquitos Lagoon. Annual plants used in restoration shall be from locally collected propagules within the Lagoon. A qualified biologist shall review landscape plans before approval.	Reduce/avoid impacts to special-status plant species on site.	During construction	Contractor
22	Equipment would be cleaned prior to transport to the project site to prevent potential non-native plant species and other foreign matter, such as sediment and debris, from entering the site.	Minimize the potential to introduce non-native species into the site.	Prior to construction	Contractor

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
23	The following measures would be implemented as necessary to reduce fugitive dust emissions associated with off-road equipment and heavy-duty vehicles: exposed surfaces (*e.g.,* unpaved access roads) shall be watered; sweepers and water trucks shall be used to control dust and debris at public street access points; dirt storage piles shall be stabilized by chemical binders, tarps, fencing, or other suppression measures; sufficient perimeter erosion control shall be provided to prevent washout of silty material onto public roads; haul trucks shall be covered or at least 12 inches of freeboard shall be maintained to reduce blow-off during hauling; and a 15-mph speed limit on unpaved surfaces shall be enforced.	Reduce fugitive dust.	During Construction	Contractor
24	The project would coordinate with State Parks and consult the Wildlife Agencies on conservation measures to assure that impacts to native habitat and wildlife are avoided and minimized to the maximum extent practicable.	Minimize impacts to habitat and wildlife	Project Planning	Project Proponent
25	Construction and maintenance activities that require mechanized equipment would be at least 500 feet from active special-status avian nests. Biological surveys would be conducted within the project footprint, which includes staging and access routes, and at least 500 feet outside the project footprint to determine the location of sensitive avian species. If these buffers between construction activity and conditions cannot be met, the project would work with State Parks and consult the Wildlife Agencies to determine the best approach to avoid/minimize/offset impacts to nesting or roosting birds. Such approaches may include considering the distance to the project limits and local topography, monitoring to evaluate whether the birds are disturbed by construction, flushing wildlife out of the active work area, and relocating nests.	Avoid impacts to special-status avian species	Prior to and during construction	Contractor and biological monitor
26	A qualified biologist would be on site during project construction and during maintenance activities that require mechanized equipment. The biological monitor must be familiar with wetland,	Minimize impacts to habitat and wildlife	Prior to construction and during construction	Biological monitor

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
	coastal sage scrub, and dune biology, ecology, associated native species, and the conservation measures identified for the project. The biological monitor would be available during pre-construction and construction phases to conduct biological surveys, address protection of sensitive biological resources, monitor ongoing work, and maintain communications with construction personnel to facilitate the appropriate and lawful management of issues relating to biological resources. The qualified biologist would have the ability to temporarily halt construction and maintenance activities, if necessary, to avoid unanticipated impacts to special status species and noncompliance with conservation measures. The avian biological monitor or qualified biologist would coordinate with LPLF or State Parks to determine appropriate measures to protect special status-species with regards to the operation of vehicles and heavy equipment.			
27	All participants and contractors for the project would receive educational training concerning special-status species within the project area and sign an agreement to comply with the conservation measures or conditions. The program would be conducted during all project phases and would cover the potential presence of listed species; the requirements and boundaries of the project; the importance of complying with avoidance, minimization, and compensation measures; and problem reporting and resolution methods.	Minimize impacts to habitat and wildlife	Prior to construction and during construction	Biological monitor and contractor
28	To avoid adverse impacts to special-status bird species, on-site vehicle operators shall drive no more than 15 miles per hour within the project footprint in areas identified as occupied habitat. The avian biological monitor or qualified biologist have the authority to further reduce the speed limit temporarily, if necessary, to avoid adverse impacts to special-status bird species. The avian biological monitor or qualified biologist would coordinate with LPLF or State Parks to determine appropriate measures to protect special-	Minimize impacts to habitat and wildlife	During construction	Contractor

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
	status species with regards to the operation of vehicles and heavy equipment.			
29	During project construction, invasive species included on the National Invasive Species Management Plan, the State of California Noxious Weed List, and the California Invasive Plant Council's Invasive Plant Inventory list (Cal-IPC 2006) found growing within the project impact area would be removed. Special care would be taken during transport, use, and disposal of soils containing invasive weed seeds and weedy vegetation removed during construction would be properly disposed of to prevent spread into areas outside of the construction area.	Minimize impacts to habitat and wildlife	Prior to construction and during construction	Biological monitor and contractor
30	Equipment maintenance, staging, and dispensing of fuel, oil, coolant, or other such activities would be restricted to staging areas. A Spill Prevention, Control, and Countermeasure Plan would be prepared for hazardous spill containment.	Minimize impacts to habitat and wildlife	Prior to construction and during construction	Contractor
31	All construction equipment used for the project would be equipped with properly operating and maintained mufflers and engines on dredging equipment would be housed to the greatest extent possible.	Minimize impacts to habitat and wildlife	Prior to construction and during construction	Contractor
32	If nighttime construction is necessary, lighting used at night for project construction would be selectively placed and directed at the immediate work area and away from adjacent sensitive habitats. Light glare shields would be used to reduce the extent of illumination into sensitive habitats.	Minimize impacts to habitat and wildlife	During construction	Contractor
33	The Applicants would prepare and implement a Stormwater Pollution Prevention Plan, Stormwater Management Plan, Hydromodification Management Plan, and Low Impact Development Best Management Practices, as appropriate, to confirm that the limits of disturbance would be maintained within the identified project footprint.	Minimize impacts to habitat and wildlife	Prior to construction	Contractor
34	Erosion and sediment control devices used for the project, including fiber rolls and bonded fiber matrix, would be made from biodegradable materials such as	Minimize impacts to habitat and wildlife	During construction	Contractor

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
	jute, with no plastic mesh, to avoid creating a wildlife entanglement hazard.			
35	The project site would be kept as clear of debris as possible. Food-related trash items would be enclosed in sealed containers and regularly removed from the site to avoid attracting scavengers/predators of sensitive birds. Spoils and materials disposal would be disposed of properly.	Minimize impacts to habitat and wildlife	During construction	Contractor
36	Project personnel will be prohibited from bringing domestic pets to construction sites to avoid disturbance and depredation of wildlife by domestic pets in adjacent habitats.	Minimize impacts to habitat and wildlife	During construction	Contractor
37	Public access facilities (trails, signage, *etc.*) would be placed in existing trails where impacts to habitat can be avoided. Trails will not go through wetland habitat but instead would move around the perimeter of the wetlands.	Minimize impacts to habitat and wildlife	Planning	Project Proponent
38	Development of success criteria would be coordinated with and approved by LPLF and State Parks prior to disturbance to soils, hydrology, or vegetation within and adjacent to TPSNR.	Minimize impacts to habitat and wildlife	Planning	Project Proponent
39	Development of monitoring and maintenance plans would be coordinated with and approved by LPLF and State Parks prior to disturbance to soils, hydrology or vegetation within and adjacent to the Torrey Pines State Natural Reserve. Monitoring plans must be integrated into or at least be consistent with the current long-term monitoring program employed at Los Peñasquitos Lagoon and currently conducted by scientist from the Tijuana River National Estuarine Research Reserve unless this requirement is waived by LPLF and State Parks. Maintenance would be in perpetuity unless State Parks, in consultation with LPLF, determines that success criteria has been met and no further maintenance is required.	Minimize impacts to habitat and wildlife Improve measures of success in meeting success criteria Support and facilitate adaptive management Assure long-term success of habitat restoration	Planning	Project Proponent
40	Permanent fencing and/or signage replaced or installed as part of the project would be consistent with styles and requirements of fencing and signage present within TPSNR. Approval from	Compliance with policies and requirements of State Parks	Planning & Construction	Project Proponent/Contractor

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
	State Parks would be required before installation.			
41	A performance bond or letter of credit for grading, planting, irrigation, maintenance and monitoring of wetland/riparian and upland mitigation would be required and would include a 20 percent contingency to be added to the total costs. This bond or letter of credit is to guarantee the successful implementation of the mitigation construction, maintenance, and monitoring. A draft bond or letter of credit with an itemized cost list would be provided to LPLF and CPS for approval at least four weeks prior to initiating project impacts. The applicant would submit the final bond or letter of credit for the amount approved by State Parks within 60 days of receiving State Parks approval of the draft bond.	Assure successful completion of the project	Planning & Construction	Project Proponent/Contractor
42	If impacts to species identified as a candidate, sensitive, or special-status species in the Multiple Species Conservation Program (MSCP) are identified, specific management priorities would be undertaken as part of MSCP implementation requirements to ensure that covered species are adequately protected, as required.	Minimize impacts to habitat and wildlife	Planning & Construction	Project Proponent

Standard Construction Procedures

The construction methods for the proposed project and other anticipated work within the lagoon complex were developed based on project requirements and site constraints, as well as experience with similar previous projects. Standard construction ~~practices~~ procedures (SCPs) would be utilized for the project and are described in Table 3-5.

Table 3-5. Standard Construction Procedures

SCP #	Standard Construction Procedure
1	Implement a public information program to assist Park users and the surrounding community in understanding the purpose of the project and disseminate pertinent project information, including a project website with current construction schedule.
2	Coordinate with utility service providers for avoiding utilities infrastructure and/or relocating infrastructure.
3	Have Resident Engineer or designee on site during construction to confirm compliance with permit conditions and construction specifications.
4	Remove sources of impounded water resulting from construction equipment (if any) and confirm compliance with construction specifications regarding no ponding.
5	Restrict access to active construction areas and staging yards to maintain public safety (*e.g.,* portions of trails).
6	During off working hours, secure heavy equipment and vehicles in staging areas or areas with restricted access.
7	Conduct equipment fueling and maintenance at designated staging and fueling stations away from publicly accessible areas.
8	Prepare project Storm Water Pollution Prevention Plan (SWPPP) and implement best management practices (BMPs) and monitoring requirements identified in SWPPP (*e.g.*, dust control measures).
9	Require heavy equipment operators to be trained in appropriate responses to accidental fires.
10	Provide fire suppression equipment on board vehicles and at the worksite.
11	Provide emergency communication equipment for site personnel.
12	Ensure the construction contractors minimize idling times by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage would be provided for construction workers at access points.
13	Site staging areas and access roads at existing access points and previously disturbed areas~~, where feasible~~.
14	Prepare work zone Traffic Control Plans for projects that would disrupt traffic flow on local roadways prior to construction. The work zone Traffic Control Plans shall be prepared by the contractor in accordance with the California Manual of Uniform Traffic Control Devices, Caltrans Standard Plans (2010), and current standards and best practices of the reviewing and approving agencies.
15	Coordinate with applicable agencies regarding construction and maintenance schedules and worksite Traffic Control Plans including, but not limited to, local fire and police departments
16	Maintain one lane of circulation on public roadways and access to neighboring commercial establishments during project construction.
17	Ensure temporary speed limit reduction for the traffic detour approaches and exits conforms to safe highway design speeds.
18	Have a flag person present to coordinate north-south traffic during those limited times that only a single lane is open.
19	Post signs advising the public of the presence of steep sand slopes (*e.g.,* scarps) should they develop on beaches where sand is placed.
20	As part of permanent erosion control, protect lagoon channel cross sections with erosion control products (*e.g.,* riprap or bioengineering solutions) and vegetated material to stabilize soils and foster natural recruitment from restoration planting, thus managing erosion during higher-velocity storm flows and preventing damage.

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CHAPTER 4
ENVIRONMENTAL IMPACT ANALYSIS

4.1 LAND USE

This section describes existing environmental conditions related to land use in the area surrounding Los Peñasquitos Lagoon. This section also identifies pertinent policies and regulations governing land use in the project areas and evaluates the potential environmental impacts associated with implementation of the proposed project in the context of land use. Existing conditions for land use are discussed in Section 2.2.5.

4.1.1 Impact Thresholds

Would the proposed project:

A. Result in physical division of an established community; or

B. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

The impact thresholds used for land use are those outlined in CEQA, Appendix G.

4.1.2 Impact Analysis

This section discusses the environmental impacts related to land use conflicts associated with lagoon restoration and enhancement, public access improvements, and vector management.

Key Planning Documents

California PRC Section 5019.71. Los Peñasquitos Lagoon's designation as a State Natural Preserve requires strict management of access into the Lagoon to protect sensitive species that include rare and endangered plants, birds, reptiles, and insects in accordance with California PRC Section 5019.71. The regulation states that, "*The purpose of natural preserve shall be to preserve such features as rare or endangered plant and animal species and other supporting ecosystems…Habitat manipulation shall be permitted only in those areas found by scientific analysis to require manipulation to preserve the species or associations that constitute the basis for the establishment of the natural preserves."* Thus, the inherent management restrictions prioritize the protection of sensitive habitats, rare and endangered animal species, and other sensitive/rare resources over direct public access.

San Diego Coastal State Park System General Plan. Volume 8 of the San Diego Coastal State Park System General Plan (State Parks 1984) guides policy formulation and development alternatives for TPSNR and defines the purpose of Los Peñasquitos Lagoon being a State Natural Preserve to "provide for the protection and perpetuation of natural resource values associated with the lagoon and wetlands." Natural resources at Los Peñasquitos Lagoon (*e.g.,* native estuarine plant and animal communities, listed species) are given higher significance over recreational opportunities with the

principal, long-range management objective "to restore and maintain the estuarine water cycle in a regime which approaches that which existed prior to 1925."

City of San Diego MSCP SAP and MHPA. The MHPA is a regional habitat preserve system designated as part of the City's MSCP, which allows development projects to occur with a streamlined development review system that avoids the traditional project-by-project review by regulatory agencies. Aside from the western corridor of the Lagoon, which includes the beach and Highway 101 infrastructure, the Lagoon is entirely within the MHPA. The Lagoon is designated as a core area with high to moderate habitat values within the City's MSCP SAP. The SAP addresses topics applicable to the proposed project such as fencing, materials storage, flood control, restoration, public access, and invasive exotics control, among others (City of San Diego 1997).

California Coastal Act. The Lagoon is located within the Coastal Zone. Various Coastal Zone jurisdictions throughout the project area are under CCC permitting authority, including some deferred certification zones. The Lagoon also includes areas of local jurisdictional authority under the City LCP and City of Del Mar LCP, including appealable and non-appealable zones. Chapter 3 of the California Coastal Act outlines coastal resources planning and management policies, specifically addressing public access, recreation, marine environment, land resources, development, and industrial development (Articles 2–7).

The following planning documents are described herein, as they apply to the proposed projects within City of San Diego jurisdiction. Proposed projects implemented on land owned by the State are not subject to local ordinances as defined by state law.

City of San Diego General Plan. The City's General Plan (City of San Diego 2008) designates the Los Peñasquitos Lagoon as Open Space on its Recreation Element Community Plan Designated Open Space and Parks Map. This designation identifies areas for preservation of land that have distinctive scenic, natural, or cultural features; that contribute to community character and form; or that contain environmentally sensitive resources. The Conservation Element of the General Plan contains a wide variety of policies aimed at protecting natural resources such as wetlands, coastal areas, floodplains, and other ecological resources.

Torrey Pines Community Plan. Objectives of the TPCP include the following: Designate and preserve as open space the exceptional topography and ecosystem of the Los Peñasquitos Lagoon; Encourage the restoration and the natural resources of the Los Peñasquitos Lagoon as a tidal estuary; and Permit only those recreational activities which do not have a negative impact on the lagoon ecosystems. The TPCP also states that future improvements to railway, highway embankments, and bridges traversing Los Peñasquitos Lagoon should be designed and constructed to minimize their impact on natural characteristics of the area, particularly the blockage of the Lagoon to tidal action and disturbance of wildlife by rail and vehicular traffic.

The TPCP includes Appendix E, LCP Policies. These policies supersede Community Plan policies where there is an overlapping conflict. The policies address hillsides, grading/water quality, wetlands/environmentally sensitive resources, visual resources, and the Los Peñasquitos watershed restoration/enhancement fee. The approval of the NCC PWP/TREP by the CCC in 2014 (Doc. No. PWP-6-NCC-13-0203-1) amended the City's LCP, and requires that subsequent regulatory reviews

of projects encompassed by the NCC PWP/TREP be processed under the framework and guidance provided within the NCC PWP/TREP (City of San Diego 2014).

City of Del Mar Community Plan. The very northern tip of the Lagoon is within the City of Del Mar jurisdictional boundaries. The Community Plan places the Lagoon area within the South Bluff District and recommends that land east of Camino del Mar and south of Carmel Valley Road be used for State Parks acquisition or, if developed, for low-density residential purposes, except at the southeast corner of Carmel Valley Road and Camino del Mar, which shall be designated Beach Commercial and compatible with lagoon sensitivities (City of Del Mar 1976). The City of Del Mar Zoning Map (City of Del Mar 2001) designates the Lagoon area as Public Parkland.

City of San Diego Environmentally Sensitive Lands. The presence of sensitive biological resources and wetlands associated with the Lagoon and its drainages qualifies the project site as Environmentally Sensitive Land (ESL), which are therefore subject to the City's ESL Regulations (City of San Diego 2018b). The proposed project would be subject to the restrictions and requirements outlined in the City Land Development Code Biology Guidelines (City of San Diego 2018a). The purpose of the ESL regulations is to protect, preserve, and, where damaged, restore, the environmentally sensitive lands of San Diego and the viability of the species supported by those lands.

4.1.2.1 Lagoon Restoration and Enhancement

The proposed Restoration and Enhancement Activities would modify the elevations, habitats, channels, and other hydraulic features within the Lagoon to provide better function and long-term sustainability, but would not change the overall size, location, or function of the Lagoon. Los Peñasquitos Lagoon has been an element of the planning and development of surrounding local communities, such as Torrey Pines, that have grown over time with the Lagoon as part of the natural setting. The proposed project would not change the ability of communities to continue to grow and function around the Lagoon. The enhancement and restoration of the Lagoon would not divide nor modify the existing community. Thus, **no impact related to dividing an established community would result (Threshold A).**

Los Peñasquitos Lagoon currently functions as an open space/reserve area. With implementation of the proposed project, this function would continue, with modifications to habitat distributions, channels, and other elevations within the Lagoon. The proposed project would not result in the conversion of the Lagoon from a riparian and wetland area to another land use post-implementation. The overall existing land use of the Lagoon would not change; it would remain a coastal lagoon and open space/reserve area. Restoration and enhancement would not change or modify the Lagoon's designation, purpose, or function as an ecological preserve. The Lagoon area is identified in applicable planning documents as an area to be preserved and protected as open space and restoration, and enhancement activities would not alter the Lagoon's use or function in a manner inconsistent with applicable regulations and laws or existing and future local land use plans. Many of the land use regulations adopted by adjacent jurisdictions are geared toward the conservation and preservation of the Lagoon area and associated natural resources. The overall lagoon restoration and enhancement resulting from the proposed project would not cause conflicts with land use regulations or policies that could result in substantial adverse environmental effects. The continuation of the Lagoon land uses would remain compatible with the surrounding areas and not cause modification of land uses in

nearby areas. During construction, various temporary changes in and around the Lagoon could occur, such as altered traffic, *etc.* (as discussed in the appropriate sections throughout this Program EIR); however, the overall open space nature of the Lagoon would continue.

MSCP SAP and MHPA

Restoration and Enhancement Activities would be planned in accordance with the goals and guidelines of the MSCP SAP (City of San Diego 1997), and in consultation with the wildlife agencies. As further detailed in Section 2.2.5, Biological Resources, the proposed project would be consistent with the applicable goals and policies related to the maintenance and preservation of open space lands and the protection and enhancement of sensitive ecological and natural resources and has been designed to comply with the applicable restrictions and requirements therein. Compliance with the MSCP SAP may require a potential boundary line adjustment, which would be assessed at the time of project-level analysis. As the proposed project is a restoration project and would restore wetlands, riparian corridors, and other sensitive natural communities and habitat for wildlife, and perimeter trails for passive recreation, the proposed project is consistent with the goals and objectives of the MHPA and would not conflict with the provisions of the MSCP.

Environmentally Sensitive Lands Regulations

ESL Regulations are applicable to the proposed project within property owned by the City and deal with a wide range of protective restrictions, such as general measures like restriction on the storage of materials or equipment in ESLs without demonstration that the disturbance would not degrade the land or cause permanent habitat loss. The ESL Regulations require the preservation of steep hillsides in their natural state to the extent possible and provide requirements related to the alteration of rivers or streams and the modification of floodways. Compliance with the MSCP and the City's Land Development Code Biology Guidelines on City-owned parcels is required. Additionally, portions of the project site are within the FEMA designated Special Flood Hazard Area for areas subject to inundation by the 1% annual chance flood, Zone A (FEMA 2012), and would be subject to additional regulations imposed on ESLs in special flood hazard areas. These regulations would not apply to proposed activities carried out by the State on land~~areas of the project~~ owned by State Parks.

Uses permitted in wetlands as outlined in Municipal Code Section 143.0130(d) specifically include wetland restoration projects where the primary purpose is restoration of habitat. The proposed project would be consistent with this permitted use.

The proposed project does not include the development of structures or other permanent built features that might conflict with provisions of the ESL Regulations. The proposed enhancement and restoration activities would be consistent with applicable requirements and restrictions of the ESL Regulations as they would enhance the biological resources within the Lagoon and improve the hydraulic function within the floodplain.

Coastal Zone

Because Los Peñasquitos Lagoon is located within the Coastal Zone, the CCC would need to issue a CDP for the proposed projects. The permit would be issued by the CCC as they have retained

jurisdiction over portions of the Lagoon; however, due to the multiple jurisdictions overlaying the project site, including the City, local permit authorizations may also be required. If a specific action would affect multiple permit jurisdictions, and include state jurisdictional areas, a Consolidated CDP may be requested from the CCC, streamlining permitting processes.

Many of the policies contained in Chapter 3 of the California Coastal Act do not apply to the proposed project as there would be no development of permanent structures that could affect coastal resources. Additionally, as shown in Figure 3-2, Phases 1 and 2 of the proposed project are distant and separated from the waterfront and coastal beach areas. Recreation or public access within the Lagoon is not allowed and this would not change with the proposed project. Formal trails and legal public access around the perimeter of the Lagoon would not be reduced as part of the proposed Restoration and Enhancement Activities, and would continue to be available for public use, access, and recreation throughout the duration of the project, unless temporarily closed for public safety. Proposed Restoration and Enhancement Activities would not conflict with public access policies outlined in Article 2 and Article 6 (Section 20252) or recreation policies outlined in Article 3.

Article 4 outlines policies related to the protection of the marine environment, addressing topics such as biological productivity and protection of water quality in waters, streams, and wetlands; filling or dredging; movement of sediment; and flood control. The proposed project would work toward improved hydrologic function, quality, and health of the wetlands and overall Lagoon area and would not conflict with these policies. Article 4 also states that dredge spoils suitable for beach replenishment should be transported for these purposes to appropriate beaches or into suitable longshore current systems, which is proposed as a potential disposal option for materials removed from the Lagoon.

Article 5 (Section 30240) specifically addresses ESHAs and the protection of such resources. The proposed Restoration and Enhancement Activities would result in improved habitat values and would not conflict with those policies. The continuation of coastal access and protection of land resources would not be altered or restricted in accordance with requirements of Chapter 3 of the California Coastal Act.

Article 6 (Section 30251) addresses the protection of scenic resources. While some landform alteration is necessary as part of the restoration activities to provide the adequate elevations for established habitat and wetlands, the altered landforms would be compatible and comparable with the surrounding environment and scenic aesthetic. The proposed project would not block, obstruct, or otherwise substantially alter views of the scenic coastal area.

Section 30233(b) of the California Coastal Act specifies that dredge spoils suitable for beach nourishment should be transported for such purposes to appropriate beaches or into suitable longshore current systems. Placement of suitable materials from Restoration and Enhancement Activities on Torrey Pines State Beach is included as part of the proposed project.

As described in the Project Description, the potential implementation of a Living Shoreline is included in the proposed project. The Living Shoreline could provide a beneficial reuse of sand excavated from the Lagoon through the creation of coastal dunes. Design and implementation of these coastal features would be permitted in accordance with CCC regulations and in compliance with requirements of the California Coastal Act and other applicable agency requirements.

For these reasons, the proposed project would not create substantial conflicts with policies of the California Coastal Act and would generally work to enhance and improve resources protected by the California Coastal Act.

Thus, **a less than significant impact related to environmental effects due to land use conflict would result (Threshold B).**

4.1.2.2 Public Access Improvements

Several pathways and an established trail exist around the edges of Los Peñasquitos Lagoon, but they are informal and fragmented with little connectivity. The Marsh Trail is the only dedicated trail within TPSNR that borders the Lagoon and that is authorized by State Parks for pedestrian use.

Elements of proposed improvements to public access would include trail reconstruction, creation of trail access points, establishment of new trail alignments, improvements along roadways, closure of informal user-generated trails, and other pedestrian and bicycle facility improvements. The proposed public access improvements would provide increased safety and overall connectivity with the existing trail and pathway network in the local area, such as those in TPSNR, the California Coastal Trail, and along local roadways. Safety would be enhanced through projects such as trail alignments through safer terrain and improvements along the eastern edge of Highway 101 that would physically separate pedestrian traffic from bicycles and vehicles, enhancing public safety along the roadway corridor. As projects are planned, the improvements would be designed in accordance with applicable planning documents and regulations, such as the State Parks Trails Handbook (State Parks 2019), relevant Caltrans requirements, bicycle facilities classifications in the TPCP, California Coastal Act (Article 2 addressing Public Access and Article 3 addressing Recreation), City development guidelines, and others. Additionally, the appropriate easements would be obtained from the City as applicable for public access improvements (*e.g.,* Northwest and Southeast Trailhead Marsh Trail Access and the Hilltop Trail Education Overlook and Marsh Trail Connection).

Public access improvements would not modify land uses or conflict with policies in applicable planning documents regarding public access and recreation opportunities. Generally, public access improvements would be modifying existing trails/pathways and not creating new facilities in significantly different locales. Proposed public access improvements would have better connectivity to local trail and pathway networks and potentially increase walking/bicycling as an alternative means of transit while also improving user safety. These beneficial outcomes are consistent with many public access/recreation and transportation goals in planning documents pertaining to the area.

Much of the land use discussion of division of an established community and land use policy conflicts provided under restoration and enhancement is also applicable to the analysis of public access improvements. Thus, **no impact would result regarding the division of an existing community and a less than significant impact related to environmental effects due to land use conflicts would result (Thresholds A and B).**

4.1.2.3 Vector Management

Most of the proposed Vector Management Activities would include improvements to road culverts, modifications to storm drain outfalls, enhancing minor channels to reduce localized ponding, and other drainage-related infrastructure. Vector management would not include the construction of buildings or other similar structures or cause change to the existing land uses surrounding the area. The potential for land use impacts would be minimal and the land use discussions provided under enhancement and restoration and public access improvements would apply to vector management. Thus**, no impact would result regarding the division of an existing community and a less than significant impact related to land use conflicts would result (Thresholds A and B).**

4.1.3 Significance of Impacts

Table 4.1-1 summarizes the land use impact conclusions identified at this programmatic level in the Impact Analysis for each impact threshold.

Table 4.1-1. Summary of Land Use Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements	Vector Management
A. Physical division of an established community.	No Impact	No Impact	No Impact
B. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	Less than Significant	Less than Significant	Less than Significant

4.1.4 Mitigation Measures

No significant impacts to land use have been identified at this program-level analysis. Therefore, no mitigation measures are required.

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4.2 PUBLIC ACCESS AND RECREATION

Natural open areas can serve as important public spaces and recreational opportunities. A description of the existing conditions for public access, trails, and recreation opportunities is provided in Section 2.2.6 and existing trails are shown in Figure 2-8.

4.2.1 Impact Thresholds

Would the proposed project:

A. Include recreational facilities or require the construction or expansion of recreational facilities which may have an adverse physical effect on the environment; or

B. Result in loss of recreational use areas or lessen recreational use.

The impact thresholds used for public access and recreation are based on those outlined in CEQA, Appendix G, and have been modified to best analyze a project of this nature.

4.2.2 Impact Analysis

This section discusses the potential environmental impacts related to public access and recreation associated with lagoon restoration and enhancement, public access improvements, and vector management. The Lagoon's state designation as a State Natural Preserve requires limited and controlled access to protect sensitive and rare species. Direct access to the Lagoon is limited to academic study and protection of coastal salt marshes and granted through a Right of Entry Permit or Science Collection Permit issued by State Parks. Thus, recreation or public access does not occur within the Lagoon boundaries and only passive recreation is allowed along the lagoon perimeter.

Existing Recreation Opportunities

While Los Peñasquitos Lagoon itself is not accessible or available as a recreation area, public access and recreation around the Lagoon occur on trails (officially established and user-established) and local roadways including Highway 101, Carmel Valley Road, Sorrento Valley Road, and Roselle/Flintkote Road (see Figure 2-8). Public access around the Lagoon is fragmented with no or limited connection between the trails and is poorly integrated with nearby regional trail networks such as the Coastal Rail Trail, Sea to Sea Trail, and California Coastal Trail. Many trails and pathways are also in poor condition and in need of repair. Only Sorrento Valley Road (City Multi-Use Trail) and the Marsh Trail (established trail within TPSNR) are officially designated trails.

Other recreation opportunities in the area include TPSNR, operated by State Parks and located along the western border of the Lagoon. TPSNR requires a user entry fee for vehicles and includes hiking trails, visitor center and museum, guided nature walks, and beach areas, and allows special events. Torrey Pines Golf Course, a municipal golf course known for its views of the Pacific Ocean is located southwest of the Lagoon and TPSNR. The City's and County's Los Peñasquitos Canyon Preserve is located on the east side of I-5 at the southern end of the Lagoon and stretches approximately 7 miles east to I-15. The preserve includes trails with numerous cultural resource sites, extensive biodiversity,

and varied geology for recreationalists to enjoy. The CVREP and Sea to Sea Trail along Carmel Creek, along with the SR 56 Bike Trail, are located east of I-5 but are currently missing connectivity to the Lagoon trails and bicycle lanes located west of I-5 along Carmel Valley Road and the Sorrento Valley Multi-Use Trail. The Pacific Ocean and beaches located west of the Lagoon are popular recreation and viewing areas. The North Beach parking lot and South Beach parking lot are used for parking for access into TPSNR, associated trails, and beach areas.

There are user-generated trails throughout the upland areas that border the Lagoon and in some areas along the Marsh Trail that are a result of unauthorized use by people creating short-cuts to traverse the area. Many of the user-generated trails are in the northern area between the railroad, Carmel Valley Road, and the North Beach parking lot. Some of these trails may not be actively used today and have not revegetated, but others show visible signs of ongoing frequent use. User-generated trails along the Marsh Trail were created to avoid areas of inundation during extreme high tides and/or flood events caused by urban runoff and/or inlet closures.

Planning Considerations

Los Peñasquitos Lagoon's designation as a State Natural Preserve requires strict management of access into the Lagoon to protect sensitive species in accordance with California PRC Section 5019.71 that states: *The purpose of natural preserve shall be to preserve such features as rare or endangered plant and animal species and other supporting ecosystems…Habitat manipulation shall be permitted only in those areas found by scientific analysis to require manipulation to preserve the species or associations that constitute the basis for the establishment of the natural preserves.* Management restrictions prioritize the protection of sensitive biological resources over direct public access; therefore, active aquatic recreation, including swimming, kayaking, and boating, is not permitted within the Lagoon (prohibition of active recreation in the Lagoon has been actively enforced since 2000).

While direct public access to the Lagoon is not permitted, improving access around Los Peñasquitos Lagoon is a management priority identified within the updated Enhancement Plan to foster coastal stewardship. Various planning documents applicable to the Lagoon include public access, trail, and recreation policies. For example, the Recreation Element of the City's General Plan prescribes goals and policies specific to park and open space lands and the preservation of such resources and implementation of recreational facilities such as trails. The Conservation Element contains a wide variety of policies aimed at protecting natural resources such as wetlands, coastal areas, floodplains, and other ecological resources. Specific to the Lagoon, the Draft TPSNR Trail Management Plan would be referenced as applicable to proposed public access improvement design and implementation (State Parks 2005). The California Coastal Act includes public access and recreational policies. The approval of the NCC PWP/TREP by the CCC in 2014 (Doc. No. PWP-6-NCC-13-0203-1) amended the City's LCP and included transit, bicycle, pedestrian, community, and resource enhancement projects. These proposed projects are incorporated into the TPCP (City of San Diego 2014).

4.2.2.1 Lagoon Restoration and Enhancement

Restoration and enhancement projects do not include or require the construction of new or expanded recreational facilities. The current restrictions on public access and recreation within the Lagoon

would remain with the proposed project. Surrounding trails and pathways or other recreational facilities would not be modified by proposed Restoration and Enhancement Activities. Thus, **a less than significant impact related to the construction or expansion of recreational facilities which may have an adverse physical effect on the environment would result (Threshold A).**

The Lagoon itself is not accessible or allowed for use as an active recreation facility; however, recreationalists enjoy the open and natural setting it provides for trails and pathways around the perimeter and surrounding areas. Because no recreation is allowed within the Lagoon, the Restoration and Enhancement Activities proposed within the Lagoon would not directly disrupt or interfere with existing recreation opportunities. The restrictions on recreation within the Lagoon would not change or be modified as part of the proposed project. Recreationalists who enjoy the natural setting of the Lagoon may find the presence of construction equipment and activities within the Lagoon disturbing to the typical natural setting. However, construction activities would generally be consolidated in a small area of the Lagoon and move around as work progresses. Additionally, the construction activities would be temporary, lasting throughout the duration of construction. Once complete, the Lagoon would be restored to a natural open space setting.

While the majority of construction associated with restoration and enhancement would be contained within the Lagoon itself, it is possible that some temporary trail or pathway closures may be necessary for public safety. As noted previously, the trail network is not well connected, and most trails and pathways cannot be used to access other trails or more distant destinations. However, while the potential for short-term trail or pathway closures associated with construction for Lagoon Restoration and Enhancement Activities may lessen the ability to use perimeter trails for a short period, this temporary minor disruption would not be substantial within the overall local trail system. Because the Lagoon perimeter trails are not well connected with the local trail network, the temporary loss of portions of Lagoon trails would not impede or hamper the ability of recreationalists to use other local recreation amenities, such as those trails within TPSNR during potential short-term closures. Thus, **a less than significant impact related to the loss of recreational use areas or lessened recreational use would result (Threshold B).**

4.2.2.2 Public Access Improvements

The proposed public access improvements would result in new and expanded recreational facilities in the form of new or realigned trails, access points, and new or improved public access facilities along roadways. The proposed projects that would close user-generated trails that traverse through sensitive resource areas would serve to reduce impacts to the environment related to those unauthorized trails. As identified throughout the topic sections in this Program EIR, there would be the potential for significant environmental impacts from implementation of public access improvements (*e.g.,* impacts to sensitive biological resources, cultural resources, paleontological resources). However, as described in each topic analysis and mitigation section of this Program EIR, the potential environmental effects related to construction of new or modified public access facilities would either be mitigated to below a level of significance through the required measures specified in each individual section or the impact would be temporary. Because potential environmental impacts would be mitigated or temporary as identified in this Program EIR, **a less than significant impact related to the construction or expansion of recreational facilities that may have an adverse physical effect on the environment would result (Threshold A).**

Elements of proposed improvements to public access are designed to improve trail and pathway conditions, increase connectivity with existing trail networks and local pathways, and increase safe public access throughout the area. Actions such as trail realignments, creation of trail access points, establishment of new trail alignments, improvements along roadways, and other pedestrian and bicycle facility improvements could require the temporary closure of trails and pathways or portions of those facilities to maintain adequate public safety.

The closure of user-generated trails is considered important for a variety of reasons. The unmaintained and undesignated paths result in public safety concerns. Additionally, the trails may pass through areas of natural and/or sensitive habitat that may include nesting areas of listed birds. The closure of user-generated trails would allow the opportunity for those habitats to be reestablished. The purposeful closure of user-generated trails would eliminate these points of public access through the area; however, these are unofficial and non-maintained alignments. The public access improvements proposed as part of the project would serve to provide more access and connection points in a safe and logical manner throughout the area. Thus, the closure of user-generated trails would not cause substantial impediment to public access while benefiting the restoration of habitat and enhancing public safety and overall access.

New trails and trail realignments, such as the Hilltop Trail improvements and Marsh Trail realignment, are proposed for multiple purposes including the opening of new areas to public access, increased connectivity and linkages, and movement of trails away from sensitive biological resources and/or to locate the trail in a more geologically stable and safe alignment with consideration to projected rates for sea level rise. The new trails and trail realignments have the potential to increase connectivity to the local trail network by providing linkages to other trail systems nearby. Trails would be planned and engineered in accordance with applicable planning documents that provide guidance on trail design, such as the Draft TPSNR Trail Management Plan (State Parks 2005). This draft plan serves as a long-term, guiding document to construct trail improvements, as well as maintain or repair existing trails, within TPSNR. Additionally, the State Parks Trails Handbook would be used to ensure that adequate and often enhanced protection for cultural and natural resources is provided. The State Parks Trails Handbook also provides guidelines for layout and design, construction, and maintenance of trails (State Parks 2019). Consistency with other planning documents would also be important in new or realigned trail planning, such as State Parks' San Diego Coastal State Park System General Plan (State Parks 1984), and the NCC PWP/TREP.

The California Coastal Act has regulations specific to public access and recreation. Trails that may be temporarily closed for public safety do not provide direct coastal access. Additionally, once completed, the proposed project improvements to the public access network in the local area would provide increased access to the coastal area through more and better facilities, more interconnectivity to other local and regional trails and pathways, and increased safety for pedestrians and bicyclists. Thus, the proposed project would not conflict with public access policies outlined in Article 2 and Article 6 (Section 20252) or recreation policies outlined in Article 3 of the California Coastal Act.

Temporary closure of portions of the officially designated Marsh Trail would preclude trail use during the construction period for public safety. However, closures would be short term, and hikers could use other trails in the local area, including those in TPSNR. The volume of recreationalists that may use other trails as a result of the Marsh Trail closure is not anticipated to be of a magnitude to

substantially impact the physical condition of other trails or recreation facilities. The Marsh Trail is currently utilized by a small number of recreationalists since access from the South Beach parking lot and Torrey Pines State Beach is fragmented and often dangerous (*i.e.,* heavy vehicular traffic on North Torrey Pines Road). Once complete, new trails and realigned trails would increase the amount of recreational hiking around the Lagoon.

The proposed project includes multiple public access improvements related to new or enhanced trailheads and access points that would provide safe and convenient locations for recreationalists to begin their hikes/bike rides and increase the connectivity to the existing local trail system to promote non-vehicular travel within the region. Trailhead improvement may include features such as information kiosks and entrance signs, and create linkages and wayfinding opportunities to other local and regional trail networks. The majority of such improvements would be in unimproved, disturbed, or developed locations to minimize potential for impacts and determined at project-level design in consultation with the appropriate planning documents (*e.g.,* Draft TPSNR Trail Management Plan).

Proposed access improvements also include multiple projects associated with pedestrian and bike facilities along roadways or in already developed locations such as Highway 101, Carmel Valley Road, and Sorrento Valley Road. These types of proposed projects have a wide variety of purposes including minimizing safety issues for pedestrian, bicycle, and vehicle traffic by separating pedestrian and bicycle traffic from vehicle lanes; improved parking for better public access to the coast and Lagoon; improved flow in and out of the South Beach parking lot to reduce safety issues; roadway shoulder improvements to accommodate pedestrian and bicycle activity along the lagoon perimeter; and completion of connections between currently unconnected portions of the local pedestrian and bicycle network; among others. Many of the proposed public access projects along roadways would be contingent on, and coordinated with, planned roadway improvements. Coordination with applicable agencies with jurisdiction over the roadways (*e.g.,* City) would be required. Temporary closure of portions of the roadside pedestrian/bicycle facilities would be necessary for construction. During times of closure, appropriate actions would be taken to ensure safe and continued public access through measures in the required Traffic Control Plan (Table 3-5, Standard Construction Practices).

As described in the analysis above, temporary closures during construction may cause recreationalists to use other trail or pathway facilities. However, this potential short-term closure of trails would not preclude or hamper the ability of recreationalists to use other recreational facilities in the local area. The short-term closures of trails would not be of the magnitude or duration to cause substantial loss of recreation opportunity. **A less than significant impact related to the loss of recreational use areas or lessened recreational use would result (Threshold B).**

4.2.2.3 Vector Management

Proposed Vector Management Activities would involve projects to reduce viable breeding habitat for mosquitos within and around Los Peñasquitos Lagoon with priority given to *Culex tarsalis. C. tarsalis* is a priority target species for the San Diego County's DEH due to its ability to transmit brain encephalitis to human hosts coupled with its population densities within the County's wetland areas that include Los Peñasquitos Lagoon. Vector Management Activities under the proposed project focus on improved water conveyance to reduce areas of stagnated waters that facilitate vector breeding and include improvements to road culverts, modifications to storm drain outfalls, and

reducing residency time of areas inundated by dry weather nuisance flows of freshwater that contribute to vector breeding. Vector management would not include the construction of new or expanded recreation facilities and would not affect recreation or public access in the area. Thus, **a less than significant impact related to recreation and public access would result (Thresholds A and B).**

4.2.3 Significance of Impacts

Table 4.2-1 summarizes the public access and recreation impact conclusions identified at this programmatic level in the Impact Analysis for each impact threshold.

Table 4.2-1. Summary of Public Access and Recreation Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements	Vector Management
A. Include recreational facilities or require the construction or expansion of recreational facilities which may have an adverse physical effect on the environment.	Less than Significant	Less than Significant	Less than Significant
B. Result in loss of recreational use areas or lessen recreational use.	Less than Significant	Less than Significant	Less than Significant

4.2.4 Mitigation Measures

Environmental impacts related to the construction of new or improved public access and recreational trails are described in each of the topic sections and mitigation is required as necessary. No significant impacts were identified for public access and recreation at this program-level analysis and no additional mitigation measures are required.

4.3 HYDROLOGY

Hydrology of the Lagoon is driven by inputs from the larger watershed, as well as more localized effects of the lagoon channel system and ocean inlet. Coastal processes drive hydrology outside of the inlet along the coast, such as sediment movement and distribution in the nearshore and influence water quality parameters within lagoon channels depending on inlet shoaling. Existing conditions for hydrology within Los Peñasquitos Lagoon and its watershed are described in Sections 2.2.2 and 2.2.7. This section describes potential effects of lagoon enhancement, public access improvements, and vector management related to hydrology within the Lagoon, within the project area specifically, and at potential materials disposal sites, including the coastal area. Improvements to the watershed and upstream drainage are not included as part of the proposed project; this discussion therefore focuses on impacts of the proposed activities on the Lagoon itself. It should be noted that proposed project elements were integrated into the Los Peñasquitos Watershed WQIP to provide a comprehensive approach linking watershed improvements with lagoon restoration and enhancement.

4.3.1 Impact Thresholds

Would the proposed project:

A. Result in a substantial increase in impervious surfaces and associated increased runoff;

B. Lead to substantial alteration to on- and off-site drainage patterns due to changes in runoff flow rates or volumes;

C. Cause substantial alteration of the existing drainage pattern of the site, including through the alteration of the course of a stream or river or increase in flow velocities, in a manner which would result in substantial scour or erosion that causes instability of slopes, river control berms, adjoining roadway embankments, or bridge abutments;

D. Result in substantial increase in the flow rate or amount (volume) of surface runoff in a manner that would result in flooding on or off site, causing damage to structures or exposing the public to substantial risk;

E. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

F. Increase risks of damage to coastal resources, including inundation by storm surge, wave uprush or sea level rise.

The impact thresholds used for hydrology are partially based on those outlined in CEQA, Appendix G, along with others that have been added or modified to best analyze potential effects from a project of this nature.

4.3.2 Impact Analysis

Restoration activities within the Lagoon would require the excavation and/or disposal of sediment and vegetation from wetland and riparian areas within the Lagoon. The extent of grading and other

ground disturbance within the Lagoon would be determined during project-level design but would be focused on increasing the hydraulic efficiency of the Lagoon and enhancing wetland habitat functions. Stockpiling and disposal of excavated materials may also be incorporated into the proposed project with potential beneficial reuse elements within TPSNR (*e.g.,* excavated sand used for beach nourishment). Localized protection of areas susceptible to erosion and/or scour may be required as part of project design (*e.g.,* at storm drain inlets or sediment management locations). Trail relocations and enhancements to public access, as well as Vector Management Activities, may also require localized stabilization. As discussed in Chapter 3, no structures would be built as part of the proposed project, and proposed trails would be constructed consistent with State Parks and/or City guidelines. Construction and post-construction phases of the proposed project have the potential to affect hydrology and are analyzed by threshold below.

4.3.2.1 Lagoon Restoration and Enhancement

Lagoon enhancement and restoration would actively enhance the fluvial and tidal efficiency of the Lagoon by creating channels to convey flows, thereby reducing impoundment of dry weather freshwater inflows to the Lagoon from urban areas, attenuation of flood waters from storm runoff, and increasing tidal extent from the ocean into the interior of the Lagoon. Localized sediment management facilities and protection to stabilize areas that could be subject to erosion (*e.g.,* rock slope protection) would not be substantial and would not result in a substantial increase in impervious surfaces within the Lagoon. The proposed project would not result in a substantial increase in impervious surfaces or associated increased runoff, and **a less than significant impact would occur (Threshold A).**

Drainage patterns within the Lagoon would be intentionally modified, as noted above, to increase hydrologic connectivity with the ocean. While the drainage patterns of the Lagoon would be altered by the proposed project, the resulting changes to flow rates or volumes would not cause hydrologic impacts per the CEQA Thresholds as listed under 4.3.1; rather, these changes would serve to improve hydrologic efficiency of the Lagoon. No additional runoff would be added to the system by these changes. Areas identified for localized protection against scour or erosion would be appropriately designed to avoid slope or structure instability, as required (PDF #1). Thus, implementation of the proposed project would not lead to substantial alteration to on- and off-site drainage patterns due to changes in runoff flow rates or volumes or cause substantial alteration of the existing drainage pattern of the site in a manner that could cause instability of slopes, river control berms, adjoining roadway or railway embankments, or bridge abutments, and **a less than significant impact would occur (Thresholds B and C).**

Current FEMA mapping for the Lagoon identifies much of TPSNR and adjacent areas as subject to floods (Figure 2-13). Specific changes to the potential for flooding of adjacent structures would be identified during the design phase of proposed project components, but enhancement objectives are to reduce flooding, and increases in the potential for flooding are not anticipated. No additional runoff water would be added to the system through the implementation of lagoon enhancement activities. The proposed project would not result in a substantial increase in the flow rate or amount (volume) of surface runoff in a manner that would increase flooding or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial

additional sources of polluted runoff. **A less than significant impact would result from proposed project implementation (Thresholds D and E).**

As part of lagoon enhancement, materials disposal from sediment excavation and/or inlet maintenance may result in sand placement on the beach or in the nearshore. Adding sand to the system and/or creating a nearshore structure to reduce wave action on the beach/shoreline would reduce storm surge inundation and wave uprush and would provide some temporary additional protections against the effects of sea level rise on adjacent roadways/parking facilities. **No impacts would occur due to increased risks of damage to coastal resources (Threshold F).**

4.3.2.2 Public Access Improvements

Public access improvements would focus on providing additional formal public access along the Lagoon perimeter through trail relocations and additions and parking and interpretive opportunities. Existing unauthorized trails would also be closed and restored to preserve sensitive resources. Trail surfaces would be consistent with State Parks and City guidelines and would primarily have permeable surfaces; parking and interpretive infrastructure would be located along existing roadways and trailheads to minimize additional paved surfaces and changes to drainage. Localized sediment management facilities and protection to stabilize areas that could be subject to erosion would not be substantial and would not result in a substantial increase in impervious surfaces, or substantial alterations to drainage patterns. Public access improvements would not result in a substantial increase in impervious surfaces or associated increased runoff, and **a less than significant impact would occur (Threshold A).**

Implementation of the proposed project would not lead to substantial alteration to on- and off-site drainage patterns due to changes in runoff flow rates or volumes or cause substantial alteration of the existing drainage pattern of the site in a manner that could cause instability of slopes, river control berms, adjoining roadway or railway embankments, or bridge abutments, and **a less than significant impact would occur (Thresholds B and C).**

Public access improvements may result in slight changes to localized drainage patterns along trail segments or existing roadways, but would not result in a substantial increase in the flow rate or amount (volume) of surface runoff in a manner that would increase flooding, or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. **A less than significant impact would result from proposed project implementation (Thresholds D and E).**

No public access improvements would be located on the sandy beach. Improvements connecting parking on the west of the roadway to the Lagoon would extend east and not affect existing conditions of inundation associated with storm surge or wave uprush. The proposed project would not affect existing risk of damage to coastal structures due to sea level rise. **No impacts would occur due to increased risks of damage to coastal resources (Threshold F).**

4.3.2.3 Vector Management

Vector management would focus on improving stormwater conveyance through existing storm drain outlets into the Lagoon and reducing areas of stagnation within the Lagoon, particularly in areas of freshwater influence that can support breeding of freshwater mosquitos that can serve as vectors for human disease. Localized sediment management facilities and protection to stabilize storm drain inlets identified for improvement in vector management areas would not be substantial and would not result in a substantial increase in impervious surfaces. Drainage patterns would be altered, but in a way to enhance drainage; changes would not substantially increase runoff flow rates or change runoff volumes, and ultimately water surface elevations in these localized areas would be lowered, reducing the potential for flooding adjacent structures. Vector management would not result in a substantial increase in impervious surfaces or associated increased runoff, and **a less than significant impact would occur (Threshold A)**.

Implementation of proposed improvements would not lead to substantial alteration to on- and off-site drainage patterns due to changes in runoff flow rates or volumes or cause substantial alteration of the existing drainage pattern of the site in a manner that could cause instability of slopes, river control berms, adjoining roadway or railway embankments, or bridge abutments. Vector management projects may result in slight changes to localized drainage patterns at drainage culverts or outfalls, but would not result in a substantial increase in the flow rate or amount (volume) of surface runoff in a manner that would increase flooding, or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. **A less than significant impact would result from proposed project implementation (Thresholds B, C, D, and E).**

Vector Management Activities would not be located on the sandy beach and would not affect existing conditions of inundation associated with storm surge or wave uprush, nor increase existing risk of damage to coastal structures due to sea level rise. **No impacts would occur due to increased risks of damage to coastal resources (Threshold F).**

4.3.3 Significance of Impacts

Table 4.3-1 summarizes the hydrology impact conclusions identified at this programmatic level in the Impact Analysis for each impact threshold.

4.3.4 Mitigation Measures

No significant hydrology impacts would result from the proposed project at this program-level analysis and no mitigation measures are required.

Table 4.3-1. Summary of Hydrology Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements	Vector Management
A. Result in a substantial increase in impervious surfaces and associated increased runoff.	Less than Significant	Less than Significant	Less than Significant
B. Lead to substantial alteration to on- and off-site drainage patterns due to changes in runoff flow rates or volumes.	Less than Significant	Less than Significant	Less than Significant
C. Cause substantial alteration of the existing drainage pattern of the site, including through the alteration of the course of a stream or river or increase in flow velocities, in a manner which would result in substantial scour or erosion that causes instability of slopes, river control berms, adjoining roadway embankments, or bridge abutments.	Less than Significant	Less than Significant	Less than Significant
D. Result in substantial increase in the flow rate or amount (volume) of surface runoff in a manner that would result in flooding on or off site, causing damage to structures or exposing the public to substantial risk.	Less than Significant	Less than Significant	Less than Significant
E. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	Less than Significant	Less than Significant	Less than Significant
F. Increase risks of damage to coastal resources, including inundation by storm surge, wave uprush or sea level rise.	No impact	No impact	No impact

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4.4 WATER QUALITY AND SEDIMENT MANAGEMENT

Water quality in Los Peñasquitos Lagoon is affected by many different factors, including input from the upstream watershed, wastewater discharges, and tidal exchange, and is critical for the overall health of the Lagoon. This section describes potential effects of lagoon enhancement, public access improvements, and vector management related to water quality and sediment management within the Lagoon. Some discussion provided in this section overlaps slightly with Section 4.3, Hydrology, and references are made to that section where appropriate. Existing conditions for water quality are discussed in Section 2.2.8.

4.4.1 Impact Thresholds

Would the proposed project:

A. Result in a violation of water quality standards or waste discharge requirements or degradation of beneficial uses in Los Peñasquitos Lagoon;

B. Substantially degrade water quality in the Lagoon by increasing sedimentation, leading to a violation or degradation of water quality standards or beneficial uses; or generate pollutions in violation of such standards; or

C. Alter circulation patterns in the Lagoon in a way that inhibits mixing or promotes stagnation.

The impact thresholds used for water quality and sediment management are partially based on those outlined in CEQA, Appendix G, along with others that have been added or modified to best analyze potential effects from a project of this nature.

4.4.2 Impact Analysis

Proposed Restoration and Enhancement Activities within the Lagoon would require the excavation and/or disposal of sediment and vegetation from wetland and riparian areas within the Lagoon. The extent of grading and other ground disturbance within the Lagoon would be determined during project-level design but would be focused on increasing the hydraulic efficiency of the Lagoon and providing water quality improvements through wetland restoration to meet TMDL requirements as described in Table 2-5. Replacement and enhancement of existing storm drains would also occur in some locations to reduce impoundment and stagnation and enhance water quality. Trail relocations and enhancements to public access would remove existing and unauthorized trails currently traversing sensitive wetland areas; new or relocated trails and public access would be aligned in upland terraces around the Lagoon. Construction and post-construction phases of the proposed project have the potential to affect water quality in the Lagoon and are analyzed by threshold below.

4.4.2.1 Lagoon Restoration and Enhancement

Lagoon enhancement and restoration would actively enhance the fluvial and tidal efficiency of the Lagoon by reducing impoundment of freshwater inflows to the Lagoon and increasing tidal extent from the ocean into the interior of the Lagoon. A majority of the enhancements would be implemented

to support compliance with the lagoon target set by the Los Peñasquitos Lagoon Sediment TMDL established by the RWQCB in 2016. Restoration and enhancement actions would be designed to address existing water quality issues within the Lagoon, such as high nutrient levels, increased sedimentation rates, low DO and salinity, and freshwater impoundment. Implementation of these actions would reduce the potential for water quality standards violations and would not cause degradation of beneficial uses in the Lagoon. Ultimately, circulation in the Lagoon would be enhanced for both tidal and fluvial flows, and areas of stagnation or freshwater impoundment (*e.g.,* storm drains or nuisance dry weather freshwater inflows) would be reduced and/or eliminated. As part of Lagoon enhancement, materials disposal from sediment excavation and/or inlet maintenance may result in sand placement on the beach or in the nearshore. Sand or materials added to the littoral system would have to comply with existing regulations that include the EPA's Inland Testing Manual. The proposed project would not result in a violation of water quality standards or waste discharge requirements or degradation of beneficial uses in Los Peñasquitos Lagoon, nor would circulation patterns in the Lagoon inhibit mixing or promote stagnation; **a less than significant impact would occur (Thresholds A and C).**

Construction of some of the Lagoon restoration and enhancement components would require excavation and exposure of soils within the Lagoon. Materials disposal from sediment excavation and/or inlet maintenance may also result in sand placement on the beach or in the nearshore, or on-site disposal. Adding sand to the system and/or creating a nearshore structure to reduce wave action on the beach/shoreline would introduce material to the ocean, but material would be primarily sandy and would settle and mix with sand already in the beach and surf/nearshore zones relatively quickly.

Construction activities associated with vegetation and sediment excavation and/or materials disposal, as well as access road or staging area grading, have the potential to impact lagoon water quality through the release of pollutants such as sediment, oils and grease, and trash and debris. Construction in wetland areas could result in temporary increased turbidity and sedimentation or excess vegetative material in the water column. Upland soil disturbance from access roads or staging areas would expose soils and make them susceptible to erosion and sedimentation into surface waters. While some sedimentation could occur during construction activities and until lagoon soils stabilize post-construction, the proposed project would be required to comply with existing applicable regulations (*e.g.,* Municipal Permit, Construction General Permit) to minimize pollutant transport during construction activities. The development of a Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Program would be required, as identified in Table 3-5, Standard Construction Practices, for project work. Within these documents, BMPs must be identified to protect water quality, minimize erosion, prevent pollutant discharge, and minimize sediment transport during construction. Implementation of identified BMPs would minimize the effects of sedimentation on adjacent and downstream areas consistent with stormwater regulations. Specific BMPs would be dependent on construction needs, but could include silt curtains, filtration devices, flocculants, jute netting, silt fences, fiber rolls, soil binders or hydraulic mulch, and stabilized access roads and construction entrances, *etc.* In addition to BMPs that would be required, several project design features would also be implemented during construction activities to minimize erosion potential. For example, a series of PDFs have been incorporated into the proposed project to ensure slopes and exposed soils are planted and maintained to reduce erosion potential, including adequate drainage and erosion-control treatments such as jute mesh fiber rolls (PDFs #1, #2, and #3). Although increased turbidity within the Lagoon would be expected during active construction within hydraulically

connected wetland areas (*e.g.,* during earthwork or dredging), the generation of turbidity would be minimized through implementation of BMPs in accordance with existing regulations. Nutrients could potentially become suspended within these areas of localized turbidity, temporarily increasing the potential for eutrophic conditions to develop within the Lagoon. Outside of the lagoon inlet, the nearshore area is shallow and naturally turbid due to wave and wind action; turbidity would dissipate quickly from mixing and dilution. However, because the Lagoon has a defined TMDL for sedimentation, **temporary turbidity within lagoon channels generated by Lagoon Restoration and Enhancement Activities, most specifically the removal of sediment within wetland areas during construction, would be considered a potentially significant temporary impact under CEQA (Threshold B).**

Post-construction, water quality in the Lagoon would be improved compared to existing conditions, including with respect to sedimentation. Areas within expanded or new channels would be monitored and maintained as needed due to increased flow or scour potential. No additional pollutant sources would be added to the system once restoration and enhancement of the Lagoon is complete and no degradation of the water quality standards or beneficial uses would occur. The completed project would not substantially degrade water quality in the Lagoon by increasing sedimentation, leading to a violation or degradation of water quality standards or beneficial uses; or generate pollution in violation of such standards; **a less than significant permanent impact would occur (Threshold B).**

4.4.2.2 Public Access Improvements

Public access improvements would focus on providing additional formal public access along the Lagoon perimeter through trail relocations and additions, and parking and interpretive opportunities. Existing unauthorized trails would also be closed and restored to preserve sensitive resources. New and relocated trail surfaces would be consistent with State Parks and City guidelines and would primarily have stabilized permeable surfaces. Parking, pedestrian, and bicycle paths adjacent to roads, and interpretive infrastructure would be located along existing roadways and trailheads to minimize additional paved surfaces. Additional areas of impervious surfaces would be designed to drain appropriately and would include Low Impact Development elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. Restored unauthorized trails would reduce the potential for erosion and sedimentation into the Lagoon compared to existing conditions as vegetation would be reestablished and replace the current exposed soils of the trails. Public access improvements would not result in violations of water quality standards or degradation of beneficial uses in Los Peñasquitos Lagoon, and a **less than significant impact would occur (Threshold A).**

Proposed trail surfaces would be consistent with State Parks and City regulations, including appropriate permeable surfaces and drainage, and would not contribute to sedimentation or generate pollutants compared to existing conditions. Implementation of public access improvements would not substantially degrade water quality in the Lagoon by substantially increasing sedimentation, leading to a violation or degradation of water quality standards or beneficial uses, or generate pollutions in violation of such standards; **a less than significant impact would occur (Threshold B).**

Public access improvements would be located outside of the Lagoon wetland areas. Proposed improvements include the elimination of unauthorized existing trails that currently traverse sensitive

wetland areas and allow those areas to be restored to higher--functioning Lagoon habitats. Because public access improvements would occur outside of the Lagoon (with the exception of user-generated trail closures) circulation patterns of the lagoon system would not be affected by public access improvements, as proposed, and **no impact would occur (Threshold C).**

4.4.2.3 Vector Management

Vector management projects would focus on improving existing storm drain outlets into the Lagoon and reducing areas of stagnation within the Lagoon, improving circulation in localized areas. Changes would not result in the introduction of additional sedimentation or pollutants to the Lagoon and would improve water quality through improved circulation in areas identified for Vector Management Activities. Vector management would not result in a violation of water quality standards or waste discharge requirements or degradation of beneficial uses in Los Peñasquitos Lagoon or substantially degrade water quality in the Lagoon by increasing sedimentation, leading to a violation or degradation of water quality standards or beneficial uses; or generate pollutions in violation of such standards, and a **less than significant impact would occur (Thresholds A and B).**

Circulation would be altered within localized areas of the Lagoon to reduce existing areas of stagnation. Circulation patterns would not be altered in a way that inhibits mixing or promotes stagnation; **no impact would occur (Threshold C).**

4.4.3 Significance of Impacts

Table 4.4-1 summarizes the water quality impact conclusions identified at this programmatic level in the Impact Analysis for each impact threshold.

Table 4.4-1. Summary of Water Quality Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements	Vector Management
A. Result in a violation of water quality standards or waste discharge requirements or degradation of beneficial uses in Los Peñasquitos Lagoon.	Less than Significant	Less than Significant	Less than Significant
B. Substantially degrade water quality in the Lagoon by increasing sedimentation, leading to a violation or degradation of water quality standards or beneficial uses; or generate pollutions in violation of such standards.	Potentially Significant (temporary)	Less than Significant	Less than Significant
C. Alter circulation patterns in the Lagoon in a way that inhibits mixing or promotes stagnation.	Less than Significant	No Impact	No Impact

4.4.4 Mitigation Measures

A number of project design features that minimize erosion and the release of pollutants into the environment have been incorporated into the proposed project (*e.g.,* planting manufactured slopes, stabilizing slopes, requiring preparation of a SWPPP); however, the following mitigation measures are required for CEQA significant impacts related to turbidity. With implementation of Water

Quality-1, impacts identified at this program-level analysis would be reduced to below a level of significance.

Water Quality-1

Compliance with regulatory requirements intended to address turbidity impacts (*e.g.*, Construction General Permit, Municipal Permit) shall be implemented to ensure impacts would be reduced to a less than significant level. Compliance with those permit conditions shall be monitored through the construction monitoring program and the contractor shall certify to the engineer of record that they have been completed.

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4.5 GEOLOGY/SOILS

Geological resources consist of the geology, soils, and topography of a given area. Geology generally includes bedrock materials and mineral deposits. Soil refers to unconsolidated earthen materials overlying bedrock or other parent material. The principal geologic factors influencing the stability of built structures are soil stability and seismic properties. The geologic and soils characteristics of the project site are generally not dynamic and would not be subject to substantial change within a moderate timeframe. Existing conditions for geology and soils are discussed in Section 2.2.9.

4.5.1 Impact Thresholds

Would the proposed project:

A. Expose people or structures (including infrastructure) to geologic hazards such as earthquakes due to rupture of a known earthquake fault delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist or any other known faults, landslides, mudslides, ground failure, or similar hazards;

B. Result in a substantial increase in wind or water erosion of soils, either on or off the site; or

C. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.

The impact thresholds used for geology and soils are partially taken from those outlined in CEQA, Appendix G, and modified to appropriately address a project of this nature.

4.5.2 Impact Analysis

This section discusses the environmental impacts related to geology and soils associated with lagoon restoration and enhancement, public access improvements, and vector management.

4.5.2.1 Lagoon Restoration and Enhancement

Southern California is a region that is seismically active and subject to strong seismic-induced ground shaking. Los Peñasquitos Lagoon is not within an Alquist-Priolo Earthquake Fault Zone but is underlain by mapped faults and is approximately 2.5 miles northeast of the active Rose Canyon Fault (California Department of Conservation 2019). While the potential for seismic-related risks such as rupture, ground shaking, or ground failure exists at and around Los Peñasquitos Lagoon, the proposed Restoration and Enhancement Activities would not increase the potential for seismic activity or resulting geologic hazards. Lagoon Restoration and Enhancement Activities, such as channel modifications and improvements, sediment management, riparian corridor enhancement, wildlife corridor enhancement, focused grading, inlet improvements, floodplain restoration, construction of treatment wetlands, and living shoreline implementation would require ground-disturbing activities but would not increase seismic risk or hazards. Restoration and Enhancement Activities that involve

ground disturbance would typically be limited to portions of the Lagoon basins and hydraulic connections that are generally underlain by loose marine and alluvial deposits. Grading activities may create terraced or sloping terrain to accommodate habitat needs but would not create or modify steep slopes that would be susceptible to landslides or increase the risk for landslides on or off site. Additionally, built structures that accommodate public activities that could be subject to seismic risks are not proposed. Design of enhancement and restoration components would be required to adhere to applicable codes and regulations relative to seismic safety. Thus, **a less than significant impact related to geologic hazards would result (Threshold A)**.

As described in Section 2.2.9, the soils outside Los Peñasquitos Lagoon's floodplains are considered to have "severe" erosion potential (see Figure 2-14). Ground-disturbing activities, including sediment removal, would largely be confined to the interior of the lagoon basins and within channel areas where the exposure to and potential for wind erosion is limited because of the generally damp soil conditions. If soil conditions are not damp, PDF #23 has been incorporated into the proposed project to reduce fugitive dust during construction activities. The proposed project would be required to comply with applicable permit regulations (*e.g.,* Municipal Permit, Construction General Permit) to minimize temporary on-site or off-site erosion during construction activities. The Construction General Permit requires the development of a project SWPPP that identifies BMPs that would be used to minimize erosion during construction. The BMPs contained in the SWPPP would be developed and implemented by the contractor in compliance with existing regulations, and implementation of those appropriately designed BMPs, such as silt fences, gravel bag barriers, hydraulic mulch, soil binders, stabilized access roads and construction entrances, and/or other erosion control products, would reduce erosion potential by protecting the susceptible soil. PDFs #1, #2, and #3 listed in Table 3-4 requiring revegetation and erosion control methods for exposed soils would also be implemented during construction activities to minimize sediment movement and erosion potential. Minor channel bank erosion (primarily caused by rainfall) would likely be captured within interior tributaries of the Lagoon and this, along with short-term sloughing and rounding of underwater contours, would be part of the naturalizing process following construction. As stated in Table 3-5, Standard Construction Practices, as part of permanent erosion control, specific areas of lagoon channel cross sections subject to erosion would be protected with erosion control products (*i.e.,* riprap) and vegetated material, as necessary, to stabilize soils and foster natural recruitment from restoration planting, thus managing erosion during higher-velocity storm flows and preventing damage. The establishment of vegetation and habitats would aid in the stabilization of exposed soils and reduce long-term erosion potential. Thus, while the proposed grading activities necessary within the Lagoon would result in potential erosion as detailed above, the actions are intentional to achieve improved hydrologic efficiency and would be minimized to avoid impacts in exceedance of the CEQA Thresholds as listed under Section 4.5.1. With adherence to permit requirements and SWPPP BMPs, **a less than significant impact related to a substantial increase in wind or water erosion of soils, either on or off the site would result (Threshold B)**.

Section 2.2.9 describes the underlying geologic formations surrounding the Lagoon as highly susceptible to erosion and other geologic hazards such as landslide and slope failures. The Lagoon is underlain by marine or river sand to a depth of more than 50 feet, covered in most areas by approximately 6 feet of fine silts and clays. Four types of soils occur within the Lagoon. Silts and clay are the predominant soil types within the Lagoon's eastern channels, while sand from coastal sources is the predominant sediment type within the inlet area. Terrestrial soils within the Lagoon tend to be

a mix of sandy substrate, loamy soil (a mixture of sand, silt, and clay), and areas of clay that help to create the Lagoon's salt pannes. Lagoon Restoration and Enhancement Activities would involve ground disturbance and sediment removal from the lagoon basins and channels; however, these actions would not change or modify the type or conditions of the underlying soils and geology that could increase the susceptibility of the project site to unstable conditions. Expansive soils are those that have high shrink-swell behaviors as they can absorb large volumes of water and swell and then shrink when water is drawn away. These soil types, often clay-based soils, can cause damage to building foundations, slabs, sidewalks, and other structures. While clay-based soils are present in the Lagoon basins, soils within the Lagoon are, by nature, saturated soils. As such, expansion would not occur within these soils. Lagoon soils would have the potential to shrink once dredged materials are removed from the Lagoon and allowed to dry. As a part of the permitting process, BMPs specific to the condition of each area would be developed as necessary. The actions included in lagoon restoration and enhancement would not create conditions that could increase potential for geologic hazards such as on-site or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. Design of enhancement and restoration components would be required to adhere to applicable codes and regulations relative to seismic safety. Thus, **a less than significant impact related to unstable geologic conditions including on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse would result (Threshold C)**.

4.5.2.2 Public Access Improvements

Elements of proposed improvements to public access could require ground-disturbing activities. Actions such as trail realignments, creation of trail access points, establishment of new trail alignments, improvements along roadways, and other pedestrian and bicycle facility improvements could require excavation, fill, compaction, or other ground-altering activities.

The potential for seismic-related risks such as rupture, ground shaking, or ground failure exists at and around Los Peñasquitos Lagoon. Public access improvements would not include the construction of buildings or other similar structures; however, certain elements of access and trail improvements could be at risk from geological hazards related to seismic activity. For example, new or realigned trails on steep terrain could be subject to the effects of liquefaction or landslides, or access improvements that involve roadways could be damaged by seismic shaking, faulting, or other unstable ground conditions. Depending on the action, a geological technical report may be required and would include design standards and recommendations for geologic safety as stated in PDF #4. Public access improvements would be required to meet the appropriate engineering design standards/building codes applicable to the action such as the Uniform Building Code, City code requirements, and/or the Draft TPSNR Trail Management Plan (State Parks 2005). The permitting agency would review the engineering design to confirm that applicable regulatory safety requirements and engineering/building codes are satisfied and comply with standard/code compliance. Regulatory requirements and seismic standards help to ensure that built elements are engineered to best withstand potential damage or risk from geologic hazards. With adherence to geologic safety standards, compliance with applicable regulatory requirements, and proper engineering, **a less than significant impact related to geologic hazards would result (Threshold A)**.

Soils surrounding Los Peñasquitos Lagoon's floodplains are considered to have severe erosion potential that could affect new or realigned trails, particularly those on steep terrain. The stability of

public access elements associated with roadways such as undercrossings or walkways would also be at risk from general erosion potential. Similar to lagoon enhancement and restoration, public access projects would be required to comply with applicable permit regulations (*e.g.,* Municipal Permit, Construction General Permit) to minimize temporary on-site or off-site erosion during construction activities. Additionally, depending on the action, a geological technical report may be required and would include design standards and recommendations for erosion control and stability as stated in PDF #4. Public access improvements would be required to meet the appropriate engineering design standards/building codes applicable to the action such as City requirements related to erosion. Further, PDFs #1, #2, and #3 listed in Table 3-4 requiring revegetation and erosion control methods for exposed soils would also be implemented during construction activities to minimize sediment movement and erosion potential. Establishment of vegetation and habitats would aid in the stabilization of soils exposed during construction and reduce long-term erosion potential. With adherence to permit requirements, SWPPP BMPs, and other applicable erosion control requirements, **a less than significant impact related to a substantial increase in wind or water erosion of soils, either on or off the site would result (Threshold B)**.

Ground-disturbing activities associated with public access improvements could increase the susceptibility of the project area to unstable conditions including on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Public access improvements around Los Peñasquitos Lagoon have the potential to be located on expansive soils; however, paved or other solid surfaces such as improvements associated with roads or other facilities such as undercrossing or culverts have the potential to be impacted by the shrink/swell behavior of expansive soils. Potential damage and risk associated with expansive soils can be minimized through proper engineering and adherence to regulations such as those required by the Uniform Building Code or the City. Actions such as grading for new or realigned trails or other pedestrian accommodations or excavating for facilities such as an undercrossing or culverts would disturb the supporting soils and increase risk of failure due to unstable soil conditions. As a part of the permitting process and/or geotechnical studies, BMPs specific to the condition of each activity area would be developed as necessary, such as slope stabilization measures, compaction or fill requirements, and limited slope ratio, among others. Design of public access improvements would be required to adhere to applicable codes and regulations relative to unstable soil conditions. While geologic risks could result from unstable soil conditions, with proper engineering and adherence to applicable codes, regulations, and BMPs, the possible impacts related to public access improvements would be minimized. Thus, **a less than significant impact related to unstable geologic conditions including on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse would result (Threshold C)**.

4.5.2.3 Vector Management

Some of the proposed Vector Management Activities, such as improvements to road culverts, modifications to storm drain outfalls, and reducing impounded water in areas may require excavation and ground disturbance into underlying soils. Vector management would not include the construction of buildings or other similar public-use structures; however, certain activities would require ground disturbance and placement of infrastructure that could be at risk from geological hazards related to seismic activity. These types of activities are similar in nature and in the same general setting surrounding the Lagoon to those considered in the discussion of public access improvements. In some instances, vector management actions would serve to improve problematic drainage conditions. These

improvements may help to reduce soil erosion due to stormwater or drainage. The potential for impacts would be similar as would the requirements for compliance with appropriate regulations, codes, standards, and other BMPs. Thus, **a less than significant impact related to geology and soils would result (Thresholds A, B, and C)**.

4.5.3 Significance of Impacts

Table 4.5-1 summarizes the geology and soils impact conclusions identified at this programmatic level in the Impact Analysis for each impact threshold.

Table 4.5-1. Summary of Geology and Soils Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements	Vector Management
A. Expose people or structures (including infrastructure) to geologic hazards such as earthquakes due to rupture of a known earthquake fault delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist or any other known faults, landslides, mudslides, ground failure, or similar hazards.	Less than Significant	Less than Significant	Less than Significant
B. Result in a substantial increase in wind or water erosion of soils, either on or off the site.	Less than Significant	Less than Significant	Less than Significant
C. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.	Less than Significant	Less than Significant	Less than Significant

4.5.4 Mitigation Measures

Impacts related to geologic hazards are less than significant due to project BMPs and engineering standards/codes that dictate design standards to avoid or minimize geologic impacts. No significant impacts to geology and soils have been identified at this program-level analysis. Therefore, no mitigation measures are required.

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4.6 BIOLOGICAL RESOURCES

Although it has been subject to much anthropogenic disturbance in the past, the Lagoon supports a variety of native vegetation communities that support a large number of plant and animal species. Vegetation observed in the Lagoon and TPSNR includes a mosaic of saline, brackish, freshwater, riparian, upland and transitional habitats. Many of these communities have been greatly reduced in Southern California. As a result, a number of the plant and wildlife species that rely on them for survival are now threatened with extinction. Coastal salt marsh associated with Southern California lagoons and estuaries is considered particularly valuable as approximately 91% of coastal wetlands in the state of California have been lost to development (California Department of Fish and Game 2001).

Biological resources within the Lagoon consist of vegetation communities, sensitive plant species, and sensitive wildlife species as outlined in Section 2.2.10. As described herein, the Lagoon consists of a mix of saltwater marsh, freshwater marsh, and transitional and upland vegetation communities that provide habitat for a number of sensitive plant and wildlife species. These communities and species have been subject to anthropogenic inputs that have altered the biological resources in the Lagoon for more than a century. The proposed project would aim to enhance overall Lagoon biological resources through lagoon enhancement, public access improvements, and vector management.

The following biological assessment of the proposed project was conducted at the program level. It is expected that additional biological surveys and more detailed assessment will be needed at the project level to generate the necessary environmental assessment documents.

4.6.1 Impact Thresholds

Would the proposed project:

A. Have a substantial adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in the MSCP or other local or regional plans, policies or regulations, or by the CDFW or USFWS;

B. Have a substantial adverse impact on any Tier I Habitats, Tier II Habitats, Tier IIIA Habitats, or Tier IIIB Habitats as identified in the Biology Guidelines of the Land Development manual or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS;

C. Have a substantial adverse impact on wetlands (including, but not limited to, marsh, vernal pool, riparian) through direct removal, filling, hydrological interruption, or other means;

D. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, including linkages identified in the MSCP, or impede the use of native wildlife nursery sites;

E. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan, either within the MSCP plan area or in the surrounding region;

F. Introduce development in areas adjacent to the MHPA that would result in adverse edge effects;

G. Conflict with any state or local policies or ordinances or public resources codes protecting biological resources; or

H. Introduce invasive species of plants into a natural open space area.

The impact thresholds used for biological resources are partially based on those outlined in CEQA, Appendix G, along with others that have been added or modified to best analyze potential effects from a project of this nature.

4.6.2 Impact Analysis

The biological assessment in this Program EIR is based on the planning-level Enhancement Plan. As specific phases and activities from the Enhancement Plan are taken to design, biological assessments will be conducted that may identify significant impacts requiring mitigation measures not included within this Program EIR. Because specific impacts associated with future projects are not known at this time, the CEQA analysis for future projects that would tier off of this Program EIR may identify impacts not anticipated herein. Therefore, other project-specific mitigation measures may be incorporated to minimize impacts and be required for implementation. These assessments will be conducted to meet the applicable federal, state, and local requirements and guidelines. Biological impacts as analyzed below may be permanent or temporary in nature. In the context of the proposed project, permanent conversion of disturbed or lower quality habitats to higher quality wetland habitats would occur within the limits of disturbance. Some impacts may be both temporary (*e.g.,* graded during construction) as well as permanent (*e.g.,* converted to a different type of habitat in the long term); therefore, impacts cannot necessarily be added together. Impact categories are defined below:

> Permanent Impacts: For the purposes of proposed Restoration and Enhancement Activities, long-term changes in the environment are those changes that are anticipated to occur or be maintained over the long term (*i.e.*, intentional conversion of habitat or changes that would remain post-construction when resources have become reestablished, usually 5 to 10 years post-restoration).
>
> Temporary Impacts: Any benefits or impacts considered to have reversible impacts on biological resources can be viewed as temporary. Graded areas would be temporarily impacted during construction, for example, even if they would establish as habitat after construction. Newly planted vegetation would take time to establish and become suitable breeding and foraging habitat. These impacts are therefore considered short-term impacts and would occur to habitats/waters/species but be reversible over 5 to 10 years, as vegetation becomes established. In addition, temporary impacts may be construction related, and may include the generation of fugitive dust during construction and construction-related noise.

4.6.2.1 Lagoon Restoration and Enhancement

Although direct habitat modification is proposed as part of the project, each of the key project components would benefit the overall health of the Lagoon and the candidate, sensitive, or special-status species it supports. The proposed project would provide additional and/or enhanced habitat for the special-status species listed in Tables 2-7 and 2-8 through habitat modification over time. The proposed project includes modifying the dimensions of the Lagoon's main northern and southern channels to improve hydrologic connectivity between the watershed, lagoon, and ocean. Improved connectivity between these three systems would reduce impounded freshwater within the Lagoon associated with both nuisance dry weather flows and floodwaters from storm runoff in a manner that promotes expansion of and supports the health and resiliency of the coastal salt marsh and other native habitats historically present in the Lagoon. Additional grade modifications to further enhance wetlands within the Lagoon and create habitat gradients may also occur, particularly within areas of recent sediment deposition/habitat conversion and freshwater impoundment. The proposed project would also enhance riparian areas, some of which currently support sensitive species. This would primarily involve the removal of non-native invasive species and planting of native riparian species but could include some localized grading to improve water flow through the area. Remaining riparian habitat would have enhanced function due to the removal of non-native invasive species and improvement of upstream freshwater inputs.

These vegetation types and wetlands could support sensitive species that could be subject to temporary impacts associated with project construction. However, over the long term, lagoon functions would be enhanced and improved. Specific sensitive species are described in more detail below.

Plants

Special-status plant species listed in Table 2-7 and described in Section 2.2.10 are known to occur in the Lagoon. Of these, six are likely to be impacted by Lagoon Restoration and Enhancement Activities due to their association with wetland habitats. These include spiny rush, California sea-blite (*Suaeda esteroa*), woolly sea-blite (*Suaeda taxifolia.*), salt marsh daisy, San Diego marsh-elder, and Palmer sagewort. PDFs #18 and #21 would minimize impacts to these species by collecting the seed of surrounding plants through topsoil salvage and native seed use. However, potential impacts from the modification of lagoon channels may occur as a result of the proposed project, which would significantly impact these special-status plant species temporarily during construction.

Also included in Table 2-7 are three federally listed plant species known to occur or have the potential to occur in uplands above the Lagoon: Nevin's barberry (*Berberis nevenii*), Del Mar manzanita (*Arctostaphylos glandulosa ssp. crassifolia*), and Orcutt's spineflower (*Chorizanthe orcuttiana*). Impacts to federally listed species from Lagoon Restoration and Enhancement Activities are not expected because presence of these species is associated with upland habitats and would not be in areas affected by lagoon restoration and enhancement.

Reptiles

Northern red diamond rattlesnake, Coronado Island skink, coast horned lizard (*Phrynosom blainvillii*), two-striped garter snake, and California legless lizard are special-status species that inhabit various transitional and upland habitats in the Lagoon. These species would not be significantly impacted by the proposed project, as the project would not drastically alter available suitable habitat and adequate habitat would remain available during construction.

Birds

Belding's savannah sparrow is a state-listed, nonmigratory bird that inhabits and nests within the coastal salt marsh habitat within the Lagoon. Though the exact acreage changes of coastal salt marsh would be determined on a project-level basis, the proposed project would include modifications to channel banks to improve tidal inundation needed for salt marsh restoration and enhancement in the near term and to facilitate resiliency to climate change through improving opportunities for upslope migration of salt marsh in response to projected sea level rise. It is expected that intercepting freshwater inputs while increasing tidal flows within lagoon channels and over the marsh plain would convert existing areas of brackish inundation and freshwater habitats to salt marsh and other wetland habitats historically present in the Lagoon. Focused grading would occur in select areas to remove invasive grass, lower elevations, and improve drainage of impounded freshwater and storm runoff into the main tidal channels and to bring tidal waters farther back into the eastern reaches of the Lagoon. With the proposed project, salt marsh in Los Peñasquitos Lagoon is projected by habitat trajectory modeling to increase from the existing 158 acres to 232 acres, with a net increase of approximately 74 acres of salt marsh by 2030 and 114 acres by 2050. Each of these key project components would expand and enhance the overall available coastal salt marsh habitat suitable for Belding savannah sparrow foraging and nesting. However, temporary impacts during construction and vegetation recruitment post-restoration may significantly affect Belding's savannah sparrow nesting and/or foraging habitat. PDFs were developed to address these temporary impacts during construction (*i.e.*, PDFs #14, #15, #16, #17, #25, #26, #27, and #28). Indirect impacts from habitat modification are expected to benefit the species through overall expansion and enhancement of suitable habitat. Habitat modification may take a number of years to establish, temporarily impacting the function of Belding's savannah sparrow nesting and/or foraging habitat post-restoration until vegetation has established.

California least tern is a migratory, federally and state-listed endangered species that nests on unvegetated substrates and forages in shallow open water areas and mudflats. Modeling results indicate that areas of brackish marsh within the Lagoon would be replaced by salt marsh conversion zone habitats, such as cismontane alkali marsh and salt panne, both of which were historically present within the Lagoon, with increases from 38 acres to 141 acres in 2030 for an increase of 370% from baseline conditions. The proposed increase of salt panne habitat as well as channel improvements described above would increase and improve foraging opportunities for this species. Salt panne can also be utilized for nesting for listed bird species. Furthermore, this species has not been observed nesting in the Lagoon since the 1980s. Therefore, the proposed project would not have a significant adverse direct impact on this species. Indirect impacts from habitat modification are expected to benefit the species through overall expansion and enhancement of suitable habitat. It is not anticipated that this species would be temporarily

impacted over the time habitat modification is expected to occur or during restoration activities since this species has not recently been observed in the Lagoon.

Light-footed Ridgway's rail is a federally and state-endangered species that generally nests in the lower elevations of coastal salt marsh, and forages in low marsh and unvegetated mudflat habitats. They can also utilize freshwater cattail marsh for breeding and have been observed in freshwater marsh within the Lagoon and upstream of the Lagoon in Los Peñasquitos Canyon. It should be noted that current populations of light-footed Ridgway's rail at the Lagoon are not naturally occurring within the last 50 years but were re-introduced to the Lagoon as fledglings from an active breeding program initiated to re-establish local populations within the region. The proposed project is expected to benefit the species due to overall expansion and enhancement of suitable habitat. Specifically, efforts to restore cordgrass and low marsh would be pursued, which is a valued habitat for light-footed Ridgway's rail and other coastal marsh species. Habitat trajectory monitoring indicates that the proposed project would provide opportunities for salt marsh enhancement and expansion. Improved freshwater management and focused grading would allow for enhancement of existing salt marsh and provide opportunities for upslope migration in response to sea level rise. Enhancement efforts would include removal of invasive and other non-native species, promoting the establishment of native salt marsh plants, and diversifying salt marsh habitats dominated by a single species. Implementation of the above-mentioned habitat modifications may temporarily displace light-footed Ridgway's rail from habitat during construction to available but potentially more confined areas within the Lagoon, resulting in a significant temporary impact to this species. PDFs were developed to address these temporary impacts (*i.e.,* PDFs #14, #15, #16, #17, #25, #26, #27, and #28) but impacts would remain during construction and for a time post-restoration until newly supported vegetation communities are established. Indirect permanent impacts from habitat modification are expected to benefit the species through overall expansion and enhancement of suitable habitat once established.

Least Bell's vireo is a migratory federally and state-endangered species that visits the riparian areas of the Lagoon in the summer months but is not known to nest in the Lagoon. The proposed project would enhance riparian areas within the Lagoon, including removal of non-native invasive species and planting of native riparian species. Some localized grading to enhance water flow through the area may also occur and there could potentially be a net loss of riparian habitat on a project-level basis in exchange for saltmarsh habitat. Vegetation would be removed outside of the breeding season (PDF #16), but there may be a significant temporary impact on the species depending on the availability of remaining habitat during construction of the proposed project and for a time post-restoration until vegetation has established. An overall loss of certain habitat types due to lagoon enhancement actions may occur but remaining riparian habitat would have enhanced function due to the removal of non-native invasive species and sediment and water quality control upstream. Additionally, proposed Lagoon Restoration and Enhancement Activities may provide an opportunity for lower statured riparian plants (*e.g.,* mulefat, sandbar willow) to grow adjacent to the braided channel network, making habitat more suitable for least Bell's vireo nesting. Indirect impacts from habitat modification are expected to benefit the species through overall enhancement of suitable habitat.

Western snowy plover sporadically use the sandy beach adjacent to the inlet and along Torrey Pines State Beach. Monthly monitoring efforts performed at Torrey Pines State Beach and

nearby/within the lagoon inlet have failed to identify the consistent presence of western snowy plover for over a decade most likely due to lack of suitable habitat, heavy use by the public, and predation. Prior to and during sand placement or construction of a living shoreline project, monitoring will be conducted to determine presence or absence of this listed species. Should western snowy plover be present within or adjacent to the project areas, PDF #11 would provide initial guidance for impact avoidance. After construction is complete, the beach may be suitable for use again though site conditions (*e.g.,* public use and predation) would most likely preclude re-establishment of this species. Impacts to this species from implementation of the proposed project are not expected.

Coastal California gnatcatcher is a federally listed threatened species that forages and nests in coastal sage scrub habitat. Temporary construction activities during preparation of access and staging areas could affect suitable habitat even when utilizing disturbed habitat to the extent feasible and conducting removal of vegetation outside the breeding season. PDFs have been incorporated to address these temporary impacts (*i.e.,* PDFs #14, #15, #16, #17, #25, #26, #27, and #28). The proposed project does not include substantial changes to upland undeveloped land, but significant temporary impacts may occur depending on disturbance to suitable habitat with implementation of proposed access/staging areas.

Insects

Wandering skipper utilizes the upper elevations of the coastal salt marsh habitat, and specifically requires saltgrass as a larval host plant. As Restoration and Enhancement Activities would expand and enhance coastal salt marsh habitat, the proposed project is expected to benefit this special-status species. Implementation of the above-mentioned coastal salt marsh habitat modifications would have a significant temporary impact on the species due to relocation during construction. However, the proposed project would not have a significant long-term impact on this species. Saline habitat, including saltgrass, would be improved as a part of the proposed project and would subsequently benefit wandering skipper by providing more suitable breeding habitat. Indirect permanent impacts from habitat modification are expected to benefit the species through overall expansion and enhancement of suitable habitat.

Temporary impacts to sensitive wildlife species present in the Lagoon, and/or those with a high potential to be present, are characterized by impacts to their habitat. The primary concern for temporary loss of habitat is reduced availability of food and shelter for resident and migratory species that rely on the habitat afforded by the Lagoon. While PDFs were incorporated into the proposed project to address these temporary impacts (*i.e.,* PDFs #14, #15, #16, #17, #25, #26, #27, and #28), they would remain during temporary construction activities and post-restoration while habitat establishes or indirectly converts. The proposed project is expected to benefit special-status species from the enhancement and/or expansion of their habitats. However, in the short term, the potential temporary loss of habitat used by sensitive species during construction of Restoration and Enhancement Activities would be considered substantial. Thus**, a temporary significant impact related to a substantial adverse impact on sensitive species would result (Threshold A)**.

Of the Tier I habitats listed in the City Land Development Code Biology Guidelines, sensitive upland habitats (Tier I, II, IIIA, IIIB) occur within the project area including ~~only~~ southern foredunes that occurs in the ~~proposed project~~proposed lagoon restoration and enhancement areas (City of San Diego 2018a~~2~~). ~~No Tier II or Tier IIIA habitats occur in the proposed project area.~~ Non-native grassland is a Tier III habitat that occurs in the proposed lagoon restoration and enhancement~~project~~ area. Wetland and riparian habitats are also considered sensitive by other agencies. On a project-level basis, these habitats may change in acreage within the Lagoon. Construction of Lagoon Restoration and Enhancement Activities could result in temporary impacts to these sensitive habitats associated with soil removal/ movement during grading operations, focused vegetation removal during riparian enhancement, and other project construction activities. The potential temporary impact on sensitive habitats, affecting mostly lower-functioning or disturbed areas, is unavoidable in the process to modify elevations and remove non-native invasive species to achieve the restoration and enhancement habitat goals. The small loss of wetlands due to proposed activities, such as with installation of proposed sediment management facilities, would affect lower-functioning perimeter areas and would be localized. Proposed Lagoon Restoration and Enhancement Activities also have potential to impact upland and riparian areas, although such impacts would most likely result from implementation of proposed Public Access Activities, as analyzed in Section 4.6.2.2. However, it is the goal of the program-level proposed project to increase high value habitats such as coastal salt marsh and native riparian habitat throughout the proposed project area. Potential impacts to sensitive habitats would occur in the process of creating higher value habitats that would be resilient in the long term and high functioning within the Lagoon with no feasible way to avoid disturbance. Impacts to those existing sensitive habitats would be temporary and are considered an acceptable trade-off with higher value habitat creation. Overall, the proposed project would result in a substantial net gain of higher-functioning sensitive habitats. The proposed project plans for conversion of lower tier habitats to higher value tiered habitats and localized impacts may occur, as required, to enhance the overall function of wetland habitats within the Lagoon~~does not propose a conversion of undeveloped land to development~~. As specified in Threshold B, a significant impact would result from the proposed project if it were to cause a substantial adverse impact on designated sensitive habitats. However, improvements would be designed to avoid impacts to sensitive habitats~~southern foredunes~~ to the extent feasible. Potential impacts to non-native grasslands habitat, as well as other wetland and riparian habitat areas would occur in the process of creating higher value habitats that would be resilient for the long term and high functioning within the Lagoon with no feasible way to avoid disturbance. Thus, **a temporary significant impact related to a substantial adverse impact on any Tier I Habitats, Tier II Habitats, Tier IIIA Habitats, or Tier IIIB Habitats or other identified sensitive natural community would result (Threshold B)**.

As described above, direct modification of the distribution of wetland habitats is proposed for restoration and enhancement of the Lagoon. However, each of the key proposed project components directly benefits the overall health of the Lagoon and the ecosystem connectivity and health between contiguous wetland habitats. The ability of the proposed project to generate 103 acres of transitional areas within the marsh plain by 2030 (under modeled conditions) supports the need to make Los Peñasquitos Lagoon a resilient system with regard to climate change by facilitating upslope migration of salt marsh in response to sea level rise. As such, the proposed project may generate additional salt marsh acreage by 2035 when Lagoon Sediment TMDL Compliance is required. In addition to the generation of additional acres of salt marsh conversion

zones, the proposed project would also enhance riparian areas. This would involve the removal of non-native invasive species, and planting of native riparian species. The riparian habitat would have enhanced function due to the removal of non-native invasive species and upstream controls for water quality and to reduce excessive sedimentation that facilitates establishment of invasive species. The proposed project also includes modifying the dimensions of the Lagoon's main northern and southern channels to improve hydrologic connectivity between the watershed, lagoon, and ocean. Improved connectivity between these three systems would reduce residence times for impounded waters within Los Peñasquitos Lagoon that are associated with both nuisance dry weather flows and floodwaters from storm runoff in a manner that supports the health and resiliency of the coastal salt marsh and other native habitats historically present in the Lagoon. As specified in Threshold C, a significant impact would result from the proposed project if it were to cause a substantial adverse impact on wetlands (marsh, vernal pool, riparian, *etc.*). Although the proposed project would directly impact wetlands through the restoration activities, these impacts are expected to enhance the hydrological system that sustains these wetlands, and would not result in a net removal, fill, or loss of wetland habitats on the program level. Thus, the short-term impact to wetlands is not considered substantially adverse, but rather an acceptable temporary condition in the process of restoration. Furthermore, individual projects that would directly alter wetland habitat under the jurisdiction of the Corps, CDFW, and/or RWQCB would be subject to permit conditions extended by those agencies. Therefore, **a less than significant impact related to a substantial adverse impact to wetlands would result (Threshold C)**.

The Lagoon functions as a valuable wildlife corridor connecting the eastern reaches of contributing watersheds to the Pacific Ocean. As such, a primary goal throughout the Enhancement Plan includes improvements to wildlife corridors. As detailed in Section 3.4.1.2, enhancement of riparian corridors would be required to remove invasive vegetation on site while also reducing establishment farther into Los Peñasquitos Lagoon, as well as improving these areas currently used as wildlife corridors and critical habitat for listed species. Enhancement of wildlife corridors would also be integrated into enhancements of the riparian corridor where possible to reduce habitat fragmentation and allow for improved connectivity.

Through these enhancements, the proposed project aims to enhance and expand wildlife corridors and connectivity of available habitats for native resident wildlife on a program level; therefore, impacts on the program level would not be significant. On a project level, temporary impacts to wildlife corridors and connectivity could potentially be significant, if the siting and phasing of projects do not allow for wildlife movement during project construction. However, the Enhancement Plan describes phasing of projects, which would stagger construction of key components and allow for wildlife movement. During Restoration and Enhancement Activities, various portions of the Lagoon would be under construction at any one time, allowing for wildlife use and passage through other adjacent areas. The phasing and staged timeframe of the proposed project would limit the potential for wildlife movement to be substantially impeded. Furthermore, the proposed project is expected to benefit wildlife corridors in the long term by enhancing and expanding available habitat for wildlife. **Therefore, a less than significant impact related to a wildlife movement would result (Threshold D)**.

The entire project area is within the City's MHPA~~, and the MSCP principles would be applied~~. Because the proposed project's overall goal is the enhancement and restoration of habitat, ~~is a~~

~~habitat enhancement and restoration project,~~ it would not conflict with the City's MSCP or other local policies or ordinances protecting biological resources, and **a less than significant impact would result (Thresholds E and G)**.

Although the specific habitat distributions within the Lagoon may change from baseline conditions, the overall goal of the proposed project is to restore and enhance the functions and values of habitat within the Lagoon~~net habitat area versus development would not change~~. Proposed ~~r~~Restoration and ~~e~~Enhancement ~~a~~Activities would~~do~~ not introduce~~not include~~ development (*e.g.,* residential/commercial development, lighting, transportation) in areas adjacent to the project site that~~of permanent structures, facilities, or infrastructure (*e.g.,* nighttime lighting) that could create conditions with adverse edge effects. Therefore, the proposed project~~ would ~~not~~ result in adverse edge effects to the MHPA and **a less than significant impact related to edge effects would result (Threshold F)**.

The proposed project includes numerous key components that focus on the removal of invasive species from the riparian areas of the Lagoon. During implementation, construction vehicles visiting the project site have the potential to introduce invasive species of plants. However, PDF #22 would be implemented for construction, which would ensure that equipment be free of non-native plant species and other foreign matter before entering the project site. **Therefore, a less than significant impact related to introduction of invasive species to the Lagoon would result (Threshold H)**.

4.6.2.2 Public Access Improvements

Public Access Activities are included in the Enhancement Plan to formalize access where it doesn't exist, enhance public enjoyment of the Lagoon, and close unauthorized trails. As described for the proposed Restoration and Enhancement Activities, similar temporary impacts to special-status species during construction on and near access points that are surrounded by habitat could result. Potential impacts would be limited as the trail work would be in one area for a short amount of time and PDFs require staking and flagging of sensitive areas as "no construction zone" (PDFs #12 and #14) to avoid encroachment into nearby habitat areas. The removal of vegetation outside of the bird breeding season would avoid direct impacts to species as well as flushing of birds from the area by a qualified biologist before construction (PDF #17). However, in the short term, the potential temporary loss of habitat used by sensitive species, including the coastal California gnatcatcher, which utilizes upland habitats in the vicinity of proposed public access improvements, during construction of Public Access Activities would be considered substantial. Thus**, a temporary significant impact related to a substantial adverse impact on sensitive species due to habitat disruption would result (Threshold A)**.

Tier I and Tier II habitats, specifically Torrey Pines Woodland and coastal sage scrub habitat, respectively, occur in the vicinity of the proposed Hilltop Trail improvements and realignment of the western portion of the Marsh Trail. New alignments may impact undisturbed vegetation categorized as Tier I or II habitat, depending on the final alignment. Adjacent disturbed areas or realigned/informal trails no longer required would be revegetated to avoid a net loss of sensitive habitats. However, temporary impacts to sensitive habitats would occur until vegetation is reestablished. **A temporary significant impact related to a substantial adverse impact on Tier I Habitats, Tier II Habitats,**

Tier IIIA Habitats, or Tier IIIB Habitats or other identified sensitive natural community would result (Threshold B).

The Public Access Activities discussed in the Enhancement Plan mostly involve improvements to existing trails and roads, and closure of unauthorized trails. Some of these existing user-generated trails are located in wetlands, and their closure and restoration would benefit the wetland habitat they currently traverse. The proposed project would not decrease the overall distribution of wetlands for the creation of new trails. Furthermore, projects that would directly alter wetland habitat under the jurisdiction of the Corps, CDFW, and/or RWQCB would be subject to permit conditions extended by those agencies. Therefore, **a less than significant impact related to wetlands would result (Threshold C)**.

As mentioned above, the Public Access Activities included in the Enhancement Plan are generally improvements to existing trails and roads. Proposed trails and public pathways would not traverse new locations that could cause impediment to wildlife movement. Additionally, pedestrian pathways and trails are generally not of the nature to substantially interfere with wildlife movement. Therefore, improvements to existing public access facilities would not interfere substantially with the movements of fish or wildlife species and **a less than significant impact would result (Threshold D)**.

The entire project area is within the City's MHPA~~,~~ and Public Access Activities would be planned in accordance with the goals and guidelines of the MSCP ~~principles would be applied~~. The public access activities would not conflict with the City's MSCP, and **a less than significant impact would result (Thresholds E and G)**.

The entire proposed project area is within the City's MHPA~~,~~ and Public Access Activities would be planned in accordance with the goals and guidelines of the MSCP ~~principles would be applied~~. In addition, the proposed project would not introduce new development to the Lagoon that would result in adverse edge effects. Public access is not allowed within the Lagoon and trails may only occur around the perimeter, thus limiting the potential for edge effects to negatively impact the Lagoon habitat and species. Public access projects outlined in the Enhancement Plan do not include a net increase of development that would result in adverse edge effects or net decrease of habitat in the Lagoon. Therefore, **a less than significant impact related to edge effects would result (Threshold F)**.

During implementation of public access improvements, construction vehicles visiting the project site have the potential to introduce invasive species of plants. However, PDF #22 would be implemented for construction, which would ensure that equipment be free of non-native plant species and other foreign matter before entering the project site. Therefore, **a less than significant impact related to the introduction of non-native species would result (Threshold H)**.

4.6.2.3 Vector Management

The Vector Management Activities discussed in the Enhancement Plan focus on reducing favorable mosquito breeding habitat. These include modification of tidal channels, improved circulation, increased tidal exchange, and improvements to stormwater facilities and water quality.

As part of the proposed Vector Management Activities, the proposed project would reduce impounded water at the area along Old Sorrento Valley Road currently identified by the County DEH as a priority area for managing mosquito breeding within the Lagoon. Nuisance dry weather inputs of freshwater in this area have converted historic salt marsh into perennially open water with thick stands of emerging and established cattails. Reducing impounded water in this area would reduce breeding habitat for *C. tarsalis* and facilitate restoration of salt marsh habitat while maintaining aesthetic value associated with open water areas that appeal to the public. Some localized, focused impacts may occur to wetland areas with installation and construction of proposed Vector Management Activities; however, these would be relatively small impacts to lower-–functioning or disturbed wetland areas. These impacts would cease upon the end of construction with the overall program resulting in a substantial net increase to higher-functioning wetland habitats. Therefore, no substantial permanent impacts from the expansion of suitable habitat for special-status species that utilize salt marsh for foraging and breeding are expected and no substantial effects to sensitive wetland areas would result. **A less than significant impact related to sensitive habitats and/or species would result (Thresholds A~~, B,~~ and C)**.

Vector management strategies included in the Enhancement Plan focus on reducing mosquito breeding habitat, which is stagnant, standing freshwater, that is not a Tier I, II, IIIA, or IIIB habitat. Therefore, **no impact to sensitive habitats would result (Threshold B)**.

Vector management strategies focus on the reduction of suitable mosquito breeding habitat through improved stormwater facilities, freshwater drainage, tidal connections, and channel improvements. These activities would not interfere with wildlife movement, conflict with the MSCP, nor introduce development that would result in adverse edge effects. Therefore, **no impact would result (Thresholds D, E, F, and G)**.

During vector management implementation, construction vehicles visiting the project site have the potential to introduce invasive species of plants. However, PDF #22 would be implemented for construction, which would ensure that equipment be free of non-native plant species and other foreign matter before entering the project site. Therefore, **a less than significant impact related to the introduction of invasive species would result (Threshold H)**.

4.6.3 Significance of Impacts

Table 4.6-1 summarizes the biological resource impact conclusions identified at this programmatic level in the Impact Analysis for each impact threshold.

4.6.4 Mitigation Measures

The proposed project is designed to restore and enhance the Lagoon and would contribute to the ecological function of the Lagoon system as a whole. Although temporary impacts would result as identified in the Impact Analysis, they would occur to increase the overall habitat value of the site and to increase sustainable habitats within Los Peñasquitos Lagoon as a whole. Permanent habitat modifications would be intentional, to increase higher value/functioning habitat at the expense of lower-quality habitat currently existing on site. As summarized in Table 4.6-1, the significant

Table 4.6-1. Summary of Biological Resource Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements	Vector Management
A. Have a substantial adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in the MSCP or other local or regional plans, policies or regulations, or by CDFW or USFWS.	Potentially Significant (temporary)	Potentially Significant (temporary)	Less than Significant
B. Have a substantial adverse impact on any Tier I Habitats, Tier II Habitats, Tier IIIA Habitats, or Tier IIIB Habitats as identified in the Biology Guidelines of the Land Development manual or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.	Potentially Significant (temporary)	Potentially Significant (temporary)	Less than Significant
C. Have a substantial adverse impact on wetlands (including, but not limited to, marsh, vernal pool, riparian, *etc.*) through direct removal, filling, hydrological interruption, or other means.	Less than Significant	Less than Significant	Less than Significant
D. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, including linkages identified in the MSCP Plan, or impede the use of native wildlife nursery sites.	Less than Significant	Less than Significant	No Impact
E. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan, either within the MSCP plan area or in the surrounding region.	Less than Significant	Less than Significant	No Impact
F. Introduce development in areas adjacent to the MHPA that would result in adverse edge effects.	Less than Significant	Less than Significant	No Impact
G. Conflict with any local policies or ordinances protecting biological resources.	Less than Significant	Less than Significant	No Impact
H. Introduce invasive species of plants into a natural open space area.	Less than Significant	Less than Significant	Less than Significant

adverse biological impacts identified for the proposed project at this program-level analysis are temporary and a result of the disturbance that must occur to alter elevations to achieve appropriate habitat conditions and enhance the overall habitat value of the site or provide public access in the most appropriate location. The temporary disturbance of habitat within the project site is unavoidable for implementation of the proposed project; however, the temporary impacts would cease either at the end of construction activities or as the new marsh and upland habitats establish.

During project-specific design and CEQA review of restoration and public access components, potential habitat disturbance would be identified and ~~avoidance~~minimized, and specific mitigation measures to protect sensitive species that rely on the habitat would be identified and implemented ~~if~~

~~feasible~~. The following mitigation measures would be required under CEQA for implementation of the proposed project:

Biological-1 Confirm presence of suitable habitat within the proposed project limits and an appropriate buffer. If suitable habitat is present for sensitive species:

a. Conduct pre-construction surveys to confirm presence/absence of sensitive species.

b. If sensitive species are present, implement the following measures:

1. For impacts to species identified as candidate, sensitive, or special-status species in the Multiple Species Conservation Program (MSCP), specific management priorities will be undertaken as part of MSCP implementation requirements to ensure that covered species are adequately protected. Priority 1 actions identified in the City of San Diego MSCP Subarea Plan Section 1.5 Framework Management Plan, specifically actions which concerns the Northern Area, will be undertaken to adequately protect covered species (City of San Diego 1997). The actions identified as Priority 2 may be undertaken as applicable.

2. For impacts to state and/or federally listed species not covered under the MSCP, complete coordination with wildlife agencies as required.

Impacts to Tier I, II, IIIA, or IIIB habitats as identified by the City or other sensitive natural communities may be significant, and the mitigation measures included below would be required.

Biological-2 An evaluation for no net loss of ~~each~~ sensitive habitat ~~type~~ would occur, and~~. The~~ net changes of habitat ~~in acreage of habitat within each tiered habitat~~ as defined by MSCP or other sensitive natural habitats would be quantified.

If a net loss of ~~tiered or other~~ sensitive habitat is confirmed, ~~then~~ the following would be implemented with priority given to lands within or adjacent to the Lagoon:

a. Contribution to an appropriate funding mechanism for habitat acquisition; and/or

~~a.~~b. ~~or~~ Restoration/enhancement of habitat within the Torrey Pines State Natural Reserve~~. or the City of San Diego's Habitat Acquisition Fund (Fund #10571), as established by City Council Resolution R-275129, adopted on February 12, 1990 (City of San Diego 2012); and/or~~

~~b. Coordination with the City to complete a boundary line adjustment to the MHPA Preserve.~~

Short-term substantial adverse impacts to sensitive vegetation (**Threshold B**) and subsequent habitat loss for sensitive species (**Threshold A**) would be unavoidable with implementation of the proposed

project. Due to the restoration nature of the project, an effort has been made to proactively incorporate PDFs to limit impacts to resources whenever possible. As described above, even with the numerous project design features to reduce these temporary impacts, they remain significant. No feasible mitigation is available to reduce these impacts to below a level of significance. No long-term significant biological impacts were identified for the proposed project.

4.7 TRANSPORTATION

This section of the Program EIR considers the potential transportation impacts that could result during construction and operation of the proposed project. The consideration of transportation includes multiple components of the circulation system, including travel by passenger vehicles, transit, bicycle, and pedestrians.

4.7.1 Impact Thresholds

Would the proposed project:

A. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities;

B. Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b);

C. Substantially increase hazards due to a geometric design feature (*e.g.,* sharp curves or dangerous intersections) or incompatible use (*e.g.,* farm equipment); or

D. Result in inadequate emergency access.

The impact thresholds used for transportation are those outlined in CEQA, Appendix G.

4.7.2 Impact Analysis

This section discusses the environmental impacts related to transportation associated with lagoon restoration and enhancement, public access improvements, and vector management.

4.7.2.1 Lagoon Restoration and Enhancement

Actions proposed as part of lagoon restoration and enhancement are not anticipated to include the construction of substantial structures or other components requiring considerably large volumes of materials to be transported to or from the construction site. Construction-generated traffic on local roadways associated with the enhancement and restoration would generally include transporting~~delivery~~ of equipment and materials, haul trips, and worker trips to the construction area. These vehicle trips would be nominal relative to existing traffic on local roadways. The majority of construction activities would be located within the Lagoon itself and would not extend into existing roads. Parking, staging, and laydown areas for construction activities would be located in existing disturbed areas, nearby parking lots, or other appropriately sited locations within or near the Lagoon, to the extent feasible. These locations would minimize construction interference with traffic operations on local roadways. In addition, if disruption of traffic is anticipated (*e.g.,* lane closure, detour, or similar), a Traffic Control Plan (Table 3-5, Standard Construction Practices) would be required and would outline appropriate traffic control measures intended to accommodate workers within the roadway, while facilitating continued circulation for road users (motorists, bicyclists, and pedestrians) through the work zone.

Due to the nature of the restoration and enhancement projects, once construction is complete additional traffic trips would be minimal. Occasional maintenance operations would be required but would not necessitate substantial traffic trips.

Because minor construction traffic is anticipated with restoration and enhancement projects and a Traffic Control Plan would be required if project activities would disrupt the transportation system, no conflict would occur with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadways, bicycle, and pedestrian facilities. Thus, **a less than significant impact related to transportation plans and policies would result (Threshold A)**.

As described above, the nature of the lagoon restoration and enhancement would not generate traffic. There would be no new land uses or other project elements that would entice people to travel to the area and increase vehicle miles traveled (VMT). Some construction traffic would be necessary during restoration and enhancement projects and during continued maintenance of the restored lagoon; however, these trips would be temporary and occur during construction activity. CEQA Guidelines Section 15064.3, subdivision (b) outlines that VMT is the most appropriate measure of transportation impacts and states that VMT refers to the amount and distance of automobile travel attributable to a project. Thus, because the proposed Restoration and Enhancement Activities would not generate new traffic or otherwise cause vehicle miles to increase, **a less than significant impact related to increased VMT would result (Threshold B)**.

The proposed projects associated with the lagoon restoration and enhancement would not include roadway reconfiguration or other modifications that would create dangerous roadway design features. Restoration and enhancement of the Lagoon would not result in new land uses or features that could cause incompatible uses on the local roadways. Thus, **no impact related to a substantial increase in hazards due to a geometric design feature or incompatible use would result (Threshold C)**.

As described above, restoration and enhancement projects would require temporary construction traffic to use local roadways. While construction traffic on surrounding roadways would be typical and not be of substantial volume, a Traffic Control Plan would be required if the transportation system were disrupted (Table 3-5, Standard Construction Practices). The Traffic Control Plan would outline safety and emergency procedures to ensure that adequate emergency access is available through the impacted areas and may include informing and coordinating with emergency services provided in the area, use of flagmen to control traffic flow and allow passage for emergency vehicles, *etc.* Thus, adequate emergency access would be maintained throughout the construction period. **A less than significant impact related to emergency access would result (Threshold D)**.

4.7.2.2 Public Access Improvements

Elements of proposed improvements to public access could require roadway modifications and construction on or adjacent to local roadways. Projects such as a pedestrian underpass under Highway 101 at the South Beach parking lot, a promenade along Highway 101 for pedestrians and cyclists, dedicated entry to the South Beach parking lot, roadway edge improvements, improvements to the North Beach lot, and pedestrian and bicycle facility improvements along Carmel Valley Road and Sorrento Valley Road would have the potential to disrupt the transportation system during construction. Projects that require work on or adjacent to roads could require lane closures, diversion

of traffic, detours, or other construction-related disruption to traffic flow that could cause potentially significant impacts to the transportation system. However, if a project were to create a potential transportation disruption, a Traffic Control Plan (Table 3-5, Standard Construction Practices) would be required and would outline appropriate traffic control measures intended to accommodate workers within the roadway, while facilitating continued circulation for road users (motorists, bicyclists, and pedestrians) through the work zone.

Once completed, the public access projects would serve to improve the pedestrian and bicycle trail network by providing safer, more convenient, and better-connected trails and pathways around and near the Lagoon. The interconnected trails and safer pedestrian and bicycle routes would provide more options for alternative travel and work toward the achievement of public access goals and policies. The improved trail system may result in some additional vehicle trips to the trail heads and access points, but this would not create a substantial increase in traffic volume that could cause disruption to the transportation system.

With implementation of a Traffic Control Plan as required for public access projects that could disrupt transportation systems, **a less than significant impact related to transportation plans and policies would result (Threshold A)**.

As described above, the public access improvements may encourage some additional recreationalists to drive to the Los Peñasquitos Lagoon area to use the trails and pedestrian/bicycle facilities. However, the additional VMT in association with the public access improvements is not anticipated to be substantial. In addition, the improved public access facilities may encourage more people to travel by foot, bicycle, or railway due to the safer and more interconnected trail and pedestrian network. Thus, because the proposed public access improvements would not generate substantial new traffic or otherwise cause vehicle miles to increase, **a less than significant impact related to increased VMT would result (Threshold B)**.

Certain projects associated with public access improvements may include minor roadway reconfiguration or other modifications to the transportation system. However, modifications would be designed for increased safety of both vehicle and pedestrian traffic. Design of roadway-related elements would be prepared in accordance with applicable standards and conform to appropriate design standards per the permitting jurisdiction (City, Caltrans, *etc.*). The purpose of many of the public access improvements is to create increased compatibility between vehicle and pedestrian uses of shared or adjacent transportation facilities. Thus, **a less than significant impact related to a substantial increase in hazards due to a geometric design feature or incompatible use would result (Threshold C)**.

As described above, public access projects would require temporary construction traffic to use local roadways, and construction on or adjacent to roadways may cause temporary disruptions. A Traffic Control Plan would be required if the transportation system were disrupted (Table 3-5, Standard Construction Practices). The Traffic Control Plan would outline safety and emergency procedures to ensure that adequate emergency access is available through the impacted areas and may include informing and coordinating with emergency services provided in the area, use of flagmen to control traffic flow and allow passage for emergency vehicles, *etc.* Thus, adequate emergency access would

be maintained throughout the construction period. **A less than significant impact related to emergency access would result (Threshold D)**.

4.7.2.3 Vector Management

Some of the proposed Vector Management Activities, such as improvements to road culverts and modifications to storm drain outfalls, may require construction work on or adjacent to local roadways. While not as substantial, these types of activities that may disrupt roadway operations are similar to those considered in the discussion of public access improvements and the analysis provided is also applicable to vector management projects. Due to the nature of the vector management projects, once construction is complete there would be no generation of additional traffic trips. Thus, **a less than significant impact related to transportation issues would result (Thresholds A, B, C, and D)**.

4.7.3 Significance of Impacts

Table 4.7-1 summarizes the transportation impact conclusions identified at this programmatic level in Section 4.7.2, Impact Analysis, for each impact threshold.

Table 4.7-1. Summary of Transportation Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements	Vector Management
A. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities.	Less than Significant	Less than Significant	Less than Significant
B. Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).	Less than Significant	Less than Significant	Less than Significant
C. Substantially increase hazards due to a geometric design feature (*e.g.,* sharp curves or dangerous intersections) or incompatible use (*e.g.,* farm equipment).	No impact	Less than Significant	Less than Significant
D. Result in inadequate emergency access.	Less than Significant	Less than Significant	Less than Significant

4.7.4 Mitigation Measures

Impacts related to transportation issues are less than significant due to the requirement for projects with the potential to disrupt transportation operations or facilities to prepare a Traffic Control Plan to avoid or minimize traffic impacts (Table 3-5, Standard Construction Practices). No significant impacts to transportation have been identified at this program-level analysis. Therefore, no mitigation measures are required.

4.8 AIR QUALITY

This section of the Program EIR considers the potential air quality impacts that could result during construction and operation of the proposed project. Air quality is defined by the concentration of pollutants related to human health. Concentrations of air pollutants are determined by the rate and location of pollutant emissions released by pollution sources, and the atmosphere's ability to transport and dilute such emissions.

4.8.1 Impact Thresholds

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. A significant impact would occur if the proposal would:

A. Conflict with or obstruct implementation of the applicable air quality plan;

B. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;

C. Expose sensitive receptors to substantial pollutant concentrations; or

D. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The impact thresholds used for air quality are those outlined in CEQA, Appendix G.

The screening level thresholds in Table 4.8-1 are those recommended by the City and are used in this programmatic analysis. If the emissions of the proposed project were found to be below the screening level thresholds, it can be concluded that the project would not violate air quality standards or contribute substantially to an existing or projected air quality violation.

Table 4.8-1. Regional Pollutant Emission Screening Level Standards of Significance

	VOC[1]	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$[2]
Pounds per day	137	250	550	250	100	55

Notes:
[1] VOC standards are based on levels per South Coast Air Quality Management District (SCAQMD) and the Monterey Bay Air Pollution Control District, which have similar federal and state attainment status as San Diego.
[2] Standard for PM2.5 from SCAQMD
VOC = volatile organic compounds; NO_X = nitrogen oxides; SO_X = sulfur oxides, CO = carbon monoxide; PM_{10} = particulate matter less than 10 micrometers in diameter; $PM_{2.5}$ = particulate matter less than 2.5 micrometers in diameter.
Source: City of San Diego 2016

Future development projects would undergo subsequent project-level CEQA review by State Parks or other lead agencies, as appropriate. It is anticipated environmental compliance documents would tier off of and be evaluated using the most applicable thresholds available at the time of the analysis.

4.8.2 Impact Analysis

This section discusses the environmental impacts related to air quality associated with Lagoon restoration and enhancement, public access improvements, and vector management.

Criteria Pollutants

Six air pollutants have been identified by EPA and ARB as being of concern on both nationwide and statewide levels: ozone; carbon monoxide (CO); nitrogen dioxide; sulfur dioxide; lead; and particulate matter (PM). PM is subdivided into two classes based on particle size: PM equal to or less than 10 micrometers in diameter (PM_{10}) and PM equal to or less than 2.5 micrometers in diameter ($PM_{2.5}$). Ozone is formed in the atmosphere through a series of reactions involving reactive organic gases (ROG) or volatile organic compounds (VOC) and nitrogen oxides (NO_X) in the presence of sunlight. As such, ROG/VOC and NO_X are called precursors of ozone. Because the air quality standards for these air pollutants are regulated using human health and environmentally based criteria, they are commonly referred to as "criteria air pollutants." Both EPA and ARB use ambient air quality monitoring data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify the areas with air quality problems and initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. An "attainment" designation for an area signifies that pollutant concentrations did not exceed the established standard. In contrast to attainment, a "nonattainment" designation indicates that a pollutant concentration has exceeded the established standard. An "unclassified" designation indicates that the area cannot be classified on the basis of available information as meeting or not meeting the established standard. The proposed project is located within the San Diego Air Basin (SDAB). The SDAB currently meets the National Ambient Air Quality Standards (NAAQS) for criteria air pollutants except ozone and meets the California Ambient Air Quality Standards (CAAQS) for criteria air pollutants except ozone, PM_{10}, and $PM_{2.5}$. The SDAB currently falls under a federal maintenance plan for 8-hour ozone and is designated as "unclassifiable" for the federal PM_{10} standard.

Toxic Air Contaminants

In addition to criteria pollutants, both federal and state air quality regulations also focus on toxic air contaminants (TACs). TACs can be separated into carcinogens and noncarcinogens based on the nature of the effects associated with exposure to the pollutant. Common substantial sources of TAC emissions are motor vehicles on freeways, high-volume roadways, or other areas with high numbers of diesel vehicles, such as distribution centers. Off-road mobile sources are also major contributors of TAC emissions and include construction equipment, ships, and trains.

Sensitive Receptors

Some members of the population are especially sensitive to air pollutant emissions and should be given special consideration when evaluating air quality impacts from projects. The City CEQA

Guidelines define a sensitive receptor as a person who is more susceptible to health effects due to exposure to an air contaminant relative to the population at large. Sensitive receptors include children, the elderly, people with preexisting respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Air quality regulators typically define sensitive receptors as schools, hospitals, resident care facilities, daycare centers, or other facilities that may house individuals who are particularly susceptible to health effects that would be adversely impacted by changes in air quality. Residential areas are also considered sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to pollutants present. Sensitive receptors in the Los Peñasquitos Lagoon area would generally include residential areas near the northern end of the Lagoon. Pedestrians and bicyclists using the trails and pathways near the Lagoon perimeter may also be considered transient sensitive receptors.

4.8.2.1 Lagoon Restoration and Enhancement

Elements of the proposed Lagoon Restoration and Enhancement Activities, such as channel modifications and improvements; sediment management; riparian corridor enhancement; wildlife corridor enhancement; focused grading, inlet improvements; floodplain, wetland, and marsh restoration; construction of treatment wetlands; and living shoreline implementation would require construction activities and the use of heavy equipment, construction-related trips by workers, delivery and hauling truck trips, and fugitive dust from site preparation activities that could result in emissions and the generation of fugitive dust. Lagoon restoration and enhancement construction activities would generate temporary emissions of VOC, NO_X, CO, sulfur oxides (SO_X), PM_{10}, and $PM_{2.5}$. Emissions of VOC, NO_X, CO, and SO_X are associated primarily with mobile equipment exhaust, including off-road construction equipment and on-road motor vehicles. Emission generation varies with factors such as type of engine or duration of operation. Fugitive dust emissions (PM_{10} and $PM_{2.5}$) are associated primarily with site preparation and vary as a function of parameters such as soil silt content, soil moisture, wind speed, acreage of disturbance area, and miles traveled by construction vehicles.

Air quality plans describe air pollution control strategies to be implemented by a city, county, or regional air district. The primary purpose of an air quality plan is to bring an area that does not attain NAAQS and CAAQS into compliance with those standards. The San Diego Air Pollution Control District (SDAPCD) updated its Attainment Plan for the 2008 Eight-Hour Ozone Standard (Attainment Plan) (SDAPCD 2016a) and Regional Air Quality Strategy (RAQS) in 2016 (SDAPCD 2016b). A project's consistency with the RAQS and Attainment Plan is based on whether the project would exceed the estimated air basin emissions, which are based in part on equipment use assumptions, projections of population, and VMT. Actions associated with the lagoon restoration and enhancement would involve construction activities that would be short term and temporary. However, the use of on-road and off-road construction equipment in the RAQS is estimated for the region on an annual basis, and due to the standard nature of the construction activities and short duration of construction, the proposed project would not increase the assumptions for off-road equipment use. The generally moist soil conditions throughout the Lagoon basins where most construction activities would occur for proposed Restoration and Enhancement Activities would naturally limit the amount of fugitive dust generated by soil exposure. Additional air quality protection would be implemented as a requirement of the PDFs listed in Table 3-4 that include measures to minimize soil erosion (PDFs #1, #2, #3, and #4) and maintenance of construction equipment in proper working order (PDF #13),

as well as standard construction procedures that limit vehicle idling time. The proposed project would not increase population, employment, or vehicle trips over the current assumptions used to develop the RAQS and State Implementation Plan.

Once constructed, the restored Lagoon would not generate air quality emissions and may have the potential to sequester carbon. Air quality emissions would result from periodic and short-term maintenance that may require vehicle or equipment use. Thus, the long-term emissions generation associated with the proposed project is considered nominal.

For these reasons, implementation of the proposed project would not conflict with or obstruct implementation of the applicable air quality plan and **a less than significant impact related to conformance with air quality plans would result (Threshold A)**.

Air pollution is largely a cumulative impact as it is not constrained by boundaries or jurisdictions. A project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development projects. Construction of lagoon enhancement and restoration projects would generate temporary emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. The City emission thresholds listed in Table 4.8-1 are relevant to whether a project's individual emissions would result in a cumulatively considerable incremental contribution to the existing cumulative air quality conditions. If the emissions of the proposed project were found to be below the City's screening level thresholds or other applicable thresholds available at the time of project-level CEQA review as selected by the project lead agency, it can be concluded that the project would not violate air quality standards or contribute substantially to an existing or projected air quality violation. Because specific restoration and enhancement project details necessary to accurately calculate pollutant emissions are currently undetermined and could change through the project design process, it is not possible to determine if the screening level thresholds would be exceeded or not. Additionally, because the timeframe for implementation of some of the proposed projects is 10 to 25 years away, it is not possible to accurately anticipate the cumulative scenario of other projects in the vicinity of the Lagoon or the regional air quality conditions that may factor into the consideration of air quality impacts. Therefore, it is possible that construction activities for larger-scale projects and those that require substantial amounts of earthwork would exceed the project-level air quality impact thresholds for pollutant emissions and **a potentially significant impact related to a cumulatively considerable contribution to the region's air quality could result (Threshold B)**.

The greatest potential for substantial concentrated emission exposure resulting from construction of the proposed project would originate from diesel PM emissions associated with heavy equipment operations during construction activities. Typically, construction projects generate diesel PM in a single area for a short period of time. Other construction-related sources of diesel PM are material delivery trucks and may include construction worker vehicles. Emissions associated with vehicle trips to and from the project site during construction would be dispersed throughout the region, as aided by prevailing winds along the coast, and would have a nominal localized impact at the project site. Therefore, the analysis of potential impacts focuses on localized diesel PM emissions generated by on-site construction activities. Sensitive receptors are located at varying distances from the project site and consist of residences generally at the north end of Los Peñasquitos Lagoon (across Carmel Valley Road) and trail or other pedestrian/bicycle facilities users around the lagoon perimeter. Trail or pedestrian/bicycle facility users would also not be anticipated to be in the vicinity of project

construction for a substantial period of time as they would quickly pass by the construction area. The distance at which construction equipment would operate near sensitive receptors would vary considerably during the construction period as they move about the Lagoon and vary by project-specific components. When required, future restoration and enhancement projects would undergo project-level CEQA review by the implementing agency to determine the extent of their potential emissions and mitigation that may be required to reduce emissions if they exceed applicable thresholds. However, based on the current information and anticipated construction activities available at this time, it is anticipated emissions would be dispersed around the project site; thus, TAC emissions from project construction would be less concentrated than those from a typical static location and would be less likely to expose receptors to substantial pollutant concentrations. Compliance with SDAPCD rules and permit regulations would also reduce PM_{10} and $PM_{2.5}$ emissions generated by construction of the proposed project. Therefore, it is anticipated that PM concentrations would decrease substantially before affecting the nearest sensitive receptor. Thus, the restoration and enhancement projects would not expose sensitive receptors to substantial construction pollutant concentrations and **a less than significant impact related to pollutant exposure would result (Threshold C)**.

Odors are considered an air quality issue both at the local level (*e.g.,* odor from wastewater treatment) and at the regional level (*e.g.,* smoke from wildfires). Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (*e.g.,* irritation, anger, or anxiety) to physiological (*e.g.,* circulatory and respiratory effects, nausea, vomiting, and headache). Potential sources that may emit odors during construction activities include exhaust from diesel construction equipment. However, because of the temporary nature of these emissions and the highly diffusive properties of diesel exhaust, nearby receptors would not be substantially affected by diesel exhaust odors associated with project construction. Thus, odors from these sources would be localized and generally confined to the immediate area surrounding the project site.

In addition to diesel exhaust odors, construction activities would include grading within the Lagoon and disposal of sediments excavated from the Lagoon. The water levels control odor from the underlying sediment, and grading activities could temporarily disturb soils and affect water levels at locations throughout the Lagoon. Sediment and tidal mudflat exposure may occur and result in potential odors during low tide. However, much of the habitat is located at substantial buffer distance from the nearest sensitive receptors. The creation of new tidal mudflat habitat could result in intermittent odor emission from anaerobic respiration of mudflat bacteria (NOAA 2008). However, this odor would only be generated when tidal mudflats are exposed to the air during low tide. Much of the proposed mudflat habitat is located in the interior of the Lagoon away from receptors. There would be an area of mudflat habitat located near Carmel Valley Road and I-5; however, the proposed project would provide adequate separation between mudflat habitat and populated areas in the vicinity of the Lagoon. Tidal mudflat would be approximately 200 feet from the nearest residential area located north of Carmel Valley Road. This distance would allow for dispersion of odorous molecules where receptors are present, in addition to dispersion from prevailing winds along the coast. Thus, long-term odors associated with the proposed project would be anticipated to be similar to existing conditions. **A less than significant impact related to other pollutants, including odor, would result (Threshold D)**.

4.8.2.2 Public Access Improvements

Elements of proposed improvements to public access could require construction and other ground-disturbing activities. Actions such as trail realignments, creation of trail access points, establishment of new trial alignments, improvements to and along roadways, and other pedestrian and bicycle facility improvements could require roadway demolition, excavation, fill, resurfacing, or other construction activities. Similar to Restoration and Enhancement Activities, public access improvement construction activities would generate temporary emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ from construction equipment use and fugitive dust emissions from soil exposure and disturbance. Public access improvements would involve construction activities that would be short term and temporary and not of substantial size. The use of on-road and off-road construction equipment in the RAQS is estimated for the region on an annual basis, and due to the standard nature of the proposed construction activities and short duration of construction, public access improvements would not increase the assumptions for off-road equipment use. Additionally, the public access improvement would not increase population, employment, or vehicle trips over the current assumptions used to develop the RAQS and State Implementation Plan. Therefore, implementation of public access improvements would not conflict with or obstruct implementation of the applicable air quality plan and **a less than significant impact related to conformance with air quality plans would result (Threshold A)**.

Similar to Restoration and Enhancement Activities, construction of public access improvements would generate temporary emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. The location of the trail improvement and realignment project and other roadway improvements would be outside of the lagoon basins and more susceptible to fugitive dust generation in the dry soils. The emission thresholds listed in Table 4.8-1 or other applicable thresholds available at the time of project-level CEQA review as selected by the project lead agency are relevant to whether a project's individual emissions would result in a cumulatively considerable incremental contribution to the existing cumulative air quality conditions. When required, future restoration and enhancement projects would undergo project-level CEQA review to determine the extent of their potential emissions in combination with other projects to determine if they are cumulatively considerable. Because specific public access improvement details necessary to accurately calculate pollutant emissions are currently undetermined and could change through the project design process, and the specific timing of future projects is not yet determined, it is not possible to identify with certainty what other emissions may be occurring in the area and if a cumulative impact could result. Thus, **a potentially significant impact related to a cumulatively considerable contribution to the region's air quality could result (Threshold B)**.

Similar to the discussion under Restoration and Enhancement Activities, sensitive receptors near the lagoon setting consist of residences generally at the north end of the Lagoon and trail or other pedestrian/bicycle facilities users around the lagoon perimeter. The distance at which construction equipment would operate near sensitive receptors would vary considerably dependent on where the specific public improvements were occurring. Many public access improvements would require construction activities to move along the linear alignment of a trail or roadway. Additionally, linear construction improvements are typically constructed in segments and similar to a moving assembly line, trucks and off-road equipment would not operate in the immediate vicinity of a sensitive receptor for an extended period of time. Trail or pedestrian/bicycle facility users would also not be anticipated

to be in the vicinity of project construction for a substantial period of time as they would quickly pass by the construction area or be required to bypass the work area entirely for safety. SDAPCD rules and permits would also reduce PM_{10} and $PM_{2.5}$ emissions generated by construction of the proposed project. Therefore, based on the current information and anticipated construction activities available at this time, it is anticipated that PM concentrations would decrease substantially before affecting the nearest sensitive receptor. Thus, public access improvements would not expose sensitive receptors to substantial construction pollutant concentrations and **a less than significant impact related to pollutant exposure would result (Threshold C)**.

The discussion of odor generation provided for lagoon restoration and enhancement activates is also applicable to public access improvements. Thus, **a less than significant impact related to pollutant exposure would result (Threshold D)**.

4.8.2.3 Vector Management

Some of the proposed Vector Management Activities, such as improvements to road culverts and modifications to storm drain outfalls, may require construction work and ground disturbance. While not as substantial, these types of activities that may require heavy equipment operation and ground disturbance are similar to those considered in the discussion of lagoon restoration and enhancement projects and public access improvements, and the analysis provided is also applicable to vector management projects. Thus, **a less than significant impact related to air quality issues would result (Thresholds A, C, and D) and a potentially significant impact could result from a cumulatively considerable contribution to the region's air quality (Threshold B)**.

4.8.3 Significance of Impacts

Table 4.8-2 summarizes the air quality impact conclusions identified at this programmatic level in Section 4.8.2, Impact Analysis, for each impact threshold.

4.8.4 Mitigation Measures

The following mitigation measure would be required for lagoon restoration and enhancement, public access improvements, and/or vector management actions that are determined at this program-level analysis to exceed Impact Threshold B as identified in Section 4.8.2. This mitigation measure would be included in project-level planning, design, and analysis, as appropriate CEQA reviews.

Implementation of Mitigation Measure Air Quality-1 would serve to minimize the potential pollutant emissions associated with future projects that have the potential to exceed applicable air quality standards. However, it is not possible to guarantee that these measures would be able to fully reduce potential emissions to below a level of significance. Thus, potential cumulative air quality impacts at the program level (Threshold B) would remain significant at a program level under CEQA.

Table 4.8-2. Summary of Air Quality Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements	Vector Management
A. Conflict with or obstruct implementation of the applicable air quality plan.	Less than Significant	Less than Significant	Less than Significant
B. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.	Potentially Significant (temporary)	Potentially Significant (temporary)	Potentially Significant (temporary)
C. Expose sensitive receptors to substantial pollutant concentrations.	Less than Significant	Less than Significant	Less than Significant
D. Result in other emissions (such as those leading to odors adversely affecting a substantial number of people.	Less than Significant	Less than Significant	Less than Significant

Air Quality-1

The construction contractor shall implement the following measures as deemed appropriate by State Parks for implementation within a State Natural Preserve to reduce fugitive dust emissions associated with off-road equipment and heavy-duty vehicles:

- Water the grading and exposed areas as necessary to control fugitive dust;
- Stabilize stockpiles in accordance with City grading ordinance requirements for stabilization of exposed soils to minimize fugitive dust;
- Stabilize unpaved roads to limit dust emissions by using chemical stabilizers, dust suppressants, and/or watering;
- Remove visible track-out into traveled public streets as necessary;
- Wet wash the construction access point at the end of each workday if vehicle travel on unpaved surfaces has occurred and caused track-out;
- Provide sufficient perimeter erosion control to prevent washout of silty material onto public roads;
- Cover haul trucks or maintain at least 12 inches of freeboard to reduce blow-off during hauling on public roads;
- Suspend grading operations when wind speeds are high enough to result in dust emissions crossing the property line, despite the application of dust mitigation measures; and
- Enforce speed limit of 15 miles per hour or less on unpaved surfaces.

4.9 CULTURAL RESOURCES

Cultural resources consist of sites, buildings, structures, objects, and districts or other places of human activity that are considered significant to a community, culture, or ethnic group. These resources may be historic or prehistoric in age, or a combination of both. As mentioned in Section 2.2.11, a Tribal cultural resource is identified as a site, feature, place, cultural landscape, sacred place or object, which is of cultural value to a Tribe; and is either on or eligible for the California Historic Register or a local historic register. The cultural and tribal cultural study area refers to the entire boundary of Los Peñasquitos Lagoon. The area of potential effects (APE) is generally the extent of physical disturbance for the proposed project as shown in Figure 3-2.

This section is based primarily on information from the Cultural Resources Report and the Tribal Cultural Resources Consultation Summary (Appendix D). Existing conditions for cultural and tribal cultural resources are discussed in Section 2.2.11.

4.9.1 Impact Thresholds

Would the proposed project:

A. Cause an alteration, including the adverse physical or aesthetic effects and/or the destruction of a prehistoric or historic building (including an architecturally significant building), structure, or object or site;

B. Have any impact to existing religious or sacred uses within the potential impact area;

C. Cause the disturbance of any human remains, including those interred outside of formal cemeteries; or

D. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

   i) Listed or eligible for listing in the California Register of Historical Resources (CRHR), or in a local register of historical resources as defined in PRC Section 5020.1(k), or

   ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

The impact thresholds for cultural resources are those recommended by the City Development Services Department (City of San Diego 2016). Analysis included under Threshold A is differentiated between archaeological and built environmental resources in Section 4.9.2. For tribal cultural resources, the impact thresholds are those outlined in CEQA, Appendix G.

4.9.2 Impact Analysis

4.9.2.1 Lagoon Restoration and Enhancement

Archaeological Resources

As discussed in Section 2.2.11, 26 archaeological sites have been recorded within the APE, mostly consisting of historic refuse deposits, isolated artifacts, and shell and artifact scatters, as well as midden deposits. However, since the lagoon enhancement site is covered in recent sediment deposits, buried stable surfaces below may contain archaeological resources that have not been uncovered. While it is anticipated that the majority of materials removed from the Lagoon during ~~r~~Restoration and ~~e~~Enhancement ~~a~~Activities would be relatively recent alluvial deposits, grading and soil removal activities for the proposed project may have the potential to encounter previously unidentified, potentially significant archaeological resources in these stable sediments, particularly in the margins of the Lagoon where human activities may have been obscured by the deposition of younger alluvial soils by seasonal flooding. **The potential for physical impact to, or destruction of, archaeological resources would be considered a significant impact (Threshold A)**.

No existing religious or sacred uses have been identified within the Lagoon. **The proposed project would have no impact to existing religious or sacred uses within the potential impact area (Threshold B).**

City archaeological staff confirmed additional information regarding an archaeological site (P-37_8225H/CA-SDI-8225H) while contributing to the San Dieguito Lagoon W-19 Restoration Project Final EIR, including the discovery of unrecorded human remains (AECOM 2018). Since San Dieguito Lagoon is located just north of the proposed project and contains similar cultural and tribal resources, there may be a potential to encounter human remains during ground-disturbing activities associated with the proposed project. Currently, there is no evidence for the presence of human remains within the Lagoon; however, **unanticipated presence of human remains within the Lagoon would be considered potentially significant due to the proximity of the discovery of human remains at a similar, nearby location (Threshold C)**.

While the APE presents an area of potential tribal cultural significance, to date no tribal cultural resources have been listed, determined eligible for listing, or are being considered a significant resource as outlined in PRC Section 5024.1(c). **The proposed project would not substantially adversely change the significance of tribal cultural resources and thus no impact would result (Threshold D)**.

Built Environment Resources

A single-family residence (P-37-17178) considered a~~No~~ built environment resource~~s~~ has~~ve~~ been identified ~~in or directly~~ adjacent to the proposed project ~~site~~; however, implementation of proposed Lagoon Restoration and Enhancement Activities would avoid this resource. **Therefore, ~~N~~no impact would result to existing built environment resources (Threshold A)**.

4.9.2.2 Public Access Improvements

Lagoon Complex

Archaeological Resources

Public access improvements are proposed for areas of the Lagoon that are both relatively undeveloped (*i.e.,* Marsh Trail improvements including the proposed underpass at the northwest trailhead and Hilltop Trail Overlook) while some improvements are within existing transportation corridors or hardscaped trails (*i.e.,* Carmel Valley and Sorrento Valley Improvements). Construction activities such as pile driving, tunneling, grading, excavation, and removal of material have the potential to encounter previously unidentified archaeological resources. **The potential for physical impacts to, or destruction of, archaeological resources would be considered a significant impact (Threshold A)**.

No existing religious or sacred uses have been identified within the proposed public access improvement areas. **The proposed project would have no impact to existing religious or sacred uses within the potential impact area (Threshold B).**

Although there is no evidence indicating the possible presence of human remains within the proposed public access improvement areas, based on the unrecorded discovery of human remains in proximity to the proposed project area as described above, there may be a potential for encountering human remains during ground-disturbing activities. **Thus, the unanticipated presence of human remains within the Lagoon would be considered potentially significant (Threshold C)**.

As stated above, to date no tribal cultural resources have been identified within the APE. **The proposed public access improvements would not substantially adversely change the significance of tribal cultural resources and thus no impact would result (Threshold D).**

Built Environment Resources

A single-family residence (P-37-17178) considered a~~No~~ built environment resource~~s~~ has~~ve~~ been identified ~~in or directly~~ adjacent to the proposed project; however, implementation of proposed P~~p~~public A~~a~~access ~~improvements~~Activities would avoid this resource. **Therefore, ~~N~~no impact would result to existing built environment resources (Threshold A)**.

Beach

Archaeological Resources

Several proposed Public Access Activities have the potential to overlap with areas west of North Torrey Pines Road, potentially impacting the beach and previously disturbed areas such as the existing State Parks parking lot. The proposed activities that have the potential to impact areas west of the Lagoon include the Northwest Trailhead Marsh Trail Access and Highway 101 Improvements. As described in Section 3.4.2.1, access improvements to the Northwest Trailhead to the Marsh Trail

involve constructing an underpass underneath North Torrey Pines Road to connect the current eastward trailhead to the existing State Parks parking lot to the west.

To construct the underpass, tunneling or a cut and cover method would most likely be utilized to create a tunnel underneath the roadway. The underpass would remove material underneath North Torrey Pines Road resulting in the potential for impacts to occur if a previously unknown cultural or tribal cultural resource(s) was discovered during ground-disturbing activities. Depending on the underpass design, material may or may not be disturbed from previous construction of North Torrey Pines Road. Similarly, implementation of proposed Highway 101 improvements would involve ground-disturbing activities to construct head-in diagonal parking spaces as well as upgrades to travel lanes for both vehicular and bicycle traffic, as described in Section 3.4.2.2. The proposed Highway 101 Improvements limits of disturbance and grading would extend to previously undisturbed areas of the beach and would also utilize disturbed areas to the extent possible (*e.g.,* existing State Parks parking lot). Given the potential for high volumes of soil disturbance associated with proposed public access improvements, **the potential for physical impacts to, or destruction of, archaeological resources would be considered a significant impact (Threshold A)**.

No existing religious or sacred uses have been identified within the proposed public access improvement areas along the beach. **The proposed project would have no impact to existing religious or sacred uses within the potential impact area (Threshold B)**.

There is no evidence indicating the possible presence of human remains within the proposed public access improvement areas along the beach. In addition, sand deposits are dynamic and material is constantly moving onshore and offshore, decreasing the likelihood that undiscovered human remains would be present in this area. **No impact due to the disturbance of human remains is anticipated (Threshold C)**.

As stated above, no tribal cultural resources are present within the APE. **Thus, the proposed public access improvements would not substantially adversely change the significance of tribal cultural resources and thus no impact would result (Threshold D).**

Built Environment Resources

A single-family residence (P-37-17178) considered a~~No~~ built environment resource~~s~~ has~~ve~~ been identified ~~in or directly~~ adjacent to the proposed project; however, implementation of proposed P~~p~~ublic A~~a~~ccess Activities would avoid this resource~~improvements~~. **Therefore, ~~N~~no impact would result to existing built environment resources (Threshold A)**.

4.9.2.3 Vector Management

Archaeological Resources

Proposed vector management strategies include culvert replacements, storm outfall modifications, and potential channel modifications to reduce impounded water in select areas. The majority of these improvements are anticipated to occur in previously disturbed areas where existing infrastructure is located. If improvements extend into previously undisturbed native deposits, there is a potential to

encounter previously unidentified archaeological resources and **the potential for physical impacts to, or destruction of, archaeological resources would be considered a significant impact (Threshold A)**.

No existing religious or sacred uses have been identified within the proposed vector management areas. The proposed project would have **no impact to existing religious or sacred uses within the potential impact area (Threshold B)**.

As stated previously, there may be potential for encountering human remains during ground-disturbing activities within the Lagoon and **impacts due to the disturbance of human remains are considered potentially significant (Threshold C)**.

No tribal cultural resources have been documented to date within proposed vector management areas. The proposed vector management would not substantially adversely change the significance of tribal cultural resources and thus **no impact would result (Threshold D)**.

Built Environment Resources

A single-family residence (P-37-17178) considered a~~No~~ built environment resource~~s~~ has~~ve~~ been identified ~~in or directly~~ adjacent to the proposed project; however, implementation of proposed V~~v~~ector M~~m~~anagement Activities would avoid this resource~~areas~~. **Therefore, ~~N~~no impact would result to existing built environment resources (Threshold A)**.

4.9.3 Significance of Impacts

Table 4.9-1 summarizes the cultural and tribal cultural resources impact conclusions identified at this programmatic level in Section 4.9.2, Impact Analysis, for each impact threshold.

4.9.4 Mitigation Measures

Cultural resources, if present on site, could be substantially damaged or destroyed during excavation of previously undisturbed portions of the proposed project site. The potential for damage or destruction of archaeological resources would be considered a significant impact.

Implementation of Mitigation Measure Cultural-1 would reduce proposed project impacts identified at this program-level analysis to archaeological resources to less than significant levels. If human remains or tribal cultural resources are discovered within the Lagoon during ground-disturbing activities conducted as part of the proposed project, the applicable sections of Mitigation Measure Cultural-1 would be implemented.

Table 4.9-1. Summary of Cultural Resources Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements (Lagoon Complex; Beach)	Vector Management
A. Cause an alteration, including the adverse physical or aesthetic effects and/or the destruction of a prehistoric or historic building (including an architecturally significant building), structure, or object or site.	Potentially Significant	Potentially Significant; Potentially Significant	Potentially Significant
B. Have any impact to existing religious or sacred uses within the potential impact area.	No Impact	No Impact; No Impact	No Impact
C. Cause the disturbance of any human remains, including those interred outside of formal cemeteries.	Potentially Significant	Potentially Significant; No Impact	Potentially Significant
D. Cause a substantial adverse change in the significance of tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	No Impact	No Impact; No Impact	No Impact

Cultural-1

I. Prior to Permit Issuance (for projects that include ground disturbance)

A. Entitlements Plan Check

1. Prior to issuance of any construction permits, including, but not limited to, the first Grading Permit, Demolition Plans/Permits, and Building Plans/Permits, but prior to the first preconstruction (precon) meeting, whichever is applicable, the Project Archaeologist shall verify that the requirements for archaeological monitoring and Native American monitoring have been noted on the applicable construction documents through the plan check process. For activities occurring on property

owned by State Parks, the Project Archaeologist will verify with the State Parks Archaeologist that the appropriate State Parks requirements have been met.

B. Letters of Qualification Have Been Submitted to Project Archaeologist

1. The project's cultural resources consultant shall submit a letter of verification to Mitigation Monitoring Coordination (MMC) identifying the Principal Investigator (PI) for the project and confirming the names of all persons involved in the archaeological monitoring program, as defined in the City of San Diego Historical Resources Guidelines (City of San Diego 1999). Prior to potential project start, the State Parks-approved cultural resource consultant must acquire an Archaeological Investigations/Collections (DPR412A) permit from State Parks. If applicable, individuals involved in the archaeological monitoring program must have completed the 40-hour Hazardous Waste Operations and Emergency Response training with certification documentation.

2. MMC would provide a letter to the project's cultural resources consultant confirming the qualifications of the PI and all persons involved in the archaeological monitoring of the project meet the qualifications established in the Historical Resources Guidelines.

3. Prior to the start of work, the project's cultural resources consultant must obtain written approval from MMC for any personnel changes associated with the monitoring program.

II. Prior to Start of Construction

A. Verification of Records Search

1. The PI shall provide verification to MMC that a site-specific records search (quarter-mile radius) has been completed, and previously unidentified and/or unevaluated sites would be assessed under the CRHR and/or applicable state codes. Verification includes, but is not limited to, a copy of a confirmation letter from South Coast Information Center (SCIC) and State Parks for projects or portion of project work on State Parks land stating that the search was completed.

2. The letter shall introduce any pertinent information concerning expectations and probabilities of discovery during trenching and/or grading activities.

3. The PI may submit a detailed letter to MMC and State Parks requesting a reduction to the quarter-mile radius.

B. PI Shall Attend Precon Meetings

1. Prior to beginning any work that requires monitoring; the land owners and managers shall arrange a precon meeting with the project proponent that shall include the PI, Native American consultant/monitor (where Native American

resources may be impacted), Construction Manager (CM) and/or Grading Contractor, Resident Engineer (RE), Building Inspector (BI), if appropriate, State Parks archaeologist or cultural representative and MMC. The qualified archaeologist and Native American monitor shall attend any grading/excavation-related precon meetings to make comments and/or suggestions concerning the archaeological monitoring program with the CM and/or Grading Contractor.

a. If the PI is unable to attend the precon meeting, the implementing agencies shall schedule a focused precon meeting with MMC, the PI, RE, CM or BI, if appropriate, prior to the start of any work that requires monitoring.

2. Identify Areas to Be Monitored

a. Prior to the start of any work that requires monitoring, the PI shall submit an Archaeological Monitoring Exhibit (AME) (with verification that the AME has been reviewed and approved by the Native American consultant/monitor when Native American resources may be impacted) based on the appropriate construction documents (reduced to 11 inches x 17 inches) to MMC identifying the areas to be monitored, including the delineation of grading/excavation occurring within stable undisturbed sediments. This should also be submitted to State Parks tribal liaison and cultural representative.

b. The AME shall be based on the results of a site-specific records search as well as information regarding existing known soil conditions (native or formation).

3. When Monitoring Will Occur

a. Prior to the start of any work, the PI shall also submit a construction schedule to MMC and State Parks cultural representative through the RE indicating when and where monitoring would occur.

b. The PI may submit a detailed letter to MMC and State Parks cultural representative prior to the start of work or during construction requesting a modification to the monitoring program. This request shall be based on relevant information such as review of final construction documents that indicate site conditions such as depth of excavation and/or site graded to bedrock, *etc.* that may reduce or increase the potential for resources to be present.

III. During Construction

A. Monitor(s) Shall Be Present during Grading/Excavation/Trenching

1. The Archaeological Monitor shall be present full-time during soil-disturbing and grading/excavation/trenching activities into stable undisturbed sediments that could result in impacts to archaeological resources as identified on the AME. The CM is responsible for notifying the RE, PI, State Parks cultural representative, and MMC of changes to any construction activities such as in the case of a potential safety

concern within the area being monitored. In certain circumstances, Occupational Safety and Health Administration safety requirements may necessitate modification of the AME.

2. The Native American consultant/monitor shall determine the extent of their presence during soil-disturbing and grading/excavation/trenching activities based on the AME and provide that information to the PI and MMC. The MMC shall provide this information to State Parks cultural representative if ground disturbance is occurring on land owned by State Parks. If prehistoric resources are encountered during the Native American consultant/monitor's absence, work shall stop, and the Discovery Notification Process detailed in Section III.B–C and IV.A–D shall commence.

3. The PI may submit a detailed letter to MMC during construction requesting a modification to the monitoring program when a field condition such as modern disturbance post-dating the previous grading/trenching activities, presence of fossil formations, or native soils are encountered that may reduce or increase the potential for resources to be present. If such modifications occur on land owned by State Parks this letter or email notification should be submitted to State Parks cultural representative.

4. The Archaeological Monitor and Native American consultant/monitor shall document field activity via the Consultant Site Visit Record (CSVR). The CSVRs shall be faxed by the CM to the RE the first day of monitoring, the last day of monitoring, monthly (Notification of Monitoring Completion), and in the case of any discoveries. The RE shall forward copies to MMC.

B. Discovery Notification Process

1. In the event of a discovery, the Archaeological Monitor shall direct the contractor to temporarily divert all soil-disturbing activities including, but not limited to, digging, trenching, excavating, or grading activities in the area of discovery and in the area reasonably suspected to overlay adjacent resources and immediately notify the RE or BI, as appropriate.

2. The Archaeological Monitor shall immediately notify the PI (unless Monitor is the PI) of the discovery.

3. The PI shall immediately notify MMC and State Parks cultural representative by phone of the discovery and shall also submit written documentation to MMC within 24 hours by fax or email with photos of the resource in context, if possible.

4. No soil shall be exported off site until a determination can be made regarding the significance of the resource, specifically if Native American resources are encountered.

C. Determination of Significance

1. The PI and Native American consultant/monitor, where Native American resources are discovered, shall evaluate the significance of the resource. If human remains are involved, follow protocol in Section IV below.

   a. The PI shall immediately notify MMC by phone to discuss significance determination and shall also submit a letter to MMC indicating whether additional mitigation is required.

   b. If the resource is significant, the PI shall submit an Archaeological Data Recovery Program that has been reviewed by the Native American consultant/monitor, and obtain written approval from MMC and State Parks cultural representative. Impacts to significant resources must be mitigated before ground-disturbing activities in the area of discovery would be allowed to resume. Note: If a unique archaeological site is also a historical resource as defined in CEQA, then the limits on the amount(s) that the project may be required to pay to cover mitigation costs as indicated in CEQA Section 21083.2 shall not apply.

   c. If the resource is not significant, the PI shall submit a letter to MMC indicating that artifacts will be collected, curated, and documented in the Final Monitoring Report. The letter shall also indicate that no further work is required.

IV. Discovery of Human Remains

If human remains are discovered, work shall halt in that area and no soil shall be exported off site until a determination can be made regarding the provenance of the human remains, and the following procedures as set forth in CEQA Section 15064.5(e), California PRC (Section 5097.98) and State Health and Safety Code (Section 7050.5) shall be undertaken:

A. Notification

1. Archaeological Monitor shall notify the RE or BI as appropriate, State Parks cultural representative, MMC, and the PI, if the Monitor is not qualified as a PI. MMC would notify the appropriate Senior Planner in the Environmental Analysis Section of the Development Services Department to assist with the discovery notification process.

2. The PI shall notify the Medical Examiner after consultation with the RE, either in person or via telephone.

B. Isolate Discovery Site

1. Work shall be directed away from the location of the discovery and any nearby area reasonably suspected to overlay adjacent human remains until a determination can

be made by the Medical Examiner in consultation with the PI concerning the provenance of the remains.

2. The Medical Examiner, in consultation with the PI, would determine the need for a field examination to determine the provenance.

3. If a field examination is not warranted, the Medical Examiner would determine with input from the PI whether the remains are, or are most likely to be, of Native American origin.

C. If Human Remains Are Determined to Be Native American

1. The Medical Examiner would notify the NAHC within 24 hours. By law, only the Medical Examiner can make this call.

2. The NAHC would immediately identify the person or persons determined to be the Most Likely Descendant (MLD) and provide contact information.

3. The MLD would contact the PI within 24 hours or sooner after the Medical Examiner has completed coordination to begin the consultation process in accordance with CEQA Section 15064.5(e), the California PRC, and California Health and Safety Codes.

4. The MLD would have 48 hours to make recommendations to the implementing agency or representative for the treatment or disposition with proper dignity of the human remains and associated grave goods.

5. Disposition of Native American human remains would be determined between the MLD and the PI, and, if:

   a. The NAHC is unable to identify the MLD, or the MLD failed to make a recommendation within 48 hours after being notified by the NAHC; or;

   b. The implementing agency or authorized representative rejects the recommendation of the MLD and mediation in accordance with California PRC Code 5097.94 (k) by the NAHC fails to provide measures acceptable to State Parks and LPLF, then,

   c. In order to protect these sites, the implementing agency shall do one or more of the following:

      (1) Record the site with the NAHC;

      (2) Record an open space or conservation easement on the site; or

      (3) Record a document with the County.

d. Upon the discovery of multiple Native American human remains during a ground-disturbing land development activity, the implementing agency may agree that additional conferral with descendants is necessary to consider culturally appropriate treatment of multiple Native American human remains. Culturally appropriate treatment of such a discovery may be ascertained from review of the site utilizing cultural and archaeological standards. Where the parties are unable to agree on the appropriate treatment measures, the human remains, and cultural materials buried with Native American human remains shall be reinterred with appropriate dignity, pursuant to Section 5.c., above.

e. If human remains are discovered on State Parks land, the State Parks cultural representative should be informed of decisions prior to disposition.

D. If Human Remains Are Not Native American

1. The PI shall contact the Medical Examiner with notification of the historic era context of the burial.

2. The Medical Examiner would determine the appropriate course of action with the PI and implementing agency staff (California PRC 5097.98).

3. If the remains are of historic origin, they shall be appropriately removed and conveyed to the San Diego Museum of Man for analysis. The decision for interment of the human remains shall be made in consultation with MMC, Environmental Analysis Section, any known descendant group, and the San Diego Museum of Man.

V. Night and/or Weekend Work

A. If Night and/or Weekend Work Is Included in the Contract

1. When night and/or weekend work is included in the contract package, the extent and timing shall be presented and discussed at the precon meeting.

2. The following procedures shall be followed.

a. No Discoveries

In the event that no discoveries were encountered during night and/or weekend work, the PI shall record the information on the CSVR and submit to MMC via fax by 8 a.m. of the next business day.

b. Discoveries

All discoveries shall be processed and documented using the existing procedures detailed in Sections III – During Construction, and IV – Discovery

of Human Remains. Discovery of human remains shall always be treated as a significant discovery.

c. Potentially Significant Discoveries

If the PI determines that a potentially significant discovery has been made, the procedures detailed under Section III – During Construction and IV –Discovery of Human Remains shall be followed.

d. The PI shall immediately contact MMC and the State Parks cultural representative, or by 8 a.m. of the next business day, to report and discuss the findings as indicated in Section III-B, unless other specific arrangements have been made.

B. If Night and/or Weekend Work Becomes Necessary during the Course of Construction

1. The CM shall notify the RE, or BI, as appropriate, a minimum of 24 hours before the work is to begin.

2. The RE, or BI, as appropriate, shall notify MMC immediately.

C. All Other Procedures Described Above Shall Apply, as Appropriate.

VI. Post-Construction

A. Preparation and Submittal of Draft Monitoring Report

1. The PI shall submit two copies of the Draft Monitoring Report (even if negative), prepared in accordance with the Historical Resources Guidelines that describes the results, analysis, and conclusions of all phases of the Archaeological Monitoring Program (with appropriate graphics) to MMC for review and approval within 90 days following the completion of monitoring. Monitoring reports must also be submitted for review and approval per conditions of the DPR412A permit by the State Parks cultural representative. It should be noted that if the PI is unable to submit the Draft Monitoring Report within the allotted 90-day timeframe resulting from delays with analysis, special study results, or other complex issues, a schedule shall be submitted to MMC establishing agreed-upon due dates and the provision for submittal of monthly status reports until this measure can be met.

a. For significant archaeological resources encountered during monitoring, the Archaeological Data Recovery Program shall be included in the Draft Monitoring Report.

b. Recording Sites with State of California Department of Parks and Recreation

The PI shall be responsible for recording (on the appropriate State of California Department of Park and Recreation forms [DPR 523 A/B]) any significant or

potentially significant resources encountered during the Archaeological Monitoring Program in accordance with the City's Historical Resources Guidelines, and submittal of such forms to the SCIC with the Final Monitoring Report.

2. MMC and State Parks cultural representative shall return the Draft Monitoring Report to the PI for revision or for preparation of the Final Report.

3. The PI shall submit revised Draft Monitoring Report to MMC and State Parks cultural representative for approval.

4. MMC shall provide written verification to the PI of the approved report.

5. MMC shall notify the RE or BI, as appropriate, of receipt of all Draft Monitoring Report submittals and approvals.

B. Handling of Artifacts

1. The PI shall be responsible for ensuring that all cultural remains collected are cleaned and catalogued.

2. The PI shall be responsible for ensuring that all artifacts are analyzed to identify function and chronology as they relate to the history of the area; that faunal material is identified as to species; and that specialty studies are completed, as appropriate.

3. The cost for curation is the responsibility of the property owner.

C. Curation of Artifacts: Accession Agreement and Acceptance Verification

1. The PI shall be responsible for ensuring that all artifacts associated with the survey, testing, and/or data recovery for this project are permanently curated with an appropriate institution. This shall be completed in consultation with MMC and the Native American representative, as applicable. Collections and proper curation preparations shall be completed in consultation with State Parks cultural representative.

2. The PI shall include the Acceptance Verification from the curation institution and appropriate State Parks Museum Collections documents (DPR 927, 928) in the Final Monitoring Report submitted to the RE or BI and MMC.

3. When applicable to the situation, the PI shall include written verification from the Native American consultant/monitor indicating that Native American resources were treated in accordance with state law and/or applicable agreements. If the resources were reinterred, verification shall be provided to show what protective measures were taken to ensure no further disturbance occurs in accordance with Section IV – Discovery of Human Remains, Subsection 5.

D. Final Monitoring Report(s)

1. The PI shall submit one copy of the approved Final Monitoring Report to the RE or BI as appropriate, and one copy to MMC and State Parks cultural representative (even if negative), within 90 days after notification from MMC that the draft report has been approved.

2. The RE shall, in no case, issue the Notice of Completion and/or release of the Performance Bond for grading until receiving a copy of the approved Final Monitoring Report from MMC that includes the Acceptance Verification from the curation institution.

Implementation of Mitigation Measure Cultural-1 would reduce proposed project impacts to cultural resources to less than significant levels (Section 4.9.3).

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4.10 PALEONTOLOGICAL RESOURCES

Paleontological resources (*i.e.,* fossils) are the buried remains and/or traces of prehistoric organisms. These resources can include bones and teeth as well as materials such as shells and wood. Paleontological resources are found in the geological formations within which they were originally buried. Fossils are considered nonrenewable resources because, typically, the organisms they represent no longer exist and can often provide a valuable scientific record of historical environmental conditions, depending on the age and the characteristic of the formation. Generally, to impact a paleontological resource, the sedimentary bedrock that embeds the resources must be disturbed. Existing conditions for paleontological resources are discussed in Section 2.2.12.

4.10.1 Impact Thresholds

Would the proposed project:

A. Require over 1,000 cubic yards of excavation in a high resource potential geologic deposit/formation/rock unit; or

B. Require over 2,000 cubic yards of excavation in a moderate resource potential geologic deposit/formation/rock unit.

The impact thresholds for paleontological resources are those recommended by the City Development Services Department (City of San Diego 2016).

4.10.2 Impact Analysis

There is a predictive relationship between fossils and the geologic formations in which they are contained as some formations are known to contain high yields of important fossils. However, paleontological resources are typically irregularly dispersed throughout a geologic formation, both horizontally and vertically, and it is not possible to predict the specific location of fossils within a particular formation. Direct impacts to a paleontological resource, which could include both destruction and alteration of the resource, could result from ground-disturbing activities that disrupt subsurface geologic formations. These activities could include, but are not limited to, grading, excavation, trenching, boring, and tunneling. Indirect impacts to paleontological resources are not caused by project implementation, but rather may be reasonably foreseeable results of project implementation at a later time. For example, increased erosion as a result of project construction, or the unauthorized tampering or removal of a fossil or paleontological resource from a project site, could result in the destruction or loss of surface fossils. Activities that place material on top of existing surface areas, such as placement of material to level a surface, are not considered to have potential for a significant impact since the resources are not destroyed.

Due to the relationship between fossils and geologic formations in which they can occur, the geology of an area provides a reasonable basis for predicting the potential presence of paleontological resources.

Levels of Paleontological Resource Sensitivity

The paleontological sensitivity of geological formations has been documented in *Paleontological Resources, County of San Diego California* (Deméré and Walsh 1993). The definitions of geologic sensitivity are provided below.

HIGH SENSITIVITY: Geologic formations known to contain paleontological localities with rare, well-preserved, and/or critical fossil materials for stratigraphic or paleoenvironmental interpretation, and fossils providing important information about the paleobiology and evolutionary history of animal and plant groups. Generally, highly sensitive formations are known to produce vertebrate fossil remains or are considered to have the potential to produce such remains.

MODERATE SENSITIVITY: Geologic formations known to contain paleontological localities with moderately preserved, common elsewhere, or stratigraphically long-ranging fossil material. The moderate sensitivity category is also applied to geologic formations that are judged to have a strong, but unproven potential for producing important fossil remains.

LOW SENSITIVITY: Geologic formations that, based on their relative youthful age and/or high-energy depositional history, are judged unlikely to produce important fossil remains. Typically, low sensitivity formations may produce invertebrate fossil remains in low abundance.

MARGINAL SENSITIVITY: Marginal sensitivity is assigned to geologic formations that are composed either of pyroclastic volcanic rocks or metasedimentary rocks, but which nevertheless have a limited probability for producing fossil remains from certain sedimentary lithologies at localized outcrops.

ZERO SENSITIVITY: Geologic formations that are entirely plutonic in origin and therefore have no potential for producing fossil remains.

Sensitivity of Los Peñasquitos Lagoon Geologic Formations

The perimeter of Los Peñasquitos Lagoon is known to be underlain by three geologic formations: Delmar Formation, Torrey Sandstone Formation, and Lindavista Formation (ESA 2018). Paleontological information and sensitivity of each formation are provided in Table 4.10-1.

The Lagoon itself is underlain by marine or river sand to a depth of more than 50 feet, covered in most areas by approximately 6 feet of fine silts and clays. Generally, these alluvial deposits have been transported into the Lagoon setting through watershed sedimentation and are not considered sensitive.

Table 4.10-1. Geologic Formation Sensitivity Ratings

Formation	Description	Paleontology	Sensitivity
Delmar Formation	Deposited in lagoonal/estuarine setting and preserves marsh flat and tidal channel paleoenvironments. Late early to early middle Eocene in age.	Produced important remains of terrestrial vertebrate fossils. Fossils consist of well-preserved to poorly preserved remains of estuarine invertebrates (clams, oysters, snails) and estuarine vertebrates (sharks and rays).	High
Torrey Sandstone Formation	Portions deposited in an ancient nearshore marine environment, while other parts of the deposit formed within a barrier island/ protected lagoon setting. Early middle Eocene in age.	Produced important remains of fossil plants and marine invertebrates. Plant remains are especially significant. Invertebrate fossils primarily consist of nearshore marine taxa (clams, oysters, snails, barnacles).	Moderate
Lindavista Formation	Marine and/or non-marine terrace deposit. Deposits accumulated on a flat, wave cut platform (sea floor) during a period of dropping sea levels. Early Pleistocene age.	Fossil localities are rare and have only been recorded from a few areas. Fossils collected consist of nearshore marine invertebrates (clams, scallops, snails, barnacles, sand dollars) and sparse remains of sharks and baleen whales.	Moderate

Source: Deméré and Walsh 1993

4.10.2.1 Lagoon Restoration and Enhancement

Elements of the proposed Lagoon Restoration and Enhancement Activities, such as channel modifications and improvements, sediment management, riparian corridor enhancement, wildlife corridor enhancement, focused grading, inlet improvements, floodplain restoration, construction of treatment wetlands, and living shoreline implementation would require ground-disturbing activities. The California Department of Parks and Recreation Operations Manual, Natural Resources includes Section 0309, which addresses the protection of Paleontological Resources. The Paleontological Resources Protection Policy (Section 0309.2) states that paleontological resources will be protected, preserved, and managed for public education. Policies to inventory and protect identified fossils, encourage academic field research and study, interpret resources for park visitors, prohibit general classroom collection, and protect known fossil locations are included (State Parks 2004).

Some ground-disturbing activities may result in excavation within previously undisturbed underlying bedrock formations. As shown in Table 4.10-1, some portions of Los Peñasquitos Lagoon are underlain by geologic formations considered to have a high or moderate paleontological sensitivity because those formations have produced important fossil remains. Thus, if a restoration or enhancement activity were to disturb more than 1,000 cy within the Delmar Formation and/or more than 2,000 cy within the Torrey Sandstone or Lindavista formations, **a potentially significant impact to paleontological resources would result (Thresholds A and B)**.

4.10.2.2 Public Access Improvements

Elements of proposed improvements to public access could require ground-disturbing activities. Actions such as trail realignments, creation of trail access points, establishment of new trial

alignments, improvements along roadways, and other pedestrian and bicycle facility improvements could require excavation into previously undisturbed underlying bedrock formations. If a public access improvement activity were to disturb more than 1,000 cy within the Delmar Formation and/or more than 2,000 cy within the Torrey Sandstone or Lindavista formations, **a potentially significant impact to paleontological resources would result (Thresholds A and B)**.

4.10.2.3 Vector Management

Vector management may include a variety of actions to reduce potential mosquito breeding habitat and conditions. Some of these actions, such as improvements to road culverts, modifications to storm drain outfalls, and dewatering of areas may require excavation into previously undisturbed underlying bedrock formations. If a vector management activity were to disturb more than 1,000 cy within the Delmar Formation and/or more than 2,000 cy within the Torrey Sandstone or Lindavista formations, **a potentially significant impact to paleontological resources would result (Thresholds A and B)**.

4.10.3 Significance of Impacts

Table 4.10-2 summarizes the paleontological resources impact conclusions identified at this programmatic level in Section 4.10.2, Impact Analysis, for each impact threshold.

Table 4.10-2. Summary of Paleontological Resources Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements	Vector Management
A. Require over 1,000 cubic yards of excavation in a high resource potential geologic deposit/formation/ rock unit.	Potentially Significant	Potentially Significant	Potentially Significant
B. Require over 2,000 cubic yards of excavation in a moderate resource potential geologic deposit/ formation/rock unit.	Potentially Significant	Potentially Significant	Potentially Significant

4.10.4 Mitigation Measures

The following mitigation measure would be required for lagoon restoration and enhancement, public access improvements, and/or vector management actions that exceed the impact thresholds at this program-level analysis as identified in Section 4.10.2. Implementation of Mitigation Measure Paleo-1 would reduce the level of impact to paleontological resources to a less than significant level under CEQA.

Paleo-1

A paleontological monitor shall be on site during initial cuttings of previously undisturbed deposits of moderate to high paleontological significance, as defined in *Paleontological Resources, County of San Diego California* (Deméré and Walsh 1993), to inspect exposures for contained fossils. If significant paleontological resources are encountered during excavation or other ground-disturbing activities, work in the area of the discovery shall be temporarily halted, and a qualified paleontologist

shall be contracted to properly assess the resource(s) and develop and implement a paleontological resource monitoring and fossil recovery program. The monitoring and recovery program may include monitoring of future ground disturbance, worker training, resource assessment and recovery, proper documentation, curation, and/or other measures as deemed appropriate. A paleontological monitor is defined as an individual who has experience in the collection and salvage of fossil materials and works under the direction of a qualified paleontologist.

As ground disturbance progresses, the qualified paleontologist and paleontological monitor shall have the authority to reduce the scope of the monitoring program to an appropriate level if it is determined that the potential for impacts to paleontological resources is lower than anticipated.

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4.11 PUBLIC SERVICES AND UTILITIES

This section of the Program EIR considers the potential impacts to public services and utilities that could result during construction and operation of the proposed project.

4.11.1 Impact Thresholds

Would the proposed project:

A. Result in impacts to any of the following public services that would require the establishment of additional facilities. Would these facilities result in further potential physical impacts to the environment?
   - Fire protection;
   - Police protection;
   - Lifeguard services;
   - Parks; or
   - Other public facilities.

B. Result in a need for any of the following new systems, or require substantial alterations to existing utilities, the construction of which would create physical impacts?
   - Natural gas;
   - Water;
   - Sewer;
   - Communication systems; or
   - Solid waste disposal.

The impact thresholds used for public services and utilities are based on those outlined in CEQA, Appendix G, and modified to best analyze a project of this nature.

4.11.2 Impact Analysis

This section discusses the environmental impacts related to public services and utilities associated with lagoon restoration and enhancement, public access improvements, and vector management.

A variety of utility infrastructure traverses Los Peñasquitos Lagoon. Multiple service providers, jurisdictions, and agencies own and maintain these utilities. The existing utility infrastructure is described in Section 2.2.13. Public services including libraries and schools and other similar services would not be affected by the proposed project and are not discussed further.

4.11.2.1 Lagoon Restoration and Enhancement

Construction activities could increase the potential for accidental on-site fires from such sources as the operation of mechanical equipment and use of flammable construction materials. Most restoration and enhancement work would occur within the wet marshy areas of the Lagoon, which would not be high risk areas. PDFs and standard construction practices, identified in Tables 3-4 and 3-5,

respectively, would be implemented to maintain fire safety. Staging and access areas would be located in previously disturbed areas with minimal vegetation or in areas cleared prior to construction to minimize the risk of accidental ignition of surrounding vegetation (PDF #15). Construction equipment used in construction activities would have fire suppression equipment on board or at the worksite so that accidental fires could be quickly extinguished, heavy equipment operators would be trained in appropriate responses to accidental fires so that an accidental fire would be dealt with expediently before spreading, and emergency communication equipment would also be available to site personnel to quickly call for help if an accidental fire were to occur and require additional assistance to be extinguished. Implementation of the project design features and standard construction practices by the construction contractors and work crews would minimize fire hazard and the need for additional fire protection services.

When not properly secured, construction sites can become targets for trespassing and other illegal activities that must be dealt with by local law enforcement. Per standard construction practices outlined in Table 3-5, during non-work hours, heavy equipment, vehicles, and fuel storage would be secured away from publicly accessible areas, creating physical barriers to trespassing and minimizing the need for police involvement.

The placement of materials on Torrey Pines State Beach would be conducted to ensure that access to and from lifeguard towers is not impeded and mobile lifeguard towers would be relocated as necessary (PDF #10). Additionally, placement of materials on the beach would not be of a height that would interfere with sight lines from viewing platforms on the lifeguard towers (PDF #11) to ensure that lifeguards have unobstructed views of the beach and water.

As discussed in Section 4.7, Transportation, construction activities associated with Restoration and Enhancement Activities are not anticipated to generate traffic volumes that could cause poor traffic operating conditions on local roadways. In addition, if disruption of traffic is anticipated (*e.g.,* lane closure, detour, or similar), a Traffic Control Plan would be required as listed in Table 3-5 and would outline appropriate traffic control measures intended to ensure adequate access is provided through the construction area. As such, adequate emergency access would be maintained throughout the construction period.

Lagoon enhancement and restoration activities would be contained generally within the Lagoon itself and would not be of the nature to impact local parks. Restricted access, or increased usage, or modification of parks would not result from the proposed project.

Therefore, implementation of the proposed project would not require the establishment of new public service facilities or cause physical impacts associated with the provision of new or altered facilities. **A less than significant impact related to the provision of public services would result (Threshold A)**.

As described in Section 2.2.13, multiple utility corridors traverse through or along the perimeter of the Lagoon. These include sewage lines along the perimeter, Pump Station 65, stormwater conveyance systems along the perimeter with outfalls that discharge into the Lagoon, SDGE underground natural gas lines along the perimeter, SDGE overhead power lines that cross the Lagoon, and a City underground water main that crosses the Lagoon. Relocation of existing utilities is not

proposed or anticipated with the proposed project. The restoration and enhancement of the Lagoon are not of the nature to require substantial additional public services such as natural gas, electricity, or communication facilities; thus, development of expanded or new facilities is not proposed. As noted in Table 3-5, standard construction practices include coordination with utility service providers for relocating and/or avoiding utilities infrastructure (*e.g.,* SDGE). Advanced coordination would serve to minimize service disruptions and ensure appropriate siting requirements are met. Should utility relocation be necessary, it would be temporary and is anticipated to occur within the boundaries of the project site. If the subsequent utility study indicates that utilities would need to be relocated outside of the project boundaries, the relocation would be designed to avoid significant environmental impacts in accordance with the applicable utility siting criteria. Restoration and Enhancement Activities would require a nominal amount of water consumption and wastewater disposal. Water consumption associated with the proposed project would be limited and primarily required during initial construction, the plant establishment period, and occasional maintenance activities. Planting activities associated with restoration and enhancement would involve minimal water use that would require temporary irrigation during plant establishment. These activities are limited and temporary in nature and would not consume water or generate wastewater in quantities that would exceed the capacity of existing treatment facilities. Other than occasional maintenance activities, the proposed project does not include features requiring water supply. Therefore, available water supplies would be sufficient to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.

Improved lagoon hydrology and overall function as a result of Lagoon Restoration and Enhancement Activities would serve to better handle wastewater inputs that enter the Lagoon through the watershed and directly from drainage outfalls. Wastewater treatment facilities located adjacent to Los Peñasquitos Lagoon (Pump Station 65), within Sorrento Valley (Pump Station 64) and associated pipelines would not be modified or impacted by the proposed project. Modifications or changes to stormwater facilities, such as culverts or drainages, would be designed to improve function. Lagoon Restoration and Enhancement Activities are not of the nature to generate wastewater as there would be minimal water consumption and no features that require sewer service.

As outlined in Table 3-5 and discussed in Section 4.3, Hydrology, a SWPPP would be prepared that would specify appropriate BMPs to control runoff from the project site and must comply with National Pollutant Discharge Elimination System requirements. Construction activities would require a nominal need for wastewater disposal, and these activities are limited and temporary in nature. The proposed project would not generate wastewater in quantities that would affect the determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

The City has multiple plans and policies aimed at reducing solid waste and diverting solid waste from landfill, including policies in the General Plan and the City's Zero Waste Plan with a target to divert 75% of solid waste by 2020 and 90% by 2035 (City of San Diego 2015). Construction activities associated with the proposed project would generate relatively small amounts of construction waste as no large structures or other facilities would be built. In accordance with recycling trends, City policies, and incentives for recycling, much of the construction debris would likely be recycled. Vegetation removed from identified areas within the Lagoon could require disposal if it cannot be

beneficially reused on site (*e.g.,* mulched and/or composted). It should be noted that the vegetation removed would be considered biodegradable green waste.

Material and sediment would be removed from the lagoon basins as part of the proposed Restoration and Enhancement Activities and ongoing maintenance. As described in Section 3.4, Project Description, the majority of sediments removed from the Lagoon would be targeted for beneficial re-use ~~on or off site~~ for purposes such as lagoon elevations, trails, beach nourishment, or other elevation augmentation but may be exported off site for disposal. It is anticipated that sediments removed would not generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure ~~The majority of material would not be exported as "waste."~~ The proposed project does not include other components that would generate solid waste. ~~The proposed project would not generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure.~~

A less than significant impact related to the construction of new or substantially altered utilities would result (Threshold B).

4.11.2.2 Public Access Improvements

As discussed in Section 4.7, Transportation, activities associated with public access improvements activities are not anticipated to generate traffic volumes that could cause poor traffic operating conditions on local roadways. During construction of public access improvements, work along, on, or adjacent to local roadways could disrupt traffic on those roads. If traffic disruption is anticipated (*e.g.,* lane closure, detour, or similar), a Traffic Control Plan would be required as listed in Table 3-5 and would outline appropriate traffic control measures intended to ensure adequate access for emergency services is provided and maintained throughout the construction area. Once operational, improvement to public access throughout the area may result in a slight user increase at local parks as recreationalists are provided with better accessibility to those facilities. This increase would not be of the magnitude to negatively impact local parks or their ability to serve the community. Issues related to police service and other public services would be similar to the discussion provided for enhancement and restoration.

Elements of proposed actions related to public access would involve improvements or adding new infrastructure into the stormwater drainage system, such as road culverts and modifications to storm drain outfalls that would modify existing wastewater drainage facilities. However, actions involving wastewater infrastructure modifications would be designed to improve the system's ability to appropriately drain and handle wastewater inputs to avoid standing water and other drainage issues. Like Restoration and Enhancement Activities, water consumption associated with the public access improvements would be limited and would primarily be required during initial construction and occasional maintenance activities. Solid waste generation would be relatively small, similar to the discussion of restoration and enhancement as substantial structures or material-intensive facilities are not proposed.

Therefore, a less than significant impact related to public services and utilities would result (Thresholds A and B).

4.11.2.3 Vector Management

Some of the proposed Vector Management Activities, such as improvements to road culverts and modifications to storm drain outfalls, would modify existing wastewater drainage facilities or add new infrastructure into the system. However, actions involving wastewater infrastructure modifications would be designed to improve the system's ability to appropriately drain and handle wastewater inputs to avoid standing water and other drainage issues. These actions would be similar to those considered in the discussion of lagoon restoration and enhancement projects and public access improvements, and the analysis provided is also applicable to vector management projects. Thus, **a less than significant impact related to public services and utilities would result (Thresholds A and B)**.

4.11.3 Significance of Impacts

Table 4.11-1 summarizes the public services and utilities impact conclusions identified at this programmatic level in Section 4.11.2, Impact Analysis, for each impact threshold.

Table 4.11-1. Summary of Public Services and Utilities Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements	Vector Management
A. Result in impacts to any of the following public services that would require the establishment of additional facilities. Would these facilities result in further potential physical impacts to the environment? a. Fire protection b. Police protection c. Lifeguard services d. Parks e. Other public facilities	Less than Significant	Less than Significant	Less than Significant
B. Result in a need for any of the following new systems, or require substantial alterations to existing utilities, the construction of which would create physical impacts. • Natural gas • Water • Sewer • Communication systems • Solid waste disposal	Less than Significant	Less than Significant	Less than Significant

4.11.4 Mitigation Measures

Impacts related to public services and utilities are less than significant. No significant impacts to public services and utilities have been identified at this program-level analysis. Therefore, no mitigation measures are required.

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4.12 PUBLIC HEALTH AND SAFETY

This section addresses public health and safety impacts associated with implementation of the proposed project, focusing on topics such as hazardous materials, vectors, and recreational safety. Flooding and flood hazards are discussed in Section 4.3, Hydrology.

4.12.1 Impact Thresholds

Would the proposed project:

A. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

B. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

C. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

D. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;

E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area;

F. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;

G. Substantially increase human exposure to vectors, such as mosquitoes, that are capable of transmitting significant public health diseases or creating nuisances; or

H. Substantially increase hazards for people recreating at beach and/or nearshore placement locations.

The impact thresholds used for public health and safety are those outlined in CEQA, Appendix G. An additional vector-related threshold (Threshold G) was added to address unique public safety concerns associated with the wetland conditions that would be created by the proposed project. Threshold H was added to consider the potential for hazards generated by material placement along Torrey Pines State Beach.

4.12.2 Impact Analysis

This section discusses the potential impacts related to public health and safety associated with lagoon restoration and enhancement, public access improvements, and vector management. Wildland fires are discussed in Section 8.6.

4.12.2.1 Lagoon Restoration and Enhancement

The use of construction equipment for the implementation of lagoon restoration and enhancement projects would require routine use of a number of petroleum products such as fuel, hydraulic fluids, and lubricants for operation. Fuel replenishment would be required daily for most of the heavy equipment. Consistent with standard construction practices (Table 3-5), fueling and/or maintenance activities would occur at the staging areas and/or away from publicly accessible areas to ensure the public is not exposed to, or has access to, the hazardous materials associated with the construction activities. The contractor would be required to prepare a Spill Prevention Control and Containment plan for hazardous spill containment. The Spill Prevention Control and Containment plan would ensure that spills would be cleaned up in accordance with permit conditions and that employees would understand the proper procedures associated with a cleanup so that it would be carried out correctly.

Because of the potential for contamination in lagoon soils due to past sewage spills, pollutant discharge from upstream sources, and the location of a known TCE contamination plume from a nearby hazardous material site as described in Section 2.2.14, soil testing would occur per permitting and regulatory requirements prior to the excavation of lagoon materials. Testing would indicate if potential contaminant concentrations exceed regulatory health risk-based soil screening levels and ecological risk-based screening levels developed by the State of California, as well as soil screening levels developed by EPA (Regional Screening Levels). Concentration levels would determine what, if any, regulatory requirements would be necessary for the proper handling of the material. If special treatment of lagoon materials is necessary, regulatory requirements related to the safe transport, handling, and disposal of hazardous material would be implemented and adhered to in order to minimize potential public exposure.

As required by law (Health and Safety Code, Division 20, Chapter 6.95, Article 2, Section 25500-25520), storage, handling, transport, emission, and disposal of hazardous materials associated with construction activities would be in full compliance with local, state, and federal regulations, which provide requirements to ensure proper and appropriate actions specific to minimizing hazardous materials risk. Thus, through adherence with regulatory requirements, BMPs, and standard construction practices, potential risk associated with the transport, use, or disposal of hazardous materials or public exposure due to accidental release of hazardous materials would be minimized. **A less than significant impact related to public exposure and risk from the transport, use, or disposal or accidental release of hazardous materials would result (Thresholds A and B)**.

Large segments of the Lagoon are generally buffered by open space and existing roadways. Schools are located in the general area, but not in immediate proximity to the Lagoon. National University is on North Torrey Pines Road approximately 0.25 mile west of the Lagoon; Carmel del Mar School and The San Diego Jewish Academy are both east of I-5 at distances over 0.5 mile from the Lagoon. Other daycares and pre-schools are located throughout the area as well. As described for Thresholds A and B, construction of the proposed project would include the use of standard hazardous materials necessary for the operation of construction equipment; however, hazardous materials would be handled in compliance with safety regulations and potential for accidental release would be minimized through adherence to regulatory requirements, BMPs, and standard construction practices. For these reasons, a **less than significant impact related to hazardous emissions or handling of**

hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school would result (Threshold C).

As outlined in Existing Conditions, Section 2.2.14, Los Peñasquitos Lagoon is not listed as a hazardous materials site in DTSC databases and the nearest hazardous material sites are located outside of areas that may be disturbed by the proposed project. Thus, the proposed project would not be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (DTSC 2019a, 2019b). As discussed above, potential contamination from a listed off-site hazardous material site (Kyocera America Inc. [71002420]) may have encroached into Los Peñasquitos Lagoon wetland areas. Soil testing would occur prior to excavation of materials and appropriate regulatory requirements would be implemented as necessary. **A less than significant impact related to the creation of a public hazard from a hazardous material site would result (Threshold D)**.

Los Peñasquitos Lagoon is not located within 2 miles of a public use airport. The Lagoon area is within the Airport Influence Area for Marine Corps Air Station (MCAS) Miramar as flight patterns pass over the area (San Diego County Regional Airport Authority 2008). MCAS Miramar is a military installation and no public use of the air station occurs. No elements of the proposed project would be of the size, magnitude, or nature to interfere with aircraft operations that may occur in the area. No tall structures are proposed, and the proposed project would not bring substantial new amounts of people to the area. The continued open space setting of the Lagoon would not influence or modify airport operations in a way that could result in a safety hazard or excessive noise for people residing or working in the project area. Thus, **no impact related to airport safety would result (Threshold E)**.

As described in Section 4.7, Transportation, restoration and enhancement projects would require temporary construction traffic to use local roadways. While construction traffic on surrounding roadways would be typical and not be of substantial volume, a Traffic Control Plan would be required if the transportation system were to be disrupted (Table 3-5, Standard Construction Practices). The Traffic Control Plan would outline safety and emergency procedures to ensure that adequate emergency access is available through the impacted areas, including emergency evacuation routes, and may include informing and coordinating with emergency services provided in the area, use of flagmen to control traffic flow, and procedures for emergency evacuation situations. Restoration activities would not obstruct or hinder the ability of the local transportation network and designated roads to serve emergency purposes or as evacuation routes if an emergency were to occur. Once completed, the restored Lagoon would not create conditions that could affect emergency evacuation in the local area. Thus, Lagoon restoration and enhancement would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. **A less than significant impact related to emergency plans and evacuation would result (Threshold F)**.

As described in Section 2.2.14, Los Peñasquitos Lagoon is a breeding area for mosquitos, including the vector species of *Culex tarsalis*, *C. pipiens*, and *C. peus*. These mosquito species are capable of transmitting WNV, Western Equine Encephalitis, and St. Louis Encephalitis to both human and equine hosts. In addition, large populations of aggressive day-biting mosquitoes of the genus *Aedes* occur intermittently at the Lagoon, usually following higher high tides associated with spring tide events. Mosquitos such as *Aedes taeniorhynchus* can be a nuisance that affects quality of life for nearby

residents and visitors; their bite can cause severe reactions for some individuals. Daily inputs of freshwater from the watershed have caused rapid expansion of brackish and freshwater habitats into the Lagoon while rapid sedimentation has increased elevations within the marsh plain and salt marsh conversion zones, precluding these areas from tidal inundation and creating additional areas for freshwater ponding. Structural impediments (*e.g.,* railway berm, Highway 101) also have greatly affected freshwater conveyance within the Lagoon's channels, increasing drawdown times of flood waters impounded within the channels, greatly diminishing tidal circulation, and impairing the ability of the Lagoon to maintain an open inlet. As a result, *C. tarsalis* and other freshwater mosquitoes have become further established in the Lagoon and at greater concentrations due to the expansion of preferred breeding habitat and complications associated with on-site vector management. During prolonged inlet closures, populations of *C. tarsalis* can explode exponentially as the entire Lagoon is dominated by fresh and brackish waters. San Diego County DEH operates a vector management program with its primary species of concern being *C. tarsalis.* DEH has identified numerous, ongoing instances of WNV infections in avian populations within the Lagoon. In 2008, two human cases of WNV occurring near the Lagoon were recorded by DEH staff, making management of this species at the Lagoon a priority within San Diego County. Following an extended inlet closure in 2016, DEH detected WNV in airborne *C. tarsalis* found in traps near the lagoon and subsequently sprayed the community of Torrey Pines with insecticide to avoid human infections.

The conditions that tend to favor mosquitoes are stagnant~~, fresh or brackish~~ water with minimal circulation; narrow channels or a limited circulation system; and dense vegetation. Key management strategies to control ~~vector~~ mosquito populations in water bodies focus on breaking the larval life cycle before they mature and become adult mosquitoes. Strategies focus on increasing water circulation and wave action, varying water levels, decreasing vegetation such as cattails, decreasing nutrients and reducing water temperatures, and providing improved access for natural predators of larval and adult mosquitoes (aquatic and airborne) to potential breeding areas. Mosquito fish (*Gambusia affinis*) have been introduced to the Lagoon in the past to control mosquito populations, but this invasive fish species is no longer used since it tends to be an aggressive feeder that outcompetes native fish species.

During construction, heavy equipment, construction vehicles, and other tools/storage facilities would be present within the Lagoon. There is some potential for rainwater or other water sources to become impounded in small containers or wheel ruts. Given the rapid mosquito life cycle, an impoundment of 7 to 10 days can allow for successful breeding. As described in standard construction practices (Table 3-5), sources of impounded water resulting from construction equipment would be removed, which would ensure that no new breeding conditions would be created during construction.

The Restoration and Enhancement Activities would modify the hydrologic conditions of the Lagoon to accommodate more tidal exchange and circulation within lagoon channels. The increased tidal action would lead to a larger area inundated at high tide, and a smaller area inundated at low tide. The dynamic hydrologic cycle of tides would interrupt the mosquito reproduction process, and would lead to substantially increased mortality of eggs, larvae, and pupae. Eggs laid on water during one point of the tide may be left totally high and dry during the subsequent low tide or delivered directly to the ocean by tidal currents. In addition, quick draw-down would prevent establishment of stagnant ponds on the lagoon edges that could serve as mosquito breeding grounds. Specific to freshwater mosquito species, ~~I~~increased tidal action would also result in other benefits for mosquito abatement, including

increased salinity, which reduces the ability of these vectors to reproduce~~; quick draw-down, which prevents establishment of stagnant ponds on the lagoon edges;~~ and habitat conversion resulting in less stands of invasive and non-native vegetation that cannot survive the saline waters creating better circulation of water and improved effectiveness of vector control measures. Additionally, the new and cooler ocean water entering the Lagoon would reduce *C. tarsalis* larvae survival.

Channel modifications and creation throughout the Lagoon would better capture dry weather flows of freshwater and reduce periods of inundation across the marsh plain. Intercepting freshwater inputs while increasing tidal flows within lagoon channels and over the marsh plain would convert the existing areas of brackish inundation and freshwater habitats to salt marsh and other wetland habitats. Salt marsh in Los Peñasquitos Lagoon is projected by habitat trajectory modeling to increase from the existing 158 acres to 232 acres, with a net increase of approximately 74 acres of salt marsh by 2030 and 114 acres by 2050. This conversion to saltwater marsh habitats would decrease areas favorable for mosquito propagation and harborage (dense expanses of freshwater marsh) and increase unfavorable habitats for mosquitoes (open water, channels within marsh areas, tidal mudflats, regularly inundated/tidally drained areas).

As described above, implementation of the Restoration and Enhancement Activities in Los Peñasquitos Lagoon would result in a less-conducive vector breeding condition for both freshwater and saltwater mosquitos and reduce the public health and safety risk associated with mosquito-borne diseases. Substantial increases in human exposure to vectors are not anticipated during construction or after implementation of the proposed project. **A less than significant impact related to increased human exposure to vectors, such as mosquitoes, that are capable of transmitting public health diseases or creating nuisances would result (Threshold G)**.

Placement of material on local beach or nearshore locations would create a potentially dangerous situation with construction equipment operating in areas of typical public beach recreation. A series of PDFs have been incorporated into the proposed project as previously implemented for similar projects. During placement of material on the beach, portions of the beach directly affected by active material placement activities may be closed temporarily (PDF). Closing the area to the public would prevent potentially unsafe conditions for the public associated with the operation of heavy equipment to move the sand onto the beach. Adjacent stretches of beach not directly affected by placement activities would remain open to public access and recreational activities (PDF #7). As sand placement activities shift along the beach, those areas where sand placement has been completed would be reopened to public use. Prior to opening areas of beach with placed materials, the material would be spread and checked for potential hazards (*e.g.,* foreign objects in the sand) (PDF #8). Horizontal and vertical access along either side of the placement area would be maintained with temporary closures occurring as necessary to complete sand placement to the back edge of the beach (PDF #9). Lifeguard services would remain during construction and mobile lifeguard towers would be temporarily relocated if necessary (PDF #10), and sand would be placed to avoid blocking line-of-sight at lifeguard towers (PDF #11). **With these PDFs implemented to maintain public safety during material placement on beach locations, a less than significant safety hazard to recreational beach users at material placement locations would result (Threshold H)**.

4.12.2.2 Public Access Improvements

Like Lagoon restoration and enhancement, public access improvements would also include the use of construction equipment and the associated hazardous materials necessary for operation. The potential risk associated with the transport, use, or disposal of hazardous materials or public exposure due to accidental release of hazardous materials would be similar to that described for restoration and enhancement, and the regulatory requirements, BMPs, and standard construction practices to minimize potential for risk would also be applicable. Discussion and analysis of potential school exposure and nearby hazardous material sites provided for restoration and enhancement would be the same for public access improvements. **A less than significant impact related to public exposure and risk from the transport, use, or disposal of hazardous materials; accidental release of hazardous materials; exposure to schools within 0.25-mile radius; and location on or near listed hazardous sites would result (Thresholds A, B, C, and D)**.

No elements of proposed public access improvements would be of the size, magnitude, or nature to interfere with aircraft operations that occur in the area. No tall structures are proposed and while public access improvements may encourage the increased use of trails and public pathways around the Lagoon, they would not bring substantial new amounts of people to the area. Improved public access in the local area would not influence or modify airport operations in a way that could result in a safety hazard or excessive noise for people residing or working in the project area. Thus, **no impact related to airport safety would result (Threshold E)**.

Similar to restoration and enhancement projects, public access improvements would at times require temporary construction traffic to use local roadways. If the transportation system were disrupted, a Traffic Control Plan (Table 3-5, Standard Construction Practices) would be required that would outline safety and emergency procedures. It is logical to assume that in an emergency situation requiring evacuation of the area, work on the Lagoon would be halted and construction traffic would not be active on local roadways. Improved public access could aid non-motorized evacuation of the area. Improved public access would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. **A less than significant impact related to emergency plans and evacuation would result (Threshold F)**.

Public access improvements would not create new or worsened vector conditions. New or altered surfaces would be designed in accordance with State Parks and/or City requirements and include proper drainage to minimize potential for ponded or standing water that could be breeding habitat for vectors. **A less than significant impact related to increased human exposure to vectors, such as mosquitoes, that are capable of transmitting public health diseases or creating nuisances would result (Threshold G)**.

Public access improvements do not include the placement of excavated materials on local beaches. Thus, **no impact related to safety hazards to recreational beach users at material placement locations would result (Threshold H)**.

4.12.2.3 Vector Management

Similar to the previous analysis, Vector Management Activities would also include the use of construction equipment and the associated hazardous materials necessary for operation. The potential risk associated with the transport, use, or disposal of hazardous materials or public exposure due to accidental release of hazardous materials would be similar to that described for restoration and enhancement, and the regulatory requirements, BMPs, and standard construction practices to minimize potential for risk would also be applicable. Discussion and analysis of potential school exposure and nearby hazardous material sites provided for restoration and enhancement would be the same for vector management actions. **A less than significant impact related to public exposure and risk from the transport, use, or disposal of hazardous materials; accidental release of hazardous materials; exposure to schools within 0.25 mile radius; and location on or near listed hazardous sites would result (Thresholds A, B, C, and D)**.

No elements of proposed vector management actions would be of the size, magnitude, or nature to interfere with aircraft operations that occur in the area. No tall structures are proposed, and vector management projects would not bring substantial new amounts of people to the area. Thus, **no impact related to airport safety would result (Threshold E)**.

Similar to restoration and enhancement projects, vector management projects may at times require temporary construction traffic to use local roadways. If the transportation system were disrupted, a Traffic Control Plan (Table 3-5, Standard Construction Practices) would be required that would outline safety and emergency procedures. Vector control projects such as improved culverts and drainage outfalls would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. **A less than significant impact related to emergency plans and evacuation would result (Threshold F)**.

The purpose of vector management as part of the proposed project would be to eliminate those areas known to be prone to good vector breeding conditions. Vector management projects would improve drainage in specific areas through modifications to storm outfalls, road culverts, and reduced impoundment of water in areas to reduce standing water that serves as breeding habitat for vectors. Improved circulation and reduced impoundment of storm and tidal flows would reduce favorable mosquito breeding habitat in an area. **No impact related to increased human exposure to vectors, such as mosquitoes, that are capable of transmitting public health diseases or creating nuisances would result (Threshold G)**.

Vector management does not include the placement of excavated materials on local beaches. Thus, **no impact related to safety hazards to recreational beach users at material placement locations would result (Threshold H)**.

4.12.3 Significance of Impacts

Table 4.12-1 summarizes the public health and safety impact conclusions identified at this programmatic level in the Impact Analysis for each impact threshold.

Table 4.12-1. Summary of Public Health and Safety Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements	Vector Management
A. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Less than Significant	Less than Significant	Less than Significant
B. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	Less than Significant	Less than Significant	Less than Significant
C. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	Less than Significant	Less than Significant	Less than Significant
D. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.	Less than Significant	Less than Significant	Less than Significant
E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area.	No Impact	No Impact	No Impact
F. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	Less than Significant	Less than Significant	Less than Significant
G. Substantially increase human exposure to vectors, such as mosquitoes, that are capable of transmitting significant public health diseases or creating nuisances.	Less than Significant	Less than Significant	No Impact
H. Substantially increase hazards for people recreating at beach placement locations.	Less than Significant	No Impact	No Impact

4.12.4 Mitigation Measures

Impacts related to public health and safety are less than significant due to regulatory requirements, project BMPs, and standard construction practices. No significant impacts to public health and safety have been identified at this program-level analysis. Therefore, no mitigation measures are required.

4.13 CLIMATE CHANGE AND GREENHOUSE GAS EMISSIONS

This section of the Program EIR considers the potential GHG emissions that could be generated during the proposed project during construction and operation and the resulting potential implications on climate change.

4.13.1 Impact Thresholds

Would the project:

A. Emit GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

B. Conflict with the City's Climate Action Plan (CAP) or another applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The impact thresholds used for climate change and GHG emissions analysis are based on those outlined in CEQA, Appendix G, and by the City Development Services Department.

In December 2015, the City adopted a CAP that outlines the actions the City will undertake to achieve its proportional share of state GHG emission reductions (City of San Diego 2015). Pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of the CAP. In July 2016, the City adopted the CAP Consistency Checklist (Checklist) to provide a streamlined review process for proposed new development projects that are subject to discretionary review and trigger environmental review pursuant to CEQA. The Checklist was revised in June 2017. If a project is determined, through the use of the Checklist, to be in compliance with the CAP, the project may rely on the CAP for the cumulative impacts analysis of GHG emissions and is not required to perform further analysis (City of San Diego 2016).

Because the City relies on the CAP and Checklist for CEQA significance conclusions, this analysis reviewed guidelines used by other public agencies to establish additional context in which to consider the proposed project's GHG emissions. Other districts, including the South Coast Air Quality Management District (SCAQMD), have recommended that GHG emissions from construction and short-term sources be amortized over the lifetime of the project (typically assumed 30 years) for comparison with significance thresholds (SCAQMD 2008). The draft thresholds released by the SCAQMD include possible thresholds of 3,000 metric tons of CO2e per year for non-industrial projects (residential, commercial, and mixed-use projects). The most conservative threshold was included in the California Air Pollution Control Officers Association report *CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the CEQA*, which recommends a threshold of 900 metric tons of CO2e per year for any residential, commercial, or industrial project (California Air Pollution Control Officers Association 2008).

4.13.2 Impact Analysis

This section discusses the environmental impacts related to climate change and GHG emissions associated with lagoon restoration and enhancement, public access improvements, and vector management. As described in Section 3.5, the lagoon is not a generator of GHG emissions that could influence sea level rise and the proposed project has been designed with a gradient habitat to provide resilience against predicted future sea level rise; thus, the issue of sea level rise is not further discussed.

4.13.2.1 Lagoon Restoration and Enhancement

Heavy-duty off-road equipment, material transport, and worker commutes during construction of the restoration and enhancement projects would result in exhaust-related GHG emissions. GHG emissions generated by construction activities would be primarily in the form of CO_2. Although emissions of other GHGs, such as CH_4 and N_2O, are important with respect to global climate change, the emission levels of these other GHGs from on- and off-road vehicles used during construction are relatively small compared with CO_2 emissions, even when factoring in the relatively larger GWP of CH_4 and N_2O.

Emissions associated with the individual restoration and enhancement actions would be required to be analyzed during future CEQA (where applicable) environmental review processes. At the time of these analyses, the specific impact of the future actions on GHG emissions would be determined. However, at a programmatic level, the overall proposed project as a whole is considered. Because specific emission calculations cannot be performed at this time due to lack of specific project details, the proposed project has been compared with recent lagoon restoration projects. The San Dieguito Lagoon W-19 Restoration Project EIR identified that the amortized construction-related emissions for that project would be approximately 177 metric tons CO_2e per year. The San Dieguito Lagoon W-19 Restoration Project involves the excavation and removal of approximately 1.1 million cy of soil and 150,000 cy of vegetation (San Dieguito River Park Joint Powers Authority 2018). For the most intensive alternative of the Buena Vista Lagoon Enhancement Project EIR, the combined amortized construction-related and regular yearly maintenance emissions were calculated at 193 metric tons of CO_2e per year. This involved the initial excavation and disposal of approximately 781,000 cy of soil and 211,000 cy of vegetation (SANDAG 2017). As shown by these recent lagoon restoration projects in the San Diego region, the amortized construction-related emissions that would be generated by excavation, disposal, and other lagoon enhancement activities/maintenance do not approach the significance guidance threshold of 900 metric tons of CO_2e. The initial quantities of material excavation anticipated for the Los Peñasquitos Lagoon restoration range ~~around~~ of approximately 51,000 cy. Thus, based on these example projects, which are of a larger magnitude than the proposed project, it is anticipated that the GHG emissions resulting from the proposed project would be less than the significance guidance threshold of 900 MT CO_2e. Additionally, many of the activities planned as part of the proposed project are anticipated to be implemented over a long timeframe, some as long as 25 to 50 years from now. It is likely that, as construction extends into future years, actual emissions would be lower due to improvements in equipment technology, fuel efficiency, and turnover in equipment fleet. With implementation of enhancement actions, additional sequestration of carbon may also occur, offsetting some emissions. Thus, potential GHG emissions from the overall proposed project would be generated and spread over a 50-year-plus timeframe. **Therefore, the proposed project would not generate GHG emissions, either directly or**

indirectly, that may have a significant impact on the environment and a less than significant impact would result (Threshold A).

Step 1 of the Checklist requires a project to assess its consistency with existing General Plan and Community Plan land use and zoning designations. As discussed in Section 4.1, Land Use, the proposed project would not modify the current land use or designations of Los Peñasquitos Lagoon. The preserved open space of the Lagoon would remain and continue to be consistent with applicable land use planning documents, such as the City's General Plan and Torrey Pines Community Plan. No new land use conflicts would result. Step 2 of the Checklist only applies to development projects that involve permits that would require a certificate of occupancy from the Building Official or projects composed of one- and two-family dwellings or townhouses. Continued preservation of open space areas does not require a certificate of occupancy; thus, by demonstrating land use consistency, the proposed project demonstrates consistency with the CAP through the Checklist. Additionally, Footnote 5 of the City CAP Checklist states that it also doesn't apply to non-building infrastructure projects such as roads or pipeline projects.

Additionally, the proposed project would be consistent with relevant CAP strategies, specifically Strategy 5: Climate Resiliency. Climate Resiliency is described as the ability of a system to absorb disturbance while undergoing change and still retain essentially the same function and identity as before. The intent of the strategy is to develop flexible programs, policies, and processes to accommodate unexpected events and shocks and continue to function effectively (City of San Diego 2015). The proposed project implements Strategy 5, Climate Resiliency, by restoring and enhancing the Lagoon in a manner that would include appropriate contours, gradients, and elevations that would facilitate upslope migration of salt marsh and other native habitats in response to sea level rise. The improved hydrology of the Lagoon would support native species establishment and improve long-term resiliency.

Thus, the proposed project has demonstrated consistency with the CAP through the Checklist and would not conflict with existing California legislation that has been adopted to reduce statewide GHG emissions. For these reasons, the proposed project would not result in a substantial adverse effect related to a conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and **a less than significant impact would result (Threshold B)**.

4.13.2.2 Public Access Improvements

Similar to restoration and enhancement, public access improvements would require the use of heavy construction equipment that would emit GHG pollutants. Grading and excavation would be necessary for some trail and pathway relocations and improvements. Also, activities such as paving and roadway work would be required. However, similar to the analysis provided for Restoration and Enhancement Activities, the proposed public access improvement projects are not of the magnitude to generate GHG emissions in excess of the suggested significance guidance threshold of 900 metric tons of CO_2e. Similarly, potential GHG emissions from the overall proposed project would be generated and spread over a 50-year-plus timeframe. **Therefore, public access improvements would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment and a less than significant impact would result (Threshold A)**.

As described for Restoration and Enhancement Activities, public access improvements would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. Thus, the proposed project has demonstrated consistency with the CAP through the Checklist and would not conflict with existing California legislation that has been adopted to reduce statewide GHG emissions. For these reasons, public access improvements would not result in a substantial adverse effect related to a conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and **a less than significant impact would result (Threshold B)**.

4.13.2.3 Vector Management

Minor construction activities would be required for activities associated with vector management, such as improving drainage outfall and roadway culverts. Similar to the analysis provided for other proposed project activities, vector management projects are not of the magnitude to generate GHG emissions in excess of the suggested significance guidance threshold of 900 metric tons of CO_2e. Similarly, potential GHG emissions from the overall proposed project would be generated and spread over a 50-year-plus timeframe. **Therefore, vector management projects would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment and a less than significant impact would result (Threshold A)**.

As described for Restoration and Enhancement Activities, vector management would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. Thus, the proposed project has demonstrated consistency with the CAP through the Checklist and would not conflict with existing California legislation that has been adopted to reduce statewide GHG emissions. For these reasons, vector management would not result in a substantial adverse effect related to a conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and **a less than significant impact would result (Threshold B)**.

4.13.3 Significance of Impacts

Table 4.13-1 summarizes the climate change and GHG emissions impact conclusions identified at this programmatic level in the Impact Analysis for each impact threshold.

Table 4.13-1. Summary of Climate Change and GHG Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements	Vector Management
A. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	Less than Significant	Less than Significant	Less than Significant
B. Conflict with the City's Climate Action Plan or another applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Less than Significant	Less than Significant	Less than Significant

4.13.4 Mitigation Measures

Impacts related to climate change and GHG emissions are less than significant. No significant impacts to climate change and GHG emissions have been identified at this program-level analysis. Therefore, no mitigation measures are required.

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4.14 ENERGY

This section of the Program EIR considers the potential impacts related to energy consumption that could result during construction and operation of the proposed project. The analysis considers the proposed project's primary uses of energy and the potential for activities to result in the wasteful, inefficient, and unnecessary consumption of energy.

4.14.1 Impact Thresholds

Would the project:

A. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or

B. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

The impact thresholds for energy resources are those recommended in CEQA, Appendix G.

4.14.2 Impact Analysis

4.14.2.1 Lagoon Restoration and Enhancement

The proposed project would result in the consumptive use of energy required to operate machinery during construction, which may include the use of excavators, dredges, trucks, pumping equipment, and grading equipment. Elements of the proposed project design features and standard construction procedures discussed in Section 3.4.4 lend themselves to energy savings, such as stockpiling of material where the material could be placed on top of designated fill areas that would otherwise be hauled to a landfill or other disposal site. Additional project features that would promote energy efficiency and would decrease overall energy consumption include PDF #13, which requires equipment and vehicle engines be maintained in good condition and minimize idling time, avoiding wasteful and inefficient use of energy resources.

Once completed, the proposed project would not generate additional daily vehicle trips, necessitate an increased need for ongoing energy use, or require other energy-consuming activities. It is not anticipated that the proposed project would require operational use of energy. If maintenance activities were necessary, they would be temporary and periodic in nature. Although the proposed project would require the use of a variety of energy resources during construction, **the energy used for lagoon restoration and enhancement implementation is not considered wasteful, inefficient, or unnecessary and, as a result, a less than significant impact to energy resources would occur (Threshold A).**

The proposed project would be constructed within Los Peñasquitos Lagoon, which is part of the overall TPSNR, and would not conflict with plans for renewable energy. Specific project design features and standard construction procedures have been incorporated into the proposed project that promote energy efficiency and decrease overall energy consumption. Further, energy use during

construction is expected to be temporary in nature and operational energy use is not anticipated with the proposed project. **Therefore, the proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur (Threshold B).**

4.14.2.2 Public Access Improvements

Energy use required to construct proposed public access improvements would be similar to lagoon restoration and enhancement initiatives. Energy would be required for transportation of construction workforce and materials to and from the site, as well as for construction operations. Energy sources such as gasoline and diesel oil would be used to power construction equipment and vehicles such as trucks and pumps. One additional consideration that may be greater than other proposed project components is the use of earthmoving and/or tunneling equipment to construct the proposed improved access underneath North Torrey Pines Road. However, as stated above, specific PDFs as described in Section 3.4.4 have been incorporated into the proposed project to minimize energy consumption whenever possible. Additionally, energy use during construction would be temporary and is not anticipated during operational aspects of the proposed project. **A less than significant impact would result due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation (Threshold A).**

Similar to the analysis for restoration and enhancement, **proposed public access improvements would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency; thus, no impacts would occur (Threshold B).**

4.14.2.3 Vector Management

As described above, the proposed project would result in energy use during construction when improving culverts, modifying storm drain outfalls, and reducing impounded water at known issue areas through channel modifications to increase circulation and to better manage vector sources within the Lagoon, as described in Section 3.4.3. Specific PDFs and standard construction procedures have been incorporated into the proposed project to minimize energy use and to conserve energy where possible. Energy use is not anticipated during operational phases of the proposed project. **Thus, the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources and a less than significant impact would occur (Threshold A).**

Similar to the analysis for restoration and enhancement, **proposed vector management strategies would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency; thus, no impacts would occur (Threshold B).**

4.14.3 Significance of Impacts

Table 4.14-1 summarizes the energy impact conclusions identified at this programmatic level in the Impact Analysis for each impact threshold.

Table 4.14-1. Summary of Energy Impact Conclusions

Threshold	Lagoon Restoration and Enhancement	Public Access Improvements	Vector Management
A. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or	Less than Significant	Less than Significant	Less than Significant
B. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	No Impact	No Impact	No Impact

4.14.4 Mitigation Measures

Significant impacts related to energy are not anticipated since the proposed project incorporates PDFs that would reduce energy consumption and prevent wasteful, inefficient use of energy resources. No significant impacts to energy have been identified at this program-level analysis. Therefore, no mitigation measures are required.

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CHAPTER 5
SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

PRC Section 21100(b)(2)(B) and Section 15126.2(c) of the CEQA Guidelines require that an EIR identify the significant, irreversible environmental changes that would result from a project. Irreversible environmental changes are typically categorized as either primary impacts, such as the direct use of nonrenewable resources, or secondary impacts, which facilitate the use of such resources. This chapter analyzes the extent to which the proposed project's primary and secondary impacts would affect the environment and commit nonrenewable resources to uses that future generations will not be able to reverse.

Implementation of the Enhancement Plan actions would result in the use of nonrenewable resources, including fossil fuels, natural gas, water, and building materials such as concrete. Additionally, electrical power would be used for power generation and lighting. The proposed project does not represent an uncommon construction project that would use an extraordinary amount of raw material in comparison to other restoration projects of similar scope and magnitude. As such, the Los Peñasquitos Lagoon Restoration and Enhancement Project is not anticipated to consume substantial amounts of energy or use other resources in a wasteful manner. Because the proposed project would not induce growth or increased demand for resources in the area, changes to the natural environment would be limited to those related to initial construction or maintenance activities. Although the proposed project would result in the consumption of nonrenewable resources, the impact would not be considered significant.

Irreversible changes to the natural environment would occur within the Lagoon. The proposed project would change the Lagoon environment by removing existing vegetation and soils to support water quality improvements and establish a functional mix of wetlands, salt marsh, and other native habitat that would thrive in the Lagoon environment. While some existing biological resources would be lost due to implementation of Restoration and Enhancement Activities, the proposed project would not result in a net loss of native habitats and would protect and preserve native species within Los Peñasquitos Lagoon and the habitats that support them through efforts that include improved hydrology, adequate buffer zones, reduced unauthorized trail access through sensitive areas, and reduced vector breeding opportunities. Channel improvements would improve hydrologic connectivity between the watershed, Lagoon, and ocean, which would reduce residence times for impounded waters within Los Peñasquitos Lagoon in a manner that supports the health and resiliency of the coastal salt marsh and other native habitats historically present in the Lagoon to promote a sustainable system of native wetland and terrestrial vegetation communities. Although the proposed project would result in the initial loss of some biological resources, the restoration and enhancement of the Lagoon would create a net gain in more biologically productive habitat and support of sensitive species than currently exists. Many of the proposed trail improvements include natural surfaces that could be revegetated at the end of the trail facilities' useful life. Some Public Access or Vector Management Activites may include more permanent facilities, such as concrete or paving; however, those improvements would generally be located adjacent to roadways or within proximity of other existing developed features and would benefit species within the Lagoon by limiting access to specific areas of the reserve. While the proposed project would create a substantial change to the existing

Lagoon environment, the modifications are considered an improvement and biologically beneficial, as sustainable riparian habitats and the species they support are a valuable resource and would remain consistent with resource management of a State Natural Preserve. Thus, the change to the natural environment would not be considered significant.

CHAPTER 6
GROWTH INDUCEMENT

Section 15126.2(d) of the CEQA Guidelines requires a discussion of the ways in which a project could induce growth. This includes ways in which a project would foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Section 15126.2(d) of the CEQA Guidelines states that an EIR should:

> *"Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth… Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment."*

Induced growth is growth that exceeds planned growth and results from new development that would not have taken place without the implementation of a proposed project. Typically, the growth-inducing potential of a project would be considered significant if it results in growth or population concentration that exceeds or substantially alters the planned location, distribution, density, or growth rate of the population of an area relative to assumptions included in pertinent master plans, land use plans, or projections made by regional planning authorities. Growth inducement can also be a result of extensions of roads or other infrastructure not assumed in the community plan when such infrastructure exceeds the needs of the project and could accommodate future developments. However, the creation of growth-inducing potential does not automatically lead to growth, whether it would be below or in exceedance of a projected level. The environmental effects of induced growth are secondary or indirect impacts of a proposed project. Secondary effects of growth could result in significant, adverse environmental impacts, which could include increased demand on community or public services, increased traffic and noise, degradation of air and water quality, and conversion of agricultural land and open space to developed uses.

Restoration and enhancement of Los Peñasquitos Lagoon and associated public access and vector control activities would not be considered growth inducing. No zoning changes would be required for implementation of the proposed project and the Lagoon would remain as currently used for open space that is not proposed or designated for future development. No new homes or businesses are proposed. Implementation of the proposed project would not increase land use density or intensity in the project area as the restoration project would maintain the existing open space setting of the Lagoon. Construction and maintenance activities would require workers throughout the temporary construction period, as well as during intermittent maintenance events, but it is anticipated that most of these workers would come from the local workforce. Therefore, implementation of the proposed project would not result in a direct increase in population in the project area.

The current restrictions on the public use and access to Los Peñasquitos Lagoon would remain in place with implementation of the proposed project. While the proposed project would enhance the existing ecological functions of the Lagoon and provide new or improved trails and pathway networks that would offer enhanced and expanded recreational opportunities, it is not anticipated that resulting public access amenities would attract sufficient numbers of new visitors to induce expansion of existing tourist-related commercial uses. The proposed project would not stimulate significant employment, involve development of new housing, or significantly affect the economy of the region. Therefore, the proposed project would not result in a direct significant growth-inducing impact in the project area. Further, as discussed in Section 4.11, Public Services and Utilities, neither construction nor long-term maintenance of the Lagoon would generate an increase in demand for public services and utilities or include the development of infrastructure that could support future growth. Therefore, the proposed project would not indirectly result in a significant growth-inducing impact.

CHAPTER 7
CUMULATIVE IMPACTS

CEQA Guidelines require a discussion of cumulative impacts of a project "when the project's incremental effect is cumulatively considerable" (2011 CEQA Guidelines Section 15130). As defined by CEQA Guidelines Section 15065 (a)(3) "cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. These cumulative impacts are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355).

The discussion of cumulative impacts is further guided by CEQA Guidelines Section 15130(a) and (b), which states the following:

- An EIR shall not discuss impacts which do not result in part from the project evaluated in the EIR.
- When the cumulative effect of the project's incremental contribution and the effect of the other projects are not significant, the EIR shall briefly indicate why and not discuss it further.
- An EIR may identify a significant cumulative effect but determine that a project's contribution is less than significant. That conclusion could result if the project is required to implement or fund its fair share of a mitigation measure designed to alleviate the cumulative impact.
- The discussion of cumulative impacts shall reflect the possibility of occurrence and severity of the impacts and focus on cumulative impact to which the identified other projects could contribute.

In general, effects of a particular action or a group of actions would be considered cumulative impacts under the following conditions:

- effects of several actions in a common location;
- effects are not localized (*i.e.,* can contribute to effects of an action in a different location);
- effects on a particular resource are similar in nature (*i.e.,* they affect the same specific element of a resource); and
- effects are long term (short-term impacts tend to dissipate over time and cease to contribute to cumulative impacts).

7.1 DESCRIPTION OF CUMULATIVE ENVIRONMENT

The study area for this cumulative analysis varies somewhat by issue area but for most issues is focused on the adjacent areas of the surrounding communities, such as Del Mar, Torrey Pines, and Carmel Valley. The location of I-5 immediately to the east of Los Peñasquitos Lagoon creates a fairly substantial barrier and obstruction between the Lagoon and areas east. One key exception is air quality, which is addressed at a regional level because standards are set by ARB at this more gross scale.

Additionally, key lagoons along the San Diego regional coastline are considered due to the unique nature of coastal lagoons. There are six lagoons in northern San Diego County with a long history of human modifications, particularly infrastructure construction like roads and rail that run perpendicular to lagoon features. Only in the past few decades has the focus been on ecological enhancement of some of those lagoons. The most recent is the ongoing restoration of San Elijo Lagoon, which was approved and began construction in 2017 and is scheduled to be completed in 2020. San Dieguito Lagoon has recently received approval of plans for lagoon restoration and enhancement in a portion of the site east of I-5, referred to as the W-19 restoration site. This restoration effort is in addition to the Southern California Edison restoration project within San Dieguito Lagoon where planning and implementation occurred between 1997 and 2011 and has ongoing maintenance. SANDAG currently is in the process of planning the restoration of Buena Vista Lagoon. Restoration of Batiquitos Lagoon was implemented over 15 years ago to create a more tidally open system.

7.2 PROJECTS CONSIDERED IN THE CUMULATIVE IMPACT ANALYSIS

CEQA Guidelines Section 15130(b) presents two possible approaches for analyzing cumulative impacts:

- A list of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the agency; or
- A summary of projections contained in an adopted local, regional, or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect. Such plans may include: a general plan, regional transportation plan, or plans for the reduction of GHG emissions. A summary of projections may also be contained in an adopted or certified prior environmental document for such a plan. Such projections may be supplemented with additional information such as a regional modeling program. Any such document shall be referenced and made available to the public at a location specified by the lead agency.

A combination of the summary of projections and list of project approaches is used for this cumulative impact analysis. Reasonably foreseeable future projects are further described below. Where regional plans are considered, those are discussed in the appropriate topic analysis.

North Coast Corridor Improvements Project

Caltrans - District 11 proposes improvements to a 27-mile stretch of I-5 in San Diego County. The proposed project begins at La Jolla Village Drive in the City and ends at Harbor Boulevard in the City of Oceanside. Currently, I-5 is an eight-lane freeway with some auxiliary lanes that are frequently over capacity and subject to traffic congestion and travel delays. This project proposes four build alternatives to add a combination of features that include High Occupancy Vehicle/Managed Lanes (HOV/ML) that support multiple occupancy vehicle travel, auxiliary lanes to reduce traffic weaving and congestion, a possible additional general purpose lane in each direction of travel, and Direct Access Ramps to improve access to the HOV/MLs. The project is expected to be constructed in phases through 2040.

Along with interstate improvements, the North Coast Corridor Program plans to double track 99% of the 60-mile San Diego segment of coastal rail line with implementation of the Los Angeles to San Diego Rail Corridor Improvements Project (LOSSAN). During the next 20 years, SANDAG plans to construct nearly $820 million in improvements in the San Diego County section, including a primary effort to double-track the corridor from Orange County to downtown San Diego. Other infrastructure improvements include bridge and track replacements, new platforms, pedestrian undercrossings, and other safety and operational enhancements.

The PWP/TREP identifies mitigation and enhancement actions for the entire coastal corridor to mitigate for I-5 and railroad improvements. Measures may include completion of bicycle and pedestrian connections, improving trails, upgrading new and existing transportation facilities, re-creation of habitat (upland and wetland), and compensatory mitigation projects that would provide "functional lift" to coastal resources.

Lagoon Restoration Projects

As noted above in Section 7.1, multiple coastal lagoon restoration projects along the San Diego coast have taken place recently, are ongoing, are currently under construction, or are in planning and approval stages.

- San Elijo Lagoon Restoration Project – Currently under construction, the project will restore the lagoon via major infrastructure changes (*e.g.,* railroad tracks and I-5 bridge) and includes dredging and vegetation restoration. Excess dredged material resulting from creation of an overdredge pit as part of construction was placed on the beach in 2019.
- San Dieguito Lagoon W-19 Restoration Project – The EIR for the project was certified in 2018 and is currently in the final design and permitting phase. The project will restore areas south of the San Dieguito River and east of I-5, expanding upon the San Dieguito Wetland Restoration Project.
- Buena Vista Lagoon Enhancement Project – The EIR for the proposed project is currently under consideration for certification by SANDAG. The project would enhance Buena Vista Lagoon, located at the boundary of the City of Carlsbad and City of Oceanside in North San Diego County.

- San Dieguito Lagoon Restoration Project and Ongoing Maintenance – The project was implemented by Southern California Edison and revitalized 150 acres of coastal wetlands, creating a fish nursery and a refuge for migratory waterfowl and endangered species. The project restored tidal flows, natural habitat, and vegetation. Maintenance is ongoing.
- Fairgrounds South Overflow Lot Wetland Restoration – This multi-phase project restored approximately 11 acres of wetlands of a former dirt parking lot on the San Diego Fairgrounds site with a Phase 2 that included restoration of 9.51 acres of coastal salt marsh habitat and 1.67 acres of upland habitat.

7.3 CUMULATIVE IMPACT ANALYSIS

7.3.1 Land Use

Section 4.1 identified no significant land use impacts as a result of the implementation of the proposed project. The overall nature of the surrounding area with preserved areas such as TPSNR or very specific uses such as the Torrey Pines Golf Course or interstate corridors limits the potential for cumulative projects to substantially modify the land uses associated within the well-established and defined area. Other cumulative projects, such as infrastructure improvements like the I-5 North Coast Corridor Project including the LOSSAN railway double-tracking, or other roadway improvements, are not generally of the nature to result in significant land use conflicts or incompatibilities and would improve or upgrade existing infrastructure such as I-5 or the railway corridor as opposed to creating new uses or substantially modified alignments. Because the proposed project would maintain the open space setting of Los Peñasquitos Lagoon as mandated by State Parks and improve public access connectivity as identified in local planning efforts, the proposed project would not make a cumulatively considerable contribution to a significant cumulative impact related to land use.

7.3.2 Public Access and Recreation

Section 4.2 identified no significant public access and recreation impacts as a result of the implementation of the proposed project. The public access improvements included in the proposed project would aid in providing increased connectivity between trail systems and additional and rerouted trails to better serve recreationalists and provide enhanced public accessibility to and through the area. Other cumulative projects in the area may also serve to enhance recreational opportunities and facilities within the area. For example, the I-5 North Coast Corridor Project PWP within the Los Peñasquitos Lagoon area includes trail and pathway improvements for better connectivity to existing trail networks (Caltrans 2014). Similar to the proposed project public access improvements, while temporary closures or rerouting may be required during construction or maintenance activities for safety purposes, public access and trail opportunities would continue to be available in the area, and local and regional recreation facilities would ultimately be enhanced by the project and other cumulative projects. Thus, the proposed project would not make a cumulatively considerable contribution to a significant cumulative impact related to public access and recreation.

7.3.3 Hydrology

As described in Section 4.3, no substantial impacts to hydrology would result from implementation of the proposed project. Implementation of actions associated with the proposed Enhancement Plan would substantially change some of the Lagoon's hydrology and tributary drainage patterns; however, the design-induced changes would cause a net beneficial impact to the hydrology by improving hydraulic efficiency, overall circulation, and channel networks, and by creating better flow regimes. The proposed project would not lead to substantial alteration to on- and off-site drainage patterns due to changes in runoff flow rates or volumes. It is possible that other cumulative projects, specifically projects that require substantial earth-moving or surface alterations or projects that increase impervious surface area, could also change and modify local hydrology. However, other cumulative projects would be required to adhere to federal, state, and local regulatory requirements, and may include preparation of a SWPPP and implementation of BMPs to minimize impacts to surface drainage patterns, the amount of surface runoff, and the exposure of people or property to water-related hazards such as flooding. These regulations and requirements would further aid in minimizing the potential for project impacts that could combine to create cumulative hydrology impacts. Additionally, the hydraulic improvements implemented as part of the proposed project would help the Lagoon better handle additional inputs from the watershed. For these reasons, the proposed project would not make a cumulatively considerable contribution to a significant cumulative impact related to hydrology.

7.3.4 Water Quality and Sediment Management

As detailed in Section 4.4, overall water quality throughout the Lagoon would not be significantly impacted with implementation of the proposed project because a variety of appropriate PDFs, including BMPs, would protect water quality, minimize erosion, and minimize sediment transport during construction. Overall, the proposed project would improve water quality that would cumulatively benefit the Lagoon environment. Water quality impacts can have widespread effects on an entire watershed, hydrologic unit, and downstream locations. For this reason, analysis of potential cumulative impacts to water quality must also consider development and projects that are occurring at upstream locations in the watershed. Often, smaller projects with minor ground disturbance would not be of the type or magnitude to create significant water quality impacts. However, larger projects, such as the North Coast Corridor Improvements Project, could result in degraded water quality. As described in Section 4.4, multiple federal, state, and local regulations must be complied with to protect water quality. Typically, projects under the Construction General Permit would be required to prepare a SWPPP that identifies BMPs that would be used to prevent pollutant discharge and minimize other water quality impacts. Additionally, projects would be implemented in accordance with RWQCB water quality certifications, which require compliance with applicable water quality standards, limitations, and restrictions. The required adherence to water quality regulations and implementation of required BMPs would minimize the potential for water quality impacts to result from cumulative projects and development throughout the watershed.

The proposed project would provide a long-term water quality improvement throughout the Lagoon by improving hydraulic efficiency within the lagoon system, which would improve lagoon circulation, decrease stagnation, and increase lagoon and coastal water quality. Cumulatively, beneficial improvements would also occur at San Elijo Lagoon, San Dieguito Lagoon, and Buena

Vista Lagoon if restoration plans proceed. For these reasons, the proposed project would not make a cumulatively considerable contribution to a cumulatively significant impact related to water quality.

7.3.5 Geology and Soils

Section 4.5 identified no significant geology and soils impacts as a result of the implementation of the proposed project. Cumulative projects around the Lagoon, including infrastructure or other development, would be subject to multiple regulatory codes and requirements to ensure structures are properly designed and engineered to achieve high safety standards when being constructed in unstable geologic conditions. Similar to the proposed project, the implementing agencies for other local projects would be required to perform necessary geologic investigations and meet engineering and design requirements to ensure appropriate design for geologic safety. Adhering to regulations and requirements aids in minimizing the potential for project impacts that could combine to create cumulative geologic and soils impacts. For these reasons, the activities associated with the proposed project would not increase geologic hazards and would not make a cumulatively considerable contribution to a significant cumulative impact related to geology and soils.

7.3.6 Biological Resources

Although direct habitat modification is proposed as part of the project, the results would benefit the overall health of the Lagoon and the candidate, sensitive, or special-status species it supports. Section 4.6 identifies potentially significant temporary impacts that could result due to the modification of vegetation and wetlands necessary for restoration. While these vegetation types and wetlands could support sensitive species that could be subject to temporary impacts associated with project construction, over the long term, lagoon functions would be enhanced and improved. Similarly, although the proposed project would directly impact wetlands, these impacts are expected to enhance the hydrological system that sustains these wetlands and would not result in a net removal, fill, or loss of wetland habitats on the program level.

While some adverse short-term biological impacts could occur if construction of cumulative projects were to impact the same types of resources as the proposed project, they would not be considered significant because the cumulative contribution of the proposed project would cease over time as habitats establish. In addition, the proposed project would not result in a considerable contribution to long-term cumulative impacts because of the overall positive and beneficial biological results that would occur from the construction of this proposed project. Other cumulative projects in the region may result in impacts to similar biological resources; however, cumulative projects would also be subject to regulatory requirements, such as mitigation ratios set forth in the ~~MHPA~~ MSCP that would serve to reduce the severity of their impacts. The addition of cumulative projects and their potentially adverse impacts to biological resources would not reduce the proposed project's ability to create improved lagoon ecology, or increase quality habitat for species, and would not result in an overall loss of lagoon resources. The phased restoration of Los Peñasquitos Lagoon is, by design, a project for the long-term improvement of water quality and health/diversity of biological resources. For these reasons, the proposed project would not make a cumulatively considerable contribution to a significant cumulative impact related to biological resources.

7.3.7 Transportation

Section 4.7 identified no significant transportation impacts as a result of the implementation of the proposed project. As noted in the transportation analysis, the majority of construction activities, parking, staging, and laydown would be located within TPSNR itself or other disturbed areas and would not extend into existing roads. These off-road locations would minimize construction interference with traffic operations on local roadways. If disruption of traffic is anticipated (*e.g.,* lane closure, detour, or similar), a Traffic Control Plan would be required. It is possible that other cumulative projects could be ongoing in the area that would also require the use of local roadways. If construction periods of cumulative projects were to overlap, the Traffic Control Plan would address the coordination with other projects to ensure that adequate transportation conditions were planned for the construction period. The Traffic Control Plan would also address pedestrians and their ability to safely traverse the construction zone. Once implemented, public access improvements included as part of the proposed project could help to enhance the ability of pedestrian/bicycle traffic to safely move through the area and better connect with regional trail systems. Because construction-related traffic effects would be short term and periodic with the implementation of different Enhancement Plan projects at various times over a 50-year time period and with the required Traffic Control Plan to coordinate traffic issues, the proposed project would not make a cumulatively considerable contribution to a significant cumulative impact related to transportation.

7.3.8 Air Quality

Air quality is typically considered a regional issue, as pollutants can travel long distances, regardless of jurisdictional boundaries. For this reason, the cumulative analysis considers regional air quality throughout the SDAB. However, localized air quality impacts can also result from numerous construction projects in a small area. The analysis in Section 4.8 concluded that, without specific project details, temporary construction-related emissions could exceed the recommended levels of significance and could lead to a violation of an applicable air quality standard. Implementation of mitigation measures requiring reduced-emission equipment and technology would partially reduce anticipated emissions, but potentially not to levels below the applicable thresholds. Proposed mitigation would reduce localized emissions but may not fully mitigate the impact, and it would remain potentially significant. The SDAB currently meets NAAQS for criteria air pollutants except ozone and meets the CAAQS for criteria air pollutants except ozone, PM_{10}, and $PM_{2.5}$. Construction and operation of cumulative projects and general growth and development throughout the region would further degrade the local air quality, as well as the air quality of the SDAB. Air quality would be temporarily degraded during construction activities that occur separately or simultaneously. The required adherence to air quality regulations and implementation of mitigation, if necessary, would reduce the potential for significant adverse cumulative air quality impacts to occur throughout the SDAB due to cumulative projects.

A project that produces a significant air quality impact in an area that is out of attainment is considered to significantly contribute to the cumulative air quality impact. Because details are not available at this time to determine with certainty that mitigation would fully reduce emissions from the proposed project to below a level of significance, the proposed project would potentially make a cumulatively considerable contribution to a significant cumulative impact related to air quality.

7.3.9 Cultural Resources

As described in Section 4.9, construction of the proposed project would have the potential to result in significant impacts to archaeological resources and human remains. Other cumulative projects and future development within the local area and region have the potential to also result in similar significant impacts to these resources. Like the proposed project, cumulative projects would also be subject to federal, state, and local regulations mandating the protection of cultural resources. Mitigation for such impacts would likely be similar to that prescribed for the proposed project and would include archival research, cultural resource surveys, Native American consultation, resource documentation and evaluation, and test and/or data recovery excavations. These types of mitigation measures allow the cultural resources data to be protected and preserved to ensure that the critical information necessary to the future study of cultural resource sites and artifacts is not lost or destroyed by the proposed project or other cumulative projects within the study area. Implementation of actions associated with the Enhancement Plan would avoid impacts to cultural resources to the extent feasible and would implement mitigation as necessary; other cumulative impacts to archaeological resources would be expected to be fully avoided, minimized, or mitigated, and critical information regarding regional prehistory preserved and/or documented. Thus, the proposed project would not make a cumulatively considerable contribution to a significant cumulative impact related to cultural resources.

7.3.10 Paleontological Resources

As described in Section 4.10, most ground-disturbing activities associated with the proposed project would be limited to portions of the lagoon basins that are generally underlain by fill soils and alluvial deposits. However, some surrounding geologic material has a high to moderate paleontological sensitivity. If excavation activities were to disturb the underlying sensitive formation, a potential would exist for paleontological resources to be damaged or destroyed and this is considered a significant impact. Mitigation is proposed that would ensure that paleontological resources encountered during construction would be adequately treated and the important information retained and documented. Other cumulative projects would have a similar potential to disturbed paleontological resources. Project compliance with CEQA ensures that paleontological resources encountered during construction would be adequately treated and the important information retained and documented. This would minimize/mitigate the potential for the proposed project to add to a cumulative loss or destruction of significant paleontological resources. Thus, the proposed project would not make a cumulatively considerable contribution to a significant cumulative impact related to paleontological resources.

7.3.11 Public Services and Utilities

As described in Section 4.11, the proposed project would not result in significant impacts to public services and utilities. Minimal amounts of utility provision or other public services would be required for the proposed project. The proposed project has been designed to avoid interference with existing utilities and, if determined that relocation of infrastructure may be required, coordination with the service provider would minimize potential for substantial service interruptions. On a cumulative basis, individual projects would have the potential to interfere with or require public services and utilities dependent on the type of project and the specific location.

A large project such as the North Coast Corridor Improvements Project would likely require extensive coordination with public service providers due to necessary infrastructure relocations to avoid interrupted service; however, these projects are not the type of project that necessitates a substantial increase in the long-term demand for public services or utilities. Because the proposed project would create minimal demand on public services and utilities during construction and would require almost no long-term services once operational, the proposed project would not make a cumulatively considerable contribution to a cumulative public services or utilities impact.

7.3.12 Public Health and Safety

As described in Section 4.12, the proposed project would not result in a significant impact to public health and safety. Other cumulative projects, such as the North Coast Corridor Improvements Project, may also occur in an overlapping timeframe with the actions associated with the Enhancement Plan and would also be required to comply with regulatory safety requirements regarding hazardous materials. The mandatory adherence to regulatory requirements limits potential for cumulative risks associated with the use of hazardous materials. Implementation of other cumulative sand nourishment projects could have similar public safety hazards during materials placement onshore or nearshore. However, these safety hazards are avoidable through appropriate PDFs and standard public safety measures. The vector control measures included in the proposed project would serve to reduce mosquito breeding conditions within the Lagoon and thus improve public health and safety by reducing potential exposure to vectors. Additionally, other lagoon restoration projects, such as the San Elijo Lagoon and Buena Vista Lagoon restoration projects along the San Diego coast, are designed to create lagoon conditions less conducive to vector breeding. For these reasons, the proposed project would not make a cumulatively considerable contribution to a cumulative public health and safety impact.

7.3.13 Climate Change and Greenhouse Gas Emissions

A single project is unlikely to have a significant impact on global climate change. However, the cumulative effects of worldwide GHG emissions have been clearly linked to changes in the atmosphere and identified as the main cause of global climate change. For this reason, analysis of GHG emissions from the project, as provided in Section 4.13, is considered a cumulative impact analysis. Section 4.13 describes that the anticipated emissions associated with construction of a project of this size and nature would not generate GHG emissions of the magnitude to exceed accepted threshold levels. Once constructed, the proposed lagoon restoration and enhancement, public access improvements, and vector management would require periodic and minor maintenance that could produce GHG emissions. The restored Lagoon would not be a long-term generator of GHG emissions; rather, it would continue to serve as a public open space supporting valuable natural resources The salt marsh restored by the proposed project (74 acres by 2030, 114 acres by 2050) would sequester carbon at rates likely to be higher than carbon sequestration in existing freshwater marsh habitat, which emits CH_4 at higher rates than salt marsh (Keller et al. 2012). Estimated rates of carbon sequestration in salt marshes range from 0.5 to 3.2 tons per acre per year (Crooks et al. 2010). While it is difficult to estimate the net change in carbon sequestration due to the project, reductions in CH_4 emissions are likely to result in a reduction in the GHGs emitted by the project and an increase in carbon sequestration. Therefore, the proposed project

would not make a cumulatively considerable contribution to a cumulative climate change or GHG impact.

Specific to climate change and sea level rise, the proposed project would provide a benefit by enhancing and maintaining tidal exchange with the ocean. This improved hydraulic system would increase the ability of the Lagoon and surrounding habitat to slowly adapt to changes in sea level over time. Additionally, enhanced flow and drainage of the Lagoon would provide resiliency against floods, other extreme events, and sea level rise. Therefore, the proposed project would not make a cumulatively considerable contribution to a significant cumulative impact related to climate change.

7.3.14 Energy

As described in Section 4.14, construction of the proposed project would require the temporary use of energy resources. Once constructed, the proposed project would not be a consumer of energy resources. The energy resources required for the proposed project would be in combination with energy used by other cumulative projects in the area; however, the expenditure of energy resources is necessary to achieve the beneficial results on the Los Peñasquitos Lagoon ecology and hydrology and is not considered wasteful. Minor and periodic maintenance activities would be required but would be infrequent and necessitate small energy use. Regardless of the surrounding cumulative projects and their energy use, the maintained open space nature of the Lagoon and surrounding trail system would not consume energy or use energy in a wasteful manner. Therefore, the proposed project would not make a cumulatively considerable contribution to a significant cumulative impact related to energy.

CHAPTER 8
EFFECTS CONSIDERED NOT SIGNIFICANT

Section 15128 of the CEQA Guidelines requires that the EIR "contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR." An Initial Study was not prepared for the proposed project; therefore, brief descriptions of the issue areas where effects were found not to be significant are provided in this chapter.

8.1 VISUAL RESOURCES

The visual setting of Los Peñasquitos Lagoon includes natural open space aesthetics along with man-made elements such as roads, train tracks, and surrounding commercial and residential development. Viewers can enjoy the natural environment from the trails and roadways along the perimeter of the Lagoon. The Enhancement Plan would include restoration and enhancement actions that would slightly alter the aesthetic of the Lagoon, but the overall open and natural setting would be maintained with visual variations generally resulting from changed habitat distribution, the location and size of channels, and slightly modified terrain undulation. These types of visual changes within the Lagoon environment would not create an element of visual contrast or appear out of scale or out of context with the existing aesthetic and surrounding visual setting. The proposed project elements associated with public access and vector management, such as new or modified drainage outfall and culverts, or new or realigned trails would not introduce new types of visual elements to the landscape as trails and wastewater infrastructure currently exist in the area. Once constructed, these features would not be of the size or magnitude to create a significant visual change. They would be visually similar to existing features and would not be out of scale or visually conflicting within the viewscape.

During construction of Enhancement Plan projects, temporary construction visual effects would result from the addition of construction equipment operating in the viewshed, vegetation removal, landform modifications, stockpiling, and other construction-related activities. However, due to the limited nature of construction within the lagoon complex with the visual intrusion of construction activities lasting only for the duration of each project's construction period and, ultimately, the Lagoon character returning similar to preconstruction conditions, the visual effects from various construction projects are considered noticeable but would not be substantial. Thus, a less than significant visual impact would result from implementation of the Enhancement Plan.

8.2 NOISE

The natural and open space setting of Los Peñasquitos Lagoon provides a generally quiet setting and most noise generation is from birds and other natural sources. However, the surrounding development and man-made elements that are located adjacent to the lagoon perimeter and surrounding area generate substantial noise. Major noise sources include the trains on the railroad tracks that traverse through the Lagoon; traffic on roadways such as Highway 101, Carmel Valley Road, Sorrento Valley Road, and I-5; and surrounding commercial developments. Throughout most of the Lagoon area, there is a lack of sensitive receptors. Noise-sensitive receptors in the area include nearby residential

receptors and recreationalists using trails and pedestrian/bicycle pathways along the perimeter of the Lagoon (noise-sensitive wildlife species are addressed in Section 4.6, Biological Resources). Noise receptors around the Lagoon setting are currently exposed to ambient noise from the roadways, trains, and other existing noise sources. Project-generated construction and maintenance noise would vary depending on activities and duration, and the type and usage of equipment. The noise would also be episodic as it moves throughout different locations within the Lagoon. Trail users and recreationalists in the area could experience construction noise while adjacent to active areas of construction and would likely experience a varying range of noise levels as they move along the trail or pathway, moving away from or toward project activities. However, recreationalists would be exposed to construction noise for short periods of time when construction is occurring close to the project boundary and recreationalists are within proximity to that activity (estimated duration on the order of minutes). Residential receptors (mostly located on the northern end of the Lagoon along the northwest side of Carmel Valley Road) would likely hear the construction noise at acceptable levels when construction was in that specific area; however, construction would be moving throughout the Lagoon and would not be in one location for extended periods. While the noise from construction may be audible, it would be short term and periodic. The generation of temporary construction noise would be required to comply with the City of San Diego and the City of Del Mar noise ordinances (*e.g.,* between 7 a.m. and 7 p.m. Monday through Friday per both cities' noise ordinance requirements, allowable noise levels, *etc.*) and appropriate construction noise permits would be required as listed in Table 1-2. Thus, noise generation from the proposed project would result in less than significant impacts.

8.3 AGRICULTURAL AND FORESTRY RESOURCES

The majority of the Los Peñasquitos Lagoon area is designated as Urban and Built-Up Land on the "Important Farmland in California" map prepared by the California Resources Agency pursuant to the Farmland Mapping and Monitoring Program (California Department of Conservation 2018). Some areas east of I-5, near where Los Peñasquitos Creek enters the Lagoon, are designated as Grazing Land and Farmland of Local Importance. Thus, no part of the proposed project would be located on or near Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Additionally, the project study area is not developed for farming or agricultural use, and no Williamson Act contract is applicable to the project area (California Department of Conservation 2013).

Furthermore, the proposed project area is not zoned for or developed as forest land or timberland as defined in PRC Section 12220(g) and Government Code Section 4526, respectively (City of San Diego 2019). Therefore, no impact to agriculture and forestry resources would occur.

8.4 MINERAL RESOURCES

Los Peñasquitos Lagoon is generally designated Mineral Resource Zone (MRZ) 4 by the City's General Plan Conservation Element, which is defined as an area where available information is inadequate for assignment to other MRZ. Areas immediately surrounding the Lagoon are designated as MRZ 1 or MRZ 3, which indicate little likelihood for significant mineral deposits of areas where the significance of mineral deposits cannot be evaluated with available data (City of San Diego 2008). Furthermore, should future mineral resources be discovered on or near the proposed project area,

implementation of the Enhancement Plan would not preclude mineral extraction. Therefore, the proposed project would not result in the loss of availability of a locally important mineral resource recovery site or known mineral resources that would be of value to the region and the residents of the state. No impact would occur.

8.5 POPULATION AND HOUSING

The Enhancement Plan does not include development of residential or commercial land uses and, therefore, would not result in direct population generation from construction of new homes or businesses. Additionally, the proposed project does not include extension of roads or other infrastructure that would result in indirect population growth. There are no existing residential uses within the proposed project limits of disturbance; thus, implementation of the proposed project would not result in the displacement of existing housing, and no persons would be displaced. The open space setting of Los Peñasquitos Lagoon would be maintained. No impacts to population and housing would occur.

8.6 WILDFIRE

California Department of Forestry and Fire Protection (CalFire) has developed Fire Hazard Severity Zones that measure the likelihood of an area burning and the severity of how it would burn. Portions of Los Peñasquitos Lagoon and the surrounding areas are designed as Very High or High Fire Hazard Severity Zones (CalFire 2009). This designation is likely due to the scrub vegetation throughout the area that could fuel a wildfire; thus, wildland fire safety concerns in these areas exist due to the presence of native and exotic vegetation in proximity to residences and other developments. The proposed project would result in construction activities within the areas with High or Very High Fire Hazard designations. However, most restoration and enhancement work would occur within the wet marshy areas of the Lagoon, which are not high fire risk areas. Staging and access areas would be located in previously disturbed areas with minimal vegetation or areas cleared prior to construction to minimize the risk of accidental ignition of surrounding vegetation (PDF #15). Some proposed project work may be located in areas with existing vegetation such as trail alignments or culverts. However, fire hazards from construction equipment or activities are not anticipated with implementation of the Enhancement Plan. PDFs and standard construction practices identified in Tables 3-4 and 3-5, respectively, would be implemented to maintain fire safety. Construction equipment would have fire suppression equipment on board or at the worksite so that accidental fires could be quickly extinguished. Heavy equipment operators would be trained in appropriate responses to accidental fires so that an accidental fire would be dealt with expediently before spreading, and emergency communication equipment would also be available to site personnel to quickly call for help if an accidental fire were to occur and require additional assistance to be extinguished. Implementation of the Enhancement Plan would not introduce new or permanent structures within the Lagoon area that would create or be subject to new or increased fire hazards. Construction or operation of the Enhancement Plan would not impair emergency response plans or exacerbate fire risks to people or structures. Therefore, no impacts related to wildfires would result.

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CHAPTER 9
ALTERNATIVES

CEQA requires that a project consider alternatives to a proposed project as a part of its evaluation. This section evaluates alternatives to the proposed Los Peñasquitos Lagoon Enhancement Plan that are feasibly capable of reducing or eliminating significant environmental impacts. According to State CEQA Guidelines Section 15126.6(f)(1), factors that may impact feasibility of alternatives include site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, and jurisdictional boundaries (projects with a regionally significant impact should consider the regional context). For the proposed project, alternatives to lagoon restoration and enhancement, public access, and Vector Management Activities were evaluated.

9.1 STAKEHOLDER INVOLVEMENT AND PROCESS

During the early planning stages of the Enhancement Plan update, efforts were made to solicit input from key stakeholder groups that included members of the public, primary land owners, local and regional planning groups, resource managers, wetland experts, law enforcement, representatives from local municipalities within the watershed, and partner non-profits that operate in TPSNR (*i.e.,* Torrey Pines Docents and Torrey Pines Association). During this stakeholder process, seven public workshops and meetings with individual groups were held over a period of 3 years to capture stakeholder perspectives and priorities with regard to management needs and priorities for the Lagoon and its watershed. Draft goals and objectives developed for the updated Enhancement Plan were presented during the initial workshops and then refined through working groups that focused on the themes of habitat, public access and safety, and sustainability. The final set of goals and objectives for the Enhancement Plan are detailed in Chapter 6 of the Enhancement Plan (Appendix A).

Subsequent workshops focused on identifying and distilling management priorities for Los Peñasquitos Lagoon through group discussions that identified management areas within the Lagoon and the opportunities and constraints within each zone or throughout the entire system. Efforts within the watershed needed to support lagoon health and management were also considered and discussed due to the importance of a watershed-based approach to improving and protecting Los Peñasquitos Lagoon. Management zones and a phased approach were also adopted to improve planning and adaptive management efforts. A phased approach also helped to identify and better qualify windows of opportunities and constraints, both current and future, in order to maximize benefits in a realistic and sustainable manner. Based on the results of the public workshops and other stakeholder outreach efforts, Lagoon Restoration and Enhancement Activities and their alternatives were then developed through technical analysis that included habitat trajectory modeling using data sets generated from the Lagoon's long-term continuous monitoring program, (field verified) updated vegetation association and habitat mapping, watershed inputs of freshwater and sediment, and established sea level rise rates calibrated specifically for projected surface elevations within Los Peñasquitos Lagoon. Additional information regarding public workshops held during the Enhancement Plan update process,

including details on stakeholder participation, are discussed in Chapter 6 of the Enhancement Plan (Appendix A).

9.2 ALTERNATIVES

9.2.1 Lagoon Restoration and Enhancement Activities

Lagoon Restoration and Enhancement Activities were developed through the public involvement process described above with the focus on hydrologic improvements needed to support salt marsh restoration, establishment, and resiliency to sea level rise. These improvements are also anticipated to support compliance with the lagoon target set for the Los Peñasquitos Lagoon Sediment TMDL, outlined in Section 2.2.7 of the Enhancement Plan (Appendix A). The following alternatives were developed for Los Peñasquitos Lagoon and subjected to technical analysis that included modeling habitat trajectories, as shown in Figure 9-1. The proposed project, as fully evaluated throughout Chapter 4 of this Program EIR, was initially evaluated as Freshwater Management (Channel Improvements) during the Enhancement Plan update process. The other three projects included in this alternatives analysis are summarized below:

- No Action
- Expanding Tidal Reach (Elevation Reduction)
- Elevation Reduction and Freshwater Management

No Action

No Action was included as an alternative to demonstrate what would happen to habitats within Los Peñasquitos Lagoon over time if no action were taken with regard to large-scale restoration and enhancement of Los Peñasquitos Lagoon. The No Action alternative is also a requirement for analysis and evaluation under CEQA. Under this alternative, Los Peñasquitos Lagoon would continue to evolve under baseline conditions with no mechanized efforts conducted (*e.g.*, grading, channel modification) to facilitate salt marsh recovery in Zone 3. Instead, efforts would be focused on small-scale control of invasive plant species, and planting and seeding of native species. Modeling results demonstrated that, under the No Action Alternative, minimal salt marsh conversion zones would persist under sea level rise conditions as compared to the proposed project, thereby lessening the No Action alternative's resiliency to sea level rise.

Expanding Tidal Reach (Elevation Reduction)

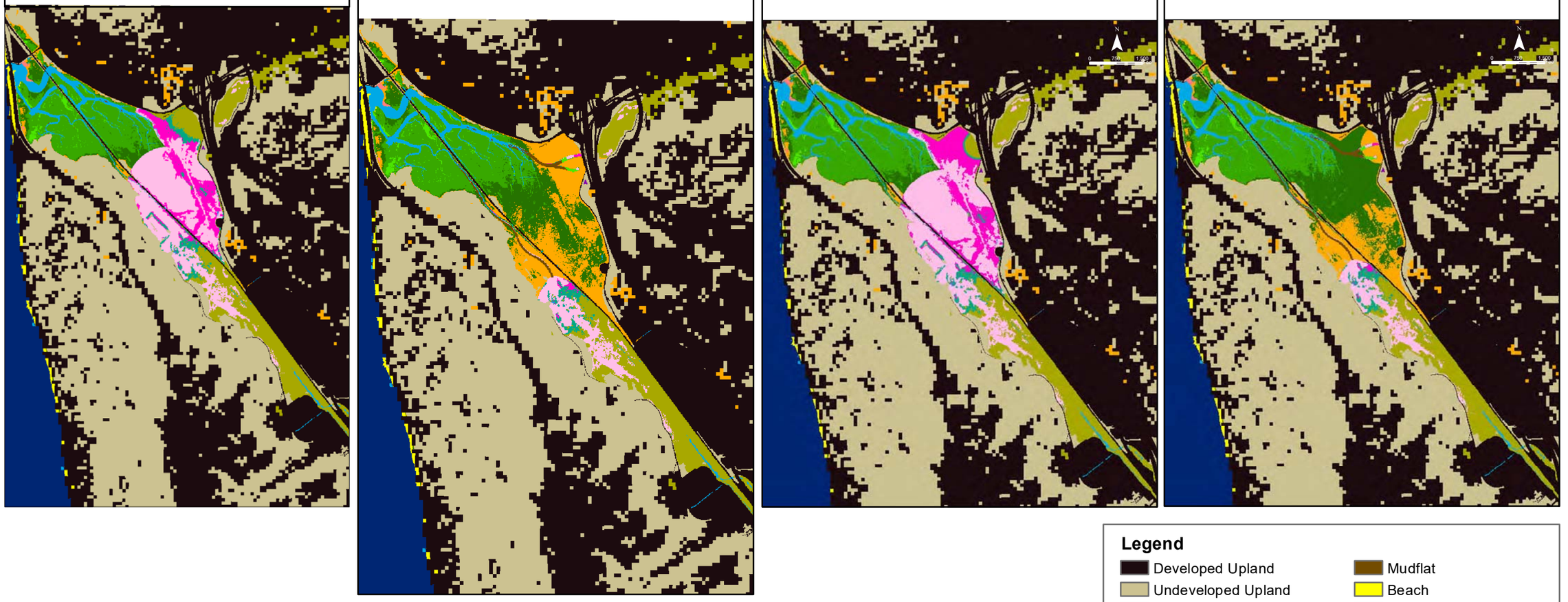
Expanding Tidal Reach (Elevation Reduction) was developed to examine the approach of further expanding tidal reach within Los Peñasquitos Lagoon by reducing current elevations through large-scale grading to facilitate salt marsh restoration and establishment in the near term (see Figure 9-2). This approach would aim at recovery of salt marsh habitat in the short term on the premise that lack of tidal inundation is the main driver for habitat conversion and overall loss of salt marsh habitat in the upper marsh. Under Lagoon Concept 3, the area of Zone 3 would be

Baseline

Restoration with Proposed Project - Channel Improvements

Restoration with Grading

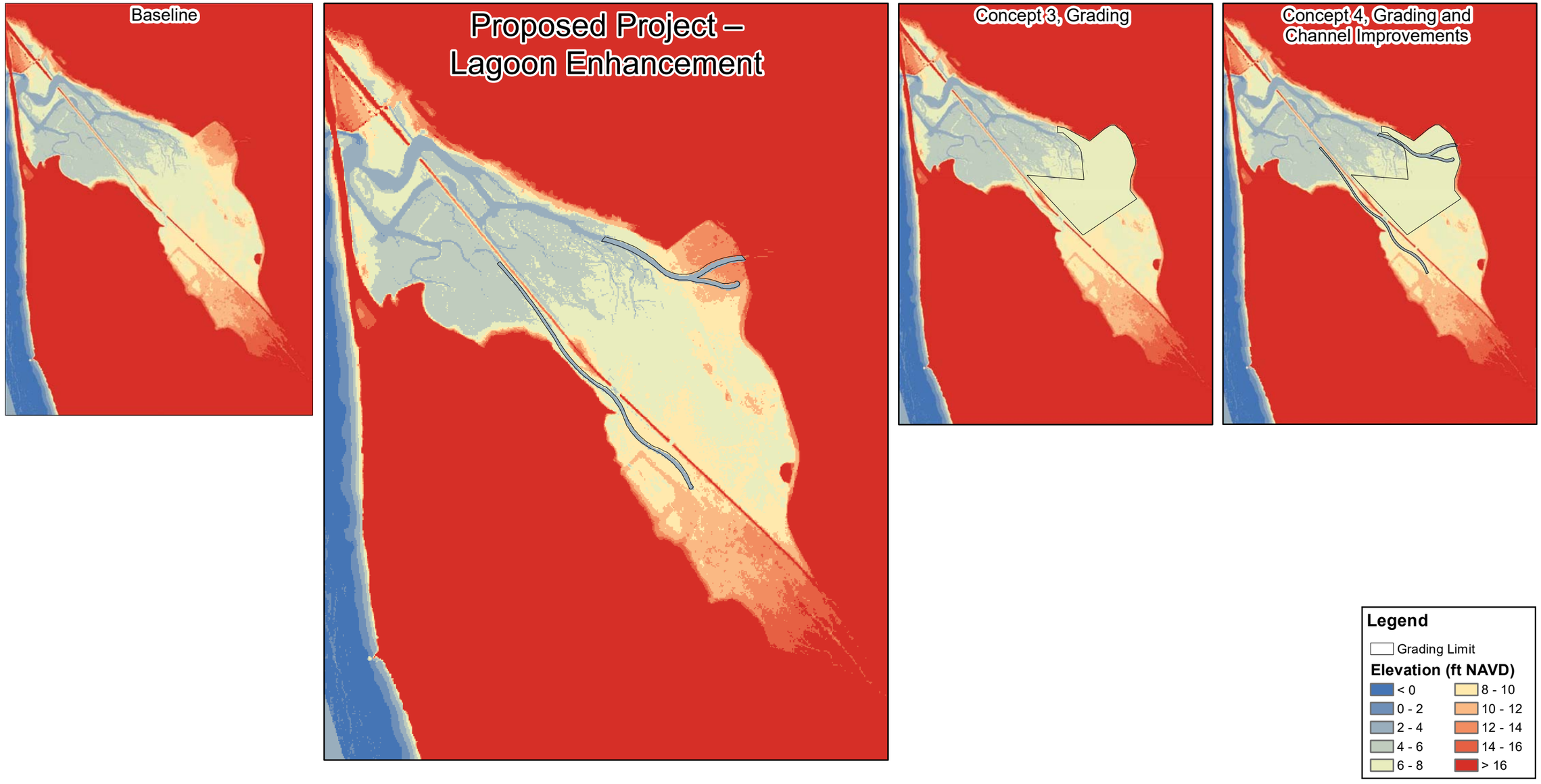
Restoration with Grading and Channel Improvements



Source: ESA 2016; ESRI

No Scale

Figure 9-1
Habitat Trajectory Modeling through 2030



Source: ESA 2016

No Scale

Figure 9-2
Lagoon Restoration and Enhancement Concepts

graded down to marsh plain elevation to increase tidal inundation and encourage salt marsh habitat recovery in the near term. In the long term, resiliency to sea level rise would be less than the proposed project, as demonstrated in Figure 9-1.

Habitat and Design Features

As shown in Figure 9-2, approximately 90 acres in Zone 3 would be graded to salt marsh elevations to allow tidal inundation in the near term. The area would be graded to an elevation of 7.5 feet NAVD, which is the upper elevation of high salt marsh under existing conditions. Revegetation would be necessary to ensure colonization by native species.

Excavators and track-mounted trucks would be used to remove the material in the marsh. Materials disposal options include placement within the Lagoon, in the near vicinity of the Lagoon (*e.g.,* raising the parking lot), or off-site disposal.

Potential Habitat Impacts

Under the Expanding Tidal Reach (Elevation Reduction) alternative, grading would potentially impact approximately 90 acres of habitat within Los Peñasquitos Lagoon. Table 9-1 provides a preliminary estimate of the potential impact acreage by habitat type.

Table 9-1. Potential Habitat Impacts for Expanding Tidal Reach (Elevation Reduction)

Habitat	Area (acres)
Upland	0.15
Riparian Wetland	21.39
Freshwater Marsh	16.53
Brackish Marsh	20.42
Transition Zone	0.20
Salt Marsh	30.12
Subtidal/Mudflat	1.58
Total	**90.40**

Earthwork Quantities and Cost Estimate

For planning purposes, order of magnitude estimates of possible construction quantities and costs are provided to allow cost comparison of alternatives. The preliminary quantity and cost estimates for the proposed work items for Expanding Tidal Reach (Elevation Reduction) are summarized in Tables 9-2 and 9-3. This cost estimate is intended to provide an approximation of total project costs appropriate for the preliminary level of design. These cost estimates are considered to be approximately -30% to +50% accurate and include a 20% contingency to account for project uncertainties (such as final design refinements, permitting restrictions, and bidding climate). These

estimates are subject to refinement and revisions as the design is developed in future stages, which is outside of the scope of the Enhancement Plan update.

Table 9-2. Earthwork Quantities for Expanding Tidal Reach (Elevation Reduction)

	Excavation Volume (cubic yards)
Grading	195,600
Total	**195,600**

Table 9-3. Preliminary Cost Estimate for Expanding Tidal Reach (Elevation Reduction)

Description	Quantity	Unit	Unit Cost		Total Cost	
			Low	High	Low	High
Mobilization	1	LS	5%	10%	$318,000	$1,626,000
Mitigation Measures (SWPPP, *etc.*)	1	LS	$25,000	$100,000	$25,000	$100,000
Temporary Access	10,900	LF	$100	$300	$1,090,000	$3,270,000
Marsh Excavation	195,600	CY	$20	$50	$3,912,000	$9,780,000
Fill Placement & Grading	176,040	CY	$5	$10	$880,200	$1,760,400
Revegetation	90	AC	$5,000	$15,000	$450,000	$1,350,000
Subtotal					**$6,675,200**	**$17,886,400**
Contingency	**20%**				**$1,335,000**	**$3,577,300**
Total					**$8,010,200**	**$21,463,700**

Notes:
LS = Lump Sum LF = linear feet
CY = cubic yards AC = acres
SWPPP – Stormwater Pollution Prevention Plan

1. These estimates are subject to refinement and revisions as the design is developed in future stages of the project.
2. This table does not include estimated project costs for permitting, monitoring, and/or ongoing maintenance.
3. Estimated costs are presented in 2015 dollars and would need to be adjusted to account for price escalation for implementation in future years.
4. This opinion of probably construction costs is based on Environmental Science Associates' previous experience and bid prices from similar projects.

The assumptions discussed for the proposed project were used to generate preliminary costs for Expanding Tidal Reach (Elevation Reduction). Large-scale lowering of the marsh area under this alternative is considered less efficient than channel excavation, since more extensive access road(s) would be required.

Elevation Reduction and Freshwater Management

The Elevation Reduction and Freshwater Management alternative presents an approach that combines freshwater management identified for the proposed project with elevation reduction and improved tidal inundation identified for the Expanding Tidal Reach (Elevation Reduction) alternative (see Figure 9-2). Under this alternative, an area of Zone 3 would be graded down to marsh plain elevation to increase tidal inundation in the near term and encourage salt marsh habitat recovery. As with the proposed project, lagoon channels would be excavated to help transport year-round, non-storm freshwater flows to the ocean, improve draw-down times for impounded storm runoff, and to bring tidal waters further back into the Lagoon. The Elevation Reduction and Freshwater Management alternative would create additional subtidal habitat in the channels, and salt marsh habitat would replace the existing brackish and freshwater habitat. Over time with sea level rise, the channels would provide tidal flow and drainage to the marsh plain. Results from habitat trajectory modeling indicated retention of salt marsh conversion zones with the influence of sea level rise with similar scale as the proposed project (see Figure 9-1). While modeling results played a key role in the evaluation of alternatives with regarding to restoring salt marsh and long-term resiliency in response to sea level rise, additional criteria were used to provide a comprehensive analysis and evaluation of each activity, as described further in Chapter 10 of the Enhancement Plan (Appendix A).

Habitat and Design Features

As shown in Figure 9-2, approximately 90 acres within Zone 3 would be restored by grading to an elevation of 7.5 feet NAVD, which is the upper elevation of high salt marsh under existing conditions within Los Peñasquitos Lagoon. In this area, revegetation would be necessary to ensure colonization by native species. In addition, the northern channel would be extended 2,100 feet eastward toward the mouth of Carmel Creek and the southern channel would be extended eastward for 3,800 feet toward Sorrento Valley. It is expected that the southern channel will also need to be widened and deepened due to its relatively constrained dimensions. Additional channels may also be added to further drain freshwater inundation within the middle portion of Zone 3 and expand tidal influence within this management zone.

Excavators and track-mounted trucks would be used to remove the material in the channels and marsh. Materials disposal options include placement within the Lagoon, in the near vicinity of the Lagoon (*e.g.,* raising the parking lot), or off-site disposal.

Potential Habitat Impacts

Excavating the middle lagoon and channels would potentially impact approximately 95 acres of habitat within Los Peñasquitos Lagoon. Table 9-4 provides a preliminary estimate of the potential impact acreage by habitat type.

Table 9-4. Potential Habitat Impacts for Elevation Reduction and Freshwater Management

Habitat	Area (acres)
Upland	0.16
Riparian Wetland	21.55
Freshwater Marsh	16.59
Brackish Marsh	21.94
Transition Zone	0.54
Salt Marsh	32.71
Subtidal/Mudflat	1.58
Total	**95.07**

Earthwork Quantities and Cost Estimate

For planning purposes, order of magnitude estimates of possible construction quantities and costs are provided to allow cost comparison of alternatives. The preliminary quantity and cost estimates for the proposed work items for Elevation Reduction and Freshwater Management are summarized in Tables 9-5 and 9-6. This cost estimate is intended to provide an approximation of total project costs appropriate for the preliminary level of design. These cost estimates are considered to be approximately -30% to +50% accurate and include a 20% contingency to account for project uncertainties (such as final design refinements, permitting restrictions and bidding climate). These estimates are subject to refinement and revisions as the design is developed in future stages, which is outside of the scope of the Enhancement Plan update.

Table 9-5. Earthwork Quantities for Elevation Reduction and Freshwater Management

	Channel Cross-Sectional Area (square feet)	Channel Length (feet)	Excavation Volume (cubic yards)
Northern Channel toward Carmel Creek	260	2,100	20,200
Southern Channel toward Carroll Canyon and Los Peñasquitos Creeks	220	3,800	31,000[1]
Grading			195,600[2]
Total			**246,800**

[1] There is an existing channel in this area that would be deepened and extended, so this is a conservative estimate of volume.

[2] The northern channel would overlap with the grading in some places, so this is a conservative estimate of volume.

Table 9-6. Preliminary Cost Estimate for Elevation Reduction and Freshwater Management

Description	Quantity	Unit	Unit Cost		Total Cost	
			Low	High	Low	High
Mobilization	1	LS	5%	10%	$356,000	$1,831,000
Mitigation Measures (SWPPP, *etc.*)	1	LS	$25,000	$100,000	$25,000	$100,000
Temporary Access	10,900	LF	$100	$300	$1,090,000	$3,270,000
Channel Excavation & Transport	51,200	CY	$15	$40	$768,000	$2,048,000
Marsh Excavation	195,600	CY	$20	$50	$3,912,000	$9,780,000
Fill Placement & Grading	176,040	CY	$5	$10	$880,200	$1,760,400
Revegetation	90	AC	$5,000	$15,000	$450,000	$1,350,000
Subtotal					**$7,481,200**	**$20,139,400**
Contingency	**20%**				**$1,496,200**	**$4,027,900**
Total					**$8,977,400**	**$24,167,300**

Notes:
LS = Lump Sum LF = linear feet
CY = cubic yards AC = acres
SWPPP – Stormwater Pollution Prevention Plan

1. These estimates are subject to refinement and revisions as the design is developed in future stages of the project.
2. This table does not include estimated project costs for permitting, monitoring, and/or ongoing maintenance.
3. Estimated costs are presented in 2015 dollars and would need to be adjusted to account for price escalation for implementation in future years.
4. This opinion of probably construction costs is based on Environmental Science Associates' previous experience and bid prices from similar projects.

9.2.2 Public Access Activities

Since direct access is limited due to the Lagoon's status as a State Natural Preserve (see Section 3.1 of the Project Description), Public Access Activities were developed for the perimeter of Los Peñasquitos Lagoon to improve passive recreation and safety. Trail and pathway improvements were developed for consideration and possible inclusion in the Draft TPSNR Trail Management Plan. The trail and pathway segments considered for improvement under the Public Access Activities identified as part of the proposed project are evaluated fully in Chapter 4 of this Program EIR. Improvements to the North Beach Access point have also been considered by State Parks and evaluation of these improvement options occurred after the Enhancement Plan update was initiated. Alternative improvement strategies considered during the Enhancement Plan update process are as follows:

- Marsh Trail Improvements
  - Improved Marsh Trail Access (Northwest Trailhead)
    - At-Grade Crossing (Alternative 1)
    - Overpass Crossing (Alternative 3)

- Highway 101 Improvements
  - Parallel Parking (Alternative B)
  - No Parking (Alternative C)

- North Beach Access Improvements
  - On-site Improvements (Alternative A)
  - Retreated Location (Alternative B)
  - Off-site Location (Alternative C)

It should be noted that only the Marsh Trail is a dedicated trail within TPSNR and falls entirely within the jurisdiction of State Parks. The other trail and pathway alignments considered in the Enhancement Plan fall partially or entirely within the jurisdiction of the City. Improvement to those segments would likely need to follow the City's established CEQA process with the City as lead agency.

Marsh Trail Improvements – Improved Marsh Trail Access (Northwest Trailhead)

Three options were identified in the Enhancement Plan to improve access and safety to the northwest end of the Marsh Trail. The first is an at-grade crossing at the intersection of Highway 101 (North Torrey Pines Road) and Torrey Pines Park Road (At-Grade Crossing [Alternative 1]). The second is an underpass from the South Beach parking lot under Highway 101, which was fully evaluated throughout Chapter 4 of this Program EIR as part of the proposed project (Underpass Crossing [Alternative 2]), and the third is an overpass from Torrey Pines Park Road over Highway 101 (Overpass Crossing [Alternative 3]). All three options were discussed at the public workshops and in stakeholder meetings with State Parks staff.

<u>At-Grade Crossing (Alternative 1)</u>

The At-Grade Crossing (Alternative 1) improvement for improving access to the Marsh Trail includes an at-grade crossing at the intersection of Highway 101 and Torrey Pines Park Road located within TPSNR. This option involves improvements to the intersection of Highway 101 and Torrey Pines Park Road located within TPSNR (Option 1 in Figure 3-6). This option also improves pedestrian facilities along the northbound lanes of Highway 101 from the intersection to Marsh Trail. Intersection improvements include a crosswalk and traffic-calming features at a minimum, and potentially a pedestrian-activated signal. On the eastside of Highway 101, a deck or small plaza is needed to keep congregating visitors safe before crossing. This could be similar to the bus stops found at the North Beach Access. Once across the North Torrey Pines section of Highway 101, approximately 600 feet of pedestrian improvements are required to reach the Marsh Trail. Based on the narrow width of the shoulder and the steep embankment down to the Lagoon, a wood or steel boardwalk cantilevered out of the embankment may be more appropriate than a widening of the shoulder with a retaining wall and concrete sidewalk.

<u>Overpass Crossing (Alternative 3)</u>

The third option is a pedestrian overpass connecting Torrey Pines Park Road to the beginning of the Marsh Trail referred to as the Overpass Crossing (Option 3 in Figure 3-6). The overpass, or

bridge, would start at the turn in Torrey Pines Park Road just above the South Beach parking lot to take advantage of the existing elevation that is 8 to 10 feet above Highway 101. Additional ramping would be needed to gain adequate vertical clearance over Highway 101. Once the required elevation is gained, a bridge would span over Highway 101. Once over Highway 101, visitors would descend a series of ramps down to the beginning of the Marsh Trail some 35 feet below.

Highway 101 Improvements

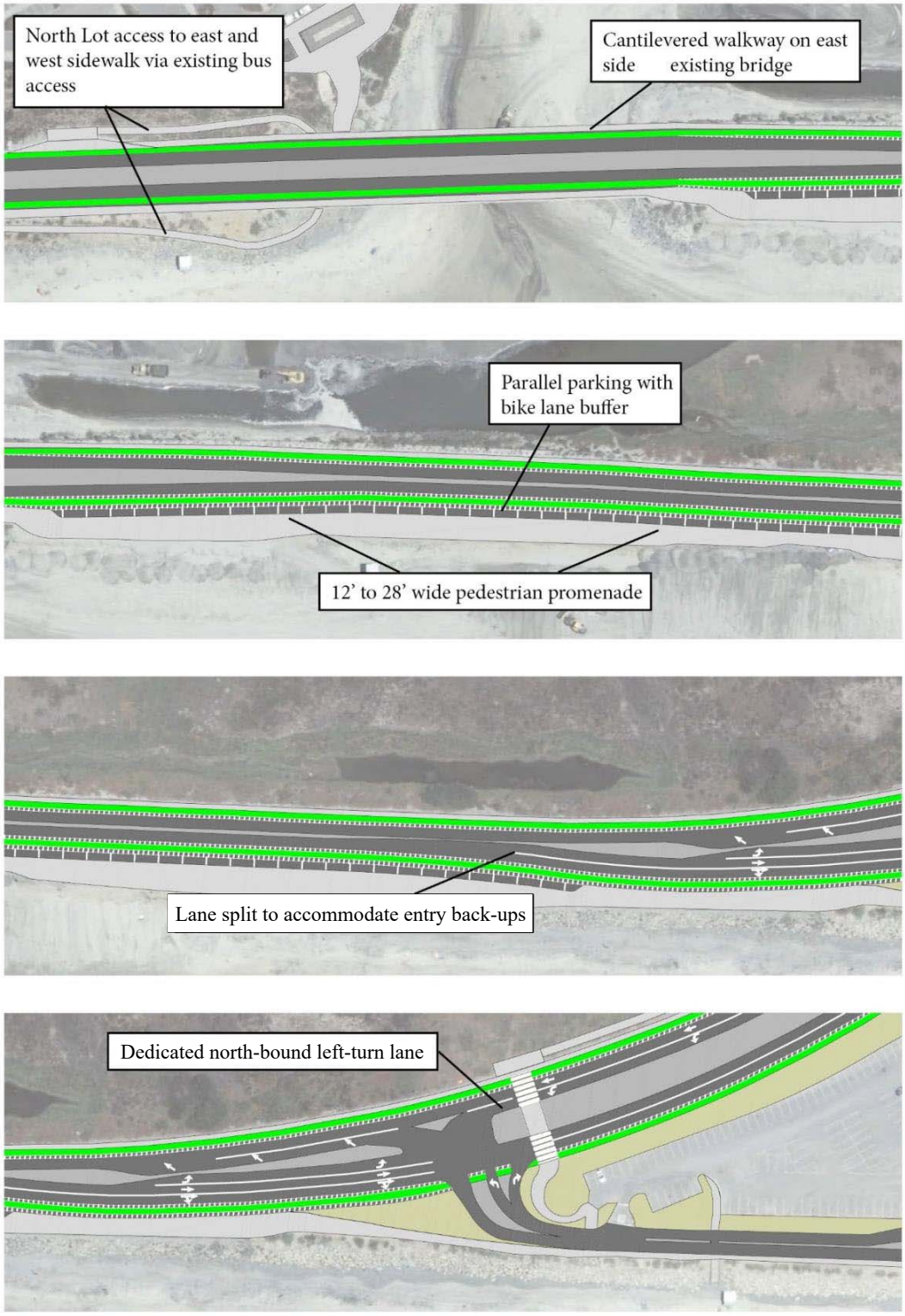
Three design alternatives were developed for the section of Highway 101 between the North Beach parking lot and South Beach parking lot, commonly referred to as North Torrey Pines Road. Future design and implementation would require support from the City of San Diego, who manages this roadway and related easements. Therefore, improvements to this section of Highway 101 would most likely be led by the City as part of a Capital Improvement Project, though partnerships with State Parks and LPLF could occur given their management responsibilities and landownership on either side of this coastal highway. Three options were identified in the Enhancement Plan to improve access and safety from Highway 101. The first option, Head-In Parking (Alternative A), was fully evaluated as part of the proposed project in Chapter 4 of this Program EIR. Alternatives to the proposed project include the Parallel Parking (Alternative B) and No Parking (Alternative C) options.

Parallel Parking (Alternative B)

The Parallel Parking (Alternative B) improvement has a smaller footprint and likely lower construction costs than the proposed project As shown in Figure 9-3, a promenade with widths ranging from 15 to 25 feet would be provided along the western edge for pedestrians and slow-moving cyclists. Parallel parking spaces would be provided along most of the length of the promenade. A buffered bicycle lane would be provided between the parking and southbound travel lane. The northbound travel lane would include a standard bicycle lane and a pedestrian sidewalk along the edge of the Lagoon within the existing disturbed shoulder. Dedicated entry and exit lanes to the South Beach parking lot for northbound and southbound traffic are included with this alternative to improve flow in and out of the parking lot to reduce vehicular congestion on Highway 101 that presents safety issues for pedestrian, bicycle, and vehicle traffic.

No Parking (Alternative C)

The No Parking (Alternative C) improvement has the smallest footprint and likely the lowest construction costs as compared to the proposed project and Parallel Parking (Alternative B) and likely the lowest construction costs. As shown in Figure 9-3, a promenade with widths ranging from 10 to 15 feet would be provided along most of the western edge for pedestrians and slow-moving cyclists. No parking spaces would be provided to accommodate the space needed to improve safety for pedestrian and bicycle use. A standard bicycle lane would be provided adjacent to the southbound



Source: ESA 2016

No Scale

Figure 9-3
Parallel Parking Option

travel lane. The northbound travel lane would include the standard bicycle lane and a pedestrian sidewalk along the Lagoon's edge within the existing disturbed shoulder. Dedicated entry and exit lanes to the South Beach parking lot for southbound traffic are provided under this alternative. However, northbound traffic would need to access this parking lot by way of a U-turn rather than a dedicated left-turn lane as provided in the proposed project and the Parallel Parking Option (Alternative B). While this alternative reduces available parking along Highway 101 by 120 spaces, the adjacent North Beach parking lot provides 503 parking spaces and could accommodate parking needs as this parking lot is underutilized by more than 120 spaces on all but the busiest holidays (Figure 9-4). Reduction in available parking spaces may be offset by implementation of a shuttle system that connects designated areas within TPSNR with off-site parking areas.

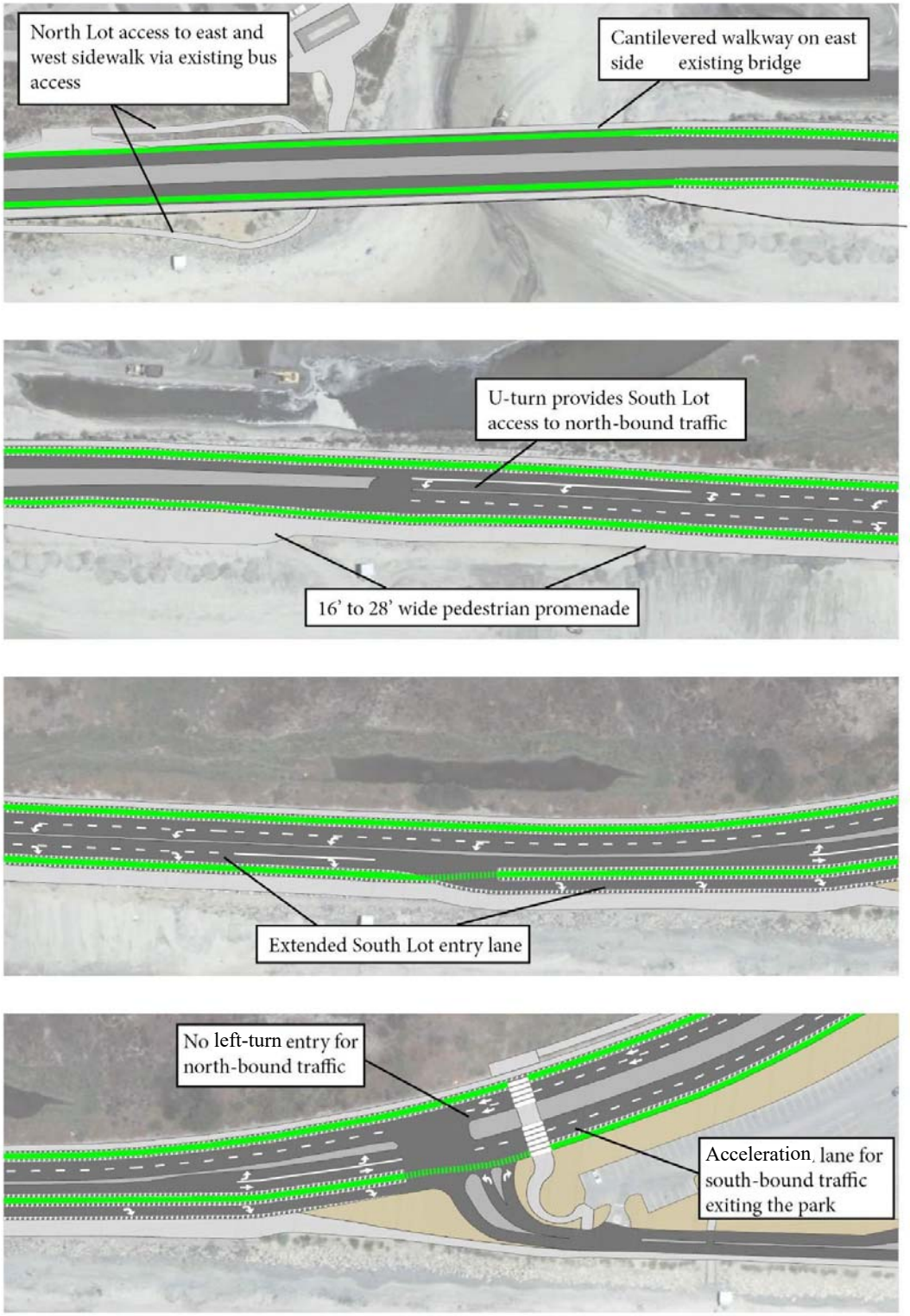
North Beach Access Improvements

The North Beach parking lot and associated beach facilities are critical to providing public access and recreation at TPSNR. The North Beach lot has 503 parking spaces, a restroom, a moveable lifeguard tower, and maintenance facilities. This lot serves more than 1,000,000 visitors annually, including visitors parking in the lot and those walking in from Carmel Valley Road. The North Beach lot public access function is vulnerable to coastal flooding and sea level rise. This lot was constructed in 1968 by grading coastal strand habitat and filling wetlands.

Three design alternatives are considered to provide broad approaches for managed retreat of the North Beach parking lot: on-site improvements implemented within the existing parking lot footprint; retreating the lot to a nearby upland location within TPSNR; and relocating parking to an off-site location with shuttle service provided to move park patrons to designated drop-off points within TPSNR, including Torrey Pines State Beach and/or a reduced version of the North Beach parking lot within its existing footprint.

On-site Improvements (Alternative A)

The On-site Improvements (Alternative A) Alternative would provide on-site improvements to the existing North Beach parking lot in a manner that is resilient to climate change. Creation of additional facilities to support State Parks staff (*e.g.,* lifeguards and rangers) and education/outreach efforts will be considered to improve public safety, foster coastal stewardship, and support valuable community outreach programs that include junior lifeguards and interactions with local schools. Following a living shoreline approach, sand borrowed from Lagoon inlet maintenance could be used to restore areas of historic coastal dune along the lot's western edge to provide natural buffers needed to protect this area from coastal flooding and sea level rise. Existing parking spaces in the back of the lot could be preserved or relocated underground through the construction of a new parking structure in a similar design that has been successful in the Katwik and Zee project in the Netherlands (ASCE 2015). The underground structure would be hidden under as much as 4 acres of restored coastal dune and coastal sage scrub habitats. Under this alternative, the North Beach parking lot could also be reconfigured to restore approximately 1 acre of tidal wetlands.



Source: ESA 2016

No Scale

Figure 9-4
No Parking Option

Retreated Location (Alternative B)

Under the Retreated Location (Alternative B) Alternative, the North Beach Parking and related facilities would be moved to a nearby upland area within TPSNR to protect them from coastal flooding and sea level rise. Similar to the On-site Improvements Alternative, parking spaces could be reduced to accommodate public parking needs while preserving natural areas. Design of an underground parking structure and visitor-serving facilities with a shrubland habitat vegetated roof may be considered as an alternative approach that balances parking needs and the provision of public amenities with more than 5 acres of restored habitat by vegetating the roof of the new structure. Creation of additional facilities to support State Parks staff (*e.g.,* lifeguards and rangers) and education/outreach efforts would be considered to improve public safety, foster coastal stewardship, and support valuable community outreach programs that include junior lifeguards and interactions with local schools. This alternative may also include alternate uses of the existing North Beach parking lot space that include restored dune, wetland, coastal sage scrub habitats, and possibly low-cost visitor-serving amenities and/or shuttle service drop-off points and gathering areas.

Off-site Improvements (Alternative C)

The Off-site Improvements (Alternative C) Alternative would develop or acquire off-site upland retreat locations for a new North Beach Lot. Sites in the vicinity of I-5 with shuttle services would be considered as well as the potential for property acquisitions. The existing North Beach parking lot space could be restored with dune, wetland and upland habitats, and habitat-buffered visitor-serving facilities (*e.g.,* Americans with Disabilities Act parking, restroom, trails, public safety and maintenance facilities, and an interpretive center).

9.2.3 Vector Management Activities

Vector Management Activities 1 through 4 were developed for the Enhancement Plan (Chapter 9) and are fully evaluated as part of the proposed project in Chapter 4 of this Program EIR. Two alternatives were developed after the initiation of the Enhancement Plan:

- Increased Inlet Management
- Increased Vector Treatments

Increased Inlet Management

Annual inlet maintenance at the Lagoon includes removing sediment deposited at the mouth and interior of the Lagoon from an extreme storm event and/or the regular flood and ebb currents. Annual inlet maintenance helps to increase tidal circulation and minimize impounded water within the system while also providing beach nourishment opportunities at nearby beaches (*e.g.,* Torrey Pines State Beach). This Vector Management Activity considers increasing the frequency of inlet maintenance throughout a given year, thereby decreasing stagnant water and available breeding habitat for vectors within the Lagoon. However, with implementation of this Vector Management Activity, it is likely areas near the lagoon mouth will benefit the most. Upper areas of the Lagoon suffer from increased dry weather flows from urban runoff that generally remain impounded behind outdated stormwater

infrastructure and/or elevated areas in the interior of the Lagoon. These areas would most likely remain unaltered with implementation of the Increased Inlet Maintenance alternative.

Increased Vector Treatments

Vector management within the Lagoon currently occurs through the San Diego County's DEH VCP~~and the County of San Diego VHRP currently operate an integrated vector management program~~, as described in Section 2.1.5. Implementation of the Increased Vector Treatment alternative may expand the existing vector management program, such as increasing larvicide applications at identified issue areas. While vector management is the responsibility of the landowner, the current program is coordinated with the DEH VCP for implementation. An expanded program could include independent efforts or continued coordination with DEH to provide expanded vector management. Landowners may identify other funding sources, such as grant opportunities or other mechanisms, to provide increased treatments. While increased vector treatments may not occur through the County's DEH VCP, they would continue to be consulted and partnered with to coordinate and determine the most appropriate and effective vector treatment options.

9.3 RATIONALE FOR CEQA ALTERNATIVE SELECTION

The stakeholder process also included the evaluation of the Lagoon Restoration and Enhancement, Public Access, and Vector Management Activities. Using the goals and objectives of the updated Enhancement Plan, project assessment criteria were developed to facilitate the evaluation of project alternatives for restoration of salt marsh habitat and salt marsh conversion zones, improvements to public access around Los Peñasquitos Lagoon, and improvements to vector management within the Lagoon in a manner consistent with management guidelines for a State Preserve. A more in-depth discussion regarding the evaluation and ranking of project alternatives is provided in Chapter 10 of the Enhancement Plan (Appendix A). The results of the evaluation drove the selection of the proposed project components. The remainder of the potential options have been developed into the project alternatives, as described in Section 9.2 above, and represent a reasonable range of potential alternatives that could lessen environmental impact as identified for the proposed projects.

As discussed in Chapter 4, implementation of the proposed project would result in significant and unavoidable impacts to biological resources and air quality, which are temporary in nature. CEQA Guidelines Section 15021(a)(2) requires that a public agency not approve a proposed project if there are feasible alternatives available that would substantially lessen the project's significant impacts. The alternatives identified in this section represent a reasonable range of variations on the project that are designed to reduce one or more significant impacts of the proposed project. Each issue area analyzed in Chapter 4 is addressed for the alternatives in Section 9.5.

9.4 ALTERNATIVES CONSIDERED BUT REJECTED

Over the life of the proposed project, various opportunities for lagoon improvements have been considered. However, the primary focus of the Enhancement Plan is to restore salt marsh habitat and wetland conversion zones, improve public access, and improve vector management within the Lagoon in a manner consistent with management guidelines for a State Preserve. While benefits associated with the options may vary, the project objectives in Section 3.1 of this Program EIR

identify the key selection criteria and remain linked to the enhancement element of the project. Table 9-7 below highlights the lagoon improvements that were considered but have been eliminated from further analysis in the Program EIR, as well as the rationale for elimination. As shown in Table 9-7, alternatives were eliminated from further consideration based on potential loss of sensitive habitat, disposal requirements of sediment and vegetation to be removed from the Lagoon, and minimally reduced flooding risk. Public access improvements considered were determined feasible to implement and have been carried forward for future analyses either throughout Chapter 4 as part of the proposed project or in Section 9.5 below as part of the alternatives evaluation.

Table 9-7. Alternatives Considered but Rejected

Name of Alternative	Brief Description	Justification for Elimination
Reduced Inlet Management	Instead of performing annual inlet maintenance, this alternative would allow for more frequent and longer closures of the inlet in hopes of restoring a more natural closure regime and historic salt panne habitat.	Based on increased infrastructure surrounding the Lagoon (*e.g.,* railroad, North Torrey Pines Road embankments, urban development in the watershed), the Lagoon functions fundamentally different than in the past. This alternative would likely result in a primarily freshwater system with large-scale habitat conversion from tidal and non-tidal salt marsh habitats to a freshwater marsh.
Stormwater Flood Control	This option consisted of extending an existing pilot flood channel, near the intersection of Estuary Way and Roselle Street, into a larger tidal channel near Carmel Valley.	This alternative was eliminated from further consideration due to the large permanent impacts to wetlands and additional maintenance resulting in increased flows of sediment, non-native plants, and debris closer to the tidal lagoon mouth. In addition, this alternative would have minimally reduced the frequency of flooding to nearby commercial properties.

9.5 EVALUATION OF ALTERNATIVES TO THE PROPOSED PROJECT

Tables 9-8 through 9-10 provide analyses of the alternatives for each of the project components in accordance with CEQA. CEQA Section 151256.6(d) states:

> The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.

The evaluation of alternatives is organized into three matrixes broken down by the proposed project components (*e.g.*, lagoon restoration and enhancement, public access, and vector management) described above in Section 9.2 and also in Chapter 10 of the Enhancement Plan (Appendix A). Table 9-8 addresses Lagoon Restoration and Enhancement Activities; Table 9-9 addresses Public Access Activities, and Table 9-10 addresses Vector Management Activities. To satisfy CEQA, each alternative is considered with a comparison to the analysis presented for the

proposed project to identify areas where new or different impacts may or may not occur. The analysis of each alternative includes discussion for each of the thresholds of significance used for analysis in this Program EIR. The potential for impact per each threshold is identified.

9.5.1 Comparison of Proposed Project and Alternatives Impacts

A comparison of issue areas analyzed for the alternatives relative to the proposed project are summarized in Table 9-11. In some cases, the potential for impact is very similar and substantial differences would not result. However, as Table 9-11 shows, various lagoon restoration and enhancement, public access, and vector management alternatives may lessen the severity of some impacts while some may result in greater impacts as generally compared to similar components evaluated as part of the proposed project. While the severity of impacts may vary from the proposed project, at times the differences would not be of the magnitude to change significance conclusions for the issue area as compared to the proposed project. Some alternatives, as indicated by shading, could potentially alter a significance conclusion from that identified for the proposed project.

9.5.2 Lagoon Restoration and Enhancement Alternatives

Table 9-8. Summary of Impacts, Lagoon Restoration and Enhancement Alternatives

Issue Area and Threshold	Proposed Project	No Action	Expanding Tidal Reach (Elevation Reduction)	Elevation Reduction and Freshwater Management
Land Use				
A. Would the project result in physical division of an established community?	No Impact	No mechanized efforts would be conducted within the Lagoon. The current conditions would remain and would not divide the community or change land uses. There would be no impact.	Similar impacts as the proposed project. Expanded grading and elevation changes would take place within the Lagoon and would not divide the community or change land uses. There would be no impact. See proposed project land use discussion in Section 4.1.2.1.	Similar impacts as the proposed project. Expanded grading, elevation changes, and channel modifications would take place within the Lagoon and would not divide the community or change land uses. There would be no impact. See proposed project land use discussion in Section 4.1.2.1.
B. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	Less than Significant	The current conditions would remain generally unmodified and would not conflict with land use policies, plans, or regulations. There would be no impact.	Similar impacts as the proposed project. Expanded grading and elevation changes would take place within the Lagoon. However, the overall existing land use of the Lagoon would not change; it would remain a coastal lagoon and open space/reserve area and not conflict with land use policies, plans, or regulations. The impact would be less than significant. See proposed project land use discussion in Section 4.1.2.1.	Similar impacts as the proposed project. Expanded grading, elevation changes, and channel modifications would take place within the Lagoon. However, the overall existing land use of the Lagoon would not change; it would remain a coastal lagoon and open space/reserve area and not conflict with land use policies, plans, or regulations. The impact would be less than significant. See proposed project land use discussion in Section 4.1.2.1.
Public Access and Recreation				
A. Would the project include recreational facilities or require the construction or expansion of recreational facilities which may have an adverse physical effect on the environment?	Less than Significant	Similar impacts as proposed project. No recreational facilities would be constructed. The current restrictions on public access and recreation within the Lagoon would remain. There would be no impact. See proposed project public access and recreation discussion in Section 4.2.2.1.	Similar impacts as the proposed project. No recreational facilities would be constructed. The impact would remain less than significant. See proposed project public access and recreation discussion in Section 4.2.2.1.	Similar impacts as the proposed project. No recreational facilities would be constructed. The current restrictions on public access and recreation within the Lagoon would remain. There would be no impact. See proposed project public access and recreation discussion in Section 4.2.2.1.
B. Would the project result in loss of recreational use areas or lessen recreational use?	Less than Significant	No mechanized efforts would be conducted within the Lagoon. The current conditions would remain and there would be no effect on recreational use. There would be no impact.	Similar impacts as the proposed project. No recreation is allowed within the Lagoon, thus, expanded grading within the Lagoon would not directly disrupt or interfere with existing recreation opportunities. It is possible that some temporary trail closures may be necessary for public safety, but temporary loss of portions of lagoon trails would not impede the ability of recreationalists to use other local recreation amenities. The impact would be less than significant. See proposed project public access and recreation discussion in Section 4.2.2.1.	Similar impacts as the proposed project. No recreation is allowed within the Lagoon, thus, expanded grading or channel modifications within the Lagoon would not directly disrupt or interfere with existing recreation opportunities. It is possible that some temporary trail closures may be necessary for public safety, but temporary loss of portions of lagoon trails would not impede the ability of recreationalists to use other local recreation amenities. The impact would be less than significant. See proposed project public access and recreation discussion in Section 4.2.2.1.
Hydrology				
A. Would the project result in a substantial increase in impervious surfaces and associated increased runoff?	Less than Significant	Current conditions would remain generally unmodified and there would be no construction of additional impervious surfaces that could generate runoff. There would be no impact.	Similar impacts as the proposed project. Expanded grading and elevation modification would not include creation of impervious surfaces with the exception of localized sediment management and erosion protection to stabilize areas (*e.g.,* rock slope protection), which would not be substantial and would not result in a substantial increase in impervious surfaces within the Lagoon. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.1.	Similar impacts as the proposed project. Expanded grading, elevation changes, and channel modifications would not include creation of impervious surfaces with the exception of localized sediment management and erosion protection to stabilize areas (*e.g.,* rock slope protection), which would not be substantial and would not result in a substantial increase in impervious surfaces within the Lagoon. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.1.
B. Would the project lead to substantial alteration to on- and off-site drainage patterns due to changes in runoff flow rates or volumes?	Less than Significant	Current conditions would remain generally unmodified and there would be no alterations to drainage patterns that could generate increased runoff. There would be no impact.	Similar impacts as the proposed project. Drainage patterns within the Lagoon would be intentionally modified through elevation changes to increase tidal inundation and encourage salt marsh habitat recovery. No additional runoff would be added to the system by these changes. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.1.	Similar impacts as the proposed project. Drainage patterns within the Lagoon would be intentionally modified through elevation changes to increase tidal inundation and encourage salt marsh habitat recovery and channel improvements for better tidal flow and drainage. No additional runoff would be added to the system by these changes. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.1.

Issue Area and Threshold	Proposed Project	No Action	Expanding Tidal Reach (Elevation Reduction)	Elevation Reduction and Freshwater Management
C. Would the project cause substantial alteration of the existing drainage pattern of the site, including through the alteration of the course of a stream or river or increase in flow velocities, in a manner which would result in substantial scour or erosion that causes instability of slopes, river control berms, adjoining roadway embankments, or bridge abutments?	Less than Significant	Current conditions would remain generally unmodified and there would be no alterations to drainage patterns that could generate increased scour or erosion. There would be no impact.	Similar impacts as the proposed project. Drainage patterns within the Lagoon would be intentionally modified through elevation changes to increase tidal inundation and encourage salt marsh habitat recovery. If necessary, localized erosion protection to stabilize areas (*e.g.,* rock slope protection) would be installed to minimize erosion. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.1.	Similar impacts as the proposed project. Drainage patterns within the Lagoon would be intentionally modified through elevation changes and widening and deepening of channels to create better flow and drainage. Substantial scour or erosion of modified channels is not anticipated and if necessary, localized erosion protection to stabilize areas (*e.g.,* rock slope protection) would be installed. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.1.
D. Would the project result in substantial increase in the flow rate or amount (volume) of surface runoff in a manner that would result in flooding on or off site, causing damage to structures or exposing the public to substantial risk?	Less than Significant	Current conditions would remain generally unmodified and there would be no construction of additional impervious surfaces or drainage modifications that could increase flooding risk. There would be no impact.	Similar impacts as the proposed project. Drainage patterns within the Lagoon would be intentionally modified but would not generate increased runoff or conditions that could cause increased flooding. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.1.	Similar impacts as the proposed project. Drainage patterns within the Lagoon would be intentionally modified but would not generate increased runoff or conditions that could cause increased flooding. Widening and deepening of channels would create better flow and drainage and provide improved flood protection. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.1.
E. Would the project 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?	Less than Significant	Current conditions would remain generally unmodified and there would be no alterations to drainage patterns that could generate increased runoff. There would be no impact.	Similar impacts as the proposed project. Expanded grading and elevation modification would not include creation of impervious surfaces with the exception of localized sediment management and erosion protection to stabilize areas (*e.g.,* rock slope protection), which would not result in a substantial increase in impervious surfaces or runoff. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.1.	Similar impacts as the proposed project. Expanded grading, elevation changes, and channel modifications would not include creation of impervious surfaces with the exception of localized sediment management and erosion protection to stabilize areas (*e.g.,* rock slope protection), which would not result in a substantial increase in impervious surfaces or runoff. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.1.
F. Would the project increase risks of damage to coastal resources, including inundation by storm surge, wave uprush or sea level rise?	No impact	Current conditions would remain generally unmodified and there would be no alterations that could increase risk of damage to coastal resources. There would be no impact.	Similar impact as the proposed project. Expansion of modified elevations within the Lagoon would not increase risk associated with storm surge, wave uprush, or sea level rise and could serve to provide improved protection from these events through better drainage and storage capacity. There would be no impact. See proposed project hydrology discussion in Section 4.3.2.1.	Similar impact as the proposed project. Expansion of modified elevations and improved channels throughout the Lagoon would not increase risk associated with storm surge, wave uprush, or sea level rise and could serve to provide improved protection from these events through better drainage and storage capacity. There would be no impact. See proposed project hydrology discussion in Section 4.3.2.1.
Water Quality and Sediment Management				
A. Would the project result in a violation of water quality standards or waste discharge requirements or degradation of beneficial uses in Los Peñasquitos Lagoon?	Less than Significant	Current conditions would remain generally unmodified and there would be no alterations that could decrease water quality standards. However, degradation of water quality within the lagoon system would continue to worsen over time. The impact would be less than significant.	Similar impacts as the proposed project. The Lagoon would be intentionally modified through elevation changes to increase tidal inundation and encourage salt marsh habitat recovery. Such changes would not result in introduction of pollutants and could improve water quality. The impact would be less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.1.	Similar impacts as the proposed project. The Lagoon would be intentionally modified through elevation changes and channel improvements for better drainage and habitat quality. Such changes would not result in introduction of pollutants and could improve water quality. The impact would be less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.1.
B. Would the project substantially degrade water quality in the Lagoon by increasing sedimentation, leading to a violation or degradation of water quality standards or beneficial uses; or generate pollutions in violation of such standards?	Significant (temporary)	Current conditions would remain generally unmodified and there would be no alterations that could generate increased runoff or create additional sources of sedimentation. However, there would be no improvements to help flush upstream sedimentation through the lagoon system. The impact would be less than significant.	Similar impacts as the proposed project. Temporary turbidity generated by expanded excavation actives within the Lagoon would result in a potentially significant temporary impact during construction. Post-construction, sedimentation would not be increased and new water pollution sources would not result. The impact would be less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.1.	Similar impacts as the proposed project. Temporary turbidity generated by expanded excavation actives within the Lagoon would result in a potentially significant temporary impact during construction. Post-construction, water quality in the Lagoon would be improved compared to existing conditions, including with respect to sedimentation. The impact would be less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.1.
C. Would the project alter circulation patterns in the Lagoon in a way that inhibits mixing or promotes stagnation?	Less than significant	Current conditions would remain generally unmodified. However, degradation of the lagoon system would continue to worsen over time and could result in inhibited mixing and increased areas of	Similar impacts as the proposed project. Circulation patterns within the Lagoon would be intentionally modified through expanded elevation changes to increase tidal inundation and	Similar impacts as the proposed project. Circulation patterns within the Lagoon would be intentionally modified through expanded elevation changes to increase tidal inundation and encourage salt marsh habitat recovery, and through widening and

Issue Area and Threshold	Proposed Project	No Action	Expanding Tidal Reach (Elevation Reduction)	Elevation Reduction and Freshwater Management
		stagnant water. The impact would be less than significant.	encourage salt marsh habitat recovery. There would be no impact. See proposed project hydrology discussion in Section 4.4.2.1.	deepening of channels to create better flow and drainage. This would promote mixing and reduce areas of stagnation. There would be no impact. See proposed project hydrology discussion in Section 4.4.2.1.
Geology/Soils				
A. Would the project expose people or structures (including infrastructure) to geologic hazards such as earthquakes due to rupture of a known earthquake fault delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist or any other known faults, landslides, mudslides, ground failure, or similar hazards?	Less than Significant	Current conditions would remain generally the same. Geologic conditions would not be modified and would not increase the exposure of people or structures to geologic hazards. There would be no impact.	Similar impacts as the proposed project. Expanded ground disturbance would typically be limited to portions of the lagoon basins that are generally underlain by loose marine and alluvial deposits. Grading activities may create terraced or sloping terrain to accommodate habitat needs but would not create or modify steep slopes that would be susceptible to geologic instability or resulting hazards. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.1.	Similar impacts as the proposed project. Expanded ground disturbance would typically be limited to portions of the lagoon basins and hydraulic connections that are generally underlain by loose marine and alluvial deposits. Grading activities may create terraced or sloping terrain to accommodate habitat needs or necessary channel dimensions but would not create or modify steep slopes that would be susceptible to geologic instability or resulting hazards. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.1.
B. Would the project result in a substantial increase in wind or water erosion of soils, either on or off the site?	Less than Significant	No mechanized efforts would be conducted within the Lagoon and no ground disturbance or other activities that could result in erosion would occur. There would be no impact.	Similar impacts as the proposed project. Expanded ground-disturbing activities, including sediment removal, would be subject to permit requirements, the project SWPPP that identifies BMPs to minimize erosion during construction, and PDFs identified in the Program EIR requiring implementation of erosion control methods. Adherence to these measures would result in a less than significant impact. See proposed project geology/soils discussion in Section 4.5.2.1.	Similar impacts as the proposed project. Expanded ground-disturbing activities, including sediment removal and channel modifications would be subject to permit requirements, the project SWPPP that identifies BMPs to minimize erosion during construction, and PDFs identified in the EIR requiring implementation of erosion control methods. Adherence to these measures would result in a less than significant impact. See proposed project geology/soils discussion in Section 4.5.2.1.
C. Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off site landslide, lateral spreading, subsidence, liquefaction or collapse?	Less than Significant	No mechanized efforts would be conducted within the Lagoon and no ground disturbance or other activities that could result in geologic instability would occur. There would be no impact.	Similar impacts as the proposed project. Expanded ground disturbance in the lagoon basin would not change or modify the type or conditions of the underlying soils and geology that could increase the susceptibility of the project site to unstable conditions. The actions and the locations included in elevation modifications would not create conditions that could increase potential for geologic hazards. Adherence to permitting requirements would further minimize geologic risks. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.1.	Similar impacts as the proposed project. Expanded ground disturbance in the lagoon basin and channels would not change or modify the type or conditions of the underlying soils and geology that could increase the susceptibility of the project site to unstable conditions. The actions and the locations included in elevation modifications would not create conditions that could increase potential for geologic hazards. Adherence to permitting requirements would further minimize geologic risks. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.1.
Biological Resources				
A. Would the project have a substantial adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in the MSCP or other local or regional plans, policies or regulations, or by the CDFW or USFWS?	Potentially Significant (temporary)	No mechanized efforts would be conducted within the Lagoon. Small-scale areas of invasive plant removal and native plant reseeding would not be of the magnitude to substantially affect sensitive species. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.1.	Similar impacts as the proposed project. During elevation modifications within the lagoon basin, there would be a temporary loss of habitat prior to revegetation. Concern with temporary loss of habitat is reduced availability of food and shelter for resident and migratory species. PDFs outlined in the EIR would be applicable to minimize potential for impact; however, the temporary loss of habitat used by sensitive species during elevation modifications would be considered substantial and potentially significant (temporary). See proposed project biological resources discussion in Section 4.6.2.1.	Similar impacts as the proposed project. During elevation modifications within the lagoon basin, there would be a temporary loss of habitat prior to revegetation. Concern with temporary loss of habitat is reduced availability of food and shelter for resident and migratory species. PDFs outlined in the EIR would be applicable to minimize potential for impact; however, the temporary loss of habitat used by sensitive species during elevation modifications and channel improvements would be considered substantial and potentially significant (temporary). See proposed project biological resources discussion in Section 4.6.2.1.
B. Would the project have a substantial adverse impact on any Tier I Habitats, Tier II Habitats, Tier IIIA Habitats, or Tier IIIB Habitats as identified in the Biology Guidelines of the Land Development manual or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS?	Potentially Significant (temporary)	Current conditions would remain generally the same and small-scale areas of invasive plant removal and native plant reseeding would not affect sensitive habitats. There would be no impact.	Similar impacts as the proposed project. Potential impacts to sensitive habitats would occur in the process of creating higher value habitats that would be resilient for the long term and high functioning within the Lagoon with no feasible way to avoid disturbance. The impact to those existing sensitive habitats is not considered substantially adverse, but rather an acceptable trade-off with higher value habitat creation. Thus, the impact would be less	Similar impacts as the proposed project. Potential impacts to sensitive habitats would occur in the process of creating higher value habitats that would be resilient for the long term and high functioning within the Lagoon with no feasible way to avoid disturbance. The impact to those existing sensitive habitats is not considered substantially adverse, but rather an acceptable trade-off with higher value habitat creation. Thus, the impact would be

Issue Area and Threshold	Proposed Project	No Action	Expanding Tidal Reach (Elevation Reduction)	Elevation Reduction and Freshwater Management
			than significant. See proposed project biological resources discussion in Section 4.6.2.1.	less than significant. See proposed project biological resources discussion in Section 4.6.2.1.
C. Would the project have a substantial adverse impact on wetlands (including, but not limited to, marsh, vernal pool, riparian, *etc.*) through direct removal, filling, hydrological interruption, or other means?	Less than Significant	Current conditions would remain generally the same and small-scale areas of invasive plant removal and native plant reseeding would not adversely affect wetland habitats. There would be no impact.	Similar impacts as the proposed project. As shown in Table 9-2, impacts to sensitive habitats, including riparian wetlands and marsh habitats would occur in the process of expanded elevation modifications designed to expand tidal reach into the Lagoon. In the long term, these impacts are expected to enhance the hydrological system that sustain wetland habitat, though modeling results indicate a larger area of brackish inundation and lower quality wetland habitat rather than increases to salt marsh habitat, and would not result in a net removal, fill, or loss of wetland habitats on the program level. Thus, the short-term impact to wetlands is not considered substantially adverse, but rather an acceptable temporary condition in the process of restoration. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.1.	Similar impacts as the proposed project. As shown in Table 9-2, impacts to sensitive habitats, including riparian wetlands and marsh habitats, would occur in the process of expanded elevation modifications designed to expand tidal reach into the Lagoon. The expanded tidal reach would create quality habitats with higher value that would be resilient for the long term and high functioning within the Lagoon with no feasible way to avoid disturbance. In the long term, these impacts are expected to enhance the hydrological system that sustains these wetlands and would not result in a net removal, fill, or loss of wetland habitats on the program level. Thus, the short-term impact to wetlands is not considered substantially adverse, but rather an acceptable temporary condition in the process of restoration. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.1.
D. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, including linkages identified in the MSCP Plan, or impede the use of native wildlife nursery sites?	Less than Significant	Current conditions would remain generally the same and small-scale areas of invasive plant removal and native plant reseeding would not be of the magnitude to substantially influence wildlife movement or use of the Lagoon as linkages. There would be no impact.	Similar impacts as the proposed project. During expanded elevation modifications, only a portion of the Lagoon would be temporarily under construction at any one time, allowing for wildlife use and passage through other adjacent areas. This would limit the potential for wildlife movement to be substantially impeded within the lagoon setting and the impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.1.	Similar impacts as the proposed project. During expanded elevation modifications and channel improvements, only a portion of the Lagoon would be temporarily under construction at any one time, allowing for wildlife use and passage through other adjacent areas. This would limit the potential for wildlife movement to be substantially impeded within the lagoon setting and the impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.1.
E. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan, either within the MSCP plan area or in the surrounding region?	Less than Significant	Similar impact as the proposed project. Current conditions would remain generally the same and invasive plant removal and native plant reseeding would not conflict with the MSCP or other local or regional conservation plans. There would be no impact.	Similar impact as the proposed project. Activities would be planned in accordance with the goals and guidelines of ~~T~~the MSCP ~~principles would be applied~~. Because the expanded elevation modifications would result in habitat enhancement and restoration, it would not conflict with the City's MSCP or other local policies or ordinances protecting biological resources. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.1.	Similar impact as the proposed project. Activities would be planned in accordance with the goals and guidelines of ~~T~~the MSCP principles ~~would be applied~~. Because the expanded elevation modifications and channel improvements would result in habitat enhancement and restoration, it would not conflict with the City's MSCP or other local policies or ordinances protecting biological resources. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.1.
F. Would the project introduce development in areas adjacent to the MHPA that would result in adverse edge effects?	Less than significant	No mechanized efforts would be conducted within the Lagoon. Current conditions would remain generally the same and would not include development of permanent structures, facilities, or infrastructure that could create conditions with adverse edge effects. There would be no impact.	Similar impact as the proposed project. While expanded elevation modifications within the Lagoon would change specific habitat distributions, there would be no development of permanent structures, facilities, or infrastructure (*e.g.*, nighttime lighting) that could create conditions with adverse edge effects. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.1.	Similar impact as the proposed project. While expanded elevation modifications and channel improvements within the Lagoon would change specific habitat distributions, there would be no development of permanent structures, facilities, or infrastructure (*e.g.*, nighttime lighting) that could create conditions with adverse edge effects. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.1.
G. Would the project conflict with any State or local policies or ordinances or public resources codes protecting biological resources?	Less than significant	Current conditions would remain generally the same and invasive plant removal and native plant reseeding would not conflict with local or state policies protecting biological resources. There would be no impact.	Similar impact as the proposed project. Expanded elevation modifications would not include actions that would conflict with local or state policies protecting biological resources. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.1.	Similar impact as the proposed project. Expanded elevation modifications and channel improvements would not include actions that would conflict with local or state policies protecting biological resources. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.1.
H. Would the project introduce invasive species of plants into a natural open space area?	Less than Significant	No mechanized efforts would be conducted within the Lagoon. There would be small-scale areas of invasive plant removal and native plant reseeding. Thus, there would be no impact.	Similar impact as the proposed project. Construction equipment has the potential to transport invasive species to the site. However, PDF #22 would be implemented for construction, which would ensure that equipment be free of non-native plant species and other	Similar impact as the proposed project. Construction equipment has the potential to transport invasive species to the site. However, PDF #22 would be implemented for construction, which would ensure that equipment be free of non-native plant

Issue Area and Threshold	Proposed Project	No Action	Expanding Tidal Reach (Elevation Reduction)	Elevation Reduction and Freshwater Management
			foreign matter before entering the project site. The impact would continue to be less than significant. See proposed project biological resources discussion in Section 4.6.2.1.	species and other foreign matter before entering the project site. The impact would continue to be less than significant. See proposed project biological resources discussion in Section 4.6.2.1.
Transportation				
A. Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities?	Less than Significant	Current conditions would remain generally the same and would not generate substantial traffic on local roadways. There would be no impact.	Similar impact as the proposed project. Construction traffic and potential material export haul trips would create additional traffic on the local roadways. However, the volume of construction traffic would not be of the magnitude to substantially interfere with local traffic operations. A Traffic Control Plan would be required if project activities would disrupt the transportation system. Thus, the short-term construction traffic would not conflict with a transportation plan, program, or policy. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.1.	Similar impact as the proposed project. Construction traffic and potential material export haul trips would create additional traffic on the local roadways. However, the volume of construction traffic would not be of the magnitude to substantially interfere with local traffic operations. A Traffic Control Plan would be required if project activities would disrupt the transportation system. Thus, the short-term construction traffic would not conflict with a transportation plan, program, or policy. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.1.
B. Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	Less than Significant	Current conditions would remain generally the same and would not generate substantial traffic on local roadways. There would be no impact.	Similar impact as the proposed project. Construction traffic would be necessary during restoration activities and maintenance; however, these trips would be temporary and occur only during the duration of construction. There would be no new land uses or other project elements that would entice people to travel to the area and increase vehicle miles traveled. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.1.	Similar impact as the proposed project. Construction traffic would be necessary during restoration activities and maintenance; however, these trips would be temporary and occur only during the duration of construction. There would be no new land uses or other project elements that would entice people to travel to the area and increase vehicle miles traveled. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.1.
C. Would the project substantially increase hazards due to a geometric design feature (*e.g.*, sharp curves or dangerous intersections) or incompatible use (*e.g.*, farm equipment)?	No Impact	Current conditions would remain generally the same and would not create new roadway features or construction traffic on local roadways. There would be no impact.	Similar impact as the proposed project. Expanded elevation modifications within the Lagoon would not create new roadway features and construction traffic on local roadways would be similar to typical construction traffic. There would be no impact. See proposed project transportation discussion in Section 4.7.2.1.	Similar impact as the proposed project. Expanded elevation modifications and channel improvements within the Lagoon would not create new roadway features and construction traffic on local roadways would be similar to typical construction traffic. There would be no impact. See proposed project transportation discussion in Section 4.7.2.1.
D. Would the project result in inadequate emergency access?	Less than Significant	Current conditions would remain generally the same and would not generate substantial traffic or create conditions that could interfere with emergency access. There would be no impact.	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.1.	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.1.
Air Quality Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.				
A. Would the project conflict with or obstruct implementation of the applicable air quality plan?	Less than Significant	No mechanized efforts would be conducted within the Lagoon and current conditions would remain generally the same. No new emissions would be generated. There would be no impact.	Similar impact as the proposed project. Construction activities, including expanded elevation modifications would generate temporary emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ that would be greater than the proposed project as more excavation would be required (195,600 cy compared to 51,200 cy for the proposed project). Due to the standard nature of the construction activities and short duration of construction, this alternative would not increase or exceed the assumptions used for regional air quality planning. Additional air quality protection would be implemented as a requirement of the PDFs listed in Table 3-4. The impact would continue to be less than significant. See proposed project air quality discussion in Section 4.8.2.1.	Similar impact as the proposed project. Construction activities, including expanded elevation modifications and channel improvements would generate temporary emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ that would be greater than the proposed project as more excavation would be required (246,800 cy compared to 51,200 cy for the proposed project). Due to the standard nature of the construction activities and short duration of construction, this alternative would not increase or exceed the assumptions used for regional air quality planning. Additional air quality protection would be implemented as a requirement of the PDFs listed in Table 3-4. The impact would continue to be less than significant. See proposed project air quality discussion in Section 4.8.2.1.

Issue Area and Threshold	Proposed Project	No Action	Expanding Tidal Reach (Elevation Reduction)	Elevation Reduction and Freshwater Management
B. Would the project 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?	Potentially Significant (temporary)	No mechanized efforts would be conducted within the Lagoon. This alternative would not generate emissions and thus, would not make a cumulatively considerable contribution to the region's air quality. There would be no impact.	Similar impact as the proposed project. Because specific alternative details necessary to accurately calculate pollutant emissions are currently undetermined and could change through the project design process, it is not possible to determine if the cumulative screening level thresholds would be exceeded or not. Construction activities for larger-scale projects and those that require substantial amounts of earthwork could potentially make a cumulatively considerable contribution to the region's air quality. Thus, the construction-related impact would be potentially significant (temporary). See proposed project air quality discussion in Section 4.8.2.1.	Similar impact as the proposed project. Because specific alternative details necessary to accurately calculate pollutant emissions are currently undetermined and could change through the project design process, it is not possible to determine if the cumulative screening level thresholds would be exceeded or not. Construction activities for larger scale projects and those that require substantial amounts of earthwork could potentially make a cumulatively considerable contribution to the region's air quality. Thus, the construction-related impact would be potentially significant (temporary). See proposed project air quality discussion in Section 4.8.2.1.
C. Would the project expose sensitive receptors to substantial pollutant concentrations?	Less than Significant	No mechanized efforts would be conducted within the Lagoon and current conditions would remain generally the same. No new emissions or pollutant concentrations would be generated. There would be no impact.	Similar impact as the proposed project. Expanded elevation modifications would result in localized diesel PM emissions generated by the construction activities. Construction work would move around within the 90 acres of Zone 3 proposed for elevation modifications and it is anticipated emissions would be dispersed around the project site and concentrations would decrease substantially before affecting the nearest sensitive receptor. The impact would continue to be less than significant. See proposed project air quality discussion in Section 4.8.2.1.	Similar impact as the proposed project. Expanded elevation modifications and channel improvements would result in localized diesel PM emissions generated by the construction activities. Construction work would move around within the 90 acres of Zone 3 proposed for elevation modifications and along the linear channel corridors. It is anticipated emissions would be dispersed around the project site and concentrations would decrease substantially before affecting the nearest sensitive receptor. The impact would continue to be less than significant. See proposed project air quality discussion in Section 4.8.2.1.
D. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Less than Significant	No mechanized efforts would be conducted within the Lagoon and current conditions would remain generally the same. No odor emissions would be generated. There would be no impact.	Similar impact as the proposed project. Tidal mudflat exposure may occur and result in potential odors during low tide. However, this alternative would create only 1.58 acres of mudflat habitat and those areas would be located at substantial buffer distance from the nearest sensitive receptors. Construction activities cause exhaust from diesel construction equipment; however, because of the temporary nature and the highly diffusive properties of diesel exhaust, nearby receptors would not be substantially affected by diesel exhaust odors. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.1.	Similar impact as the proposed project. Tidal mudflat exposure may occur and result in potential odors during low tide. However, this alternative would create only 1.58 acres of mudflat habitat and those areas would be located at substantial buffer distance from the nearest sensitive receptors. Construction activities cause exhaust from diesel construction equipment; however, because of the temporary nature and the highly diffusive properties of diesel exhaust, nearby receptors would not be substantially affected by diesel exhaust odors. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.1.
Cultural Resources				
A. Would the project cause an alteration, including the adverse physical or aesthetic effects and/or the destruction of a prehistoric or historic building (including an architecturally significant building), structure, or object or site?	Potentially Significant	The No Action Alternative would not require construction, ground disturbance, or other land or structure altering actions. No impact to unknown human remains would result.	Twenty-six archaeological sites have been recorded within the area of potential effect (APE) and buried stable surfaces below may contain archaeological resources that have not been uncovered. Thus, expanded grading and soil removal activities may have the potential to encounter previously unidentified, potentially significant archaeological resources in stable sediments. The potential impact to archaeological resources is considered significant. See proposed project cultural resource discussion in Section 4.9.2.1.	Twenty-six archaeological sites have been recorded within the APE and buried stable surfaces below may contain archaeological resources that have not been uncovered. Thus, expanded grading and soil removal activities may have the potential to encounter previously unidentified, potentially significant archaeological resources in stable sediments. The potential impact to archaeological resources is considered significant. See proposed project cultural resource discussion in Section 4.9.2.1.
B. Would the project have any impact to existing religious or sacred uses within the potential impact area?	No Impact	Similar impact as the proposed project. No existing religious or sacred uses have been identified within the proposed vector management areas. There would be no impact. See proposed project cultural resource discussion in Section 4.9.2.1.	Similar impact as the proposed project. No existing religious or sacred uses have been identified within the proposed vector management areas. There would be no impact. See proposed project cultural resource discussion in Section 4.9.2.1.	Similar impact as the proposed project. No existing religious or sacred uses have been identified within the proposed vector management areas. There would be no impact. See proposed project cultural resource discussion in Section 4.9.2.1.
C. Would the project cause the disturbance of any human remains, including those interred outside of formal cemeteries?	Potentially Significant	The No Action Alternative would not require construction or other ground disturbance. No impact to unknown human remains would result.	Similar impact as the proposed project. Currently, there is no evidence for the presence of human remains within the Lagoon; however, there may be a potential to encounter human remains during expanded ground-disturbing activities due to the proximity of the discovery of human remains at a similar, nearby location.	Similar impact as the proposed project. Currently, there is no evidence for the presence of human remains within the Lagoon; however, there may be a potential to encounter human remains during expanded ground-disturbing activities due to the proximity of the discovery of human remains at a similar, nearby

Issue Area and Threshold	Proposed Project	No Action	Expanding Tidal Reach (Elevation Reduction)	Elevation Reduction and Freshwater Management
			Therefore, the potential to disturb human remains is considered significant. See proposed project cultural resource discussion in Section 4.9.2.1.	location. Therefore, the potential to disturb human remains is considered significant. See proposed project cultural resource discussion in Section 4.9.2.1.
D. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	No Impact	Similar impact as the proposed project. No tribal cultural resources have been documented to date within the APE. No impact would result. See proposed project cultural resource discussion in Section 4.9.2.1.	Similar impact as the proposed project. No tribal cultural resources have been documented to date within the APE. No impact would result. See proposed project cultural resource discussion in Section 4.9.2.1.	Similar impact as the proposed project. No tribal cultural resources have been documented to date within the APE. No impact would result. See proposed project cultural resource discussion in Section 4.9.2.1.
Paleontological Resources				
A. Would the project require over 1,000 cubic yards of excavation in a high resource potential geologic deposit/formation/rock unit?	Potentially Significant	The No Action Alternative would not require construction or other ground disturbance. There would be no impact.	Similar impact as the proposed project. Portions of the Lagoon are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. The Expanding Tidal Reach Alternative would require 195,600 cy of excavation. Thus, there is a potential to disturb more than 1,000 cy within the highly sensitive Delmar Formation. A potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.1.	Similar impact as the proposed project. Portions of the Lagoon are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. The Elevation Reduction and Freshwater Management and Expanding Tidal Reach (Elevation Reduction) Alternative would require 246,800 cy of excavation. Thus, there is a potential to disturb more than 1,000 cy within the highly sensitive Delmar Formation. A potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.1.
B. Would the project require over 2,000 cubic yards of excavation in a moderate resource potential geologic deposit/formation/rock unit?	Potentially Significant	The No Action Alternative would not require construction or other ground disturbance. There would be no impact.	Similar impact as the proposed project. Portions of the Lagoon are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. The Expanding Tidal Reach Alternative would require 195,600 cy of excavation. Thus, there is a potential to disturb more than 2,000 cy within the moderately sensitive Torrey Sandstone or Lindavista formations. A potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.1.	Similar impact as the proposed project. Portions of the Lagoon are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. The Elevation Reduction and Freshwater Management and Expanding Tidal Reach (Elevation Reduction) Alternative would require 246,800 cy of excavation. Thus, there is a potential to disturb more than 2,000 cy within the moderately sensitive Torrey Sandstone or Lindavista formations. A potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.1.
Public Services and Utilities				
A. Would the project result in impacts to any of the following public services that would require the establishment of additional facilities. Would these facilities result in further potential physical impacts to the environment? • Fire protection; • Police protection;	Less than Significant	No mechanized efforts would be conducted within the Lagoon. Current conditions would remain generally the same and would not require public services or the establishment of new or expanded service facilities. There would be no impact.	Similar impact as the proposed project. Construction activities typically create some issues related to the need for public services such as potential for fire, illegal activities, public safety concerns, and in this case interference with beach lifeguard. PDFs have been incorporated into the project to minimize such construction-related concerns and the impact would be less than significant. See	Similar impact as the proposed project. Construction activities typically create some issues related to the need public services such as potential for fire, illegal activities, public safety concerns, and in this case interference with beach lifeguard. PDFs have been incorporated into the project to minimize such construction-related concerns and the impact would be less than

Issue Area and Threshold	Proposed Project	No Action	Expanding Tidal Reach (Elevation Reduction)	Elevation Reduction and Freshwater Management
• Lifeguard services; Parks; or • Other public facilities.			proposed project public services and utilities discussion in Section 4.11.2.1.	significant. See proposed project public services and utilities discussion in Section 4.11.2.1.
B. Would the project result in a need for any of the following new systems, or require substantial alterations to existing utilities, the construction of which would create physical impacts? • Natural gas; • Water; • Sewer; • Communication systems; or • Solid waste disposal.	Less than Significant	No mechanized efforts would be conducted within the Lagoon. Current conditions would remain generally the same and would not require increased use of public utilities or the establishment of new or expanded service facilities. There would be no impact.	Similar impact as the proposed project. Standard construction activities would be necessary for a temporary time period to complete the expanded elevation modifications and revegetation and may necessitate minor and typical use of utilities such as water, electricity, or natural gas, but not at a rate to require new or altered systems or services. This alternative would require 195,600 cy of excavation and some of this material may be exported as waste if not reused on site. However, export of the remaining material would not be in excess of state or local standards, or in excess of the capacity of local infrastructure. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.1.	Similar impact as the proposed project. Standard construction activities would be necessary for a temporary time period to complete the expanded elevation modifications and revegetation and may necessitate minor and typical use of utilities such as water, electricity, or natural gas, but not at a rate to require new or altered systems or services. This alternative would require 246,800 cy of excavation and some of this material may be exported as waste if not reused on site. However, export of the remaining material would not be in excess of state or local standards, or in excess of the capacity of local infrastructure. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.1.
Public Health and Safety				
A. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Less than Significant	No mechanized efforts would be conducted within the Lagoon. Current conditions would remain generally the same and would not create a new or increased risk to the public related to hazardous materials. There would be no impact.	Similar impact as the proposed project. Expanded elevation modifications would require the use of construction equipment and the associated hazardous materials necessary for operation. Regulatory requirements, BMPs, and standard construction practices to minimize potential for risk would be applicable and thus, would not create an increased risk to the public related to hazardous materials. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.	Similar impact as the proposed project. Expanded elevation modifications and channel improvements would require the use of construction equipment and the associated hazardous materials necessary for operation. Regulatory requirements, BMPs, and standard construction practices to minimize potential for risk would be applicable and thus, would not create an increased risk to the public related to hazardous materials. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.
B. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	Less than Significant	No mechanized efforts would be conducted within the Lagoon. Current conditions would remain generally the same and would not create a new or increased risk related to release of hazardous materials. There would be no impact.	Similar impact as the proposed project. Because of the potential for contamination in lagoon soils, soil testing would occur per permitting and regulatory requirements prior to the excavation of lagoon materials to indicate if potential contaminate concentrations exceed regulatory health or ecological risk-based screening levels. Concentration levels would determine what, if any, regulatory requirements would be necessary to minimize potential public exposure. Thus, the impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.	Similar impact as the proposed project. Because of the potential for contamination in lagoon soils, soil testing would occur per permitting and regulatory requirements prior to the excavation of lagoon materials to indicate if potential contaminate concentrations exceed regulatory health or ecological risk-based screening levels. Concentration levels would determine what, if any, regulatory requirements would be necessary to minimize potential public exposure. Thus, the impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.
C. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	Less than Significant	No mechanized efforts would be conducted within the Lagoon. Current conditions would remain generally the same and would expose schools to hazardous materials. There would be no impact.	Similar impact as the proposed project. Schools are located in the general area, but not in immediate proximity to the Lagoon. The impact would continue to be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.	Similar impact as the proposed project. Schools are located in the general area, but not in immediate proximity to the Lagoon. The impact would continue to be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.
D. Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	Less than Significant	Similar impact as the proposed project. The Lagoon is not listed as a hazardous materials site in DTSC databases. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.	Similar impact as the proposed project. The Lagoon is not listed as a hazardous materials site in DTSC databases. Soil testing would occur prior to excavation of materials and appropriate regulatory requirements would be implemented as necessary. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.	Similar impact as the proposed project. The Lagoon is not listed as a hazardous materials site in DTSC databases. Soil testing would occur prior to excavation of materials and appropriate regulatory requirements would be implemented as necessary. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.
E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	No Impact	The Lagoon is not located within 2 miles of a public use airport. Activities associated with this alternative would not be of the size, magnitude, or nature to interfere with aircraft operations that may occur in the area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.1.	The Lagoon is not located within 2 miles of a public use airport. Activities associated with this alternative would not be of the size, magnitude, or nature to interfere with aircraft operations that may occur in the area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.1.	The Lagoon is not located within 2 miles of a public use airport. Activities associated with this alternative would not be of the size, magnitude, or nature to interfere with aircraft operations that may occur in the area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.1.

Issue Area and Threshold	Proposed Project	No Action	Expanding Tidal Reach (Elevation Reduction)	Elevation Reduction and Freshwater Management
F. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Less than Significant	No mechanized efforts would be conducted within the Lagoon and construction activities would not occur. Current conditions would remain generally the same and there would be no impact to emergency response or evacuation plans.	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.
G. Would the project substantially increase human exposure to vectors, such as mosquitoes, that are capable of transmitting significant public health diseases or creating nuisances?	Less than significant	Current conditions would remain generally the same. The vector control benefits from expanded tidal reach and improved circulation in lagoon channels would not occur and vector breeding conditions could continue to increase. There would be a less than significant impact. See proposed project public health and safety discussion in Section 4.12.2.1.	Similar impact as the proposed project. Expanding the tidal reach within portions of the Lagoon would create conditions that provide better vector control assuming cattails do not advance westward due to the increased area of brackish waters from nuisance flows of freshwater from the watershed. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.	Similar impact as the proposed project. Expanding the tidal reach within portions of the Lagoon and circulation within lagoon channels would create conditions that provide better vector control. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.
H. Would the project substantially increase hazards for people recreating at beach and/or nearshore placement locations?	Less than significant	No mechanized efforts would be conducted within the Lagoon and construction activities would not occur at beach or nearshore locations. There would be no impact.	Similar impact as the proposed project. Placement of material on local beach or nearshore locations would create a potentially dangerous situation with construction equipment operating in areas of typical public beach recreation. The PDFs outlined in the Program EIR to address public safety and access to beach recreation during construction activities at or near the beach would be applicable and minimize potential for public safety hazards (such as PDFs -11). The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.	Similar impact as the proposed project. Placement of material on local beach or nearshore locations would create a potentially dangerous situation with construction equipment operating in areas of typical public beach recreation. The PDFs outlined in the Program EIR to address public safety and access to beach recreation during construction activities at or near the beach would be applicable and minimize potential for public safety hazards (such as PDFs -11). The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.
Climate Change and Greenhouse Gas Emissions				
A. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less than Significant	No mechanized efforts would be conducted within the Lagoon and would not require construction. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.1.	Similar impact as the proposed project. The initial quantities of material excavation anticipated for this alternative is approximately 95,000 cy. Based on similar lagoon restoration example projects, which are of a larger magnitude than this alternative, it is anticipated that the GHG emissions resulting from the proposed project would be less than the significance guidance threshold of 900 MT CO_2e. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.	Similar impact as the proposed project. The initial quantities of material excavation anticipated for this alternative is approximately 246,800 cy. Based on similar lagoon restoration example projects, which are of a larger magnitude than this alternative, it is anticipated that the GHG emissions resulting from the proposed project would be less than the significance guidance threshold of 900 MT CO_2e. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.
B. Would the project conflict with the City's Climate Action Plan or another applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Less than Significant	Current conditions would remain generally the same and would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. There would be no impact.	Similar impact as the proposed project. Expansion of modified elevations throughout the Lagoon would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.1.	Similar impact as the proposed project. Expansion of modified elevations and improved channels throughout the Lagoon would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.1.
Energy				
A. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	Less than Significant	Minimal energy would be required as no construction activities would occur. There would be no impact.	Similar impact as the proposed project. Modifying elevations within the Lagoon would result in energy use during construction activities. Specific PDFs and standard construction procedures have been incorporated into the proposed project to minimize energy use and to conserve energy where possible. The impact would continue to be less than significant. See proposed project energy discussion in Section 4.14.2.1.	Similar impact as the proposed project. Modifying elevations and improving channels within the Lagoon would result in energy use during construction activities. Specific PDFs and standard construction procedures have been incorporated into the proposed project to minimize energy use and to conserve energy where possible. The impact would continue to be less than significant. See proposed project energy discussion in Section 4.14.2.1.

Issue Area and Threshold	Proposed Project	No Action	Expanding Tidal Reach (Elevation Reduction)	Elevation Reduction and Freshwater Management
B. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	No impact	Minimal energy would be required as no construction activities would occur. This alternative would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur. See proposed project energy discussion in Section 4.14.2.1.	Similar impact as the proposed project. Implementation of this alternative would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur. See proposed project energy discussion in Section 4.14.2.1.	Similar impact as the proposed project. Implementation of this alternative would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur. See proposed project energy discussion in Section 4.14.2.1.

9.5.3 Public Access Alternatives

Table 9-9. Summary of Impacts – Public Access Alternatives

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
Land Use								
A. Would the project result in physical division of an established community?	No Impact	Similar impacts as the proposed project. The At-Grade Crossing would provide improved connectivity for pedestrians in the Lagoon area. There would be no impact. See proposed project land use discussion in Section 4.1.2.2.	Similar impacts as the proposed project. The Overpass Crossing would provide improved connectivity for pedestrians in the Lagoon area. There would be no impact. See proposed project land use discussion in Section 4.1.2.2.	Similar impacts as the proposed project. The Parallel Parking Alternative would provide improved safety for pedestrian, bicycle, and vehicle traffic along the existing Highway 101 roadway. There would be no impact. See proposed project land use discussion in Section 4.1.2.2.	Similar impacts as the proposed project. The No Parking Alternative would provide improved safety for pedestrian and bicycle traffic along the existing Highway 101 roadway. There would be no impact. See proposed project land use discussion in Section 4.1.2.2.	Similar impacts as the proposed project. The On-site Improvements Alternative would make modifications within the existing North Beach parking lot footprint and immediate area. There would be no impact. See proposed project land use discussion in Section 4.1.2.2.	The Retreated Location Alternative lot would be near the existing lot in upland areas within the lagoon setting. Regardless of specific location, the development of a parking lot would not be of the nature to divide a community. There would be no impact. See proposed project land use discussion in Section 4.1.2.2	The Off-site Location Alternative would likely be located in the general vicinity of the Lagoon. Regardless of specific location, the development of a parking lot would not be of the nature to divide a community. The impact would be less than significant.
B. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	No Impact	Similar impacts as the proposed project. The At-Grade Crossing would be consistent with many public access/recreation and transportation goals in planning documents pertaining to the area. There would be no impact. See proposed project land use discussion in Section 4.1.2.2.	Higher visual profile than the proposed project, but similar impacts would be anticipated. Visual treatment to minimize visibility could be incorporated into design; potential blockage of visual view corridors would be required as part of project-level design evaluation, however, to confirm conclusions. The Overpass Crossing would be consistent with many public access/recreation and transportation goals in planning documents pertaining to the area. There would be no impact. See proposed project land use discussion in Section 4.1.2.2.	Similar impacts as the proposed project. The Parallel Parking Alternative would be consistent with many public access/recreation and transportation goals in planning documents pertaining to the area. There would be no impact. See proposed project land use discussion in Section 4.1.2.2.	Similar impacts as the proposed project. The No Parking Alternative would be consistent with many public access/ recreation and transportation goals in planning documents pertaining to the area. Coastal access would not be affected because while this alternative reduces parking along Highway 101, the adjacent North Beach parking lot provides parking and is underutilized by more than 120 spaces on all but the busiest holidays. Thus, there would be no impact. See proposed project land use discussion in Section 4.1.2.2.	Similar impacts as the proposed project. The On-site Improvements Alternative would be consistent with many public access/ recreation and transportation goals in planning documents pertaining to the area. There would be no impact. See proposed project land use discussion in Section 4.1.2.2.	The Retreated Location Alternative would likely be located near the existing lot in an upland area. Land use policies and regulations and environmental effects would be considered when planning development of the parking lot. The impact would be less than significant.	The Off-site Location Alternative would likely be located in the general vicinity of the Lagoon. The site could be current open space or an existing developed or disturbed parcel. Land use policies and regulations and environmental effects would be considered when planning development of the parking lot. The impact would be less than significant.

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
Public Access and Recreation								
A. Would the project include recreational facilities or require the construction or expansion of recreational facilities which may have an adverse physical effect on the environment?	Less than Significant	Similar impacts as the proposed project. As identified throughout this Program EIR, there would be the potential for significant environmental impacts from implementation of public access improvements (*e.g.,* impacts to sensitive biological resources, cultural resources, *etc.*). Because potential environmental impacts would be mitigated or temporary as identified in this Program EIR. A less than significant impact would result. See proposed project land use discussion in Section 4.2.2.2.	Higher visual profile than the proposed project, but similar impacts would be anticipated. Visual treatment to minimize visibility could be incorporated into design; potential blockage of visual view corridors would be required as part of project-level design evaluation, however, to confirm conclusions. As identified throughout this EIR, there would be the potential for significant environmental impacts from implementation of public access improvements (*e.g.*, impacts to sensitive biological resources, cultural resources, *etc.*). Because potential environmental impacts would be mitigated or are temporary as identified in this Program EIR, a less than significant impact would result. See proposed project land use discussion in Section 4.2.2.2.	No recreational facilities would be constructed as part of the Parallel Parking Alternative, rather improvements would provide safer access to existing recreational opportunities in the area. There would be no impact. See proposed project public access and recreation discussion in Section 4.2.2.2.	No recreational facilities would be constructed as part of the No Parking Alternative, rather improvements would provide safer access to existing recreational opportunities in the area. Coastal access would not be affected because while this alternative reduces parking along Highway 101, the adjacent North Beach parking lot provides parking and is underutilized by more than 120 spaces on all but the busiest holidays. There would be no impact. See proposed project public access and recreation discussion in Section 4.2.2.2.	No recreational facilities would be constructed as part of the On-site Improvements Alternative; however, the reconfigured lot may include provision of facilities to support State Parks staff (*e.g.,* lifeguards and rangers) and education/ outreach efforts. These provisions would be located within the existing footprint of the parking lot. A less than significant impact would result. See proposed project land use discussion in Section 4.2.2.2.	No recreational facilities would be constructed as part of the Retreated Location Alternative; however, the reconfigured lot may include provision of facilities to support State Parks staff (*e.g.,* lifeguards and rangers) and education/ outreach efforts. These provisions would be located within the existing footprint of the parking lot. A less than significant impact would result. See proposed project land use discussion in Section 4.2.2.2.	No recreational facilities would be constructed as part of the Off-Site Location Alternative; however, the reconfigured lot may include provision of facilities to support State Parks staff (*e.g.,* lifeguards and rangers) and education/ outreach efforts. These provisions would be located within the existing footprint of the parking lot. A less than significant impact would result. See proposed project land use discussion in Section 4.2.2.2.
B. Would the project Result in loss of recreational use areas or lessen recreational use?	Less than Significant	Similar impacts as the proposed project. Temporary closures during construction of the At-Grade Crossing may require recreationalists to use other trail or pathway facilities but would not preclude or hamper the ability of recreationalists to use recreational facilities in the local area. The short-term trails or pathway closures would not be of the magnitude or duration to cause substantial loss of recreation opportunity. A less than significant impact would result. See proposed project land use discussion in Section 4.2.2.2.	Similar impacts as the proposed project. Temporary closures during construction of the Overpass Crossing may require recreationalists to use other trail or pathway facilities but would not preclude or hamper the ability of recreationalists to use recreational facilities in the local area. The short-term trails or pathway closures would not be of the magnitude or duration to cause substantial loss of recreation opportunity. A less than significant impact	Similar impacts as the proposed project. Temporary pathway closures during construction of the Parallel Parking Alternative may require recreationalists to use other trail or pathway facilities but would not preclude or hamper the ability of recreationalists to use recreational facilities in the local area. The short-term closures would not be of the magnitude or duration to cause substantial loss of recreation opportunity. A less than significant impact	Similar impacts as the proposed project. Temporary pathway closures during construction of the No Parking Alternative may require recreationalists to use other trail or pathway facilities but would not preclude or hamper the ability of recreationalists to use recreational facilities in the local area. The short-term closures would not be of the magnitude or duration to cause substantial loss of recreation opportunity. A less than significant impact would result. See proposed project land use discussion in Section 4.2.2.2.	Similar impacts as the proposed project. Temporary closure of the North Beach parking lot during construction of the On-site Improvements may require recreationalists to use other parking locations or alternative transit to the area but would not preclude or substantially impede the ability of recreationalists to use recreational facilities in the local area. The short-term loss of parking spaces would not be of the magnitude or duration to cause substantial loss of recreation opportunity. A less than significant impact would	Similar impacts as the proposed project. Temporary closure of the North Beach parking lot during modifications proposed as part of the Retreated Location Alternative may require recreationalists to use other parking locations or alternative transit to the area but would not preclude or substantially impede the ability of recreationalists to use recreational facilities in the local area. The short-term loss of parking spaces would not be of the magnitude or duration to cause substantial	Similar impacts as the proposed project. Temporary closure of the North Beach parking lot during modifications proposed as part of the Off-site Location Alternative may require recreationalists to use other parking locations or alternative transit to the area but would not preclude or substantially impede the ability of recreationalists to use recreational facilities in the local area. The short-term loss of parking

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
			would result. See proposed project land use discussion in Section 4.2.2.2.	would result. See proposed project land use discussion in Section 4.2.2.2.		result. See proposed project land use discussion in Section 4.2.2.2.	loss of recreation opportunity. Recreationalists would have to travel a farther distance from their vehicle to the beach area from the retreated lot location. A less than significant impact would result. See proposed project land use discussion in Section 4.2.2.2.	spaces would not be of the magnitude or duration to cause substantial loss of recreation opportunity. Recreationalists would have to travel a farther distance from their vehicle to the beach area from the off-site lot location. A less than significant impact would result. See proposed project land use discussion in Section 4.2.2.2.
Hydrology								
A. Would the project result in a substantial increase in impervious surfaces and associated increased runoff?	Less than Significant	Similar impacts as the proposed project. Most improvements associated with the At-Grade Crossing would be made to existing paved surfaces; however, a small waiting area would be necessary on the east side of Highway 101 and approximately 600 feet of pedestrian improvements would be necessary to reach the Marsh Trail and could be constructed of impervious surfaces that would generate runoff. However, these potential new areas of impervious surfaces would not be large enough to create a substantial increase in new runoff. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Construction of the pedestrian overpass would require the use of impervious surfaces for the structure that would generate runoff. However, these potential new areas of impervious surfaces would not be large enough to create a substantial increase in new runoff. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Construction of the Parallel Parking Alternative would require the use of impervious surfaces for parking and roadway modifications that would generate runoff. However, these potential new areas of impervious surfaces would not be large enough to create a substantial increase in new runoff. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Construction of the No Parking Alternative would require the use of impervious surfaces for parking and roadway modifications that would generate runoff. However, these potential new areas of impervious surfaces would not be large enough to create a substantial increase in new runoff. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Most improvements associated with the On-site Improvements Alternative would be made to existing paved surfaces; however, some reconfiguration designs may include areas of new impervious surfaces while other areas may be restored to native habitat. These potential new areas of impervious surfaces would not be large enough to create a substantial increase in new runoff. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Development of a Retreated Location Alterative parking lot would require a new area of impervious surface be created. However, the potential new area of impervious surface would not be large enough to create a substantial increase in new runoff and would be properly designed to minimize runoff and adequately control drainage. Design may include an underground lot with a vegetated roof that would reduce runoff volumes. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Dependent upon the siting of the Off-Site Location Alterative parking lot, it is possible that a new area of impervious surface may be created for development of a paved parking lot. However, the potential new area of impervious surface would not be large enough to create a substantial increase in new runoff and would be properly designed to minimize runoff and adequately control drainage. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.
B. Would the project lead to substantial alteration to on- and off-site drainage patterns due to changes in runoff flow rates or volumes?	Less than Significant	Similar impacts as the proposed project. Drainage patterns around the areas of construction for the At-Grade Crossing would be altered to accommodate the alternative elements, specifically near the steep embankment down to the Lagoon. However, elements of the alternative would be designed with proper drainage	Similar impacts as the proposed project. Drainage patterns around the areas of construction for the Overpass Crossing would be altered to accommodate the alternative elements. However, elements of the alternative would be designed with proper drainage and stormwater	Similar impacts as the proposed project. Drainage patterns around the areas of new parking spaces, pedestrian promenade, sidewalk, bike lanes, or other roadway modifications would be altered. However, elements of the alternative would be designed with proper drainage and	Similar impacts as the proposed project. Drainage patterns around the areas of the pedestrian promenade, sidewalk, bike lanes, or other roadway modifications would be altered. However, elements of the alternative would be designed with proper drainage and stormwater controls to minimize increased runoff rates	Similar impacts as the proposed project. Drainage patterns around modified areas of the existing parking lot may be altered. However, elements of the alternative would be designed with proper drainage and stormwater controls to minimize increased runoff rates and volumes. The impact would be less than significant. See	Similar impacts as the proposed project. Drainage patterns around a new or modified area to create a new parking lot may be altered. However, elements of the alternative would be designed with proper drainage and stormwater controls to minimize increased runoff rates and volumes. The	Similar impacts as the proposed project. Drainage patterns around a new or modified area to create an off-site parking lot may be altered. However, elements of the alternative would be designed with proper drainage and stormwater controls to minimize

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	**Overpass Crossing (Alt 3)**	**Parallel Parking (Alt B)**	**No Parking (Alt C)**	**On-site Improvements (Alt A)**	**Retreated Location (Alt B)**	**Off-site Location (Alt C)**
		and stormwater controls to minimize increased runoff rates and volumes. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	controls to minimize increased runoff rates and volumes. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	stormwater controls to minimize increased runoff rates and volumes. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	and volumes. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	proposed project hydrology discussion in Section 4.3.2.2.	impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	increased runoff rates and volumes. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.
C. Would the project cause substantial alteration of the existing drainage pattern of the site, including through the alteration of the course of a stream or river or increase in flow velocities, in a manner which would result in substantial scour or erosion that causes instability of slopes, river control berms, adjoining roadway embankments, or bridge abutments?	Less than Significant	Similar impacts as the proposed project. Drainage patterns around the areas of construction for the At-Grade Crossing would be altered to accommodate the alternative elements; however, these alterations would not be of the magnitude or location to result in substantial scour. The steep embankment leading down to the Lagoon could be subject to erosion and instability. Design and engineering requirements would minimize risk from runoff-based erosion or risk of instability. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Drainage patterns around the areas of construction for the Overpass Crossing would be altered to accommodate the alternative elements; however, these alterations would not be of the magnitude or location to result in substantial scour or erosion. Design and engineering requirements would minimize risk from runoff-based erosion or risk of instability. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Drainage patterns around the areas of improvements for the Parallel Parking Alternative would be altered to accommodate the alternative elements; however, these alterations would not be of the magnitude or location to result in substantial scour or erosion. Design and engineering requirements would minimize risk from runoff-based erosion or risk of instability. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Drainage patterns around the areas of improvements for the No Parking Alternative would be altered to accommodate the alternative elements; however, these alterations would not be of the magnitude or location to result in substantial scour or erosion. Design and engineering requirements would minimize risk from runoff-based erosion or risk of instability. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Drainage patterns around modified areas of the existing parking lot may be altered. However, these alterations would not be of the magnitude to result in substantial scour or erosion. Design and engineering requirements would minimize risk from runoff-based erosion or risk of instability. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Drainage patterns around a new parking lot would be altered. However, these alterations would not be of the magnitude to result in substantial scour or erosion. Design and engineering requirements would minimize risk from runoff-based erosion or risk of instability. Design may include an underground lot with a vegetated roof that would reduce runoff volumes. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Drainage patterns around a new or modified area to create an off-site parking lot may be altered. However, these alterations would not be of the magnitude to result in substantial scour or erosion. Design and engineering requirements would minimize risk from runoff-based erosion or risk of instability. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.
D. Would the project result in substantial increase in the flow rate or amount (volume) of surface runoff in a manner that would result in flooding on or off site, causing damage to structures or exposing the public to substantial risk?	Less than Significant	Similar impacts as the proposed project. Potential new areas of impervious surfaces would not be large enough to create a substantial increase in runoff and elements of the alternative would be designed with proper drainage and stormwater facilities to accommodate increased runoff rates and volumes so that flooding risk would be minimized. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Potential new areas of impervious surfaces would not be large enough to create a substantial increase in runoff and elements of the alternative would be designed with proper drainage and stormwater facilities to accommodate increased runoff rates and volumes so that flooding risk would be minimized. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Potential new areas of impervious surfaces would not be large enough to create a substantial increase in runoff and elements of the alternative would be designed with proper drainage and stormwater facilities to accommodate increased runoff rates and volumes so that flooding risk would be minimized. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Potential new areas of impervious surfaces would not be large enough to create a substantial increase in runoff and elements of the alternative would be designed with proper drainage and stormwater facilities to accommodate increased runoff rates and volumes so that flooding risk would be minimized. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Potential new areas of impervious surfaces would not be large enough to create a substantial increase in runoff and elements of the alternative would be designed with proper drainage and stormwater facilities to accommodate increased runoff rates and volumes so that flooding risk would be minimized. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Potential new areas of impervious surfaces would not be large enough to create a substantial increase in runoff and elements of the alternative would be designed with proper drainage and stormwater facilities to accommodate increased runoff rates and volumes so that flooding risk would be minimized. Design may include an underground lot with a vegetated roof that would reduce runoff volumes. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Potential new areas of impervious surfaces would not be large enough to create a substantial increase in runoff and elements of the alternative would be designed with proper drainage and stormwater facilities to accommodate increased runoff rates and volumes so that flooding risk would be minimized. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
E. Would the project 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?	Less than Significant	Similar impacts as the proposed project. Potential new areas of impervious surfaces would not be large enough to create a substantial increase in runoff that would exceed capacity of stormwater systems. Elements of the alternative that could affect existing stormwater drainage, such as along the shoulders of Highway 101 would be designed with proper drainage and stormwater infrastructure to accommodate increased runoff rates and volumes. Areas of impervious surfaces would be designed to drain appropriately and would include Low Impact Development (LID) elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Potential new areas of impervious surfaces would not be large enough to create a substantial increase in runoff that would exceed capacity of existing stormwater systems. Elements of the alternative that could affect stormwater drainage, such as at the base of pedestrian ramps would be designed with proper drainage and stormwater infrastructure to accommodate increased runoff rates and volumes. Areas of impervious surfaces would be designed to drain appropriately and would include LID elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Potential new areas of impervious surfaces would not be large enough to create a substantial increase in runoff that would exceed capacity of existing stormwater systems. Elements of the alternative that could affect stormwater drainage, such as new parking spaces, pedestrian promenade, sidewalk, bike lanes, or other roadway modifications would be designed with proper drainage and stormwater infrastructure to accommodate increased runoff rates and volumes. Areas of impervious surfaces would be designed to drain appropriately and would include LID elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Potential new areas of impervious surfaces would not be large enough to create a substantial increase in runoff that would exceed capacity of existing stormwater systems. Elements of the alternative that could affect stormwater drainage, such as pedestrian promenade, sidewalk, bike lanes, or other roadway modifications would be designed with proper drainage and stormwater infrastructure to accommodate increased runoff rates and volumes. Areas of impervious surfaces would be designed to drain appropriately and would include LID elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Potential new areas of impervious surfaces would not be large enough to create a substantial increase in runoff that would exceed capacity of existing stormwater systems. Elements of the alternative that could affect stormwater drainage, such as increased paved area outside of the existing lot footprint would be designed with proper drainage and stormwater infrastructure to accommodate increased runoff rates and volumes. Areas of impervious surfaces would be designed to drain appropriately and would include LID elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. Reconfiguration may also allow for restoration of native habitats that would improve natural drainage control. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Potential new areas of impervious surfaces to create a new lot would not be large enough to create a substantial increase in runoff that would exceed capacity of existing stormwater systems. Elements that could affect stormwater drainage, such as newly paved areas would be designed with proper drainage and stormwater infrastructure to accommodate increased runoff rates and volumes. Areas of impervious surfaces would be designed to drain appropriately and would include LID elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. Design may include an underground lot with a vegetated roof that would reduce runoff volumes. The existing lot could support restoration of native habitats that would improve natural drainage control. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	Similar impacts as the proposed project. Potential new areas of impervious surfaces to create a new off-site lot would not be large enough to create a substantial increase in runoff that would exceed capacity of existing stormwater systems. Elements of the alternative that could affect stormwater drainage, such as newly paved areas would be designed with proper drainage and stormwater infrastructure to accommodate increased runoff rates and volumes. Areas of impervious surfaces would be designed to drain appropriately and would include LID elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. The existing lot could support restoration of native habitats that would improve natural drainage control. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.
F. Would the project increase risks of damage to coastal resources, including inundation by storm surge, wave uprush or sea level rise?	No impact	Similar impacts as the proposed project. The At-Grade Crossing would not be located on the sandy beach and would not affect existing conditions of inundation associated with storm surge or wave uprush. Adherence to design and engineering requirements would minimize potential for damage from coastal conditions. The impact would	Similar impacts as the proposed project. The Overpass Crossing would not be located on the sandy beach and would not affect existing conditions of inundation associated with storm surge or wave uprush. Adherence to design and engineering requirements would minimize potential for	Similar impacts as the proposed project. The Parallel Parking Alternative would not be located on the sandy beach and would not affect existing conditions of inundation associated with storm surge or wave uprush. Adherence to design and engineering requirements would minimize potential for damage from coastal	Similar impacts as the proposed project. The No Parking Alternative would not be located on the sandy beach and would not affect existing conditions of inundation associated with storm surge or wave uprush. Adherence to design and engineering requirements would minimize potential for damage from coastal conditions. The impact	The purpose of the On-site Improvements is to preserve public use of the North Beach parking lot in a manner that is resilient to climate change. Facilities currently located adjacent to the lagoon inlet would be relocated to the back of the parking lot to protect them from coastal flooding. Restoration of historic coastal dune along the lot's western	The Off-site Location Alternative would relocate the parking lot to an upland retreated location that would not be subject to risks from coastal events. The remaining lot could support restored dune, wetland and upland habitat restoration that would help protect the area from coastal flooding and sea level	The Off-site Location Alternative would relocate the parking lot to a more distant upland location that would not be subject to risks from coastal events. The remaining lot could support restored dune, wetland and upland habitat restoration that would help protect the

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
		be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	damage from coastal conditions. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	conditions. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	would be less than significant. See proposed project hydrology discussion in Section 4.3.2.2.	edge and other natural habitats would provide natural buffers to protect from coastal flooding and sea level rise. There would be no impact.	rise. There would be no impact.	area from coastal flooding and sea level rise. There would be no impact.
Water Quality and Sediment Management								
A. Would the project result in a violation of water quality standards or waste discharge requirements or degradation of beneficial uses in Los Peñasquitos Lagoon?	Less than Significant	Similar impacts as the proposed project. Areas of impervious surfaces would be designed to drain appropriately and would include LID elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. New and relocated trail surfaces would be consistent with State Parks and City guidelines and would primarily have stabilized permeable surfaces. The impact would be less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	Similar impacts as the proposed project. Areas of impervious surfaces would be designed to drain appropriately and would include LID elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. New and relocated trail surfaces would be consistent with State Parks and City guidelines and would primarily have stabilized permeable surfaces. The impact would be less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	Similar impacts as the proposed project. Areas of impervious surfaces would be designed to drain appropriately and would include LID elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. The impact would be less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	Similar impacts as the proposed project. Areas of impervious surfaces would be designed to drain appropriately and would include LID elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. The impact would be less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	Similar impacts as the proposed project. Areas of new impervious surfaces would be designed to drain appropriately and would include LID elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. Restoration of historic coastal dune along the lot's western edge and other native habitats would provide natural drainage and filtration. The impact would be less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	Similar impacts as the proposed project. Areas of new impervious surfaces would be designed to drain appropriately and would include LID elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. The remaining lot could support restored dune, wetland and upland habitat restoration that would provide natural drainage and filtration. The impact would be less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	Similar impacts as the proposed project. Areas of new impervious surfaces would be designed to drain appropriately and would include LID elements as required by City and state regulations to minimize additional pollutants and runoff into the Lagoon. The remaining lot could support restored dune, wetland and upland habitat restoration that would provide natural drainage and filtration. The impact would be less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.2.
B. Would the project substantially degrade water quality in the lagoon by increasing sedimentation, leading to a violation or degradation of water quality standards or beneficial uses; or generate pollutions in violation of such standards?	Significant (temporary)	Modified trails would be surfaced in accordance with applicable regulations, including appropriate permeable surfaces and drainage, and would not contribute to sedimentation or generate pollutants compared to existing conditions. The steep embankment leading down to the Lagoon could be subject to erosion and instability. Design and engineering requirements would minimize runoff-based erosion. There would not be substantial work in lagoon soils where the potential for water quality impacts would increase. The impact would be less than significant. See proposed	Modified trails would be surfaced applicable in accordance with regulations, including appropriate permeable surfaces and drainage, and would not contribute to sedimentation or generate pollutants compared to existing conditions. There would not be substantial work in lagoon soils where the potential for water quality impacts would increase. The impact would be less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	The Parallel Parking Alternative components would mostly be paved and would be designed in accordance with applicable regulations, including appropriate drainage facilities and would not contribute to sedimentation or generate pollutants compared to existing conditions. Design and engineering requirements would minimize runoff-based erosion. There would not be substantial work in lagoon soils where the potential for water quality impacts would increase. The impact would be less than	The No Parking Alternative components would mostly be paved and would be designed in accordance with applicable regulations, including appropriate drainage facilities and would not contribute to sedimentation or generate pollutants compared to existing conditions. Design and engineering requirements would minimize runoff-based erosion. There would not be substantial work in lagoon soils where the potential for water quality impacts would increase. The impact would be less than significant. See proposed project water quality and	On-site Improvements Alternative components would mostly be reconfiguration of already paved areas and would be designed in accordance with applicable regulations, including appropriate drainage facilities and would not contribute to sedimentation or generate pollutants compared to existing conditions. Design and engineering requirements would minimize runoff-based erosion. There would not be substantial work in lagoon soils where the potential for water quality impacts would increase. The impact would be less than significant. See proposed project water quality and	The Retreated Location Alternative would require new paved areas and would be designed in accordance with applicable regulations, including appropriate drainage facilities and would not contribute to sedimentation or generate pollutants compared to existing conditions. Design and engineering requirements would minimize runoff-based erosion. There would not be substantial work in lagoon soils where the potential for water quality impacts would increase. The impact would be less than significant. See proposed project water	The Off-site Location Alternative may require new paved areas and would be designed in accordance with applicable regulations, including appropriate drainage facilities and would not contribute to sedimentation or generate pollutants compared to existing conditions. Design and engineering requirements would minimize runoff-based erosion. There would not be substantial work in lagoon soils where the potential for water quality impacts would increase.

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
		project water quality and sediment management discussion in Section 4.4.2.2.		significant. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	sediment management discussion in Section 4.4.2.2.	sediment management discussion in Section 4.4.2.2.	quality and sediment management discussion in Section 4.4.2.2.	The impact would be less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.2.
C. Would the project alter circulation patterns in the lagoon in a way that inhibits mixing or promotes stagnation?	No impact	Similar impacts as the proposed project. Drainage modifications may occur in the immediate footprint of the At-Grade Crossing but would be located outside of lagoon wetland areas. Current drainage and circulation conditions of the Lagoon would remain generally unmodified by this alternative and would not cause stagnant conditions. There would be no impact. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	Similar impacts as the proposed project. Drainage modifications may occur in the immediate footprint of the Overpass Crossing but would be located outside of lagoon wetland areas. Current drainage and circulation conditions of the Lagoon would remain generally unmodified by this alternative and would not cause stagnant conditions. There would be no impact. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	Similar impacts as the proposed project. Drainage modifications may occur in the immediate footprint of the Parallel Parking Alternative but would be located outside of lagoon wetland areas. Current drainage and circulation conditions of the Lagoon would remain generally unmodified by this alternative and would not cause stagnant conditions. There would be no impact. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	Similar impacts as the proposed project. Drainage modifications may occur in the immediate footprint of the No Parking Alternative but would be located outside of lagoon wetland areas. Current drainage and circulation conditions of the Lagoon would remain generally unmodified by this alternative and would not cause stagnant conditions. There would be no impact. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	Similar impacts as the proposed project. Drainage modifications may occur in the immediate footprint of the reconfigured North Beach parking lot but would be located outside of lagoon wetland areas. Current drainage and circulation conditions of the Lagoon would remain generally unmodified by this alternative and would not cause stagnant conditions. There would be no impact. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	Similar impacts as the proposed project. Drainage modifications may occur in the immediate footprint of the new parking lot or the reconfigured North Beach parking lot but would be located outside of lagoon wetland areas. Current drainage and circulation conditions of the Lagoon would remain generally unmodified by this alternative and would not cause stagnant conditions. There would be no impact. See proposed project water quality and sediment management discussion in Section 4.4.2.2.	Similar impacts as the proposed project. Drainage modifications may occur in the immediate footprint of the new parking lot or the reconfigured North Beach parking lot but would be located outside of lagoon wetland areas. Current drainage and circulation conditions of the Lagoon would remain generally unmodified by this alternative and would not cause stagnant conditions. There would be no impact. See proposed project water quality and sediment management discussion in Section 4.4.2.2.
Geology/Soils								
A. Would the project expose people or structures (including infrastructure) to geologic hazards such as earthquakes due to rupture of a known earthquake fault delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist or any other known faults, landslides, mudslides, ground failure, or similar hazards?	Less than Significant	Similar impacts as the proposed project. The At-Grade Crossing Alternative would not include the construction of buildings or other similar structures; however, trails or pathways on steep terrain, such as the embankment leading down to the Lagoon or access improvements that involve roadways could be subject to unstable geologic conditions. Improvements would be required to meet the appropriate engineering design standards/building codes. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	The Overpass Crossing Alternative would include the construction of an elevated pedestrian walkway over Highway 101 that could be subject to seismic risk or unstable geologic conditions. The structure and other improvements would be required to meet the appropriate engineering design standards/building codes that help ensure built elements are engineered to best withstand potential damage or risk from geologic hazards. The impact would be less than significant. See proposed project geology/soils	The Parallel Parking Alternative would include the construction of roadway elements associated with the existing Highway 101 facility that could be subject to seismic risk or unstable geologic conditions. Improvements would be required to meet the appropriate engineering design standards/building codes that help ensure built elements are engineered to best withstand potential damage or risk from geologic hazards. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	The No Parking Alternative would include the construction of roadway elements associated with the existing Highway 101 facility that could be subject to seismic risk or unstable geologic conditions. Improvements would be required to meet the appropriate engineering design standards/building codes that help ensure built elements are engineered to best withstand potential damage or risk from geologic hazards. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	The On-site Improvements Alternative may include construction of an underground parking structure that could be subject to seismic risk or unstable geologic conditions. The parking structure and other support facilities would be required to meet the appropriate engineering design standards/building codes that help ensure built elements are engineered to best withstand potential damage or risk from geologic hazards. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	The Retreated Location Alternative may include construction of a new surface or underground parking lot. Flat paved lots are typically not highly subject to seismic risk or unstable geologic conditions. The parking lot and other support facilities at the remaining lot would be required to meet the appropriate engineering design standards/building codes that help ensure built elements are engineered to best withstand potential damage or risk from geologic hazards. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	The Off-site Location Alternative may include construction of a new surface parking lot. Flat paved lots are typically not highly subject to seismic risk or unstable geologic conditions. The parking lot and other support facilities at the remaining lot would be required to meet the appropriate engineering design standards/building codes that help ensure built elements are engineered to best withstand potential damage or risk from geologic hazards. The impact would be less than significant. See proposed

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements: At-Grade Crossing (Alt 1)	Marsh Trail Improvements: Overpass Crossing (Alt 3)	Highway 101 Improvements: Parallel Parking (Alt B)	Highway 101 Improvements: No Parking (Alt C)	North Beach Access: On-site Improvements (Alt A)	North Beach Access: Retreated Location (Alt B)	North Beach Access: Off-site Location (Alt C)
			discussion in Section 4.5.2.2.					project geology/soils discussion in Section 4.5.2.2.
B. Would the project result in a substantial increase in wind or water erosion of soils, either on or off the site?	Less than Significant	Similar impacts as the proposed project. Implementation of the alternative would be required to comply with applicable permit regulations to minimize temporary on-site or off-site erosion during construction activities as well as project PDFs #1, #2, and #3 requiring erosion control methods for exposed soils. Areas of impervious surfaces would be designed to drain appropriately to minimize runoff. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	Similar impacts as the proposed project. Implementation of the alternative would be required to comply with applicable permit regulations to minimize temporary on-site or off-site erosion during construction activities as well as project PDFs #1, #2, and #3 requiring erosion control methods for exposed soils. Areas of impervious surfaces would be designed to drain appropriately to minimize runoff. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	Similar impacts as the proposed project. Implementation of the alternative would be required to comply with applicable permit regulations to minimize temporary on-site or off-site erosion during construction activities as well as project PDFs #1, #2, and #3 requiring erosion control methods for exposed soils. Areas of impervious surfaces would be designed to drain appropriately to minimize runoff. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	Similar impacts as the proposed project. Implementation of the alternative would be required to comply with applicable permit regulations to minimize temporary on-site or off-site erosion during construction activities as well as project PDFs #1, #2, and #3 requiring erosion control methods for exposed soils. Areas of impervious surfaces would be designed to drain appropriately to minimize runoff. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	Similar impacts as the proposed project. Implementation of the alternative would be required to comply with applicable permit regulations to minimize temporary on-site or off-site erosion during construction activities as well as project PDFs #1, #2, and #3 requiring erosion control methods for exposed soils. Areas of impervious surfaces would be designed to drain appropriately to minimize runoff. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	Similar impacts as the proposed project. Implementation of the alternative would be required to comply with applicable permit regulations to minimize temporary on-site or off-site erosion during construction activities as well as project PDFs #1, #2, and #3 requiring erosion control methods for exposed soils. Areas of impervious surfaces would be designed to drain appropriately to minimize runoff. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	Similar impacts as the proposed project. Implementation of the alternative would be required to comply with applicable permit regulations to minimize temporary on-site or off-site erosion during construction activities as well as project PDFs #1, #2, and #3 requiring erosion control methods for exposed soils. Areas of impervious surfaces would be designed to drain appropriately to minimize runoff. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.
C. Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	Less than Significant	Ground-disturbing activities associated with installation of At-Grade Crossing components, specifically those along the steep and narrow embankment leading down to the Lagoon could increase the susceptibility of the project area to unstable conditions as they could disturb the supporting soils and increase risk of failure due to unstable soil conditions. While geologic risks could result, with proper engineering and adherence to applicable codes, regulations, and BMPs, the possible impacts related to public access improvements would be minimized. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	Ground-disturbing activities associated with installation of Overpass Crossing components, specifically those at the footings of the overpass bridge, could increase the susceptibility of the project area to unstable conditions as they could disturb the supporting soils and increase risk of failure due to unstable soil conditions. While geologic risks could result, with proper engineering and adherence to applicable codes, regulations, and BMPs, the possible impacts related to public access improvements would be minimized. The impact would be less than significant. See proposed project geology/soils	Ground-disturbing activities associated with roadway improvements could increase the susceptibility of the project area to unstable conditions as they could disturb the supporting soils and increase risk of failure due to unstable soil conditions. While geologic risks could result, with proper engineering and adherence to applicable codes, regulations, and BMPs, the possible impacts related to public access improvements would be minimized. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	Ground-disturbing activities associated with roadway improvements could increase the susceptibility of the project area to unstable conditions as they could disturb the supporting soils and increase risk of failure due to unstable soil conditions. While geologic risks could result, with proper engineering and adherence to applicable codes, regulations, and BMPs, the possible impacts related to public access improvements would be minimized. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	Ground-disturbing activities associated with the On-site Improvements Alternative, particularly the potential construction of an underground parking structure could increase the susceptibility of the project area to unstable conditions as they could disturb the supporting soils and increase risk of failure due to unstable soil conditions. While geologic risks could result, with proper engineering and adherence to applicable codes, regulations, and BMPs, the possible impacts related to public access improvements would be minimized. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	Ground-disturbing activities associated with the Retreated Location Alternative, could increase the susceptibility of the project area to unstable conditions as they could disturb the supporting soils and increase risk of failure due to unstable soil conditions. While geologic risks could result, with proper engineering and adherence to applicable codes, regulations, and BMPs, the possible impacts related to public access improvements would be minimized. The impact would be less than significant. See proposed project geology/soils discussion in Section 4.5.2.2.	Ground-disturbing activities associated with the Off-site Location Alternative, could increase the susceptibility of the project area to unstable conditions as they could disturb the supporting soils and increase risk of failure due to unstable soil conditions. While geologic risks could result, with proper engineering and adherence to applicable codes, regulations, and BMPs, the possible impacts related to public access improvements would be minimized. The impact would be less than significant. See proposed project geology/soils

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
			discussion in Section 4.5.2.2.					discussion in Section 4.5.2.2.
Biological Resources								
A. Would the project have a substantial adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in the MSCP or other local or regional plans, policies or regulations, or by the CDFW or USFWS?	Potentially Significant (temporary)	Similar impacts as the proposed project. Much of the construction and areas of disturbance for implementation would be located along existing developed roads and pathways associated with Highway 101 and the Marsh Trail and not within sensitive lagoon habitat. Potential impacts to sensitive species would be temporary during construction activities and permanent areas of impact would be minor and adjacent to existing developed areas. PDFs incorporated into the Program EIR would be implemented to reduce adverse impacts. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impacts as the proposed project. Much of the construction and areas of disturbance for implementation would be located along existing developed roads and pathways associated with Highway 101 and the Marsh Trail and not within sensitive lagoon habitat. Potential impacts to sensitive species would be temporary during construction activities and permanent areas of impact would be minor and adjacent to existing developed areas. PDFs incorporated into the Program EIR would be implemented to reduce adverse impacts. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impacts as the proposed project. Much of the construction and areas of disturbance for implementation would be located along the existing developed Highway 101 and not within sensitive lagoon habitat. Potential impacts to sensitive species would be temporary during construction activities and permanent areas of impact would be minor and adjacent to existing developed areas. PDFs incorporated into the Program EIR would be implemented to reduce adverse impacts. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impacts as the proposed project. Much of the construction and areas of disturbance for implementation would be located along the existing developed Highway 101 and not within sensitive lagoon habitat. Potential impacts to sensitive species would be temporary during construction activities and permanent areas of impact would be minor and adjacent to existing developed areas. PDFs incorporated into the Program EIR would be implemented to reduce adverse impacts. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impacts as the proposed project. Much of the construction and areas of disturbance would be located within the existing footprint of the North Beach parking lot and immediately adjacent areas and not within sensitive lagoon habitat. Potential impacts to sensitive species would be temporary during construction activities and permanent areas of impact would be minor and adjacent to existing developed areas. Restoration of historic coastal dune along the lot's western edge and other native habitats and wetlands would create new acreage of sensitive habitats. PDFs incorporated into the Program EIR would be implemented to reduce adverse impacts. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impacts as the proposed project. Much of the construction and areas of disturbance would be located within upland areas of coastal sage scrub that could support sensitive species such as California coastal gnatcatchers. Potential impacts to sensitive species would be temporary during construction activities. A new paved surface lot would result in permanent loss of habitat and potential edge effects. Restoration of historic coastal dune along the lot's western edge and other native habitats and wetlands would create new acreage of sensitive habitats. PDFs incorporated into the Program EIR would be implemented to reduce adverse impacts. However, the impact would be potentially significant and appropriate mitigation may be necessary.	Similar impacts as the proposed project. Siting of a new off-site parking lot would consider impact to potential biological resources and would avoid sensitive habitats to the extent feasible. The alternative may include restoration of historic coastal and other native habitats and wetlands that would create new acreage of sensitive habitats. PDFs incorporated into the Program EIR would be implemented to reduce adverse impacts. Thus, it is anticipated that the impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.
B. Would the project have a substantial adverse impact on any Tier I Habitats, Tier II Habitats, Tier IIIA Habitats, or Tier IIIB Habitats as identified in the Biology Guidelines of the Land Development manual or other sensitive natural community identified in local or regional plans, policies, regulations, or by	Potentially Significant (temporary)	Much of the construction and areas of disturbance for implementation would be located along existing developed roads and pathways associated with Highway 101 and the Marsh Trail and not within sensitive lagoon habitat. No net loss of sensitive habitat is expected to occur. The impact would be less than significant.	Much of the construction and areas of disturbance for implementation would be located along existing developed roads and pathways associated with Highway 101 and the Marsh Trail and not within sensitive lagoon habitat. No net loss of sensitive habitat is expected to occur. The impact would be less than significant.	Much of the construction and areas of disturbance for implementation would be located along the existing Highway 101 roadway and not within sensitive lagoon habitat. No net loss of sensitive habitat is expected to occur. The impact would be less than significant.	Much of the construction and areas of disturbance for implementation would be located along the existing Highway 101 roadway and not within sensitive lagoon habitat. No net loss of sensitive habitat is expected to occur. The impact would be less than significant.	Much of the construction and areas of disturbance for implementation would be located within and adjacent to the existing North Beach parking lot and not within sensitive lagoon habitat. Restoration of historic coastal dune along the lot's western edge and other native habitats and wetlands would create new acreage of sensitive habitats. No net loss of sensitive habitat is expected to occur. The impact would be less than significant.	Similar impacts as the proposed project. Much of the construction and areas of disturbance would be located within upland areas that would likely include identified sensitive habitats such as coastal sage scrub. A new paved surface lot would result in permanent loss of habitat. Restoration of historic coastal dune along the existing lot's western edge and other native habitats and wetlands would create new acreage of sensitive habitats. PDFs incorporated into the Program EIR would be implemented to reduce	Similar impacts as the proposed project. Siting of a new off-site parking lot would consider impact to potential biological resources and would avoid sensitive habitats to the extent feasible. The alternative may include restoration of historic coastal and other native habitats and wetlands that would create new acreage of sensitive habitats. No net loss of sensitive habitat is expected to occur. The impact would be potentially significant

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
the CDFW or USFWS?							adverse impacts. However, the impact would be potentially significant and appropriate mitigation may be necessary.	and appropriate mitigation may be necessary.
C. Would the project have a substantial adverse impact on wetlands (including, but not limited to, marsh, vernal pool, riparian, *etc.*) through direct removal, filling, hydrological interruption, or other means?	Less than Significant	Current wetland habitats would remain generally the same as construction and areas of disturbance for implementation of the At-Grade Crossing would be located along existing developed roads and pathways associated with Highway 101 and the Marsh Trail and not within sensitive lagoon wetland habitat. The alternative actions would not result in a net removal, fill, or loss of wetland habitats on the program level. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Current wetland habitats would remain generally the same as construction and areas of disturbance for implementation of the Overpass Crossing would be located along existing developed roads and pathways associated with Highway 101 and the Marsh Trail and not within sensitive lagoon wetland habitat. The alternative actions would not result in a net removal, fill, or loss of wetland habitats on the program level. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Current wetland habitats would remain generally the same as construction and areas of disturbance for implementation of the Parallel Parking Alternative would be located along the existing Highway 101 roadway and not within sensitive lagoon wetland habitat. The alternative actions would not result in a net removal, fill, or loss of wetland habitats on the program level. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Current wetland habitats would remain generally the same as construction and areas of disturbance for implementation of the No Parking Alternative would be located along the existing Highway 101 roadway and not within sensitive lagoon wetland habitat. The alternative actions would not result in a net removal, fill, or loss of wetland habitats on the program level. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Current wetland habitats would remain generally the same as areas of disturbance for implementation would be located within and adjacent to the existing North Beach parking lot and not within sensitive lagoon wetland habitat. Potential restoration of tidal wetlands could create new acreage of sensitive habitats. The alternative would not result in a net removal, fill, or loss of wetland habitats on the program level. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Current wetland habitats would remain generally the same as areas of disturbance for a retreated parking lot would be at a new upland location and not within sensitive lagoon wetland habitat. Potential restoration of tidal wetlands could create new acreage of sensitive habitats. The alternative would not result in a net removal, fill, or loss of wetland habitats on the program level. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Current wetland habitats would remain generally the same as areas of disturbance for a relocated parking lot would be at a new upland location and not within sensitive lagoon wetland habitat. Potential restoration of tidal wetlands could create new acreage of sensitive habitats. The alternative would not result in a net removal, fill, or loss of wetland habitats on the program level. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.
D. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, including linkages identified in the MSCP Plan, or impede the use of native wildlife nursery sites?	Less than Significant	Similar impacts as the proposed project. Overall lagoon conditions would remain generally the same and small-scale areas of disturbance near existing roadway infrastructure would not be of the magnitude to substantially impede wildlife movement or use of the Lagoon as linkages. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impacts as the proposed project. Overall lagoon conditions would remain generally the same and small-scale areas of disturbance near existing roadway infrastructure would not be of the magnitude to substantially impede wildlife movement or use of the Lagoon as linkages. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impacts as the proposed project. Overall lagoon conditions would remain generally the same and small-scale areas of disturbance near existing roadway infrastructure would not be of the magnitude to substantially impede wildlife movement or use of the Lagoon as linkages. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impacts as the proposed project. Overall lagoon conditions would remain generally the same and small-scale areas of disturbance near existing roadway infrastructure would not be of the magnitude to substantially impede wildlife movement or use of the Lagoon as linkages. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impacts as the proposed project. Overall lagoon conditions would remain generally the same and small-scale areas of disturbance on and around the existing parking lot would not be of the magnitude to substantially impede wildlife movement or use of the Lagoon as linkages. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impacts as the proposed project. Overall lagoon conditions would remain generally the same and development of a new flat paved parking lot in a retreated upland area would not be of the magnitude to substantially impede wildlife movement or use of the Lagoon as linkages. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impacts as the proposed project. Overall lagoon conditions would remain generally the same and development of a new flat paved parking lot in a new more distant area would not be of the magnitude to substantially impede wildlife movement or use of the Lagoon as linkages. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.
E. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation	Less than Significant	Similar impact as the proposed project. The entire project area is within the City of San Diego's MHPA~~,~~ and activities would be planned in accordance with the goals and guidelines of the MSCP	Similar impact as the proposed project. The entire project area is within the City of San Diego's MHPA~~,~~ and activities would be planned in accordance with the goals	Similar impact as the proposed project. The entire project area is within the City of San Diego's MHPA~~,~~ and activities would be planned in accordance with the goals and guidelines of	Similar impact as the proposed project. The entire project area is within the City of San Diego's MHPA~~,~~ and activities would be planned in accordance with the goals and guidelines of the MSCP	Similar impact as the proposed project. The area is within the City of San Diego's MHPA~~,~~ and activities would be planned in accordance with the goals and guidelines of the MSCP ~~principles would be applied~~.	Similar impact as the proposed project. The area is within the City of San Diego's MHPA~~,~~ and activities would be planned in accordance with the goals and guidelines of the MSCP	It is unknown whether the off-site location for a new parking lot would be within the City's MHPA. Siting of the new parking lot would take into consideration applicable

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
Community Plan, or other approved local, regional, or state habitat conservation plan, either within the MSCP plan area or in the surrounding region?		~~principles would be applied~~. This public access activity would not conflict with the City's MSCP. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	and guidelines of the MSCP ~~principles would be applied~~. This public access activity would not conflict with the City's MSCP. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	the MSCP ~~principles would be applied~~. The Parallel Parking Alternative would not conflict with the City's MSCP. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	~~principles would be applied~~. The No Parking Alternative would not conflict with the City's MSCP. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	The On-site Improvements Alternative would not conflict with the City's MSCP. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	~~principles would be applied~~. The Retreated Location Alternative parking lots would be designed in conformance with applicable policies and would not conflict with the City's MSCP. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	biological and conservation plan areas to avoid substantial conflict. Thus, it is anticipated that the impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.
F. Would the project introduce development in areas adjacent to the MHPA that would result in adverse edge effects?	Less than significant	Similar impact as the proposed project. The entire project area is within the City of San Diego's MHPA~~,~~ and activities would be planned in accordance with the goals and guidelines of the MSCP ~~principles would be applied~~. The area of development for this alternative crossing would be generally adjacent to existing development such as roads and trails and would not introduce development into a new area that would result in adverse edge effects. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. The entire project area is within the City of San Diego's MHPA~~,~~ and activities would be planned in accordance with the goals and guidelines of the MSCP ~~principles would be applied~~. The area of development for this alternative crossing would be generally adjacent to existing development such as roads and trails and would not introduce development into a new area that would result in adverse edge effects. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. The entire project area is within the City of San Diego's MHPA~~,~~ and activities would be planned in accordance with the goals and guidelines of the MSCP ~~principles would be applied~~. The area of development for this alternative crossing would be generally adjacent to existing highway development and would not introduce development into a new area that would result in adverse edge effects. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. The entire project area is within the City of San Diego's MHPA~~,~~ and activities would be planned in accordance with the goals and guidelines of the MSCP ~~principles would be applied~~. The area of development for this alternative crossing would be generally adjacent to existing highway development and would not introduce development into a new area that would result in adverse edge effects. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. The entire project area is within the City of San Diego's MHPA~~,~~ and activities would be planned in accordance with the goals and guidelines of the MSCP ~~principles would be applied~~. The area of development for the On-site Improvements would be generally on or adjacent to the existing North Beach parking lot and would not introduce development into a new area that would result in adverse edge effects. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	The Retreated Alternative would have the potential to develop a new parking lot in a previously undisturbed upland area. Edge effects could include new sources of noise, light from headlights, dust, among others. Thus, there could be a potentially significant impact.	The Off-site Alternative would have the potential to develop a new parking lot in a previously undisturbed area dependent on location selected. Edge effects could include new sources of noise, light from headlights, dust, among others. Thus, there could be a potentially significant impact.
G. Would the project conflict with any State or local policies or ordinances or public resources codes protecting biological resources?	Less than significant	Similar impact as the proposed project. This public access crossing option would not conflict with biological resource protection policies. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. This public access crossing option would not conflict with biological resource protection policies. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. The Parallel Parking Alternative would not conflict with biological resource protection policies. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. The No Parking Alternative would not conflict with biological resource protection policies. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. The On-site Improvements Alternative would not conflict with biological resource protection policies. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. The Retreated Location Alternative would consider biological resource protection policies when identifying the site location to avoid conflicts. Thus, it is anticipated that the impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. The Off-site Location Alternative would consider biological resource protection policies when identifying site locations to avoid conflicts. Thus, it is anticipated that the impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	**Overpass Crossing (Alt 3)**	**Parallel Parking (Alt B)**	**No Parking (Alt C)**	**On-site Improvements (Alt A)**	**Retreated Location (Alt B)**	**Off-site Location (Alt C)**
H. Would the project introduce invasive species of plants into a natural open space area?	Less than Significant	Similar impact as the proposed project. During implementation of this alternative, construction vehicles have the potential to introduce invasive species of plants. PDF #22 would be implemented, which would ensure that equipment be free of non-native plant species and other foreign matter before entering the project site. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. During implementation of this alternative, construction vehicles have the potential to introduce invasive species of plants. PDF #22 would be implemented, which would ensure that equipment be free of non-native plant species and other foreign matter before entering the project site. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. During implementation of this alternative, construction vehicles have the potential to introduce invasive species of plants. PDF #22 would be implemented, which would ensure that equipment be free of non-native plant species and other foreign matter before entering the project site. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. During implementation of this alternative, construction vehicles have the potential to introduce invasive species of plants. PDF #22 would be implemented, which would ensure that equipment be free of non-native plant species and other foreign matter before entering the project site. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. During implementation of this alternative, construction vehicles have the potential to introduce invasive species of plants. PDF #22 would be implemented, which would ensure that equipment be free of non-native plant species and other foreign matter before entering the project site. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. During implementation of this alternative, construction vehicles have the potential to introduce invasive species of plants. PDF #22 would be implemented, which would ensure that equipment be free of non-native plant species and other foreign matter before entering the project site. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.	Similar impact as the proposed project. During implementation of this alternative, construction vehicles have the potential to introduce invasive species of plants. PDF #22 would be implemented, which would ensure that equipment be free of non-native plant species and other foreign matter before entering the project site. The impact would be less than significant. See proposed project biological resources discussion in Section 4.6.2.2.
Transportation								
A. Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities?	Less than Significant	Similar impact as the proposed project. Implementation of the At-Grade Crossing Alternative could result in temporary local traffic disruptions during construction activities on or adjacent to roadways. If disruption of traffic is anticipated, a Traffic Control Plan (Table 3-5, Standard Construction Practices) would be required and would outline appropriate traffic control measures intended to accommodate workers within the roadway, while facilitating continued circulation for road users (motorists, bicyclists, and pedestrians) through the work zone. In the long term, the improvements such as those at the intersection of Highway 101 and Torrey Pines Park Road, traffic calming features, and improved pedestrian facilities would be beneficial to transportation and safety in the area. The impact would be less than significant. See proposed	Similar impact as the proposed project. Implementation of the Overpass Crossing Alternative could result in temporary local traffic disruptions during construction activities on or adjacent to roadways. If disruption of traffic is anticipated, a Traffic Control Plan (Table 3-5, Standard Construction Practices) would be required and would outline appropriate traffic control measures intended to accommodate workers within the roadway, while facilitating continued circulation for road users (motorists, bicyclists, and pedestrians) through the work zone. In the long term, the improvements such as those at the intersection of Highway 101 and Torrey Pines Park Road, traffic calming features, and improved	Similar impact as the proposed project. Implementation of the No Parallel Parking Alternative could result in temporary local traffic disruptions during construction activities on Highway 101 or adjacent to roadways. If disruption of traffic is anticipated, a Traffic Control Plan (Table 3-5, Standard Construction Practices) would be required and would outline appropriate traffic control measures intended to accommodate workers within the roadway, while facilitating continued circulation for road users (motorists, bicyclists, and pedestrians) through the work zone. In the long term, the improvements in safety for pedestrians, bicyclists, and vehicular traffic would be beneficial to transportation and safety in the area. The impact would	Similar impact as the proposed project. Implementation of the No Parallel Parking Alternative could result in temporary local traffic disruptions during construction activities on Highway 101 or adjacent to roadways. If disruption of traffic is anticipated, a Traffic Control Plan (Table 3-5, Standard Construction Practices) would be required and would outline appropriate traffic control measures intended to accommodate workers within the roadway, while facilitating continued circulation for road users (motorists, bicyclists, and pedestrians) through the work zone. In the long term, the improvements in safety for pedestrians and bicyclists would be beneficial to transportation and safety in the area. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	Similar impact as the proposed project. Implementation of the On-Site Improvements Alternative could result in temporary local traffic disruptions during construction activities on or near to Highway 101 or adjacent to roadways. If disruption of traffic is anticipated, a Traffic Control Plan (Table 3-5, Standard Construction Practices) would be required and would outline appropriate traffic control measures intended to accommodate workers within the roadway, while facilitating continued circulation for road users (motorists, bicyclists, and pedestrians) through the work zone. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	Similar impact as the proposed project. Implementation of the Retreated Location Alternative could result in temporary local traffic disruptions during construction activities on or near to Highway 101 or other local roadways. If disruption of traffic is anticipated, a Traffic Control Plan (Table 3-5, Standard Construction Practices) would be required and would outline appropriate traffic control measures intended to accommodate workers within the roadway, while facilitating continued circulation for road users (motorists, bicyclists, and pedestrians) through the work zone. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	Similar impact as the proposed project. Implementation of the Off-site Location Alternative could result in temporary local traffic disruptions during construction activities on or near to Highway 101 or other local roadways. If disruption of traffic is anticipated, a Traffic Control Plan (Table 3-5, Standard Construction Practices) would be required and would outline appropriate traffic control measures intended to accommodate workers within the roadway, while facilitating continued circulation for road users (motorists, bicyclists, and pedestrians) through the work zone. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
		project transportation discussion in Section 4.7.2.2.	pedestrian facilities would be beneficial to transportation and safety in the area. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	be less than significant. See proposed project transportation discussion in Section 4.7.2.2.				
B. Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	Less than Significant	Similar impact as the proposed project. The At-Grade Crossing is not of the nature to generate new traffic and may encourage increased pedestrian access to the area as a result of the safer and more convenient pedestrian facilities. Some construction traffic would be necessary; however, these trips would be temporary and occur only during the construction duration. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	Similar impact as the proposed project. The Overpass Crossing is not of the nature to generate new traffic and may encourage increased pedestrian access to the area as a result of the safer and more convenient pedestrian facilities. Some construction traffic would be necessary; however, these trips would be temporary and occur only during the construction duration. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	Similar impact as the proposed project. The addition of new parking locations that are more convenient and safer as proposed by the Parallel Parking Alternative is not of the nature to generate substantial new vehicle miles traveled to the Lagoon and improvements may encourage increased pedestrian/bicycle access to the area as a result of the safer and more convenient pedestrian facilities. Some construction traffic would be necessary; however, these trips would be temporary and occur only during the construction duration. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	Similar impact as the proposed project. The addition of new parking locations that are more convenient and safer as proposed by the No Parking Alternative is not of the nature to generate substantial new vehicle miles traveled to the Lagoon and improvements may encourage increased pedestrian/bicycle access to the area as a result of the safer and more convenient pedestrian facilities. Some construction traffic would be necessary; however, these trips would be temporary and occur only during the construction duration. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	Similar impact as the proposed project. The modification of the existing parking lot may accommodate additional or less parking spaces than currently provided in the lot dependent on the design. However, modifications would not necessarily generate additional traffic as the lot is currently underutilized. Thus, a change in the number of spaces is not of the nature to generate substantial new vehicle miles traveled to the Lagoon area. Some construction traffic would be necessary; however, these trips would be temporary and occur only during the construction duration. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2	Similar impact as the proposed project. The relocation of the existing parking lot would be expected to accommodate an adequate number of parking spaces and not influence the number of visitors traveling to the Lagoon area; thus, a potential change in the number of spaces is not of the nature to generate substantial new vehicle miles traveled to the Lagoon area. Some construction traffic would be necessary; however, these trips would be temporary and occur only during the construction duration. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2	Similar impact as the proposed project. The relocation of the existing parking lot would be expected to accommodate an adequate number of parking spaces and not influence the number of visitors traveling to the Lagoon area. A potential location near I-5 would be easily accessible by many motorists. Dependent on the location of the off-site lot, a shuttle services may be provided at times but is not anticipated to be of the magnitude to generate substantial new vehicle miles traveled from the parking lot to the Lagoon area. Some construction traffic would be necessary; however, these trips would be temporary and occur only during the construction duration. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2
C. Would the project substantially increase hazards due to a geometric design feature (*e.g.*, sharp curves or dangerous intersections) or incompatible use (*e.g.*, farm equipment)?	No Impact	Roadway alterations associated with the At-Grade Crossing, such as modifications at the intersection of Highway 101 and Torrey Pines Park Road would serve to improve safety conditions for local vehicle and pedestrian traffic. Hazards would not be increased, and overall roadway safety would be improved. There would be	Transportation infrastructure alterations associated with the Overpass Crossing would serve to improve safety conditions for pedestrian traffic. Hazards would not be increased, and overall roadway safety would be improved. There would be no impact. See proposed	Roadway alterations associated with the Parallel Parking Alternative along Highway 101 would serve to improve safety conditions for local vehicle, pedestrian, and bicycle traffic. Hazards would not be increased, and overall roadway safety would be improved. There would be no impact. See	Roadway alterations associated with the No Parking Alternative along Highway 101 would serve to improve safety conditions for local vehicle, pedestrian, and bicycle traffic. Hazards would not be increased, and overall roadway safety would be improved. There would be no impact. See	Transportation infrastructure alterations associated with the On-site Improvements Alternatives would be designed appropriately for vehicle, pedestrian, and bicycle safety. Hazards would not be increased. There would be no impact. See proposed project transportation discussion in Section 4.7.2.2.	Transportation infrastructure alterations associated with the Retreated Location Alternatives would be designed appropriately for vehicle, pedestrian, and bicycle safety. Hazards would not be increased. There would be no impact. See proposed project	Transportation infrastructure alterations associated with the Off-site Location Alternatives would be designed appropriately for vehicle, pedestrian, and bicycle safety. Hazards would not be increased. There would be no impact. See proposed project

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements: At-Grade Crossing (Alt 1)	Marsh Trail Improvements: Overpass Crossing (Alt 3)	Highway 101 Improvements: Parallel Parking (Alt B)	Highway 101 Improvements: No Parking (Alt C)	North Beach Access: On-site Improvements (Alt A)	North Beach Access: Retreated Location (Alt B)	North Beach Access: Off-site Location (Alt C)
		no impact. See proposed project transportation discussion in Section 4.7.2.2.	project transportation discussion in Section 4.7.2.2.	proposed project transportation discussion in Section 4.7.2.2.	proposed project transportation discussion in Section 4.7.2.2.		transportation discussion in Section 4.7.2.2.	transportation discussion in Section 4.7.2.2.
D. Would the project result in inadequate emergency access?	Less than Significant	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. The impact would be less than significant. See proposed project transportation discussion in Section 4.7.2.2.
Air Quality Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.								
A. Would the project conflict with or obstruct implementation of the applicable air quality plan?	Less than Significant	Similar impact as the proposed project. Construction activities would generate temporary emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. The At-Grade Crossing construction activities would be short term and not of substantial size. Implementation would not increase the assumptions for off-road equipment use used for regional air quality estimations. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Similar impact as the proposed project. Construction activities would generate temporary emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. The Overpass Crossing construction activities would be short term and not of substantial size. Implementation would not increase the assumptions for off-road equipment use used for regional air quality estimations. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Similar impact as the proposed project. Construction activities would generate temporary emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. The Parallel Parking Alternative construction activities would be short term and not of substantial size. Implementation would not increase the assumptions for off-road equipment use used for regional air quality estimations. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Similar impact as the proposed project. Construction activities would generate temporary emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. The No Parking Alternative construction activities would be short term and not of substantial size. Implementation would not increase the assumptions for off-road equipment use used for regional air quality estimations. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Similar impact as the proposed project. Construction activities would generate temporary emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. Construction activities would be short term and not of substantial size. Implementation would not increase the assumptions for off-road equipment use used for regional air quality estimations. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Similar impact as the proposed project. Construction activities would generate temporary emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. Construction activities would be short term and not of substantial size. Implementation would not increase the assumptions for off-road equipment use used for regional air quality estimations. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Similar impact as the proposed project. Construction activities would generate temporary emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. Construction activities would be short term and not of substantial size. Implementation would not increase the assumptions for off-road equipment use used for regional air quality estimations. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.
B. Would the project result in a cumulatively considerable net increase of any criteria pollutant	Potentially Significant (temporary)	Similar impact as the proposed project. Construction of At-Grade Crossing Alternative would generate temporary air quality emissions. Because specific alternative details	Similar impact as the proposed project. Construction of Overpass Crossing Alternative would generate temporary air quality emissions. Because	Similar impact as the proposed project. Construction of the Parallel Parking Alternative would generate temporary air quality emissions. Because	Similar impact as the proposed project. Construction of the No Parking Alternative would generate temporary air quality emissions. Because specific alternative details necessary to	Similar impact as the proposed project. Construction of the On-site Improvements Alternative would generate temporary air quality emissions. Because specific alternative details	Similar impact as the proposed project. Construction of the Retreated Location Alternative would generate temporary air quality emissions. Because	Similar impact as the proposed project. Construction of the Off-site Location Alternative would generate temporary air quality emissions.

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
for which the project region is non-attainment under an applicable federal or state ambient air quality standard?		necessary to accurately calculate pollutant emissions are currently undetermined and could change through the project design process, it is not possible to determine if the cumulative screening level thresholds would be exceeded or not. Thus, the construction-related impact would be potentially significant (temporary). See proposed project air quality discussion in Section 4.8.2.2.	specific alternative details necessary to accurately calculate pollutant emissions are currently undetermined and could change through the project design process, it is not possible to determine if the cumulative screening level thresholds would be exceeded or not. Thus, the construction-related impact would be potentially significant (temporary). See proposed project air quality discussion in Section 4.8.2.2.	specific alternative details necessary to accurately calculate pollutant emissions are currently undetermined and could change through the project design process, it is not possible to determine if the cumulative screening level thresholds would be exceeded or not. Thus, the construction-related impact would be potentially significant (temporary). See proposed project air quality discussion in Section 4.8.2.2.	accurately calculate pollutant emissions are currently undetermined and could change through the project design process, it is not possible to determine if the cumulative screening level thresholds would be exceeded or not. Thus, the construction-related impact would be potentially significant (temporary). See proposed project air quality discussion in Section 4.8.2.2.	necessary to accurately calculate pollutant emissions are currently undetermined and could change through the project design process, it is not possible to determine if the cumulative screening level thresholds would be exceeded or not. Thus, the construction-related impact would be potentially significant (temporary). See proposed project air quality discussion in Section 4.8.2.2.	specific alternative details necessary to accurately calculate pollutant emissions are currently undetermined and could change through the project design process, it is not possible to determine if the cumulative screening level thresholds would be exceeded or not. Thus, the construction-related impact would be potentially significant (temporary). See proposed project air quality discussion in Section 4.8.2.2.	Because specific alternative details necessary to accurately calculate pollutant emissions are currently undetermined and could change through the project design process, it is not possible to determine if the cumulative screening level thresholds would be exceeded or not. Thus, the construction-related impact would be potentially significant (temporary). See proposed project air quality discussion in Section 4.8.2.2.
C. Would the project expose sensitive receptors to substantial pollutant concentrations?	Less than Significant	Similar impact as the proposed project. The At-Grade Crossing improvements would result in localized diesel PM emissions generated by the construction activities. Trail or pedestrian/ bicycle facility users would not be anticipated to be in the vicinity of construction for a substantial period of time as they would quickly pass by the construction area or be required to bypass the work area entirely for safety. Concentrations would decrease substantially before substantially affecting the nearest sensitive receptor. The impact would continue to be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Similar impact as the proposed project. The Overpass Crossing improvements would result in localized diesel PM emissions generated by the construction activities. Trail or pedestrian/ bicycle facility users would not be anticipated to be in the vicinity of construction for a substantial period of time as they would quickly pass by the construction area or be required to bypass the work area entirely for safety. Concentrations would decrease substantially before substantially affecting the nearest sensitive receptor. The impact would continue to be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Similar impact as the proposed project. The Parallel Parking Alternative improvements would result in localized diesel PM emissions generated by the construction activities. Pedestrian/ bicycle facility users on Highway 101 would not be anticipated to be in the vicinity of construction for a substantial period of time as they would quickly pass by the construction area or be required to bypass the work area entirely for safety. Concentrations would decrease substantially before substantially affecting the nearest sensitive receptor. The impact would continue to be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Similar impact as the proposed project. The No Parking Alternative improvements would result in localized diesel PM emissions generated by the construction activities. Pedestrian/ bicycle facility users on Highway 101 would not be anticipated to be in the vicinity of construction for a substantial period of time as they would quickly pass by the construction area or be required to bypass the work area entirely for safety. Concentrations would decrease substantially before substantially affecting the nearest sensitive receptor. The impact would continue to be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Similar impact as the proposed project. The On-site Improvements Alternative improvements would result in localized diesel PM emissions generated by the construction activities. Pedestrian/ bicycle facility users on nearby Highway 101 would not be anticipated to be in the vicinity of construction for a substantial period of time as they would quickly pass by the construction area or be required to bypass the work area entirely for safety. Concentrations would decrease substantially before substantially affecting the nearest sensitive receptor. The impact would continue to be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Similar impact as the proposed project. The Retreated Location Alternative improvements would result in localized diesel PM emissions generated by the construction activities. Recreationalists or other receptors are not anticipated to be in the vicinity of construction for a substantial period of or may be required to bypass the work area entirely for safety. Concentrations would decrease substantially before substantially affecting the nearest sensitive receptor. The impact would continue to be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Similar impact as the proposed project. The Off-site Location Alternative improvements would result in localized diesel PM emissions generated by the construction activities. Recreationalists or other receptors are not anticipated to be in the vicinity of construction for a substantial period of or may be required to bypass the work area entirely for safety. Concentrations would decrease substantially before substantially affecting the nearest sensitive receptor. The impact would continue to be less than significant. See proposed project air quality discussion in Section 4.8.2.2.

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements: At-Grade Crossing (Alt 1)	Marsh Trail Improvements: Overpass Crossing (Alt 3)	Highway 101 Improvements: Parallel Parking (Alt B)	Highway 101 Improvements: No Parking (Alt C)	North Beach Access: On-site Improvements (Alt A)	North Beach Access: Retreated Location (Alt B)	North Beach Access: Off-site Location (Alt C)
D. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Less than Significant	Construction activities cause exhaust from diesel construction equipment; however, because of the temporary nature and the highly diffusive properties of diesel exhaust, nearby receptors would not be substantially affected by diesel exhaust odors. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Construction activities cause exhaust from diesel construction equipment; however, because of the temporary nature and the highly diffusive properties of diesel exhaust, nearby receptors would not be substantially affected by diesel exhaust odors. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Construction activities cause exhaust from diesel construction equipment; however, because of the temporary nature and the highly diffusive properties of diesel exhaust, nearby receptors would not be substantially affected by diesel exhaust odors. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Construction activities cause exhaust from diesel construction equipment; however, because of the temporary nature and the highly diffusive properties of diesel exhaust, nearby receptors would not be substantially affected by diesel exhaust odors. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Construction activities cause exhaust from diesel construction equipment; however, because of the temporary nature and the highly diffusive properties of diesel exhaust, nearby receptors would not be substantially affected by diesel exhaust odors. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Construction activities cause exhaust from diesel construction equipment; however, because of the temporary nature and the highly diffusive properties of diesel exhaust, nearby receptors would not be substantially affected by diesel exhaust odors. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.	Construction activities cause exhaust from diesel construction equipment; however, because of the temporary nature and the highly diffusive properties of diesel exhaust, nearby receptors would not be substantially affected by diesel exhaust odors. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.2.
Cultural Resources								
A. Would the project cause an alteration, including the adverse physical or aesthetic effects and/or the destruction of a prehistoric or historic building (including an architecturally significant building), structure, or object or site?	Potentially Significant	Construction activities such as pile driving, grading, excavation, and removal of material have the potential to encounter previously unidentified archaeological resources in relatively undeveloped locations along the lagoon fringe in stable sediments. While most areas of construction associated with the At-Grade Crossing would have been previously disturbed, the potential impact to archaeological resources is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.	Construction activities such as pile driving, grading, excavation, and removal of material have the potential to encounter previously unidentified archaeological resources in relatively undeveloped locations along the lagoon fringe in stable sediments. While most areas of construction associated with the Overpass Crossing would have been previously disturbed, the potential impact to archaeological resources is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.	Construction activities such as pile driving, grading, excavation, and removal of material have the potential to encounter previously unidentified archaeological resources in relatively undeveloped locations along the lagoon fringe in stable sediments. While most areas of construction associated with the Parallel Parking Alternative would have been previously disturbed by development of the Highway 101 roadway, the potential impact to archaeological resources is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.	Construction activities such as pile driving, grading, excavation, and removal of material have the potential to encounter previously unidentified archaeological resources in relatively undeveloped locations along the lagoon fringe in stable sediments. While most areas of construction associated with the No Parking Alternative would have been previously disturbed by development of the Highway 101 roadway, the potential impact to archaeological resources is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.	Construction activities such as pile driving, grading, excavation, and removal of material have the potential to encounter previously unidentified archaeological resources in previously undisturbed stable sediments. While most areas of construction associated with the On-site Improvements Alternative would have been previously disturbed by development of the existing North Beach parking lot, the potential impact to archaeological resources is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.	Construction activities such as pile driving, grading, excavation, and removal of material have the potential to encounter previously unidentified archaeological resources in previously undisturbed stable sediments. Because the specific location of a retreated parking lot is currently undetermined, the potential impact to archaeological resources is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.	Construction activities such as pile driving, grading, excavation, and removal of material have the potential to encounter previously unidentified archaeological resources in previously undisturbed stable sediments. Because the specific location of an off-site parking lot is currently undetermined, the potential impact to archaeological resources is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.
B. Would the project have any impact to existing religious or sacred uses within the potential impact area?	No Impact	Similar impact as the proposed project. No existing religious or sacred uses have been identified within public access improvement areas. There would be no impact. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. No existing religious or sacred uses have been identified within public access improvement areas. There would be no impact. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. No existing religious or sacred uses have been identified within public access improvement areas. There would be no impact. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. No existing religious or sacred uses have been identified within public access improvement areas. There would be no impact. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. No existing religious or sacred uses have been identified within public access improvement areas. There would be no impact. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. No existing religious or sacred uses have been identified within public access improvement areas. There would be no impact. See proposed project cultural resource discussion in Section 4.9.2.2.	No existing religious or sacred uses have been identified within public access improvement areas; however, an off-site location could have such resources. Thus, the impact is considered potentially significant.

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements: At-Grade Crossing (Alt 1)	Marsh Trail Improvements: Overpass Crossing (Alt 3)	Highway 101 Improvements: Parallel Parking (Alt B)	Highway 101 Improvements: No Parking (Alt C)	North Beach Access: On-site Improvements (Alt A)	North Beach Access: Retreated Location (Alt B)	North Beach Access: Off-site Location (Alt C)
C. Would the project cause the disturbance of any human remains, including those interred outside of formal cemeteries?	Potentially Significant	Similar impact as the proposed project. Currently, there is no evidence for the presence of human remains within the Lagoon; however, there may be a potential to encounter human remains during ground-disturbing activities due to the proximity of the discovery of human remains at a similar, nearby location. Therefore, the potential to disturb human remains is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. Currently, there is no evidence for the presence of human remains within the Lagoon; however, there may be a potential to encounter human remains during ground-disturbing activities due to the proximity of the discovery of human remains at a similar, nearby location. Therefore, the potential to disturb human remains is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. Currently, there is no evidence for the presence of human remains within the Lagoon; however, there may be a potential to encounter human remains during ground-disturbing activities due to the proximity of the discovery of human remains at a similar, nearby location. Therefore, the potential to disturb human remains is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. Currently, there is no evidence for the presence of human remains within the Lagoon; however, there may be a potential to encounter human remains during ground-disturbing activities due to the proximity of the discovery of human remains at a similar, nearby location. Therefore, the potential to disturb human remains is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. Currently, there is no evidence for the presence of human remains within the Lagoon; however, there may be a potential to encounter human remains during ground-disturbing activities due to the proximity of the discovery of human remains at a similar, nearby location. Therefore, the potential to disturb human remains is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. Currently, there is no evidence for the presence of human remains within the Lagoon; however, there may be a potential to encounter human remains during ground-disturbing activities due to the proximity of the discovery of human remains at a similar, nearby location. Therefore, the potential to disturb human remains is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. Currently, there is no evidence for the presence of human remains within the Lagoon; however, there may be a potential to encounter human remains during ground-disturbing activities due to the proximity of the discovery of human remains at a similar, nearby location. Therefore, the potential to disturb human remains is considered significant. See proposed project cultural resource discussion in Section 4.9.2.2.
D. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of	No Impact	Similar impact as the proposed project. No tribal cultural resources have been documented to date within the APE. No impact would result. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. No tribal cultural resources have been documented to date within the APE. No impact would result. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. No tribal cultural resources have been documented to date within the APE. No impact would result. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. No tribal cultural resources have been documented to date within the APE. No impact would result. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. No tribal cultural resources have been documented to date within the APE. No impact would result. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. No tribal cultural resources have been documented to date within the APE. No impact would result. See proposed project cultural resource discussion in Section 4.9.2.2.	Similar impact as the proposed project. No tribal cultural resources have been documented to date within the APE; however, an off-site location could affect tribal cultural resources. Thus, the impact is considered potentially significant.

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
historical resources as defined in PRC Section 5020.1(k), or ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?								
Paleontological Resources								
A. Would the project require over 1,000 cubic yards of excavation in a high resource potential geologic deposit/formation/rock unit?	Potentially Significant	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If an At-Grade Crossing Alternative activity were to disturb more than 1,000 cy within the Delmar Formation, a potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.2.	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If an Overpass Crossing Alternative activity were to disturb more than 1,000 cy within the Delmar Formation, a potentially significant impact would result. See proposed project paleontological	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If a Parallel Parking Alternative activity were to disturb more than 1,000 cy within the Delmar Formation, a potentially significant impact would result. See proposed project paleontological resource	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If a No Parking Alternative activity were to disturb more than 1,000 cy within the Delmar Formation, a potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.2.	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If an On-site Improvement activity were to disturb more than 1,000 cy within the Delmar Formation, a potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.2.	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If a Retreated Location activity were to disturb more than 1,000 cy within the Delmar Formation, a potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.2.	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If an Off-site Location activity were to disturb more than 1,000 cy within the Delmar Formation, a potentially significant impact would result. See proposed project paleontological

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements: At-Grade Crossing (Alt 1)	Marsh Trail Improvements: Overpass Crossing (Alt 3)	Highway 101 Improvements: Parallel Parking (Alt B)	Highway 101 Improvements: No Parking (Alt C)	North Beach Access: On-site Improvements (Alt A)	North Beach Access: Retreated Location (Alt B)	North Beach Access: Off-site Location (Alt C)
			resource discussion in Section 4.10.2.2.	discussion in Section 4.10.2.2.				resource discussion in Section 4.10.2.2.
B. Would the project require over 2,000 cubic yards of excavation in a moderate resource potential geologic deposit/formation/rock unit?	Potentially Significant	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If an At-Grade Crossing Alternative activity were to disturb more than 2,000 cy within the moderately sensitive Torrey Sandstone or Lindavista formations, a potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.2.	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If an Overpass Crossing Alternative activity were to disturb more than 2,000 cy within the moderately sensitive Torrey Sandstone or Lindavista formations, a potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.2.	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If a Parallel Parking Alternative activity were to disturb more than 2,000 cy within the moderately sensitive Torrey Sandstone or Lindavista formations, a potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.2.	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If a No Parking Alternative activity were to disturb more than 2,000 cy within the moderately sensitive Torrey Sandstone or Lindavista formations, a potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.2.	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If an On-site Improvement activity were to disturb more than 2,000 cy within the moderately sensitive Torrey Sandstone or Lindavista formations, a potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.2.	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If a Retreated Location activity were to disturb more than 2,000 cy within the moderately sensitive Torrey Sandstone or Lindavista formations, a potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.2.	Similar impact as the proposed project. Portions of the project vicinity are underlain by geologic formations considered to have a high or moderate paleontological sensitivity. If an Off-site Location activity were to disturb more than 2,000 cy within the moderately sensitive Torrey Sandstone or Lindavista formations, a potentially significant impact would result. See proposed project paleontological resource discussion in Section 4.10.2.2.
Public Services and Utilities								
A. Would the project result in impacts to any of the following public services that would require the establishment of additional facilities. Would these facilities result in further potential physical impacts to the environment? • Fire protection; • Police protection; • Lifeguard services; • Parks; or • Other public facilities.	Less than Significant	Similar impact as the proposed project. If disruption of traffic is anticipated during construction, a Traffic Control Plan be required and would outline appropriate traffic control measures to ensure adequate access for emergency services is maintained throughout the construction area. Improved public access as a result of the At-Grade Crossing Alternative may result in a slight user increase at local parks as recreationalists are provided with better accessibility to those facilities. This increase would not be of the magnitude to negatively impact local parks or their ability to serve the community. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.2.	Similar impact as the proposed project. If disruption of traffic is anticipated during construction, a Traffic Control Plan be required and would outline appropriate traffic control measures to ensure adequate access for emergency services is maintained throughout the construction area. Improved public access as a result of the Overpass Crossing Alternative may result in a slight user increase at local parks as recreationalists are provided with better accessibility to those facilities. This increase would not be of the magnitude to negatively impact local parks or their ability to serve the community. The impact would be less than significant. See proposed	Similar impact as the proposed project. If disruption of traffic is anticipated during construction, a Traffic Control Plan would be required and would outline appropriate traffic control measures to ensure adequate access for emergency services is maintained throughout the construction area. Improved public access as a result of the Parallel Parking Alternative may result in a slight user increase at local parks as recreationalists arriving via foot, bicycle, or vehicle are provided with better accessibility to those facilities. This increase would not be of the magnitude to negatively impact local parks or their ability to serve the community. The impact would be less than significant. See proposed	Similar impact as the proposed project. If disruption of traffic is anticipated during construction, a Traffic Control Plan would be required and would outline appropriate traffic control measures to ensure adequate access for emergency services is maintained throughout the construction area. Improved public access as a result of the No Parking Alternative may result in a slight user increase at local parks as recreationalists arriving via foot, bicycle, or vehicle are provided with better accessibility to those facilities. This increase would not be of the magnitude to negatively impact local parks or their ability to serve the community. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.2.	Similar impact as the proposed project. If disruption of traffic is anticipated during construction, a Traffic Control Plan would be required and would outline appropriate traffic control measures to ensure adequate access for emergency services is maintained throughout the construction area. Creation of additional facilities to support State Parks staff (*e.g.*, lifeguards and rangers) would provide a benefit to these local services. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.2.	Similar impact as the proposed project. If disruption of traffic is anticipated during construction, a Traffic Control Plan would be required and would outline appropriate traffic control measures to ensure adequate access for emergency services is maintained throughout the construction area. Creation of additional facilities to support State Parks staff (*e.g.*, lifeguards and rangers) would provide a benefit to these local services. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.2.	Similar impact as the proposed project. If disruption of traffic is anticipated during construction, a Traffic Control Plan would be required and would outline appropriate traffic control measures to ensure adequate access for emergency services is maintained throughout the construction area. Creation of additional facilities to support State Parks staff (*e.g.*, lifeguards and rangers) would provide a benefit to these local services. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.2.

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			project public services and utilities discussion in Section 4.11.2.2.	project public services and utilities discussion in Section 4.11.2.2.				
B. Would the project result in a need for any of the following new systems, or require substantial alterations to existing utilities, the construction of which would create physical impacts? • Natural gas; • Water; • Sewer; • Communication systems; or • Solid waste disposal.	Less than Significant	The At-Grade Crossing Alternative may involve improvements or new infrastructure to the stormwater drainage system; however, infrastructure modifications would be designed to improve the system's ability to appropriately drain and handle wastewater inputs to avoid standing water. Water consumption would be limited and would primarily be required during construction. Solid waste generation would be relatively small as substantial demolition or material-intensive facilities are not proposed. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.2.	The Overpass Crossing Alternative may involve improvements or new infrastructure to the stormwater drainage system; however, infrastructure modifications would be designed to improve the system's ability to appropriately drain and handle wastewater inputs to avoid standing water. Water consumption would be limited and would primarily be required during construction. Solid waste generation would be relatively small as substantial demolition or material-intensive facilities are not proposed. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.2.	The Parallel Parking Alternative may involve improvements or new infrastructure to the stormwater drainage system; however, infrastructure modifications would be designed to improve the system's ability to appropriately drain and handle wastewater inputs to avoid standing water. Water consumption would be limited and would primarily be required during construction. Solid waste generation would be relatively small as substantial demolition or material-intensive facilities are not proposed. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.2.	The No Parking Alternative may involve improvements or new infrastructure to the stormwater drainage system; however, infrastructure modifications would be designed to improve the system's ability to appropriately drain and handle wastewater inputs to avoid standing water. Water consumption would be limited and would primarily be required during construction. Solid waste generation would be relatively small as substantial demolition or material-intensive facilities are not proposed. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.2.	The On-site Improvements Alternative may involve improvements or new infrastructure to the stormwater drainage system associated with the North Beach parking lot; however, infrastructure modifications would be designed to improve the system's ability to appropriately drain and handle wastewater inputs to avoid standing water. Water consumption would be limited and would primarily be required during construction or initial revegetation. Solid waste generation would be relatively small as substantial demolition or material-intensive facilities are not proposed. Implementation of an underground parking facility would likely incorporate reuse of excavated material as opposed to landfill disposal ~~if feasible~~. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.2.	The Retreated Location Alternative may involve improvements or new infrastructure to the stormwater drainage system associated with development of a new parking lot site; however, infrastructure modifications would be designed to appropriately drain and handle wastewater inputs to avoid standing water. Water consumption would be limited and would primarily be required during construction or initial revegetation. Solid waste generation would be relatively small as substantial demolition or material-intensive facilities are not proposed. Implementation of an underground parking facility would likely incorporate reuse of excavated material as opposed to landfill disposal ~~if feasible~~. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.2.	The Off-site Location Alternative may involve improvements or new infrastructure to the stormwater drainage system associated with development of a new parking lot off site; however, infrastructure modifications would be designed to appropriately drain and handle wastewater inputs to avoid standing water. Water consumption would be limited and would primarily be required during construction or initial revegetation. Solid waste generation would be relatively small as substantial demolition or material-intensive facilities are not proposed. The impact would be less than significant. See proposed project public services and utilities discussion in Section 4.11.2.2.
Public Health and Safety								
A. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Less than Significant	Similar impact as the proposed project. The At-Grade Crossing Alternative would require the use of construction equipment and the associated hazardous materials necessary for operation. Regulatory requirements, BMPs, and standard construction practices to minimize potential for risk would be applicable and thus, would not create an increased risk to the public related to hazardous materials. The	Similar impact as the proposed project. The Overpass Crossing Alternative would require the use of construction equipment and the associated hazardous materials necessary for operation. Regulatory requirements, BMPs, and standard construction practices to minimize potential for risk would be applicable and thus, would	Similar impact as the proposed project. The Parallel Parking Alternative would require the use of construction equipment and the associated hazardous materials necessary for operation. Regulatory requirements, BMPs, and standard construction practices to minimize potential for risk would be applicable and thus, would not create an increased risk	Similar impact as the proposed project. The No Parking Alternative would require the use of construction equipment and the associated hazardous materials necessary for operation. Regulatory requirements, BMPs, and standard construction practices to minimize potential for risk would be applicable and thus, would not create an increased risk to the public related to hazardous materials. The	Similar impact as the proposed project. The On-site Improvements Alternative would require the use of construction equipment and the associated hazardous materials necessary for operation. Regulatory requirements, BMPs, and standard construction practices to minimize potential for risk would be applicable and thus, would not create an increased risk to the public related to	Similar impact as the proposed project. The Retreated Location Alternative would require the use of construction equipment and the associated hazardous materials necessary for operation. Regulatory requirements, BMPs, and standard construction practices to minimize potential for risk would be applicable and thus, would not create an increased	Similar impact as the proposed project. The Off-site Location Alternative would require the use of construction equipment and the associated hazardous materials necessary for operation. Regulatory requirements, BMPs, and standard construction practices to minimize potential for risk would be applicable and thus,

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	**Overpass Crossing (Alt 3)**	**Parallel Parking (Alt B)**	**No Parking (Alt C)**	**On-site Improvements (Alt A)**	**Retreated Location (Alt B)**	**Off-site Location (Alt C)**
		impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	not create an increased risk to the public related to hazardous materials. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	to the public related to hazardous materials. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	hazardous materials. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	risk to the public related to hazardous materials. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	would not create an increased risk to the public related to hazardous materials. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.
B. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	Less than Significant	Similar impact as the proposed project. Because of the potential for contamination in nearby lagoon soils, soil testing would occur per permitting and regulatory requirements prior to excavation activities to indicate if potential contaminate concentrations exceed regulatory health or ecological risk-based screening levels and determine what, if any, regulatory requirements would be necessary to minimize potential public exposure. Thus, the impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Because of the potential for contamination in nearby lagoon soils, soil testing would occur per permitting and regulatory requirements prior to excavation activities to indicate if potential contaminate concentrations exceed regulatory health or ecological risk-based screening levels and determine what, if any, regulatory requirements would be necessary to minimize potential public exposure. Thus, the impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Because of the potential for contamination in nearby lagoon soils, soil testing would occur per permitting and regulatory requirements prior to excavation activities to indicate if potential contaminate concentrations exceed regulatory health or ecological risk-based screening levels and determine what, if any, regulatory requirements would be necessary to minimize potential public exposure. Thus, the impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Because of the potential for contamination in nearby lagoon soils, soil testing would occur per permitting and regulatory requirements prior to excavation activities to indicate if potential contaminate concentrations exceed regulatory health or ecological risk-based screening levels and determine what, if any, regulatory requirements would be necessary to minimize potential public exposure. Thus, the impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Because of the potential for contamination in nearby lagoon soils, soil testing would occur per permitting and regulatory requirements prior to excavation activities to indicate if potential contaminate concentrations exceed regulatory health or ecological risk-based screening levels and determine what, if any, regulatory requirements would be necessary to minimize potential public exposure. Thus, the impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Because of the potential for contamination in nearby lagoon soils, soil testing would occur per permitting and regulatory requirements prior to excavation activities to indicate if potential contaminate concentrations exceed regulatory health or ecological risk-based screening levels and determine what, if any, regulatory requirements would be necessary to minimize potential public exposure. Thus, the impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Soil testing would occur per permitting and regulatory requirements prior to excavation activities to indicate if potential contaminate concentrations exceed regulatory health or ecological risk-based screening levels and determine what, if any, regulatory requirements would be necessary to minimize potential public exposure. Thus, the impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.
C. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	Less than Significant	Similar impact as the proposed project. Schools are located in the general area, but not in immediate proximity to the Lagoon. The impact would to be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Schools are located in the general area, but not in immediate proximity to the Lagoon. The impact would to be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Schools are located in the general area, but not in immediate proximity to the Lagoon. The impact would to be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Schools are located in the general area, but not in immediate proximity to the Lagoon. The impact would to be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Schools are located in the general area, but not in immediate proximity to the Lagoon. The impact would to be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Schools are located in the general area, but not in immediate proximity to the Lagoon. The impact would to be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Schools are located in the general area, but not in immediate proximity to the Lagoon. The specific site for an off-site parking lot is currently unknown but is anticipated in a nearby location. The impact would to be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements: At-Grade Crossing (Alt 1)	Marsh Trail Improvements: Overpass Crossing (Alt 3)	Highway 101 Improvements: Parallel Parking (Alt B)	Highway 101 Improvements: No Parking (Alt C)	North Beach Access: On-site Improvements (Alt A)	North Beach Access: Retreated Location (Alt B)	North Beach Access: Off-site Location (Alt C)
D. Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	Less than Significant	Similar impact as the proposed project. The Lagoon is not listed as a hazardous materials site in DTSC databases. Soil testing would occur prior to excavation of materials and appropriate regulatory requirements would be implemented as necessary. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. The Lagoon is not listed as a hazardous materials site in DTSC databases. Soil testing would occur prior to excavation of materials and appropriate regulatory requirements would be implemented as necessary. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. The Lagoon is not listed as a hazardous materials site in DTSC databases. Soil testing would occur prior to excavation of materials and appropriate regulatory requirements would be implemented as necessary. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. The Lagoon is not listed as a hazardous materials site in DTSC databases. Soil testing would occur prior to excavation of materials and appropriate regulatory requirements would be implemented as necessary. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. The Lagoon is not listed as a hazardous materials site in DTSC databases. Soil testing would occur prior to excavation of materials and appropriate regulatory requirements would be implemented as necessary. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. The Lagoon is not listed as a hazardous materials site in DTSC databases. Soil testing would occur prior to excavation of materials and appropriate regulatory requirements would be implemented as necessary. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. The Lagoon is not listed as a hazardous materials site in DTSC databases. Soil testing would occur prior to excavation of materials and appropriate regulatory requirements would be implemented as necessary. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.
E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	No Impact	The Lagoon is not located within 2 miles of a public use airport. Activities associated with this alternative would not be of the size, magnitude, or nature to interfere with or influence aircraft operations that may occur in the area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.	The Lagoon is not located within 2 miles of a public use airport. Activities associated with this alternative would not be of the size, magnitude, or nature to interfere with or influence aircraft operations that may occur in the area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.	The Lagoon is not located within 2 miles of a public use airport. Activities associated with this alternative would not be of the size, magnitude, or nature to interfere with or influence aircraft operations that may occur in the area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.	The Lagoon is not located within 2 miles of a public use airport. Activities associated with this alternative would not be of the size, magnitude, or nature to interfere with or influence aircraft operations that may occur in the area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.	The Lagoon is not located within 2 miles of a public use airport. Activities associated with this alternative would not be of the size, magnitude, or nature to interfere with or influence aircraft operations that may occur in the area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.	The Lagoon is not located within 2 miles of a public use airport. Activities associated with this alternative would not be of the size, magnitude, or nature to interfere with or influence aircraft operations that may occur in the area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.	The Lagoon is not located within 2 miles of a public use airport. Activities associated with this alternative would not be of the size, magnitude, or nature to interfere with or influence aircraft operations that may occur in the area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.
F. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Less than Significant	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. Improved public access could aid non-motorized evacuation of the area. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. Improved public access could aid non-motorized evacuation of the area. The impact would be less than	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. Improved public access could aid non-motorized evacuation of the area. The impact would be less than significant. See proposed project public	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. Improved public access could aid non-motorized evacuation of the area. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. Improved public access could aid non-motorized evacuation of the area. The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. Improved public access could aid non-motorized evacuation of the area. The impact would be less than significant. See proposed project public	Similar impact as the proposed project. Construction traffic on surrounding roadways would be typical and not be of substantial volume. A Traffic Control Plan would be required if the transportation system were disrupted and would outline safety and emergency procedures to ensure that adequate emergency access is maintained. Improved public access could aid non-motorized evacuation of the area. The impact would be less than

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
			significant. See proposed project public health and safety discussion in Section 4.12.2.2.	health and safety discussion in Section 4.12.2.2.			health and safety discussion in Section 4.12.2.2.	significant. See proposed project public health and safety discussion in Section 4.12.2.2.
G. Would the project substantially increase human exposure to vectors, such as mosquitoes, that are capable of transmitting significant public health diseases or creating nuisances?	Less than significant	The At-Grade Crossing Alternative would not create new or worsened vector conditions. New or altered surfaces would be designed in accordance with applicable requirements and with proper drainage to minimize potential for ponded or standing water. There would be a less than significant impact. See proposed project public health and safety discussion in Section 4.12.2.2.	The Overpass Crossing Alternative would not create new or worsened vector conditions. New or altered surfaces would be designed in accordance with applicable requirements and with proper drainage to minimize potential for ponded or standing water. There would be a less than significant impact. See proposed project public health and safety discussion in Section 4.12.2.2.	The Parallel Parking Alternative would not create new or worsened vector conditions. New or altered surfaces would be designed in accordance with applicable requirements and with proper drainage to minimize potential for ponded or standing water. There would be a less than significant impact. See proposed project public health and safety discussion in Section 4.12.2.2.	The No Parking Alternative would not create new or worsened vector conditions. New or altered surfaces would be designed in accordance with applicable requirements and with proper drainage to minimize potential for ponded or standing water. There would be a less than significant impact. See proposed project public health and safety discussion in Section 4.12.2.2.	The On-site Improvements Alternative would not create new or worsened vector conditions. New or altered surfaces would be designed in accordance with applicable requirements and with proper drainage to minimize potential for ponded or standing water. There would be a less than significant impact. See proposed project public health and safety discussion in Section 4.12.2.2.	The On-site Improvements Alternative would not create new or worsened vector conditions. New or altered surfaces would be designed in accordance with applicable requirements and with proper drainage to minimize potential for ponded or standing water. There would be a less than significant impact. See proposed project public health and safety discussion in Section 4.12.2.2.	The Off-site Location Alternative would not create new or worsened vector conditions. New or altered surfaces would be designed in accordance with applicable requirements and with proper drainage to minimize potential for ponded or standing water. There would be a less than significant impact. See proposed project public health and safety discussion in Section 4.12.2.2.
H. Would the project substantially increase hazards for people recreating at beach and/or nearshore placement locations?	No Impact	Similar impact as the proposed project. Construction activities for the At-Grade Crossing Alternative would not occur at beach or nearshore locations. In the long term, improved public access would create safer pedestrian conditions for recreationalists accessing the beach from the local area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Construction activities for the Overpass Crossing Alternative would not occur at beach or nearshore locations. In the long term, improved public access would create safer pedestrian conditions for recreationalists accessing the beach from the local area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Construction activities for the Parallel Parking Alternative would not occur at beach or nearshore locations. In the long term, improved public access would create safer pedestrian and bicycle conditions for recreationalists accessing the beach from the local area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Construction activities for the No Parking Alternative would not occur at beach or nearshore locations. In the long term, improved public access would create safer pedestrian and bicycle conditions for recreationalists accessing the beach from the local area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Construction activities for the On-site Improvements Alternative would not occur on beach or nearshore locations. In the long term, improved public access and parking options would create safer conditions for recreationalists accessing the beach from the local area. Improved support facilities at the existing lot would provide enhanced public safety services. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Construction activities for the Retreated Location Alternative would not occur on beach or nearshore locations. In the long term, improved public access and parking options would create safer conditions for recreationalists accessing the beach from the local area. Improved support facilities at the existing lot would provide enhanced public safety services. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.	Similar impact as the proposed project. Construction activities for the Off-site Location Alternative would not occur on beach or nearshore locations. In the long term, improved public access and parking options would create safer conditions for recreationalists accessing the beach from the local area. Improved support facilities at the existing lot would provide enhanced public safety services. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.2.
Climate Change and Greenhouse Gas Emissions								
A. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant	Less than Significant	Similar impact as the proposed project. Grading, excavation, paving, and roadway work would be required for the At-Grade Crossing Alternative. These improvements are not of the magnitude to generate GHG	Similar impact as the proposed project. Grading, excavation, paving, and roadway work would be required for the Overpass Crossing Alternative. These improvements are	Similar impact as the proposed project. Grading, excavation, paving, and roadway work would be required for the Parallel Parking Alternative. These improvements are not of the	Similar impact as the proposed project. Grading, excavation, paving, and roadway work would be required for the No Parking Alternative. These improvements are not of the magnitude to generate GHG	Similar impact as the proposed project. Grading, excavation, paving, and roadway work would be required for the On-Site Improvements Alternative. These improvements are not of the magnitude to generate GHG	Similar impact as the proposed project. Grading, excavation, paving, and roadway work would be required for the Retreated Location Alternative. These improvements are not of the	Similar impact as the proposed project. Grading, excavation, paving, and roadway work would be required for the Off-site Location Alternative. These

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
impact on the environment?		emissions in excess of the suggested significance guidance threshold of 900 $MTCO_2e$. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.	not of the magnitude to generate GHG emissions in excess of the suggested significance guidance threshold of 900 MT CO_2e. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.	magnitude to generate GHG emissions in excess of the suggested significance guidance threshold of 900 MT CO_2e. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.	emissions in excess of the suggested significance guidance threshold of 900 MT CO_2e. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.	emissions in excess of the suggested significance guidance threshold of 900 MT CO_2e. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.	magnitude to generate GHG emissions in excess of the suggested significance guidance threshold of 900 MT CO_2e. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.	improvements are not of the magnitude to generate GHG emissions in excess of the suggested significance guidance threshold of 900 MT CO_2e. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.
B. Would the project conflict with the City's Climate Action Plan or another applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Less than Significant	Similar impact as the proposed project. Improvements associated with the At-Grade Crossing Alternative would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. Improved pedestrian safety may increase non-motorized access to the area. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.	Similar impact as the proposed project. Improvements associated with the Overpass Crossing Alternative would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. Improved pedestrian safety may increase non-motorized access to the area. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.	Similar impact as the proposed project. Improvements associated with the Parallel Parking Alternative would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. Improved pedestrian and bicycle safety may increase non-motorized access to the area. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.	Similar impact as the proposed project. Improvements associated with the No Parking Alternative would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. Improved pedestrian and bicycle safety may increase non-motorized access to the area. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.	Similar impact as the proposed project. Improvements associated with the On-site Improvements Alternative would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. Improved pedestrian and bicycle safety may increase non-motorized access to the area. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.	Similar impact as the proposed project. Improvements associated with the Retreated Location Alternative would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. Improved pedestrian and bicycle safety may increase non-motorized access to the area. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.	Similar impact as the proposed project. Improvements associated with the Off-site Location Alternative would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. Improved pedestrian and bicycle safety may increase non-motorized access to the area. The impact would be less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.2.
Energy								
A. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	Less than Significant	Similar impact as the proposed project. Implementation of the At-Grade Crossing Alternative would result in energy use during construction activities. Specific PDFs and standard construction procedures have been incorporated into the proposed project to minimize energy use and to conserve energy where possible. The impact would be less than significant. See proposed project energy discussion in Section 4.14.2.2.	Similar impact as the proposed project. Implementation of the Overpass Crossing Alternative would result in energy use during construction activities. Specific PDFs and standard construction procedures have been incorporated into the proposed project to minimize energy use and to conserve energy where possible. The impact would be less than significant. See proposed project energy discussion in Section 4.14.2.2.	Similar impact as the proposed project. Implementation of the Parallel Parking Alternative would result in energy use during construction activities. Specific PDFs and standard construction procedures have been incorporated into the proposed project to minimize energy use and to conserve energy where possible. The impact would be less than significant. See proposed project energy discussion in Section 4.14.2.2.	Similar impact as the proposed project. Implementation of the No Parking Alternative would result in energy use during construction activities. Specific PDFs and standard construction procedures have been incorporated into the proposed project to minimize energy use and to conserve energy where possible. The impact would be less than significant. See proposed project energy discussion in Section 4.14.2.2.	Similar impact as the proposed project. Implementation of the On-site Improvements Alternative would result in energy use during construction activities. Specific PDFs and standard construction procedures have been incorporated into the proposed project to minimize energy use and to conserve energy where possible. The impact would be less than significant. See proposed project energy discussion in Section 4.14.2.2.	Similar impact as the proposed project. Implementation of the Off-site Location Alternative would result in energy use during construction activities. Specific PDFs and standard construction procedures have been incorporated into the proposed project to minimize energy use and to conserve energy where possible. The impact would be less than significant. See proposed project energy discussion in Section 4.14.2.2.	Similar impact as the proposed project. Implementation of the Off-site Location Alternative would result in energy use during construction activities. Specific PDFs and standard construction procedures have been incorporated into the proposed project to minimize energy use and to conserve energy where possible. The impact would be less than significant. See proposed project energy discussion in Section 4.14.2.2.

Issue Area and Threshold	Proposed Project	Marsh Trail Improvements		Highway 101 Improvements		North Beach Access		
		At-Grade Crossing (Alt 1)	Overpass Crossing (Alt 3)	Parallel Parking (Alt B)	No Parking (Alt C)	On-site Improvements (Alt A)	Retreated Location (Alt B)	Off-site Location (Alt C)
B. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	No impact	Similar impact as the proposed project. Implementation of this alternative would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur. See proposed project energy discussion in Section 4.14.2.2.	Similar impact as the proposed project. Implementation of this alternative would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur. See proposed project energy discussion in Section 4.14.2.2.	Similar impact as the proposed project. Implementation of this alternative would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur. See proposed project energy discussion in Section 4.14.2.2.	Similar impact as the proposed project. Implementation of this alternative would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur. See proposed project energy discussion in Section 4.14.2.2.	Similar impact as the proposed project. Implementation of this alternative would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur. See proposed project energy discussion in Section 4.14.2.2.	Similar impact as the proposed project. Implementation of this alternative would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur. See proposed project energy discussion in Section 4.14.2.2.	Similar impact as the proposed project. Implementation of this alternative would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur. See proposed project energy discussion in Section 4.14.2.2.

9.5.4 Vector Management Alternatives

Table 9-10. Summary of Impacts, Vector Management Alternatives

Issue Area and Threshold	Proposed Project	Increased Inlet Management	Increased Vector Treatments
Land Use			
A. Would the project result in physical division of an established community?	No Impact	Similar impacts as the proposed project. Increased inlet management would take place at the current inlet location and would not divide the community or change land uses. See proposed project land use discussion in Section 4.1.2.3.	Similar impacts as the proposed project. Increased vector treatments would not divide the community or change land uses. See proposed project land use discussion in Section 4.1.2.3.
B. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	Less than Significant	Similar impact as the proposed project. Increased inlet management activities, similar to those already occurring would not conflict with land use policies, plans, or regulations. See proposed project land use discussion in Section 4.1.2.3.	Increased vector treatments would not conflict with land use policies, plans, or regulations. There would be no impact.
Public Access and Recreation			
A. Would the project include recreational facilities or require the construction or expansion of recreational facilities which may have an adverse physical effect on the environment?	Less than Significant	Similar impact as the proposed project. Increased inlet management activities would not include construction of recreational facilities. See proposed project public access and recreation discussion in Section 4.2.2.3.	Increased vector treatments would not include construction of recreational facilities. There would be no impact.
B. Would the project result in loss of recreational use areas or lessen recreational use?	Less than Significant	More frequent inlet management activities could necessitate additional temporary beach area restrictions in the immediate vicinity of the inlet. The potential increase in temporary restrictions would result in a slightly increased impact relative to the proposed project; however, they are not of the magnitude or longevity to be substantial and the impact would remain less than significant. See proposed project public access and recreation discussion in Section 4.2.2.3.	Increased vector treatments would not affect areas of recreational use and applications do not require recreational areas to be restricted or closed. There would be no impact.
Hydrology			
A. Would the project result in a substantial increase in impervious surfaces and associated increased runoff?	Less than Significant	Increased inlet management activities would not include construction of additional impervious surfaces that could generate runoff. There would be no impact.	Increased vector treatments would not include construction of additional impervious surfaces that could generate runoff. There would be no impact.
B. Would the project lead to substantial alteration to on- and off-site drainage patterns due to changes in runoff flow rates or volumes?	Less than Significant	Increased inlet management would modify drainage and circulation patterns in portions of the Lagoon to help reduce areas of stagnant water and extend the tidal reach for improved vector control but would not substantially change runoff flow rates or volumes. The impact would remain less than significant. See proposed project hydrology discussion in Section 4.3.2.3.	Increased vector treatments would not result in the modification of drainage facilities and current drainage patterns and runoff would remain the same. Drainage enhancements associated with the proposed outflow and culvert improvements would not occur; however, the impact would remain less than significant. See proposed project hydrology discussion in Section 4.3.2.3.

Issue Area and Threshold	Proposed Project	Increased Inlet Management	Increased Vector Treatments
C. Would the project cause substantial alteration of the existing drainage pattern of the site, including through the alteration of the course of a stream or river or increase in flow velocities, in a manner which would result in substantial scour or erosion that causes instability of slopes, river control berms, adjoining roadway embankments, or bridge abutments?	Less than Significant	Similar impact as the proposed project. Increased inlet management would modify drainage patterns in portions of the Lagoon to help reduce areas of stagnant water and extend the tidal reach for improved vector control but would not result in substantial damaging scour or erosion. The impact would be less than significant. See proposed project hydrology discussion in Section 4.3.2.3.	Increased vector treatments would not result in the modification of drainage throughout the Lagoon. Increased treatments would not change drainage channels or flow velocities that could result in substantial scour or erosion. There would be no impact.
D. Would the project result in substantial increase in the flow rate or amount (volume) of surface runoff in a manner that would result in flooding on or off site, causing damage to structures or exposing the public to substantial risk?	Less than Significant	Similar impact as the proposed project. Increased inlet management would not generate increased rate or volume of runoff that could cause increased flooding. Improved drainage from inlet maintenance could help minimize flooding potential. The impact would remain less than significant. See proposed project hydrology discussion in Section 4.3.2.3.	Increased vector treatments would not generate increased rate or volume of runoff that could cause increased flooding. Drainage enhancements associated with the proposed outflow and culvert improvements would not occur; however, the impact would remain less than significant. See proposed project hydrology discussion in Section 4.3.2.3.
E. Would the project 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?	Less than Significant	Similar impact as the proposed project. Increased inlet management would not generate increased volume of runoff that could affect stormwater drainage systems or create polluted runoff. Drainage enhancements associated with the proposed outflow and culvert improvements would not occur; however, existing drainage conditions would not be modified or worsened. The impact would remain less than significant. See proposed project hydrology discussion in Section 4.3.2.3.	Similar impact as the proposed project. The larvicides used by the County of San Diego Vector Control Program contain naturally occurring bacteria to target mosquito larvae and do not harm people, pets, plants, or wildlife. Thus, increased applications would not contribute to polluted runoff. Drainage enhancements associated with the proposed outflow and culvert improvements would not occur; however, the impact would remain less than significant. See proposed project hydrology discussion in Section 4.3.2.3.
F. Would the project increase risks of damage to coastal resources, including inundation by storm surge, wave uprush or sea level rise?	No impact	Similar impact as the proposed project. Increased inlet management would aid in the ability of the Lagoon to drain and flush efficiently and allow the system to be more resilient to tidal inundation. There would be no impact. See proposed project hydrology discussion in Section 4.3.2.3.	Similar impact as the proposed project. Increased vector treatments would not be of the nature to affect inundation associated with store surge, wave uprush, or sea level rise. There would be no impact. See proposed project hydrology discussion in Section 4.3.2.3.
Water Quality and Sediment Management			
A. Would the project result in a violation of water quality standards or waste discharge requirements or degradation of beneficial uses in Los Peñasquitos Lagoon?	Less than Significant	Similar impact as the proposed project. Increased inlet management would reduce areas of stagnant water and extend the tidal reach for improved vector control. Such changes would not result in introduction of pollutants and could improve water quality. The impact would remain less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.3.	The larvicides used by the County of San Diego Vector Control Program contain naturally occurring bacteria to target mosquito larvae and do not harm people, pets, plants, or wildlife. Additional herbicides used to reduce invasive plants would be selected as appropriate for use in a lagoon setting. Thus, increased treatment applications would not degrade water quality or increase pollutants. The impact would remain less than significant.
B. Would the project substantially degrade water quality in the Lagoon by increasing sedimentation, leading to a violation or degradation of water quality standards or beneficial uses; or generate pollutions in violation of such standards?	Less than Significant	Similar impact as the proposed project. Increased inlet management would reduce areas of stagnant water, improve flushing, and extend the tidal reach for improved vector control. Such changes would not introduce additional sedimentation or pollutants that could substantially degrade water quality. The impact would remain less than significant. See proposed project water quality and sediment management discussion in Section 4.4.2.3.	Increased vector treatments would not cause additional sedimentation. The larvicides used by the County of San Diego Vector Control Program contain naturally occurring bacteria to target mosquito larvae and do not harm people, pets, plants, or wildlife. Thus, increased treatment applications would not degrade water quality or increase pollutants. The impact would remain less than significant.
C. Would the project alter circulation patterns in the Lagoon in a way that inhibits mixing or promotes stagnation?	No impact	Similar impact as the proposed project. While drainage patterns of the Lagoon would be altered, the purpose of increased inlet management would be to reduce areas of stagnant water and extend the tidal reach farther back into the Lagoon to promote mixing and better flushing. There would be no impact. See proposed project water quality and sediment management discussion in Section 4.4.2.3.	Increased vector treatments would not result in the modification of circulation throughout the Lagoon. There would be no impact. See proposed project water quality and sediment management discussion in Section 4.4.2.3.
Geology/Soils			
A. Would the project expose people or structures (including infrastructure) to geologic hazards such as earthquakes due to rupture of a known earthquake fault delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist or any other known faults, landslides, mudslides, ground failure, or similar hazards?	Less than Significant	Similar impact as the proposed project. Increased inlet management would require earthwork at the inlet; however, this location is in a dynamic sandy and alluvial soil environment that does not pose risk from hazardous geologic conditions. The impact would remain less than significant. See proposed project geology/soils discussion in Section 4.5.2.3.	Increased vector treatments would not modify geologic conditions and would not increase the exposure of people or structures to geologic hazards. There would be no impact.
B. Would the project result in a substantial increase in wind or water erosion of soils, either on or off the site?	Less than Significant	Similar impact as the proposed project. Increased inlet management would require additional earthwork at the inlet and allow better tidal flow and flushing of the Lagoon system. Such changes would not cause substantial wind or water erosion of soils. The impact would remain less than significant. See proposed project geology/soils discussion in Section 4.5.2.3.	Increased vector treatments would not require construction or other ground disturbance that could cause increased erosion potential. There would be no impact.

Issue Area and Threshold	Proposed Project	Increased Inlet Management	Increased Vector Treatments
C. Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	Less than Significant	Similar impact as the proposed project. Increased inlet management would require additional earthwork at the inlet. This location is in a dynamic sandy and alluvial soil environment that does not pose risk from unstable geologic conditions. The impact would remain less than significant. See proposed project geology/soils discussion in Section 4.5.2.3.	Increased vector treatments would not affect the geologic stability of the Lagoon or surrounding area and conditions would remain the same. There would be no impact.
Biological Resources			
A. Would the project have a substantial adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in the MSCP or other local or regional plans, policies or regulations, or by the CDFW or USFWS?	Less than Significant	Similar impact as the proposed project. Increased inlet management would require additional earthwork at the inlet. Applicable permit requirements and agency compliance measures as described in Section 2.2.3 under Inlet Management and Maintenance would be implemented during increased inlet management activities. The impact would remain less than significant. See proposed project biological resources discussion in Section 4.6.2.3.	Increased vector treatments would not cause impacts to sensitive flora or fauna. Treatment would be applied outside of the bird breeding season when possible to minimize impacts to listed species. Hand and aerial distribution would be coordinated to minimize impacts to sensitive plants. The larvicides used by the County of San Diego Vector Control Program contain naturally occurring bacteria to target mosquito larvae and do not harm plants or wildlife. Thus, increased treatment applications would not degrade habitats or cause harm to protected species. There would be no impact.
B. Would the project have a substantial adverse impact on any Tier I Habitats, Tier II Habitats, Tier IIIA Habitats, or Tier IIIB Habitats as identified in the Biology Guidelines of the Land Development manual or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS?	Less than Significant	Similar impact as the proposed project. Increased inlet management would require additional earthwork at the inlet, which is a sandy dynamic environment. This increased frequency of work in a previously disturbed location that currently undergoes similar inlet maintenance would not have a substantial adverse impact on a sensitive natural community. The impact would remain less than significant. See proposed project biological resources discussion in Section 4.6.2.3.	Increased vector treatments would not cause impacts to habitats. The larvicides used by the County of San Diego Vector Control Program contain naturally occurring bacteria to target mosquito larvae and do not harm plants or wildlife. Thus, increased treatment applications would not degrade habitats. There would be no impact.
C. Would the project have a substantial adverse impact on wetlands (including, but not limited to, marsh, vernal pool, riparian, *etc.*) through direct removal, filling, hydrological interruption, or other means?	Less than Significant	Similar impact as the proposed project. Increased inlet management would require additional earthwork at the inlet which is a sandy dynamic environment that would serve to maintain tidal exchange and not be filling or changing the habitat conditions. The impact would remain less than significant. See proposed project biological resources discussion in Section 4.6.2.3.	Increased vector treatments would not cause impacts to wetlands. The larvicides used by the County of San Diego Vector Control Program contain naturally occurring bacteria to target mosquito larvae and do not harm plants or wildlife. Thus, increased treatment applications would not degrade wetland habitats. There would be no impact.
D. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, including linkages identified in the MSCP Plan, or impede the use of native wildlife nursery sites?	No Impact	Similar impact as the proposed project. Increased inlet management would require additional earthwork at the inlet, but this temporary work would not be of the nature or magnitude to substantially interfere with wildlife movement or use of the Lagoon as linkages. The resource agency compliance measures related to grunion monitoring during spawning season detailed in Section 2.2.3 would be applicable to this alternative. There would be no impact. See proposed project biological resources discussion in Section 4.6.2.3.	Similar impact as the proposed project. Increased vector treatments would not interfere with wildlife movement or use of the Lagoon as linkages. There would be no impact. See proposed project biological resources discussion in Section 4.6.2.3.
E. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan, either within the MSCP plan area or in the surrounding region?	No Impact	Similar impact as the proposed project. Increased inlet maintenance would not include actions or new areas of impact that would conflict with the MSCP or other local or regional conservation plans. There would be no impact. See proposed project biological resources discussion in Section 4.6.2.3.	Similar impact as the proposed project. Increased vector treatments would not include actions that would conflict with the MSCP or other local or regional conservation plans. There would be no impact. See proposed project biological resources discussion in Section 4.6.2.3.
F. Would the project introduce development in areas adjacent to the MHPA that would result in adverse edge effects?	No Impact	Similar impact as the proposed project. The increased inlet maintenance activities would not include new development that would result in adverse edge effects. There would be no impact. See proposed project biological resources discussion in Section 4.6.2.3.	Increased vector treatments would not include new development that would result in adverse edge effects. There would be no impact. See proposed project biological resources discussion in Section 4.6.2.3.
G. Would the project conflict with any state or local policies or ordinances or public resources codes protecting biological resources?	No Impact	Similar impact as the proposed project. Increased inlet maintenance would not include actions or new areas of impact that would conflict with local or state policies protecting biological resources. There would be no impact. See proposed project biological resources discussion in Section 4.6.2.3.	Similar impact as the proposed project. Increased vector treatments would not include actions that would conflict with local policies protecting biological resources and would be applied using methods that minimize impacts to sensitive plants/wildlife species. There would be no impact. See proposed project biological resources discussion in Section 4.6.2.3.
H. Would the project introduce invasive species of plants into a natural open space are?	Less than Significant	Similar impact as the proposed project. Construction equipment has the potential to transport invasive species to the site. However, PDF #22 would be implemented for construction, which would ensure that equipment be free of non-native plant species and other foreign matter before entering the project site. The impact would remain less than significant. See proposed project biological resources discussion in Section 4.6.2.3.	Similar impact as the proposed project. Vehicles have the potential to transport invasive species to the site. However, PDF #22 would be implemented for construction, which would ensure that equipment be free of non-native plant species and other foreign matter before entering the project site. Additionally, increased removal of non-native plants would be a component of this alternative. The impact would remain less than significant. See proposed project biological resources discussion in Section 4.6.2.3.

Issue Area and Threshold	Proposed Project	Increased Inlet Management	Increased Vector Treatments
Transportation			
A. Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities?	Less than Significant	Similar impact as the proposed project. Increased inlet management would require more frequent earthwork at the inlet and potentially create some additional construction trips for equipment transport, worker trips, and potential off-road material hauling. This minor short-term construction traffic during maintenance activities would not conflict with a transportation plan, program, or policy. The impact would remain less than significant. See proposed project transportation discussion in Section 4.7.2.3.	Similar impact as the proposed project. Increased vector treatments would require additional vehicle trips to the Lagoon for treatment application. The additional vehicle trips would be intermittent and extremely limited. This minor short-term construction traffic would not conflict with a transportation plan, program, or policy. The impact would remain less than significant. See proposed project transportation discussion in Section 4.7.2.3.
B. Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	Less than Significant	Similar impact as the proposed project. Increased inlet management would require additional earthwork at the inlet and potentially create some additional construction trips but not of the magnitude to affect local traffic operations. The impact would remain less than significant. See proposed project transportation discussion in Section 4.7.2.3.	Similar impact as the proposed project. Increased vector treatments would create some additional worker trips but not of the magnitude to affect local traffic operations. The impact would remain less than significant. See proposed project transportation discussion in Section 4.7.2.3.
C. Would the project substantially increase hazards due to a geometric design feature (*e.g.*, sharp curves or dangerous intersections) or incompatible use (*e.g.*, farm equipment)?	No Impact	Similar impact as the proposed project. Increased inlet management would not create new roadway features and construction traffic on local roadways would be minor. There would be no impact. See proposed project transportation discussion in Section 4.7.2.3.	Similar impact as the proposed project. Increased vector treatments would not create new roadway features. There would be no impact. See proposed project transportation discussion in Section 4.7.2.3.
D. Would the project result in inadequate emergency access?	Less than Significant	Similar impact as the proposed project. Increased inlet management would create minimal construction traffic on local roadways and would not affect emergency access. The impact would remain less than significant. See proposed project transportation discussion in Section 4.7.2.3.	Increased inlet management would create minimal additional traffic and would not affect emergency access. There would be no impact.
Air Quality Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.			
A. Would the project conflict with or obstruct implementation of the applicable air quality plan?	Less than Significant	Similar impact as the proposed project. Increased inlet management would require additional construction activities during each maintenance action at the inlet and potentially create some additional construction trips. These sources of air pollution would be minimal and temporary and not of the magnitude to conflict with or obstruct implementation of air quality plans. The impact would remain less than significant. See proposed project air quality discussion in Section 4.8.2.3.	Similar impact as the proposed project. Increased vector treatments would create minimal additional traffic and generate nominal pollutant emissions. A few intermittent vehicle trips or additional flight for aerial applications would not be of the magnitude to conflict with or obstruct implementation of air quality plans. The impact would remain less than significant. See proposed project air quality discussion in Section 4.8.2.3.
B. Would the project 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?	Potentially Significant (temporary)	Similar impact as the proposed project. Increased inlet maintenance would require additional construction during each maintenance action that could generate temporary emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. It is possible that these pollutants could combine with other emissions being generated in the area and cause a cumulatively considerable contribution to the region's air quality. The impact would remain potentially significant (temporary). See proposed project air quality discussion in Section 4.8.2.3.	Increased vector treatments would not require construction and would create minimal additional trips with nominal pollutant emissions. Thus, this alternative would not make a cumulatively considerable contribution to the region's air quality. The impact would be less than significant. See proposed project air quality discussion in Section 4.8.2.3.
C. Would the project expose sensitive receptors to substantial pollutant concentrations?	Less than Significant	Similar impact as the proposed project. Increased inlet management would require additional construction activities at the inlet. This source of air pollution would be minimal and temporary and nearby recreationalists would not be in the vicinity of the construction for long periods of time. The impact would remain less than significant. See proposed project air quality discussion in Section 4.8.2.3.	Increased vector treatments would not require construction and would create minimal additional trips with nominal pollutant emissions that could affect sensitive receptors. There would be no impact. See proposed project air quality discussion in Section 4.8.2.3.
D. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Less than Significant	Similar impact as the proposed project. Increased inlet management would require additional construction activities at the inlet but would not create other emissions or odors. The impact would remain less than significant. See proposed project air quality discussion in Section 4.8.2.3.	Increased vector treatments would not require construction and would create minimal additional trips. No additional emissions or odors would be generated. There would be no impact. See proposed project air quality discussion in Section 4.8.2.3.
Cultural Resources			
A. Would the project cause an alteration, including the adverse physical or aesthetic effects and/or the destruction of a prehistoric or historic building (including an architecturally significant building), structure, or object or site?	Potentially Significant	Increased inlet management would require additional construction at the inlet. The inlet is within a dynamic and sandy environment that is influenced and changed by the tides, outlet flows, and sedimentation. There are no structures or other archaeological resources known or expected in this location. Increased inlet maintenance is anticipated to occur within previously disturbed areas of the inlet and no impact to cultural resources would result.	Increased vector treatments would not require construction or other ground disturbance. The application of additional vector treatments would not be of the nature to affect buildings, structures, or archeological objects. No impact to cultural resources would result.
B. Would the project have any impact to existing religious or sacred uses within the potential impact area?	No Impact	Similar impact as the proposed project. No existing religious or sacred uses have been identified within the proposed vector management areas. There would be no impact. See proposed project cultural resource discussion in Section 4.9.2.3.	Similar impact as the proposed project. The application of additional vector treatments would not be of the nature to affect religious or sacred uses. There would be no impact. See proposed project cultural resource discussion in Section 4.9.2.3.

Issue Area and Threshold	Proposed Project	Increased Inlet Management	Increased Vector Treatments
C. Would the project cause the disturbance of any human remains, including those interred outside of formal cemeteries?	Potentially Significant	Increased inlet management would require additional construction at the inlet. The inlet is within a dynamic and sandy environment that is influenced and changed by the tides and outlet flows. Additionally, increased inlet maintenance is anticipated to occur within previously disturbed areas of the inlet. Therefore, the potential to disturb human remains is considered minimal and no impact to cultural resources would result.	Increased vector treatments would not require construction or other ground disturbance. No impact to unknown human remains would result.
D. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	No Impact	Similar impact as the proposed project. No tribal cultural resources have been documented to date within the inlet area. Thus, increased inlet management would not change the significance of tribal cultural resources. No impact would result. See proposed project cultural resource discussion in Section 4.9.2.3.	Similar impact as the proposed project. No tribal cultural resources have been documented to date within vector treatment areas of the Lagoon. Thus, increased vector treatments would not change the significance of tribal cultural resources. No impact would result. See proposed project cultural resource discussion in Section 4.9.2.3.
Paleontological Resources			
A. Would the project require over 1,000 cubic yards of excavation in a high resource potential geologic deposit/formation/rock unit?	Potentially Significant	Increased inlet maintenance would occur in the loose and dynamic soils of the inlet and would not require excavation into the sensitive geologic formations along the perimeter of the Lagoon. Generally, these alluvial deposits within the inlet have been transported into the Lagoon through sedimentation and are not considered paleontologically sensitive. There would be no impact.	Increased vector treatments would not require construction or other ground disturbance. There would be no impact.
B. Would the project require over 2,000 cubic yards of excavation in a moderate resource potential geologic deposit/formation/rock unit?	Potentially Significant	Increased inlet maintenance would occur in the loose soils of the inlet and would not require excavation into the sensitive geologic formations along the perimeter of the Lagoon. Generally, these alluvial deposits within the inlet have been transported into the Lagoon through sedimentation and are not considered paleontologically sensitive. There would be no impact.	Increased vector treatments would not require construction or other ground disturbance. There would be no impact.
Public Services and Utilities			
A. Would the project result in impacts to any of the following public services that would require the establishment of additional facilities. Would these facilities result in further potential physical impacts to the environment? • Fire protection; • Police protection; • Lifeguard services; • Parks; or • Other public facilities.	Less than Significant	Similar impact as the proposed project. Additional inlet maintenance would require standard construction activities at intermittent intervals and for short time periods. These construction activities at the inlet would not require public services or the establishment of new or expanded service facilities. The impact would remain less than significant. See proposed project public services and utilities discussion in Section 4.11.2.3.	Increased vector treatments would not require public services or the establishment of new or expanded service facilities. There would be no impact.
B. Would the project result in a need for any of the following new systems, or require substantial alterations to existing utilities, the construction of which would create physical impacts? • Natural gas; • Water; • Sewer;	Less than Significant	Similar impact as the proposed project. Additional inlet maintenance would require standard construction activities at intermittent intervals and for short time periods. These construction activities may necessitate minor and typical use of utilities such as water or solid waste disposal, but not at a rate to require new or altered systems or services. The impact would remain less than significant. See proposed project public services and utilities discussion in Section 4.11.2.3.	Increased vector treatments would not require public utilities or the establishment of new or expanded utility service facilities. There would be no impact.

Issue Area and Threshold	Proposed Project	Increased Inlet Management	Increased Vector Treatments
• Communication systems; or • Solid waste disposal.			
Public Health and Safety			
A. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Less than Significant	Similar impact as the proposed project. Increased inlet management would include the use of construction equipment and the associated hazardous materials necessary for operation. Regulatory requirements, BMPs, and standard construction practices to minimize potential for risk would be applicable. The impact would remain less than significant. See proposed project public health and safety discussion in Section 4.12.2.3.	Construction activities would not be necessary for increased vector treatments. The larvicides used by the County of San Diego Vector Control Program contain naturally occurring bacteria to target mosquito larvae and do not harm people, pets, plants, or wildlife. Any use of herbicides to control non-native plants would be selected for appropriate and safe use in a lagoon setting. Thus, increased applications of currently used larvicides would not cause increased safety risks due to hazards materials. The impact would be less than significant.
B. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	Less than Significant	Similar impact as the proposed project. Increased inlet management would include the use of construction equipment and the associated hazardous materials necessary for operation. Regulatory requirements, BMPs, and standard construction practices to minimize potential for risk would be applicable. The impact would remain less than significant. See proposed project public health and safety discussion in Section 4.12.2.3.	The larvicides used by the County of San Diego Vector Control Program contain naturally occurring bacteria to target mosquito larvae and do not harm people, pets, plants, or wildlife. Any use of herbicides to control non-native plants would be selected for appropriate and safe use in a lagoon setting. Thus, increased applications of currently used larvicides would not cause increased release of hazards materials into the environment. The impact would be less than significant.
C. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	Less than Significant	Similar impact as the proposed project. Schools are located in the general area, but not in immediate proximity to the Lagoon. The impact would remain less than significant. See proposed project public health and safety discussion in Section 4.12.2.3.	Similar impact as the proposed project. Schools are located in the general area, but not in immediate proximity to the Lagoon. The impact would remain less than significant. See proposed project public health and safety discussion in Section 4.12.2.3.
D. Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	Less than Significant	Similar impact as the proposed project. The Lagoon is not listed as a hazardous materials site in DTSC databases. The impact would remain less than significant. See proposed project public health and safety discussion in Section 4.12.2.3.	Similar impact as the proposed project. The is not listed as a hazardous materials site in DTSC databases. The impact would remain less than significant. See proposed project public health and safety discussion in Section 4.12.2.3.
E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	No Impact	The Lagoon is not located within 2 miles of a public use airport. Activities associated with increased inlet maintenance would not be of the size, magnitude, or nature to interfere with aircraft operations that may occur in the area. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.3.	The Lagoon is not located within 2 miles of a public use airport. Increased vector treatments may include more frequent aerial applications. Aerial applications are currently used for vector treatment at The Lagoon and would continue in a similar manner that would not create new or increased hazards associated with airports or aircraft operations.
F. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Less than Significant	Similar impact as the proposed project. Increased inlet management would require additional earthwork at the inlet and potentially create some additional construction trips but not of the magnitude to affect local emergency response or evacuation operations. The impact would remain less than significant. See proposed project public health and safety discussion in Section 4.12.2.3.	Increased vector treatments may require a few additional intermittent worker trips to the Lagoon, but not of the magnitude to affect local emergency response or evacuation operations. There would be no impact.
G. Would the project substantially increase human exposure to vectors, such as mosquitoes, that are capable of transmitting significant public health diseases or creating nuisances?	No Impact	Similar impact as the proposed project. Increased inlet management would modify drainage and circulation patterns in portions of the Lagoon to help reduce areas of stagnant water, extend the tidal reach, and improve drainage for better vector control. However, the vector control benefits from drainage improvements in specific areas through modifications to storm outfalls, road culverts, and dewatering of areas to reduce standing water that serves as breeding habitat for vectors as part of the proposed project would not occur. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.3.	Similar impact as the proposed project. Increased vector treatments would allow effective larvicide to be distributed throughout areas of the Lagoon most needing vector control and at more frequent intervals. However, the vector control benefits from drainage improvements in specific areas through modifications to storm outfalls, road culverts, and dewatering of areas to reduce standing water that serves as breeding habitat for vectors as part of the proposed project would not occur. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.3.
H. Would the project substantially increase hazards for people recreating at beach and/or nearshore placement locations?	No Impact	Increased inlet management construction activities at the inlet would create more frequent situations with construction equipment operating in areas of typical public beach recreation and the potential for unsafe conditions. The PDFs outlined in the Program EIR to address public safety and access to beach recreation during construction activities at or near the beach would be applicable and minimize potential for public safety hazards (such as PDFs -	Similar impact as the proposed project. Increased vector treatments would not be anticipated at beach locations. There would be no impact. See proposed project public health and safety discussion in Section 4.12.2.3.

Issue Area and Threshold	Proposed Project	Increased Inlet Management	Increased Vector Treatments
		11). The impact would be less than significant. See proposed project public health and safety discussion in Section 4.12.2.1.	
Climate Change and Greenhouse Gas Emissions			
A. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less than Significant	Similar impact as the proposed project. Minor construction activities would be required for increased inlet management during each maintenance action. The amount of construction activities would not be of the magnitude to generate GHG emissions in excess of the suggested significance guidance threshold of 900 MT CO_2e. The impact would remain less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.3.	Increased vector treatments would not require construction and would create minimal additional traffic with nominal pollutant emissions. The impact would remain less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.3.
B. Would the project conflict with the City's Climate Action Plan or another applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Less than Significant	Increased inlet maintenance would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. The impact would remain less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.3.	Increased vector treatments would not create a land use conflict or create other impediments to reducing GHG emissions as mandated. The impact would remain less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.3.
Energy			
A. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	Less than Significant	Increased inlet maintenance would result in energy use during construction activities during each maintenance action. Specific PDFs and standard construction procedures have been incorporated into the proposed project to minimize energy use and to conserve energy where possible. The impact would remain less than significant. See proposed project energy discussion in Section 4.14.2.1.	Minimal energy would be required for increased vector treatments. No construction activities would be required. The impact would remain less than significant. See proposed project climate change and GHG emissions discussion in Section 4.13.2.3.
B. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	No impact	Similar impact as the proposed project. Energy use during construction would be temporary in nature. Increased inlet management would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur. See proposed project energy discussion in Section 4.14.2.1.	Similar impact as the proposed project. Increased vector treatments would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur. See proposed project energy discussion in Section 4.14.2.1.

Table 9-11. Comparison of the Proposed Project and Project Alternatives

Environmental Issue Area	Lagoon Restoration and Enhancement Activities				Public Access Activities								Vector Management Activities		
					Marsh Trail Access			Highway 101 Improvements		North Beach Access					
	Proposed Project[1]	No Action	Expanding Tidal Reach (Elevation Reduction)	Elevation Reduction and Freshwater Management	Proposed Project[1]	At-Grade Crossing	Overpass Crossing (Alt 3)	Parallel Parking	No Parking	Option A On-site Improvements	Option B Retreated Location	Option C Off-Site Location	Proposed Project[1]	Increased Inlet Management	Increased Vector Treatments
Land Use	LTS	Less	Similar	Similar	LTS	Similar	Similar	Similar	Similar	Similar	Greater	Greater	LTS	Similar	Less
Public Access and Recreation	LTS	Less	Similar	Similar	LTS	Similar	Similar	Similar	Similar	Similar	Greater	Greater	LTS	Greater	Less
Hydrology	LTS	Less	Greater	Greater	LTS	Less	Less	Similar	Similar	Similar	Greater	Greater	LTS	Similar	Less
Water Quality and Sediment Management	M	Less	Greater	Greater	LTS	Similar	Similar	Similar	Similar	Similar	Greater	Greater	LTS	Similar	Similar
Geology/Soils	LTS	Less	Similar	Similar	LTS	Less	Less	Similar	Similar	Greater	Greater	Similar	LTS	Similar	Less
Biological Resources	S	Less	Greater	Greater	S	Similar	Similar	Similar	Similar	Less	Greater	Greater	LTS	Similar	Less
Transportation	LTS	Less	Similar	Similar	LTS	Less	Similar	Similar	Greater	Similar	Similar	Similar	LTS	Similar	Less
Air Quality	S	Less	Greater	Greater	S	Less	Less	Similar	Similar	Similar	Greater	Greater	S	Greater	Less
Cultural Resources	M	Less	Greater	Greater	M	Less	Less	Similar	Similar	Similar	Similar	Greater	M	Less	Less
Paleontological Resources	M	Less	Greater	Greater	M	Less	Less	Similar	Similar	Similar	Greater	Greater	M	Less	Less
Public Services and Utilities	LTS	Less	Similar	Similar	LTS	Similar	Similar	Similar	Similar	Similar	Similar	Similar	LTS	Similar	Less
Public Health and Safety	LTS	Less	Less	Less	LTS	Similar	Similar	Similar	Similar	Similar	Similar	Similar	LTS	Greater	Similar
Climate Change and Greenhouse Gas Emissions	LTS	Less	Greater	Greater	LTS	Less	Less	Similar	Similar	Similar	Greater	Greater	LTS	Greater	Less
Energy	LTS	Less	Greater	Greater	LTS	Less	Similar	Similar	Similar	Similar	Greater	Greater	LTS	Greater	Less

[1] S = significant and unmitigable; M = Mitigable to less than significant; LTS = Less than significant
Greater = impact associated with the alternative would be potentially greater than the proposed project.
Less = impact associated with the alternative would be potentially less than the proposed project.
Similar = impact associated with the alternative would be generally similar level of effect as the proposed project.
Shaded = relative reduction or worsening of proposed project impact that would change the significance conclusion.

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9.6 CEQA ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires disclosure of the environmentally superior alternative and, if the No Action Alternative is environmentally superior, identification of a superior alternative among the other alternatives (Section 15126.6[e][2]). CEQA states:

> *The "no project" analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably 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. If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. (Section 15126.6[e][2])*

The No Action Alternative for lagoon restoration and enhancement would reduce many of the potential temporary or permanent environmental impacts as compared to the proposed project, shown in Table 9-11. However, it is reasonably expected that in the foreseeable future the No Action Alternative would result in the continued deterioration of the lagoon habitat and hydraulic function, and would provide none of the positive and beneficial outcomes that would result from the proposed project or other restoration and enhancement alternatives. These future adverse outcomes for resources such as biological resources, hydrology, water quality, public access and recreation, and public health and safety would render the No Action Alternative inconsistent with the overall purpose and this alternative would not achieve any of the project objectives (Section 3.1). Thus, the No Action Alternative would not be the CEQA environmentally superior alternative.

The following provides a discussion of the environmentally superior alternative among the alternatives for each of the three project components—lagoon restoration and enhancement, public access, and vector control—as summarized in Table 9-11 and based on a qualitative comparison of the significant adverse environmental impacts in accordance with the CEQA thresholds used in this analysis. This discussion does not focus on a comparison of the environmental benefits of the alternatives.

CEQA does not require that the decision-makers approve the environmentally superior alternative. A decision to approve a project alternative can be based on other factors beyond adverse environmental impacts, including the benefits of the proposed project and ability to meet critical project objectives.

Lagoon Restoration and Enhancement Activities

Expanding Tidal Reach (Elevation Reduction) and Elevation Reduction and Freshwater Management alternatives for the lagoon restoration and enhancement portion of the proposed project would both expand the tidal reach by lowering elevations to increase tidal inundation and encourage salt marsh habitat recovery beyond the extent included in the proposed project. By creating increased areas of tidal inundation, the potential for vector breeding conditions is lessened

and the risk to public health is reduced to a greater level under the Elevation Reduction and Freshwater Management alternative than the proposed project. While Expanding Tidal Reach (Elevation Reduction) increases tidal reach, freshwater inputs may still maintain habitat (*e.g.*, cattails) that could support vector breeding conditions.

However, because of increased excavation activity, lengthened construction time, and the increased amount of disturbance to the lagoon setting relative to the proposed project, many of the temporary impacts that would result from lagoon restoration and enhancement Expanding Tidal Reach (Elevation Reduction) and Elevation Reduction and Freshwater Management alternatives would also occur to a greater degree and extent than those resulting from the proposed project. Both alternatives would increase the significant and unavoidable impacts to biological resources and air quality that were identified for the proposed project. Additionally, the Expanding Tidal Reach (Elevation Reduction) and Elevation Reduction and Freshwater Management alternatives would increase impacts for the issue areas of hydrology, water quality and sediment management, cultural resources, paleontological resources, climate change and GHG emissions, and energy.

The proposed project requires the smallest volume of material removal and disposal (51,200 cy compared to 195,000 cy and 246,800 cy for the Expanding Tidal Reach (Elevation Reduction) and Elevation Reduction and Freshwater Management alternatives, respectively), which generally results in a lesser degree of impact. Many of the impacts identified for the project and alternatives are short term and would cease at the end of the construction period and as the new habitats establish; thus, the proposed project's smaller volume of material removal would abbreviate the construction period and result in the shortest temporal impacts among the alternatives. Thus, among the action alternatives, the proposed project is identified as the Environmentally Superior Alternative.

Public Access Activities

Marsh Trail Improvements – Improved Marsh Trail Access

Both the At-grade Crossing and the Overpass Crossing alternatives would not require the substantial excavation under Highway 101 that would be necessary for the Underpass Crossing as included in the proposed project. As shown in Table 9-11, the reduced ground disturbance and excavation for the two Marsh Trail Access alternatives would lessen impacts associated with construction of the proposed project. While still potentially significant, the amount of air quality emissions as compared with the proposed Underpass Crossing (identified as a significant impact) would be lessened with both the At-grade Crossing and the Overpass Crossing alternatives. The reduced heavy construction necessary for the two alternatives would also result in lessened impacts to hydrology, geology and soils, cultural resources, paleontological resources, and climate change and GHG emissions. The At-grade Crossing would further reduce impacts to transportation as it would not require the disruption of Highway 101 in such a substantial manner or duration as the other two crossing options during construction. The At-grade Crossing Alternative would also result in lessened energy demand for implementation compared to the proposed project and Overpass Crossing Alternative. The Overpass Crossing Alternative may result in additional visual impacts depending on the ultimate elevation of the crossing and the potential interference with identified public ocean view corridors. It is anticipated that visual treatments and railing styles to

minimize visual contract and interference would be incorporated into design, but if this alternative is selected for implementation, additional project-level evaluation would be required.

Based solely on a comparison of adverse impacts, the At-grade Crossing may be considered the environmentally superior alternative under CEQA. This conclusion is due to the lessened potential for impact of multiple issue areas from the At-grade Crossing. However, the At-grade crossing does not provide the safest pedestrian access compared to the other two crossing alternatives as people would still be required to interact with vehicles driving on Highway 101 as they cross the roadway as compared to the other crossing options, which provide unimpeded crossing either above or below the highway that avoids potential for pedestrian/vehicle hazards.

Highway 101 Improvements

In most instances, the alternative Highway 101 improvements do not have substantial impact differences as the alternative variances are generally in the layout of parking spaces along the highway and parking lot access. The Parallel Parking and No Parking Alternatives have smaller footprints as promenade widths would be smaller and fewer parking spaces would be created to accommodate space for improved bike and pedestrian safety. However, the reduction in footprint size does not make a substantial difference in the potential to reduce environmental impacts in this location because most improvements would generally be made within or adjacent to the existing paved or disturbed areas of Highway 101 and the South Beach parking lot. The No Parking Alternative would result in an increased traffic hazard as compared to the other Highway 101 improvement alternatives because it does not provide a dedicated left-turn lane into the South Beach parking lot and vehicles would be required to make a U-turn to access the lot.

The differences in impacts between the Head-In Parking as included in the proposed project and the Parallel Parking Alternative are fairly minimal as shown in Table 9-11, and the alternative would not substantially reduce impacts relative to the proposed project. The reduced footprint size of the Parallel Parking Alternative could slightly reduce potential for impact, but not of a magnitude that would change significance conclusions. The Head-In Parking as included in the proposed project would provide the greatest widths for pedestrian and bicycle facilities with the most separation of pedestrian facilities from the roadway, thus creating the highest level of protection and safety for public access. With nominal differences in impacts, the Head-In Parking option as included in the proposed project is considered the environmentally superior alternative as it best minimizes potential public safety impacts and transportation hazards.

North Beach Access Improvements

As demonstrated in Table 9-11, the Retreated Location and Off-Site Location alternatives have the potential to cause greater impact, some with a potentially worsened significance conclusion per the CEQA thresholds. The siting of the parking lot into upland coastal sage scrub as proposed in the Retreated Location Alternative could create some land use conflicts or inconsistencies with land use policies aimed at protecting biological resources. Similarly, the Off-site Location is currently undetermined, and siting could potentially cause land use inconsistencies or conflict. Siting considerations would likely minimize land use conflicts; however, the significance conclusion for these two alternatives would be anticipated as less than significant, which is an

increase from the no impact conclusion for the proposed project and On-site Improvement Alternative. Additionally, the location of the Retreated Location Alternative within upland coastal sage scrub would cause a permanent loss of that habitat and could adversely affect sensitive species that occur in the area, such as coastal California gnatcatcher. The Off-site Location is currently undetermined, and siting could potentially cause biological impacts dependent on the location. Both the Retreated Location and Off-Site Location alternatives would have the potential to create new edge effects through the placement of a parking lot in sensitive and/or previously undisturbed habitat areas. The Off-Site Location also could impact cultural resources in a manner greater than anticipated for either On-site Improvements or Retreated Location alternatives as its location could be in a more sensitive cultural resource setting or area with religions or sacred uses.

Impacts associated with the On-site Improvements Alternative would be less than the other two alternatives. Because the On-site Improvements Alternative would generally not result in new development beyond the footprint of the existing lot, the potential for impact is limited. Even if undergrounded, the area of disturbance would be similar to the existing parking lot and the resulting revegetation would be beneficial. The On-site Improvements Alternative would not create new edge effects as the location of the parking lot would remain generally in the same disturbed location. As shown in Table 9-11, there are multiple issues areas that would have lessened impact potential with the On-site Improvements Alternative relative to the other North Beach access alternatives Thus, based solely on a comparison of adverse impacts, the On-site Improvements Alternative is considered the environmentally superior North Beach Access alternative for this reason.

Vector Management Activities

The Increased Inlet Management Alternative for vector management would lessen some impacts as compared to the vector management proposed in the project. The potentially significant but mitigated impact to cultural resources that would result from the proposed project would be lessened as cultural resources are not expected in the dynamic sandy soils of the inlet. Similarly, potential impacts to paleontological resources would also be lessened by this alternative. However, the increased frequency of construction activity at the inlet would increase some impacts over the proposed project. As shown in Table 9-11, increased impacts would result for public access and recreation, air quality, climate change and GHG emissions, and energy. The Increased Inlet Management Alternative's impact to public health and safety due to hazards for beach recreation would increase the significance conclusion from no impact to less than significant.

The Increased Vector Treatments Alternative would lessen many of the potential impacts associated with the vector management proposed in the project. Impacts would be lessened mainly because no construction or other ground disturbance would be necessary to continue the already ongoing vector treatments at an increased frequency as implemented by the Lagoon landowners and/or DEH. As shown in Table 9-11, without new construction activities, the Increased Vector Treatments would lessen impacts as compared to the proposed project to land use, public access and recreation, geology/soils, transportation, air quality, cultural resources, paleontological resources, and public health and safety in a manner that could reduce the significance conclusion to no impact. Impacts to biological resources may occur under an increased treatment alternative, if treatment requirements caused substantial disturbance to sensitive species during the breeding

season or hand distribution resulted in habitat impacts. Additional evaluation would occur during project design if this alternative is selected for implementation. Potential impacts to hydrology, climate change and GHG emissions, and energy would also be reduced. Based solely on a comparison of adverse impacts, the Increased Vector Treatments Alternative may be considered the environmentally superior alternative for vector management under CEQA. This conclusion is due to the lessened potential for impact of multiple issue areas.

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CHAPTER 10
MITIGATION, MONITORING, AND REPORTING PROGRAM

CEQA (PRC Section 21081.6) requires that an MMRP be adopted upon certification of an EIR to ensure that the mitigation measures are implemented. The MMRP specifies what the mitigation is, the entity responsible for monitoring the program, and when in the process it should be accomplished. This MMRP is designed to ensure compliance with PRC Section 21081.6 during implementation of mitigation measures. In addition to mitigation measures identified in Chapter 4 of this Program EIR, a series of PDFs have been incorporated into the proposed project to avoid or minimize impacts as part of the restoration approach to project implementation. These PDFs represent a commitment by the project proponent to construct the project in an environmentally sensitive way, and therefore are also included in this MMRP.

The MMRP table below, Table 10-1, lists the required mitigation measures and monitoring efforts, timing, and responsible party necessary to ensure that the measures are properly implemented. All mitigation measures identified in the Program EIR are stated herein. Proposed project PDFs are listed in Table 10-2.

Table 10-1. Mitigation Required by the Mitigation, Monitoring, and Reporting Program

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
Water Quality-1	Compliance with regulatory requirements intended to address turbidity impacts (*e.g.,* Construction General Permit, Municipal Permit) shall be implemented to ensure impacts would be reduced to a less than significant level. Compliance with those permit conditions shall be monitored through the construction monitoring program and the contractor shall certify to the engineer of record that they have been completed.	During Construction	Contractor	Contractor/ Engineer
Biological-1	Confirm presence of suitable habitat within the proposed project limits and an appropriate buffer. If suitable habitat is present for sensitive species, a. Conduct pre-construction surveys to confirm presence/absence of sensitive species. b. If sensitive species are present, implement the following measures: 1. For impacts to species identified as candidate, sensitive, or special-status species in the Multiple Species Conservation Program (MSCP), specific management priorities will be undertaken as part of MSCP implementation requirements to ensure	Prior to construction	Project proponent	Project proponent

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	that covered species are adequately protected. Priority 1 actions identified in the City of San Diego (City) MSCP Subarea Plan Section 1.5 Framework Management Plan, specifically actions which concerns the Northern Area, will be undertaken to adequately protect covered species (City of San Diego 1997). The actions identified as Priority 2 may be undertaken as applicable. 2. For impacts to state and/or federally listed species not covered under the MSCP, complete coordination with wildlife agencies as required.			
Biological-2	An evaluation for no net loss of ~~each~~ sensitive habitat ~~type~~ would occur. The net changes of habitat ~~in acreage of habitat within each tiered habitat~~ as defined by the MSCP or other sensitive natural habitats would be quantified. If a net loss of ~~tiered or other~~ sensitive habitat is confirmed, ~~then~~ the following would be implemented with priority given to lands within or adjacent to the Lagoon: a. Contribution to an appropriate funding mechanism for habitat acquisition; and/or ~~a.~~b. ~~or~~Restoration/enhancement within the Torrey Pines State Natural Reserve. ~~or the City of San Diego's Habitat Acquisition Fund (Fund #10571), as established by City Council Resolution R-275129, adopted on February 12, 1990 (City of San Diego 2012); and/or~~ ~~b.Coordination with the City to complete a boundary line adjustment to the Multiple Habitat Planning Area (MHPA) Preserve.~~	Prior to construction	Project proponent	Project proponent
Air Quality-1	The construction contractor shall implement the following measures as deemed appropriate by State Parks for implementation within a State Natural Preserve to reduce fugitive dust emissions associated with off-road equipment and heavy-duty vehicles: • Water the grading and exposed areas as necessary to control fugitive dust; • Stabilize stockpiles in accordance with City grading ordinance requirements for stabilization of exposed soils to minimize fugitive dust;	During Construction	Contractor	Contractor

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	• Stabilize unpaved roads to limit dust emissions by using chemical stabilizers, dust suppressants, and/or watering. • Remove visible track-out into traveled public streets as necessary; • Wet wash the construction access point at the end of each workday if vehicle travel on unpaved surfaces has occurred and caused track-out; • Provide sufficient perimeter erosion control to prevent washout of silty material onto public roads; • Cover haul trucks or maintain at least 12 inches of freeboard to reduce blow-off during hauling on public roads; • Suspend grading operations when wind speeds are high enough to result in dust emissions crossing the property line, despite the application of dust mitigation measures; and • Enforce speed limit of 15 miles per hour or less on unpaved surfaces.			
Cultural-1	I. Prior to Permit Issuance (for projects that include ground disturbance) A. Entitlements Plan Check 1. Prior to issuance of any construction permits, including, but not limited to, the first Grading Permit, Demolition Plans/Permits, and Building Plans/Permits, but prior to the first preconstruction (precon) meeting, whichever is applicable, the Project Archaeologist shall verify that the requirements for archaeological monitoring and Native American monitoring have been noted on the applicable construction documents through the plan check process. For activities occurring on property owned by State Parks, the Project Archaeologist will verify with the State Parks Archaeologist that the appropriate State Parks requirements have been met. B. Letters of Qualification Have Been Submitted to Project Archaeologist 1. The project's cultural resources consultant shall submit a letter of verification to Mitigation Monitoring Coordination (MMC) identifying the Principal Investigator (PI) for the project and confirming the names of all persons	During Construction	Contractor	Contractor/ Principal Investigator

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	involved in the archaeological monitoring program, as defined in the City of San Diego Historical Resources Guidelines (City of San Diego 1999). Prior to potential project start, the State Parks-approved cultural resource consultant must acquire an Archaeological Investigations/ Collections (DPR412A) permit from State Parks. If applicable, individuals involved in the archaeological monitoring program must have completed the 40-hour Hazardous Waste Operations and Emergency Response training with certification documentation. 2. MMC would provide a letter to the project's cultural resources consultant confirming the qualifications of the PI and all persons involved in the archaeological monitoring of the project meet the qualifications established in the Historical Resources Guidelines. 3. Prior to the start of work, the project's cultural resources consultant must obtain written approval from MMC for any personnel changes associated with the monitoring program. II. Prior to Start of Construction A. Verification of Records Search 1. The PI shall provide verification to MMC that a site-specific records search (quarter mile radius) has been completed, and previously unidentified and/or unevaluated sites would be assessed under the CRHR and/or applicable state codes. Verification includes, but is not limited to, a copy of a confirmation letter from South Coast Information Center (SCIC) and State Parks for projects or portion of project work on State Parks land stating that the search was completed. 2. The letter shall introduce any pertinent information concerning expectations and probabilities of discovery during trenching and/or grading activities. 3. The PI may submit a detailed letter to MMC and State Parks requesting a reduction to the quarter mile radius. B. PI Shall Attend Precon Meetings 1. Prior to beginning any work that requires monitoring; the land owners and managers			

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	shall arrange a precon meeting with the project proponent that shall include the PI, Native American consultant/monitor (where Native American resources may be impacted), Construction Manager (CM) and/or Grading Contractor, Resident Engineer (RE), Building Inspector (BI), if appropriate, State Parks archaeologist or cultural representative and MMC. The qualified archaeologist and Native American monitor shall attend any grading/excavation-related precon meetings to make comments and/or suggestions concerning the archaeological monitoring program with the CM and/or Grading Contractor. a. If the PI is unable to attend the precon meeting, the implementing agencies shall schedule a focused precon meeting with MMC, the PI, RE, CM or BI, if appropriate, prior to the start of any work that requires monitoring. 2. Identify Areas to Be Monitored a. Prior to the start of any work that requires monitoring, the PI shall submit an Archaeological Monitoring Exhibit (AME) (with verification that the AME has been reviewed and approved by the Native American consultant/monitor when Native American resources may be impacted) based on the appropriate construction documents (reduced to 11 inches x 17 inches) to MMC identifying the areas to be monitored, including the delineation of grading/excavation occurring within stable undisturbed sediments. This should also be submitted to State Parks tribal liaison and cultural representative. b. The AME shall be based on the results of a site-specific records search as well as information regarding existing known soil conditions (native or formation). 3. When Monitoring Will Occur a. Prior to the start of any work, the PI shall also submit a construction schedule to MMC and State Parks cultural representative through the RE			

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	indicating when and where monitoring would occur. b. The PI may submit a detailed letter to MMC and State Parks cultural representative prior to the start of work or during construction requesting a modification to the monitoring program. This request shall be based on relevant information such as review of final construction documents that indicate site conditions such as depth of excavation and/or site graded to bedrock, *etc.* that may reduce or increase the potential for resources to be present. III. During Construction A. Monitor(s) Shall Be Present during Grading/Excavation/Trenching 1. The Archaeological Monitor shall be present full-time during soil-disturbing and grading/excavation/trenching activities into stable undisturbed sediments that could result in impacts to archaeological resources as identified on the AME. The CM is responsible for notifying the RE, PI, State Parks cultural representative, and MMC of changes to any construction activities such as in the case of a potential safety concern within the area being monitored. In certain circumstances, Occupational Safety and Health Administration safety requirements may necessitate modification of the AME. 2. The Native American consultant/monitor shall determine the extent of their presence during soil-disturbing and grading/excavation/trenching activities based on the AME and provide that information to the PI and MMC. The MMC shall provide this information to State Parks cultural representative if ground disturbance is occurring on land owned by State Parks. If prehistoric resources are encountered during the Native American consultant/monitor's absence, work shall stop, and the Discovery Notification Process detailed in Section III.B–C and IV.A–D shall commence.			

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	3. The PI may submit a detailed letter to MMC during construction requesting a modification to the monitoring program when a field condition such as modern disturbance post-dating the previous grading/trenching activities, presence of fossil formations, or native soils are encountered that may reduce or increase the potential for resources to be present. If such modifications occur on land owned by State Parks this letter or email notification should be submitted to State Parks cultural representative. 4. The Archaeological Monitor and Native American consultant/monitor shall document field activity via the Consultant Site Visit Record (CSVR). The CSVRs shall be faxed by the CM to the RE the first day of monitoring, the last day of monitoring, monthly (Notification of Monitoring Completion), and in the case of any discoveries. The RE shall forward copies to MMC. B. Discovery Notification Process 1. In the event of a discovery, the Archaeological Monitor shall direct the contractor to temporarily divert all soil-disturbing activities including, but not limited to, digging, trenching, excavating, or grading activities in the area of discovery and in the area reasonably suspected to overlay adjacent resources and immediately notify the RE or BI, as appropriate. 2. The Archaeological Monitor shall immediately notify the PI (unless Monitor is the PI) of the discovery. 3. The PI shall immediately notify MMC and State Parks cultural representative by phone of the discovery and shall also submit written documentation to MMC within 24 hours by fax or email with photos of the resource in context, if possible. 4. No soil shall be exported off site until a determination can be made regarding the significance of the resource, specifically if Native American resources are encountered.			

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	C. Determination of Significance 1. The PI and Native American consultant/monitor, where Native American resources are discovered, shall evaluate the significance of the resource. If human remains are involved, follow protocol in Section IV below. a. The PI shall immediately notify MMC by phone to discuss significance determination and shall also submit a letter to MMC indicating whether additional mitigation is required. b. If the resource is significant, the PI shall submit an Archaeological Data Recovery Program that has been reviewed by the Native American consultant/monitor, and obtain written approval from MMC and State Parks cultural representative. Impacts to significant resources must be mitigated before ground-disturbing activities in the area of discovery would be allowed to resume. Note: If a unique archaeological site is also a historical resource as defined in CEQA, then the limits on the amount(s) that the project may be required to pay to cover mitigation costs as indicated in CEQA Section 21083.2 shall not apply. c. If the resource is not significant, the PI shall submit a letter to MMC indicating that artifacts will be collected, curated, and documented in the Final Monitoring Report. The letter shall also indicate that no further work is required. IV. Discovery of Human Remains If human remains are discovered, work shall halt in that area and no soil shall be exported off site until a determination can be made regarding the provenance of the human remains, and the following procedures as set forth in CEQA Section 15064.5(e), California PRC (Section 5097.98) and State Health and Safety Code (Section 7050.5) shall be undertaken:			

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	A. Notification 1. Archaeological Monitor shall notify the RE or BI as appropriate, State Parks cultural representative, MMC, and the PI, if the Monitor is not qualified as a PI. MMC would notify the appropriate Senior Planner in the Environmental Analysis Section of the Development Services Department to assist with the discovery notification process. 2. The PI shall notify the Medical Examiner after consultation with the RE, either in person or via telephone. B. Isolate Discovery Site 1. Work shall be directed away from the location of the discovery and any nearby area reasonably suspected to overlay adjacent human remains until a determination can be made by the Medical Examiner in consultation with the PI concerning the provenance of the remains. 2. The Medical Examiner, in consultation with the PI, would determine the need for a field examination to determine the provenance. 3. If a field examination is not warranted, the Medical Examiner would determine with input from the PI whether the remains are, or are most likely to be, of Native American origin. C. If Human Remains Are Determined to Be Native American 1. The Medical Examiner would notify the NAHC within 24 hours. By law, only the Medical Examiner can make this call. 2. The NAHC would immediately identify the person or persons determined to be the Most Likely Descendant (MLD) and provide contact information. 3. The MLD would contact the PI within 24 hours or sooner after the Medical Examiner has completed coordination to begin the consultation process in accordance with CEQA Section 15064.5(e), the California PRC, and California Health and Safety Codes. 4. The MLD would have 48 hours to make recommendations to the implementing agency or representative for the treatment or disposition with proper dignity of the			

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	human remains and associated grave goods. 5. Disposition of Native American human remains would be determined between the MLD and the PI, and, if: a. The NAHC is unable to identify the MLD, or the MLD failed to make a recommendation within 48 hours after being notified by the NAHC; or; b. The implementing agency or authorized representative rejects the recommendation of the MLD and mediation in accordance with California PRC Code 5097.94 (k) by the NAHC fails to provide measures acceptable to State Parks and LPLF, then, c. In order to protect these sites, the implementing agency shall do one or more of the following: (1) Record the site with the NAHC; (2) Record an open space or conservation easement on the site; or (3) Record a document with the County. d. Upon the discovery of multiple Native American human remains during a ground-disturbing land development activity, the implementing agency may agree that additional conferral with descendants is necessary to consider culturally appropriate treatment of multiple Native American human remains. Culturally appropriate treatment of such a discovery may be ascertained from review of the site utilizing cultural and archaeological standards. Where the parties are unable to agree on the appropriate treatment measures, the human remains, and cultural materials buried with Native American human remains shall be reinterred with appropriate dignity, pursuant to Section 5.c., above. e. If human remains are discovered on State Parks land, the State Parks cultural representative should be informed of decisions prior to disposition.			

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	D. If Human Remains Are Not Native American 1. The PI shall contact the Medical Examiner with notification of the historic era context of the burial. 2. The Medical Examiner would determine the appropriate course of action with the PI and implementing agency staff (California PRC 5097.98). 3. If the remains are of historic origin, they shall be appropriately removed and conveyed to the San Diego Museum of Man for analysis. The decision for interment of the human remains shall be made in consultation with MMC, Environmental Analysis Section, any known descendant group, and the San Diego Museum of Man. V. Night and/or Weekend Work A. If Night and/or Weekend Work Is Included in the Contract 1. When night and/or weekend work is included in the contract package, the extent and timing shall be presented and discussed at the precon meeting. 2. The following procedures shall be followed. a. No Discoveries In the event that no discoveries were encountered during night and/or weekend work, the PI shall record the information on the CSVR and submit to MMC via fax by 8 a.m. of the next business day. b. Discoveries All discoveries shall be processed and documented using the existing procedures detailed in Sections III – During Construction, and IV – Discovery of Human Remains. Discovery of human remains shall always be treated as a significant discovery. c. Potentially Significant Discoveries If the PI determines that a potentially significant discovery has been made, the procedures detailed under Section III – During Construction and IV – Discovery of Human Remains shall be followed.			

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	d. The PI shall immediately contact MMC and the State Parks cultural representative, or by 8 a.m. of the next business day, to report and discuss the findings as indicated in Section III-B, unless other specific arrangements have been made. B. If Night and/or Weekend Work Becomes Necessary during the Course of Construction 1. The CM shall notify the RE, or BI, as appropriate, a minimum of 24 hours before the work is to begin. 2. The RE, or BI, as appropriate, shall notify MMC immediately. C. All Other Procedures Described Above Shall Apply, as Appropriate. VI. Post-Construction A. Preparation and Submittal of Draft Monitoring Report 1. The PI shall submit two copies of the Draft Monitoring Report (even if negative), prepared in accordance with the Historical Resources Guidelines that describes the results, analysis, and conclusions of all phases of the Archaeological Monitoring Program (with appropriate graphics) to MMC for review and approval within 90 days following the completion of monitoring. Monitoring reports must also be submitted for review and approval per conditions of the DPR412A permit by the State Parks cultural representative. It should be noted that if the PI is unable to submit the Draft Monitoring Report within the allotted 90-day timeframe resulting from delays with analysis, special study results, or other complex issues, a schedule shall be submitted to MMC establishing agreed-upon due dates and the provision for submittal of monthly status reports until this measure can be met. a. For significant archaeological resources encountered during monitoring, the Archaeological Data Recovery Program shall be included in the Draft Monitoring Report.			

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	b. Recording Sites with State of California Department of Parks and Recreation The PI shall be responsible for recording (on the appropriate State of California Department of Park and Recreation forms [DPR 523 A/B]) any significant or potentially significant resources encountered during the Archaeological Monitoring Program in accordance with the City's Historical Resources Guidelines, and submittal of such forms to the SCIC with the Final Monitoring Report. 2. MMC and State Parks cultural representative shall return the Draft Monitoring Report to the PI for revision or for preparation of the Final Report. 3. The PI shall submit revised Draft Monitoring Report to MMC and State Parks cultural representative for approval. 4. MMC shall provide written verification to the PI of the approved report. 5. MMC shall notify the RE or BI, as appropriate, of receipt of all Draft Monitoring Report submittals and approvals. B. Handling of Artifacts 1. The PI shall be responsible for ensuring that all cultural remains collected are cleaned and catalogued. 2. The PI shall be responsible for ensuring that all artifacts are analyzed to identify function and chronology as they relate to the history of the area; that faunal material is identified as to species; and that specialty studies are completed, as appropriate. 3. The cost for curation is the responsibility of the property owner. C. Curation of Artifacts: Accession Agreement and Acceptance Verification 1. The PI shall be responsible for ensuring that all artifacts associated with the survey, testing, and/or data recovery for this project are permanently curated with an appropriate institution. This shall be completed in consultation with MMC and the Native American representative, as applicable. Collections and proper			

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	curation preparations shall be completed in consultation with State Parks cultural representative. 2. The PI shall include the Acceptance Verification from the curation institution and appropriate State Parks Museum Collections documents (DPR 927, 928) in the Final Monitoring Report submitted to the RE or BI and MMC. 3. When applicable to the situation, the PI shall include written verification from the Native American consultant/monitor indicating that Native American resources were treated in accordance with state law and/or applicable agreements. If the resources were reinterred, verification shall be provided to show what protective measures were taken to ensure no further disturbance occurs in accordance with Section IV – Discovery of Human Remains, Subsection 5. D. Final Monitoring Report(s) 1. The PI shall submit one copy of the approved Final Monitoring Report to the RE or BI as appropriate, and one copy to MMC and State Parks cultural representative (even if negative), within 90 days after notification from MMC that the draft report has been approved. 2. The RE shall, in no case, issue the Notice of Completion and/or release of the Performance Bond for grading until receiving a copy of the approved Final Monitoring Report from MMC that includes the Acceptance Verification from the curation institution.			
Paleo-1	A paleontological monitor shall be on site during initial cuttings of previously undisturbed deposits of moderate to high paleontological significance, as defined in *Paleontological Resources, County of San Diego California* (Deméré and Walsh 1993), to inspect exposures for contained fossils. If significant paleontological resources are encountered during excavation or other ground-disturbing activities, work in the area of the discovery shall be temporarily halted, and a qualified paleontologist shall be contracted to properly assess the resource(s) and develop and implement a paleontological resource monitoring and fossil recovery program. The monitoring and recovery program may include monitoring of future ground disturbance, worker	During Construction	Contractor	Contractor/ Paleontological Monitor

Mitigation Measure Number	Mitigation Measure	Timeframe of Mitigation	Implementation Responsibility	Monitoring, Enforcement, and Reporting Responsibility
	training, resource assessment and recovery, proper documentation, curation, and/or other measures as deemed appropriate. A paleontological monitor is defined as an individual who has experience in the collection and salvage of fossil materials and works under the direction of a qualified paleontologist. As ground disturbance progresses, the qualified paleontologist and paleontological monitor shall have the authority to reduce the scope of the monitoring program to an appropriate level if it is determined that the potential for impacts to paleontological resources is lower than anticipated.			

Table 10-2. Project Design Features Required by the Mitigation, Monitoring, and Reporting Program

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
1	Manufactured slopes would be planted with appropriate native vegetation and maintained, and drainage would be installed in order to reduce erosion. Slope irrigation would be limited to the amount required to support vegetation cover and would only be required until vegetation is established.	Reduce potential for erosion of exposed soils.	During construction	Contractor
2	Until adequate erosion-control native vegetation is established on exposed soils. Erosion and sediment control devices used for the project, including fiber rolls and bonded fiber matrix, would be made from biodegradable materials such as jute, with no plastic mesh, to avoid creating a wildlife entanglement hazard.	Reduce potential for erosion of exposed soils.	During construction	Contractor
3	Exposed soil at the disposal site would be hydroseeded and/or planted with appropriate native vegetation once the material is placed and appropriately compacted.	Reduce potential for erosion of exposed soils.	During construction	Contractor
4	Recommendations of the geotechnical reports for the project would be incorporated into the design of manufactured slopes, berms, or other features.	Ensure geologic stability of manufactured features.	Engineering and design	Engineer

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
5	Simultaneous use of the trails by construction equipment and recreationalists would not be allowed and affected trail segments would be closed to public use when construction would occur. Signs would be placed at the trail heads to notify trail users of these closures.	Minimize public safety hazards due to construction vehicle use of trails.	During construction	Contractor
6	Restrict public access at sand placement sites during active construction as necessary.	Ensure public safety during construction.	During construction	Contractor, in coordination with State Parks lifeguards
7	Maintain alternative access to beaches adjacent to placement sites and portions of beach access trails not under active construction.	Minimize impact on public access.	During construction	Contractor
8	Prior to opening areas of beach with placed materials, spread the materials and check for potential hazards (*e.g.,* foreign objects in the sand). Removal and relocation or disposal of hazards would be coordinated LPLF and State Parks.	Reduce risks to public health and safety.	During construction	Contractor
9	Maintain horizontal and vertical access on either side of the active sand placement area as long as public safety is not compromised.	Maintain public beach access.	During construction	Contractor
10	Temporarily relocate mobile lifeguard towers, if necessary.	Ensure public safety during construction.	During construction	Contractor, in coordination with State Parks lifeguards
11	Unless directed otherwise, sand would be placed along the waterline on Torrey Pines State Beach between Lifeguard Tower 4 and Lifeguard Tower 3. Sand placed on the upper beach or on top of exposed rip rap would avoid blocking line-of-sight at lifeguard towers. Sight lines from the viewing platforms of the lifeguard towers would be maintained. Beach disposal planning and implementation would be coordinated with LPLF and State Parks. Beach prolife monitoring and grain-size analysis may be required based on the scale of disposal efforts to assess potential impacts to the lagoon inlet, beach and nearshore habitats and processes. Monitoring for western snowy plover within and adjacent to the beach disposal site(s) would be required with	Ensure public safety during construction.	During construction	Contractor, in coordination with State Parks lifeguards

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
	the appropriate avoidance measures put in place should this species be observed.			
12	Prior to initiating construction, identify sensitive "no construction zones" and fence or flag those areas. Limit construction equipment and vehicles to within these limits of disturbance.	Reduce public safety hazards.	During construction	Contractor
13	Contractors shall maintain equipment and vehicle engines in good condition and properly tuned per manufacturers' specifications.	Minimize air quality impacts and greenhouse gas (GHG) emissions.	During construction	Contractor
14	Native or sensitive habitats outside and adjacent to the construction limits would be designated as Environmentally Sensitive Areas (ESAs) on project maps. ESAs would be temporarily fenced during construction with orange plastic snow fence or orange silt fencing along staging areas and access routes, and with stakes and flagging in areas of flowing water and active construction zones. No personnel, equipment, or debris would be allowed within the ESAs. Fencing and flagging would be installed in a manner that does not impact habitats to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment. Access routes/staging areas adjacent to identified sensitive bird species habitat may require special fencing or barriers (*e.g.*, stacked straw bales) pursuant to recommendations and requirements set forth by State Parks in consultation with Wildlife Agencies. Access routes used for vector management would require approval by LPLF and State Parks and meet conditions set by a Right of Entry Permit and the Lagoon's status as a State Natural Preserve.	Minimize impacts to sensitive habitat areas.	Prior to construction Prior to vector management	Qualified biologist/Contractor
15	Site staging areas and access roads at existing access points and previously disturbed areas~~, where feasible~~.	Minimize impacts to native habitat and reduce site preparation requirements.	Final design	Engineer

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
16	Restrict vegetation clearing and grubbing, and material placement, to the extent possible, to outside the special-status bird breeding season (February 15–September 15). Work conducted during the breeding season would be designed to avoid or minimize disturbances to breeding birds. Such measures could include maintaining effective buffers to active nests and would require the on-site presence of a qualified biologist before and during clearing and grubbing activities and other manipulations of habitat. Work conducted outside of breeding season may require monitoring and avoidance measures for special-status birds; this would be determined by State Parks in consultation with Wildlife Agencies (U.S. Fish and Wildlife Service and California Department of Fish and Wildlife). Proposed clearing and grubbing along with monitoring and avoidance measures would be reviewed and approved by State Parks in consultation with Wildlife Agencies prior to the commencement of clearing and grubbing, or habitat manipulation within TPSNR.	Minimize impacts to sensitive wildlife species and their habitats.	During construction	Contractor/Qualified biologist
17	Have a qualified biological monitor on site prior to and during construction to coordinate with contractors to minimize impacts to habitat and wildlife; frequency may vary depending upon activity but could be daily during breeding season or every other week at other time periods. Monitor vegetation clearing activities and flush wildlife prior to clearing, as appropriate, and in compliance with the ESA where applicable.	Confirm implementation of biological permit conditions, design features, mitigation measures, and applicable construction specifications.	During construction	Qualified biologist
18	Stockpile high-quality topsoil from previously undisturbed areas for placement on top of fill areas after soil placement to facilitate planting success.	Aid in successful revegetation.	During construction	Contractor
19	Incorporate soil amendments in saline soils prior to capping and/or planting, as needed.	Aid in successful revegetation.	During construction	Contractor

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
20	Use temporary irrigation of freshwater for planted areas, as required.	Aid in successful revegetation.	During and post construction	Contractor
21	No invasive non-native plant species shall be planted, seeded, or otherwise introduced to habitats adjacent to the project site. Plant material shall be native species appropriate to the site and approved by State Parks. Perennial plants used in restoration shall be from genetic stock at TPSNR. For wide-ranging perennial species, plants may be from sources within 3 miles from the coast between Camp Pendleton and Mission Bay if none are readily available from Los Peñasquitos Lagoon. Annual plants used in restoration shall be from locally collected propagules within the Lagoon. A qualified biologist shall review landscape plans before approval.	Reduce/avoid impacts to special-status plant species on site.	During construction	Contractor
22	Equipment would be cleaned prior to transport to the project site to prevent potential non-native plant species and other foreign matter, such as sediment and debris, from entering the site.	Minimize the potential to introduce non-native species into the site.	Prior to construction	Contractor
23	The following measures would be implemented as necessary to reduce fugitive dust emissions associated with off-road equipment and heavy-duty vehicles: exposed surfaces (*e.g.,* unpaved access roads) shall be watered; sweepers and water trucks shall be used to control dust and debris at public street access points; dirt storage piles shall be stabilized by chemical binders, tarps, fencing, or other suppression measures; sufficient perimeter erosion control shall be provided to prevent washout of silty material onto public roads; haul trucks shall be covered or at least 12 inches of freeboard shall be maintained to reduce blow-off during hauling; and a 15-mph speed limit on unpaved surfaces shall be enforced.	Reduce fugitive dust.	During Construction	Contractor
24	The project would coordinate with State Parks and consult the Wildlife Agencies on conservation measures to assure that impacts to native habitat and wildlife are avoided and minimized to the maximum extent practicable.	Minimize impacts to habitat and wildlife	Project Planning	Project Proponent

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
25	Construction and maintenance activities that require mechanized equipment would be at least 500 feet from active special-status avian nests. Biological surveys would be conducted within the project footprint, which includes staging and access routes, and at least 500 feet outside the project footprint to determine the location of sensitive avian species. If these buffers between construction activity and conditions cannot be met, the project would work with State Parks and consult the Wildlife Agencies to determine the best approach to avoid/minimize/offset impacts to nesting or roosting birds. Such approaches may include considering the distance to the project limits and local topography, monitoring to evaluate whether the birds are disturbed by construction, flushing wildlife out of the active work area, and relocating nests.	Avoid impacts to special-status avian species	Prior to and during construction	Contractor and biological monitor
26	A qualified biologist would be on site during project construction and during maintenance activities that require mechanized equipment. The biological monitor must be familiar with wetland, coastal sage scrub, and dune biology, ecology, associated native species, and the conservation measures identified for the project. The biological monitor would be available during pre-construction and construction phases to conduct biological surveys, address protection of sensitive biological resources, monitor ongoing work, and maintain communications with construction personnel to facilitate the appropriate and lawful management of issues relating to biological resources. The qualified biologist would have the ability to temporarily halt construction and maintenance activities, if necessary, to avoid unanticipated impacts to special status species and noncompliance with conservation measures. The avian biological monitor or qualified biologist would coordinate with LPLF or State Parks to determine appropriate measures to protect special status-species with regards to the operation of vehicles and heavy equipment.	Minimize impacts to habitat and wildlife	Prior to construction and during construction	Biological monitor

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
27	All participants and contractors for the project would receive educational training concerning special-status species within the project area and sign an agreement to comply with the conservation measures or conditions. The program would be conducted during all project phases and would cover the potential presence of listed species; the requirements and boundaries of the project; the importance of complying with avoidance, minimization, and compensation measures; and problem reporting and resolution methods.	Minimize impacts to habitat and wildlife	Prior to construction and during construction	Biological monitor and contractor
28	To avoid adverse impacts to special-status bird species, on-site vehicle operators shall drive no more than 15 miles per hour within the project footprint in areas identified as occupied habitat. The avian biological monitor or qualified biologist have the authority to further reduce the speed limit temporarily, if necessary, to avoid adverse impacts to special-status bird species. The avian biological monitor or qualified biologist would coordinate with LPLF or State Parks to determine appropriate measures to protect special-status species with regards to the operation of vehicles and heavy equipment.	Minimize impacts to habitat and wildlife	During construction	Contractor
29	During project construction, invasive species included on the National Invasive Species Management Plan, the State of California Noxious Weed List, and the California Invasive Plant Council's Invasive Plant Inventory list (Cal-IPC 2006) found growing within the project impact area would be removed. Special care would be taken during transport, use, and disposal of soils containing invasive weed seeds and weedy vegetation removed during construction would be properly disposed of to prevent spread into areas outside of the construction area.	Minimize impacts to habitat and wildlife	Prior to construction and during construction	Biological monitor and contractor
30	Equipment maintenance, staging, and dispensing of fuel, oil, coolant, or other such activities would be restricted to staging areas. A Spill Prevention, Control, and Countermeasure Plan would	Minimize impacts to habitat and wildlife	Prior to construction and during construction	Contractor

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
	be prepared for hazardous spill containment.			
31	All construction equipment used for the project would be equipped with properly operating and maintained mufflers and engines on dredging equipment would be housed to the greatest extent possible.	Minimize impacts to habitat and wildlife	Prior to construction and during construction	Contractor
32	If nighttime construction is necessary, lighting used at night for project construction would be selectively placed and directed at the immediate work area and away from adjacent sensitive habitats. Light glare shields would be used to reduce the extent of illumination into sensitive habitats.	Minimize impacts to habitat and wildlife	During construction	Contractor
33	The Applicants would prepare and implement a Stormwater Pollution Prevention Plan, Stormwater Management Plan, Hydromodification Management Plan, and Low Impact Development Best Management Practices, as appropriate, to confirm that the limits of disturbance would be maintained within the identified project footprint.	Minimize impacts to habitat and wildlife	Prior to construction	Contractor
34	Erosion and sediment control devices used for the project, including fiber rolls and bonded fiber matrix, would be made from biodegradable materials such as jute, with no plastic mesh, to avoid creating a wildlife entanglement hazard.	Minimize impacts to habitat and wildlife	During construction	Contractor
35	The project site would be kept as clear of debris as possible. Food-related trash items would be enclosed in sealed containers and regularly removed from the site to avoid attracting scavengers/predators of sensitive birds. Spoils and materials disposal would be disposed of properly.	Minimize impacts to habitat and wildlife	During construction	Contractor
36	Project personnel would be prohibited from bringing domestic pets to construction sites to avoid disturbance and depredation of wildlife by domestic pets in adjacent habitats.	Minimize impacts to habitat and wildlife	During construction	Contractor
37	Public access facilities (trails, signage, *etc.*) would be placed in existing trails where impacts to habitat can be avoided. Trails would not go through wetland habitat but instead would move around the perimeter of the wetlands.	Minimize impacts to habitat and wildlife	Planning	Project Proponent

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
38	Development of success criteria would be coordinated with and approved by LPLF and State Parks prior to disturbance to soils, hydrology or vegetation within and adjacent to the Torrey Pines State Natural Reserve.	Minimize impacts to habitat and wildlife	Planning	Project Proponent
39	Development of monitoring and maintenance plans would be coordinated with and approved by LPLF and State Parks prior to disturbance to soils, hydrology or vegetation within and adjacent to the Torrey Pines State Natural Reserve. Monitoring plans must be integrated into or at least be consistent with the current long-term monitoring program employed at Los Peñasquitos Lagoon and currently conducted by scientist from the Tijuana River National Estuarine Research Reserve unless this requirement is waived by LPLF and State Parks. Maintenance would be in perpetuity unless State Parks, in consultation with LPLF, determines that success criteria has been met and no further maintenance is required.	Minimize impacts to habitat and wildlife Improve measures of success in meeting success criteria Support and facilitate adaptive management Assure long-term success of habitat restoration	Planning	Project Proponent
40	Permanent fencing and/or signage replaced or installed as part of the project would be consistent with styles and requirements of fencing and signage present within Torrey Pines State Reserves. Approval from State Parks would be required before installation.	Compliance with policies and requirements of State Parks	Planning & Construction	Project Proponent/Contractor
41	A performance bond or letter of credit for grading, planting, irrigation, maintenance and monitoring of wetland/riparian and upland mitigation would be required and would include a 20 percent contingency to be added to the total costs. This bond or letter of credit is to guarantee the successful implementation of the mitigation construction, maintenance, and monitoring. A draft bond or letter of credit with an itemized cost list would be provided to LPLF and CPS for approval at least four weeks prior to initiating project impacts. The applicant would submit the final bond or letter of credit for the amount approved by State Parks within 60 days of receiving State Parks approval of the draft bond.	Assure successful completion of the project	Planning & Construction	Project Proponent/Contractor

PDF #	Project Design Feature	Purpose	Timing	Implementation Responsibility
42	If impacts to species identified as a candidate, sensitive, or special-status species in the MSCP are identified, specific management priorities would be undertaken as part of MSCP implementation requirements to ensure that covered species are adequately protected.	Minimize impacts to habitat and wildlife	Planning & Construction	Project Proponent

CHAPTER 11
PREPARERS OF THIS PROGRAM EIR

California Department of Parks and Recreation

Darren Smith, District Services Manager
Nicole Turner, Archaeologist
Cara Stafford, Environmental Scientist
Dylan Hardenbrook, Supervising Ranger
Luke Serna, Associate Park & Recreation Specialist

Los Peñasquitos Lagoon Foundation

Mike Hastings, Executive Director

AECOM

Cindy Kinkade, Senior Project Manager
Kara Friedman, Senior Environmental Analyst
Kathryn Cartaino, Environmental Planner
Michelle Maloney, Biologist
Dan Brady, Graphic Artist
Therese Tempereau, Technical Editor
Marisa Fabrigas, Word Processor

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CHAPTER 12
AGENCIES AND INDIVIDUALS CONSULTED

California Coastal Commission
California State Coastal Conservancy
California Department of Fish and Wildlife
California Department of Transportation
California State Lands Commission
County of San Diego
City of San Diego
City of Del Mar
City of Poway
National Oceanic and Atmospheric Administration
Native American Heritage Commission
San Diego Association of Governments
San Diego Regional Water Quality Control Board
State Coastal Conservancy
State Lands Commission
Torrey Pines Association
Torrey Pines Community Planning Board
Torrey Pines Docents
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service

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CHAPTER 13
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CHAPTER 14
LIST OF ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
AB	Assembly Bill
AME	Archaeological Monitoring Exhibit
APE	area of potential effects
ARB	California Air Resources Board
ASBS	Areas of Special Biological Significance
ASCE	American Society of Civil Engineers
BI	Building Inspector
BISE	Biodiversity Information System for Europe
BMP	best management practice
BP	before present
CAAQS	California Ambient Air Quality Standards
CalFire	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CCC	California Coastal Commission
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CDP	Coastal Development Permit
CEQA	California Environmental Quality Act
cfs	cubic feet per second
Checklist	CAP Consistency Checklist
CH_4	methane
City	City of San Diego
CLOMR	Conditional Letter of Map Revision
CM	Construction Manager
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO equivalent
Corps	U.S. Army Corps of Engineers
CSVR	Consultant Site Visit Record
CVREP	Carmel Valley Restoration and Enhancement Project
cy	cubic yard(s)
DEH	Department of Environmental Health
DEM	Digital Elevation Model
DO	dissolved oxygen
DPR	Department of Park and Recreation
DTSC	Department of Toxic Substances Control
EFH	Essential Fish Habitat
EIR	Environmental Impact Report

Enhancement Plan	Los Peñasquitos Lagoon Enhancement Plan
EPA	U.S. Environmental Protection Agency
ESA	Environmentally Sensitive Areas
ESHA	Environmentally Sensitive Habitat Area
ESL	Environmentally Sensitive Land
FEMA	Federal Emergency Management Agency
FMP	Federal Management Plan
GHG	greenhouse gas
GWP	global warming potential
HA	hydrologic area
HEM	habitat evolution model
HFC	hydrofluorocarbon
HOV	High Occupancy Vehicle
I	Interstate
lbs	pounds
IPCC	Intergovernmental Panel on Climate Change
LCP	Local Costal Program
LiDAR	Light Detection and Ranging
LOMR	Letter of Map Revision
LOSSAN	Los Angeles to San Diego Rail Corridor Improvements Project
LPLF	Los Peñasquitos Lagoon Foundation
MCAS	Marine Corps Air Station
mg/L	milligrams per liter
MHPA	Multiple Habitat Planning Area
MHHW	mean high ~~high~~ water
ML	Managed Lane
MLD	Most Likely Descendant
MMC	Mitigation Monitoring Coordination
MMRP	Mitigation Monitoring and Reporting Program
MRZ	Mineral Resource Zone
MS4	Municipal Separate Storm Sewer System
MSCP	Multiple Species Conservation Program
MSL	mean sea level
MT	metric ton(s)
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Council
NAVD	North American Vertical Datum
NCC PWP/TREP	North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program
NCTD	North County Transit District
NF_3	nitrogen trifluoride
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NO_X	nitrogen oxides
Ogden	Ogden Environmental and Energy Services Company, Inc.

PDF	project design feature
PERL	Pacific Estuarine Research Laboratory
PFC	perfluorocarbon
PI	Principal Investigator
PM	particulate matter
PM_{10}	particulate matter equal to or less than 10 micrometers in diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 micrometers in diameter
ppt	parts per thousand
PRC	Public Resources Code
precon	preconstruction
proposed project	Los Peñasquitos Lagoon Enhancement Plan
PUD	Public Utilities Department
PWP	Public Works Plan
RAQS	Regional Air Quality Strategy
RE	Resident Engineer
ROG	reactive organic gases
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SANDAG	San Diego Association of Governments
SAP	Subarea Plan
SCAQMD	South Coast Air Quality Management District
SCC	State Coastal Conservancy
SCIC	South Coast Information Center
SCP	Standard Construction Procedures
SCWRP	Southern California Wetlands Recovery Project
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SDGE	San Diego Gas & Electric
SF_6	sulfur hexafluoride
SFEI	San Francisco Estuary Institute
SO_X	sulfur oxides
SR	State Route
State Parks	California Department of Parks and Recreation
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resource Control Board
TAC	toxic air contaminant
TCE	trichloroethylene
TMDL	Total Maximum Daily Load
TPCP	Torrey Pines Community Plan
TPSNR	Torrey Pines State Natural Reserve
TREP	Transportation Restoration Enhancement Program
TRNERR	Tijuana River National Estuarine Research Reserve
USDA	United States Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VCP	Vector Control Program

~~VHRP~~	~~Vector Habitat Remediation Program~~
VMS	Vegetation Management Statement
VMT	vehicle miles traveled
VOC	volatile organic compounds
Weston	Weston Solutions, Inc.
WNV	West Nile virus
WQIP	Water Quality Improvement Plan