VOLUME II
FINAL

Environmental Impact Report/ Environmental Impact Statement (EIR/EIS) for the San Dieguito Wetland Restoration Project

September 2000

SCH# 98061010

U.S. Fish & Wildlife Service (USFWS)

San Dieguito River Park Joint Powers Authority (JPA)

FINAL

Environmental Impact Report/ Environmental Impact Statement (EIR/EIS) for the San Dieguito Wetland Restoration Project

ABSTRACT

This project involves the development, design and ultimate implementation of a comprehensive restoration plan for approximately 440 acres in the western end of the San Dieguito River Valley, San Diego County, California. The project includes restoration of tidal wetlands, reestablishment of historic uplands, enhancement and expansion of freshwater and seasonal coastal wetland areas, and a public access and interpretation component. In accordance with the adopted San Dieguito River Park Concept Plan, a Park Master Plan for the project area has also been prepared to address these project components.

An essential component of this restoration project is the creation and restoration of tidally influenced wetlands. The major elements of tidal restoration would include: 1) restoring aquatic functions of the lagoon through the opening and permanent maintenance of the inlet channel and expansion of the existing tidal prism, and 2) creating subtidal and intertidal habitats on both the east and west sides of Interstate 5 (I-5). Tidal restoration would involve excavation/dredging of sediments to create/restore wetlands, excavation of the tidal inlet to promote continual tidal exchange, construction of berms along the river to maintain existing flood flows and direct sediment transport to the ocean, and identification of appropriate disposal sites for excavated/dredge material. Nesting sites for the California least tern, western snowy plover, and other shorebirds are also proposed.

It is anticipated that tidal restoration would be accomplished primarily by Southern California Edison and its partners, provided the restoration satisfies the conditions of the California Coastal Commission Permit for the construction and operation of the San Onofre Nuclear Generating Station Units 2 and 3. The San Dieguito River Park Joint Powers Authority, Fish and Wildlife Service, and a variety of state and local agencies would be involved in the restoration of the project's other non-tidal wetland and upland restoration proposals, as well as the public access and interpretive aspects of the proposal.

The joint Environmental Impact Report/Environmental Impact Statement analyzes six project alternatives, including the Mixed Habitat, Maximum Tidal Basin, Maximum Intertidal, Hybrid, Reduced Berm, and No Action alternatives. Potentially significant environmental impacts have been identified in the areas of land use, landform alteration/visual quality, hydrology/water quality, traffic circulation, noise, air quality, geology and soils, public utilities, public health and safety, biological resources, and natural resources. The project includes measures to mitigate some potential impacts, while other mitigation will be made a condition of subsequent permits.

Lead Agencies

U.S. Fish & Wildlife Service
Carlsbad Field Office

San Dieguito River Park
Joint Powers Authority

Cooperating Agency

U.S. Army Corps of Engineers
Los Angeles District, Regulatory Branch

DATE ISSUED: September 5, 2000

NOTICE OF AVAILABILITY
OF A FINAL JOINT
ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT
AND NOTICE OF PUBLIC HEARING

STATE CLEARINGHOUSE NUMBER: 98061010

NOTICE IS HEREBY GIVEN that the San Dieguito River Park Joint Powers Authority (JPA) has available for review the **final joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS)** for the San Dieguito Wetland Restoration Project. This final EIR/EIS was prepared in accordance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The final EIR/EIS can be reviewed at the following locations: (1) San Dieguito River Park Office, 18372 Sycamore Creek Road in Escondido, CA (documents referenced in EIR/EIS also available for review at this address); (2) Fish and Wildlife Service's Carlsbad Office, 2730 Loker Avenue West, Carlsbad, CA; (3) Del Mar Library, 1309 Camino del Mar, Del Mar, CA; (4) Carmel Valley Library, 3919 Townsgate Drive, San Diego, CA; (5) San Diego County Library, Solana Beach Branch, 981 Lomas Santa Fe Drive, Suite F, Solana Beach, CA; and (6) City of San Diego Central Library, 820 E Street, San Diego, CA 92101.

The final EIR/EIS consists of the following: **Volume I** - Conclusions including the recommended Preferred Alternative for wetland restoration; comments received during the draft EIR/EIS public review period and written responses to those comments. **Volume II** - Draft EIR/EIS with revisions based on comments received during the public review period. None of the revisions resulted in any new significant impacts to the environment.

SAN DIEGUITO WETLAND RESTORATION PROJECT

Project Description: The San Dieguito Wetland Restoration Project involves the development, design, and ultimate implementation of a comprehensive restoration plan for approximately 440 acres in the western San Dieguito River Valley. This project includes restoration of tidal wetlands, reestablishment of historic upland habitat, enhancement/expansion of freshwater and seasonal coastal wetland areas, and a public access/interpretation component. In accordance with the adopted San Dieguito River Park Concept Plan, a Park Master Plan for this portion of the San Dieguito River Valley has also been drafted to address these project components.

Project Location: The project site is in the western San Dieguito River Valley within the northwestern corner of the City of San Diego and the northern end of the City of Del Mar, San Diego County, California. The project's east/west boundaries can generally be described as those public lands located within the area that extends from El Camino Real west to the Pacific Ocean. The project's north/south boundary is generally formed by Via de la Valle to the north and the northern slopes of the Carmel Valley planning area to the south.

FEDERAL PUBLIC REVIEW PERIOD

As required by NEPA, the availability of the final EIR/EIS will be published in the Federal Register on September 15, 2000, establishing the beginning of a 30-day Federal review period.

PUBLIC HEARING NOTICE

NOTICE IS HEREBY GIVEN that a Public Hearing by the San Dieguito River Park Joint Powers Authority to certify the final EIR/EIS in accordance with CEQA will be held on Friday, September 15, 2000 at 9:30 AM at the County Administration Building located at 1600 Pacific Hwy, Room 302/303, San Diego, California.

FOR MORE INFORMATION CONTACT

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Or visit the River Park web site at www.sdrp.org

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INTRODUCTION

Intended Use of the EIR/EIS

The San Dieguito River Valley Regional Open Space Park Joint Powers Authority (JPA) and the U.S. Department of the Interior, Fish and Wildlife Service (USFWS) have determined that the San Dieguito Wetland Restoration Project is subject to both the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), and the adopted local CEQA guidelines for the JPA, the City of Del Mar, and the City of San Diego. The need for numerous state and local permits makes the project subject to CEQA, while compliance with NEPA is required where there is federal involvement in a project. In this case, NEPA would apply to the future issuance of a 404 Permit from the U.S. Army Corps of Engineers, as well as to the future granting of federal funds for various aspects of project implementation. To address the requirements of both CEQA and NEPA, the JPA and USFWS have prepared this joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the San Dieguito Wetland Restoration Project. Because NEPA and CEQA are somewhat different with regard to procedural and content requirements, the document has been prepared to comply with whichever requirements are more stringent. The JPA is the lead agency for compliance with CEQA, while USFWS is the lead federal agency for compliance with NEPA. In accordance with both CEQA and NEPA, the lead agencies have the responsibility for the scope, content, and legal adequacy of the document. Therefore, all aspects of the EIR/EIS scope and process are being coordinated between the two agencies.

This joint EIR/EIS is an informational document intended to inform both the decision makers and the public of the potentially significant environmental effects associated with the design, construction, and long-term maintenance of a coastal wetland restoration project at the San Dieguito Lagoon. The EIR/EIS also addresses potential impacts associated with the implementation of a park master plan for the lagoon area that is proposed by the JPA. Approval of this park master plan will establish the planning framework for the overall restoration and interpretation of the westernmost portion of the San Dieguito River Valley. In addition to tidal wetland restoration, the plan addresses upland and non-tidal wetland restoration, public access and trails, interpretation features including a visitor center, and the potential future uses of designated disposal sites intended to receive excavated/dredged materials generated from proposed tidal restoration activities.

The proposal to restore the coastal wetlands and upland areas surrounding the San Dieguito Lagoon, as well as the public access and interpretation components of the project, are part of the vision for the larger San Dieguito River Valley Regional Open Space Park. This open space park planning effort extends from Volcan Mountain near Julian westward along the San Dieguito River drainage to the ocean at Del Mar. The proposals for coastal wetland and upland restoration near the lagoon, the Coast to Crest Trail, and other trail and interpretive concepts were adopted as part of the San Dieguito River Park Concept Plan (San Dieguito River Park JPA 1994a), by the JPA in 1994. In association with the processing of the Park Concept Plan, the JPA also prepared and certified the San Dieguito River Park Concept Plan Program EIR (San Dieguito River Park JPA 1994b). This Program EIR is incorporated by reference into the current EIR/EIS.

Project Location

The San Dieguito Wetlands Restoration planning area encompasses approximately 440 acres at the western end of the San Dieguito River Valley and generally includes the public lands located between El Camino Real on the east, the Pacific Ocean on the west, Via de la Valle on the north, and the northern edge of the Carmel Valley planning area on the south. The project site, which is situated entirely within the coastal zone, is located within incorporated boundaries of the cities of Del Mar and San Diego in San Diego County, California.

Project Background

The San Dieguito Lagoon was once the largest of the six San Diego coastal lagoons. Restoration of the San Dieguito coastal wetlands has been a stated goal of the Cities of Del Mar and San Diego, local citizens, and the organizers of the San Dieguito River Park JPA for over two decades. In the late 1970s, the City of Del Mar and the State Coastal Conservancy prepared a plan for revitalizing and managing what remained of the lagoon and surrounding areas west of Interstate 5 (I-5) near the mouth of the river. As a result of that effort the City of Del Mar adopted the San Dieguito Lagoon Resource Enhancement Program in 1979 as part of its General Plan. In 1983, a portion of the enhancement program was implemented using a grant from the Coastal Conservancy. This restoration program involved dredging a new tidal basin on 70 acres of land acquired by the California Department of Fish and Game as an Ecological Reserve and located in the southern corner of the historic wetlands just west of I-5. The river mouth was also opened, thus restoring tidal influence, at least temporarily, to the entire coastal wetland.

Since this initial restoration effort was completed, the restoration goal has been expanded to address both the west and east sides of I-5, with the stated goal of restoring what remains of the historically significant San Dieguito Lagoon system. In the early 1990s, efforts began to direct coastal wetland mitigation proposals to San Dieguito. One possible mitigation project was identified when the California Coastal Commission (CCC) in July 1991 adopted new permit conditions for the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3. These conditions required Southern California Edison (SCE) to create or substantially restore 150 acres of tidal wetland as mitigation for impacts to the marine environment caused by the construction and operation of SONGS Units 2 and 3. The CCC identified eight wetlands, including San Dieguito, in Southern California that could be evaluated for suitability as the required mitigation site. By June 1992, the CCC had approved San Dieguito as the site for the required mitigation.

The San Dieguito Wetland Restoration Project addressed by this EIR/EIS includes the proposal to restore wetlands as mitigation for impacts caused by SONGS Units 2 and 3. This aspect of the restoration project would be implemented by SCE, as the managing owner of SONGS. SCE has identified a preferred alternative, the Mixed Habitat Alternative, for implementing the requirements of the CCC. This alternative is one of six (including the No Action Alternative) that is analyzed in this EIR/EIS. The proposed tidal wetland restoration component of this project, in addition to addressing CCC permit conditions, also includes tidal wetland restoration acreage to fulfill the conditions of a compromised settlement between SCE and Earth Island Institute, Inc. The restoration plan recommended for approval and/or permitting by the lead agencies will be analyzed by the CCC to determine the amount of wetland credits being provided to address the CCC permit conditions. To make this determination, the CCC will consider the standards and criteria set forth by the CCC staff for defining “created or substantially restored” tidally influenced salt marsh. As stated previously, the permit conditions require SCE to submit a plan that includes a total of 150 acres of credit, including the creation and/or substantial restoration of 115 acres of tidal wetland. The SONGS permit states that up to 35 acres of enhancement credit will be given for permanent, continuous tidal maintenance if the final restoration plan provides for enhancement of at least 126 acres through tidal maintenance. The 35 acres of enhancement credit is based upon the determination that 126 acres of existing wetlands at San Dieguito will be enhanced by 28 percent if the tidal flows are maintained continuously. If less than 126 acres are enhanced, then the amount of enhancement credit awarded will be equal to 28 percent of the total number of existing tidal wetland acres that are enhanced by tidal maintenance. In order to calculate acreage credits pursuant to the SONGS coastal development permit, the CCC staff provisionally has defined the upper boundary for created or restored high tidal salt marsh as +4.5 feet National Geodetic Vertical Datum of 1929 (NGVD). This elevation was determined by CCC scientific staff based on data collected at several existing wetland sites.

The tidal hydraulics of the restored system under alternative restoration designs have been modeled in a series of studies by Jenkins and Wasyl (1998, 1999a-d). The resulting "hydroperiod functions" that relate tidal inundation/exposure frequencies to elevations on the shore lead to a predicted upper boundary of high salt marsh that is in the range of +4.7 feet to +4.9 feet NGVD, but differs slightly between alternatives. This EIR/EIS recognizes that in nature there is not generally a sharp demarcation between tidally influenced wetlands and adjacent non-tidal wetlands or uplands, but rather a transition zone of diminishing tidal influence with increasing elevation. In addition, there is not necessarily universal agreement among specialists concerning the upper boundary of salt marsh that is substantially free of upland species. Accordingly, in evaluating the creation of wetlands by the different restoration alternatives, the EIR/EIS treats +4.5 feet NGVD as the upper limit of high tidal salt marsh, but recognizes as transitional wetland habitat the area between +4.5 feet NGVD and the upper limit predicted by the hydroperiod function. This approach provides the information needed by the public, the agencies, and the decision makers, including the CCC, to make informed decisions about the project.

It is not the purpose or intent of this EIR/EIS to evaluate either the adequacy of the CCC permit conditions as mitigation for impacts from SONGS Units 2 and 3, or the effectiveness of the proposed mitigation plan in meeting the minimum standards and objectives set forth for wetland mitigation in the CCC Permit for SONGS Units 2 and 3. The determination as to whether or not the SCE restoration plan meets the approved permit condition is the sole responsibility of the CCC.

The proposal to restore coastal wetlands is one element, albeit the predominant element, of a larger restoration and public access plan for all of the public open space lands within the San Dieguito River Valley that lie between El Camino Real on the east and the Pacific Ocean on the west. Various adopted planning documents, including the San Dieguito River Park Concept Plan and the City of Del Mar San Dieguito Lagoon Enhancement Program, include goals for restoring both coastal wetlands and adjoining upland and freshwater wetland habitats and providing for compatible public access and resource interpretation. All of these components have been incorporated into the various wetland restoration alternatives, as well as the accompanying draft park master plan for this area.

Purpose of and Need for the Project

Historically, the San Dieguito Lagoon and its adjoining coastal wetlands occupied much of the western San Dieguito River Valley and included a mosaic of vegetated salt and brackish marsh, with associated tidal embayments, sloughs, and mudflats. The San Dieguito wetlands have experienced extensive filling and alteration, beginning as early as the late 1800s. Today, less than half of the historic wetlands remain intact. During the same period that the lagoon and marshland were being filled, the surrounding area was also being developed for a variety of commercial and residential uses. Consequently, the historical context of the tidal marsh ecosystem components and the regular influence of the ocean tidal waters have been seriously diminished. The portion of the historical marsh system that still exists at the San Dieguito Lagoon continues to be viewed as significant, despite the degradation that has occurred over the years to its wetland and aquatic functions.

The primary purpose of the proposed project is to restore the habitats that historically occurred within this coastal area, taking into consideration the constraints now imposed by existing adjacent land uses. In light of permanent losses of adjacent wetlands and aquatic areas in addition to permanent hydrologic modifications, and urbanization surrounding San Dieguito over the last century, complete restoration of wetland and aquatic functions to historical levels is probably not possible. However, there is opportunity for the creation and/or substantial restoration of large portions of the area that historically supported coastal wetlands. In addition, recent public acquisitions of the western river valley's floodplain areas and surrounding uplands provides many opportunities for restoration of native grasslands, coastal sage scrub, and other upland habitats, as well as freshwater habitats including freshwater marsh and southern willow scrub. Finally, the project offers opportunities for public access and interpretation/education.

Scope of the EIR/EIS

This EIR/EIS contains the full range of topics required under both CEQA and NEPA, including a table of contents, summary, purpose and need for the proposed action, description of alternatives, environmental setting, environmental impact analysis for short- and long-term, direct and indirect impacts, as well as cumulative impacts, mitigation measures and monitoring, growth inducing impacts, and significant irreversible changes associated with the project. The document presents a range of alternatives, which are all evaluated at the same level of detail in the environmental consequences section, as required under NEPA. A number of technical studies were conducted in association with the development of project alternatives and the preparation of this document. These studies are summarized in the body of the EIR/EIS and are provided as appendices, as deemed appropriate.

Required Permits and Approvals (Federal, State, and Local)

The following actions and approvals are anticipated to be required:

- **San Dieguito River Park JPA** — Approval by the JPA Board of Directors of a final restoration plan and associated Park Master Plan and certification of the Final EIR/EIS.

- **City of Del Mar** — Permit for grading and possible Amendment to the City of Del Mar's General Plan and LCP and Coastal Development Permit.

- **City of San Diego** — Land Development and Sensitive Lands Permit, possible Coastal Development Permit, Conditional Use Permit for the nature center, right-of-entry and possible encroachment permit for various trail segments.
- **U.S. Army Corps of Engineers** —Individual 404 and Section 10 Permits.
- **U.S. Fish and Wildlife Service** — Section 7 Consultation.
- **California Department of Fish and Game** — Streambed Alteration Agreement and possible Encroachment Permit.
- **Caltrans, District 11** — Encroachment Permit.
- **North County Transit District** — Possible Encroachment Permit.
- **Regional Water Quality Control Board** — 401 Certification and / or Discharge Permit.
- **San Diego County Air Pollution Control District** — Permit to Operate for Dredge.
- **22nd District Agricultural Association** — Approval to utilize portions of the District property for the project.
- **California State Lands Commission** — Possible Lease of State Lands.
- **California Coastal Commission** — Approval of the Final Restoration Plan and Coastal Development Permit(s).
- **California Public Utilities Commission** — Approval of the relocation of San Diego Gas & Electric Company's 69 kV electric transmission line Circuit TL 667 and 12 kV distribution underbuilds.

Project Description

The San Dieguito Wetland Restoration Project includes restoration and enhancement of tidal wetlands, the development of native upland habitat on the public properties surrounding the proposed wetlands, and the enhancement and expansion of several freshwater and seasonal coastal wetland areas. Another important element of the project is the implementation of a public access and interpretive plan for the project area that includes proposals for a regional trail, nature trails, a nature / interpretive center, trail staging areas, and an interpretive program. In accordance with the adopted San Dieguito River Park Concept Plan, a Park Master Plan for this portion of the San Dieguito River Valley has also been drafted to address all of these project components.

A major component of this planning effort is a tidal restoration proposal to (1) restore the aquatic functions of the lagoon through permanent inlet maintenance and expansion of the lagoon's tidal prism, and (2) create subtidal and intertidal habitats on both the east and west sides of I-5. Tidal restoration would involve modifications to the existing drainage pattern, excavation of the tidal inlet to promote continual tidal exchange, excavation / dredging of sediments on up to 247 acres to create / restore coastal wetlands, construction of three berms (two for the Reduced Berm Alternative) along the river to maintain existing flood flows and direct sediment transport to the ocean, and identification of appropriate disposal sites for excavated/dredge material generated from the project. Five nesting sites, which would provide 13.7 acres of flat nesting area for the California least tern, western snowy plover, and other shorebirds, are also proposed in the restoration plan.

The draft EIR/EIS analyzes six project alternatives including the Mixed Habitat, Maximum Tidal Basin, Maximum Intertidal, Hybrid, Reduced Berm, and No Action alternatives. All but the Reduced Berm and No Action alternatives have the same restoration footprint. Each of five action alternatives proposes a different mix of tidally-influenced habitat types and require a different grading plan, with those alternatives that would create larger areas of subtidal and low salt marsh requiring more excavation than those alternatives that would create intertidal mudflats and high marsh. Excavation generated from these alternatives would range from 1.2 million to 3 million cubic yards.

PROJECT IMPACTS

The significant environmental impacts of the five project alternatives (with the exception of the No Action Alternative) are summarized in tables ES-2 through ES-5 by resource, along with proposed mitigation measures and level of significance after mitigation. Potentially significant environmental impacts have been identified in the areas of land use, landform alteration/visual quality, hydrology/water quality, traffic circulation, noise, air quality, geology and soils, public utilities, biological resources, public health and safety, and natural resources. The project includes measures to mitigate some potential impacts, while other mitigation will be made conditions of subsequent permits. Cumulative impacts are not addressed in these tables but are described in Chapter 6 of this EIR/EIS.

The project has beneficial impacts, as well, including:

- Helping to restore aquatic functions by opening the tidal channel and maintaining tidal exchange between the ocean and lagoon/wetlands, thereby improving water quality and health of wetland habitat.
- Restoring habitat and improving existing habitat values, thereby benefiting threatened and endangered species (least tern, snowy plover, and Belding's savannah sparrow).
- Increasing acreage of all tidal habitats with beneficial impacts on associated species.
- Improving functions and values of existing tidal habitats with beneficial impacts on associated species.
- Enhancing functions and values of seasonal wetlands with beneficial impacts on associated species.
- Restoring native uplands with beneficial impacts on associated species.
- Enhancing fresh and brackish water marsh, riparian woodland and scrub habitats.

- Creation of nest sites would benefit least tern and snowy plover and other waterbirds that may use these sites and would contribute to the restoration of ecosystem functions and values.

- Preserving the site in open space and restoring a number of filled and otherwise degraded areas with native vegetation, thereby improving the overall aesthetic qualities of the site.

- Providing additional recreational opportunities in areas currently closed to public use through the design and implementation of a regional trail, nature trails, a nature/interpretive center, trail staging areas, and an interpretive program.

RECOMMENDATIONS

In accordance with Section 15126.6(e)(2) of the CEQA Guidelines, the lead agencies have reviewed the alternatives presented in this document in order to determine the environmentally superior alternative. In making this selection, the agencies are required to consider the short- and long-term environmental impacts and benefits of each alternative. The very nature of the proposal, the restoration of native wetland and upland habitats, makes this a difficult task. As developed, each of the restoration alternatives would provide important but somewhat different benefits to the environment. Therefore, for the purpose of selecting the environmentally superior alternative, the lead agencies did not attempt to rank these benefits; rather, all of the restoration alternatives were viewed as having similar environmental benefits. The alternatives were then ranked in terms of their overall impacts on the environment. Based on this analysis, the Maximum Intertidal Alternative is considered the environmentally superior alternative. Implementation of this alternative would require the least amount of excavation of the four major restoration alternatives (Mixed Habitat, Maximum Tidal Basin, Maximum Intertidal, and Hybrid). Reduced grading would result in reduced impacts to air quality, traffic, landform, water quality, and noise. The Reduced Berm Alternative would require significantly less initial grading. However, this alternative was not selected as the environmentally superior alternative because of its greater long-term environmental impacts. These impacts result from the need for more frequent maintenance at the river mouth and in the river channel due to the reduced tidal prism provided by this alternative. Such increases in maintenance would result in greater disruption at the river mouth and on the beach over the life of the project, resulting in more frequent short-term impacts to recreation, visual quality, and noise.

Neither CEQA nor NEPA require that the environmentally superior alternative be the same as the "agency preferred" alternative, therefore, it should not be automatically assumed that the environmentally superior alternative will also be considered the agencies' preferred alternative. In fact, the lead agencies have not yet selected their preferred alternative. This will be done after taking into consideration the public comments received for the draft EIR/EIS. The Final EIR/EIS, which will be made available for public review in accordance with NEPA, will identify the lead agencies' preferred alternative.

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative

Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Land Use	Use of SA3 and the access road leading to this construction staging area could be incompatible with residences along Racetrack View Drive.	Hours of operation at SA3 shall be limited to 7 A.M. to 7 P.M. and nighttime lighting shall be shielded and limited to that needed for security and nighttime maintenance, should this activity be permitted by the appropriate land use authorities. The construction contractor shall be responsible for implementing this mitigation, with oversight by SCE or JPA. Use of the proposed new haul road for construction access to SA3 shall be limited to mobilization, demobilization, and occasional truck traffic for equipment maintenance and exchange and hours of operation limited to 7 A.M. to 7 P.M. Use of the haul road for daily access by construction workers going to and from the work site shall be prevented. The construction contractor shall be responsible for implementing this mitigation, with oversight by SCE or JPA.	Less than significant
	Excavation / construction west of I-5, inlet dredging, and maintenance dredging would produce temporary noise and night lighting impacts on residential areas along Sandy Lane. Additionally, periodic disruption of beach use would occur during maintenance dredging.	A public outreach / public comment program shall be developed by the applicant and approved by the appropriate affected agencies (City of Del Mar, City of San Diego, CCC, JPA).	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative

Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Land Use	Crossing the river mouth on foot would become relatively more difficult most of the time and prevented at some periods, particularly during high tides.	Prior to the approval of discretionary permits required for the project from the City of Del Mar, the applicant shall prepare, to the satisfaction of the City of Del Mar, a design for a pedestrian access way along the south side of the inlet channel that would accommodate access to Camino Del Mar. In addition, the applicant shall also agree to fund and construct said pathway prior to opening the inlet channel. If based on additional design work, the City of Del Mar determines that the pathway is in fact technically infeasible, an alternative access way to Camino Del Mar shall be considered.	Less than significant if technically feasible to construct the pathway in a timely manner.
	If either DS37 or DS38 were used as disposal sites during peak times, such as the fair or racing season, disposal activities could conflict with activities at these sites.	Disposal sites D37 and D38 shall not be used during peak times such as the Del Mar fair or racing season.	Less than significant
	The Coast to Crest Trail could conflict with use of the 22^{nd} District Agricultural Association's seasonal parking lot and Surf and Turf golf driving range.	A 5- to 6-foot-high fence with 1-inch or smaller mesh shall be provided between the driving range and the trail. A lodgepole or post and cable fence shall be provided between the trail and the District's parking areas. The final trail design and alignment shall be coordinated with the District in order to minimize potential conflicts.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Land Use	The preferred alignment for the Coast to Crest Trail east of the Via de la Valle property is to travel along the north side of the San Dieguito River near the southern end of the Horsepark property. This alignment could result in potentially significant land use conflicts between the existing equestrian operation and public trail uses.	Prior to construction of the Coast to Crest Trail, the JPA shall coordinate the trail alignment with the District to ensure that use conflicts have been minimized. Measures such as the installation of fences, gates, and possibly vegetative screening shall be considered and District staff shall be consulted to determine the best alignment for the trail through the Horsepark facility.	Less than significant
	Land use compatibility impacts to residential areas located to the north of the site across Via de la Valle could occur if public address systems are used and/or if night lighting is visible.	Implement mitigation measures described for noise and visual resources below.	Less than significant
	Use of a tram on the proposed trail system during the Del Mar fair could cause conflicts with bicyclists, hikers, equestrians, and other users. The tram could cause safety impacts, as well as a diminishment of the overall recreational experience.	No feasible mitigation measures have been identified.	Significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative

Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Hydrology / Water Quality	Construction could result in: ▪ Spills or leaks of oils or fluids onto ground and into aquifer or wetlands; ▪ Potential for increased channel and river bottom scour; • Short-term impacts to water quality (e.g., increased turbidity) during dredging, berm and nesting site construction, and upland disposal.	The contractor shall attend a pre-construction meeting to review all required environmental mitigation measures prior to the commencement of any construction activity. Prior to the utilization of any construction staging areas, temporary berms / cofferdams shall be constructed around the staging areas to prevent the transport of spilled materials into adjacent waterways. The contractor shall take all appropriate precautions to avoid spillage or leakage of hazardous materials, such as petroleum products, all fueling and maintenance of construction vehicles shall occur either off-site or be limited to the designated staging areas. The contractor shall be responsible for removing and properly disposing of any hazardous materials that are brought onto the construction site as a result of construction activity and / or removing and properly disposing of any soils that become contaminated during the construction process through spillage or leakage. All such contaminated areas shall be cleaned up prior to preparing the construction site and temporary construction staging areas for revegetation. The contractor shall prepare, submit to the JPA and any other designated agencies for review and approval, and follow the recommendations of a spill prevention and contingency plan.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Hydrology / Water Quality		The contractor shall construct additional temporary berms around fuel storage areas <u>that shall be maintained for the full time during which construction is occurring and construction equipment is present on the site,</u> and all fuel storage areas shall be confined to designated construction staging areas. The contractor shall construct berms or erect silt curtains around areas being excavated / graded to reduce soil losses to waterways. The contractor shall control fugitive dust emissions through watering or other accepted standard methods of control. Water quality monitoring shall be implemented for the following: • Monitor the dewatering effluent to demonstrate that the effluent quality has achieved the appropriate receiving water criteria. Construction may be halted if effluent levels are not within established criteria. • Conduct water quality monitoring during dredging / construction activities; if monitoring results indicate excessive impacts (e.g., depressed dissolved oxygen concentrations), modifications to construction or sediment disposal methods to lessen the magnitude of the impacts shall be developed and implemented in consultation with the appropriate permitting agencies. All designated fill slopes shall be hydroseeded and landscaped within 30 days of completion of grading activities. Incorporate various engineered erosion control measures into the project design.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Hydrology / Water Quality		Temporary sedimentation and desilting basins, to be located between graded areas and adjoining wetlands shall be constructed and maintained until the potential for erosion of graded areas has been minimized through the successful establishment of erosion control landscaping..	Less than significant
	Public use of the proposed trails may result in greater amounts of trash, debris, and wastes from domestic animals (e.g., horses). Runoff containing these materials could adversely impact surface water quality.	Expand the JPA's current trail maintenance program to cover the trails located within the current project area. This maintenance program shall include the requirement to perform regular trail maintenance, including manure and trash removal from and around the trail. Trail tread maintenance intended to avoid erosion problems on natural soil surfaced trails shall occur on as-needed basis. The maintenance program shall include a monitoring component that will determine when and how often trail cleanup should occur. This could result in more frequent maintenance, but under no circumstances shall trail cleanup occur less than once ever two weeks. If seasonal tram use is permitted on the Coast to Crest, then trail cleanup should occur daily during the period in which trams are using the trail.	Less than significant
	The use of area U18 for multiple uses, including equestrian uses and seasonal parking, could result in greater amounts of trash, debris, and wastes from domestic animals (e.g., horses) than under existing conditions. Runoff containing these materials could adversely impact surface water quality.	Implement a routine maintenance program for the area that would include regular trash and debris cleanup, routine removal of manure from the site, protection of slope vegetation to ensure adequate erosion control on adjoining slopes, routine dust control, and proper drainage of the site that is directed away from the adjoining wetlands.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative

Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Geology / Soils	Grading of construction staging areas, access areas, disposal sites, and public access areas could result in erosion and associated short-term water quality impacts. Erosion of graded slopes at disposal sites could result in potential long-term water quality impacts.	Implement standard short-term erosion control features during grading and construction of permanent erosion control features on slopes of disposal sites.	Less than significant
	Seismically induced ground shaking could result in liquefaction, differential settlement, and lateral spreading, including potential slope failure of berms, nesting sites, freeway embankments, and disposal sites.	Site-specific geotechnical investigations shall be completed in areas proposed to receive fills, including berm areas, nesting sites, public access areas, and disposal sites.	Less than significant
	Overexcavation of area W1 could result in potential slope instability of the adjacent freeway embankment.	A geotechnical investigation shall be completed to determine appropriate slope stability measures.	Less than significant
	Post-construction shrinkage of soil could result in differential settlement and distress of structure foundations.	Dewatering of soils shall be completed prior to sediment placement to allow pre-construction shrinkage of soils.	Less than significant
	Natural corrosivity of on-site soils could result in corrosion of future ferrous metal structures.	Heavy-gauge, corrosion protected, steel drainage pipes / culverts or plastic pipe shall be utilized in the berms.	Less than significant
Biological Resources	Precise elevation controls are necessary to ensure that habitats are graded to design specifications and provide the intended functions and values.	Survey benchmarks shall be established prior to construction and surveyed during construction to ensure that elevations are achieved within a tolerance of + / - 0.25 ft.	Less than significant
	If least terns, snowy plovers, or other water birds were to nest on NS15 in the future, use of the access road and staging area SA3 could affect their reproductive success and risk injury to the birds.	All construction activities within 100 feet (or as otherwise determined by the USFWS) of any California least tern or western snowy plover breeding habitat shall not resume or begin until a qualified, USFWS approved biologist determines that breeding is not taking place.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Biological Resources		If California least terns or western snowy plovers are breeding, all construction activities within 100 feet (or as otherwise determined by the USFWS) of the active breeding sites shall be postponed until breeding activities have finished (approximately September 15 or as otherwise determined by surveys and the USFWS).	
	Potential impacts of staging areas and haul routes include the removal of existing vegetation, disruption of wildlife use — including possible nesting on NS15 — alteration of soil and drainage characteristics, and construction-related spills. Although the project commits to restoration of these areas, plans to accomplish this are only generally developed. Final details should be addressed during permitting for the project. Impacts are considered potentially significant but mitigable by confining ground disturbance, parking, and maintenance/ refueling activities to areas that are of lowest value to wildlife and can most easily be restored following construction, and by avoiding the use of areas where sensitive bird species are nesting.	Proposed construction staging areas and haul routes shall be located within the footprint of marsh restoration and the overlap of existing wetlands minimized wherever possible. To achieve this, the following modifications to proposed staging areas and haul routes shall be incorporated into the final grading plans: • The haul route that passes east-west under I-5 shall be located as far to the south as possible to avoid the population of Coulter's goldfields on the west side of the bridge and the existing tidal channel east of the bridge. The haul route and water control structure on the southwest side of I-5 shall be placed in ruderal habitat on the berm west of the bridge.	Less than significant
	The water control structure for haul route to DS38 would temporarily disrupt tidal flows and constrict the area of passage for aquatic organisms. Frequent use of the structure by trucks hauling sediment to DS38 would also disturb fish and wildlife in the vicinity.	• Staging Area SA3 shall be reconfigured as close as possible to the toe of the I-5 embankment to avoid existing seasonal wetlands. • Staging Area SA4 shall be relocated into the W4 wetland restoration footprint and adjacent ruderal habitat, avoiding areas of seasonal wetlands to the west.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Biological Resources		Prior to construction, the boundaries of staging areas and haul routes shall be flagged by a qualified biologist. In addition, a biological monitor shall be present during the pre-construction meeting and during initial grading of these areas to ensure that no construction activity occurs outside of the designated construction boundaries.	Less than significant
		All sensitive biological areas within the project site but outside the restoration footprint shall be delineated on construction plans and flagged in the field in order to avoid any impacts to special status plants or habitats.	
		Prior to any construction-related disturbances, all construction personnel shall attend an environmental training session that shall discuss the sensitive resources in the project area and the mitigation measures designed to protect them.	
		All haul roads and construction staging areas (with the exception of SA3) shall be restored to pre-disturbance construction conditions following completion of construction.	
		Prior to use of SA3 during the March through September period, a qualified biologist shall confirm the absence of nesting by least terns, snowy plovers, or other sensitive bird species, within 500 feet of the staging area and associated haul route.	

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Biological Resources		No excavation shall occur at the river mouth (SA1) until a fenced access way has been installed to direct beach users around the construction and down to the beach. This fencing would ensure that vegetated foredunes and coastal bluff scrub would not be impacted by beach users looking for an alternate route to the beach.	Less than significant
		All vehicles and construction equipment shall be parked, and equipment refueling and maintenance shall take place only in designated areas where potential spills of fuel, lubricants, or coolants can be contained and cleaned up without impacts on adjacent wetland and aquatic habitats.	
		The proposed bridge and temporary water control structure needed to accommodate the haul road proposed to cross I-5 shall incorporate gates or culverts that can be opened and closed temporarily, enabling tidal and river flows to pass through the structure during periods when water control is not needed but the bridge must be left in place for use as a haul route.	
	Beach disposal could adversely impact grunion spawning or the survival of eggs and larvae from previous spawns.	Beach disposal shall not occur during the high tide spawning and hatching periods of the California grunion, as predicted by the CDFG.	Less than significant
	<u>Destruction</u> of jurisdictional wetlands <u>that are converted</u> to uplands through use of disposal site DS38.	Based on USACE final determination of jurisdictional area at DS38, compensatory acreage of wetlands <u>would have to be provided at a 4:1 ratio</u> for any unavoidable losses of jurisdictional habitat. <u>Mitigation acreage does not appear to be available, making use of this site potentially infeasible.</u>	<u>Significant unless sufficient mitigation acreage were provided</u>

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Biological Resources	A portion of the trail alignment (up to 2 acres) would require the conversion of wetlands to non-wetland trail use.	The JPA shall work with the USACE to determine the exact acreage of wetland habitat that would be impacted by the construction of the Coast to Crest Trail. Impacts to freshwater marsh (up to 0.28 acre) shall be mitigated at a 1:1 ratio; impacts to seasonal salt marsh (up to 1.18 acres) shall be mitigated at a 4:1 ratio; and impacts to tidal wetlands (up to 0.5 acre) shall be mitigated at a 4:1 ratio. To mitigate for these impacts, creation of up to 0.28 acres of freshwater marsh, up to 4.7 acres of seasonal salt marsh, and up to 2 acres of tidal wetlands are proposed.	Less than significant
		These mitigation areas are shown on figures 2.3.1-1, 2.3.2-1, 2.3.3-1, 2.3.4-1 and 2.3.5-1 as areas M32, M33, M34 and M37. Area M32 represents the creation of up to 2.31 acres of high salt marsh, M33 represents the creation of up to 1.15 acres of seasonal salt marsh, M34 represents the creation of up to 0.30 acres of freshwater marsh, and M37 represents the creation of up to 4.75 acres of salt marsh transition habitat. An additional 0.12 acre of wetland mitigation would be required if the Coast to Crest Trail were to accommodate the tram. The exact amount of mitigation acreage for the Coast to Crest shall be determined during the permit application process.	

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Biological Resources	If inlet maintenance ceases, populations of tidal marsh plants, invertebrates, fish, and wildlife that become established in the restored, fully tidal system could be adversely affected by inlet closure and the resulting deterioration of water quality.	Prior to the approval of the San Dieguito Wetland Restoration project by the JPA, the JPA shall enter into an agreement with SCE that would provide the legal and financial guarantees necessary to ensure that the inlet will be maintained in an open condition in perpetuity and the restored wetland will continue to attain the biological benefits described in section 4.4.	Less than significant
	Areas near the river mouth would be disturbed during wetland construction and subjected intermittently to disturbance in conjunction with inlet maintenance. Disturbance would include both the direct effects of equipment operation and the indirect effects of redirected foot traffic.	Impacts on these sensitive habitats are potentially significant but mitigable by confining activities to areas of lowest biological value and providing public access along pre-existing trails where native vegetation would not be impacted.	Less than significant
	A significant increase in the turbidity of the water associated with construction may temporarily reduce foraging success of terns using the lagoon area during the construction period. The disruption of least tern foraging or breeding activities would be a significant impact that could be mitigated by the avoidance of construction activities within 500 feet of nesting birds, and the installation of sediment fencing around work areas and other erosion control measures (described under the water quality mitigation section) to control erosion and limit turbidity.	See Hydrology / Water Quality above.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Biological Resources	If breeding on the site occurred during construction, least Bell's vireo could be adversely affected.	Least Bell's vireo presence/absence surveys shall be conducted in the spring by a qualified, USFWS approved biologist. Surveys shall take place in the riparian habitat in the southeastern part of the property prior to the commencement of any activities within 500 feet of that area. If this species is present during its breeding season, grading and other intense activity associated with habitat restoration within 200 feet, or as otherwise determined by the USFWS, of the breeding habitat shall be scheduled to occur outside the least Bell's vireo breeding season (approximately March 15 through September).	Less than significant
	Possible disturbance of Belding's savannah sparrow during nesting season.	Belding's savannah sparrow presence/absence surveys shall be conducted in the spring by a qualified, USFWS approved biologist in all suitable habitat within the project area. Construction staging, excavation, dredging, disposal sites use, and berm creation shall be scheduled to occur outside the breeding season for Belding's savannah sparrow (March 1 to August 1) for all activities that would occur in or within 100 feet of habitat known to support Belding's savannah sparrow breeding. Obtain CDFG incidental take permit as required.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Biological Resources	Predation on least tern or snowy plover nests could be increased, or nesting could be discouraged, by fences, structures, bushes, or public access that is too close to the nest sites.	California least tern and western snowy plover breeding habitat created onsite shall include the following characteristics: • The nesting sites shall be monitored to address fencing and potential predation issues. If least terns begin using the nesting sites, the nesting attempts shall be monitored to determine if predation is a problem, and if so, whether it is mammalian or avian in origin, and appropriate measures shall be taken to eliminate any future predation. • Large shrubs or man-made structures that could be used as perches by predators shall not be allowed on the berms near the nest sites. • Fencing shall not be installed initially around the nesting sites west of the highway, and shall be based on monitoring studies on the incidence of predators following construction. • The nesting sites shall be monitored to address fencing and potential predation issues. If least terns begin using the nesting sites, the nesting attempts shall be monitored to determine if predation is a problem, and if so, whether it is mammalian or avian in origin.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Biological Resources		If the use of fencing is unavoidable (to exclude mammalian predators), the following measures shall be required as part of the fence installation: fencing shall be installed at the base of elevated breeding habitat or if there is no elevation difference, at a distance to eliminate vantage sites for avian predators; materials that are mechanical deterrents to perching shall be installed on top of the fence. If these measures do not solve the problem, additional measures shall be used, such as protection of individual nests, and trapping and relocation of problem predator birds.	Less than significant
		Public access points (trails or lookouts) shall not be constructed within 100 feet of any tern nest site. Trails or access points shall be temporarily closed if terns nest within that distance.	
	Possible elimination of local populations of non-listed sensitive plant species (southern tarplant, Coulter's goldfields, Del Mar sand aster, woolly seablite) if restoration activities cannot avoid sites supporting them.	• Non-listed, sensitive plant species shall be avoided to the maximum extent possible. Where impacts cannot be avoided, seed shall be salvaged from impacted plants and an attempt shall be made to reestablish populations in suitable habitat. Restoration efforts onsite shall use seed collected from the site, where feasible.	

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Biological Resources		A habitat restoration and monitoring plan, including success criteria that recognize the experimental nature of such transplantation, shall be prepared for any reestablishment effort. This plan shall include the following details for sensitive plant species: • Restoration efforts shall plan to establish the Southern tarplant populations on spoil disposal areas, as this species appears tolerant of saline compacted soils. The species shall be included in the proposed seed and plant mix for use in freshwater marsh transitional vegetation. In order to obtain viable seed, the plants shall not be impacted until the seed has been allowed to mature. • Restoration efforts shall plan to establish the Coulter's Goldfields populations in areas of salt marsh playas and fringing areas that receive seasonal rainwater flushing that reduces soil salinity. The species shall be included in the proposed seed and plant mix for use in upland restoration of the site. In order to obtain viable seed, the plants shall not be impacted until the seed has been allowed to mature. • Impacts to the red sand-verbena colony onsite would be considered locally significant and therefore, the area occupied by the red sand-verbena shall be fenced to prevent inadvertent impacts to these plants and their habitat.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Biological Resources		• If individual Lewis's evening primrose plants are impacted, this species shall be included in the proposed seed and plant mix for use in similar habitat on conserved lands; seed shall be collected from Penasquitos Lagoon, which supports the only large population in the County.	
		• If individual Del Mar Mesa sand aster plants are impacted, this species shall be included in the proposed seed and plant mix to reestablish the plant on a nearby site on suitable habitat containing sandstone. Seed collection from existing plants on site shall occur to support the inclusion of local genotypes of this species in the revegetation seed and plant mix for coastal sage scrub and chaparral.	
		• Where larger populations of woolly seablite (Suaeda) cannot be avoided, plants shall be salvaged for propagation or transplanted into a suitable protected location.	
	Disruption of breeding by sensitive non-listed bird species.	To avoid impacts to sensitive bird species that potentially nest in the upland habitat within the project boundaries (including California Species of Special Concern species such as loggerhead shrike, burrowing owl, and northern harrier), surveys shall be conducted by a qualified biologist during the appropriate breeding season for each species. Survey results will determine the need for construction setbacks from nests to reduce impacts to breeding success.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Biological Resources	Destruction of burrows occupied by burrowing owls.	If burrowing owl burrows are disturbed during construction activities suitable (burrow) habitat shall be created. Any impact to occupied burrowing owl burrows would be considered locally significant and shall require the creation of artificial burrows in suitable habitat that is destined for long-term preservation. Burrowing owls shall either be passively relocated or captured and released at the preserved site. Relocation shall occur in the non-breeding season to avoid impacts to eggs, nestlings, or dependent juveniles.	Less than significant
	Disruption of nesting by sensitive riparian bird species.	To avoid impacts to sensitive bird species that potentially nest in the riparian or wetland habitat within or near the project boundaries (including California Species of Special Concern species such as yellow-breasted chat, Cooper's hawk, and tricolored blackbird and Fully Protected species such as the white-tailed kite), surveys shall be conducted by a qualified biologist during the appropriate breeding season for each species. All initial disturbances to riparian or wetland vegetation within 250 feet of known breeding sites for these species shall occur prior to February 15 or after July 15.	Less than significant
	Mortality to sensitive (non-listed) wildlife species during construction.	All wildlife in harm's way during construction, including individual southwestern pond turtles, shall be collected and relocated to suitable habitat by a biological monitor.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative

Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Natural Resources	Use of DS32 would result in the loss of 43 acres of Prime Farmland. The use of DS33, DS34, and DS35 and construction of the 25-car parking lot would impact about 45 acres of land that are under cultivation and about 34 acres of land classified as Farmland of Statewide Importance. The use of offsite disposal area DS36 would displace 24 acres of land that are under cultivation and 26 acres that are classified as Farmland of Statewide Importance.	No feasible measures have been identified. It is only through the selection of an array of disposal site options that do not include DS32, DS33, DS34, DS35, and DS36 that the impacts to important farmland at these sites would be avoided.	Significant
Landform Alteration / Visual Quality	The filling of DS32, DS33, DS34, DS35, DS36, and DS38 would result in a significant impact to natural landforms (Landform Alteration).	Impacts associated with landform alteration are only mitigable through a redesign of the project to reduce the amount of fill relocated to any one spot within the project boundaries or by eliminating one or more of the disposal sites from the list of potential options. Unless redesigned or eliminated, the grading proposed at disposal sites DS32, DS33, DS34, DS35, DS36 and DS38 would be considered significant and unmitigated.	Less than significant if project is redesigned
	If the parking lot at DS37 were not landscaped in association with resurfacing following disposal, the expanse of asphalt that would be used to resurface the site would be more noticeable from the roadway than that which currently exists (Visual Quality).	The area shall be landscaped in accordance with a landscape plan, approved by the CCC. This landscaping plan shall be implemented in association with the resurfacing of the parking area.	Less than significant
	The stone revetment along the toe of the longest berm (in Area B8) and Stone Revetments 1 and 2 would cause an adverse visual impact (Visual Quality).	Those rocks that would be exposed and visible to the public in Stone Revetments 1, 2, and 3 shall be of a color that will blend in with the natural color of the soils in the area.	Less than significant
	The articulated concrete block (ACB) mats above the stone revetment for berm B8 would cause an adverse visual impact (Visual Quality).	The ACB mats and the surrounding area shall be revegetated, as described in section 2.3.1.4.4, and monitored by the CCC in accordance with permit conditions.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Landform Alteration / Visual Quality	When considered as a separate project element, all three berms would result in an adverse impact to landforms due to their height and the amount of fill required (Landform Alteration).	It is not feasible from a hydrologic perspective to reduce the amount of grading required to construct the proposed berms.	Significant
	Nesting sites NS11, NS12, and NS14 would require more than 2,000 cubic yards of earth and sand per acre and would have an elevation more than 10 feet above the finished grade (Landform Alteration).	No feasible mitigation measures have been identified.	Significant
	The light-colored plateaus of the new nesting sites (excluding NS15) would contrast noticeably with the surrounding area, particularly when seen from higher elevations (Visual Quality).	No feasible mitigation measures have been identified.	Significant
	Earthmoving / construction activities would have an adverse visual impact for between 2 and 4 years until the vegetation is established (Visual Quality).	No feasible mitigation measures have been identified to reduce impacts during this time period.	Significant
	The Nature / Interpretive Center would be visually compatible with the adjacent commercial development, but would restrict views of the river valley from a portion of Via de la Valle (Visual Quality).	The form, mass, and profile of all structures and architectural features shall be designed to blend with the surrounding terrain. Materials, finishes, and colors of the main building, accessory structures, and any walls or fences shall be compatible with the intent of minimizing the visibility of the project. Colors shall be limited to subtle earthtone hues, with style and texture that reflects traditional / rural character of the river valley. All glass shall be non-reflective.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Landform Alteration / Visual Quality		Grading associated with the construction of the Nature Center shall be designed so as to reduce the need for manufactured slopes visible from open space areas. Parking areas shall be sited and / or landscaped to minimize visibility from major roadways and sensitive viewsheds. Native species shall be the predominant plant material used in and around park facilities. Night lighting shall be minimized to that required for security / safety purposes. Structures shall be oriented on the site in a manner that minimizes the blockage of views from adjoining public areas.	

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Landform Alteration / Visual Quality	The use of area U18 for temporary parking, truck trailer storage, show barns and / or practice tracks, and / or uncovered show rings also could block some or all of the views of the river valley from Via de la Valle (Visual Quality).	To mitigate visual impacts from potential use of area U18 by the District, the District shall prepare a site design for the specific use(s) proposed on the site. The site design shall incorporate the above outlined measures described for the Nature / Interpretive Center. In addition, if the site is to be used for seasonal parking, the District shall prepare a landscape plan that addresses the visual appearance of the parking area during the rest of the season. The land exchange agreement between the District and the JPA, if prepared, shall limit any future use of the property to the specific use(s) stated in the agreement. The specific site design shall be evaluated to fully assess potential visual impacts as part of the subsequent environmental review process that is required to address potential traffic impacts from such uses. The determination of whether or not potential impacts to visual quality from the specific proposal are mitigated to below a level of significance would occur as part of subsequent environmental review.	Unknown
Traffic / Circulation	During construction periods of heavy truck traffic, in combination with periods of seasonal traffic congestion in the region (during the Del Mar Fair, thoroughbred racing season, or high summer beach use), the project could increase traffic congestion to significant levels within roadways adjacent to the site.	Implement a traffic management plan that would minimize project-generated truck traffic on roadways adjacent to the site during peak seasonal traffic periods. The traffic plan shall also include measures to accommodate the movement of trucks to and from the project site during periods of intense truck activity, such as using flagmen and installing warning signs to notify motorists of the presence of truck activity.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Traffic / Circulation	Construction of the Coast to Crest Trail from I-5 west to Jimmy Durante Boulevard could significantly reduce the number of parking spaces (up to 150) in the District-owned dirt parking lot located south and east of Jimmy Durante Boulevard during high volume Del Mar Fair days.	The Plan Implementation section of the Master Park Plan for the lagoon area shall include the following requirements: (1) The JPA shall work with the District to refine the current alignment for the Coast to Crest Trail in the area west of I-5 in order to minimize the loss of parking spaces along the southern edge of the parking lot; and (2) the JPA shall work with the District to develop a contingency parking plan for days of very high attendance that could involve permitting parking on the trail, where feasible, and use of the 60 space parking lot at the proposed visitor / interpretive center.	Less than significant
	Future use of area U18 for purposes other than open space and the extension of the Coast to Crest Trail could generate potentially significant levels of traffic.	The Master Park Plan for the lagoon area shall include in the Plan Implementation section the following condition: Prior to JPA Board approval of the lease or sale of area U18 (the Via de la Valle property), environmental analysis shall be conducted to consider any project specific proposals for area U18. Environmental review shall include a traffic impact analysis.	Unknown
Air Quality	Phases 1 / 2 construction would exceed the NO_x emissions threshold of 50 tons per year.	Implement two-degree injection timing retard on diesel-powered equipment.	Less than significant
Public Health / Public Safety	The number of aquatic mishaps at the inlet channel as it crosses the beach may increase since the channel would be wider than at present (most of the time), more of the channel would be at a constant depth, and a strong tidal inlet current would occur more regularly than at present.	The possible increase in the number of aquatic mishaps in the inlet area would be mitigated by staffing the temporary lifeguard tower at the inlet area on a more regular basis and providing an alternate public access route around the inlet via the pedestrian pathway along the Camino Del Mar Bridge. In addition, the wood pilings located just west of the Camino Del Mar Bridge will be removed by the applicant. This will eliminate a secondary hazard source for swimmers and waders caught in	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Public Health / Public Safety		strong currents. To ensure appropriate lifeguard staffing, the applicant shall provide to the City of Del Mar as a condition of the Coastal Development Permit and required permits from the City of Del Mar, the funds necessary to staff two additional seasonal lifeguards for the initial two years following project completion. In addition, the applicant would be required to post a bond (the amount to be determined by the City of Del Mar) to cover additional staffing in future years. The exact level of staffing required to address long-term project-related mishaps in the inlet area would be determined as a result of the monitoring program described below. The issue of an alternate public access route is addressed in section 4.1 of this document. In this report, current estimates are based on modeling results, which have inherent levels of error, and the inlet channel depth estimate (-2 NGVD) is based on design inputs. The actual currents introduced by this project may be somewhat less or greater than these estimates. As stated above, actual channel depths may vary considerably over time depending on various channel characteristics and the frequency of maintenance. A prudent measure would be to implement a monitoring program after project implementation to gain greater confidence in both current and depth estimates. If the actual values are demonstrated to be significantly different, the risk to public health may also be significantly different. To address this issue, the following measures shall be made conditions of the Coastal Development Permit	

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Public Health / Public Safety		and future permits required from the City of Del Mar: a program to monitor changes at the inlet channel during the initial two years following project completion shall be developed by the applicant in association with the City of Del Mar and conducted by the project applicant. The results of this monitoring program shall then be provided to the CCC and the City of Del Mar for review on a yearly basis. If the initial results indicate a significantly higher risk to public health, as determined by the CCC and City of Del Mar, then funding for additional lifeguard patrols in this area shall be provided by the project applicant to the City of Del Mar, which is responsible for lifeguard activities in this area. This measure would mitigate the potential impact to a less than significant level (Class II). To ensure that this measure is implemented, SCE shall post a bond with the City of Del Mar to cover the cost of additional lifeguard patrols during peak use periods (the actual amount of the bond would be worked out between the City of Del Mar and the applicant during the processing of required permits from the City of Del Mar). If during the two-year monitoring program, it is concluded that there is a significantly higher risk to public health that originally estimated, the funds set aside by the applicant would be used to increase lifeguard patrols. If, however, the monitoring program indicates no significant change over the original estimates, the bond would be refunded to the applicant following review and approval of the two-year monitoring report.	

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Public Health / Public Safety	There is a potential for uncovering hazardous wastes and / or munitions during excavation.	A monitoring, emergency response, and reporting plan shall be prepared and implemented prior to the start of any on-site dredging or excavation. The plan shall address procedures for protecting worker safety and public health in the event that event of hazardous wastes or munitions are encountered. The construction contractor shall be responsible for implementing this mitigation, with oversight by SCE or JPA.	Less than significant
Cultural Resources	Unanticipated discovery and disturbance of buried archaeological resources during excavation and dredging.	Implement archaeological monitoring program.	Less than significant
Paleontological Resources	Unanticipated discovery and disturbances of fossils during excavation and grading.	Implement paleontological monitoring program.	Less than significant
Public Utilities	Several electrical transmission lines would have to be relocated.	Relocation of electric lines shall be performed in a manner that avoids or minimizes service disruptions.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Public Utilities	The Pacific Bell telephone duct bank located to the east of the I-5 right-of-way could experience exposure due to scour at the opening to the southern basin on the south side of the San Dieguito River.	Mitigation for potential impacts to the Pacific Bell duct bank could involve one of the following options: • Lower the existing concrete vault to avoid impacts from increased scour; or • Modify the currently proposed channel configuration in the area immediately east of the I-5 bridge to reduce anticipated channel velocity during a flood event. This would involve moving the western end of Berm B8 slightly to the north in order to reduce flow constriction in this area; or • Construct a grade control structure downstream of the duct bank. Two methods are available, including (1) driving a steel sheet pile wall parallel to and some distance downstream of the duct bank at or slightly below the existing channel bed elevation, or (2) installing a cellular concrete mat, such as armorflex, over the existing duct bank. The following measures shall be required to mitigate any additional impacts associated with the implementation of area W6a, which may be occur some time after the initial SCE project is completed. – A detailed scour analysis of the feeder channel area (W6a) shall be prepared for review and approval by the City Engineer. If, based on the scour analysis, impacts related to localized scour are identified, one of the following measures shall be included as a condition of the Land Development Permit:	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Public Utilities		– Relocation of the inlet channel to area W6a east, up to a distance of 500 feet, to avoid potential scour impacts to the cable vault, or – Construction of cable vault protection that would extend south beyond the limits of any proposed grading activities.	
	An 8-inch sewer force main that crosses the San Dieguito River between the Jimmy Durante Boulevard Bridge and the NCTD Railroad Bridge could be disturbed by dredging equipment and project-induced scour.	To mitigate potential direct impacts to the sewer main, the following measures shall be implemented. The location of the sewer main shall be depicted on all construction plans for this portion of the project. As a permit condition, the supervising contractor shall review the location of the main with all appropriate parties and the permit shall outline appropriate measures to be implemented to protect the main from inadvertent damage during project construction. If grading is not required in the vicinity of the sewer main, then no mitigation beyond locating and mapping the main on the construction plans would be required to mitigate potential direct impacts to the sewer facility.	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Public Utilities		Mitigation measures for indirect impacts to the sewer main include the following: Hydrologic modeling shall be conducted by the project applicant for the final restoration grading plan in order to establish the full extent of the scour potential in the vicinity of the sewer main. Based on this analysis, the applicant shall provide to the satisfaction of the Del Mar City Manager specific measures for protecting the main from future project-related scour impacts, should the analysis identify an increased scour potential. These measures may include but are not limited to contributing all or part of the funds needed to relocate the main to the Jimmy Durante Boulevard Bridge or protecting the main in place.	Less than significant
Noise	Use of construction staging area SA1 would create adverse noise impacts to residences located near the mouth of the river.	The boundaries of construction staging area SA1 shall be kept at least 100 feet from residences located adjacent to the south, although as-needed construction work may temporarily occur within 100 feet. All internal combustion engine-driven equipment shall be properly muffled. The use of construction equipment in this area shall be limited to daytime weekdays, 7:00 A.M. to 7:00 P.M. and Saturdays from 9 A.M. to 7 P.M. No construction shall be allowed on Sundays or City of Del Mar holidays	Less than significant

Table ES-1. Summary of Significant Impacts of the Mixed Habitat Alternative			
Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Noise	Dredging/excavation activities at the river mouth and in the inlet channel would create adverse noise impacts at nearby residences.	When excavation and dredging (including maintenance dredging) are required between the beach and the railroad bridge and within a distance of about 1,000 feet to the east of the Jimmy Durante Bridge, an electric dredge, or other equipment that reduces the decibel level to 75 dBA or less, shall be used in place of conventional construction equipment. Maintenance dredging shall occur during daylight hours only.	Less than significant
	The potential use of public address systems at the Via de la Valle site (Area U18) could cause excessive noise at nearby residences.	Use of public address systems shall be conducted in accordance with the provisions of the City of San Diego Noise Ordinance.	
	Noise impacts to residences near the end of Racetrack View Drive could occur from use of the access road leading to construction staging area SA3.	The use of construction equipment in this area shall be limited to daytime weekdays, 7:00 A.M. to 7:00 P.M. and Saturdays from 9:00 A.M. to 7:00 P.M., unless the permitting agency (or agencies) determine, following notification of the surrounding property owners, that extending these hours would not significantly impact the adjoining residents. In addition, the use of this access route by daily construction site workers shall be prohibited. These conditions shall be listed on the construction plans and discussed with the contractor at the preconstruction meeting.	Less than significant

Table ES-2. Summary of Significant Impacts of the Maximum Tidal Basin Alternative

Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Land Use	Impacts would be similar to the Mixed Habitat Alternative, although currents could be slightly higher, making crossing of the river inlet by recreation users slightly more difficult	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Hydrology / Water Quality	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Geology / Soils	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Biological Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Natural Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Landform Alteration / Visual Quality	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Traffic Circulation	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Air Quality	Same as the Mixed Habitat Alternative, plus Phase 3 construction would exceed the NO_x emissions threshold of 50 tons per year.	Implement two-degree injection timing retard on diesel-powered equipment and redesign proposed development to shift one percent of the equipment usage from phase 3 into a third year of construction.	Same as the Mixed Habitat Alternative.
Public Health / Public Safety	Same as the Mixed Habitat Alternative, although the tidal prism would be somewhat larger, resulting in slightly higher currents.	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative

Table ES-2. Summary of Significant Impacts of the Maximum Tidal Basin Alternative (continued)

Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Cultural Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Paleontological Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Public Utilities	Same as shown in Table ES-1 for the Mixed Habitat Alternative.	Same as shown in Table ES-1 for the Mixed Habitat Alternative.	Same as shown in Table ES-1 for the Mixed Habitat Alternative.
Noise	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative

Table ES-3. Summary of Significant Impacts of the Maximum Intertidal Alternative

Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Land Use	Impacts would be similar to the Mixed Habitat Alternative, although staging area SA2 may not be required and SA3 would be needed for a shorter period of time	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Hydrology / Water Quality	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Geology / Soils	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Biological Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Natural Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Landform Alteration / Visual Quality	Same as the Mixed Habitat Alternative, although impacts from stone revetment 1 would not occur	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Traffic Circulation	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Public Health / Public Safety	Same as the Mixed Habitat Alternative, although aquatic safety impacts would be the least of any alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Cultural Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Paleontological Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Public Utilities	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Noise	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative

Table ES-4. Summary of Significant Impacts of the Hybrid Alternative

Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Land Use	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Hydrology / Water Quality	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Geology / Soils	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Biological Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Natural Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Landform Alteration / Visual Quality	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Traffic Circulation	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Air Quality	Same as the Mixed Habitat Alternative	Implement two-degree injection timing retard on diesel-powered equipment.	Same as the Mixed Habitat Alternative
Public Health / Public Safety	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Cultural Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Paleontological Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Public Utilities	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Noise	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative

Table ES-5. Summary of Significant Impacts of the Reduced Berm Alternative

Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Land Use	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Hydrology / Water Quality	Same as the Mixed Habitat Alternative, except that grading and berm construction impacts would be relatively smaller and potential contaminant (e.g., trash) inputs from the Interpretive Overlook Trail would be eliminated	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Geology / Soils	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Biological Resources	Same as the Mixed Habitat Alternative, but benefits and impacts reduced relative to other alternatives	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Natural Resources	Same as the Mixed Habitat Alternative, although the use of DS36 would not be required, thus avoiding impacts to agriculture in this area	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Landform Alteration / Visual Quality	Same as the Mixed Habitat Alternative, although the area to be bermed would be less and stone revetments 1 and 2 would not be required	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Traffic Circulation	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Public Health / Public Safety	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Cultural Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Paleontological Resources	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative

Table ES-5. Summary of Significant Impacts of the Reduced Berm Alternative
(continued)

Resource	*Significant Impact*	*Mitigation Measure*	*Significance After Mitigation*
Public Utilities	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative
Noise	Same as the Mixed Habitat Alternative, although construction noise would last less time, and noise from maintenance dredging would occur more frequently	Same as the Mixed Habitat Alternative	Same as the Mixed Habitat Alternative

1. INTRODUCTION

1.1 INTENDED USE OF THE EIR/EIS

The San Dieguito River Valley Regional Open Space Park Joint Powers Authority (JPA) and the U.S. Department of the Interior, Fish and Wildlife Service (USFWS) have determined that the San Dieguito Wetland Restoration Project is subject to both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The need for numerous state and local permits makes the project subject to CEQA, while compliance with NEPA is required where there is federal involvement in a project. In this case, NEPA would apply to the future issuance of a 404 Permit from the U.S. Army Corps of Engineers, as well as to the future granting of federal funds for various aspects of project implementation. To address the requirements of both CEQA and NEPA, the JPA and USFWS have prepared this joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the San Dieguito Wetland Restoration Project. This joint EIR/EIS is an informational document intended to inform both the decisionmakers and the public of the potentially significant environmental effects associated with the design, construction, and long-term maintenance of a coastal wetland restoration project at the San Dieguito Lagoon. The EIR/EIS also addresses potential impacts associated with the implementation of a park master plan for the lagoon area that is proposed by the JPA. Approval of this park master plan will establish the planning framework for the overall restoration and interpretation of the westernmost portion of the San Dieguito River Valley. In addition to tidal wetland restoration, the plan addresses upland and non-tidal wetland restoration, public access and trails, interpretation features including a visitor center, and the potential future uses of designated disposal sites intended to receive excavated/dredged materials generated from proposed tidal restoration activities.

The EIR/EIS is intended to cover all aspects of the project including all required permits and approvals, as described in section 1.9, from the lead agencies, as well as other local, state, and federal agencies. The final EIR/EIS, adopted restoration plan, and approved park master plan would address tidal restoration, as well as other future projects consistent with the project scope as described in the draft park master plan.

This EIR/EIS has been prepared in compliance with CEQA (PRC 21000 et seq.) and the CEQA Guidelines, as amended; NEPA (42 USC 4341 et seq.) and the Council on Environmental Quality (CEQ) NEPA Regulations, contained in 40 C.F.R. Parts 1500-1508; and the adopted local CEQA guidelines for the San Dieguito River Park JPA, the City of Del Mar, and the City of San Diego. Because NEPA and CEQA are somewhat different with regard to procedural and content requirements, the document has been prepared to comply with whichever requirements are more stringent. The JPA is the lead agency for compliance with CEQA, while USFWS is the lead federal agency for compliance with NEPA. In accordance with both CEQA and NEPA, the lead agencies have the responsibility for the scope, content, and legal adequacy of the document. Therefore, all aspects of the EIR/EIS scope and process are being coordinated between the two agencies.

1.2 INCORPORATION BY REFERENCE OF THE SAN DIEGUITO RIVER PARK CONCEPT PLAN PROGRAM EIR

The proposal to restore the coastal wetlands and upland areas surrounding the San Dieguito Lagoon, as well as the public access and interpretation components of the project, are part of the vision for the larger San Dieguito River Valley Regional Open Space Park, an open space park planning effort that extends from Volcan Mountain near Julian westward along the San Dieguito River drainage to the ocean at Del Mar. The proposals for coastal wetland and upland restoration near the lagoon, the Coast to Crest Trail, and other trail and interpretive concepts were adopted as part of the San Dieguito River Park Concept Plan (San Dieguito River Park JPA 1994a), by the JPA in 1994. In association with the processing of the Park Concept Plan, the JPA also prepared and certified the San Dieguito River Park Concept Plan Program EIR (San Dieguito River Park JPA 1994b).

The San Dieguito River Park Concept Plan Program EIR (State Clearinghouse Number 91121059) is incorporated by reference into the current EIR/EIS. This document, which was certified by the San Dieguito River Park Joint Powers Authority Board of Directors on February 18, 1994, addressed program-wide issues such as cumulative impacts and policy alternatives for the various proposals incorporated in the Concept Plan, including coastal wetland restoration and the Coast to Crest Trail. A Mitigation, Monitoring and Reporting Program was also approved at the time the Program EIR was certified. The Program EIR and Mitigation, Monitoring and Reporting Program are available for public inspection at the San Dieguito River Park office, located at 18372 Sycamore Creek Road in Poway, California (call 858-674-2270 for directions).

The San Dieguito River Park Concept Plan Program EIR evaluated potential impacts related to proposals included within the San Dieguito River Park Concept Plan. The Concept Plan was prepared to establish the vision, goals, and objectives necessary to implement an open space park/greenway within the San Dieguito River Valley that will protect the area's unique resources, while providing compatible recreational opportunities for the San Diego region.

The Concept Plan, which establishes the overall planning framework for future park implementation, addresses those lands included within the Park's Focused Planning Area (FPA), defined as the areas within the viewshed of the San Dieguito River and its major tributaries. The FPA extends in an east/west orientation across central San Diego County for approximately 55 miles, beginning at the edge of the San Felipe Valley, just east of Volcan Mountain and ending at the mouth of the San Dieguito Lagoon in Del Mar. The FPA encompasses approximately 80,000 acres, and falls within the boundaries of five local jurisdictions: the cities of San Diego, Del Mar, Poway, and Escondido, and the County of San Diego. In addition, the jurisdictional boundaries of the City of Solana Beach are located immediately to the north of the FPA.

The Program EIR analyzed the Concept Plan's proposals for each of 14 landscapes described in the Plan, including the area of the proposed restoration project (Landscape A — Del Mar Coastal Lagoon). Each landscape contains distinctly different characteristics, defined by landform, vegetation, changes in elevation, and existing land use. For each landscape unit, the Concept Plan includes a list of recommended park proposals. The Concept Plan also recommends that the adoption of the Concept Plan be followed by the development of detailed master plans for the various landscape units in order that the proposals included within the Concept Plan for each landscape unit can be further evaluated and defined.

Major components of the Concept Plan that were analyzed in the Program EIR include a proposal for a master trail system that would span the entire length of the FPA. This 55-mile-long trail system, referred to as the Coast to Crest Trail, is intended as a multi-use trail with an 8-foot-wide hard surface path for bicycles and a 4-foot-wide unpaved hiking and equestrian trail. The Concept Plan defines only a generalized trail corridor for the Coast to Crest Trail, leaving the actual alignment determination to future planning efforts. A number of secondary trails, including nature trails, hiking only trails, and interpretive trails, are also proposed in the Concept Plan.

The Program EIR's environmental analysis included an evaluation of potential impacts, the identification of significant direct and cumulative impacts, recommended mitigation measures, and the description of any residual impacts after mitigation. The Program EIR found that all direct impacts related to plan implementation would be mitigated to below a level of significance through adherence to the Design and Development Standards for Park Projects included in Appendix D of the adopted Concept Plan.

The Program EIR identified significant cumulative impacts to air quality and mineral resources, and found that future plan implementation could result in potentially significant cumulative traffic impacts within the eastern portion of the FPA. Issues reviewed in the Program EIR included land use (compatibility and user conflicts), biological resources, cultural resources, hydrology / water quality, geology / soils, visual quality / landform alteration, traffic circulation, air quality, natural resources, public facilities and services, and human health / public safety. With respect to growth inducement, the Program EIR concluded that implementation of the Concept Plan would indirectly foster economic growth by contributing to the overall tourism industry within the region. As a result, implementation of the Concept Plan was considered to be growth inducing, however, no significant environmental effects were anticipated as a result of this growth inducement. Issues of noise, paleontological resources, recreational resources, population and housing, and energy were found not to be significant.

Project alternatives analyzed in the EIR included No Project, Preservation Only, and Revised Concept Plan. The Preservation Only Alternative was identified as the environmentally preferred alternative.

1.3 PROJECT LOCATION

The San Dieguito Wetlands Restoration planning area encompasses approximately 440 acres at the western end of the San Dieguito River Valley (Figure 1-1) and generally includes the public lands located between El Camino Real on the east, the Pacific Ocean on the west, Via de la Valle on the north, and the northern edge of the Carmel Valley planning area on the south (Figures 1-2 and 1-3). The project site, which is situated entirely within the coastal zone, is located within incorporated boundaries of the cities of Del Mar and San Diego in San Diego County, California.

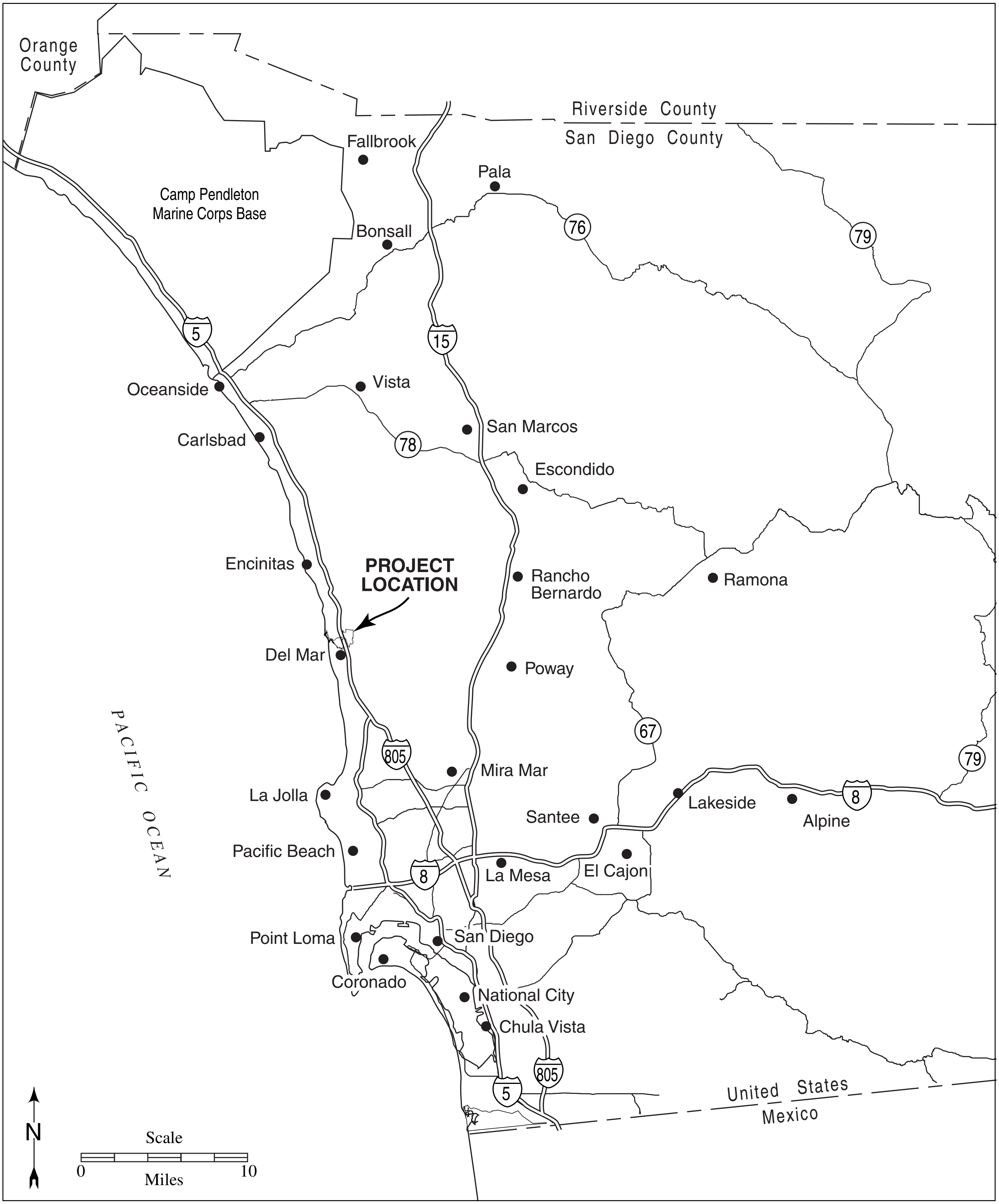


Figure 1-1. Regional Location Map

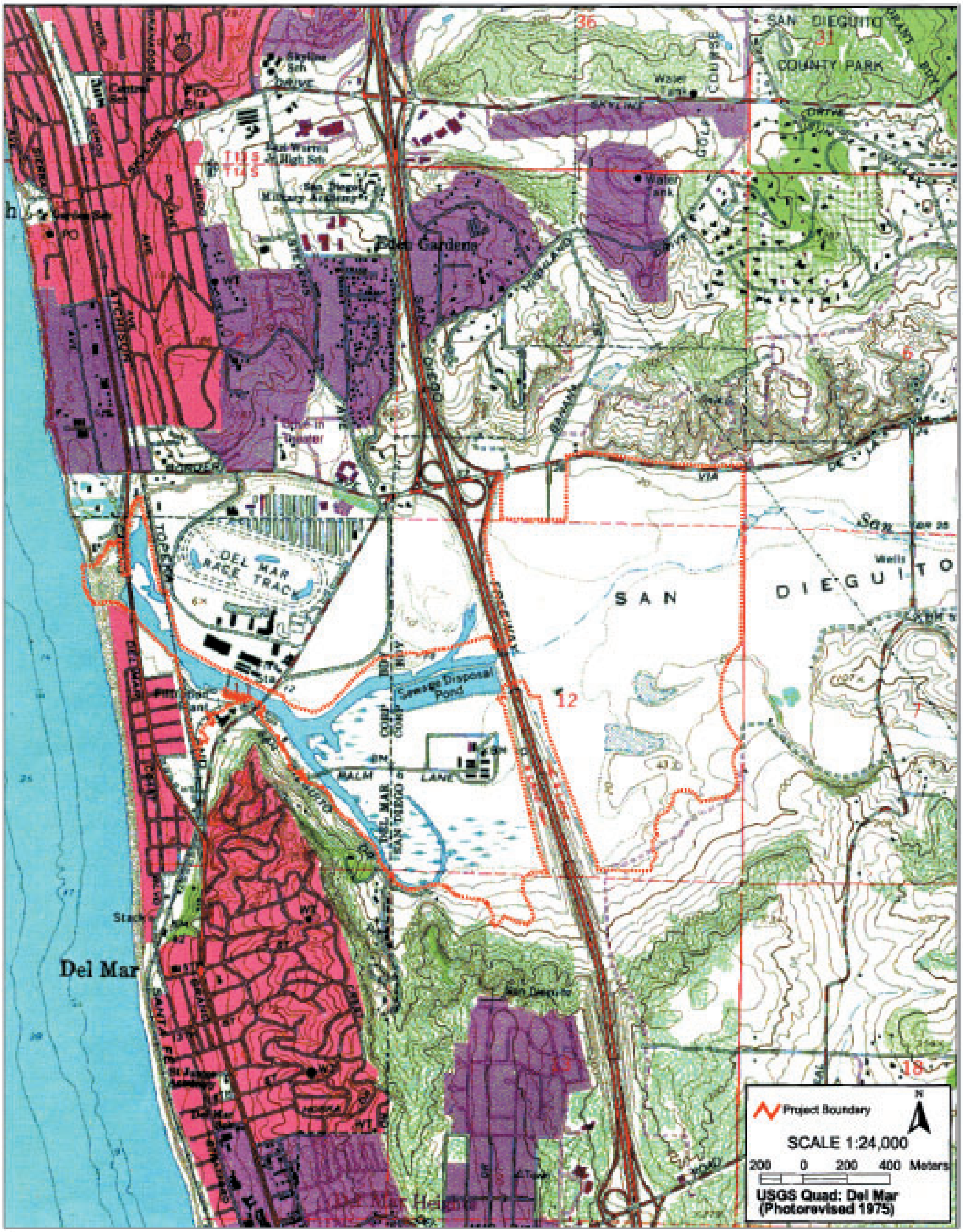


Figure 1-2. Project Location

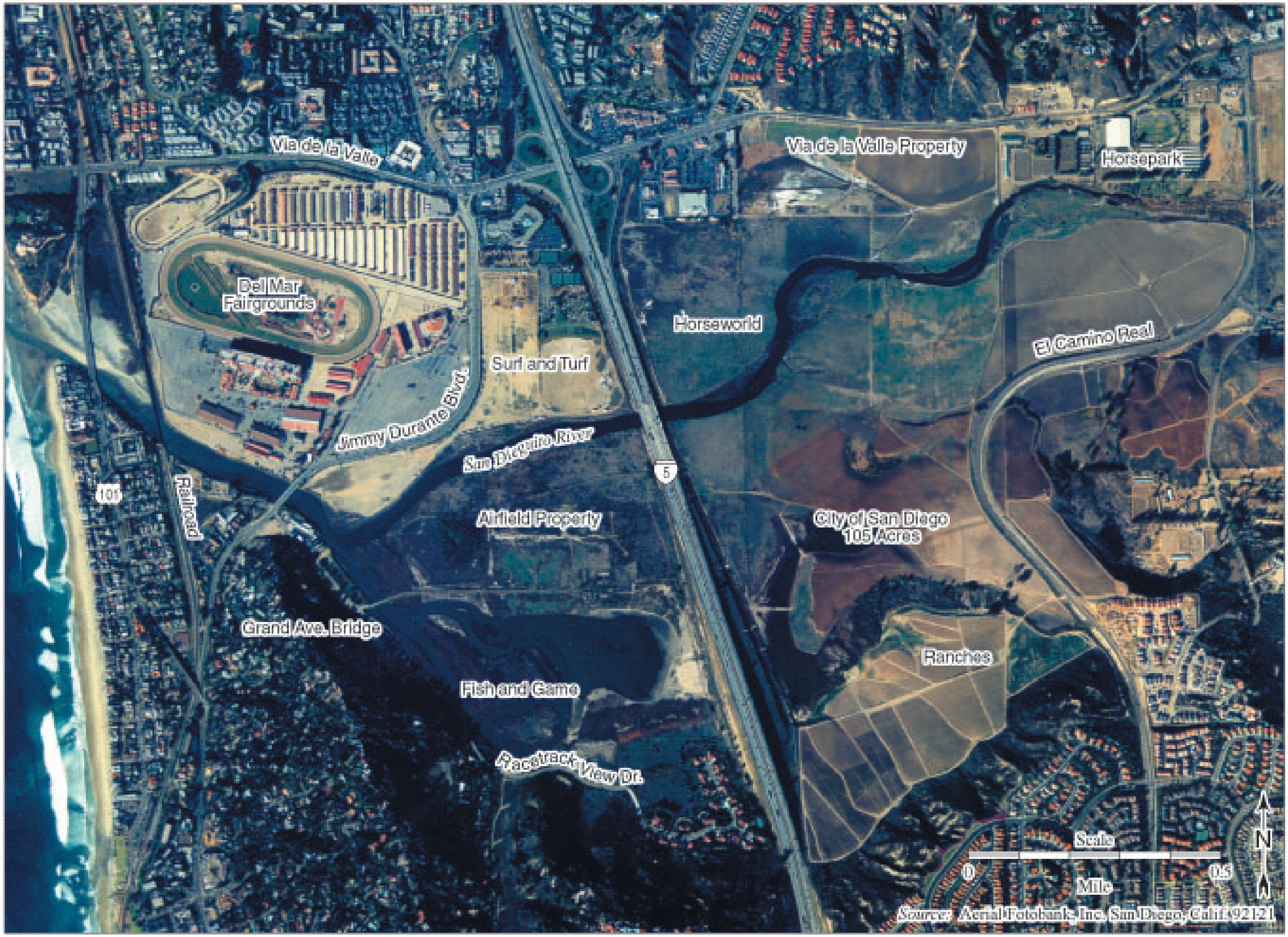


Figure 1-3. Aerial View of the Project Area

1.4 PROJECT BACKGROUND

The San Dieguito Lagoon was once the largest of the six San Diego coastal lagoons. An 1889 U.S. Coast and Geodetic Survey Map (Figure 1-4) illustrates that the San Dieguito Lagoon and surrounding coastal wetlands once covered not only the area of the present-day wetlands, but also the area north of the river to Via de la Valle on what is now the east and west side of Interstate 5 (I-5). This historic map also depicts a braided river channel west of the present location of El Camino Real. Written accounts of the area at that time identify much of the western valley floor as swamp and overflow lands and tidelands (California Coastal Conservancy 1990). The Coastal Conservancy estimates that historically the marsh area of the San Dieguito wetlands covered over 600 acres, while the entire lagoon probably covered 1,000 acres (California Coastal Conservancy 1989).

Beginning in the late 1800s, the river valley began to experience changes in surface and groundwater hydrology and in patterns of sedimentation and erosion as a result of human influences. Filling for agriculture was probably the first of the numerous disturbances that have taken place within this wetland area. Land development in 1905 filled the southern lagoon between Highway 101 and the railroad. By the 1920s, much of the freshwater flow that had previously reached the San Dieguito Lagoon from the upland areas to the east had diminished as a result of the construction of the Hodges Dam. The photograph presented in Figure 1-5 is a view of the San Dieguito Lagoon taken in 1929 before the Del Mar Fairgrounds were constructed. Although some pathways had already been constructed through the area now occupied by the Fairgrounds, when this photograph was taken much of the area still supported coastal wetlands.

In 1935, a 200-acre section of the lagoon was filled to accommodate the Del Mar Fairgrounds. Figure 1-6 provides a view of the area in 1937. Additional filling occurred over the years to construct an airfield, Jimmy Durante Boulevard, I-5, and a shopping center. By the early 1940s, the lagoon mouth was closed most years and the functions and values of the wetland habitat steadily declined.

Restoration of the San Dieguito coastal wetlands has been a stated goal of the Cities of Del Mar and San Diego, local citizens, and the organizers of the San Dieguito River Park JPA for over two decades. In the late 1970s, the City of Del Mar and the State Coastal Conservancy prepared a plan for revitalizing and managing what remained of the lagoon and surrounding areas west of I-5 near the mouth of the river. As a result of that effort the City of Del Mar adopted the San Dieguito Lagoon Resource Enhancement Program in 1979 as part of its General Plan. In 1983, a portion of the enhancement program was implemented using a $1.3 million grant from the Coastal Conservancy. This restoration program involved dredging a new tidal basin on 70 acres of land, acquired by the California Department of Fish and Game as an Ecological Reserve and located in the southern corner of the historic wetlands just west of I-5. The river mouth was also opened, thus restoring tidal influence, at least temporarily, to the entire coastal wetland.

Since this initial restoration effort was completed, the restoration goal has been expanded to address both the west and east sides of I-5, with the stated goal of restoring what remains of the historically significant San Dieguito Lagoon system. In the early 1990s, efforts began to direct coastal wetland mitigation proposals to San Dieguito. One possible mitigation project was identified when the California Coastal Commission (CCC) in July 1991 adopted new permit conditions for the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3. These conditions required Southern California Edison (SCE) to create or substantially restore 150 acres of tidal wetland as mitigation for impacts to the marine environment caused by the construction and operation of SONGS Units 2 and 3. The CCC identified eight wetlands, including San Dieguito, in Southern California that could be evaluated for suitability as the required mitigation site. By June 1992, the CCC had approved San Dieguito as the site for the required mitigation.

The San Dieguito Wetland Restoration Project addressed by this EIR/EIS includes the proposal to restore wetlands as mitigation for impacts caused by SONGS Units 2 and 3. This aspect of the restoration project would be implemented by SCE, as the managing owner of SONGS. (Other owners include San Diego Gas & Electric, the City of Riverside, and the City of Anaheim.) As presented in section 2.3.1, SCE has identified a preferred alternative for implementing the requirements of the CCC. SCE's preferred alternative is one of six (including the No Project alternative) that is analyzed in this EIR/EIS. In order to satisfy Condition A of the Coastal Development Permit (Permit 6-81-330-A) issued for SONGS Units 2 and 3, SCE's final restoration plan must meet the minimum standards and objectives presented in Table 1-1.

The restoration plan recommended for approval and/or permitting by the lead agencies will be analyzed by the CCC to determine the amount of wetland credits provided. To make this determination, the CCC will consider the standards and criteria set forth by the CCC staff for defining "created or substantially restored" tidally influenced salt marsh. As stated previously, the permit conditions require SCE to submit a plan that includes a total of 150 acres of credit, including the creation and/or substantial restoration of 115 acres of tidal wetland. The SONGS permit states that up to 35 acres of enhancement credit will be given for permanent, continuous tidal maintenance if the final restoration plan provides for enhancement of at least 126 acres through tidal maintenance. The 35 acres of enhancement credit is based upon the determination that 126 acres of existing wetlands at San Dieguito will be enhanced by 28 percent if the tidal flows are maintained continuously. If less than 126 acres are enhanced, then the amount of enhancement credit awarded will be equal to 28 percent of the total number of existing tidal wetland acres that are enhanced by tidal maintenance. In order to calculate acreage credits pursuant to the SONGS coastal development permit, the CCC staff in their letter dated October 13, 1999, provisionally has defined for their purposes the upper boundary for created or restored high tidal salt marsh as +4.5 feet National Geodetic Vertical Datum of 1929 (NGVD). This elevation was determined by CCC scientific staff based on data collected at several existing wetland sites, including San Dieguito Lagoon, Tijuana Estuary, Mugu Lagoon, and Carpinteria Salt Marsh.

The tidal hydraulics of the restored system under alternative restoration designs have been modeled in a series of studies by Jenkins and Wasyl (1998, 1999a-d). The resulting "hydroperiod functions" that relate tidal inundation/exposure frequencies to elevations on the shore lead to a predicted upper boundary of high salt marsh that is in the range of +4.7 feet to +4.9 feet NGVD, but differs slightly between alternatives. This EIR/EIS recognizes that in nature there is not generally a sharp demarcation between tidally influenced wetlands and adjacent non-tidal wetlands or uplands, but rather a transition zone of diminishing tidal influence with increasing elevation. In addition, there is not necessarily universal agreement among specialists concerning the upper boundary of salt marsh that is substantially free of upland species. Accordingly, in evaluating the creation of wetlands by the different restoration

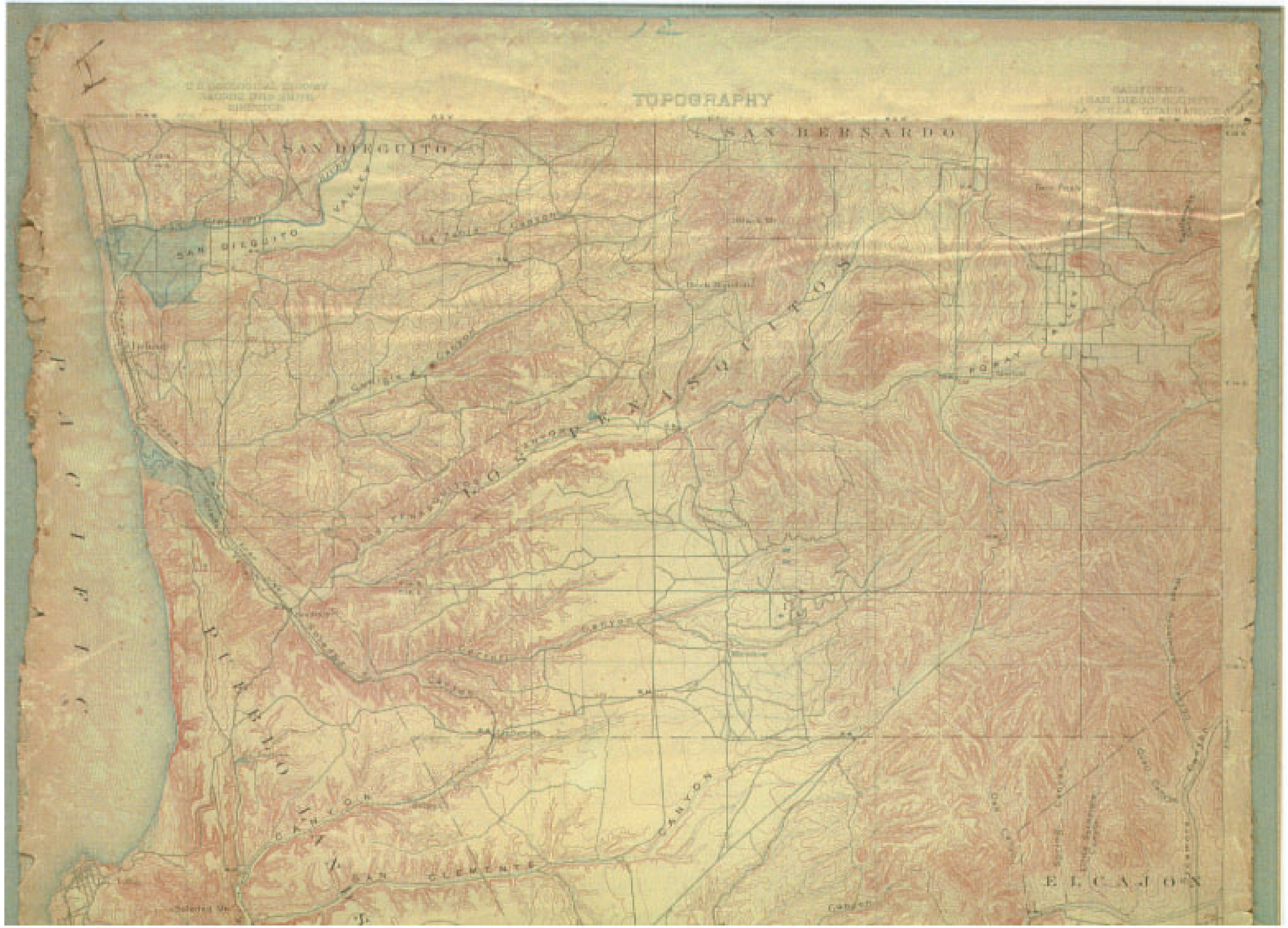


Figure 1-4. 1889 U.S. Coast and Geodetic Survey Map

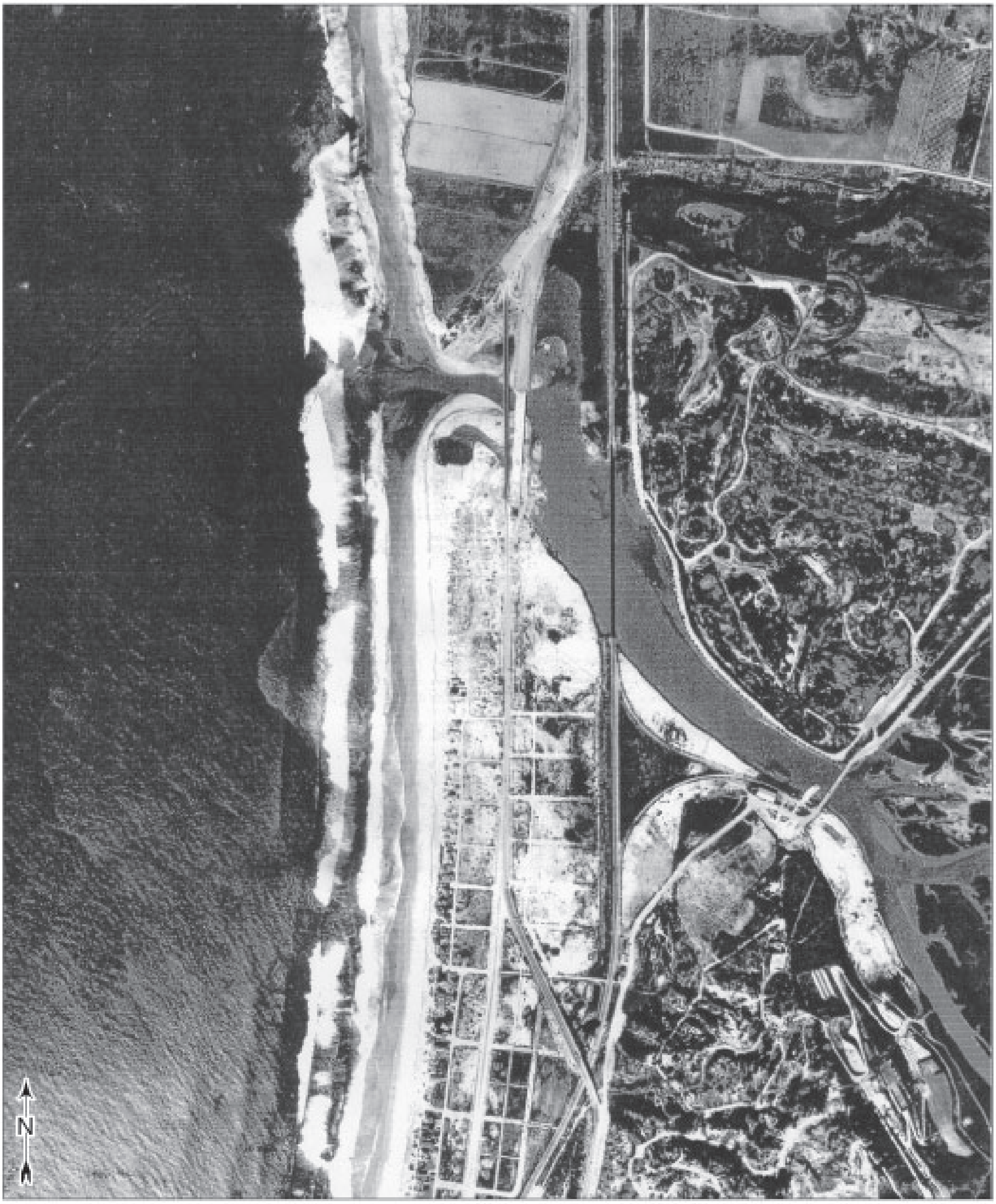


Figure 1-5. Aerial View of the Western Project Area Taken in 1929

Figure 1-6. Aerial View of the Western End of the Project Area Taken in 1937

alternatives, the EIR/EIS treats +4.5 feet NGVD as the upper limit of high tidal salt marsh, but recognizes as transitional wetland habitat the area between +4.5 feet NGVD and the upper limit predicted by the hydroperiod function. This approach provides the information needed by the public, the agencies, and the decision makers, including the CCC, to make informed decisions about the project.

Table 1-1 SONGS Permit Condition A:
Wetland Mitigation—Minimum Standards and Objectives [1]

Minimum Standards

1. Location within Southern California Bight.
2. Potential for restoration as tidal wetland, with extensive intertidal and subtidal areas.
3. Creates or substantially restores a minimum of 150 acres (60 hectares) of wetlands, excluding buffer zone and upland transition area. (If the full 150-acre restoration project is carried out at San Dieguito River Valley, up to 35 acres of enhancement credit will be given for permanent, continuous tidal maintenance.)
4. Provides a buffer zone of a size adequate to ensure protection of wetland values, and not less than at least 100 feet wide, as measured from the upland edge of the transition area.
5. Any existing site contamination problems would be controlled or remediated and would not hinder restoration.
6. Site preservation is guaranteed in perpetuity (through appropriate public agency or nonprofit ownership or other means approved by the Executive Director) to protect against future degradation or incompatible land use.
7. Feasibility methods are available to protect long-term wetland values on the site in perpetuity.
8. Does not result in loss of existing wetlands.
9. Does not result in impact on endangered species.

Objectives

1. Provides maximum overall ecosystem benefits (e.g., maximum upland buffer), enhancement of downstream fish values, regionally scarce habitat, and potential for local ecosystem diversity.
2. Provides substantial fish habitat compatible with other wetland values at the site.
3. Provides a buffer zone on an average of at least 300 feet wide and not less than 100 feet wide, as measured from the upland edge of the transition area.
4. Provides maximum upland transition areas (in addition to buffer zones).
5. Restoration involves minimum adverse impacts on existing, functioning wetlands and other sensitive habitats.
6. Site selection and restoration plan reflects a consideration of site-specific and regional wetland restoration goals.
7. Restoration design is that most likely to produce and support wetland-dependent resources.
8. Provides rare or endangered species habitat.
9. Provides for restoration of reproductively isolated populations of native California species.
10. Results in an increase in the aggregate acreage of wetland in the Southern California Bight.
11. Requires minimum maintenance.
12. Restoration project can be accomplished in a timely fashion.
13. Site is in proximity to SONGS.

Long-Term Physical Standards. The following long-term standards shall be maintained over the full operative life of SONGS Units 2 and 3.

1. Topography. The wetland shall not undergo major topographic degradation (such as excessive erosion or sedimentation).
2. Water Quality. Water quality variables (to be specified) shall be similar to reference wetlands.
3. Tidal Prism. The designed tidal prism shall be maintained, and tidal flushing shall not be interrupted.

Table 1-1 SONGS Permit Condition A:
Wetland Mitigation—Minimum Standards and Objectives [1]
(Continued)

4. Habitat Areas. The area of different habitats shall not vary by more than 10 percent from the areas indicated in the final restoration plan.

Biological Performance Standards. The following biological performance standards shall be used to determine whether the restoration project is successful.

1. Biological Communities. Within 4 years of construction, the total densities and number of species of fish, macroinvertebrates, and birds shall be similar to the densities and number of species in similar habitats in the reference wetlands.
2. Vegetation. The proportion of total vegetation cover and open space in the marsh shall be similar to those proportions found in the reference sites. The percent cover of algae shall be similar to the percent cover found in the reference sites.
3. Spartina Canopy Architecture. The restored wetland shall have a canopy architecture that is similar in distribution to the reference sites, with an equivalent proportion of stems over 3 feet tall.
4. Reproductive Success. Certain plant species, as specified in the work program, shall have demonstrated reproduction (i.e., seed set) at least once in 3 years.
5. Food Chain Support. The food chain support provided to birds shall be similar to that provided by the reference sites, as determined by the feeding activity of the birds.
6. Exotics. The important functions of the wetland shall not be impaired by exotic species.

[1] California Coastal Commission (10/22/1997)

It is not the purpose or intent of this EIR/EIS to evaluate either the adequacy of the CCC permit conditions as mitigation for impacts to the marine environment from SONGS Units 2 and 3, or the effectiveness of the proposed mitigation plan in meeting the minimum standards and objectives set forth for wetland mitigation in Condition A of the CCC Permit for SONGS Units 2 and 3. The determination as to whether or not the SCE restoration plan meets the approved permit condition is the sole responsibility of the CCC.

The proposed tidal wetland restoration component of the this project, in addition to addressing CCC permit conditions, also includes tidal wetland restoration acreage to fulfill the conditions of a compromised settlement between SCE and Earth Island Institute, Inc. (Earth Island). This settlement, a Stipulation of Settlement and Consent Decree approved by the U.S. District Court in 1993, occurred as a result of actions taken by Earth Island in 1990. In a lawsuit filed by Earth Island in 1990, it was alleged that SCE was in violation of the Clean Water Act due to discharge into the Pacific Ocean from SONGS and that these discharges violated SCE's National Pollutant Discharge Elimination System (NPDES) Permits. Hearings held by the California Regional Water Quality Control Board (Regional Board) subsequent to the filing of the lawsuit concluded that the evidence did not clearly indicate that any NPDES permit conditions for SONGS had been violated. This resulted in the filing of Petitions for Review with the California State Water Resources Control Board challenging the decision of the Regional Board. During the same time, the CCC was holding hearings regarding permit conditions for SONGS Units 2 and 3. To resolve these issues, Earth Island and SCE entered into mandatory settlement conference discussions before the U.S. District Court. The portion of the approved Consent Decree that relates directly to restoration at San Dieguito involves the requirement that SCE acquire in fee title or obtain the right to restore additional acreage of wetlands adjacent to or near the area to be restored to meet the CCC permit conditions. (SCE purchased the 86-acre Horseworld property in order to facilitate adequate coastal wetland restoration in accordance with the CCC permit conditions and recently acquired an additional 54 acres south of Via de la Valle in response to the Earth Island settlement agreement.) If title to any additional acreage is acquired by SCE, SCE is required to record language in the deed stating that such additional acreage is restricted to open space or wetlands, subject only to the right to construct and implement such wetlands, trails, and paths as are approved by the CCC. These deed restrictions are to be tied to the land. According to the Consent Decree, the number of acres to be restored shall be based on a formula described in the settlement. The settlement also includes requirements for monitoring to ensure that the additional acreage results in functional wetlands.

The proposal to restore coastal wetlands is one element, albeit the predominant element, of a larger restoration and public access plan for all of the public open space lands within the San Dieguito River Valley that lie between El Camino Real on the east and the Pacific Ocean on the west. Various adopted planning documents, including the San Dieguito River Park Concept Plan and the City of Del Mar San Dieguito Lagoon Enhancement Program, include goals for restoring both coastal wetlands and adjoining upland and freshwater wetland habitats and providing for compatible public access and resource interpretation. All of these components have been incorporated into the various wetland restoration alternatives, as well as the accompanying draft park master plan for this area.

1.5 PURPOSE OF AND NEED FOR THE PROJECT

Historically, the San Dieguito Lagoon and its adjoining coastal wetlands occupied much of the western San Dieguito River Valley and included a mosaic of vegetated salt and brackish marsh, with associated tidal embayments, sloughs, and mudflats. As described in section 1.4, the San Dieguito wetlands have experienced extensive filling and alteration, beginning as early as the late 1800s. Today, less than half of the historic wetlands remain intact. During the same period that the lagoon and marshland were being filled, the surrounding area was also being developed for a variety of commercial and residential uses. Consequently, the historical context of the tidal marsh ecosystem components and the regular influence of the ocean tidal waters have been seriously diminished. The portion of the historical marsh system that still exists at the San Dieguito Lagoon continues to be viewed as significant, despite the degradation that has occurred over the years to its wetland and aquatic functions.

The primary purpose of the proposed project is to restore the habitats that historically occurred within this coastal area, taking into consideration the constraints now imposed by existing adjacent land uses. In light of permanent losses of adjacent wetlands and aquatic areas in addition to permanent hydrologic modifications, and urbanization surrounding San Dieguito over the last century, complete restoration of wetland and aquatic functions to historical levels is probably not possible. However, there is opportunity for the creation and/or substantial restoration of large portions of the area that historically supported coastal wetlands. In addition, recent public acquisitions of the western river valley's floodplain areas and surrounding uplands provides many opportunities for restoration of native grasslands, coastal sage scrub, and other upland habitats, as well as freshwater habitats including freshwater marsh and southern willow scrub. Finally, the project offers opportunities for public access and interpretation/education.

The scope of the project includes the following:

1. A proposal to implement a tidal wetland project within the westernmost reach of the San Dieguito River basin that would restore the aquatic functions of the lagoon through permanent inlet maintenance and expansion of the tidal basin. This would create subtidal and intertidal habitats on both the east and west side of I-5.

2. A proposal to restore the adjoining uplands and nontidal wetlands to appropriate habitat types that would complement the tidally restored areas, including but not limited to construction of nesting areas for the California least tern, western snowy plover and other shore birds, reestablishment of coastal sage scrub, native grassland, and chaparral habitat, and restoration of upstream wetland habitats such as southern willow scrub and freshwater marsh.

3. Public access and interpretive proposals including the construction of the western segment of the San Dieguito River Park's Coast to Crest Trail, several interpretive / nature trails, and an interpretive center.

In response to the overwhelming public interest in restoration planning for the San Dieguito coastal wetlands, a significant public participation and planning effort was undertaken between 1992 and 1994. This effort resulted in the incorporation of the following site-specific goals into the restoration planning effort at the San Dieguito Lagoon:

- Improve, preserve, and create a variety of habitats to increase and maintain fish and wildlife and ensure protection of endangered species.

- Ensure adequate tidal and fluvial flushing and circulation with an optimal tidal regime to support a diversity of biological resources while maintaining the appearance of a natural wetland ecosystem.

- Maintain the natural, open space character of the river valley with appropriate topography to support the ecosystem and viewshed.

- Recommend appropriate land use, erosion, and runoff control polices to be implemented in and around the lagoon and watershed.

- Designate public access and use areas only at those locations where they will not interfere with a naturally functioning ecosystem or the natural, open space character of the river valley.

- Identify and minimize construction impacts.

- Maintain integrity of beach and sand balance, such that the project does not contribute to a net loss of beach sand north or south of the river mouth.

- Use dredged materials for environmentally optimal purposes.

- Maintain existing conditions of river scour and sand movement through the San Dieguito River.

It is anticipated that tidal restoration work at the San Dieguito Lagoon will be accomplished primarily by SCE and its partners, provided the approved restoration plan satisfies Condition A of the Coastal Development Permit issued for SONGS Units 2 and 3. Interested local, state, and federal agencies involved in the San Dieguito Wetland Restoration project have been working together to develop conceptual proposals for restoring wetland and aquatic functions, as well as uplands, at the San Dieguito Lagoon that is intended in part to satisfy the CCC permit conditions. It is on the basis of this conceptual proposal that SCE and the allied agencies are proceeding. Although SCE's preferred restoration proposal is assessed in the EIR/EIS as one of an appropriate range of restoration alternatives, the agencies have not yet determined whether this conceptual proposal is the preferred approach for restoring the optimal mix of wetland and aquatic functions at the San Dieguito Lagoon and achieving most, if not all, of the established project goals for the planning area. If for some reason, SCE does not or cannot meet its mitigation obligations at San Dieguito, implementation of a restoration project in accordance with one or more of the alternatives described in this EIR/EIS is still possible, since the impact analysis provided in this document focuses on the impacts of restoration, not on the mitigation requirements of SCE.

1.6 PUBLIC INVOLVEMENT

Public involvement in the issue of restoring the San Dieguito Lagoon began in earnest in 1974 with the formation of the City of Del Mar's Lagoon Committee. As described in section 1.4, Project Background, this lead to the adoption of the San Dieguito Lagoon Resource Enhancement Program and the restoration of a 70-acre wetland area located south of the river and west of I-5. In June 1992, the CCC, with strong support from the local community, selected the San Dieguito lagoon as the site most appropriate for SCE to fulfill the CCC permit conditions for SONGS units 2 and 3.

In October 1992, a formal public and government agency involvement program was initiated for the purpose of developing restoration alternatives for the San Dieguito wetlands. The first step the program was to meet with affected agency representatives to establish the regulatory constraints and expectations for wetland restoration at San Dieguito. A number of preliminary agency goals were also developed. This meeting was followed by a general public workshop on October 10, 1992. Over 75 people attended this all-day workshop. The purpose of the workshop was to inform interested members of the public about the project, identify issues to be considered in the restoration planning process, and establish a working group that would be responsible for assisting in the development of goals and objectives for the San Dieguito restoration project. As a result of this meeting, a Public Working Group was formed with representatives from 12 community interest groups, including planning groups, homeowners associations, environmental groups, and a land conservancy. The Working Group met on three occasions (October 24, November 5, and November 19, 1992) at which time they defined and prioritized goals and objectives for the restoration project. Based on these goals and objectives, 14 restoration design concepts were developed.

In February 1993, another Working Group meeting was held to solicit comments on the 14 concepts. Based on this meeting and a similar meeting with agency representatives, two concepts were selected for further analysis and modeling. An additional meeting on this subject was held in April 1993. Following the completion of a biological baseline study and hydrological modeling, the technical documents were made available for public review at four locations. Working Group meetings to discuss the conclusion of the studies and review the three alternative restoration designs were held in July and September 1993.

An additional Working Group meeting was held in April 1994 at which time the Working Group was informed of two major constraints identified by the SCE consultant team. These constraints, disposal of dredge material and flood liability issues, were presented to the group, as were revisions to two previously discussed alternatives and two new alternatives, all developed to respond to the newly identified constraints.

In June 1994, a meeting was held for the general public to present the results of the work undertaken since October 1992. At this meeting, comments about the proposed restoration designs were solicited. Working Group meetings resumed in 1997 following the development of a new restoration proposal and several alternatives, all of which were intended to respond to the hydrologic issues raised by Dr. H. Chang, a hydrologist.

A public open house was conducted in August 1997. This meeting, which was widely publicized, provided the public with an opportunity to discuss restoration proposals with the various technical experts working on the project. This was followed by a formal presentation and a question and answer period.

Following the August meeting, additional meetings with various local, state and federal agencies and community representatives were conducted which resulted in the development of a consensus plan for the restoration of the San Dieguito wetlands. This plan was presented to the JPA Board of Directors at a public meeting held on September 19, 1997, at which time the JPA Board expressed its support of the consensus plan. On November 5, 1997 another public hearing to discuss the consensus plan was held, this time before the CCC. Following public testimony, the CCC approved the San Dieguito Preliminary Wetland Restoration Plan and authorized SCE to proceed with the next steps of project approval including the CEQA/NEPA process.

Another important step in the public input process was the Notice of Preparation (NOP)/ Notice of Intent (NOI). Comments were solicited from the public during the public comment period for the NOP, issued on June 1, 1998, and NOI, published in the Federal Register on June 3, 1998. A public scoping meeting was held on June 15, 1998 and an amendment to the June 1 NOP was issued on February 16, 1999. Comments received during these review periods are provided in Appendix A.

Additional opportunities for public involvement have included numerous presentations before the JPA Board of Directors and Citizens Advisory Committee, a number of public presentations before the CCC, and a recent presentation before the 22nd District Agricultural Association's Board of Directors. Future public involvement will include public review of the draft EIR/EIS, a public hearing on the draft EIR/EIS scheduled for Monday, February 28, 2000 from 7 to 9 P.M. at the Del Mar City Hall Annex (behind and to the west of the main city hall building located at 1050 Camino Del Mar, Del Mar, California), distribution of the Final EIS, and public hearings before the San Dieguito River Park JPA Board of Directors, California Coastal Commission, and possible future hearings/meetings before the approving-bodies of the various cooperating, responsible and trustee agencies with permitting authority.

1.7 PUBLIC CONCERNS

A Notice of Preparation (NOP) was issued on June 1, 1998. In accordance with CEQA, the NOP was forwarded to the State Clearinghouse (98061010), noticed in a local paper, and provided to various agencies, organizations, interested citizens, and adjoining property owners. In compliance with NEPA, a Notice of Intent (NOI) was published in the *Federal Register* on June 3, 1998. These were the first steps in the environmental scoping process that took place in order to elicit public input regarding the range of the issues to be addressed in the EIR/EIS. A formal scoping hearing, designed to solicit public comment on the proposed scope and content of the EIR/EIS, was held on Monday, June 15, 1998 at 7:00 P.M., in the Solana Beach City Council Chambers.

An amended NOP was issued on February 16, 1999 to address changes in the project description. Specifically, it was disclosed that the project boundaries had been expanded to include additional acreage for both habitat restoration and potential dredge disposal.

Numerous written comments were received in response to the Notices. Copies of these responses are provided in Appendix A, as is a transcript of the comments provided at the formal scoping hearing. A summary of the issues raised during the scoping period is provided below.

CEQA/NEPA Process

- Describe this environmental review process in the context of the previously prepared and certified Program EIR for the overall San Dieguito River Park Concept Plan.

Environmental Setting

- Summarize past restoration and management efforts including mechanical river mouth openings in the project area to provide a historical perspective.
- Describe other agency restorations and their successes or failures.

Purpose and Need

- Include the need for least tern nesting sites in this section.
- Describe the project objectives and how these will be used to evaluate success.

Least Tern Nesting Sites

- Provide detailed information regarding nesting site locations, construction, and maintenance and management responsibilities.
- Analyze proposed nesting sites impacts on existing wetland areas.

Berms

- Describe the berms' appearance, including height, width, slope, and landscaping.

- Explain what erosion protection measures will be provided and who will have initial and long-term maintenance responsibility for the berms.
- Describe the purpose of the berms and how they will function during a flood.

Excavation and Disposal Sites

- Delineate the location of all areas to be dredged or filled.
- Describe the method and equipment to be used for dredging or filling.
- Explain how the temporary stockpiling sites and final disposal sites will be designed, constructed and managed.
- Provide the physical and chemical characteristics of sediments to be excavated.
- If beach disposal is an option, explain where and how excavated material will be placed on the beach. Describe the required equipment and related noise and fuel.

Construction

- Discuss the hours and season of operation, anticipated number and type of construction vehicles, temporary construction access roads within the project site (along with attendant visual impacts), stockpile areas (their extent, height, length of time present).
- Describe the location of construction staging areas, and how long they will be in use.
- Explain how the existing conditions of public facilities will be documented to ensure that all impacts related to construction, such as damage to existing roads, are fully mitigated.
- Identify haul routes for dredge material.

Inlet Maintenance Program

- Describe the method, frequency, and duration of inlet maintenance
- Explain what would trigger the need for maintenance dredging.
- Analyze the potential for periodic impacts to biology or water quality as a result of maintenance dredging.
- Describe any impacts to recreation as a result of channel dredging.
- Explain how maintenance dredged materials will be disposed.

Maintenance Issues

- Explain the long-term maintenance responsibilities for the project.

- Disclose and discuss possible funding, implementation, enforcement, and monitoring commitments, assurances, and mechanisms for the proposed action.
- Determine if a lease is required from the California State Lands Commission.

Buffer Areas

- Describe the location, extent, total acreage, and biological makeup and maintenance and management responsibilities of the buffer areas.

Tidal Restoration Goals

- Outline the predicted intertidal acreages by habitat type.

Alternatives

- Explain why an alternative that does not require levees is not being addressed.
- Include an additional alternative that combines the mixed habitat and maximum salt marsh alternatives.
- Include the railroad triangle as part of the alternative analysis.

Land Use

- Describe impacts to recreational uses at the beach, including those from beach disposal.
- Explain potential changes in public access across the mouth of the river.
- Describe the land use impacts that could occur if existing portions of the floodplain are raised out of the floodplain.
- State if any aspect of this project precludes future restoration of the railroad triangle.
- Describe all potential impacts to existing and planned uses in the area from the various components of the project.
- Determine the consistency of the various project components with adopted land use plans, including the Multiple Species Conservation Program (MSCP) and River Park Concept Plan.
- Determine if any aspect of the project could preclude the future double tracking of the railroad bridge.
- Examine any potential impacts of trails on Agricultural District property, including impacts to the Surf & Turf driving range.

Biological Resources

- In the existing conditions section, provide a regional context for the existing and former resources in the area, as well as the constraints that now exist to restoring the site.
- Describe specifically what habitats would be impacted as a result of grading/dredging.
- Analyze the berms' effect on any existing wildlife corridors.
- Identify any areas currently supporting critical fisheries habitat, especially spawning and rearing areas, and determine what impact project construction or periodic maintenance dredging could have on this habitat.
- Outline the construction impacts to biology, including benthic and water quality impacts. Explain how success of the selected alternative will be assured.
- Describe impacts to wetlands or other habitats due to trail proposals.
- Analyze the potential for project impacts to any currently proposed mitigation sites (i.e., the least tern mitigation site at the river mouth).
- Determine if failure of the project could impact existing wetland/habitat values.
- Describe the need for monitoring of sensitive habitats during construction.

Hydrology/Water Quality

- Explain the hydrologic and tidal processes that currently affect this area and how it would be affected in a 100-year flood under existing conditions.
- Explain how the berms would affect the floodplain during a flooding event.
- Address whether or not there could be a backwater effect on adjoining properties as a result of constructing one or more of the berms.
- Describe the predicted water surface elevations within the San Dieguito River channel and the tributary Stevens Creek channel.
- Demonstrate that the project will not exacerbate the flooding potential at the Del Mar Fairgrounds and Horsepark.
- Analyze the potential for impacts to the sewer main that currently lies on the river channel bottom to the west of the Jimmy Durante Bridge as a result of changes in river water velocity and scour.
- Describe the potential flood and erosion conditions corresponding with various flood events (5-year, 10-year, 15-year, 20-year, etc.).
- Explain the project's effects on down shore beach erosion and/or sand supply.

- Evaluate the hydraulic, erosion, and scour effects of the project on all bridges within the inlet channel.

- Describe the effects of maintaining the river mouth in an open configuration. Provide information about the existing conditions when the river mouth is open, including volumes, velocity (in and out), and width of the river mouth.

- Evaluate the affect the proposed activities at the river mouth could have on the creation of rip currents and holes offshore.

- Analyze the potential for impacts to the south side of the inlet as a result of initial dredge and long term maintenance of the river mouth.

- Discuss the potential effect of moderate to high storm waves on the southerly edge of the river mouth and the area along the City of Del Mar public works property with the river mouth in an open configuration.

- Explain how the boundaries of the floodplain would be altered if soil is disposed of on properties currently included within the 100-year floodplain.

- Describe to what extent the tidal basins could function as sediment sinks for siltation. Will any periodic dredging of the basins be required?

Water Quality

- Describe the potential impacts from trams and various trail surface proposals on water quality.

- Analyze the potential for underground saltwater migration from the restoration site to surrounding properties as a result of this project.

- Evaluate water quality impacts from project construction both upstream and downstream.

- Describe Clean Water Act (CWA) Section 303(d) and specify if the San Dieguito watershed or any tributaries into this watershed include 303(d) listed waters.

- Examine the potential short- or long-term impacts to existing fisheries.

- Analyze the potential for increases in turbidity, siltation, substrate, dissolved oxygen, temperature, and direction of stream flow due to any aspects of the project (construction through maintenance).

Landform Alteration/Visual Quality

- Describe the view of the berms from adjoining properties.

- Discuss how disposal sites and berms will be revegetated and who will be responsible for installation and maintenance.

- Describe the impact, if any, of placing rip-rap along portions of the berms.
- Indicate if any scenic highway criteria are applicable to this area.
- Describe the potential visual impacts that could result from failure of the project.

Cultural Resources

- Correspond with appropriate Native American groups.

Geology/Soils

- Analyze the potential for impacts to existing I-5 freeway embankments.
- Describe the presence / absence or potential for hazardous materials in the areas proposed for excavation.
- Evaluate the erodibility of the soils to be deposited within the floodplain and surrounding uplands.

Air Quality

- Include an appropriate analysis for non-attainment areas. Of particular concern are particulates and emissions from dredge related vehicular activities.

Noise

- Analyze the potential for impacts to proposed sensitive receptors, such as interpretive centers or trails, from existing sources.
- Determine what noise impacts the tram could have on adjoining uses and biological resources.

Public Utilities/Facilities

- Describe the current progress in the El Camino Real widening project and bridge project and how the restoration project could impact or complement these proposals.
- Describe potential impacts to existing roadways as a result of construction traffic.
- Provide detailed information about the public utilities in the area and examine the potential impacts to existing utilities, identify future plans to improve any of these utilities, and determine if these improvements could be precluded by the project.
- Analyze the existing storm water drainage facilities that empty into the lagoon, floodplain, or river channel and determine what if any impacts the project could have on these facilities and their operation during a flood.

Traffic Circulation

- Analyze traffic impacts from the various public access proposals.
- Describe all potential short-term traffic impacts due to construction activity.

Public Health/Safety

- Describe the potential safety issues related to placing the trail in proximity to the Surf & Turf driving range.
- Analyze the safety issues associated with increases in water depth and velocity at the mouth of the river.

Water Consumption

- Determine how much water would be required to implement the construction and/or short- or long-term maintenance phases of the project.

Natural Resources

- Describe the potential impacts of restoration on adjoining agriculture due to potential increases in the salinity of groundwater from salt water intrusion, increases in geese using the area, increased numbers of insects, etc.

Vectors/Odors

- Describe the potential for the generation of odors or breeding of mosquitoes as a result of project implementation and/or project failure once implemented.

Socioeconomics

- Describe the economic impact of the project on Del Mar. Consider flooding issues and changes in recreational uses, including the impact on lifeguard service due to potential difficulties getting across the river mouth and impacts to police service due to the trail.

Environmental Justice

- Prepare this section in accordance with Executive Order 12898.

Cumulative Impacts

- Consider the effect of construction in the vicinity on the success of the project.

Mitigation, Monitoring, and Reporting Program

- Consider the requirement for an adaptive management program.
- Mitigation should include the need for public education and notification prior to and during construction.

- Include a construction monitoring plan.

1.8 SCOPE OF THE EIR/EIS

This EIR/EIS contains the full range of topics required under both CEQA and NEPA, including a table of contents, summary, purpose and need for the proposed action, description of alternatives, environmental setting, environmental impact analysis for short- and long-term, direct and indirect impacts, as well as cumulative impacts, mitigation measures and monitoring, growth inducing impacts, and significant irreversible changes associated with the project. The document treats alternatives as required under NEPA. Specifically, section 2.3, Alternatives Carried Forward for Detailed Analysis, presents a range of alternatives, which are all evaluated at the same level of detail in the environmental consequences section (Chapter 4). The identification of the environmentally superior alternative, as required by CEQA, is presented in the Summary following the description of alternatives. The Summary also includes a section that identifies the extent to which each alternative would avoid or substantially lessen potentially significant environmental effects. A number of technical studies were conducted in association with the development of project alternatives and the preparation of this document. These technical studies are summarized in the body of the EIR/EIS. The supporting information and analyses presented in these technical studies have been provided as appendices to the main body of the EIR/EIS as deemed appropriate. Appendices to the EIR/EIS are available for review at several locations including the Del Mar and Carmel Valley public libraries, the USFWS's Carlsbad Office, located at 2730 Loker Avenue West, and the San Dieguito River Park JPA office, located at 18372 Sycamore Creek Road in Poway, California (call 858-674-2270 for directions). Materials referenced in the EIR/EIS, but not provided as appendices, are also maintained at the San Dieguito River Park office. For more information, please contact Jack Fancher, USFWS at 760-431-9440 or the River Park's Principal Planner at 858-674-2275 ex. 13.

1.9 REQUIRED PERMITS AND APPROVALS (FEDERAL, STATE, AND LOCAL)

The following actions and approvals are anticipated to be required:

- **San Dieguito River Park JPA** — Approval by the JPA Board of Directors of a final restoration plan and associated Park Master Plan for Landscape Unit A, and certification of the Final EIR/EIS.

- **City of Del Mar** — Amendment to the City of Del Mar's General Plan and LCP to incorporate the approved wetland and upland restoration plan and associated public access proposals for the San Dieguito Lagoon, grading permit, and possible Coastal Development Permit.

- **City of San Diego —** <u>Site Development Permit</u>, possible Coastal Development Permit, Conditional Use Permit for the nature center, right-of-entry and possible encroachment permit for various trail segments.

- **U.S. Army Corps of Engineers** — Clean Water Act Individual 404 Permit and Section 10 Permit.

- **U.S. Fish and Wildlife Service** — Section 7 Consultation.
- **California Department of Fish and Game** — Streambed Alteration Agreement and possible Encroachment Permit.
- **Caltrans, District 11** — Encroachment Permit.
- **North County Transit District** — Possible Encroachment Permit.
- **Regional Water Quality Control Board** — 401 Certification and / or Discharge Permit.
- **San Diego County Air Pollution Control District** — Permit to Operate for Dredge.
- **22nd District Agricultural Association** — Approval to utilize portions of the District property for the project.
- **California State Lands Commission** — Lease of State Lands.
- **California Coastal Commission** — Approval of the Final Restoration Plan and Coastal Development Permit(s).
- **California Public Utilities Commission** — Approval of the relocation of San Diego Gas & Electric Company's 69 kV electric transmission line Circuit TL 667 and 12 kV distribution underbuilds.

2. DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

The San Dieguito Wetland Restoration Project involves the development, design, and implementation of a comprehensive restoration plan for the western San Dieguito River Valley. The project includes restoration and enhancement of tidal wetlands, development of native upland habitat, enhancement and expansion of several freshwater and seasonal coastal wetland areas, and a public access and interpretation component. In accordance with the adopted San Dieguito River Park Concept Plan, a Park Master Plan for the Coastal Area of the San Dieguito River Valley has also been drafted that will address all of these aspects of the project.

An essential component of this restoration project is the creation and restoration of tidally influenced wetlands. The major elements of tidal restoration would include: (1) restoring aquatic functions of the lagoon through the opening and permanent maintenance of the inlet channel and expansion of the existing tidal prism, and (2) creating subtidal and intertidal habitats on both the east and west sides of Interstate 5 (I-5). It is anticipated that tidal restoration work would be accomplished primarily by SCE and partners, provided the restoration satisfies the conditions of the CCC permit for the construction and operation of SONGS Units 2 and 3. The JPA, FWS, and a variety of state and local agencies would be involved in the restoration of the project's other non-tidal wetland and upland restoration proposals, as well as the public access and interpretive aspects of the proposal.

2.1 ALTERNATIVES SCREENING ANALYSIS

The process of defining, evaluating, screening, and ultimately selecting feasible restoration alternatives for consideration in this EIR/EIS included an extensive public and government agency involvement program. As a result of this program, a restoration alternatives evaluation framework was established that included the following steps: (1) identify goals, objectives, regulatory requirements, and physical constraints for restoration; (2) establish priorities among the goals and objectives to help in making tradeoffs among competing goals or objectives; (3) develop design criteria and measures of performance that reflect the goals and objectives; and (4) evaluate alternatives based on how well they meet the design criteria and measures of performance. In addition, the following overall policy statement for wetland restoration at San Dieguito was developed:

> *Preservation and enhancement of biological functions is the overriding objective of the wetland restoration project. This is a lagoon restoration project not a flood control project. The restoration design plan will include the San Dieguito River Valley from El Camino Real on the east to the ocean on the west and will be an integrated part of the San Dieguito River Park. The planning process used to create a final restoration design will utilize previous planning efforts, Working Group goals and technical evaluations to systematically arrive at choices.*

To assist in the selection of a reasonable range of restoration alternatives, evaluation criteria were established by the agency group and supported by the Working Group (refer to section 1.6, Public Involvement). These criteria established that the following factors were important to any restoration project at San Dieguito: (1) the project provides fish habitat and adequate subtidal acreage; (2) the design is feasible from an engineering and biological perspective; (3) the proposal builds on existing natural habitat; (4) the project restores regionally scarce coastal wetland habitat; and (5) there would be an integration of buffer and upland habitat.

As the evaluation process proceeded, hydrologic constraints were identified within the western river valley that played a critical role in the alternative screening analysis. Previously considered alternatives were redesigned to address these constraints, while also attempting to adhere to the goals and criteria established by the Working Group. As the San Dieguito Lagoon was once the largest of the San Diego County lagoons, it was important to design the alternatives in a manner that would restore the largest extent of tidally influenced salt marsh habitat possible. For this reason, the majority of the alternative designs considered in this EIR/EIS have an identical grading "footprint," a footprint that maximizes the ability to create tidally influenced wetland habitat. The alternatives screening analysis also considered other aspects of the project including excavated material/dredge disposal options, alternative trail alignments, and options for the potential uses on one of the potential disposal sites (the Via de la Valle property). The disposal site options considered in this document are described in section 2.3.1.6, while trail alignment alternatives are described in section 2.3.1.8.2.

2.2 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

As a result of meetings with affected public agencies and a citizen's working group, various goals and objectives were identified for the San Dieguito wetlands restoration effort. These goals and objectives were prioritized by the Working Group and then used by the technical design team to develop a variety of restoration design concepts. This first exercise resulted in the development of 14 design concepts that were based on a number of considerations, including: (1) biological characteristics; (2) the goals and objectives developed by the agencies and Working Group; (3) hydrologic and engineering feasibility; and (4) regional aspects. These concepts illustrated a variety of restoration strategies and ranged from maximizing coastal fish habitat (Concept 1) to maximizing migratory waterbird/shorebird habitat (Concept 4) and from maximizing the habitat of a single endangered species (i.e., light-footed clapper rail, Concept 9, or Belding's savannah sparrow, Concept 12) to maximizing habit for a variety of endangered species (Concept 14).

To assist in the alternative selection process, evaluation criteria, as described above, were developed. Based on these criteria, the concepts that involved maximizing subtidal habitat (Concept 1) and maximizing intertidal mud flats (Concepts 6 and 7) were eliminated from further discussion. Concept 1 was eliminated because it resulted in the destruction of significant areas of existing salt marsh habitat and Concepts 6 and 7 were eliminated because of inadequate provision of fish habitat and potential feasibility issues due to a reduced tidal prism. It was determined that Concept 2 (Fish Habitat with Wetland Protection) and Concept 14 (Habitat for Endangered Species) represented the most feasible range of alternatives, and therefore deserved further study.

Further study and hydrological modeling of the river valley demonstrated that excavation within the effective flow area of the San Dieguito River would result in significant increases in downstream scouring during flood events. This made the originally prepared alternative design concepts infeasible from an engineering and liability perspective. As a result, all restoration alternatives with the potential to increase scour within the river channel during flood events were eliminated from further consideration.

New alternatives were developed to avoid increased downstream scour potential. The first such alternatives involved removing any excavation from the effective flow area. The result was a significant decrease in restoration potential. These early alternatives were rejected by the agencies and the public due to the limited restoration that would have occurred. Subsequent engineering demonstrated that additional restoration acreage was obtainable through the incorporation of river berms. For this reason, all of the action alternatives include some level of berming.

Four action alternatives were described in the NOP/NOI issued for this EIR/EIS: Mixed Habitat, Maximum Tidal Basin, Maximum Salt Marsh, and Reduced Berm. As a result of comments received during the public comment period for the NOP/NOI, an additional alternative, the Hybrid Alternative, was added. During the preparation of the draft EIR/EIS, additional biological and hydrological analyses were conducted for each of the alternatives. These analyses resulted in a reevaluation of the overall habitat types that would result from the various grading plans developed for each alternative. As a result, it was determined that the Maximum Salt Marsh Alternative was more appropriately described as the Maximum Intertidal Alternative. Despite changing the name of the alternative, no revisions to the grading plan for this alternative or to the size of the proposed tidal prism were made as a result of this change. Therefore, changing the name of the Maximum Salt Marsh Alternative to the Maximum Intertidal Alternative resulted in no material change to the range of alternatives proposed for inclusion in this document.

In addition to restoration alternatives, the Working Group also considered various options for maintaining tidal exchange within the restored system. A number of techniques for maintaining an open channel were considered from the simplest method of mechanical removal of sand through the use of bulldozers to experimental methods such as the use of siphons, Phoenician flushing, and the installation of fluidization and/or crater-sink sand bypassing systems. The use of jetties was also reviewed as a potential option. After reviewing all of these options, it was determined that the most reliable method for maintaining tidal exchange was through the use of bulldozers and/or a dredge. Jetties were rejected for several reasons, the most significant being the Working Group's strong objection to constructing any structures on the beach. The use of siphons, fluidization, and other more experimental methods were rejected for reasons related to engineering and construction limitations; the potential for retarded tidal flow; increased tidal muting, which would reduce the amount of tidally influenced habitat that could be restored within the project boundaries; significant long-term maintenance issues; potential decreases in the amount of sand that would be delivered to the beach; and possible negative effects on fish. Phoenician flushing was rejected for visual (a water tower is required), safety (related to high velocities during flush events), land use (significant acreage would be required to accommodate the water tower and associated pipes), and economic reasons. Similar options were also studied by Sea Science Services in 1980 for the City of Del Mar and the Coastal Conservancy, as part of the baseline studies conducted for the San Dieguito Lagoon Enhancement Plan. The Sea Science Services report concluded that, "natural tidal flushing is the most environmentally desirable method for achieving adequate rates of circulation." These other methods were not carried forward for environmental analysis in this document because they did not achieve the goals established by the Working Group (Appendix H), their technical feasibility in this setting was in doubt, and they did not appear to be capable of achieving the overall goals of the restoration project.

There were also a variety of disposal site options considered in response to the need to dispose of the material excavated from the restoration site. In evaluating these options, several were eliminated due to existing regulatory issues and/or lack of capacity at the receiving sites. Specifically, ocean disposal and offsite disposal at a public landfill were deleted from further consideration. In considering ocean disposal, the option of placing dredged/excavated materials at LA-5, an EPA-designated ocean dredged material disposal site, was explored. Use of LA-5 is intended for disposal of sediments from navigation or new dredging projects. Despite the results of the preliminary chemical analyses (Ogden 1999) for on-site sediments that indicated that the sediments could be considered suitable for disposal at LA-5, the disposal site has a finite capacity for dredged materials and the present project does not meet the definition of navigation or new dredging. Disposal at a public landfill was eliminated due to anticipated trucking impacts, as well as current capacity limits at the region's landfills.

With respect to other components of the project, two alignments alternatives for the Coast to Crest Trail were considered but not carried forward. These included placing the trail on the south side of the river and utilizing the existing bike lanes and sidewalks to the north of the project along Via de la Valle. Once the various wetland restoration alternatives were completed, it became apparent that it would not be possible to construct the Coast to Crest Trail on the south side of the river without having to cross large areas of restored wetland. The biological impacts associated with this alternative were found to be unacceptable. With respect to the use of the existing facilities along Via de la Valle, it was determined that this alternative and the No Action alternative were essentially the same. This alternative was therefore dropped from further consideration.

2.3 ALTERNATIVES CARRIED FORWARD FOR DETAILED ANALYSIS

Over the past several years various informal meetings have been held involving local, state, and federal agencies, as well as members of the public and environmental organizations, to discuss alternatives for achieving the overall project goals. Various restoration scenarios focused on specific topics of interest, including hydrology, biological habitat design, visual quality, generation of dredged material, and public access. As a result of these meetings, the following alternatives were developed: Mixed Habitat, Maximum Tidal Basin, Maximum Intertidal Habitat, and Reduced Berm. The Hybrid Alternative was added in response to comments received during the public scoping process. The No Action Alternative is also included as required by CEQA and NEPA.

In accordance with Section 15126.6(e)(2) of the CEQA Guidelines, the lead agencies have reviewed the alternatives presented in this document in order to determine the environmentally superior alternative. In making this selection, the agencies are required to consider the short- and long-term environmental impacts and benefits of each alternative. The very nature of the proposal, the restoration of native wetland and upland habitats, makes this a difficult task. As developed, each of the restoration alternatives would provide important but somewhat different benefits to the environment. Therefore, for the purpose of selecting the environmentally superior alternative, the lead agencies did not attempt to rank these benefits; rather, all of the restoration alternatives were viewed has having similar environmental benefits. The alternatives were then ranked in terms of their overall impacts on the environment. Based on this analysis, the Maximum Intertidal Alternative is considered the environmentally superior alternative. Implementation of this alternative would require the least amount of excavation of the four major restoration alternatives (Mixed Habitat, Maximum Tidal Basin, Maximum Intertidal, and Hybrid). Reduced grading would result in reduced impacts to air quality, traffic, landform, water quality, and noise. The Reduced Berm Alternative would require significantly less initial grading. However, this alternative was not selected as the environmentally superior alternative because of its greater long-term environmental impacts. These impacts result from the need for more frequent maintenance at the river mouth and in the river channel due to the reduced tidal prism provided by this alternative. Such increases in maintenance would result in greater disruption at the river mouth and on the beach over the life of the project, resulting in more frequent short-term impacts to recreation, visual quality, and noise.

Neither CEQA nor NEPA require that the environmentally superior alternative be the same as the "agency preferred" alternative. In fact, the lead agencies have selected <u>the Mixed Habitat (see Volume 1, Conclusions) as</u> their preferred alternative.

2.3.1 Mixed Habitat Alternative

As discussed in Chapter 1, the Mixed Habitat Alternative was formulated in response to the comments provided by a variety of local, state, and federal agencies and interested members of the public, all of whom reviewed numerous conceptual restoration proposals before there was general concurrence that the Mixed Habitat Alternative appeared to meet the restoration goals for San Dieguito Lagoon. The Mixed Habitat Plan was submitted as a "preliminary plan" to the CCC in November 1997, as required under the terms of the SONGS Units 2 and 3 Coastal Development Permit. The plan was approved in concept, allowing the environmental review process to begin under CEQA and NEPA. Subsequent to the CCC action, the project boundaries were expanded to include a 54-acre parcel located south of Via de la Valle and east of San Andres Drive. This parcel was acquired by SCE to allow for the restoration of additional coastal wetlands pursuant to SCE's previously described settlement agreement with Earth Island Institute.

The grading footprint and the design and location of the river berms described for the Mixed Habitat Alternative are identical to those proposed for the Maximum Tidal Basin, Maximum Intertidal, and Hybrid Alternatives, described below. The major differences among these four alternatives are in the amount of material to be excavated and disposed of and the type and relative amounts of various wetland habitats that would be created/restored. The upland restoration, public access, and interpretive proposals are also identical for all but the Reduced Berm and No Action alternatives.

2.3.1.1 Major Project Components

Tidal Restoration

The primary component of the Mixed Habitat Alternative is the proposal to restore to tidal wetlands a significant portion of the project area, with restoration occurring on both the west and east sides of I-5, as illustrated in Figure 2.3.1-1. To the west of I-5, this alternative proposes the creation of a new subtidal basin on the old airfield property, designated as Area W1 on Figure 2.3.1-1, the conversion of the City of San Diego's old sewage treatment pond site (Areas W2a and W2b) to a combination of coastal salt marsh and transitional wetlands, and the restoration of the area immediately west of the City property (Area W3) to similar coastal wetland habitat. This alternative also proposes to convert an unsuccessful nesting area (identified as Area W30) located on California Department of Fish and Game property to seasonal salt marsh. On the east side of I-5, this alternative proposes the creation of new areas of coastal salt marsh habitat on both the north and south side of the river (Areas W4, W5, W6a, W6b, W10, and W16). In the process of restoring this coastal lagoon, approximately 25 acres of existing wetlands, primarily seasonal salt marsh, would be impacted. Some of these impacts would occur as a result of converting one type of wetland to another, for instance, excavating areas currently supporting seasonal salt marsh in order to restore subtidal or coastal salt marsh habitat. In other areas, as addressed in section 4.4, existing wetlands would be permanently impacted as a result of berm and nesting site construction. To compensate for these losses, a number of potential seasonal salt marsh restoration sites have been identified. These sites, depicted as Areas M38-M43 and M45, are shown on Figure 2.3.1-1. Up to 13.8 acres of transitional wetland habitat could be created on these sites. The actual amount of restoration needed to compensate for the loss of seasonal salt marsh will be determined by the CCC at the time that the Coastal Development Permit for this project is prepared.

Taking into account anticipated impacts to existing wetlands, this alternative would result in a net gain of approximately 143 acres of tidally influenced salt marsh, seasonal salt marsh, and transitional wetlands. (This does not include any additional acreage that could be required to mitigate for wetland impacts associated with habitat restoration or trail construction.)

Non-tidal and Upland Restoration

In addition to the tidal wetland restoration component of this alternative, restoration of the western river valley under this alternative would include the creation or enhancement of a variety of non-tidal wetland and upland habitats, including coastal sage scrub, native grassland, chaparral, riparian, and freshwater marsh. Approximately 200 acres of publicly owned land within the project boundaries are proposed for non-tidal wetland or upland restoration. All of these restoration areas are shown on the plan view map (Figure 2.3.1-1). Those areas on the map that are designated with a letter/number combination (for example W1, the western tidal basin) are the areas proposed for restoration. Areas with no designation represent existing habitat that would not be altered by this proposal.

Other Project Components

The other major components of this alternative are summarized below and described in detail in the sections that follow.

1. Initial excavation and long-term maintenance of the tidal inlet to maintain tidal exchange within the restored wetland.

2. Excavation/dredging of up to 247 acres of the project site, as indicated on the proposed grading plan (Figure 2.3.1-2), to create/restore coastal wetlands, associated uplands, nesting areas, and the required river berms.

3. Construction of three berms adjacent to San Dieguito River to maintain the existing flood flows and river sediment transport to the ocean.

4. Creation of four nesting sites and the rehabilitation of another in order to provide 13.7 acres of flat nesting habitat suitable for the California least tern and western snowy plover.

5. Placement of slope protection in the form of stone revetment at two locations within the project area, and the use of a combination of stone revetment, articulated block mat, and vegetation on the southern slope of one of the proposed river berms (B8).

6. Placement of culverts through the two main river berms (B7 and B8) to help balance water levels in the tidal lagoons and river channel during flood events.

7. Construction of a weir along the eastern edge of berm B8 in order to eliminate any backwater effect of the berm on the upstream river channel.

8. Design and implementation of a public access and interpretive plan for the project area that includes proposals for a regional trail, nature trails, a nature/interpretive center, trail staging areas, and an interpretive program.

Parties Responsible for Project Implementation

Of the various components included in the Mixed Habitat Alternative, SCE would be responsible for implementing those portions of the project that are required to meet the SONGS Units 2 and 3 CCC permit conditions (refer to section 1.3 above), as well as the conditions of SCE's settlement agreement with Earth Island Institute. These components include: the initial excavation and ongoing maintenance of the inlet channel in order to maintain tidal exchange; restoration of all tidal wetland restoration areas shown on Figure 2.3.1-1, except Area W6b and possibly W30; and construction of the proposed berms and associated drainage and slope protection measures. Construction and/or rehabilitation of the five nesting sites may be undertaken by SCE if an agreement can be reached with the 22nd District Agricultural Association (District), in which the District would receive credit for providing the nesting sites in return for granting SCE and/or its successor permission to dredge and maintain the river mouth in an open configuration in perpetuity. If the nesting sites are not implemented by SCE, another party or funding source would have to be identified to implement this component of the overall restoration plan. The 22[nd] District Agricultural Association currently has an obligation to provide nesting sites within the river valley under its own permit requirements. Therefore, the District has an interest in implementing this aspect of the project if it is not implemented by SCE.

The proposal to restore Area W6b (owned by the 22nd District Agricultural Association) and Area W30 (owned by the California Department of Fish and Game) to coastal salt marsh is included in the overall restoration plan because restoration of these areas would increase the overall habitat value within the project planning area. Restoration of either of these two areas would require prior approval from the agencies that hold title to the land. Although these sites may not be restored as part of the initial phase of restoration, to ensure the ability to restore these areas in the future, the potential impacts of restoring areas W6b and W30 have been addressed by this document.

The JPA would be responsible for implementing the public access and interpretive components of this alternative. The timing of implementation would be dependent on the availability of adequate funding. Upland and freshwater habitat restoration, which are considered essential to the goal of creating a natural and diverse biological system within the western river valley, would also be implemented as funding becomes available. The JPA has agreed to seek funding to implement those portions of the upland and freshwater habitat restoration plan that are included within the JPA ownership. The draft Park Master Plan for this area also encourages the City of San Diego to seek funding for the future restoration of those areas proposed for restoration within its ownership.

2.3.1.2 Habitat Design

2.3.1.2.1 Tidal Habitat

Under the Mixed Habitat Alternative, tidal and upland areas would be excavated to create approximately 149 acres of sub-tidal, intertidal, and seasonal salt marsh and transitional wetlands. To create these coastal wetland habitats, the grading plan for this alternative (Figure 2.3.1-2) proposes to excavate a large portion of the floodplain, thereby creating an elevational range of between -6 and +5 feet NGVD. (NGVD is equal to Mean Sea Level (MSL) minus 0.19 foot). Existing elevations in these areas range from +3 to +12 feet NGVD.

As described in section 1.4, the definition of the upper boundary for tidally influenced salt marsh varies depending on the method used to calculate this upper limit. Tables 2.3.1-1a and b present the coastal wetland acres created using the CCC staff's provisional definition of the upper boundary of high salt marsh (+4.5 feet NGVD). These tables list the acreages for the various wetland habitats that would be created under this alternative, including subtidal, inter-tidal mudflats, coastal salt marsh (low, mid, and high), seasonal salt marsh, and transitional wetlands. Acreages are provided by area and include the overall restoration proposal as well as the SCE project.

SCE has indicated that if the acreage credits required to meet the CCC permit conditions are calculated using the predicted upper boundary derived from the historical hydroperiod modeling

Table 2.3.1-1a. Tidal Habitat Created for the Mixed Habitat Alternative: Full Project Implementation *

Habitat	*Restored Area (acres) a*	*Eliminated Area (acres) b*	*Converted Area (acres) c*	*Total Impacted Area (acres) d=b+c*	*Net Change (acres) a-d*
Tidal Wetland (below +4.5 feet NGVD					
Subtidal	28.72	0.49	0.87	1.36	27.36
Frequently Flooded Mudflats	24.31	0.00	0.00	0.00	24.31
Frequently Exposed Mudflats	4.00	0.00	0.00	0.00	4.00
Low Coastal Salt Marsh	34.58	0.00	0.01	0.01	34.57
Mid Coastal Salt Marsh	43.94	0.00	0.55	0.55	43.39
High Coastal Salt Marsh	17.72	1.83	0.84	2.67	15.05
Total Tidal Wetland	153.27	2.32	2.27	4.59	148.68
Nontidal Wetland (above +4.5 feet NGVD					
Seasonal Salt Marsh	0.00	1.60	18.77	20.37	-20.37
Transitional Wetlands	14.66	0.00	0.00	0.00	-14.66
Total Nontidal Wetland	14.66	1.60	18.77	20.37	-5.71

* The calculation of net acreage changes does not take into account the need to provide a 4:1 mitigation ratio for wetland habitat losses shown in the 3rd column (item b in the calculation). To quantify the effect of a 4:1 mitigation ratio, net changes would be calculated as Restored Area (a) - 4 x Eliminated Area (b) - Converted Area (c).

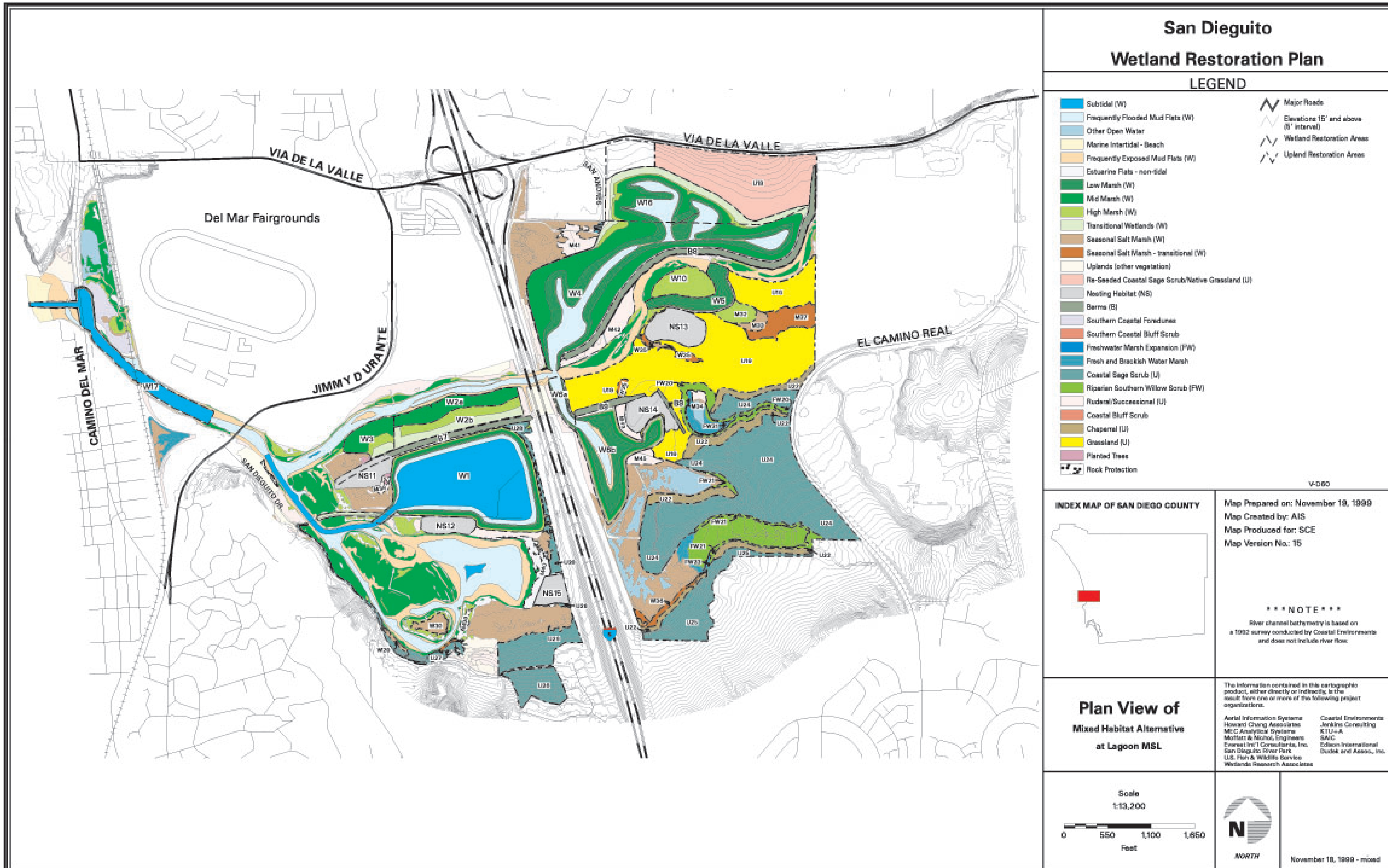


Figure 2.3.1-1. Plan View of Mixed Habitat Alternative

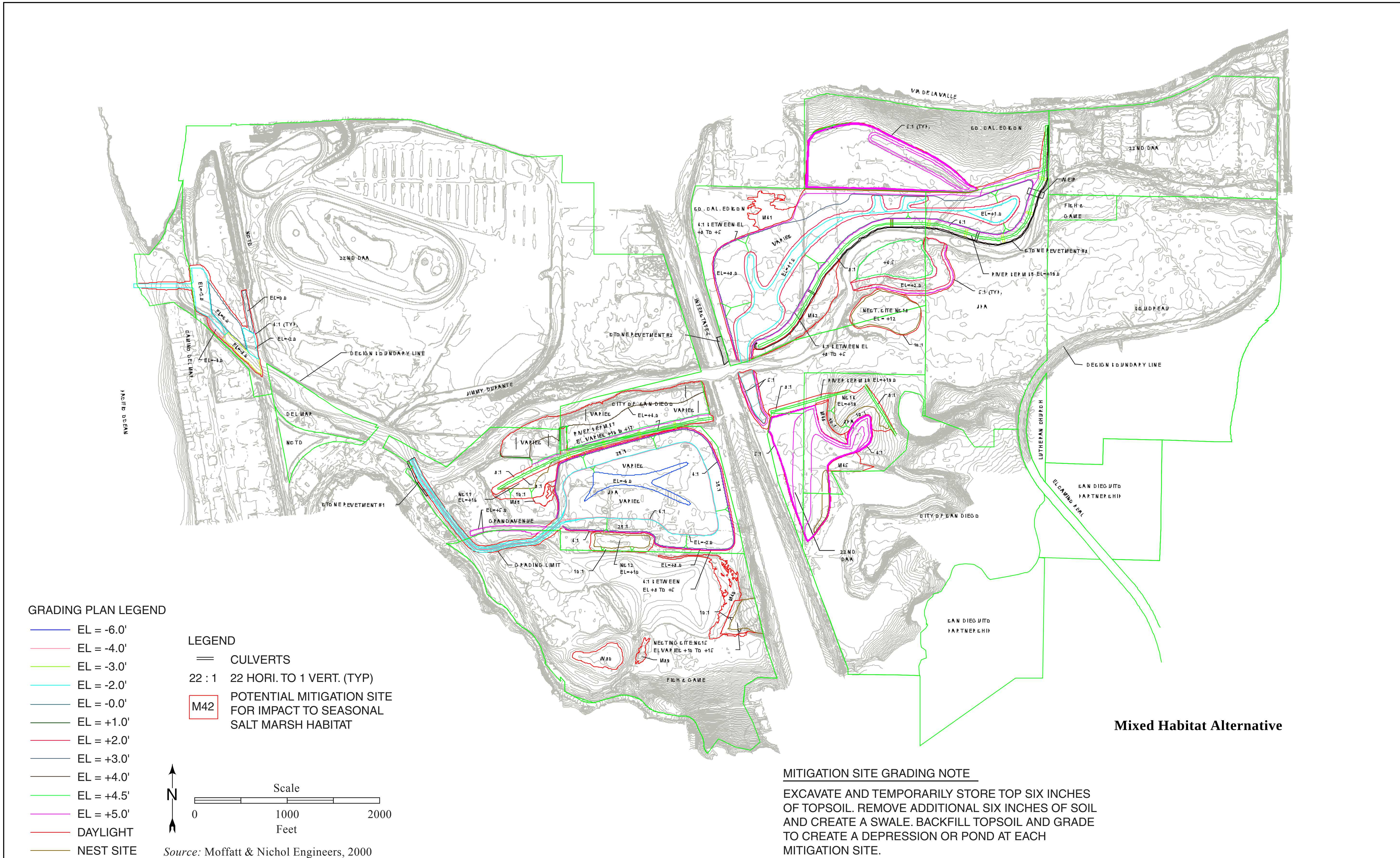


Figure 2.3.1-2. Grading Plan for Tidal Restoration and Nesting Sites - Mixed Habitat Alternative

Table 2.3.1-1b. Tidal Habitat Created for the Mixed Habitat Alternative: SCE Project Implementation (excludes Module 6B, Module 16, and Nesting Sites)*

Habitat	*Restored Area (acres) a*	*Eliminated Area (acres) b*	*Converted Area (acres) c*	*Total Impacted Area (acres) d=b+c*	*Net Change (acres) a-d*
Tidal Wetland (below +4.5 feet NGVD					
Subtidal	28.72	0.49	0.87	1.36	27.36
Frequently Flooded Mudflats	17.19	0.00	0.00	0.00	17.19
Frequently Exposed Mudflats	2.32	0.00	0.00	0.00	2.32
Low Coastal Salt Marsh	23.55	0.00	0.01	0.01	23.54
Mid Coastal Salt Marsh	35.74	0.00	0.55	0.55	35.19
High Coastal Salt Marsh	14.91	0.00	0.84	0.84	14.07
Total Tidal Wetland	122.43	0.49	2.27	2.76	119.67
Nontidal Wetland (above +4.5 feet NGVD					
Seasonal Salt Marsh	0.00	0.65	13.56	14.21	-14.21
Transitional Wetlands	7.90	0.00	0.00	0.00	7.90
Total Nontidal Wetland	7.90	0.65	13.56	14.21	-6.31

* The calculation of net acreage changes does not take into account the need to provide a 4:1 mitigation ratio for wetland habitat losses shown in the 3rd column (item b in the calculation). To quantify the effect of a 4:1 mitigation ratio, net changes would be calculated as Restored Area (a) - 4 x Eliminated Area (b) - Converted Area (c).

results of Jenkins and Wasyl (+4.7 to +4.9 feet NGVD), the final grading plans for the restoration project would be revised. Under the +4.7 to +4.9 feet NGVD definition, less grading would be required to meet the CCC acreage credit requirements, therefore, the final grading plans would be revised to reduce the depth of grading in several areas including W2a, W2b, W3, W5, and W10.

2.3.1.2.2 Wetland/Upland Transitional Habitat

Transitional habitat, consisting of approximately 15 acres, would be established on the berm slopes, as well as on the slopes adjacent to Area W16. This proposed wetland/upland transitional habitat would consist of coastal wetland species near the base of the slopes. Farther up the slopes, the plan proposes a mixture of native grasses and coastal sage scrub species, including blue wild rye (*Leymus condensatus* and *L. triticoides*), California barley (*Hordeum brachyantherum*), tall melic (*Melica imperfecta*), needlegrass (*Nasella pulchra*), California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), lemonadeberry (*Rhus intergrifolia*), bladderpod (*Cleome isomeris*), coast sunflower (*Encelia californica*), and southern tarplant (*Hemizonia parryi* ssp. *australis*). This transitional habitat is proposed to provide wildlife with diverse vegetation and natural cover at the edge of the restored wetland.

2.3.1.2.3 Upland Habitat

Upland habitat restoration, which is addressed in section 2.3.1.9, is also a component of the Mixed Habitat Alternative. Although SCE does not propose to implement this component of the overall restoration project, the restoration of upland habitat is addressed in the draft Park Master Plan for this area, and would be undertaken by the JPA or other entity when funds are identified to facilitate its implementation.

2.3.1.3 Nesting Sites

Five nesting sites for least terns and snowy plovers are included in this alternative. The location and size of these sites were determined through consultation with the Fish and Wildlife Service, California Department of Fish and Game, and CCC staff. Site selection considered the ability to provide a minimum of 1.2 acres of usable nesting area, to achieve an open panorama from the site, and to establish adequate setbacks from high structures. The establishment of multiple sites was considered to be more beneficial to nesting birds than the creation of fewer larger sites.

The location of the five proposed nesting sites, identified as Areas NS11 — NS15, is illustrated in Figure 2.3.1-1. Approximately 19 acres have been set aside for the creation of four new nesting sites. A fifth site, about 3 acres in size, would also be rehabilitated. Of the four new sites to be created, two would be constructed on the west side of I-5 and two to the east of I-5. The site to be rehabilitated is located to the west of I-5 on property owned by the California Department of Fish and Game.

The nesting sites would be somewhat higher than the surrounding wetlands in order to protect the sites from tidal inundation, resulting in the creation of gentle side slopes and a nesting plateau that is slightly smaller in acreage than the base of the nesting site. Although the five nesting sites would have a collective footprint of approximately 21.5 acres, the usable flat nesting area provided by the five sites would be 13.7 acres. The proposed acreages for the base and nesting plateau of each nesting site are provided in Table 2.3.1-2.

Table 2.3.1-2. Tern Nesting Site Cut and Fill Summary

Site Name	*Construction Site No.*	*Land Owner*	*Area [3] (acres)*	*Fill [1] (yd^3)*	*Sand Fill [2] (yd^3)*
Nesting Site No. 1 [3]	NS11	JPA	2.2 / 4.3	51,600	18,200
Nesting Site No. 2 [3]	NS12	JPA	1.2 / 3.4	4,400	8,500
Nesting Site No. 3 [3]	NS13	SCE & City	5.1 / 6.3		19,800
Nesting Site No. 4 [3]	NS 14	JPA	3.3 / 4.6	15,200	21,800
Nesting Site No. 5 [3]	NS 15	CDFG	1.9 / 2.9		9,000
Total				71,200	77,300

Notes:
1. Based on 15% Shrinkage Recommendation Contained In "Geotechnical Investigation: Material Characterization And Disposal, San Dieguito Lagoon Restoration, Del Mar, California." M&T Agra, Inc. October 22, 1993.
2. Sand imported from offsite unless geotechnical investigation determines suitable on-site material is available.
3. Top area of grade break / footprint area at existing elevation.

The base of nesting sites NS11, NS12, and NS14 could be constructed using excess material from the proposed grading operation for the overall restoration project. The target height of the nesting plateau is approximately +10 feet NGVD. Therefore, the quantity of the base material needed would depend on the starting elevation for each site. Actual quantities of base material to be used at each site are described in section 2.3.1.6. If excavated material is used for the bases, it would be dried and compacted to 85 percent relative density. Once the bases are properly compacted, two to three feet of coarse white or light colored sand would be placed on top of the base material.

Sand removed from the inlet channel during initial grading could be used as nesting site surface material. In order to optimize the attraction of terns to these sites, the sand cap should also contain scattered shell fragments. The recommended mixture is 80 percent coarse sand and 20 percent shell fragment (personal communication, Fancher 1999). A total of 77,300 cubic yards of sand are needed to cap the five sites. Under no circumstances would the silt/clay proportion be greater than 15 percent or the sand proportion less than 85 percent. Surface material would be free of viable weed seeds, organic matter and dark material. The base material would be placed, dewatered, and compacted so that subsidence over five years would not result in overall nesting areas at elevations below +10 feet NGVD. If cracking occurs during drying, the base material would be regraded or repaired to eliminate surface crevices.

The nesting sites would consist of a nearly flat central nesting plateau with side slopes descending to the marsh plain. Base material would be placed and contoured to prevent any accumulation of water on the surface that may encourage the growth of vegetation. The side slopes of sites NS12, NS13, and NS15 would be graded at a 10:1 gradient starting at the edge of the nesting site plateau. Nesting sites NS11 and NS14, which would be incorporated into adjoining berms, would have a maximum slope gradient of 3:1 along the berm side of the nesting plateau. Therefore, it may be necessary to install chick fences along the tops of these slopes. Grading would be conducted in a manner that would minimize the formation of rivulets that may increase erosion of the slopes. Proposed grading plans for each of the five nesting sites are presented in Figures 2.3.1-3 a-e.

The primary construction activity for the nesting sites would be the movement of excavated base and surface material to the specified locations. This method of construction would require either a dredge or excavator to physically transport the material. Land based construction equipment would be required to move and grade the fill material.

Nesting sites NS13 and NS14 are located adjacent to upland areas, creating a potential for mortality from ground-based predators. To reduce or eliminate this source of mortality, a chain link fence would be installed around the base of these two sites to exclude ground-based predators. Fence posts would be placed 10 feet apart on center. Where specified, polyethylene netting would be attached on the lower 4 feet of the chain-link fence. The chain-link fence would be buried one foot below ground level for a finished height of 7 feet above the ground. Surface material would extend at least 5 feet from the bottom of the fence on both sides. Each site that is fenced would have an access gate large enough in width to allow construction maintenance equipment to enter. Nesting site NS15 has already been fenced by the California Department of Fish and Game. Judicious use of fencing to protect the other nesting areas to the west of I-5 may be considered at key access points.

2.3.1.4 Engineering Elements

2.3.1.4.1 Excavation and Grading

As illustrated in the grading plan for this alternative (Figure 2.3.1-2), the tidal wetland restoration component of the Mixed Habitat Alternative would involve the excavation and grading of up to 247 acres of tidal and upland property within the project boundaries. Excavation would result in about 1,990,250 (without W17) cubic yards of cut, which allows for up to a half-foot of overdredge (104,750 cubic yards). Table 2.3.1-3 presents a breakdown of the proposed construction sites, the owner of record for each site, the site acreage, and the proposed cut and fill volumes for each site.

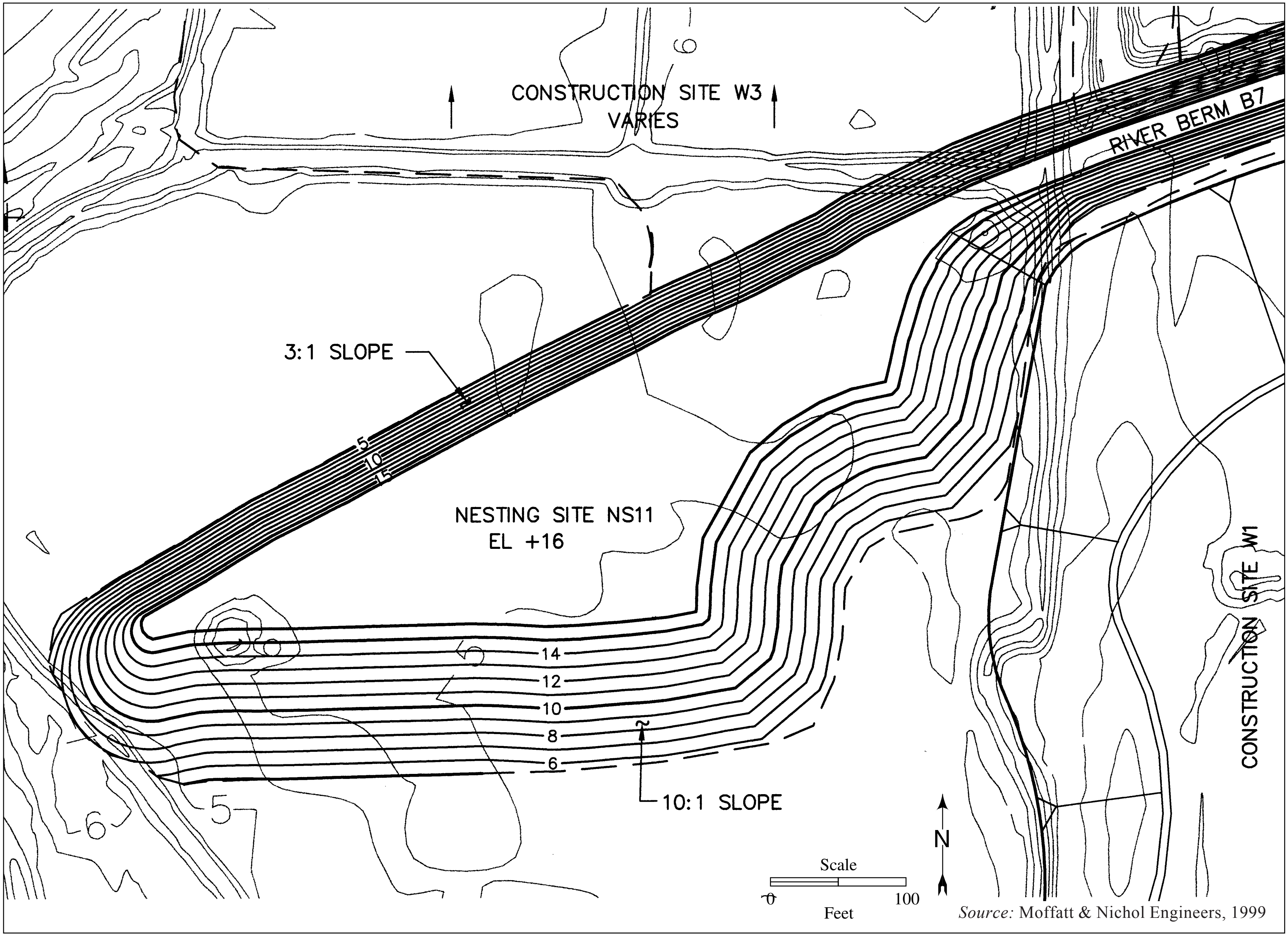


Figure 2.3.1-3a. Nesting Site NS11 Grading Plan

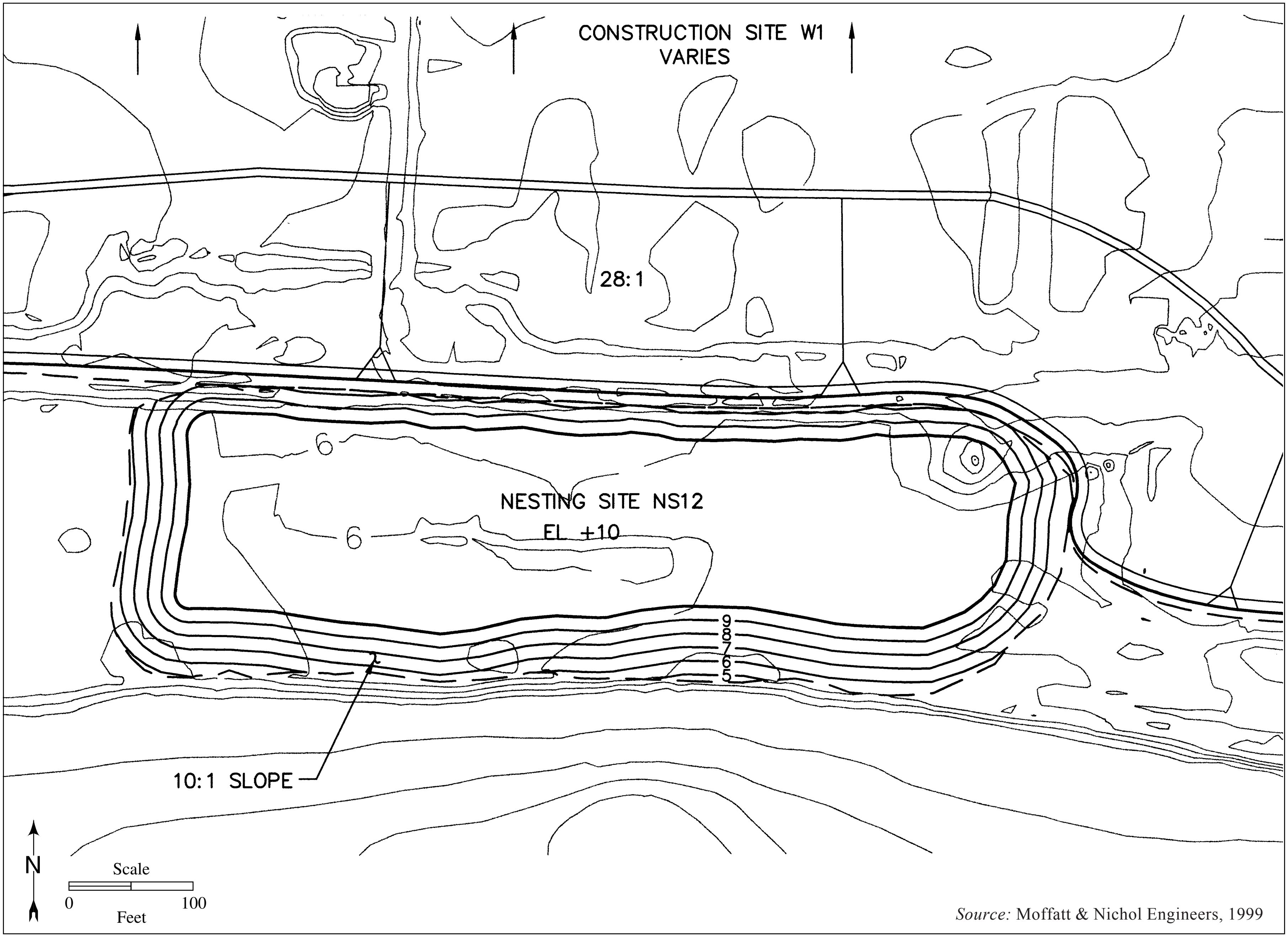


Figure 2.3.1-3b. Nesting Site NS12 Grading Plan

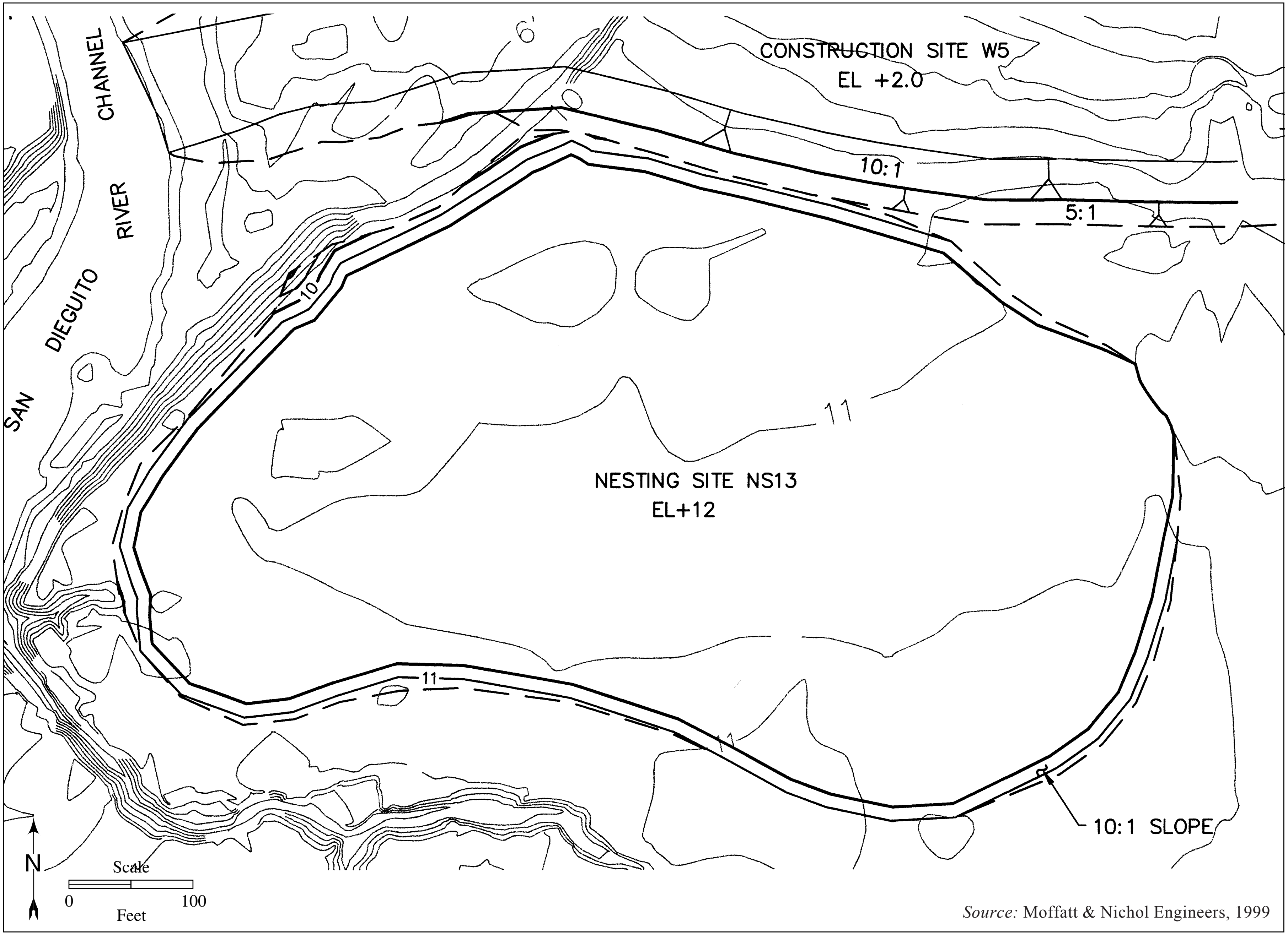


Figure 2.3.1-3c. Nesting Site NS13 Grading Plan

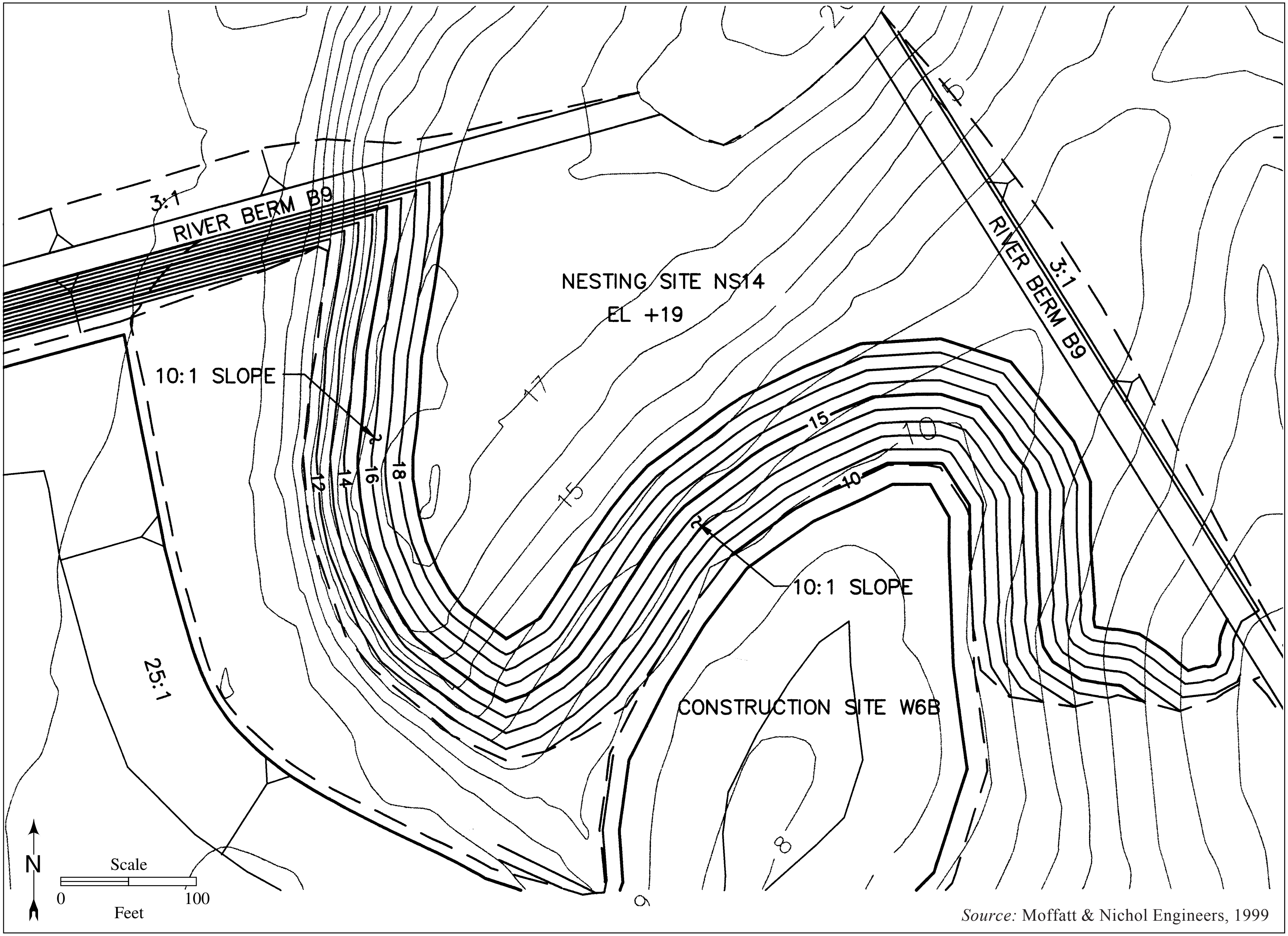


Figure 2.3.1-3d. Nesting Site NS14 Grading Plan

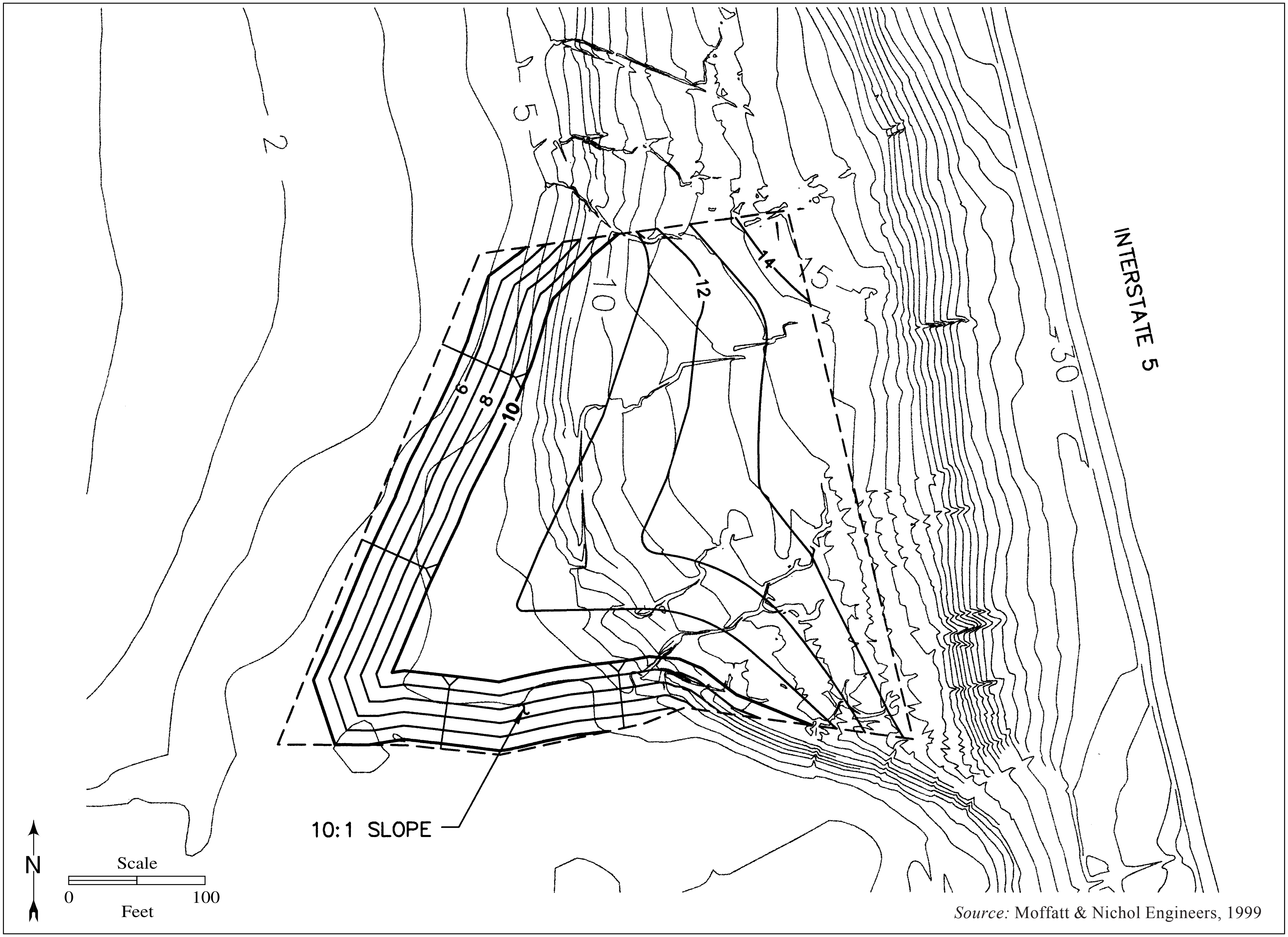


Figure 2.3.1-3e. Nesting Site NS15 Grading Plan

Table 2.3.1-3. Mixed Habitat Alternative — Cut and Fill Summary

Site Name	*Construction Site No.*	*Land Owner*	*Area* [5] *(acres)*	*Neat Line Cut (yd^3)*	*Overdredge*[1] *Cut (yd^3)*	*Fill*[2] *(yd^3)*	*Sand Fill*[3] *(yd^3)*
Lagoon	W1	JPA	46.1	793,500	99,000		
Marsh	W2a	City of San Diego	6.4	38,500	14,000		
High Marsh / Transitional Wetlands	W2b	City of San Diego	8.7	26,800	19,000		
New Tidal Area / Marsh	W3	JPA	5.5	16,600	12,000		
Intertidal Lagoon / Marsh	W4	SCE & JPA	53.8	658,800	116,000		
New Channel	W5	SCE & JPA	6.4	55,900	14,000		
Intertidal Lagoon / Marsh	W6a	City	2.5	25,500	5,000		
Intertidal Lagoon / Marsh	W6b	22nd DAA	17.5	158,300	38,000		
River Berm No. 1	B7	JPA	4.2			26,800	
River Berm No. 2	B8	SCE & JPA	7.8			78,800	
River Berm No. 3	B9	City & JPA	2.1			20,000	
New Tidal Area / Marsh	W10	SCE & JPA	5.3	23,400	11,000		
Nesting Site No. 1 [4]	NS11	JPA	2..2 / 4.3			51,600	18,200
Nesting Site No. 2 [4]	NS12	JPA	1.2 / 3.4			4,400	8,500
Nesting Site No. 3 [4]	NS13	SCE & City	5.1 / 6.3				19,800
Nesting Site No. 4 [4]	NS14	JPA	3.3 / 4.6			15,200	21,800
Nesting Site No. 5 [4]	NS15	CDFG	1.9 / 2.9				9,000
Intertidal Lagoon / Marsh	W16	SCE	22.8	282,400	49,000		
Inlet Channel / Channel to Lagoon	W17	22nd DAA, JPA, CDFG, NCTD, St. Lands	19.4	90,400	42,000		
Mitigation Site	W30	CDFG	2.2	1,800			
Mitigation Site	M38	JPA	0.6	500			
Mitigation Site	M39	CDFG	0.4	400			
Mitigation Site	M40	CDFG	3.5	2,800			
Mitigation Site	M41	SCE	2.6	2,100			
Mitigation Site	M42	SCE	4.2	3,400			
Mitigation Site	M43	JPA	1.3	1,000			
Mitigation Site	M45	JPA	1.4	1,100			
Total			247	**2,183,200**	**419,000**	**196,800**	**77,300**
			Net Cut	**1,986,400**	**2,405,400**		

1. Assume 2 feet of overdredge over two / thirds of the entire construction site area.
2. Based on 15% shrinkage recommendation contained in "Geotechnical Investigation: Material Characterization and Disposal, San Dieguito Lagoon Restoration, Del Mar, California," M&T Agra, Inc., October 22, 1993
3. Sand imported from offsite unless geotechnical investigation determines suitable on-site material is available.
4. Top area at grade break / footprint area at existing elevation
5. Includes nesting site footprint areas and mitigation sites.

Of the total material to be excavated, about 196,800 cubic yards could be used for features within the project, including 125,600 cubic yards for berm construction and 71,200 cubic yards for creating the bases of the four new nesting sites. The areas of cut and fill for the various tidal restoration components of the project are illustrated in Figure 2.3.1-4. The construction methods proposed to implement the grading plan are provided in section 2.3.1.5.

Full implementation of the Mixed Habitat Alternative would result in the excavation of eleven areas (W1, W2a, W2b, W3, W4, W5, W6a, W6b, W10, W16, and W30) to create the subtidal, intertidal, and salt marsh habitats. Additional excavation or dredging would also occur at the river mouth and within the inlet channel, as described in section 2.3.1.4.2 below. The SCE proposal, which excludes area W6b, would generate approximately <u>1,822,450 (without W17)</u> cubic yards of excavated material.

The grading proposed for each construction area is described below and illustrated in the grading plan for this alternative (Figure 2.3.1-2).

In addition to the excavation proposed at the river mouth and in the inlet channel (addressed in section 2.3.1.4.2 below), there are five major areas of excavation proposed on the west side of I-5. Area W1, referred to as the western tidal basin or old airfield property, consists of approximately 46 acres and would be excavated to a maximum depth of -6 feet NGVD. The slopes of the basin would extend from +3 feet NGVD to -2 feet NGVD with a slope gradient of 28 (horizontal) to 1 (vertical) (28:1).

Area W2a (±6.4 acres) would be excavated to an elevation below +4.0 feet NGVD in order to create appropriate conditions for the restoration of mid salt marsh and Area W3 (±5.5 acres) would be excavated to an elevation ranging from +3.5 to +4.5 feet NGVD in order to achieve the appropriate elevations for mid and high salt marsh. A band of transitional wetland would also be created along the southern edge of Area W3. The slope would vary with the intent to have all of these areas drain north toward the river.

Area W2b (±8.7 acres), which is proposed to support high salt marsh along the northern edge of the site and transitional wetland along the southern edge of the site, would be excavated to an elevation range of +4.0 to +5.0 feet NGVD. The draft Park Master Plan proposes that Area W30 (±1.62 acres) be lowered from its present elevation of +6 feet NGVD to approximately +5 feet NGVD to create transitional seasonal salt marsh. This area was originally constructed by the California Department of Fish and Game as a nesting site; however, the utility pole on the site has attracted raptors to the area, making it undesirable for nesting by terns and plovers. Lowering the site would allow the current nonnative vegetation on the site to be replaced by native salt marsh species, thereby increasing the biological value of the area. This component of the restoration plan could be implemented as a part of the SCE restoration proposal, if this acreage is required to offset impacts to seasonal salt marsh elsewhere in the project.

On the east side of I-5, Areas W4 (±53.8 acres) and W16 (±22.8 acres) would be graded as one unit to create a combination of salt marsh habitats. These areas would be excavated to a maximum depth of +0.5 foot NGVD, with much of the excavated area outside of the finger channels at elevation +3 feet NGVD.

Area W6a (±2.5 acres) is proposed primarily as an inlet channel to provide tidal flow to Area W6b, however, this channel would also support wetland habitat and could be constructed independent of Area W6b. The channel would be excavated to +0.5 foot NGVD with 5:1 side slopes. Area W6b (±17.5 acres), which is not proposed to be constructed as part of the SCE project, could be excavated and connected to area W6a in the future, should that be the desire of the property owner, the 22nd District Agricultural Association. If area W6b is restored in the future, the channel created in W6a at elevation +0.5 foot NGVD would be extended south into area W6b. The majority of the area would be excavated to elevation +2 NGVD with the edges of the site rising to +5 feet NGVD along a slope gradient of 25:1. Construction of Area W6b could occur after the completion of the SCE components without the need to impact any of the restored wetlands. Construction access to this area would be available either from El Camino Real or from the west where construction vehicles could gain access to the area by crossing under the existing I-5 bridge to the south of the river.

The existing elevation of Area W10 (±5.3 acres) would be lowered to +4.5 feet NGVD in order to support high marsh habitat.

Area W5 (±6.4 acres) represents a new channel proposed to support low marsh habitat. This area would be excavated to +2 feet NGVD.

Additional grading could also occur on Areas M38-M43 and M45 (a total of 13.8 acres). These areas of transitional wetland would be created by SCE if the CCC requires 4:1 mitigation for the project-related loss of seasonal salt marsh and transitional wetlands. To mitigate for this loss, these areas would be lowered to between +4.7 and +5 feet NGVD (generating up to 11,300 cubic yards of material) in order to support restored transitional wetlands.

In addition to excavating the site to restore coastal wetlands, grading would also be required to construct the nesting sites and river berms. Figure 2.3.1-5 presents a series of cross sections that illustrate the topographical changes that would occur throughout the site as a result of the proposed restoration project.

No excavation would be required to restore the upland areas indicated in Figure 2.3.1-1.

2.3.1.4.2 Initial Grading and Long-Term Maintenance Plan for the Ocean Inlet and Channel of the San Dieguito River

Historical observations of the San Dieguito Lagoon and the results of monitoring conducted by Coastal Environments (1998) from 1992 to 1994 demonstrate that beach sand influx into the lagoon causes closure of the mouth to tidal influence. Once this occurs, water quality in the lagoon begins to deteriorate. Restoration of the lagoon would increase the tidal prism and self-scouring capabilities of the inlet, somewhat reducing the closure frequency. However, recent studies by Jenkins and Wasyl (1998) and Goodwin and Florsheim (1997) indicate that periodic dredging/ excavation would be needed to maintain an open lagoon despite the increased tidal prism. Therefore, this project proposes initial grading at the river mouth and in the inlet channel, as well as a program of regular maintenance to maintain the inlet channel at the required design state in perpetuity. In accordance with their CCC permit conditions, SCE would be responsible for maintaining the inlet channel in an open configuration for the “full operating life” of SONGS Units 2 and 3. Once SCE has met its obligations, the JPA would take over the responsibilities for maintaining the inlet channel. As per an agreement between SCE and JPA, an endowment fund, to be established at the time of project approval, would provide the funds necessary to permit the JPA to maintain the inlet channel in perpetuity.

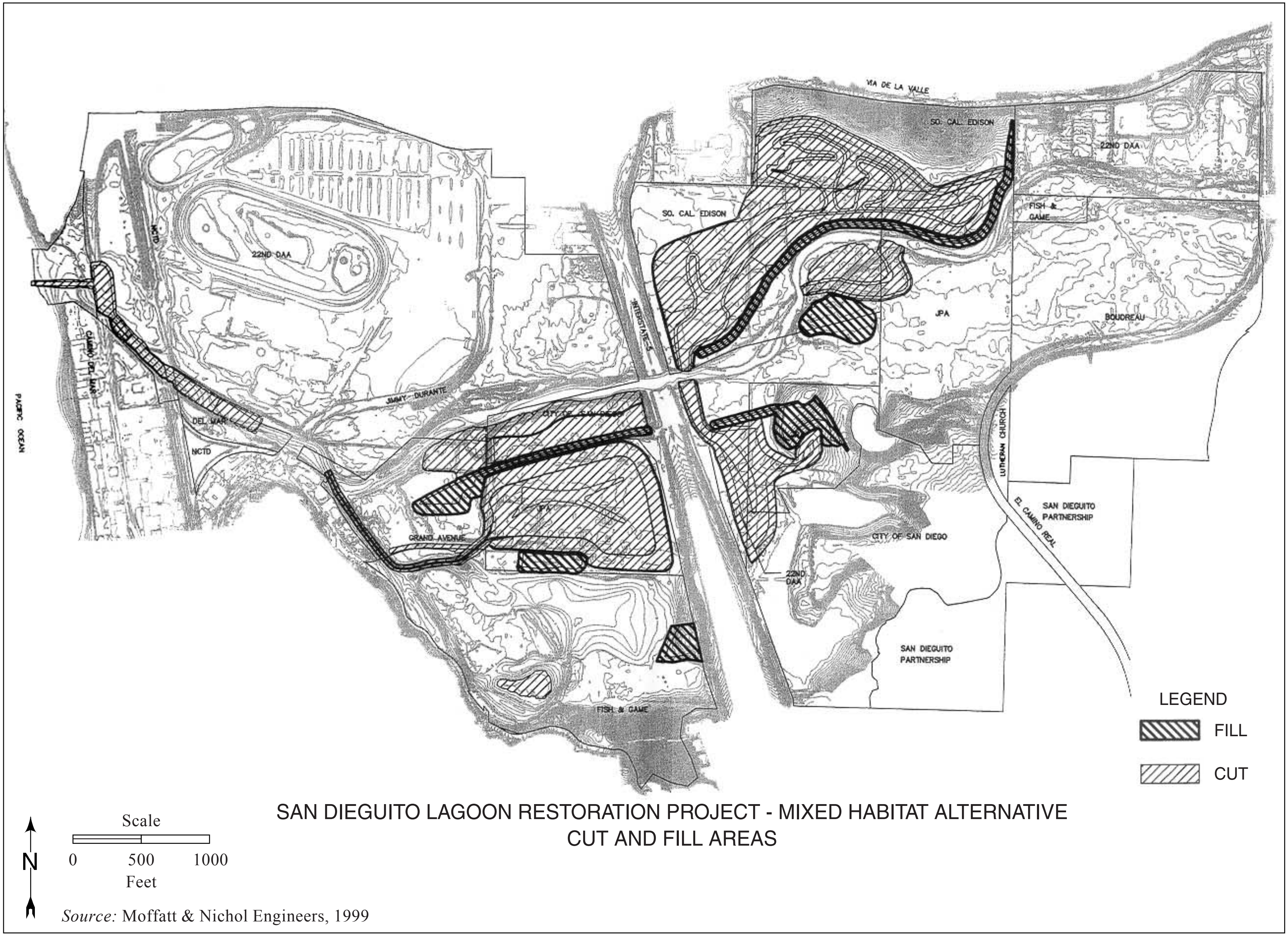


Figure 2.3.1-4. Mixed Habitat Alternative - Cut and Fill Areas

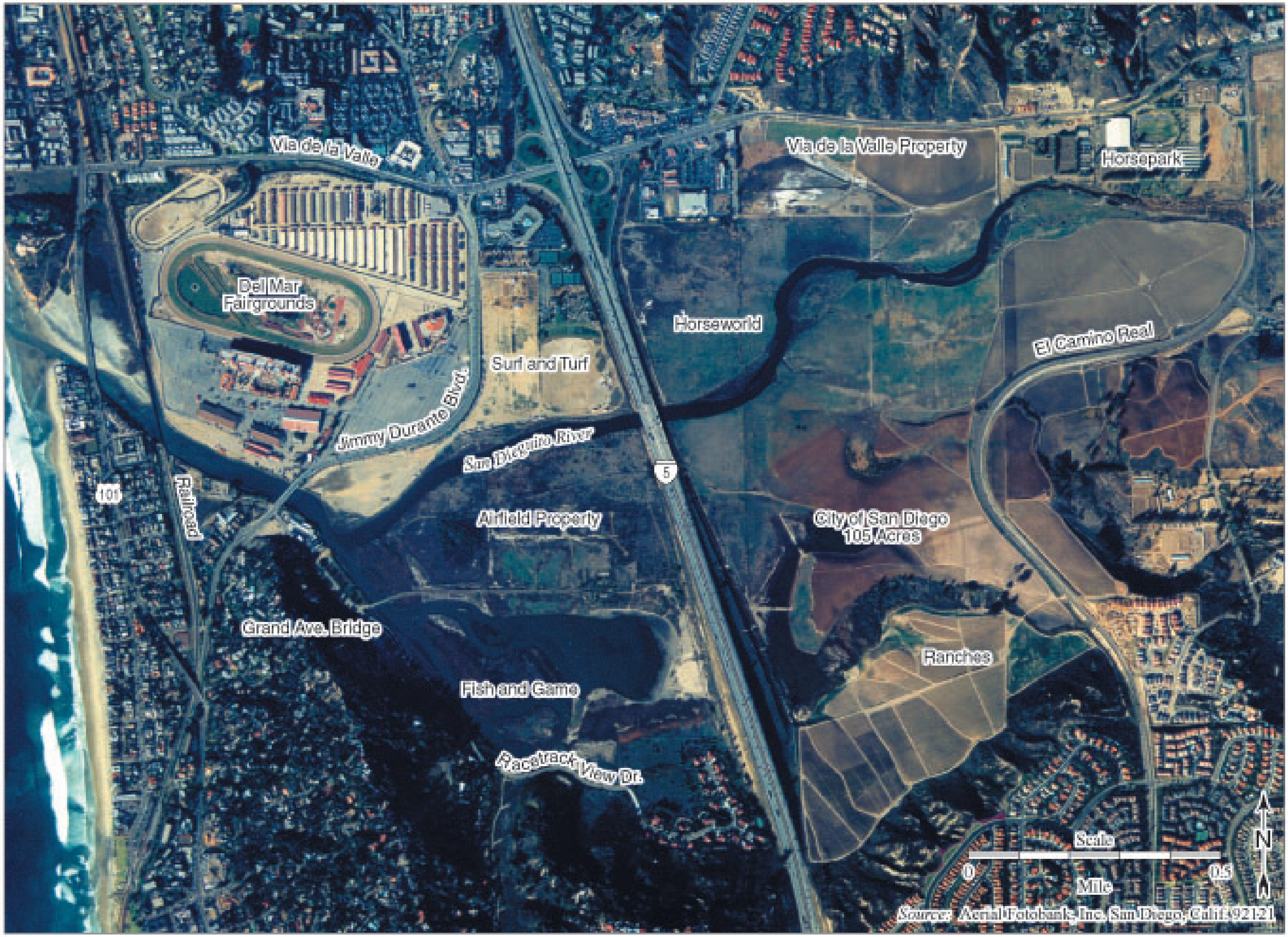


Figure 1-3. Aerial View of the Project Area

Elwany et al. (1994) analyzed the dynamics of the lagoon openings and closings from 1992 to 1994. Based on the monitoring information, historical observations from San Dieguito Lagoon, and comparative data from other lagoons in Southern California, the rationale for the initial grading and long-term inlet maintenance plans were developed as follows.

INITIAL GRADING

The initial grading plan, illustrated in Figure 2.3.1-6, indicates that initial dredging/excavation of the ocean inlet and channel could involve up to a 900-foot-long area between the ocean the railroad bridge. This grading would be necessary only if the channel conditions at the time of project implementation are not consistent with the initial design specifications indicated in Figure 2.3.1-6. The depth of the river channel currently varies depending on up- and downstream conditions. The depth of the channel may be deeper following a stormy period and much shallower following long periods of inlet closure. The depth of the channel at a point approximately 300 feet east of the Jimmy Durante Bridge was measured at -4 feet NGVD on April 19, 1999. Under these conditions, no additional grading would be required in this area to achieve the initial design specifications. The channel depth could be deeper or shallower at the time project construction begins, therefore, the impact analysis for this project assumes the worst case; that grading would be required to achieve initial design specifications.

From Highway 10l west to the ocean, the desired inlet channel would average 100 feet in width with a depth of approximately -2 feet NGVD. Prior to grading, the channel would be measured to determine to what extent the channel might already conform to these specifications. If grading is required, the channel would be excavated to create a 100-foot-wide channel with side slopes of 4:1. The initial channel depth would be -2 feet NGVD. Within a few days to a few weeks, depending on the tide patterns, a sill would establish naturally at the river mouth at about –1.6 feet NGVD. The width of the inlet channel following excavation would vary depending on the tides, and would range from 130 feet at mean higher high water to 60 feet at mean sea level.

In the area between Highway 101 and the railroad bridge, depths should range from 0 to -4 feet NGVD, with depths of -2 and -3 feet NGVD at the southern end of the railroad bridge. The area to be excavated would range from about 500 feet in width just east of the Highway 101 bridge to 250 feet in width about 400 feet east of the highway bridge. The channel would be graded with side slopes of 4:1. <u>If necessary, additional dredging would be conducted east of the railroad bridge to provide a channel with a depth of –3 feet NGVD</u>.

This initial grading operation would impact up to 19.4 acres of the inlet mouth and channel. A maximum of 132,400 cubic yards of sand could be excavated from the channel; however, the actual volume of sand removed would depend upon the existing elevations in the channel at the time of project implementation. The excavated material is expected to be clean sand. About 77,300 cubic yards of sand is needed as surface material for the proposed nesting sites for the project. Therefore, if the nesting sites are constructed prior to channel excavation, the sand removed from the channel would be used to complete the nesting sites. Any sand not used for the nesting sites would be placed on the beach about 0.5 mile south of the inlet.

INLET MAINTENANCE PLAN

A maintained inlet channel is subject to gradual closure on an annual basis, due to accumulation of sand in the inlet channel, which gradually progresses to the inner lagoon. Certain kinds of rare storm conditions can move sand into the inlet very quickly, as well. Some larger storm water flow events in the San Dieguito River can also clear out the lagoon opening. Therefore, this plan requires a program of regular maintenance grading to keep the entire channel at the desired plan elevations. Studies conducted by Coastal Environments from 1992 to 1994 monitored the hydraulics, topography, and water quality of the lagoon under various inlet conditions (Coastal Environments 1994, 1998). The study area extended from the Pacific Ocean to the Jimmy Durante Boulevard Bridge.

Inspection of the channel cross-sections within the study area led to the recommendation that maintenance of the inlet channel should be conducted to maintain a configuration resembling that of May 1993 (-2 to -4 feet NGVD). Maintaining this configuration would require a minimum rate of sand removal, since natural sedimentation occurs slowly under these conditions. The result would be minimum maintenance cost, minimal disturbance to the lagoon itself, and minimal impact to the users of the lagoon and beach (refer to Chapter 4).

Excavation planned in areas shown in Figure 2.3.1-6. Periodic excavation will be conducted between the Pacific Ocean and 150 feet east of the railroad bridge. An approximate eight-month schedule for the dredging area west of Highway 101 and the railroad bridge was developed to reduce the rate of sand incursion east of the railroad bridge to a small amount. Periodic sand removal is proposed to begin eight months after completing the initial restoration plan. The area between Highway 101 and the railroad bridge would be maintained at or near the original design elevations. The volumes to be periodically removed are estimated to be 4,000 cubic yards of sand from the inlet between the ocean and Highway 101, and about 12,000 cubic yards from the channel west of the railroad bridge.

A long term monitoring program for the inlet channel is proposed to ensure a healthy tidal system. This program would involve taking water level measurements, conducting inlet and channel topographic surveys, and measuring water quality. Through adherence to this program it will be possible to determine when and where dredging is needed. The program identifies standards for determining when maintenance dredging should be performed. Those conditions that would trigger the need for maintenance dredging include: a water level elevation under the Jimmy Durante Bridge the exceeds 0.5 feet NGVD; a tidal prism during spring tides that is below 150 acre-feet; an inlet channel elevation east of the railroad bridge that is elevated by 1-2 feet; surface/bottom dissolved oxygen in the lagoon basins less than or equal to 3 parts per thousand. If any of these conditions are identified, maintenance dredging would be implemented. The areas to be dredged would be determined by comparing the topographical survey data to the design configuration.

The 8-month time interval specified in the plan can vary by a month or two for practical reasons related to the grading operation itself, or to accommodate other activities in this area. Since excavation may be complicated by waves and storm runoff, especially during winter, initial grading after the winter storm period in early April could be followed by the first maintenance grading in November. The next maintenance grading would then take place the following September. Occasional unscheduled excavation may also be required due to sudden closure events. A monitoring plan is proposed to assess the condition of the lagoon throughout the year. Monitoring of the inlet must be designed to be adaptive in order to ensure rapid response to changing conditions.

SCE is proposing a monitoring plan that would include bimonthly measurements of the lagoon inlet channel cross-sections. Lagoon channels east of Jimmy Durante Boulevard would be surveyed on an annual basis. Water level measurements at the new basin would be collected

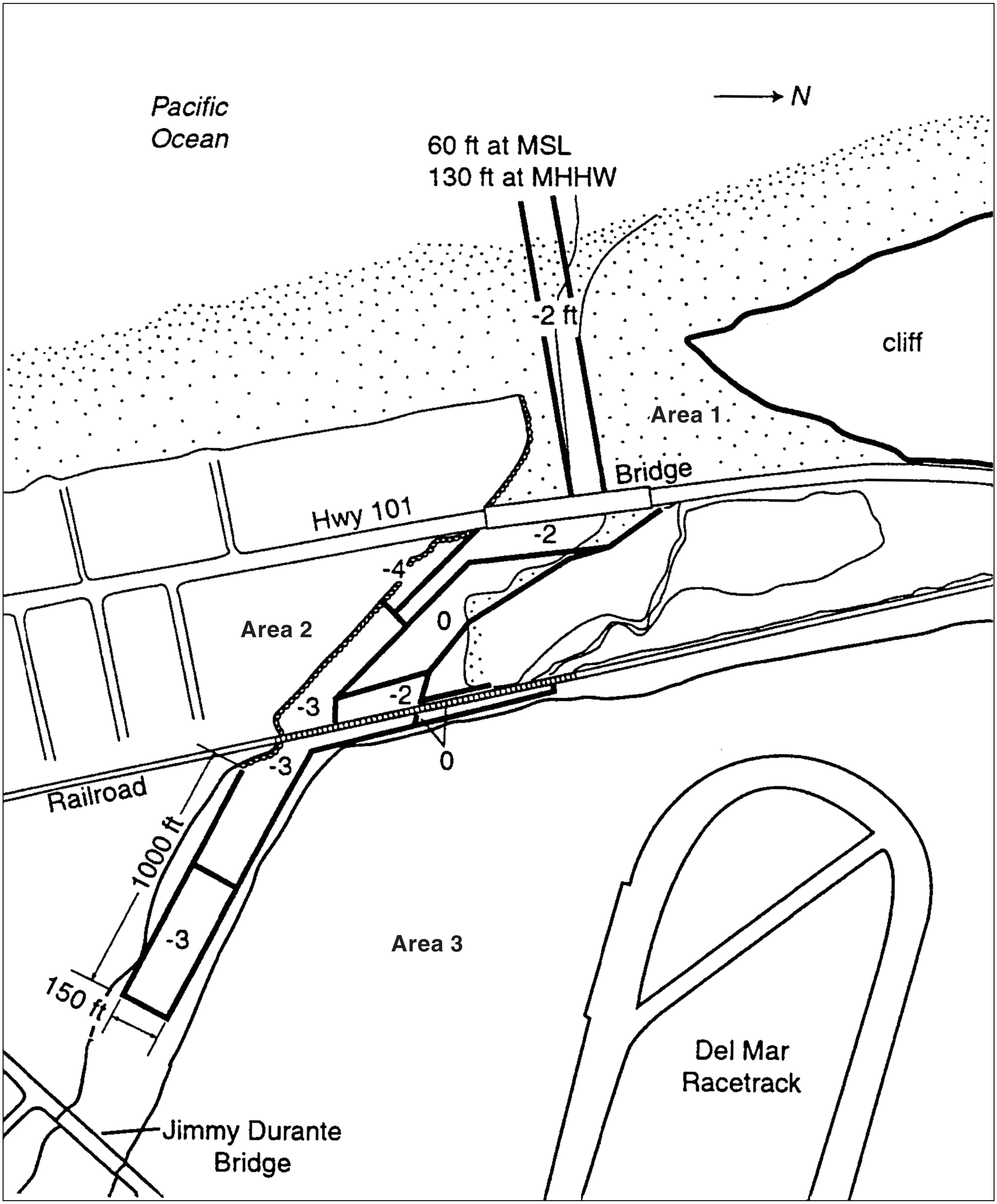


Figure 2.3.1-6. Map Showing Locations and Elevations for Recommended Initial and Maintenance Dredging in Areas 1, 2, and 3

Formerly Figure 2.3.1-7 in the DEIR/S, but combined with Figure 2.3.2-6 for the FEIR/S.

continuously. Water quality would be analyzed biweekly at various stations. Revisions to the maintenance plan may be made after review of the data collected during the initial monitoring process.

Conventional excavation equipment would be used to perform the specified maintenance program. This selection was made not only on the basis of cost and flexibility in scheduling and deployment, but was also done to avoid the use of stabilization structures (e.g., jetties on the beach). The material that is expected to accumulate in the channel would be clean sand, and is proposed to be placed on the beach. The proposed disposal sites for this sand are located approximately 1,000 feet north and south of the river mouth on the open beach between the mean higher high water and mean lower low water. The material would be discharged to the updrift side of the river mouth. Assuming that the longshore transport direction is consistent with past seasonality patterns, it is anticipated that sand would be disposed to the north in the summer and to the south in the winter.

2.3.1.4.3 Berms

River berms would be constructed along the river channel in order to maintain flow velocity and river sediment flow through the lower valley consistent with existing conditions (Chang 1997). The primary intent of the berms is to maintain the existing rate of channel scour from El Camino Real to the Pacific Ocean and in no way alter the existing patterns of storm water flooding. Three berms have been incorporated into the restoration plan (Figures 2.3.1-1 and 2.3.1-2). The westernmost berm (Area B7) would be located west of I-5 and south of the San Dieguito River. It would run in a slightly southwesterly direction from I-5 for approximately 1,825 feet. The top of the berm would vary in elevation from +16.5 feet NGVD to +17.5 feet NGVD, with a footprint of approximately 4.2 acres. Its purpose is to constrain higher velocity San Dieguito River flows from entering the proposed tidal lagoon (Area W1) where river sediments could then be deposited. Lower velocity storm water flows would pass around these berms and/or through them, via proposed culverts.

A second berm (Area B8) would be located east of I-5 on the north side of the San Dieguito River. This berm would be the longest of the three berms, extending for approximately 4,250 feet from about I-5 east to the end of the Via de la Valle property (Area U18). The top of this berm would range from elevation +18 feet NGVD to +20.5 feet NGVD. This berm, which would have a footprint of approximately 7.8 acres, would separate the northernmost intertidal lagoon (Areas W4 and W16) from the San Dieguito River. The purpose of this berm would be to prevent reduction of river velocity and to avoid the deposition of sediments being carried by the river into the proposed intertidal lagoon. A weir would be incorporated into the eastern end of this berm, as described in greater detail in section 2.3.1.4.4.

The third berm (Area B9), located east of I-5 and south of the San Dieguito River, would consist of an eastern and a western portion. The western portion, which would be constructed in an east/west orientation, would be 875 feet in length. The eastern berm, which would run northwest to southeast, would be approximately 625 feet in length. The elevation at the top of the berms would range from +18 feet NGVD to +20 NGVD. The combined footprint of the two portions would be approximately 2.1 acres. The two berm segments have been designed to tie into an existing upland area that is proposed as a new nesting site (Area NS 14, see above). The western berm would prevent the San Dieguito River flows from entering the intertidal lagoon, while the eastern berm would protect the nesting site from overland flood flows from the east.

The berms would be constructed as shown in the typical cross-section in Figure 2.3.1-8. The base width of each berm would vary depending on the post-construction ground elevation on either side of the berm. The top of the berms would be approximately 20 feet wide. The slopes of the berms would vary from 2:1 to 4:1 depending on slope treatment. The southern side of berm B8, which would be protected with a combination of stone revetment, articulated block mat, and vegetation, would have a slope gradient of 2:1. Slopes protected with geotextile would have a slope gradient of 3:1, while slopes protected only with vegetation would have a slope of 4:1. The top elevation of the slope would be above the design high water elevation. In general, the top of the berms would range from +16.5 feet NGVD at about river mile 0.75 to +20.5 feet NGVD at river mile 2.1. Computed water surface elevations and recommended top elevations for the berms are summarized in Table 2.3.1-4.

These berms are not being proposed to control the extent of flooding or to change water levels, but are intended to direct river flow and maintain existing water velocities and sediment transport during storm events. The tops of the berms would be revegetated except where trails or maintenance paths are provided. The slopes of berms B7 and B9 and the northfacing slope of berm B8 would be covered with geotextile and/or revegetated with the native species described in section 2.3.1.2.1. The river side of berm B8 would be provided with additional structural protection as described in section 2.3.1.4.4 below.

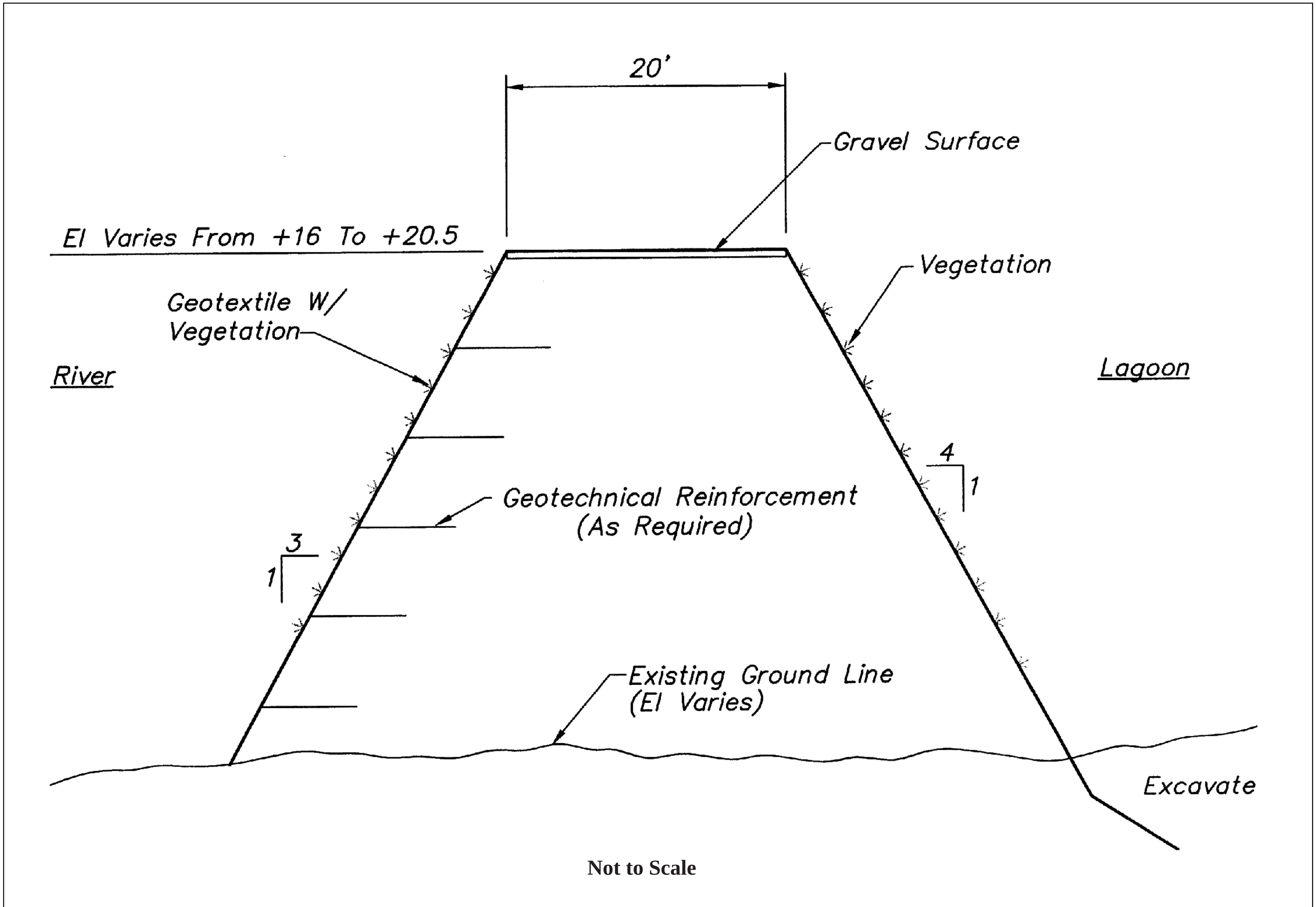
Table 2.3.1-4. Computed Water-Surface Elevations and Recommended Top-of-Level Elevations Considering 1927 Flood Elevations

	WATER-SURFACE ELEVATION, FEET		*Recommended top of berm elevation feet, NGVD*
*River mile**	*Per HEC-2*	*Per FLUVIAL-12*	
0.56 (Jimmy Durante Bridge)	16.3	8.0	
0.75	19.2	12.9	16.5
1.0	19.3	14.4	17.0
1.34 (D/S face of I-5)	19.5	15.9	17.5
1.38 (U/S face of I-5)	20.4	16.2	18.0
1.6	20.5	17.6	19.0
1.8	20.9	18.5	20.0
2.1	21.2	19.3	20.5
*Locations depicted on Figure 2.3.1-9			

2.3.1.4.4 Slope Protection

The tidal restoration plan requires slope protection for several elements of the project design including the berm slopes, one section of the San Dieguito River bank, one of the adjoining freeway slopes, the slopes formed to create nesting sites, and the slopes created to dispose of dredge material in upland areas. Proposed slope protection ranges from armoring to the use of erosion control landscaping. This section addresses those slope protection proposals related to slope armoring. Erosion control measures including landscaping are presented in section 2.3.1.7.3.

Stone revetment and/or articulated block mat is proposed as slope protection in three areas of the proposed plan. These areas are indicated on Figure 2.3.1-2. The westernmost area (identified as Stone Revetment #1) is proposed for a portion of the San Dieguito River bank that is located approximately 300 feet east of the Jimmy Durante Bridge. The area is situated on the south side of



Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.1-8. Typical River Berm Section

the inlet channel where the San Dieguito River turns and flows in a northwest direction. This 500-foot-long section of stone revetment is proposed on the seaward side of the inlet channel in order to protect the slope from changes in river scour associated with river flow modifications stemming from the creation of the tidal basin in Area W1. Filter fabric would be installed to prevent the loss of sediments from behind the revetment. A layer of quarry run stone would be placed on top of the filter fabric and extend a minimum of 3 vertical feet below the expected depth of scour. Figure 2.3.1-10 shows a typical section of slope protection at this location.

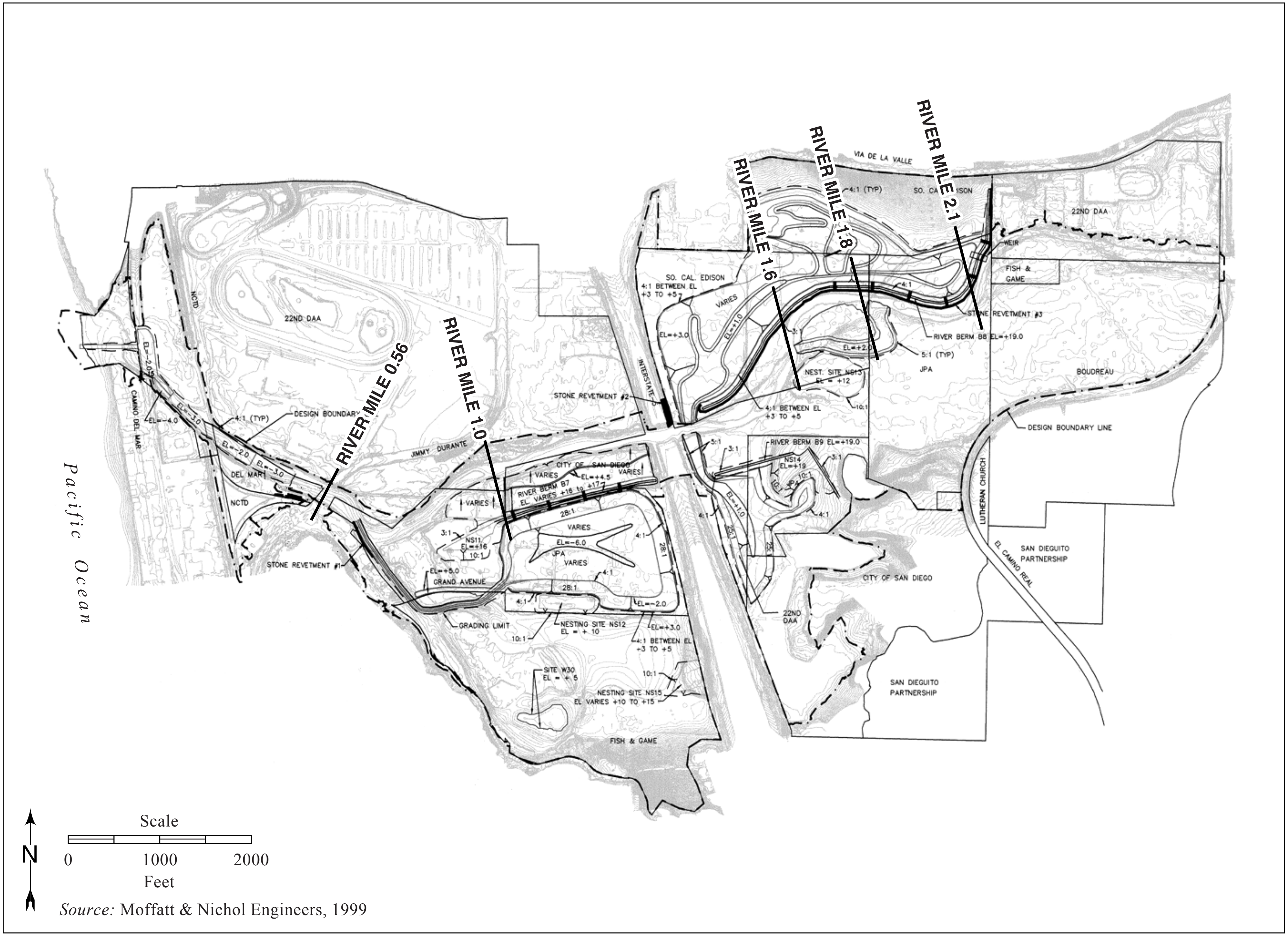
A stone revetment is also proposed along the eastern freeway slope (Stone Revetment #2), just north of the San Dieguito River. This 300-foot-long section is proposed in order to protect the slope from increased tidal velocities and wind waves. It would also provide protection from river flow eddy vortices that might be formed as the river flows past through this area. This revetment would be constructed as described for revetment #1 above. A typical section for this revetment is shown in Figure 2.3.1-10.

A third section of slope protection is proposed for much of the river side of the northeastern berm (Area B8), shown in Figure 2.3.1-2 as Stone Revetment #3. The slope protection on this berm would include a combination of measures, including stone revetment installed along the toe of the berm to elevation +5 feet NGVD, articulated concrete block mat installed to elevation +10 feet NGVD, and geotextile with erosion control landscaping installed on the remaining portion of the slope. A typical cross-section of the slope protection proposed for this berm is presented in Figure 2.3.1-11. The stone revetment would be installed as described above with the toe entrenched beyond the potential channel-bed scour. After installation, the revetment would be backfilled to the elevation of the existing ground level. As a result, in some areas along the length of the berm, the stone revetment would be completely below the natural grade.

Articulated concrete block (ACB) mats, which would be installed above the stone revetment, are an interlocking matrix of precast concrete blocks of uniform size, shape, and weight, interconnected by a series of cables. Most ACB mats are premanufactured as an assembly of concrete blocks, with specific hydraulic capacities, that are staggered and interlocked for enhanced stability. The ACB mats proposed for this project would use open-cell (up to 20 percent open area) concrete blocks to promote the growth of vegetation. The subgrade supporting the ACB mat would be compacted and graded to a smooth surface. A geotextile would be used between the subgrade and the ACB mat to control “piping” or loss of material from beneath the ACB mat.

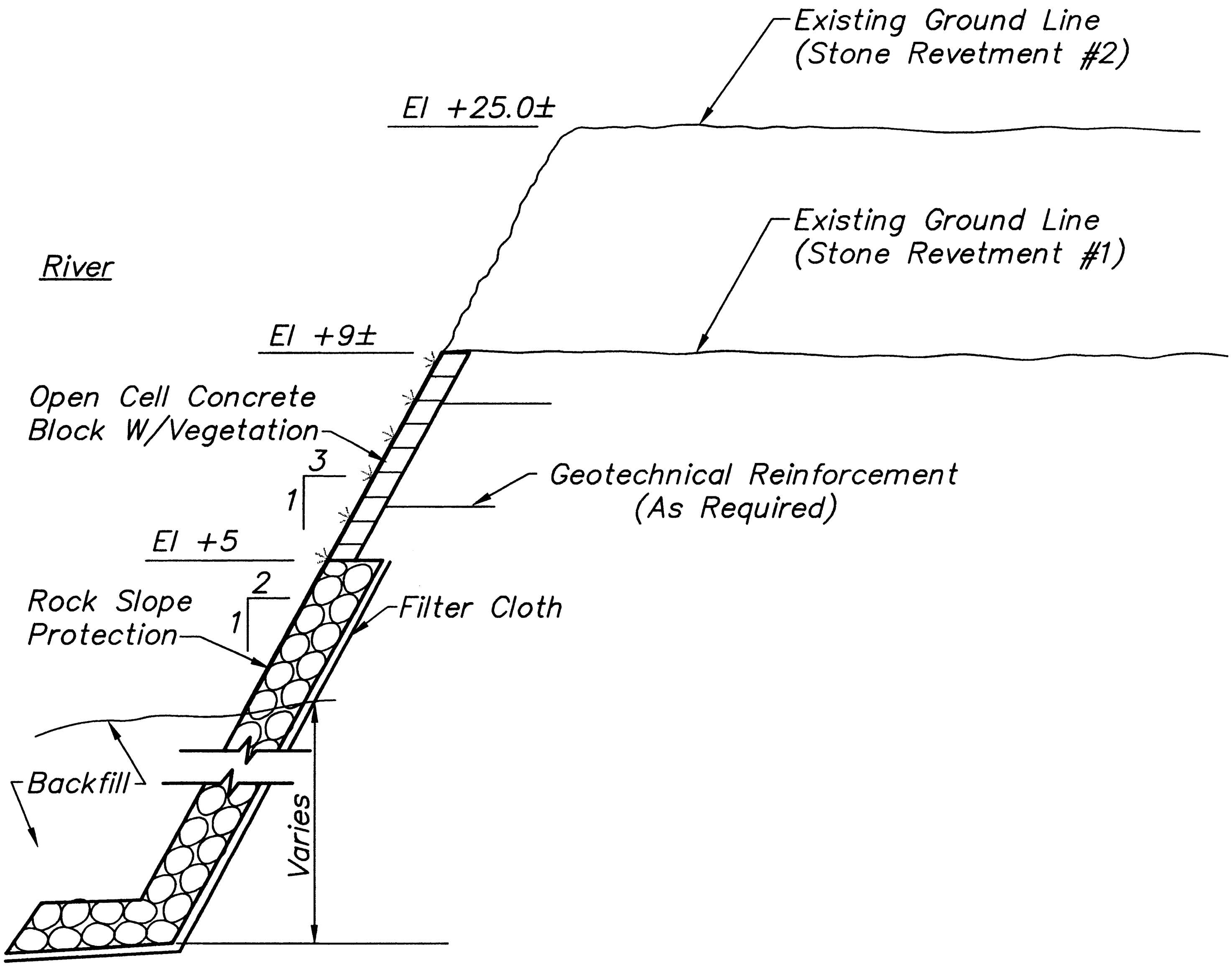
The ACB mats would likely be shipped to the site pre-assembled. A crane using a spreader bar would pick up and place each mat into the desired location. A roller or some other method may be required to ensure that the blocks are flush with the subgrade. Anchor trenches and sub-trenches would be required to anchor the perimeter of the mat. These trenches would be back-filled and compacted flush with the tops of the blocks. The cells or openings would be back-filled and compacted with material suitable for planting. The entire area would be vegetated using standard hydroseed methods. The species to be used would be those outlined in section 2.3.1.2.2.

The advantage to using an open cell ACB mat is that it can accommodate minor changes in channel shape due to settlement or slumping, while providing better habitat opportunities for local flora and fauna than a rock slope protection or other “hard” system.



Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.1-9. River Mile Locations



Not to Scale

Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.1-10. Typical Stone Revetment Sections #1 and #2

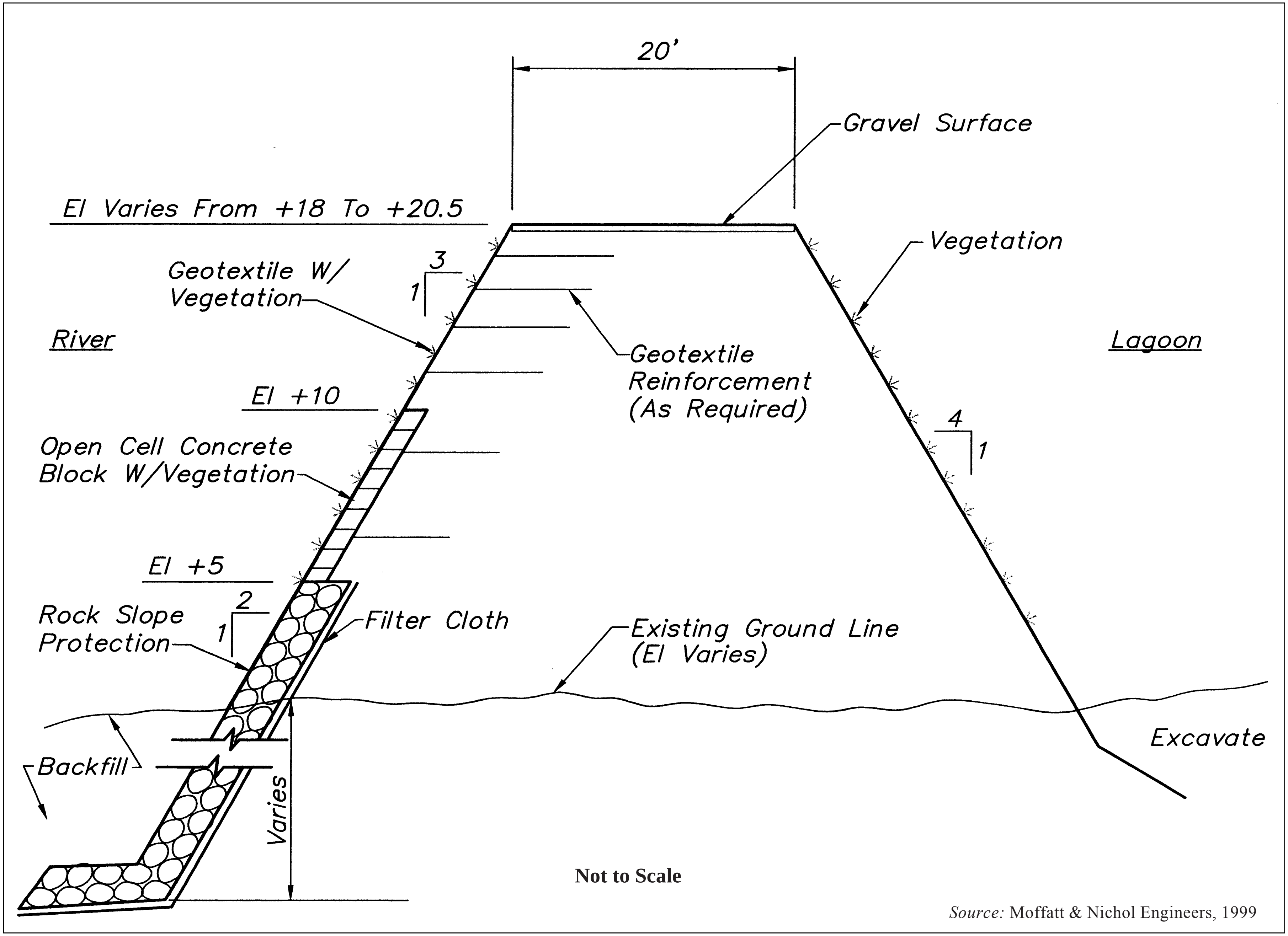


Figure 2.3.1-11. Typical Stone Revetment Section #3

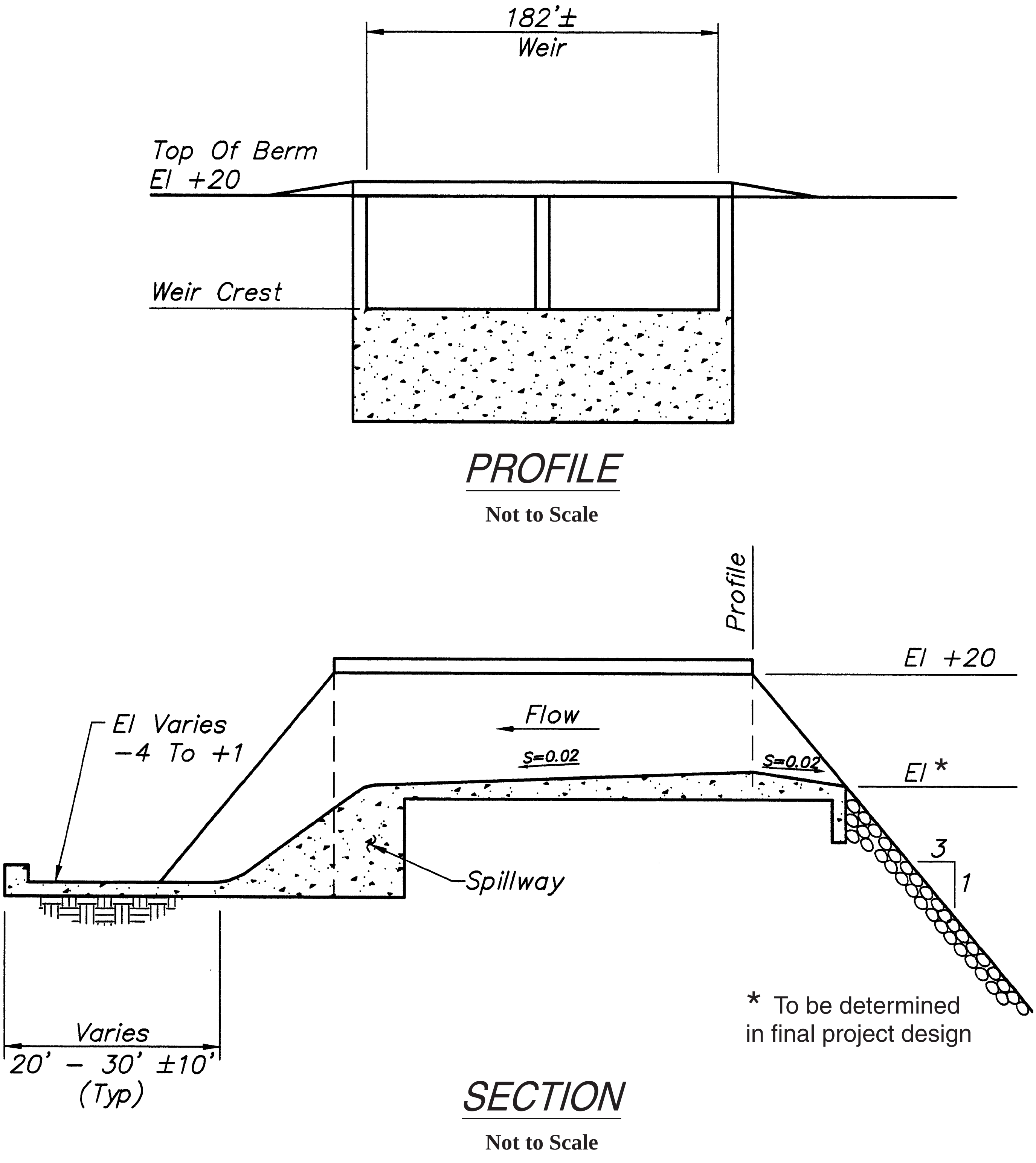
The quantities of rock, armor block, and filter fabric required under this alternative are provided in Table 2.3.1-5. Slope protection for manufactured slopes associated with upland disposal site options is addressed below in section 2.3.1.7.3 (Erosion Control).

Table 2.3.1-5. Stone Quantity Estimates

Item	*Mixed Habitat*	*Hybrid*	*Max Tidal Basin*	*Max Salt Marsh*	*Reduced Berm*
I-5					
A-Stone (ton)	700	700	700	700	700
Quarry run (ton)	700	700	700	700	700
Subtotal	1,400	1,400	1,400	1,400	1,400
Filter Fabric (sy)	1,200	1,200	1,200	1,200	1,200
BERM #2					
A-Stone (ton)	45,000	45,000	45,000	45,000	0
Quarry run (ton)	19,300	19,300	19,300	19,300	0
Subtotal	64,300	64,300	64,300	64,300	0
Filter Fabric (sy)	32,700	32,700	32,700	32,700	0
Armor Block (sf)	80,000	80,000	80,000	80,000	0
Vegetation (sy)	40,600	40,600	40,600	40,600	0
CHANNEL					
A-Stone (ton)	1,600	1,600	1,600	0	0
Quarry run (ton)	1,500	1,500	1,500	0	0
Subtotal	3,100	3,100	3,100	0	0
Filter Fabric (sy)	2,700	2,700	2,700	0	0
Total Rock (tons)	68,800	68,800	68,800	65,700	1,400
Total Fabric (SY)	36,600	36,600	36,600	33,900	1,200

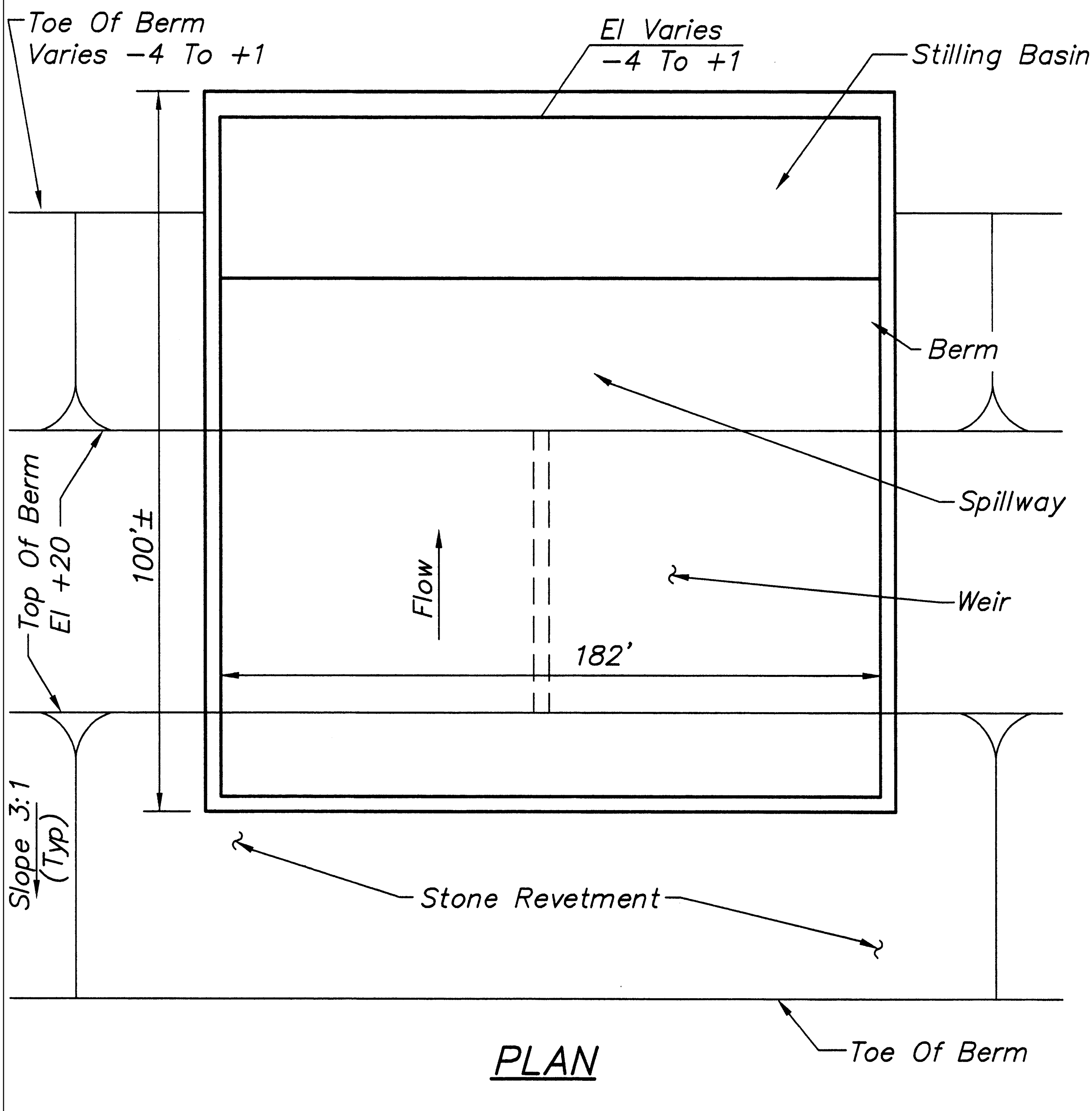
Notes: 1. Quantities are rounded up to the nearest hundred.
2. Filter fabric quantities include 10 percent waste/overage of material.

There are five bridge crossings of the San Dieguito River within the project boundaries. These include from west to east: a road crossing at Camino Del Mar (Highway 101), the North County Transit District railroad crossing; the road crossing at Jimmy Durante Boulevard, the I-5 freeway crossing, and the road crossing at El Camino Real (see Figures 2.3.1-1 and 2.3.1-2). Also included in the project boundary is an old bridge that is no longer used for traffic circulation. This bridge, referred to as the Grand Avenue bridge, is located to the south of the river in an area previously restored by the California Department of Fish and Game.



Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.1-12a. Overflow Weir on Via de la Valle Property



Not to Scale

Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.1-12b. Overflow Weir on Via de la Valle Property

Non-structural protection measures are proposed for these bridges as a part of the project. For the Camino Del Mar and railroad bridges, protection would include the staking of bridge foundations prior to excavation to prevent contact with construction equipment or undermining of foundations. In addition, the project proposes to prevent increased scour around the foundations of the bridges by maintaining passage of current volumes of river sediments past these structures. The latter measure would be accomplished through construction of the river berms discussed in section 2.3.1.4.3. Stone revetment is also proposed for a portion of the I-5 slope located along the east side of the freeway and to the north of the river (see section 2.3.1.4.4).

There is an 8-inch sewer force main, which crosses the San Dieguito River between the Jimmy Durante Boulevard bridge and the railroad bridge. Excavation of the river channel may be required in proximity to this sewer main if the river bottom elevation exceeds the minimum design depth in this area. The minimum design depth in this portion of the channel is –3 feet NGVD. At present, SCE does not propose to relocate this sewer main as part of their restoration project.

With respect to the Grand Avenue Bridge, this project proposes to remove all but the first pier of the south side of the bridge. That portion of the bridge that would remain would be available as a viewing platform, where the public would have visual access to the restored wetlands.

2.3.1.5 Construction Methods

Project construction may occur in dry or wet conditions. Both methods would involve constructing water level controls to keep water out so that excavation could take place with backhoes and other land-based equipment. The wet condition construction would entail actively flooding areas so that material could be removed using hydraulic dredging equipment. Possible construction methods based on past projects of a similar nature are presented below. The actual construction methods used to implement this project would be determined by the contractor once the construction bid documents have been completed.

2.3.1.5.1 Earthwork Methods and Equipment for Dry Condition Method

Construction would occur in three phases with Phase I and Phase II overlapping.

PHASE I

Phase I construction, which would focus on the area west of I-5, would consist of mobilizing equipment and designating the construction access routes and staging areas for the entire project. This would be followed by salvaging of wetland vegetation from Areas W1, W2a, and W2b for storage and propagation offsite. Once this is complete, remaining structures would be demolished and the airfield property (Area W1) would be cleared and grubbed. Cleared and grubbed material would be removed by truck to the Miramar Landfill. A water level control structure would be constructed from excavated sediments in the San Dieguito River just west of I-5. This structure would have culverts to maintain low river flow and control tidal flow beyond this point. It would also function as a haul route to allow access across the river to disposal sites. The water level control structure in the San Dieguito River would be removed prior to each significant rain event and reconstructed as needed.

After salvage of wetland vegetation and subsequent clearing of non-native vegetation, Areas W1, W2a, and W2b would be excavated down to elevation +3 feet NGVD using scrapers. The excavated material would be used to construct the berm (Area B7) located to the north of Area W1, as well as the core of two western nesting sites (NS11 and NS 12). Excavation below elevation +3 feet NGVD would continue at Areas W1, W2a, and W2b using bulldozers and backhoes and the material would be hauled by truck to one of the disposal site options described in section 2.3.1.6. Next, the river mouth's inlet channel would be excavated as described in section 2.3.1.4.2. The sand generated from this operation would be hauled by truck to the proposed nesting sites and/or the beach and spread by bulldozers. This entrance channel would be maintained on a seasonal basis, as needed, during construction.

Areas W1, W2a, and W2b would be revegetated as required with salvaged stores of wetland plant material.

The new access channel (Area W17) to the restored tidal basin would be excavated, leaving a sand plug near the lagoon to prevent inundation of the lagoon and increased tidal flows within the channel.

A stone revetment (Stone Revetment #1) would be placed along the inlet channel at the confluence with the San Dieguito River. The sand plug connecting Areas W17 and W1 would then be removed to open the lagoon to tidal influence. The stone revetment must be completely constructed prior to plug removal.

PHASE II

Phase II would focus on the areas east of I-5 and south of the San Dieguito River. Wetland vegetation would be salvaged from Areas W5, W10, and W6a as described in Phase I. Areas W5, W10, and W6a would then be cleared and excavated to +3 feet NGVD. Unwanted vegetation removed during clearing would be hauled by truck for disposal offsite, as specified for Phase 1. Some of the excavated material would be used to construct the southern river berm (Area B9) and the bases of nesting sites NS13 and NS14. The remainder would be hauled by truck to one of the disposal site options described in section 2.3.1.6.

Utility poles east of I-5 would be relocated and approximately 41,600 cubic yards of sand for nesting sites NS13 and NS14 would be spread over the sites using bulldozers.

Areas W5, W10, and W6a would be revegetated, as required, using salvaged stores of plant material.

PHASE III

Phase III would focus on construction east of I-5 and north of the San Dieguito River. In this phase, the rock slope protection would be installed at the base of the freeway slope on the eastern side on I-5. The 300-foot-long section of stone revetment is described in greater detail in section 2.3.1.4.4.

The existing wetland vegetation would be salvaged, as needed, from Areas W4 and W16 and stored offsite for propagation. These sites would then be cleared and the unwanted vegetative material hauled by truck for disposal offsite, as described in Phase I. Excavated material above +3 feet NGVD would be used to construct the river berm proposed to the north of the river (Area B8). Excavated material above and below +3 feet NGVD would be used to construct the upland portions of the Via de la Valle area (Area DS32). The berm slope face on the river side would be protected with a combination of rock slope protection, articulated concrete block mat, and native vegetation. A weir would be constructed at the northeastern end of the berm. The wetland and upland areas of Areas W4 and W16 would be revegetated with salvaged or purchased stores. The SDG&E lines located along the southern end of Area W4 would be relocated.

The equipment would be demobilized and the construction staging areas and access areas would be uncompacted, revegetated, and restored where they were disturbed by construction.

FUTURE PHASES

As discussed previously, certain aspects of the restoration project, including the implementation of Areas W6b and W30, could occur at some time in the future. This is also true for the construction of the nesting sites, should SCE not reach an agreement with the District.

2.3.1.5.2 Earthwork Methods and Equipment for Wet Excavation Method

Boreholes drilled in 1998 (Ninyo & Moore 1999) encountered groundwater between elevations -3 and +9 feet NVGD. The deepest excavations on the east side of I-5 for the Mixed Habitat Alternative are at elevation +1 feet NGVD. With the average groundwater elevation at about +5.3 feet NGVD and dredging equipment requiring at least 3 feet of water depth, excavations to the east of I-5 may be too high in elevation to be economical for wet excavation. Due to existing groundwater elevations east of I-5, wet excavation would likely occur on Phase I areas (west of I-5) only.

Site preparation, initial excavation to elevation +3 feet NGVD, and utility relocation would be conducted as described in section 2.3.1.5.1.

PHASE I AREA WEST OF THE JIMMY DURANTE BOULEVARD BRIDGE

The initial opening of the outlet to the Pacific Ocean and excavation of the channel bottom to its design grades may be conducted using a small, hydraulic dredge. However, the pier spacing and low clearance beneath the railroad bridge would require remobilizing the dredge to the east of the bridge. Alternatively, channel excavation west of the railroad bridge could be conducted from land using a clamshell bucket or dragline. This would require sufficient construction easements. Excavations immediately beneath and adjacent to the railroad bridge should probably be conducted using a barge-mounted hoe excavator to increase the degree of control of the equipment and reduce the likelihood of damage to the structure.

Portions of the sediments to be removed in this area have been characterized as clean sand. Therefore, this material could be used to surface the proposed nesting sites and/or disposed of on the beach. Mechanical dredging would likely be used to remove sand from either side of the railroad bridge. Hoe, clamshell, or dragline dredging operations would be used and if beach disposal is proposed, access to the beach would be required. From the area east of the railroad bridge, a conveyor system may be used to carry material to the west side of the bridge where it would be loaded onto trucks and hauled to the beach, or the material could be hauled by truck to the various nesting sites.

PHASE II AREA EAST OF THE JIMMY DURANTE BOULEVARD BRIDGE

Opening the channel to tidal exchange would yield a water source that would permit hydraulic dredging in the lagoon access channel east of the Jimmy Durante Bridge. Dredging up the channel to the lagoon basin would be accomplished using floating equipment. Sediments could be pumped for disposal in the ocean or to dry land east of I-5. From the lagoon access channel, the dredge could continue excavation of the lagoon basin from the elevation at which dry excavation was halted to -6 feet NGVD. Creation of the mild slopes between +3 feet and –2 feet NGVD would be constructed using conventional excavation equipment. A portion of the slope excavation would be conducted using land-based equipment, such as a dragline, for elevation control where the water is too shallow for dredging. For purposes of this description, it is assumed that the excavation may be made using hydraulic dredging below elevation 0 feet NGVD. Land-based excavation would require truck disposal of materials to one of the disposal site options addressed in section 2.3.1.6.

STORAGE AND REPLACEMENT OF TOPSOIL

Implementation of a tidal restoration project at San Dieguito would require excavation of soil to obtain the desired grades and contours. The excavation would include removal of existing topsoil. Construction at each disposal site may also cover or displace the existing topsoil. In an effort to improve the conditions for revegetation at proposed disposal sites, the topsoil from the project would be removed, stockpiled, and replaced to improve the conditions for revegetation.

The restoration contractor would be required to remove and stockpile the top one or two feet below the existing ground elevation on-site for future distribution. All topsoil may not be suitable for planting; therefore, a qualified soil scientist and/or revegetation specialist would be retained to determine which soils would be suitable for revegetation with native species. In areas with invasive weeds, it may be necessary to discard the top layer of soil or to treat the soil to eradicate weed seeds.

Removing, stockpiling, and replacing topsoil would require double handling of the material. A probable construction scenario would consist of two or more self-propelled scrapers to pick up and transport the topsoil to either a disposal or stockpile location within the project boundaries. A bulldozer would be used to maintain a small stockpile area up to 8 feet high. Water trucks would be used to maintain dust control. Depending upon the final distance for distribution, either bulldozers or scrapers would be used to transport and rough grade the topsoil. A motor-grader would be used for final leveling and grading of the site(s).

There are approximately 150 acres of potential stockpile area available based on the disposal site options. The volumes of topsoil for each disposal site range from 21,000 cubic yards to 54,000 cubic yards for a one-foot layer and 43,000 cubic yards to 108,000 cubic yards for a 2-foot layer. The minimum stockpile area for the disposal sites ranges from 0.2 to 0.5 acres. The length of time that each stockpile would be present is dependent on the construction schedule and field conditions during construction.

2.3.1.5.3 Construction Staging Areas

Construction staging areas would be required for this project to accommodate the staging of construction equipment and supplies. These staging areas would be located adjacent to the footprint of the restoration project. As shown in Figure 2.3.1-13, two primary staging area sites are proposed, one on the west side of I-5 and one on the east, with two additional areas proposed to accommodate channel dredging operations. Some staging and construction areas may need to be closed to the public through the use of temporary fencing in order to address security and safety issues.

Staging Area SA1, located on the beach at the river mouth, would be needed to facilitate the excavation of the inlet channel, as well as to stockpile and distribute suitable material onto the adjacent beaches. It is not anticipated that temporary power and/or water would be required at this site. However, should near-shore disposal be undertaken via hydraulic dredge, electric power may be required at this site. This would be used to power a temporary booster station that could be needed to convey the slurry material. This staging area would be temporarily fenced during use for safety and security reasons. Limited public access to the beach during construction would be provided along the bluffs on the northern edge of SA1. Construction vehicle access could be accommodated by using the existing north beach access located to the north of the Camino del Mar bridge or by constructing a temporary dirt ramp from the edge of the southbound lane of Highway 101 down onto the Staging Area. The exact location of this ramp would be determined in consultation with the City of Del Mar.

Staging Area SA2 would be located on the east side of San Dieguito Drive on parcels owned by the City of Del Mar. This construction staging area would be needed to provide access for a backhoe or a bucket and a crane to mechanically excavate the channel to the desired contours. This area also would provide access for construction of Stone Revetment #1 (see section 2.3.1.4.4), as well as temporary storage of equipment and rock materials. If this excavated material is found to be sand, it would be transported via dump trucks to proposed nesting sites or over existing surface streets to Staging Area SA1 for distribution onto the beach. If this material is unsuitable for beach disposal, then it would be used for berm construction, nest site core construction, or fill at one of the upland disposal sites. It is not anticipated that temporary power and/or water would be required at this site. This site could also be used as a launch site, should a dredging operation be deemed preferable.

Staging Area SA3, located along the west side of I-5 and south of the river, would be used to provide access to the large construction area west of I-5. This area would be used to store equipment and materials during construction, therefore, this site would likely be fenced during construction for safety and security purposes. The site may also be used as a temporary field office location. If dredging equipment is used, this area may be modified into a launch facility and could be left in-place as part of the project for future maintenance access. It is anticipated that temporary power and/or water would be needed at this site. Vehicular access to the site would be via a proposed haul road, described in section 2.3.1.5.3. This access road would extend from San Dieguito Drive and Racetrack View Drive through existing California Department of Fish and Game property and out onto the restoration site.

Staging Area SA4, located near the end of San Andres Drive, would be required to provide access to the large construction area east of I-5. This area would be used to store equipment and materials during construction, and could also be used as a temporary field office location. This construction staging area would likely be fenced during the duration of its use. It is anticipated that power and/or water would be required at this site. Access to the site would be via the end of San Andres Drive and an existing dirt utility easement. The site itself would be to the south of the utility easement in order to avoid conflicts with existing utility maintenance needs. There is some flexibility in siting this staging area. As currently proposed, the site would be located to the southwest of the terminus of San Andres Drive, behind the existing shopping center. As a result of

<u>comments provided during public review of the draft EIR/EIS, the applicant has also agreed to consider locating the staging area on the proposed site for the Nature Center. Establishing the construction staging area at this location would move the construction activity away from existing seasonal salt marsh habitat and onto a currently disturbed pad. All other components described for the original site, including fencing, would remain the same for either site.</u>

Following construction, the staging areas and construction site would, for the most part, be returned to the original condition. Aerial photographs of the site would be taken, elevations determined, and wetland vegetation mapped prior to construction. After construction, the area would be re-photographed and remapped to determine the extent of impact and the final mitigation requirements expected from the contractor. Any temporary water or power installed at the staging areas would be removed. <u>With the exception of Staging Area SA3, which would be retained as a staging area for future maintenance needs, all staging areas would be restored with appropriate vegetation. During construction, the native dune topography and vegetation would be fenced to avoid impacts during construction. Any vegetated areas that cannot be avoided would be revegetated with appropriate native dune species. SA2 is largely unvegetated and/or disturbed and following its use the site would be vegetated/revegetated to minimize the potential for erosion. The specific planting plan for this area would be developed with the City of Del Mar, which retains ownership of the site. To minimize erosion potential on SA3, the site would be maintained in an open to sparsely vegetated condition, with low-growing native salt-tolerant plants such as saltgrass, If the site northwest of San Andres Drive is utilized for SA4, following construction the area would be revegetated with native seasonal salt marsh and transitional coastal sage scrub species, with the planting palette tailored to local soil and drainage conditions. If the Nature Center site is used, temporary erosion control landscaping would be installed to minimize the potential for erosion on the site prior to construction of the Nature Center.</u>

2.3.1.5.4 Construction Access Routes

Construction equipment access routes would utilize existing paved and dirt roads within the site and travel would be within the footprint of the proposed construction sites, whenever feasible. However, several temporary construction access roads would have to be constructed in order to provide access to proposed excavation sites, as well as to accommodate the hauling of excavated materials to the ultimately approved disposal sites. Figure 2.3.1-13 illustrates the potential location of haul roads and construction access. The two main access points to the site for large construction equipment would be off of San Dieguito Drive to access Staging Area SA3 and off of San Andres Drive to access Staging Area SA4. Construction access roads would be up to 30 feet wide, and would be compacted and surfaced with gravel.

Access to Staging Area SA3 would be via San Dieguito Drive to Racetrack View Drive. Approximately 1,000 feet east of the point where San Dieguito Drive changes to Racetrack View Drive, a new dirt access road would be constructed. This road would generally follow inside the existing fencing that has been installed along the perimeter of the California Department of Fish and Game property, beginning in a southerly direction and then turning eastward toward I-5. At the I-5 right-of-way, the access road would turn to the north. To avoid impacts to wetlands, it may be necessary to construct that portion of the access road that parallels I-5 within the Caltrans right-of-way. If it is necessary to use the Caltrans right-of-way, an encroachment permit would be required from Caltrans.

To access Staging Area SA4, construction vehicles would use the existing utility easement that begins at the terminus of San Andres Drive, exiting the easement at a specified entrance point to the staging area. Some improvements to the easement, such as the placement of gravel onto the roadbed, may be necessary in order to accommodate large construction vehicles.

The specific alignment and timing for installation of the other haul roads indicated on Figure 2.3.1-13 would depend on the construction schedule and field conditions. All roads would be designed to avoid impacts to nesting areas and sensitive wetland vegetation, wherever possible. At the completion of the project, most access routes would be uncompacted and replanted with appropriate vegetation as mitigation for impacts caused within the access routes during construction. However, the access road proposed off of Racetrack View Drive and a portion of Staging Area SA3 would be retained in perpetuity in order to accommodate the long-term maintenance and monitoring requirements of the nesting sites and restoration areas west of I-5. A locked gate would control access to this maintenance road. Maintenance access would also be maintained along the tops of the proposed berms.

Daily project traffic during construction would consist of the personal vehicles owned by construction personnel, construction management personnel, and various inspectors, JPA, SCE, and other representatives from the various agencies and property owners involved with the project. Construction workers are expected to use one of two main routes to access the construction site on a daily basis.

1. Via de la Valle from both east and west directions would be used to reach San Andres Drive where access to Staging Area SA4 would be available. It is anticipated that this portion of the project would be under construction for approximately one year.
2. Jimmy Durante Boulevard from both north and south directions would be used to access Staging Area SA3. From Jimmy Durante Boulevard, traffic would turn east on San Dieguito Drive. Light vehicle construction traffic would travel on San Dieguito Drive for about a quarter of a mile before turning north onto the Grand Avenue bridge, where temporary construction access to the site would be provided. Heavy equipment would travel down San Dieguito Drive to Racetrack View Drive and then onto the access road proposed to be constructed across the Fish and Game property. The primary traffic on the new construction access road would be during mobilization and demobilization of the construction activity. It is anticipated that construction activity in this area would occur over a 1- to 2-year period depending upon the construction methodology used.

It is envisioned that mobilization/demobilization of heavy construction equipment would travel the routes described above, but this activity is anticipated to occur only at the start and end of construction. Additional equipment may be brought on-site, as the contractor deems necessary; however, this should consist of isolated cases of short duration.

As described above, the majority of the haul roads would be temporary. Construction would disturb up to a 30-foot-wide area along the access routes and could involve clearing of vegetation, grading, and installation of gravel fill within the roadbed. The roads would require periodic maintenance, and dust control would be provided. The intent is to have excavated material north of the river channel remain north of the river channel, and excavated material south of the river channel would remain south of the channel. This would minimize disturbance to the existing San

Dieguito River channel, by reducing the likelihood that a temporary structure would have to be constructed to cross the river channel.

If, however, the Surf and Turf property (DS38) or the fairgrounds main parking lot (DS37) (locations indicated on Figure 2.3.1-13) are selected as disposal sites, then access to these sites would be required via construction of a temporary river crossing. The preferred option would be to minimize heavy construction activity on public streets and keep it within the confines of the project footprint. To that end, material could be transported across the river to the Surf and Turf disposal site via a temporary structure. One of two situations would then occur: (1) continue hauling material through the Jimmy Durante Boulevard underpass to the main parking lot, or (2) if the underpass is too small for the trucks to pass under Jimmy Durante Boulevard then a conveyor system could be used to move the material. Loading, unloading, and grading equipment would already be on the site. Any temporary structure built across the river would be removed in the event of a flood or a high water situation. The procedures and conditions for this removal would become part of the contractor's water level control system to be designed and approved prior to construction.

2.3.1.5.5 Construction Schedule and Operations

Construction of the SCE portion of the alternative is proposed to occur in three phases over a 2-year period. It is anticipated that construction would start at sunrise and end at sunset, Monday through Saturday. Conventional land-based construction is proposed to occur year round with special measures to be implemented to avoid nesting areas during the summer months. Where construction is proposed in proximity to nesting areas, all activity would be kept at least 100 feet from any active nesting areas. An environmental monitor would be on-site to monitor the construction with special attention given to the avoidance of impacts to rare, threatened, and endangered species. Dredging operations, if required, are proposed to proceed on a 24-hour per day basis, six days per week until dredging is completed. Dredging operations may be temporarily suspended during the course of the week for routine maintenance, weather, and unforeseen mechanical problems. Phase I and Phase II construction would occur during Year 1 (from September 1 to August 31). Phase III construction would occur during Year 2. Section 2.3.1.5.1, Earthwork Methods and Equipment, provides detailed information about the activities proposed for each phase.

The ultimate selection of construction equipment used on the site would depend on the availability of equipment to the contractor at the time of construction. Potential equipment to be used is listed in Table 2.3.1-6.

2.3.1.6 Disposal Site Options

A variety of disposal types and locations are analyzed in this document. Figure 2.3.1-13 illustrates the various disposal site locations being considered within the project area, as well as the other options such as beach disposal. Disposal of material varies depending on the type of material, the particle size distribution, color, and the location. The inlet channel, defined as the channel reach between the ocean and the Jimmy Durante Boulevard Bridge, is relatively close to the beach. The results of geotechnical investigations indicate that material within the inlet channel is primarily composed of sand that should be suitable for beach nourishment and surfacing of nesting areas. The materials overlying the majority of the area to be excavated consist primarily of silt and clays,

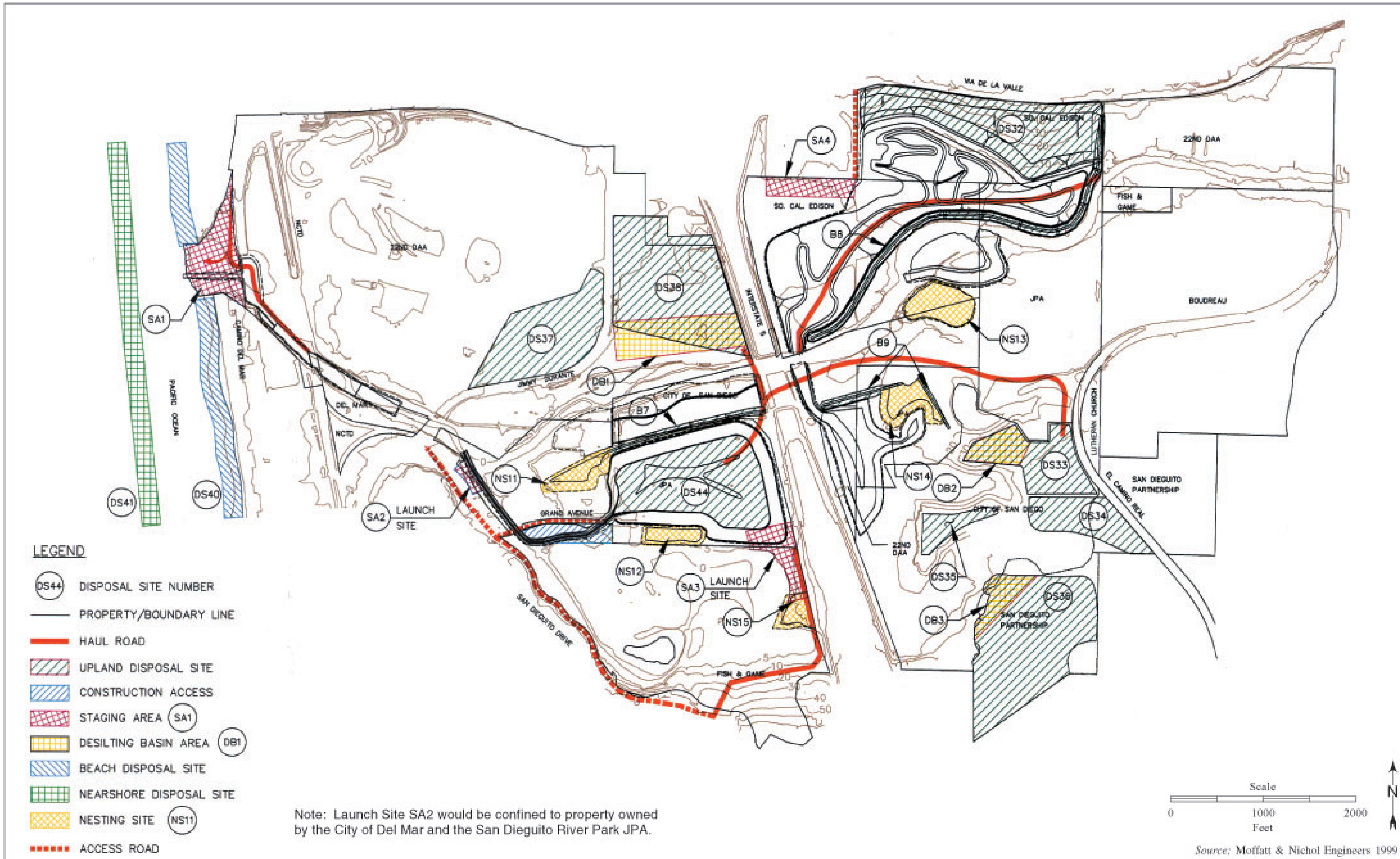


Figure 2.3.1-13. Potential Haul Roads, Construction Access, Staging and Desilting Basin Areas

while in other limited areas sand is present at depths just below the proposed maximum excavation depth for this project (section 3.3). All of these factors must be considered in developing an acceptable disposal plan.

The disposal options analyzed in this document include:

- On-site disposal of suitable material in association with the construction of the proposed river berms and nesting areas. This option would accommodate the disposal of approximately 196,800 cubic yards of material, of which 125,600 cubic yards could be used to construct the river berms and 71,200 cubic yards could be used to construct the nesting sites.
- On-site land disposal in areas adjacent to the restoration site. Seven potential disposal sites have been identified within the vicinity of the wetland restoration project, as shown in Figure 2.3.1-13. These sites have a capacity of approximately 2,032,000 cubic yards (2,336,800 cubic yards when shrinkage is taken into consideration).
- On-site burial of material in an over-excavated basin at Area W1. This method would rely on excavation in an area where the subterranean deposits were determined to have an appropriate sand to silt ratio that would permit the material to be used for beach nourishment (section 3.3). Material with excessive fines, such as silts and clays, would then be placed in the over-excavated basin and capped with sand. This disposal option has a maximum capacity of 1,683,000 cubic yards.
- Direct disposal of excavated material onto the beach (limited to materials that contain an appropriate sand to silt ratio).
- Near shore disposal of excavated material into the surf zone (limited to materials that contain an appropriate sand to silt ratio).

Table 2.3.1-7 provides information about each of the potential disposal site options, including ownership, capacity of the disposal site, and elevations and proposed slope gradients, where applicable. These disposal options are evaluated in Chapter 4 (Environmental Consequences and Mitigation Measures) for appropriateness and environmental feasibility.

Under the Mixed Habitat Alternative, 2,183,200 cubic yards of excavated material would have been disposed of using a combination of the options presented above. Implementation of the SCE portion of the restoration proposal would generate up to 2,024,900 cubic yards of excavated material, of which 125,600 is proposed for use in the berms. If the bases of nesting sites NS11, NS12, and NS14 are constructed during implementation of the SCE project, another 71,200 cubic yards of material could be disposed of on the proposed nesting sites. To complete the full tidal restoration proposal, an additional 158,300 cubic yards of material would need to be disposed of to create Area W6b.

Of the total material to be excavated, approximately 90,400 cubic yards would consist of sand generated from excavation of the inlet channel. If the nesting sites are to be constructed as part of the SCE project, 77,300 cubic yards of this sand could be used to surface the five nesting sites. The remaining sand (up to 13,100 cubic yards) is proposed to be disposed of on the Del Mar beach.

SCE's proposal for the remaining 1,808,900 cubic yards of material (construction of berms only) or 1,737,700 cubic yards (construction of berms and nesting sites) is to dispose of it on a combination

Table 2.3.1-6. Potential Construction Equipment Requirements

(page 1 of 3)

Item No.	*Activity*	*Equipment*	*Workforce*
1	Excavate Channel between Jimmy Durante Bridge and the ocean inlet. Haul and unload material onto adjacent beach.	Equipment Composition 2 – Hyd. Backhoes, wheel mtd. 3 – Dump trucks, 10-15 cy 1 – Mechanics truck	1 shift per day of operation 2 – Operators 3 – Teamsters 1 – Mechanic 6 – Laborers *Total labor force per day of production = 12*
2	Excavate new Channel between Jimmy Durante Bridge and the lagoon. Haul and unload material onto adjacent beach. Install rock slope protection.	Equipment Composition 2 – Hyd. Backhoes, wheel mtd. 7 – Dump trucks, 10-15 cy on M 4 – Dump trucks, 10-15 cy on T-F 1 – Front-end loader, 5 cy, half-day on M only. 1 – Crane w / bucket, 5 cy	1 shift per day of operation 4 – Operators 5 – Teamsters 6 – Laborers *Total labor force per day of production = 15*
3	Spread dumped beach fill material onto adjacent beach approx. half-mile up and down the coast.	Equipment Composition 1 – Bulldozer, 300 H.P. 1 – Survey truck	1 shift per day of operation 1 – Operators 4 – Survey Crew *Total labor force per day of production = 5*
4	Demolish misc. structures including underground structures. Crush concrete on-site and reuse as base for temporary haul roads and / or staging areas. Haul remainder off-site to Mirmar Dump.	Equipment Composition 1 – Bulldozer, 300 H.P. 2 – Front-end loaders, 5-6 cy 2 – Excavators w / thumbs 7 – Dump trucks 1 – Mechanics truck 1 – Air pump for asbestos / hazmat removal 1 – Crusher operation	1 shift per day of operation 5 – Operators 7 – Teamsters 10 – Laborers 1 – Mechanic 6 – Laborers (Hazmat team) 2 – Laborers (Crusher operation) *Total labor force per day of production = 31*

Table 2.3.1-6. POTENTIAL CONSTRUCTION EQUIPMENT REQUIREMENTS

(page 2 of 3)

Item No.	*Activity*	*Equipment*	*Workforce*
5	Clear & grub site. Chip and mulch trees and vegetation to be reused and mixed w/topsoil.	Equipment Composition 1 – Bulldozer, 300 H.P. 2 – Front-end loaders, 5-6 cy 7 – Dump trucks 1 – Chipping machine 2 – Chain saws	1 shift per day of operation 3 – Operators 7 – Teamsters 10 – Laborers *Total labor force per day of production = 20*
6	Excavate and stockpile topsoil. Mix with mulch material. Redistribute and spread topsoil prior to revegetation.	Equipment Composition 3 – Self-propelled scrapers, 21 cy 1 – Bulldozer, 300 H.P. 1 – Motor grader 1 – Survey truck	2 shifts per day of operation 5 – Operators 3 – Laborers 4 – Survey crew *Total labor force per day of production = 24*
7	Excavate lagoon and marsh areas and construct river berm and nesting site cores. Includes installation of geotextile, culverts, and rock slope protection along river berm and I-5.	Equipment Composition 5 – Self-propelled scrapers 5 – Bulldozers, 300 H.P 6 – Hyd. Backhoes, 3 cy 6 – Off-road Haulers, 60 cy 1 – Crane, 5 ton 1 – Survey truck	2 shifts per day of operation 12 – Operators 10 – Laborers 6 – Teamsters 4 – Survey crew *Total labor force per day of production = 64*
8	Import sand cap material for nesting sites. Install chain link and chick fence. Labor includes raking and weeding nesting site prior to new season.	Equipment Composition 15 – Dump trucks 1 – Motor grader 1 – Survey truck 1 – Fence contractor truck	1 shift per day of operation 1 – Operator 15 – Teamsters 8 – Laborers 4 – Survey crew *Total labor force per day of production = 28*
9	Utility replacement of 8” sewer force-main. Jack pipeline under channel.	Equipment Composition 1 – Hyd. Backhoe, 3 cy 1 – Water pump w/hoses 1 – Drilling machine	1 shift per day of operation 3 – Operators 5 – Laborers 2 - Carpenters *Total labor force per day of production = 10*

Table 2.3.1-6. POTENTIAL CONSTRUCTION EQUIPMENT REQUIREMENTS

(page 3 of 3)

Item No.	*Activity*	*Equipment*	*Workforce*
10	Utility relocation of existing overhead (electric) poles.	Equipment Composition 1 – Bulldozer, 300 H.P. 2 – Dump trucks 2 – Chain saws	1 shift per day of operation 1 – Electrician 2 – Laborers 2 – Teamsters 1 – Operator *Total labor force per day of production = 6*
11	Construct weir (2) in channel to F&G property.	Equipment Composition 1 – Crane, 40 ton 1 – Vibratory hammer 1 – Backhoe, 3 cy	1 shift per day of operation 3 – Operators 5 – Laborers *Total labor force per day of production = 8*
12	Revegetation of wetland plants impacted during construction. Includes salvage of existing pickleweed, temporary irrigation system(s), seeding, and monitoring.	Equipment Composition 2 – All-terrain vehicles 1 – Rototiller 1 – Spreader 1 – Roller	1 shift per day of operation 2 – Operators 1 – Skilled worker 4 – Laborers *Total labor force per day of production = 7*
13	Site access and yard setup. Includes haul roads, field office, temporary surfacing, and extending electric power and water to the site.	Equipment Composition 1 – Backhoe, 3 cy 1 – Welding machine 1 – Front-end loader, 5 cy 1 – Motor grader	2 shifts per day of operation 3 – Skilled workers 1 – Electrician 2 – Carpenters 6 – Laborers 3 – Operators 1 – Plumber 1 – Welder *Total labor force per day of production = 32*

of disposal sites identified as DS32 - DS38 on Figure 2.3.1-13. Grading plans for each of the seven potential disposal sites are presented in Figures 2.3.1-14 a-f. These grading plans represent the maximum grading that could occur at each site. The capacity of all seven sites (2,336,800 cubic yards when shrinkage is taken into consideration) exceeds the disposal needs of the project, therefore, not all of the sites would be needed for disposal and/or some of the sites would not be utilized to their full capacity. For discussion purposes, it should be noted that if the two disposal sites identified on the District's property (DS37 and DS38) were removed from consideration, the remaining five sites would have a capacity of 1,984,300 cubic yards (taking into consideration extra capacity due to shrinkage).

Incorporating the overdredged pit option into the mix of disposal choices would make it possible to reduce the amount of material that would have to be placed on the properties surrounding the restoration site. In considering the use of the overdredged pit, consideration could be given to utilizing its full capacity or just a portion of its capacity.

The selected disposal option or combination of options would be subject to approval by various regulatory agencies, including the Regional Water Quality Control Board, U.S. Army Corps of Engineers, California Coastal Commission, and U.S. Environmental Protection Agency.

2.3.1.7 Measures to Minimize Disturbance

2.3.1.7.1 Avoidance of Existing Wetlands

The proposed restoration project has been designed to avoid impacts to existing wetland resources to the maximum extent possible while restoring tidal flow to additional upland areas. As feasible, construction staging and access routes would be placed on existing roads or within the footprint of the restoration site in order to minimize impacts to additional wetland resources in the area. Despite these precautions, approximately 25 acres of existing wetland habitats would be impacted under this alternative, as described in detail in section 4.4. Other measures to avoid or minimize impacts to wetlands include the retention of a biological monitor and fencing to delineate sensitive wetland areas.

2.3.1.7.2 Avoidance of Sensitive Species

Construction operations would be planned to avoid direct impacts and minimize indirect impacts to nesting and foraging areas for sensitive species such as the California least tern, western snowy plover, and Belding's savannah sparrow. A minimum 100-foot setback from nesting habitat is proposed during construction. New nesting sites would be fenced, as deemed appropriate, upon completion to protect the birds from predation. Other measures to avoid impacts to sensitive species are addressed in section 4.4.

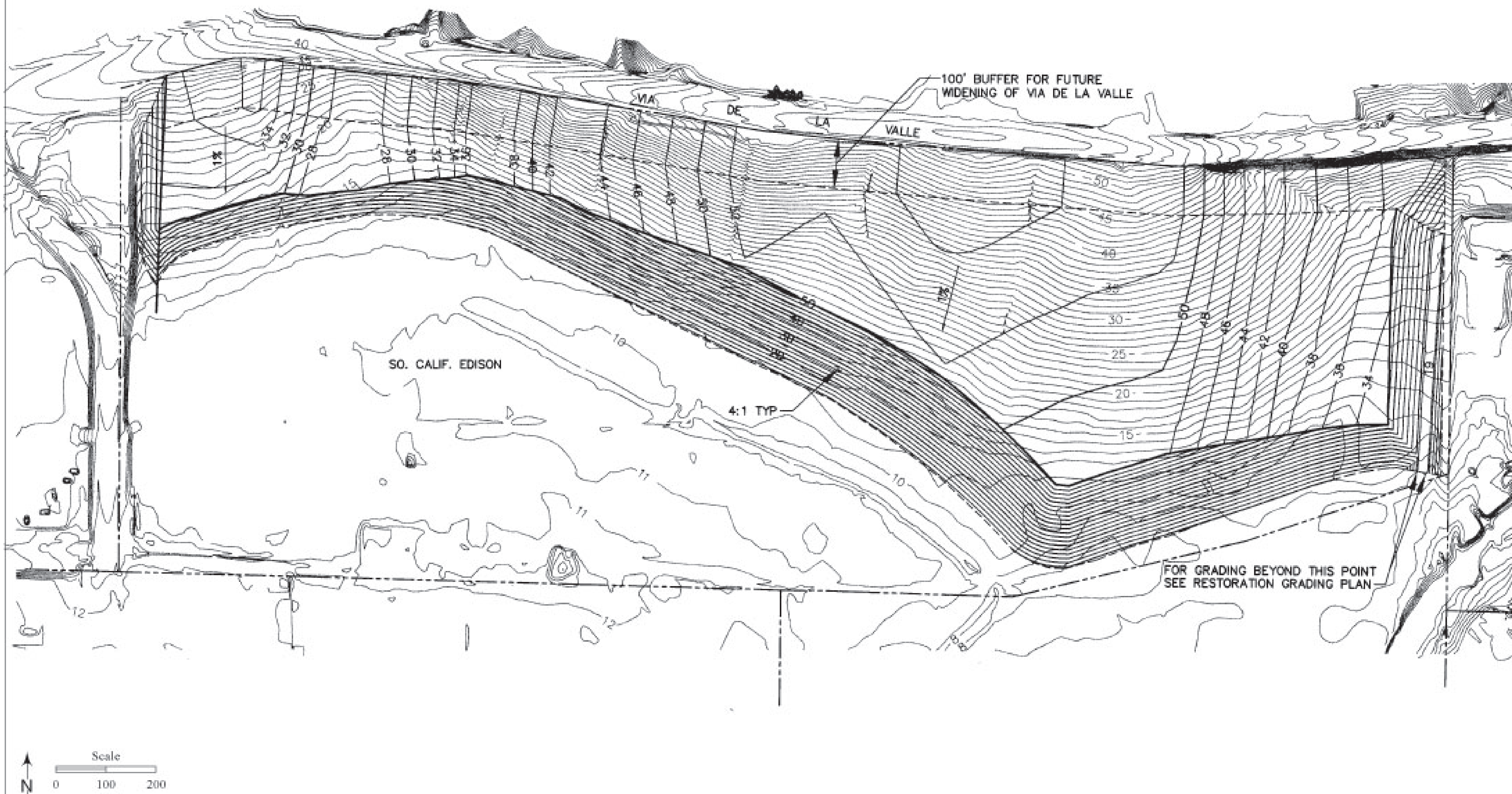
2.3.1.7.3 Erosion Control

Under this alternative, the tidal restoration component would involve the construction of berms and nesting sites and would require the disposal of excavated material, some of which is proposed to be placed in adjoining upland areas. Such proposals would result in the construction of manufactured fill slopes that would be subject to erosion. Measures have been incorporated into the scope of the project to minimize the potential for erosion. These include vegetating the graded

Table 2.3.1-7. Disposal Site Options

Site Name	*Site No.*	*Land Owner or Responsible Agency*	*Area (acres)*	*Capacity (yd^3)*	*Capacity1 (yd^3)*	*Top Elevation (ft, NGVD)*	*Notes*
Main Parking Lot	DS37	22nd DAA	22.0	54,700	62,900	+12	Requires removal of asphalt concrete
Surf and Turf	DS38	22nd DAA	28.0	251,800	289,600	+15	
El Camino Real North	DS33	City of San Diego	13.7	77,400	89,000	+62	
ECR Southeast	DS34	City of San Diego	11.0	150,000	172,000	+100	
ECR Southwest	DS35	City of San Diego	3.8	48,200	55,400	+50	
Via de la Villa	DS32	SCE	32.5	797,900	917,600	Varies	
River Berm No. 1	B7	JPA	3.0	23,300	26,800	Varies	
River Berm No. 2a	B8a	JPA & SCE	7.7	68,500	78,800	Varies	
River Berm No. 3	B9	JPA & City of San Diego	2.1	17,400	20,000	Varies	
Beach	DS40	USACE & EPA	30.0	250,100	250,100	+6	Based on 1,280-ft^2 section for 1 mile
Nearshore	DS41	USACE & EPA	Unknown	1,850,000	1,850,000	-15 to -30	Based on Navy Homeporting Project
Overdredged Pit	DS44	JPA	45.0	1,683,000	1,683,000	+0.0	
Ranches	DS36	S.D. Partnership	42.5	652,000	749,800	+150	
Nesting Site 1	NS11	JPA	2.2	44,870	51,600	+16	Capacity does NOT include sand cap
Nesting Site 2	NS12	JPA	1.2	3,826	4,400	+10	Capacity does NOT include sand cap
Nesting Site 3	NS13	SCE & City of San Diego	5.1	—	—	+12	Only requires sand cap
Nesting Site 4	NS14	JPA	3.3	13,217	15,200	+19	Capacity does NOT include sand cap
Nesting Site 5	NS15	CDFG	2.5	--	--	Varies	Only requires sand cap

Note: 1 Based on recommendations (shrinkage) contained in "Geotechnical Investigation: Material Characterization and Disposal, San Dieguito Lagoon Restoration, Del Mar, California," M&T Agra, Inc., October 22, 1993.



Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.1-14a. Disposal Site DS32 Grading Plan

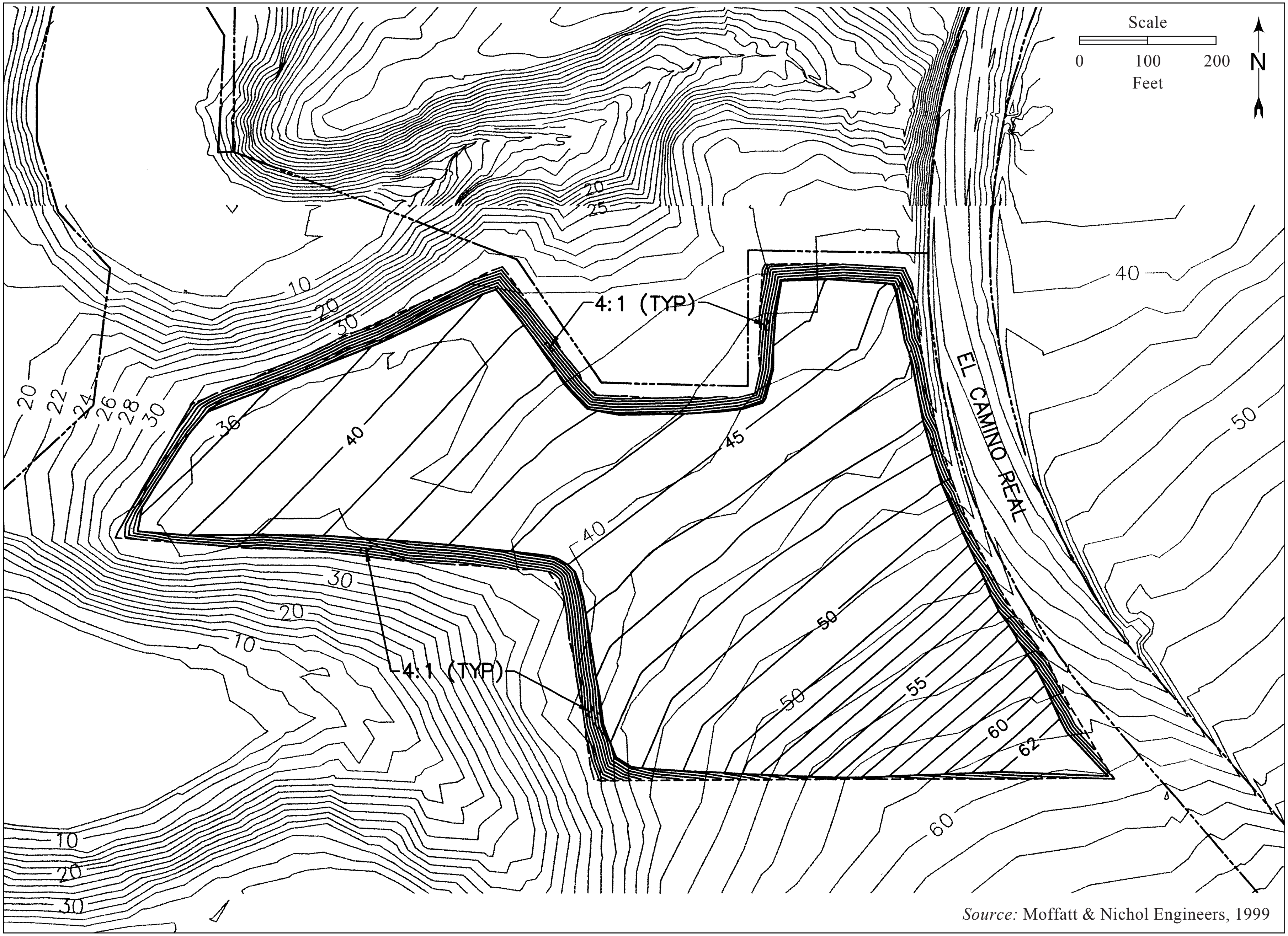


Figure 2.3.1-14b. Disposal Site DS33 Grading Plan

areas with native plants in order to stabilize excavated materials, as well as implementing additional erosion control measures in areas with greater than 6:1 slopes. The measures proposed are based on the City of San Diego's Erosion Control Guidelines contained in the City's *Landscape Technical Manual* (City of San Diego 1989), as well as from the Best Management Practices Manual (BMP 1993). The effectiveness of the measures proposed is evaluated in section 4.2.

On those berm slopes that would not be structurally reinforced, the soil slopes would be covered with a geotextile and planted with native species effective in slope stabilization and erosion control (refer to section 2.3.1.2.2).

The following procedures are proposed by SCE to revegetate the slopes of the nesting sites and any upland disposal areas:

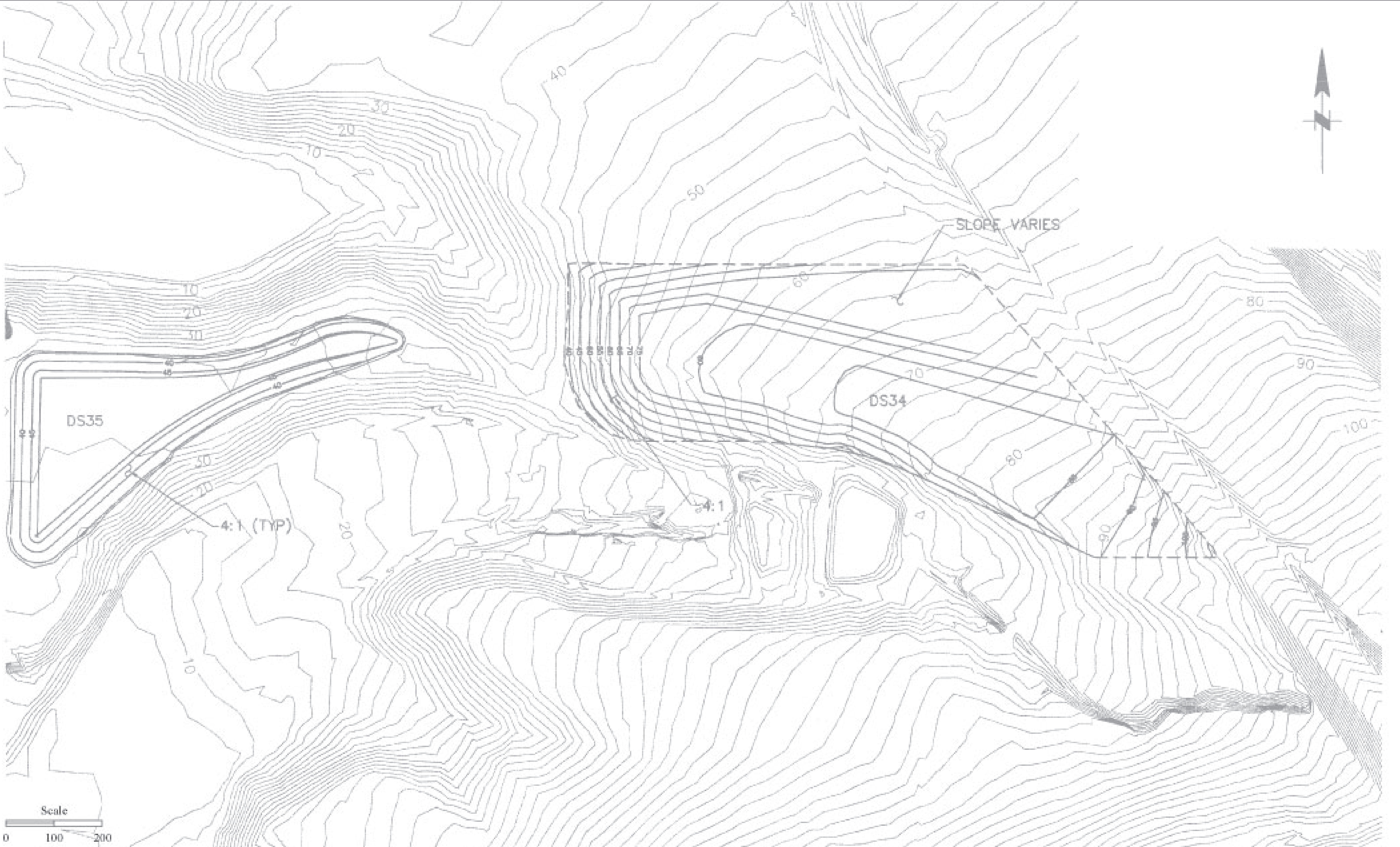
The revegetation effort would consist primarily of applying specified native plant hydroseed mixes on prepared slopes. The hydroseed slurry would include soil binding tackifier and site-specific plant mixes as determined by the permitting agencies. A polymer soil sealant may also be applied as a tackifier on steeper slopes for additional erosion protection. Additional methods of erosion control could include the use of soil sealant, mulching, or erosion blanket (e.g., jute matting). Important considerations in selecting an appropriate erosion control measure would include percent slope, time of year, typical wind direction, overland water flow amounts and velocity, biodegradability, and how long the material would remain in place before plants are sufficiently established.

Presoaking of the areas to be hydroseeded is desirable and temporary irrigation of hydroseeded areas may be provided. Seeding on non-irrigated areas would be done when the available soil moisture is at least 75 percent of the field capacity at a depth 12 inches below the soil surface, preferably between October 15 and December 31.

The native plant mixes proposed for hydroseeding in the disposal areas have been selected based on compatibility with native vegetation growing on adjacent lands. The specific plant palette used at each site would be consistent with the habitat types recommended for upland restoration on the proposed restoration plan. Parameters that could affect plant species choice within a given area include soil pH, salinity, nutrient composition, organic matter composition, soil texture, and percent sand. Appropriate amendments would be added as required to ameliorate unfavorable soil conditions. Proposed plant palette species compositions per habitat type are provided in Table 2.3.1-8.

All disposal site slopes would be hydroseeded with the appropriate mix, as described above. Slopes steeper than 3:1 would also be planted with one-gallon specimens consistent with the palette species composition lists and specifications included on Table 2.3.1.8.

Mulching with straw mulch or oak wood/leaf fibers could be used as an alternative to soil sealant or jute netting on less steep slopes. Availability of suitable mulching material may limit the application of mulch. Straw mulch would be uniformly spread at the rate of two tons per acre. Shredded wood products, if used, would be uniformly spread to a minimum depth of two inches. Three-foot-square weed control matting would be placed at the base of all containerized shrub plantings.



Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.1-14c. Disposal Site DS34 and DS35 Grading Plans

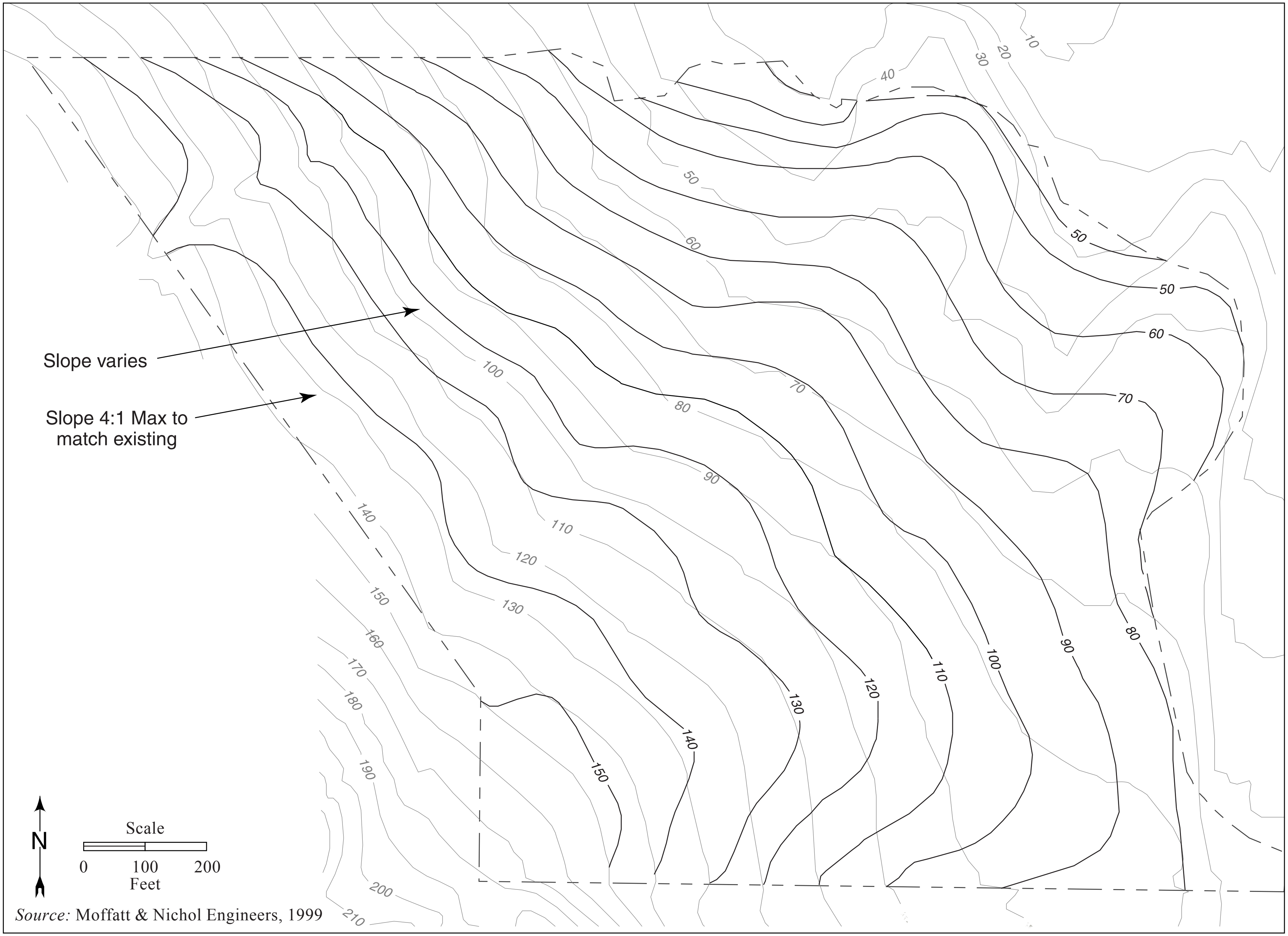


Figure 2.3.1-14d. Disposal Site DS36 Grading Plan

Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.1-14e. Disposal Site DS37 Grading Plan

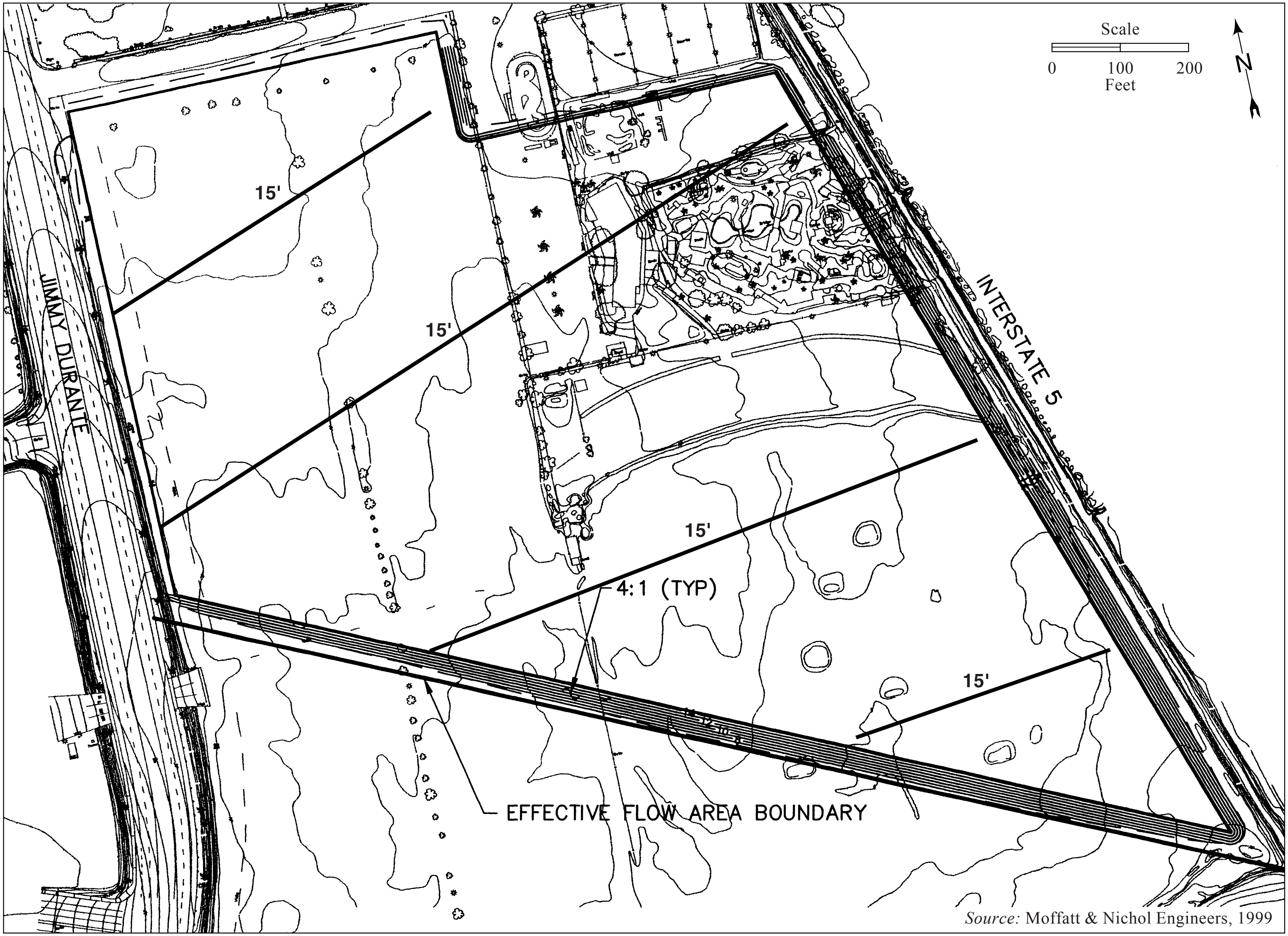


Figure 2.3.1-14f. Disposal Site DS38 Grading Plan

All container stock would be provided with a temporary irrigation system. Drip irrigation is recommended in order to avoid erosion problems related to overhead irrigation methods. No irrigation is proposed for slopes with a gradient of 30 percent or less and it is established that the soils are not highly erodible. Irrigation would not occur in areas located immediately adjacent to established native vegetation.

The restoration plan includes a proposal to construct temporary drainage crossings for construction access. Straw bales would be placed below the downstream terminus of these temporary culverts to trap sediments. Any excess earth spoil drift would be removed from the drainage channel by hand labor. Straw bales would consist of native grasses, rice straw, or excelsior matting.

Straw bales would be used in areas of shallow bedrock where keying of silt fencing would not be possible, and below the outlet of temporary slope drains and culverts. Straw bales would be anchored with steel posts. Straw bales would also be placed across dirt access roads during rainfall events to filter runoff. Straw bales would be removed from the site upon project completion and disposed of at the Miramar Landfill.

Emergency erosion control materials, including 200 straw bales, 50 5-foot steel posts, 100 sandbags, 500 feet of silt fencing, and 2,500 square feet of jute netting, would be stockpiled on-site prior to construction. A suitable labor force will be available to install any required emergency erosion control materials during or after storms, or if materials have been damaged during construction, or if additional materials are required to help prevent erosion and siltation.

Silt fencing could be used on the site for sediment trapping and filtering and to delineate exclusionary areas. Silt fencing specifications are summarized below.

- Prior to construction, place silt fencing around downslope perimeters of areas that are to be dredged and in the disposal areas.
- Place silt fencing between construction areas adjacent to sensitive habitat including wetland and riparian areas.
- Place silt-fencing downslope from topsoil stockpile areas.

Temporary desilting basins would also be provided during construction to trap any silt coming off exposed slopes following initial grading. The locations of the proposed basins are illustrated on Figure 2.3.1-12.

2.3.1.7.4 Dust and Mud Control

Dust generated by excavation activities, wind-blown dust over construction-disturbed areas, and dust generated by construction traffic on dirt access roads would be minimized by implementing the following measures, which have been incorporated into the scope of the project:

- Adequate water storage facilities would be available on-site for the refilling of required water trucks.
- Construction vehicle speeds on dirt access roads would not be permitted to exceed 15 miles per hour.

Table 2.3.1-8. Proposed Erosion Control Species and Planting Specifications

Scientific Name	*Common Name*	*Seeding Rates (lbs/acre)*
Grassland		
Leymus condensatus	Giant wild rye	Container
Leymus triticoides	Creeping wild rye	40
Hordium brachyantherum	Meadow barley	30
Melica imperfecta	Coast range melic	40
Muhlenbergia rigens	California deergrass	30
Nassella lepida	Foothill stipa	30
Nassella pulchra	Purple needle grass	40
Eschscholzia californica	California poppy	8
Lupinus succulentus	Arroyo lupine	8
Orthocarpus purpurascens	Owl's clover	8
Phacelia parryi	Parry's phacelia	2
Lotus scoparius	Deerweed	6
Eriogonum parvifolium	Bluff buckwheat	Container
Eriogonum fasciculatum	Flat-top buckwheat	Container
Baccharis pilularis ssp. *consanguinea*	Chaparral broom	Container
Coastal Sage Scrub		
Artemisia californica	California sagebrush	Container
Baccharis pilularis ssp. *consanguinea*	Chaparral broom	Container
Encelia californica	California encelia	8
Eriophyllum confertiflorum	Golden-yarrow	8
Malosma laurina	Laurel sumac	Container
Salvia mellifera	Black sage	3
Salvia apiana	White sage	Container
Chamise/Mixed Chaparral		
Adenostoma fasciculatum	Chamise	Container
Ceanothus verrucosus	Coast white-lilac	Container
Cneoridium dumosum	Coast spice bush	Container
Dendromecon rigida	Bush poppy	Container
Rhamnus crocea	Redberry	Container
Salvia mellifera	Black sage	Container
Xylococcus bicolor	Mission manzanita	Container

- Disturbed areas would be kept to a minimum by construction sequencing.
- Watering dirt access roads and disturbed areas would be frequent enough to prevent substantial dust from leaving the construction site and/or covering native vegetation.
- At the end of the construction day, all disturbed areas would be sprayed with water to create a crust that would help prevent soil erosion as a result of evening winds.
- <u>All applicable NPDES construction permit requirements, including best management practices, would be implemented to control mud and sediment transport.</u>

Mud or dirt from the tracking of construction vehicles or from site runoff would be kept off local roads. A stabilized construction entrance may be required in order to wash mud off vehicles leaving the construction site. If mud or dirt is accidentally placed on any local roads as a result of construction activities, it will be removed immediately by mechanical sweepers, hand labor, spraying by water trucks, or by other suitable mechanical equipment such as a tractor skiploader, as needed.

2.3.1.7.5 Traffic

To minimize heavy construction activity on public streets, construction access routes would be located within the confines of the project footprint, as described in section 2.3.1.5.4.

2.3.1.8 Park Master Plan

In accordance with the San Dieguito River Park Concept Plan (JPA 1994a), a draft Park Master Plan has been prepared by the JPA for the overall project area (identified as Landscape Unit A in the Concept Plan). This Park Master Plan incorporates the tidal restoration component of the project, as well as proposals for freshwater and upland habitat restoration, public access (trails and staging areas), interpretation, and a nature center. The habitat restoration proposals are indicated in Figure 2.3.1-1, with proposed tidal and seasonal salt marsh areas identified by the letter "W", restored seasonal salt marsh and transitional wetlands identified with the letter "M", upland restoration areas identified with the letter "U", and freshwater wetland restoration identified with the letters "FW". Habitat areas depicted on the graphic that do not include a letter and number designation represent existing habitat within the study area. Public access, interpretation, and nature center elements are presented on Figure 2.3.1-15.

As previously discussed, SCE presently proposes to implement all of the tidal wetland restoration proposals shown in the plan with the exception of Area W6b. The JPA would seek grant funding and/or other partners to implement the non-tidal wetland and upland restoration proposals. The JPA would also be seek funds to finance the implementation of the public access and interpretive components of the plan.

Most of the major elements and proposals included in the draft Park Master Plan would be accommodated by any of the proposed tidal habitat restoration alternatives with the exception of the No Action Alternative. The effect of adopting the No Action Alternative on the potential to implement the draft Park Master Plan is addressed in section 2.3.6. Presented below is a summary of the proposals included in the draft Park Master Plan.

2.3.1.8.1 Habitat Restoration

A primary goal of the draft Park Master Plan is to convert, to the extent feasible, previously filled or otherwise disturbed areas within the planning boundaries to the habitat types that were historically found in and around the San Dieguito Lagoon. This includes restoring and maintaining tidal influence to existing wetlands, excavating additional areas to re-create tidal wetlands, restoring freshwater drainages and facilitating the growth of southern willow scrub habitat, vegetating disturbed agricultural fields to appropriate upland habitats, and removing exotic invasive species from existing natural areas.

TIDAL HABITAT RESTORATION

The goals of the Park Master Plan for tidal habitat restoration would be met by all but the Reduced Berm and No Action Alternatives. The plan supports tidal restoration to the maximum extent feasible, and encourages the provision of habitat types that support rare, threatened, and endangered species indigenous (either now or in the past) to this area.

FRESHWATER HABITAT RESTORATION

The plan proposes to reestablish previously vegetated freshwater drainages located just to the west of El Camino Real (identified as FW20 on Figure 2.3.1-1), as well as enhance other areas of existing freshwater habitat (identified as FW21 and FW31). Actions required to accomplish these proposals involve cleaning out existing drainage culverts, prohibiting disking of drainage areas, planting of willow and mulefat cuttings and/or freshwater marsh transitional planting, as appropriate, and replacing exotic invasive species including eucalyptus trees with native species such as willow and mulefat. The recommended plant palette species composition for southern willow scrub and freshwater marsh transitional revegetation areas are presented in Tables 2.3.1-9 and 2.3.1-10, respectively.

UPLAND HABITAT RESTORATION

Just as the Park Master Plan envisions the restoration of the tidal wetlands within the western San Dieguito River Valley, it also proposes the restoration of the planning area's historic upland habitats. The upland areas located along the edges of the tidal wetland proposal area, as well as the significant areas of upland habitat in the area to the east of I-5, are proposed for restoration to one of several native upland habitats believed to have been found here prior to human disturbance. These habitats include coastal sage scrub, chaparral, and native grassland, shown as Areas U19 and U22 - U29 on Figure 2.3.1-1. Recommended plant palette species composition for each of these habitats is presented in Tables 2.3.1-11, 2.3.1-12 and 2.3.1-13, respectively.

2.3.1.8.2 Public Access/Interpretation

The public access element of the Park Master Plan addresses the proposal to construct the western segment of the Coast to Crest Trail, as well as proposals for two nature/interpretive trails. The public access element incorporates proposals for interpretation of the many resources that can be viewed in this area. The element includes the design and location of park facilities, such as staging areas, viewpoints, and a nature/interpretive center. The proposed trails plan is present in Figure 2.3.1-15, with specific details regarding each component listed in Table 2.3.1-14.

COAST TO CREST TRAIL

As envisioned by the JPA adopted Park Concept Plan, the Coast to Crest Trail is a multiple use, non-motorized trail system for hikers, bicyclists, and equestrians. This regional trail is proposed to extend for 55 miles from Del Mar to Volcan Mountain, north of Julian. The Coast to Crest Trail is designed to consist of two separate trail types which frequently are aligned side-by-side, but which may be separated.

One trail type would accommodate hikers and equestrians. It is an average of four feet in width and has a tread surface of native soil or decomposed granite. The other trail type is for bicycles and other users who require a hardened surface. This type of trail, which is intended to meet the requirements of the Americans with Disabilities Act and Caltrans' Class 1 bike path standards, has an 8-foot-wide hardened surface. In general, the trail tread may consist of asphalt, concrete, soil cement/soil stabilizer, or a polymer binder. However, the Concept Plan does not consider asphalt an appropriate material for use in this portion of the planning area, due to the proposed trail alignment's proximity to wetland habitat.

The JPA's preferred alignment for the Coast to Crest Trail in this area, which represents the westernmost extent of the trail, is to direct the trail through the planning area along the north side of the San Dieguito River. The trail would begin at El Camino Real, with the intent of ultimately connecting to an existing public trail located to the east across El Camino Real via an undercrossing of the El Camino Real/San Dieguito River Bridge. This undercrossing proposal is not, however, proposed as a part of this project, but will be designed and analyzed in association with the future bridge/road improvements currently under consideration for El Camino Real by the City of San Diego. From El Camino Real, the Coast to Crest Trail is proposed to extend westward on the north side of the river between the southern edge of the Horsepark facility and the San Dieguito River. After crossing the Horsepark property, the trail would enter the Via de la Valle property and follow along the top of the proposed 4:1 slope that separates the proposed fill area from the restored wetland. Near the western end of this property, the trail would pass the site of the proposed Nature/Interpretive Center, which is described in greater detail below.

From the site of the future Nature Center, the trail would follow along the east side of San Andres Drive to the road's terminus. At that point, the trail alignment would follow an existing utility easement. The dirt easement road extends along the south side of the existing commercial center then turns south to parallel I-5. The easement road ends at the river. From this point the trail would turn west traveling under the north bay of the I-5 bridge. As the trail exits the freeway undercrossing it turns slightly north to return to an alignment that would follow along the north bank of the river. The trail would then travel along the southernmost end of the fairgrounds property, first along the southern edge of the Surf and Turf driving range and then along the edge of the District's overflow parking lot. At the western end of the parking lot, equestrian use of the trail would terminate and bicyclists would be directed to the existing bike lanes on Jimmy Durante Boulevard where they could then travel south to Powerhouse Park. Hikers would continue to follow along the north side of the river on an elevated boardwalk until the path reached an existing rampway leading up to Jimmy Durante Boulevard. Ultimately this route would provide access to the proposed Coastal Rail Trail.

Under this alternative alignment, the portion of the Coast to Crest Trail that would extend from El Camino Real to Jimmy Durante Boulevard would be 12,771 feet in length. The 8-foot wide hardened surface is proposed to consist of a polymer binder surface, which is created by mixing resin-modified emulsion and decomposed granite. This mixture must be compacted to a 3-inch depth over a conventional aggregate rock base course. The 4-foot-wide hiking/equestrian trail would be surfaced with either existing compacted soil or imported decomposed granite. The design grade for the trail is 0-5 percent with a maximum of 2 percent preferred. The cross slope should be 2 percent to facilitate drainage. Construction of the trail would involve grading on approximately 6.3 acres.

Several special design features are proposed for the trail to insure compatibility with adjacent uses and sensitive habitat. Fencing would be used to separate trail users from adjoining uses on District property. For much of the trail's alignment, a lodgepole or post and cable fence would also be installed along the southern or eastern edge of the trail to provide a physical barrier between trail users and existing or soon to be created wetland areas. To protect trail users from errant golf balls, a 6-foot-high fence would be installed along the north side of the trail as it passes along the Surf and Turf Driving Range.

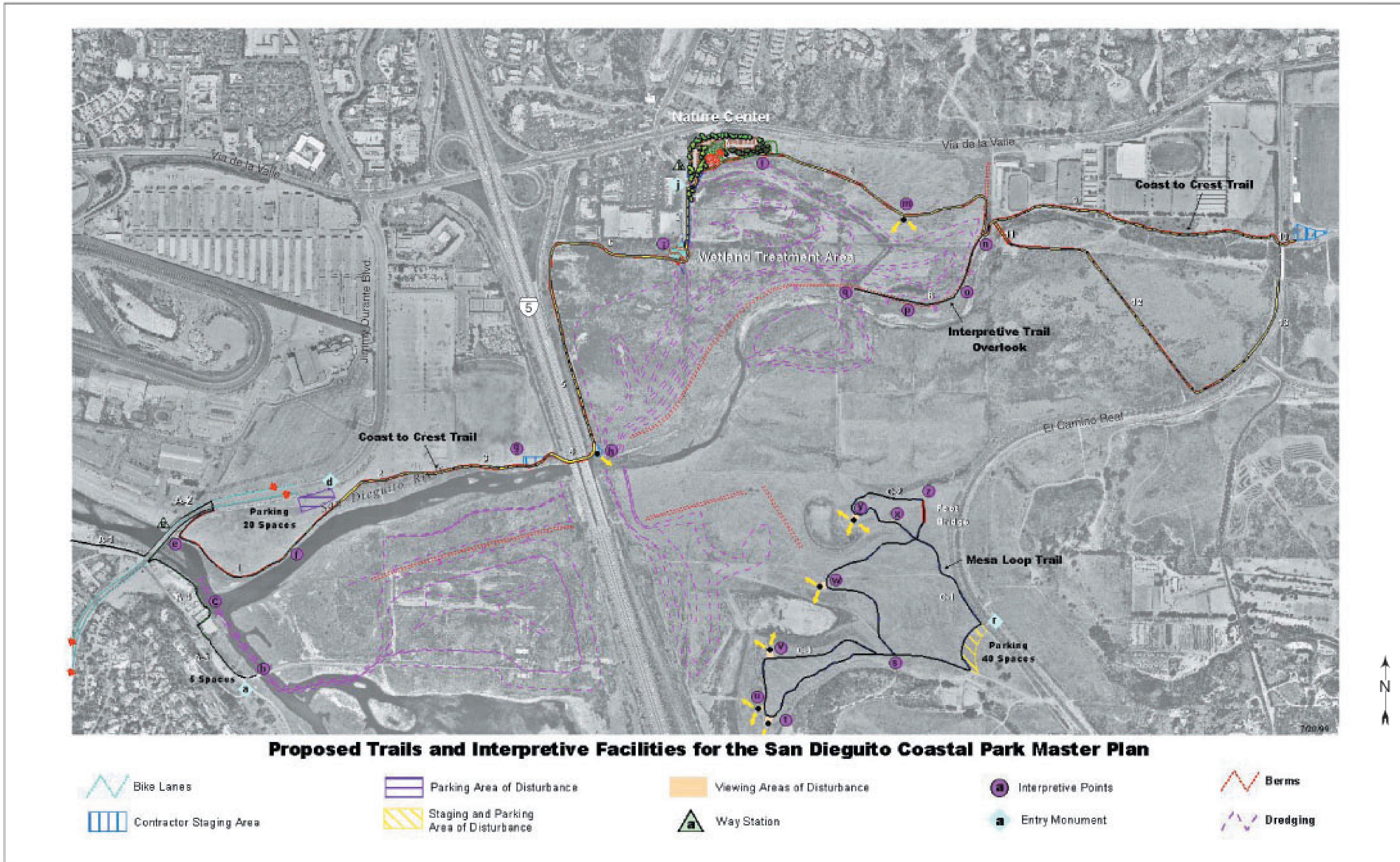


Figure 2.3.1-15. Proposed Upland Trails

Table 2.3.1-9. Plant Palette Species Composition for Riparian Southern Willow Scrub Revegetation

Botanical/Common Name	*Container Size*	*% Composition*	*Spacing on Center (initial planting)*
Trees (overstory) (assume 60% cover of trees)			
Sambucus mexicana / Mexican elderberry	1 gal.	10%	15 ft.
Platanus racemosa / Western sycamore	1 gal.	5%	30 ft.
Populus fremontii / Fremont cottonwood	1 gal.	5%	20 ft.
Salix exigua (hindsiana) / Sandbar willow	1 gal.	10%	8 ft.
Salix lasiolepis / Arroyo willow	1 gal.	50%	10 ft.
Salix gooddingii / Black willow	1 gal.	20%	15 ft.
Shrubs (understory) (assume 80% cover of shrubs)			
Artemisia douglasiana / Douglas mugwort	1 gal.	10%	3 ft.
Baccharis salicifolia / mulefat	1 gal.	30%	8 ft.
Iva hayesiana / San Diego marsh elder	1 gal.	20%	6 ft.
Leymus condensatus / Giant wild rye	1 gal.	10%	3 ft.
Oenothera elata / Hooker's evening primrose	1 gal.	10%	2ft.
Pluchea odorata / Salt marsh fleabane	1 gal.	5%	3 ft.
Tessaria sericea / Arrow weed	1 gal.	5%	6 ft.
Rosa californica / California wild rose	1 gal.	10%	5 ft.
Hydroseed Mix	**%P/%G**		**Lbs./ac.**
Ambrosia psilostachya / Western ragweed	4 / 30		2
Artemisia douglasiana / Douglas mugwort	10 / 50		3
Artemisia palmeri / Palmer's sagewort	15 / 50		2
Eleocharis macrostachya / Pale spike sedge			4
Encelia californica / Bush sunflower	40 / 60		4
Isocoma menziesii / Coast goldenbush	20 / 40		4
Juncus dubius / Mariposa rush	90 / 40		2
Leymus triticoides / Creeping wild rye	95 / 80		2
Lotus scoparius / Deerweed	90 / 60		8
Oenothera elata / Hooker's evening primrose	98 / 75		1
Total Lbs. Per Acre:			**32 lbs.**

Table 2.3.1-10. Plant Palette Species Composition for Freshwater Marsh Expansion Revegetation

Botanical / Common Name	*Container Size*	*% Composition*	*Spacing on Center (initial planting)*
Anemopsis californica / Yerba mansa	6" pot	15%	2 ft.
Artemisia douglasiana / Douglas mugwort	1 gal.	10%	3 ft.
Eleocharis macrostachya / Pale spike rush	1 gal.	5%	3 ft.
Juncus acutus / Spiny rush	1 gal.	20%	6 ft.
Juncus bufonius / Toad rush	1 gal.	5%	3 ft.
Juncus dubius / Mariposa rush	1 gal.	5%	3 ft.
Juncus mexicanus / Mexican rush	1 gal.	5%	3 ft.
Muhlenbergia rigens / Deergrass	1 gal.	5%	3 ft.
Pluchea odorata / Salt marsh fleabane	1 gal.	5%	3 ft.
Scirpus californicus / California bulrush	1 gal.	10%	4 ft.
Scirpusrobustus / bull tule	1 gal.	15%	4 ft.
Hydroseed Mix	**%P/%G**		**Lbs./ac.**
Anemopsis californica / Yerba mansa	4 / 30		8
Eleocharis macrostachya / Pale spike sedge	98 / 93		4
Juncus bufonius / Toad rush	90 / 40		2
Juncus dubius / Mariposa rush	90 / 40		2
Lasthenia glabrata / Goldfields	90 / 85		2
Total Lbs. Per Acre:			**18 lbs.**

Table 2.3.1-11. Plant Palette Species Composition for Coastal Sage Scrub Transitional Revegetation

Botanical / Common Name	*Container Size*	*% Composition*	*Spacing on Center (initial planting)*
Artemisia californica / California sagebrush	1 gal.	25%	3 ft.
Baccharis pilularis var. consanguinea / Coyote bush	1 gal.	5%	3 ft.
Cleome isomeris / Bladderpod	1 gal.	5%	3 ft.
Encelia californica / Bush sunflower	1 gal.	10%	3 ft.
Eriogonum fasciculatum / Calif. buckwheat	1 gal.	20%	3 ft.
Isocoma menziesii / Coast goldenbush	1 gal.	20%	6 ft.
**Lessingia filanginifolia* / Del Mar mesa sand aster	1 gal.	5%	3 ft.
Leymus condensatus / Giant wild rye	1 gal.	5%	2 ft.
Opuntia littoralis / Coastal prickly-pear	1 gal.	5%	2 ft.
Hydroseed Mix	**%P/%G**		**Lbs./ac.**
Ambrosia psilostachya / Western ragweed	2 / 30		2
Artemisia californica / Calif. sagebrush	15 / 50		6
Castilleja exserta / Owl's clover	50 / 50		2
Encelia californica / Coast sunflower	40 / 60		4
Eriogonum fasciculatum / Calif. buckwheat	10 / 65		8
Eschscholzia californica / Calif. poppy	98 / 75		4
Isocoma menziesii / Coast goldenbush	20 / 40		4
Lotus scoparius / Deerweed	98 / 75		8
Lupinus succulentus / Arroyo lupine	95 / 80		2
Mimulus aurantiacus puniceus / Mission red monkeyflower	2 / 55		4
Nassella pulchra / Purple needle grass	70 / 60		3
Salvia mellifera / Black sage	70 / 50		3
Phacelia parryi / Parry's phacelia	95 / 70		2
Plantago insularis / Plantain	98 / 75		2
Total Lbs. Per Acre:			**54 lbs.**
* Local collection from north coastal San Diego County sources required for species indicated with an asterisk (*).			

Table 2.3.1-12. Plant Palette Species Composition for Chaparral Transition Revegetation

Botanical / Common Name	*Container Size*	*% Composition*	*Spacing on Center (initial planting)*
* *Adenostoma fasciculatum* / Chamise	1 gal.	5%	5 ft.
* *Arctostaphlos glandulosa var. crassifolia* / Del Mar manzanita	deep 1 gal.	5%	4 ft.
Artemisia californica / Calif. sagebrush	1 gal.	5%	3 ft.
Baccharis pil. var. consanguinea / Chaparral broom	1 gal.	5%	5 ft.
* *Ceanothus verrucossus* / Wart-stemmed ceanothus	deep 1 gal.	5%	6 ft.
Cleome isomeris / Bladderpod	1 gal.	5%	3 ft.
Encelia californica / Coast sunflower	1 gal.	5%	2 ft.
Eriogonum fasciculatum / Calif. buckwheat	1 gal.	5%	4 ft.
Heteromeles arbutifolia / Toyon	1 gal.	5%	6 ft.
Isocoma menziesii / Coast goldenbush	1 gal.	30%	3 ft.
* *Lessingia filanginifolia* / Del Mar mesa sand aster	1 gal.	5%	2 ft.
Leymus condensatus / Giant wild rye	1 gal.	15%	4 ft.
Lupinus succulentus / Arroyo lupine	1 gal.	15%	2 ft.
Malocothamnus fasciculatus / Bushmallow	1 gal.	15%	4 ft.
Malosma laurina / Laurel sumac	1 gal.	15%	8 ft.
* *Quercus dumosa* / Nuttall's scrub oak	deep 1 gal.	15%	12 ft.
Rhamnus crocea / Redberry	1 gal.	15%	6 ft.
Rhus integrifolia / Lemonadeberry	deep 1 gal.	15%	8 ft.
Salvia apiana / White sage	1 gal.	15%	5 ft.
Salvia mellifera / Black sage	1 gal.	15%	4 ft.
Sambucus mexicana / Mexican elderberry	1 gal.	15%	10 ft.
Yucca schidigera / Mojave yucca	1 gal.	15%	4 ft.
Hydroseed Mix	**%P/%G**		**Lbs./ac.**
Ambrosia psilostachya / Western ragweed	2 / 30		2
Artemisia californica / Calif. sagebrush	15 / 50		6
Castilleja exserta / Owl's clover	50 / 50		2
Encelia californica / Coast sunflower	40 / 60		4
Eriogonum fasciculatum / Calif. buckwheat	10 / 65		8
Eschscholzia californica / Calif. poppy	98 / 75		4
Isocoma menziesii / Coast goldenbush	20 / 40		4
Lotus scoparius / Deerweed	98 / 75		8
Lupinus succulentus / Arroyo lupine	95 / 80		2
Mimulus aurantiacus / Monkeyflower	2 / 55		4
Nassella pulchra / Purple needle grass	70 / 60		3
Salvia mellifera / Black sage	70 / 50		3
Phacelia parryi / Parry's phacelia	95 / 85		2
Plantago insularis / Plantain	98 / 75		2
Total Lbs. Per Acre:			**54 lbs.**
* Local collection from north coastal San Diego County sources required for species indicated with an asterisk (*).			

Table 2.3.1-13. Plant Palette Species Composition for Grassland Revegetation

Hydroseed Mix	*%P/%G*	*Lbs./ac.*
Ambrosia psilostachya / Western ragweed	2 / 30	4
Eriophylum confertiflorum / Golden yarrow	30 / 60	2
Eschscholzia californica / Calif. poppy	98 / 75	4
Hordium brachyantherum / Meadow barley	20 / 40	4
Isocoma menziesii / Coast goldenbush	20 / 40	4
Lasthenia glabrata / Goldfields	90 / 85	2
Lotus scoparius / Deerweed	98 / 75	6
Lupinus succulentus / Arroyo lupine	95 / 80	2
Castilleja exserta / Owl's clover	50 / 50	2
Melica imperfecta / Coast range melic	90 / 60	8
Nassella pulchra / Purple needle grass	70 / 60	8
Phacelia parryi / Parry's phacelia	95 / 85	2
Plantago insularis / Plantain	98 / 75	4
Sisyrinchium bellum / Blue-eyed grass	95 / 75	4
Vulpia microstachys / Small fescue	90 / 80	4
Total Lbs. Per Acre:		**60 lbs.**

In order to pass under the I-5 / San Dieguito River bridge, an undercrossing would be constructed within the northernmost bay of the I-5 bridge. No water flows through this bay, which is currently filled with riprap, during normal river flows. The trail would, however, be subject to inundation during significant storm events. The undercrossing would require that the two drainage channels occurring on both sides of the freeway be crossed. These crossings would be accomplished using box culverts. Under the freeway, the entire trail would be constructed of concrete and would be designed as indicated on the cross-sections provided in Figure 2.3.1-16.

Several alternatives to the JPA preferred alignment for the Coast to Crest Trail are proposed for consideration. These include (1) the No Action Alternative; (2) terminating equestrian use at the nature center but continuing bicycle and hiking uses to the planned termination point; and (3) changing the eastern end of the alignment to avoid the Horsepark property.

An alternative route for the eastern end of the Coast to Crest Trail that would avoid Horsepark would involve crossing the river via a low flow crossing (Figure 2.3.1-17) west of the Horsepark property and constructing the trail either within the existing major utility easement that crosses the floodplain or around the northern and eastern perimeters of the parcel immediately south of the river. The trail would then continue to El Camino Real, where trail users would have to cross El Camino Real at the existing signalized intersection with San Dieguito Road. An alignment that followed the southern edge of the river rather than the northern edge was analyzed but rejected due to the extensive new wetland areas that are proposed as a part of the larger project. A southern alignment would have required the crossing of several of these proposed wetland areas and would have been too close to an existing and several proposed nesting areas.

NATURE / INTERPRETIVE TRAILS

Two nature / interpretive trails are proposed as a part of the project. These trails, which are illustrated in Figure 2.3.1-15, include the Mesa Loop Trail and the Interpretive Overlook.

Mesa Loop Trail. The Mesa Loop Trail would be located to the south of the river and the west of El Camino Real on uplands currently owned by the City of San Diego. The trail would be setback slightly from the edge of the mesa that looks down on the surrounding floodplain. This trail is proposed as a pedestrian only interpretive loop trail that is intended to provide overlooks of the surrounding seasonal wetlands directly to the west, as well as the restored wetlands to the north and northwest. It is intended that the trail be designated as a "wildlife viewing area." No dogs would be permitted on this trail.

The trail would be approximately 1.7 miles long and 4 feet in width, with a native soil or decomposed granite surface. At various points along the trail, as it extends out towards the mesa rim, strategically placed native shrubs or some type of low profile structure would be provided to serve as bird blinds. These areas would allow maximum bird viewing with minimal bird disturbance. In addition, interpretive signs would be located along the trail to explain the differences between the types of marsh visible from the trail. Panels describing the various types of waterfowl and other birds that visit this area would also be provided.

Interpretive Overlook. This trail, which would be located south of the Via de la Valle property and north of the river, would extend from the Coast to Crest Trail out onto the eastern end of the long berm proposed on the north side of the river. The trail is proposed to be 8 feet wide with a hardened surface in order to meet Americans with Disabilities Act (ADA) requirements. The trail would be open to pedestrian use only and no dogs would be permitted on the berm. The trail is proposed to extend from the southeastern end of the Via de la Valle property out onto the berm for a distance of 1,500 feet, with lodgepole fencing and native landscaping proposed at the end of the trail to discourage public access beyond this trail end point. Interpretive panels describing the restoration effort would be placed along the trail.

Wetland Treatment Ponds. An interpretive feature proposed along the Coast to Crest Trail just to the west of the terminus of San Andres Drive is a series of four ponds that would actually serve two functions: an opportunity for wetland interpretation and filtering of urban runoff. The site of this proposed interpretive feature is currently a wet area that has been created as a result of the past construction of a storm drain outlet that ends at the southern edge of an existing commercial facility. Under the present conditions, seasonal storm runoff and a significant amount of year-round urban runoff flows out of the storm drain pipe and onto the adjoining downstream property. This proposal would take advantage of this situation by directing the flows from this pipe via a new drainage swale into a series of ponds, as illustrated in Figure 2.3.1-18. The ponds would facilitate the separation of oily water and provide for natural filtering that would significantly improve the quality of the water entering the restored wetland system from an off-site storm drain. Interpretive panels would be installed which would describe the natural filtering processes of riparian and freshwater marsh habitat.

NATURE/INTERPRETIVE CENTER

A 6,000-square-foot nature/interpretive center is proposed for the northwest six acres of the Via de la Valle site (Area U18). The proposed site plan for this facility is provided as Figure 2.3.1-19.

The facility would include space for exhibits, volunteer areas, lobby, information desk, storage and utility room, restrooms, ranger offices and/or administrative offices, and possibly a small auditorium and/or multi-purpose room. Also included on the site would be a picnic area, botanical walk, interpretive stations, and parking spaces to serve visitors of the center, as well as to

Table 2.3.1-14. San Dieguito Lagoon Upland Restoration and Access Plan

SEGMENTS DESCRIPTIONS						USES						SURFACES					BARRIER CONTROLS							TRAIL SECTION
SEGMENT #	ROUTE SEGMENT DESCRIPTION	NOTES	CALCULATED DISTURBED AREA	MAP MEASURED DISTURBED AREA	LENGTH	TRAM (Usually on Primary Surface)	MAINT. VEHICLES (on Primary Surface)	EQUESTRIAN (Usually on Side Path)	BIKE (on Primary Surface Only)	HIKE (Usually on Primary Surface)	ADA Wheelchair Access (on Primary)	CONCRETE	SOIL POLYMER BINDER	SOIL CEMENT	COMPACTED DECOMPOSED GRANITE	COMPACTED NATIVE SOIL	6' CHAIN LINK FENCE	12' CHAIN LINK WITH SPECIAL NETTING	4' SPLIT RAIL OR ROUND POST RAIL	6' WHITE HORSE RAIL FENCE	POST & STEEL CABLE	RIP RAP / SLOPE SERVES AS BARRIER	EXISTING FENCE OR BRIDGE RAILING	DETAIL #
CC-1 (COAST TO CREST TRAIL: OPTION #1) Primary Option with Tram & all uses by the Horse Park																								
1	Fairgrounds parking to tram intercept	Placed at edge of parking lot	63,900	63,681	3,195			4	4	4	4		P		ST	O								4
2	Tram intercept to I-5 undercrossing	Fence needed by driving range	21,252	21,318	966	4	4	4	4	4	4	P	ST		O			N						6
3	I-5 undercrossing	All uses separated	13,338	13,782	494	4	4	4	4	4	4	A					S		C					8
4	I-5 undercrossing to north of wildlife buffer	Up against existing fence	21,280	21,067	1,064	4	4	4	4	4	4	P	ST		O				E				W	6
5	Wildlife buffer to San Andres road end	Use chain link on one side	42,120	42,318	2,106	4	4	4	4	4	4	P	ST		O				E/S					6
6	San Andres road to Nature Center entry	Use existing road	0	0	477	4	4	4	4	4	4	EX											E	9
7	Nature Center entry to berm	Split Rail on south side only	58,194	58,404	3,233	4		4	4	4	4	P	ST		O				S			S		4
8	Berm to El Camino Real bridge	Trail south of road, 50' north of river	56,520	56,321	2,826	4		4	4	4	4	P	ST		O				S			N		4
9	El Camino Real undercrossing	Costs beyond flatwork not included	2,856	3,011	136			4	4	4	4	A					S		C					7
		TOTALS	279,460	279,902	14,497																			
CC-2 (COAST TO CREST TRAIL: OPTION #2) Option without the tram & all uses by the Horse Park																								
1	Fairgrounds parking to tram intercept	Same as above	63,900	63,681	3,195			4	4	4	4		P		ST	O								4
2	Tram intercept tp I-5 undercrossing	Skinnier and different surface	19,320	18,653	966			4	4	4	4			P	ST	O		N						6
3	I-5 undercrossing	Skinnier	10,374	10,187	494			4	4	4	4	A					S		C					8
4	I-5 undercrossing to north of wildlife buffer	Same as above	21,280	21,067	1,064		4	4	4	4	4	P		ST	O						E		W	6
5	Wildlife buffer to San Andres road end	Same as above	42,120	42,318	2,106		4	4	4	4	4	P		ST	O						E/S			6
6	San Andres road to Nature Center entry	Use existing road	0	0	477		4	4	4	4	4	EX											E	9
7	Nature Center entry to berm	Different surface	58,194	58,404	3,233			4	4	4	4			P	ST	O					S	S		4
8	Berm to El Camino Real bridge	Different surface	56,520	56,321	2,826			4	4	4	4			P	ST	O					S	N		4
9	El Camino Real undercrossing	Same as above	2,856	3,011	136			4	4	4	4	A					S		C					7
		TOTALS	274,564	273,642	14,497																			
CC-3 (COAST TO CREST TRAIL OPTION #3) Option with no tram or bike use by the Horse Park																								
1	Fairgrounds parking to tram intercept	Same as above	63,900	63,681	3,195			4	4	4	4			P	ST	O								4
2	Tram intercept tp I-5 undercrossing	Skinnier & different surface	19,320	18,653	966			4	4	4	4			P	ST	O		N						6
3	I-5 undercrossing	Skinnier	10,374	10,187	494			4	4	4	4	A					S		C					8
4	I-5 undercrossing to north of wildlife buffer	Same as above	21,280	21,067	1,064		4	4	4	4	4	P		ST	O						E		W	6
5	Wildlife buffer to San Andres road end	Same as above	42,120	42,318	2,106		4	4	4	4	4	P		ST	O						E/S			6
6	San Andres road to Nature Center entry	Use existing road	0	0	477		4	4	4	4	4	EX											E	9
7	Nature Center entry to berm	Different surface	58,194	58,404	3,233			4	4	4	4			P	ST	O					S	S		4
8	Berm to El Camino Real bridge	Skinnier and different surface	39,564	32,183	2,826			4		4				P		O				N/S		N		2
9	El Camino Real undercrossing		2,856	3,011	136			4	4	4	4	A					S		C					7
10	Berm to across river (dip structure)	Includes culvert with 4:1 slopes	5,992	6,493	214			4				A									E/W			5
11	River under SDG&E ROW to intersection		45,056	44,753	2,816			4	4				P			O								4
		TOTALS	308,656	300,750	17,527																			
CC-4 (COAST TO CREST TRAIL: OPTION #4) Option with no tram and no uses by Horse Park																								
1	Fairgrounds parking to tram intercept	Same as above	63,900	63,681	3,195			4	4	4	4			P	ST	O								4
2	Tram intercept tp I-5 undercrossing	Skinnier & different surface	19,320	18,653	966			4	4	4	4			P	ST	O		N						6
3	I-5 undercrossing	Skinnier	10,374	10,187	494			4	4	4	4	A					S		C					8
4	I-5 undercrossing to north of wildlife buffer	Same as above	21,280	21,067	1,064		4	4	4	4	4	P		ST	O						E		W	6
5	Wildlife buffer to San Andres road end	Same as above	42,120	42,318	2,106		4	4	4	4	4	P		ST	O						E/S			6
6	San Andres road to Nature Center entry	Use existing road	0	0	477		4	4	4	4	4	EX											E	9
7	Nature Center entry to berm	Different surface	58,194	58,404	3,233			4	4	4	4			P	ST	O					S	S		4
9	El Camino Real undercrossing		2,856	3,011	136			4	4	4	4	A					S		C					7
10	Berm to across river (dip structure)	Includes culvert with 4:1 slopes	7,062	6,493	214		4	4				A									E/W			5
11	River under SDG&E ROW to intersection		50,688	44,753	2,816		4	4	4	4	4		P/ST		O									4
12	Intersection to Bridge Sidepath	Crossing roadway to river edge	13,212	13,525	734			4	4	4	4	P		ST	O									4
		TOTALS	289,006	282,092	15,435																			
SIDE TRAILS TO THE COAST TO CREST TRAIL San Dieguito Lagoon Landscape Unit																								
A-1	Railroad tracks to Jimmy Durante bridge	Del Mar responsible for	5,288	5,342	661					4	4	P				O						N		2
A-2	Jimmy Durante Bridge to crosswalk & ramp	May need to extend sidewalk	7,780	7,796	1,556					4	4	EX											W	1
A-3	West lagoon bridge to City parking lot	Need to resolve property issues	7,677	7,542	853					4	4		P			O						N		1
A-4	City parking lot, across Durante bridge & ramp	Some new sidewalk needed	7,450	7,748	745					4	4	P											E	2
B	East lagoon berm trail	Post & cable on both sides	18,000	16,105	1,500					4	4		P		O						N/S	N/S		5
C-1	Central Mesa loop trail	Cable on bluffs, 1/16 segment lengt	32,960	32,936	4,120					4						A					A			3
C-2	North Mesa loop trail	Cable on bluffs, 1/8 segment length	14,264	12,913	1,783					4						A					A			3
C-3	South Mesa loop trail	Cable on bluffs, 1/8 segment length	23,528	23,497	2,941					4						A					W			3
		TOTALS	116,947	113,879	14,159																			

Maximum Level of Disturbance From Trails	414,629
Contractor Staging Areas of Disturbance	43,024
Parking Areas of Disturbance	63,457
Nature Center Area of Disturbance	225,147
Created Cleansing Wetland Area of Disturbance	29,369
Special Viewing Areas of Disturbance	21,292

SPECIAL NOTES FOR BARRIER CONTROL:	OUTER EDGE=	O	SIDETRAIL SURFACE=	ST	ALL SURFACES:	A	EXISTING SURFACE:	EX
SPECIAL NOTES FOR TRAIL SURFACE:	NORTH SIDE=	N	EAST SIDE=	E	WEST SIDE=	W	CENTER OF TRAIL:	C

provide staging for trail users. A total of 60 parking spaces for cars and 15 parking spaces for equestrian rigs and buses would be provided to the east and west of the center. The northern edge of the site, that area adjacent to Via de la Valle, would be planted with Torrey Pines and other native vegetation. Oaks would also be planted in the area to provide a natural setting. Entry onto the Coast to Crest Trail would be directly accessible from the center. The only exterior lighting to be provided on the site would be that needed for security, and the entrance to the site would be gated at night to prevent overnight parking or any other unauthorized nighttime use of the facility.

STAGING / PARKING AREAS

The park plan proposes two formal trail staging areas, one informal seasonal staging area, and a small parking area for wetland viewing (Figure 2.3.1-15). The primary staging area will be located at the nature center where 60 spaces will be available for cars and smaller trucks and 15 pull-through spaces will be available for equestrian rigs, recreational vehicles, and buses (primarily school buses visiting the nature center).

An unpaved parking area would also be provided along the west side of El Camino Real to provide staging for the Mesa Loop Trail. A maximum of 25 cars could be accommodated in this area. The entrance to this area would be aligned to correspond to the entry street designed for the Villas property, recently approved just to the east of El Camino Real. There is currently no signal at that location; therefore, entry into the site would be limited to right turns in and out only unless a signal is installed at some future time.

Approximately five cars could be accommodated just off San Dieguito Drive at the foot of the Grand Avenue Bridge. No trails are proposed in this location, but visitors currently frequent this area to view the wetlands. The majority of the bridge would be removed as a result of the project; however, a viewing area would be maintained to provide visual access into the restored wetland area.

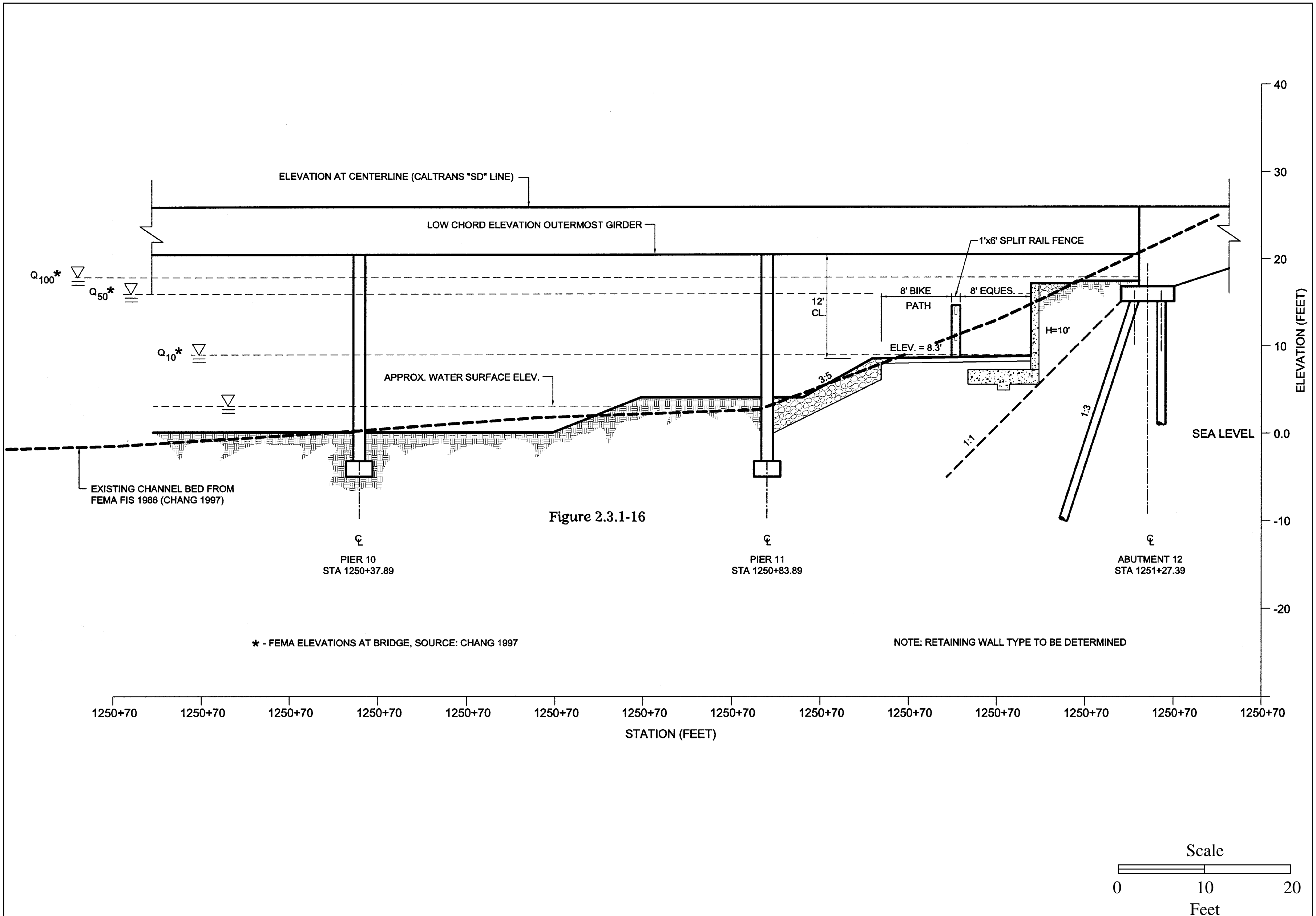
The plan also proposes designating an area north of the river and east of Jimmy Durante Boulevard, in the westernmost end of the District's overflow parking lot for trail staging. This area would accommodate approximately 20 vehicles. This area would not be available during District events such as the Del Mar Fair.

2.3.1.8.3 Other Potential Uses within the Park Master Plan Area

In the fall of 1998, the JPA, the District , and SCE began discussions involving the drafting of a Memorandum of Agreement (MOA) between the three parties. If approved, the MOA could ultimately result in the use of portions of the project area for purposes other than restoration or park-related uses. These uses, which are described as conceptual deal points by the three parties, are outlined below. The potential for impacts as a result of the implementation of one or more of these proposals is addressed in this document under the appropriate sections.

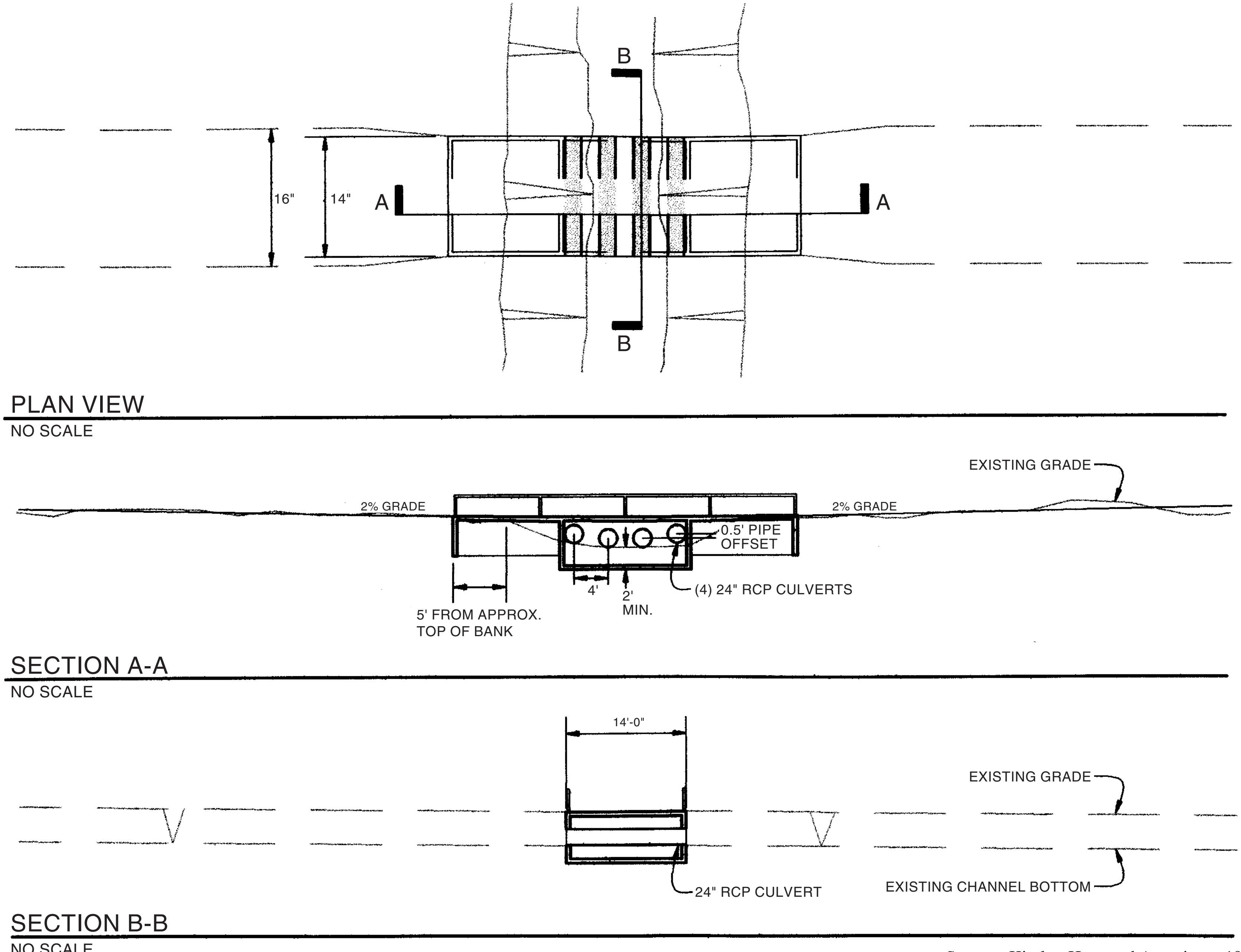
SEASONAL OPERATION OF A TRAM ON THE COAST TO CREST TRAIL

The District desires to use the Coast to Crest Trail to transport people who park on the Horsepark property to and from the Del Mar Fairgrounds via a tram. The proposed tram use would occur during the period of the Del Mar Fair, a 20-day period between late June and early July. The proposal also envisions tram use on the trail during Opening Day of the Races, which occurs in July. The tram is proposed to supplement rather than replace the existing practice of transporting people between Horsepark and the Fairgrounds via buses that use the public street system. Trams



Source: Kimley-Horn and Associates, 1998

Figure 2.3.1-16. San Dieguito River Bridge North Abutment Profile - 8' Equestrian Path and 8' Bike Path



Source: Kimley-Horn and Associates, 1998

Figure 2.3.1-17. San Dieguito River JPA - Low Flow Crossing

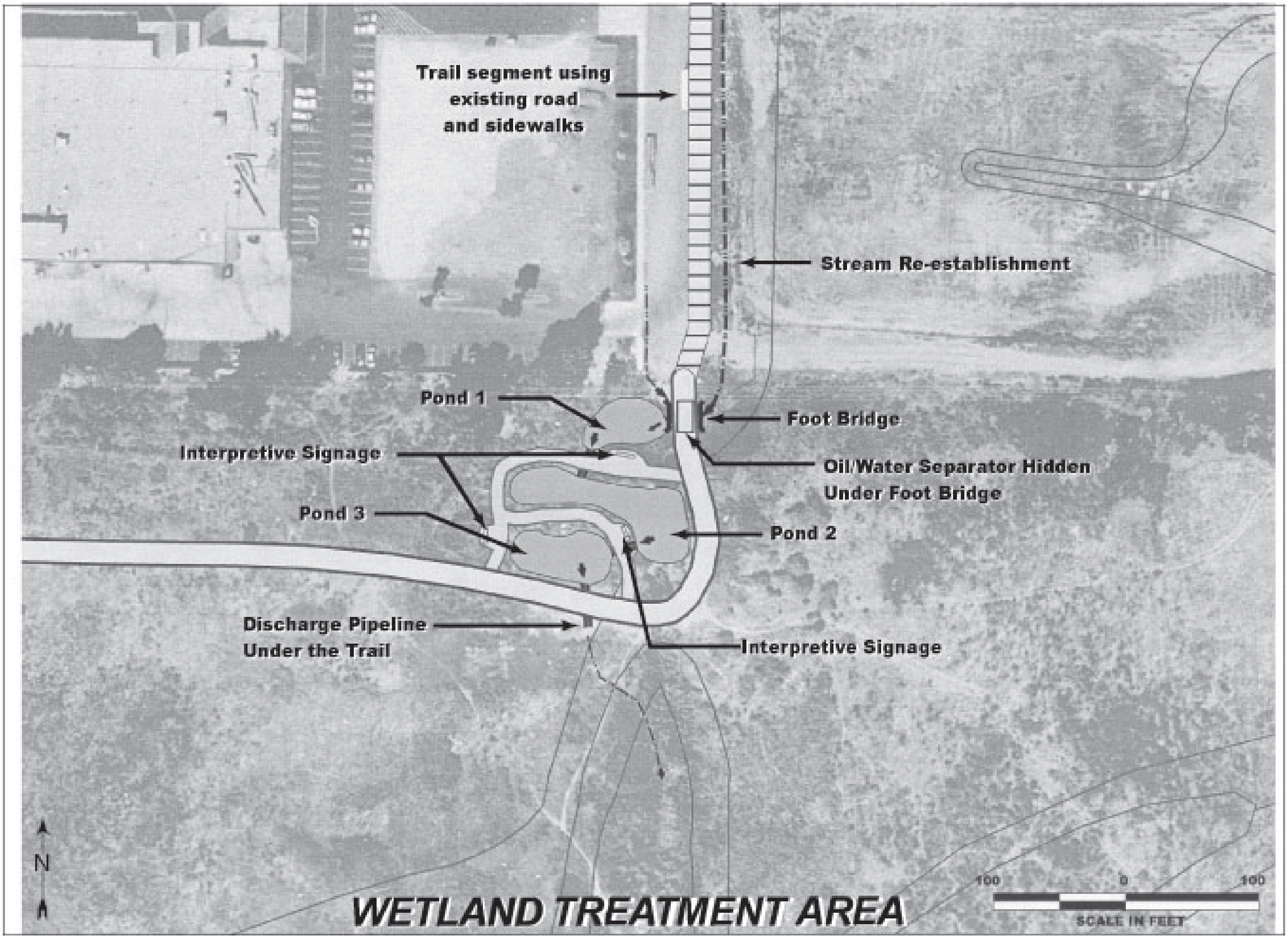


Figure 2.3.1-18. Wetland Treatment Area

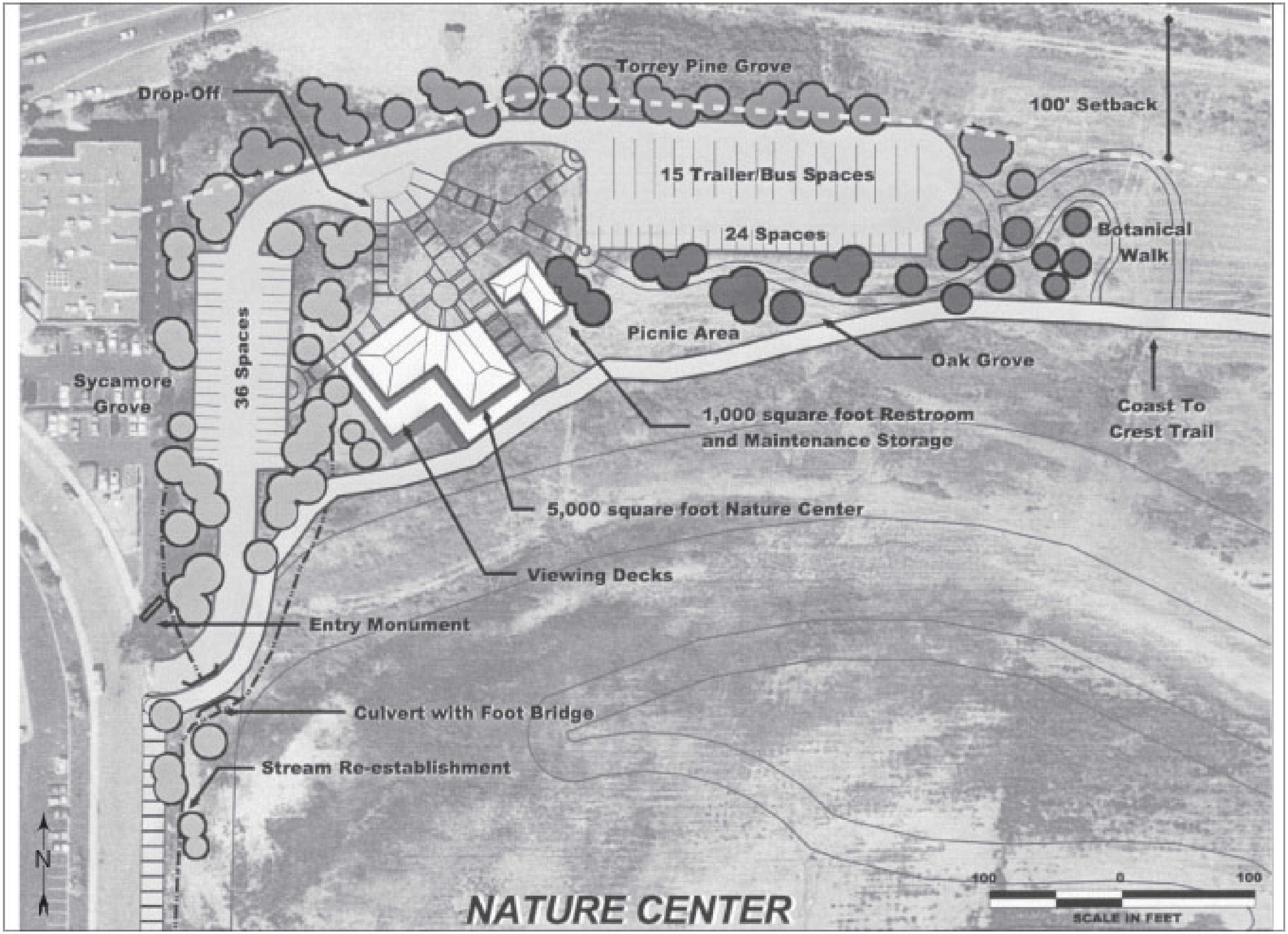


Figure 2.3.1-19. Nature Center

are proposed to utilize the trail during the hours of 7 A.M. to midnight. At this time it is estimated that two trams would be dedicated to use on the trail and would operate on a potentially continuous basis during the permitted use periods.

The District currently owns seven standard power cars (tugs) that are needed to pull the trams. Two of the tugs are powered by propane, and the remaining five are powered by unleaded gasoline. The power cars are approximately 104 inches in length and about 90 inches in height. The tugs can pull up to two trailers at a time. The District currently has two types of trailers: a fleet of ten 21-passenger trailers and a fleet of four 35-passenger trailers. The trailers have a length of 264 inches (not including a 48-inch trailer tongue) and 250 inches (not including a 60-inch trailer tongue), respectively. Both types of trailers have a height of 102 inches. The 21-passenger trailer is 56 inches wide, while the 35-passenger trailer is 87 inches wide. Two of the tugs have a wheelbase of 84 inches, and five have a wheelbase of 56 inches. The normal operating speed of the trams is between 10 and 15 miles per hour.

The tram design includes standard single level headlights that are approximately 35 watts. In addition, each tug and each trailer have two standard 4-inch stoplights and two standard 4-inch taillights. The trailers have three interior lights of approximately 15 watts each.

The tram would utilize the bicycle portion of the Coast to Crest Trail, that portion of the trail that is proposed to be an 8-foot-wide hard-surfaced path. No changes to the trail design are proposed to accommodate the tram with the exception of the I-5 undercrossing and its approaches. In order to accommodate the trail and meet Caltrans' design standards for the undercrossing, the bicycle path must be widened by 4 feet to a total width of 12 feet at the approaches to the bridge as well as in the area where the trail would cross under the freeway bridge. A cross section of the undercrossing design for this alternative is presented in Figure 2.3.1-20. The trail length under this alternative would be 12,771 feet and the total area of disturbance would be approximately 6.4 acres.

DISTRICT USE OF AREA U18 (VIA DE LA VALLE PROPERTY)

Negotiations between the District staff and the JPA include the discussion of a possible land exchange between the District and JPA or a lease of JPA property to the District in which up to 15 to 20 acres of Area U18, the Via de la Valle property, could be deeded or leased to the District in return for an equivalent amount of land (needed to accommodate the Coast to Crest Trail) and/or other consideration from the District. The area under consideration for a land exchange would include the upland portion of the site, excluding the required buffer area, adjacent 4:1 slope, and the 6 acres at the western end of the property that are proposed as the future site of a nature center.

Under this agreement, if approved, one or more of the following uses could be developed on the land exchange area: year-round thoroughbred training track, uncovered show-rings, cross-country course, demonstration agricultural uses for youth in conjunction with the Fair, relocation of the existing show barns currently located on the southeast portion of Horsepark, staging trailers during the Fair, and overflow parking during the Fair and special Horsepark events. In order to accommodate any of these uses with the exception of possibly the cross-country course, the currently proposed grading plan for this disposal site would have to be revised. Assuming that the site would have to be considerably more level in order to accommodate uses such as a practice track or show-rings, a potential grading plan has been prepared for the site (Figure 2.3.1-21), which provides the basis for the required impact analysis.

Limited information is available regarding the design and specifications for the uses being considered for the site, therefore, a number of assumptions were made in an effort to facilitate a review of potential environmental effects. If future site proposals represent a significant departure from the assumptions presented here, then additional environmental review would be required prior to transfer, either through a lease or in fee title, of the land from the JPA to the District.

Assumptions. Given the site constraints, a total of 5 acres of level area could be provided by revising the current grading plan for the site. This would result in 4:1 manufactured slopes around the flat pad, with slope heights ranging in height from 4 to 10 feet. Access to the site would be via the northwest corner of the Horsepark property. No access would be available from the west or from Via de la Valle. The proposed uses would be set back about 20 feet from the proposed alignment of the Coast to Crest Trail.

If the site were designed with uses that could also accommodate overflow parking on the site, approximately 800 to 1,000 cars (calculated at approximately 172 cars per acre) could be parked on the site. Standard truck trailers measure 16.5 feet in height and about 50 to 60 feet in length. It is assumed that as many as 50 truck trailers could be parked on the site during the two weeks of the fair. This would, however, result in a reduction in the total number of cars that could be accommodated on the site.

The types of facilities required to accommodate demonstration agricultural uses could include storage sheds, animal pens, and possibly garden areas.

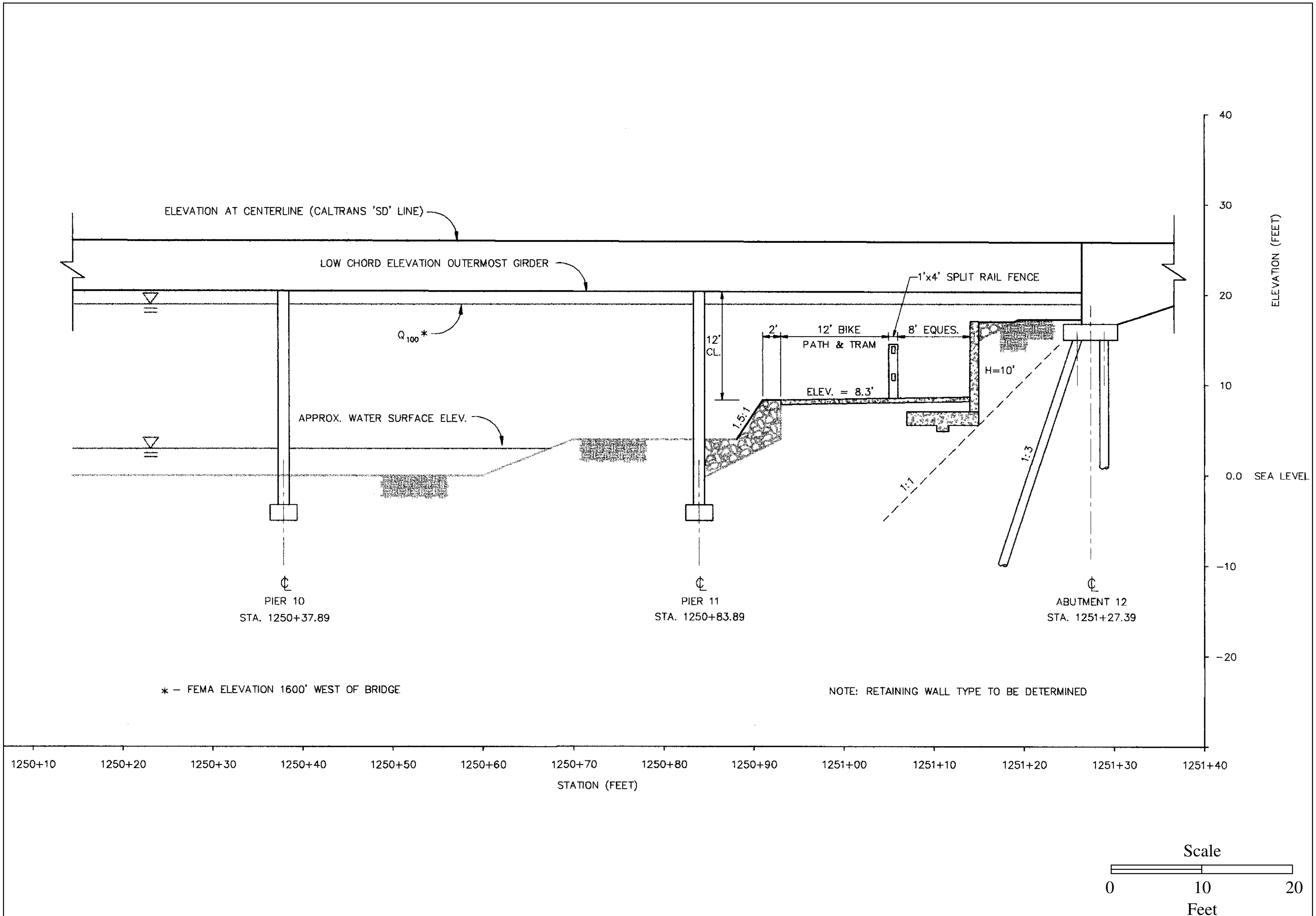
Although specific information regarding the requirements for a practice track is not available, assumptions have been developed from information submitted to the Coastal Commission by the District for a temporary practice track on District property. It is assumed that the practice track would require about 5 acres of level ground. The track itself would be approximately 52 feet wide. Based on the site constraints, the track could be up to 730 feet in length. A racing rail would border both sides of the track. These rails could be designed to be removed, possibly allowing the area to be used for parking during peak demand periods, such as during the Fair. California racing rules require the practice track to be within a secure enclosure, therefore, it is likely that the site would be enclosed by an 8-foot-high chain link fence.

The height of the existing show barns from ground to peak is between 10 and 15 feet. The structures utilize approximately 2 acres of land. Therefore, this use could be used in combination with the construction of a show-ring, seasonal parking, or possibly a cross-country course. It is assumed that fencing would be required around some or all of the uses.

Existing uncovered show-rings on the Horsepark property require from one to two acres of level ground. The site could include one or more rings, or a combination of one or more of the uses discussed in the previous paragraph.

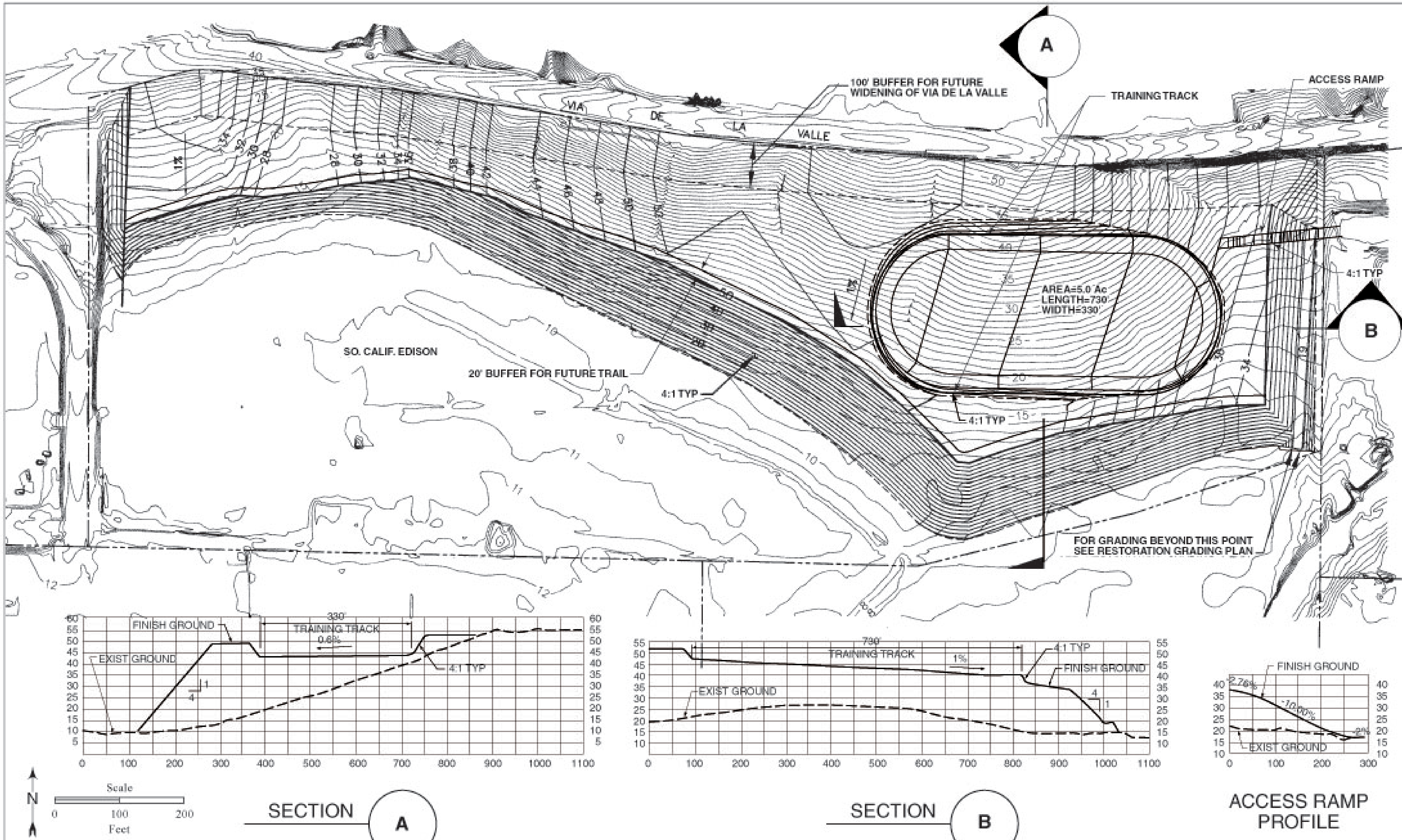
2.3.1.9 Land Ownership and Transfers

The project area located between El Camino Real and the north/south alignment of Jimmy Durante Boulevard is located within the jurisdictional boundaries of the City of San Diego, while the area to the west is in the City of Del Mar's jurisdiction. The entire site is located within the



Source: Kimley-Horn and Associates, 1998

Figure 2.3.1-20. San Dieguito River Bridge North Abutment Profile - 8' Equestrian Path and 12' Bike Path with Tram



Source: Moffatt & Nichol Engineering, 1999

Figure 2.3.1-21. District Use of Area U18

Coastal Zone. The principal landowners of areas where project activities would occur include the JPA, SCE, the City of San Diego, and the 22nd District Agricultural Association (refer to Table 2.3.1-3).

The District, which manages the Del Mar Fairgrounds, holds the opinion that it has control over the tidal areas at and near the tidal inlet, as well as along the northern edge of the San Dieguito River. However, these areas may be tidelands subject to the Public Trust. In addition to the Fairgrounds, the District also owns a small parcel on the southern edge of the river, east of I-5, and the Horsepark property located just to the west of El Camino Real and south of Via de la Valle.

The JPA owns properties to the west of I-5 including the airfield property and a small area north of the San Dieguito River. To the east of I-5, the JPA owns a large area of floodplain situated near the center of the area located between El Camino Real on the east and I-5 on the west. The JPA has entered into an agreement with SCE that allows SCE to restore and receive the mitigation credits for lands restored on the JPA properties. In exchange, following project completion, the SCE property located east of I-5 and south of the existing commercial center would be deeded to the JPA. The City of San Diego owns the approximately 20-acre, former sewage-holding pond that is west of I-5 and an area directly east of I-5. In addition, San Diego owns the 105-acre parcel located south of the river and west of El Camino Real, although the JPA currently has an option to acquire that parcel if funding can be identified. The City of San Diego has entered into an agreement with SCE that allows SCE to restore and receive the restoration credit for the city-owned lands located to the south of the river on both the east and west side of I-5. In addition, SCE has the city's permission to use portions of its 105-acre ownership for dredge disposal sites.

The City of Del Mar owns several properties along the south side of the San Dieguito River, including a parcel located just to the west of Jimmy Durante Boulevard which is occupied by the Public Works yard.

SCE owns the property located immediately to the east of I-5 and north of the river, as well as the property identified as the Via de la Valle parcel, located south of Via de la Valle and east of San Andres Drive. Following project approval, SCE has agreed to transfer six acres of the Via de la Valle parcel to the JPA for use as a nature/interpretive center. In addition, if the remainder of this site is approved as a disposal site, SCE will also transfer ownership of the remainder of the parcel to the JPA. In association with the City of San Diego's approval of the Villas at Stallions II residential project (LDR No. 98-0912) to be located to the south of the river and the east of El Camino Real, SCE entered into an agreement that permitted all of the development rights from this parcel, with the exception of the six-acre area set aside for a nature center, to be transferred to the Villas site.

Several other adjoining landowners may be affected by access and disposal operation activities. Permission to incorporate these areas into the project has been obtained from these private owners.

2.3.1.10 Monitoring and Management Plan

In accordance with the CCC's 1991 SONGS permit (as amended April 1997), the monitoring of SCE's portion of the wetland restoration project would be done independent of SCE and its partners. Per the CCC permit, scientists retained by the Executive Director of the CCC would develop a Monitoring and Management Plan in consultation with SCE and appropriate lead agencies and would oversee the monitoring studies and management tasks outlined in the Plan. This plan would provide an overall framework to guide the monitoring work and would include an overall description of the studies to be conducted over the course of the monitoring program and a description of management tasks that are anticipated. . This monitoring and management plan will also include biological performance standards, as listed in Table 1-1 of Chapter 1, that must be achieved by the SCE project. Monitoring, management (including maintenance), and remediation would be conducted over the "full operating life" of SONGS Units 2 and 3. "Full operating life" is defined by the permit conditions as including past and future years of operation of SONGS Units 2 and 3 and the decommissioning period, to the extent there are continuing discharges. According to the permit, "the number of past operating years at the time the wetland is ultimately constructed shall be added to the number of future operating years and decommission period to determine the length of the monitoring, management and remediation requirement."

In addition to the CCC Monitoring and Management Plan, a Mitigation, Monitoring and Reporting Program (MMRP) is required for the overall project in accordance with CEQA Section 21081.6. The purpose of the MMRP is to ensure compliance with all measures incorporated into the project or made conditions of project approval in order to mitigate or avoid significant effects on the environment. The MMRP will also address long-term maintenance measures and responsibilities. Issues to be included are monitoring and maintenance of the inlet channel (e.g., section 2.3.1.4.2), smaller tidal channels, and tidal basins; adherence to the trail maintenance and monitoring measures outlined in the Park Master Plan; and maintenance of the restored wetland and upland areas following success establishment of vegetation.

2.3.1.11 Overall Project Schedule

Environmental Review

Public review of the draft EIR/EIS is expected to end in mid March 2000. Following completion of the response to comments, a Final EIR/EIS will be issued for a 30-day public review period. A public hearing before the JPA Board of Directors to consider certification of the document under CEQA is expected to occur sometime in late May/early June 2000. The Record of Decision (ROD), as required by NEPA, is also expected to be issued at about the same time.

Permits

A number of permits and agreements are required from responsible and trustee agencies prior to commencement of project construction. These permits and agreements could take several months to obtain. In accordance with the CCC permit conditions, SCE is required to submit a final restoration plan within 60 days following certification of the EIR/EIS and issuance of the ROD. The coastal development permit application is to be submitted following SCE's receipt of other required permits.

Implementation

Tidal Restoration. SCE is expected to be responsible for this component of the project, which could begin by the summer of 2001 following the approval of all required permits, leases and/or agreements. Project construction may occur in dry or wet conditions, either of which would involve constructing water level controls to keep water out so that excavation could take place with backhoes and other land-based equipment. The wet condition construction would entail actively flooding areas so that material could be removed using hydraulic dredging equipment. Construction would occur in three phases, with Phase I and II overlapping.

Phase I construction, which would focus on the area west of I-5, would consist of mobilizing equipment and designating the construction access routes and staging areas for the entire project. This would be followed by salvaging of wetland vegetation for storage and propagation off site. Remaining structures would be demolished and the airfield property (Area W1) would be cleared and grubbed. Area W1 would be excavated to create new tidal wetlands, and the excavated materials would be used to form the berms and the core of two of the nesting sites. Next, the river mouth's inlet channel would be excavated, if necessary, to achieve the design specifications described in the Plan. The sand generated from this operation would be hauled by truck to the proposed nesting sites, with the remainder going to the beach. The newly excavated marsh areas would be revegetated as required with salvaged stores of wetland plant materials. Phase II would focus on the areas east of I-5 and south of the San Dieguito River. Wetland vegetation would be salvaged and the areas cleared and excavated to the design specifications. Unwanted vegetation would be removed during the clearing and hauled away. Again, some of the excavated material would be used to construct the berms and the bases of the nesting sites. The utility poles east of I-5 would be relocated. Following excavation, the areas would be revegetated, as required, using salvaged stores of plant materials. Phase III would focus on construction east of I-5 and north of the river. The process followed would be the same as in Phases I and II. At the conclusion of the project the equipment would be demobilized and the construction staging areas and access areas would be uncompacted, revegetated and restored where they were disturbed by construction. The tidal restoration project is expected to take two to three years to complete.

Non-Tidal and Upland Restoration. The non-tidal habitat portions of the project will generally follow the implementation of the wetland restoration project because the wetland restoration project proposes to dispose of excavated materials on many of the sites that are to be restored to non-tidal habitat. As described in the Plan, the material so disposed would be capped with topsoil that was previously removed and stockpiled.

The areas proposed as mitigation for Coast to Crest Trail impacts are not proposed disposal sites and would be implemented concurrently with Phase II as described above.

Implementation of the non-tidal habitat and other portions of the project will have to be phased over time as funds are secured. Some restoration funding has already been secured from the U.S. Fish and Wildlife Service. Other funding may be available from the California Coastal Conservancy or the Habitat Conservation Fund, administered by the State Department of Parks and Recreation. Permission to use certain properties must also be obtained. While some of the non-tidal habitat proposals involve land already owned by the San Dieguito River Park JPA, other portions are owned by other agencies and had not been placed in permanent open space at the time this document was published. This applies particularly to the upland mesa area where restoration of coastal sage scrub is proposed. Until an agreement is reached on the future of that area, the habitat cannot be restored consistent with this Plan, and the staging area and trail cannot be constructed.

Once the project has been approved by all required agencies, including the California Coastal Commission, interested parties may wish to seek the approval of the resource agencies to implement portions of the habitat restoration proposals in return for mitigation credit. Permission would also be required from the agency owning the land to be restored.

Public Access/Interpretation. Work on the Interpretive Overlook Trail and associated amenities can proceed concurrently with, or shortly subsequent to, completion of the wetland restoration project, provided that funds are available. Potential funding sources include grants from the California Coastal Conservancy and/or the National Recreational Trails Fund.

Work on the Coast to Crest Trail and associated amenities can proceed concurrently with, or shortly subsequent to completion of the wetland restoration project, provided that funds are available and a right-of-way agreement has been reached with the 22nd District Agricultural Association. Funding for the Coast to Crest Trail within the project area has been secured from the Statewide Transportation Enhancement Activities program, in partnership with the California Coastal Conservancy.

Work on the Mesa Loop Trail and associated amenities can begin after soil disposal on that site has been completed, the topsoil returned, and that site has been set aside for permanent open space or other agreements have been reached. Potential funding sources include grants from the California Coastal Conservancy and/or the National Recreational Trails Fund.

Work on the Nature Center can proceed after disposal on the Via de la Valle site has been completed, the soil is compacted as described in the plan, and design and construction funds are obtained. A potential funding source would be a grant from the California Coastal Conservancy or a legislative grant. It may be appropriate to seek corporate sponsors to fund the exhibits or to build the Center.

Adaptive Management. Adaptive management is expected to be an essential element of the Coastal Commission's Maintenance and Monitoring Program for the SCE portion of the project. It would also be a valuable management approach to upland and freshwater restoration. A large and complex project of this nature will provide a great deal of information that can and should be used to increase the probability for success on this and other habitat restoration projects.

2.3.1.12 Project Elements Common to All Alternatives

The following elements are common to all but the No Action Alternative:

- Maintain regular tidal exchange within the restored wetland in perpetuity.
- Restore historic tidal wetlands on both the west and east side of I-5.
- Construct four new nesting sites and rehabilitate a fifth for California least terns, western snowy plover, and other nesting shorebirds.
- Construct berms to maintain the river's current sediment flow and velocity characteristics and to ensure that existing vulnerabilities to flooding and scour damage are not negatively affected by the proposed tidal restoration.
- Ensure no significant structural changes to the wetland habitats within the California Department of Fish and Game's Ecological Reserve.
- Develop appropriate dredge disposal options.

- Restore the upland areas of the project site to appropriate native upland habitats.
- Implement the public access and interpretive proposals included in the draft Park Master Plan for this area.
- Remove all but the first pier of the Grand Avenue Bridge in order to restrict physical access into sensitive wetlands, but promote visual access of the restoration area.
- Relocate existing SDG&E 69kV transmission line and related distribution lines east of I-5 to an area outside of the stored tidal wetlands.

2.3.2 Maximum Tidal Basin Alternative

The Maximum Tidal Basin Alternative (Figure 2.3.2-1) proposes to maximize the amount of open water available within the project area. As shown on the grading plan (Figure 2.3.2-2), excavation of Area W1 would be similar to the Mixed Habitat Alternative, however, on the east side of I-5, excavation of Areas W4, W6a and W6b, and W16 would increase from a maximum depth of +0.5 foot NGVD for the Mixed Habitat Alternative to -4 feet NGVD in order to create large tidal basins, thereby expanding the overall tidal prism of the lagoon. Taking into account anticipated impacts to existing wetlands, this alternative would result in a net gain of approximately 143 acres of coastal wetland habitats. (This does not include any additional acreage that could be required to mitigate for wetland impacts associated with habitat restoration or trail construction.) Although the net gain in wetlands is similar to that of the other alternatives, the total acreage of each type of habitat to be created, as well as the total amount of excavated material to be generated, is significantly different.

Tables 2.3.2-1a and 1b list the acreages for the various wetland habitats that would be created under this alternative using the CCC staff's provisional definition of the upper boundary of high salt marsh (+4.5 feet NGVD). Acreages are provided by area and include the overall restoration proposal as well as the SCE project.

The tidal wetland restoration component of the Maximum Tidal Basin Alternative would have the same footprint as the Mixed Habitat Alternative, impacting up to 247 acres of tidal and upland property. Excavation, however, would be more extensive under this alternative, representing the largest volume of cut among all the alternatives. Proposed grading would result in approximately 2,352,950 (without W17) cubic yards of cut, which allows for up to a half-foot of overdredge (104,750 cubic yards). Of that, 196,800 cubic yards could be used to construct the proposed berms (125,600 cubic yards) and nesting sites (71,200 cubic yards). The proposed cut and fill areas within the tidal restoration project are illustrated in Figure 2.3.2-3. Implementation of the SCE project, which excludes Area W6b, would generate approximately 2,185,150 (without W17) cubic yards of excavated material. Excavation of Area W6b under this alternative would generate an additional 241,000 cubic yards of material.

Excavated material that is not used to construct the river berms or nesting sites would have to be disposed of using some combination of the disposal site options discussed previously in section 2.3.1.6. Presented in Table 2.3.2-2 is a breakdown of the proposed construction sites, the owner of record for each site, the site acreage, and the proposed cut and fill volumes for each site. Typical grading cross sections through the site are presented in Figure 2.3.2-4.

The total rock required under this alternative would be the same as required for the Mixed Habitat Alternative. All other aspects of this alternative are also identical to the Mixed Habitat Alternative.

2.3.3 Maximum Intertidal Alternative

The Maximum Intertidal Alternative (Figure 2.3.3-1) proposes to maximize the amount of intertidal habitat provided within the restoration area. Under this alternative, the western tidal basin proposed for the Mixed Habitat Alternative would be replaced with a combination of low, mid, and high salt marsh, and intertidal mudflats. Grading depths, as shown in Figure 2.3.3-2, for Area W1 would change from a low of -6 feet NGVD to -4 feet NGVD, with the major finger channels excavated to -2 feet NGVD. Under this alternative, open water areas are reduced in favor of increasing the total amount of subtidal and intertidal habitat within the system. On the east side of I-5, in the area north of the river, the land to be restored (Areas W4 and W16) would be excavated to a greater depth than that proposed for the Mixed Habitat Alternative in order to maximize the restoration of low and mid-marsh habitat. The maximum grading depth in Area W4 would increase from +0.5 foot NGVD to -4 feet NGVD and in W16 from +0.5 foot NGVD to 0 feet NGVD.

Taking into account anticipated impacts to existing wetlands, this alternative would result in a net gain of approximately 143 acres of coastal wetland habitats. (This does not include any additional acreage that could be required to mitigate for wetland impacts associated with habitat restoration or trail construction.)

Table 2.3.3-1a and b list the acreages for the various wetland habitats that would be created under this alternative using the CCC staff's provisional definition of the upper boundary of high salt marsh (+4.5 feet NGVD). Acreages are provided by area and include the overall restoration proposal as well as the SCE project.

The tidal wetland restoration component of the Maximum Intertidal Alternative would have the same footprint as the Mixed Habitat Alternative, impacting approximately 247 acres of tidal and upland property. However, under this alternative, considerably less excavation/dredge material would be generated, resulting in the least amount of cut generated from among the four full restoration alternatives. (This excludes the Reduced Berm Alternative, which has a significantly smaller footprint.) Proposed grading would result in approximately 1,758,650 (without W17) cubic yards of cut, which allows for up to a half-foot of overdredge (104,750 cubic yards). Of that, 196,800 cubic yards could be used for project features including 125,600 cubic yards for berm construction and 71,200 cubic yards for creating the bases of the four new nesting sites. The proposed cut and fill areas for the tidal restoration component of the project are illustrated in Figure 2.3.3-3. Implementation of the SCE project, which excludes Area W6b, would generate approximately 1,590,850 (without W17) cubic yards of excavated material. Excavation of Area W6b under this alternative would generate an additional 158,300 cubic yards of material.

Excavated material that is not used to construct the river berms or nesting sites would have to be disposed of using some combination of the disposal site options discussed previously in section 2.3.1.6. Cross sections illustrating the changes in topographic elevations across the site as a result of project implementation are provided in Figure 2.3.3-4. Presented in Table 2.3.3-2 is a breakdown of the proposed construction sites, the owner of record for each site, the site acreage, and the proposed cut and fill volumes for each site.

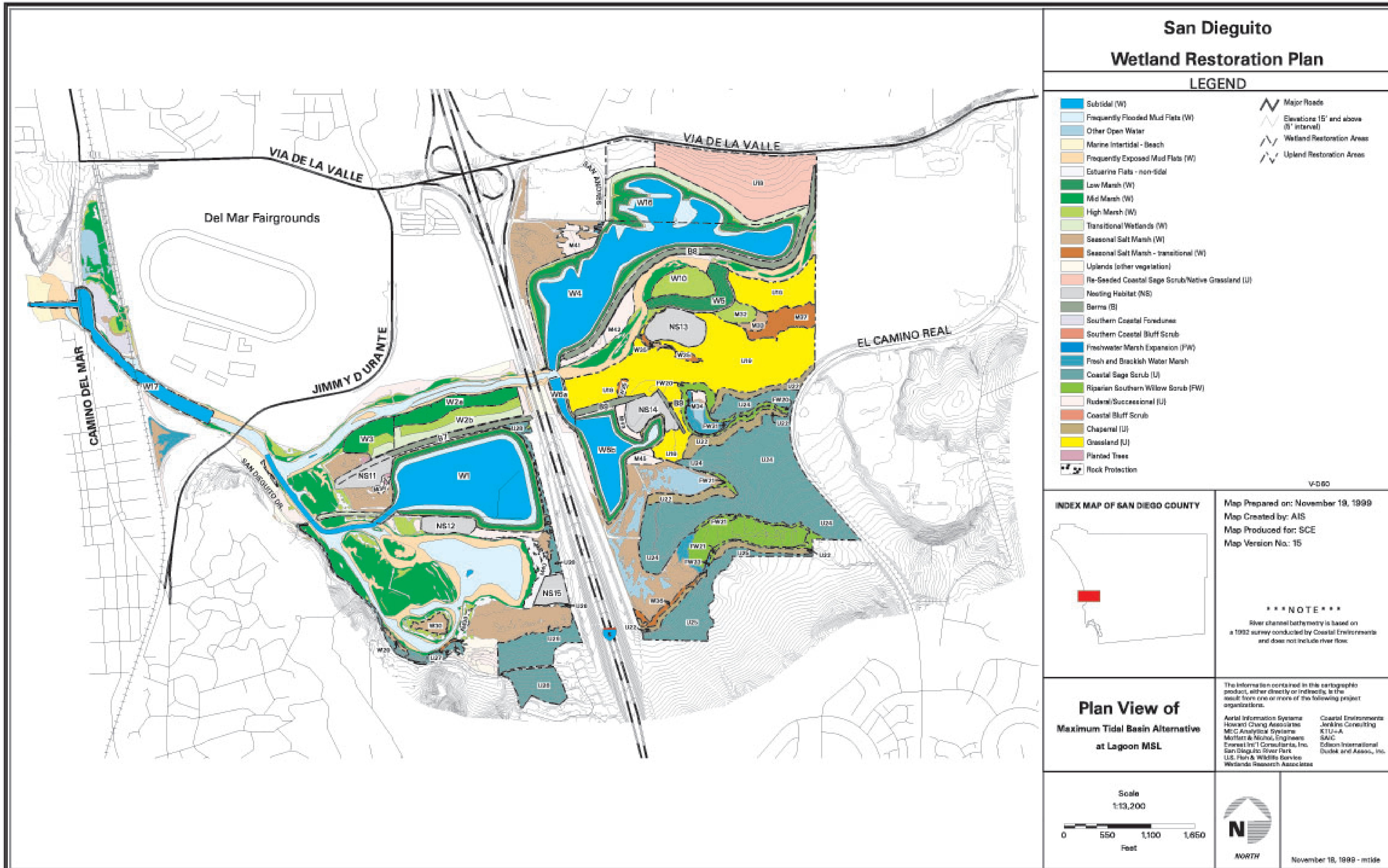


Figure 2.3.2-1. Plan View of Maximum Tidal Basin Alternative

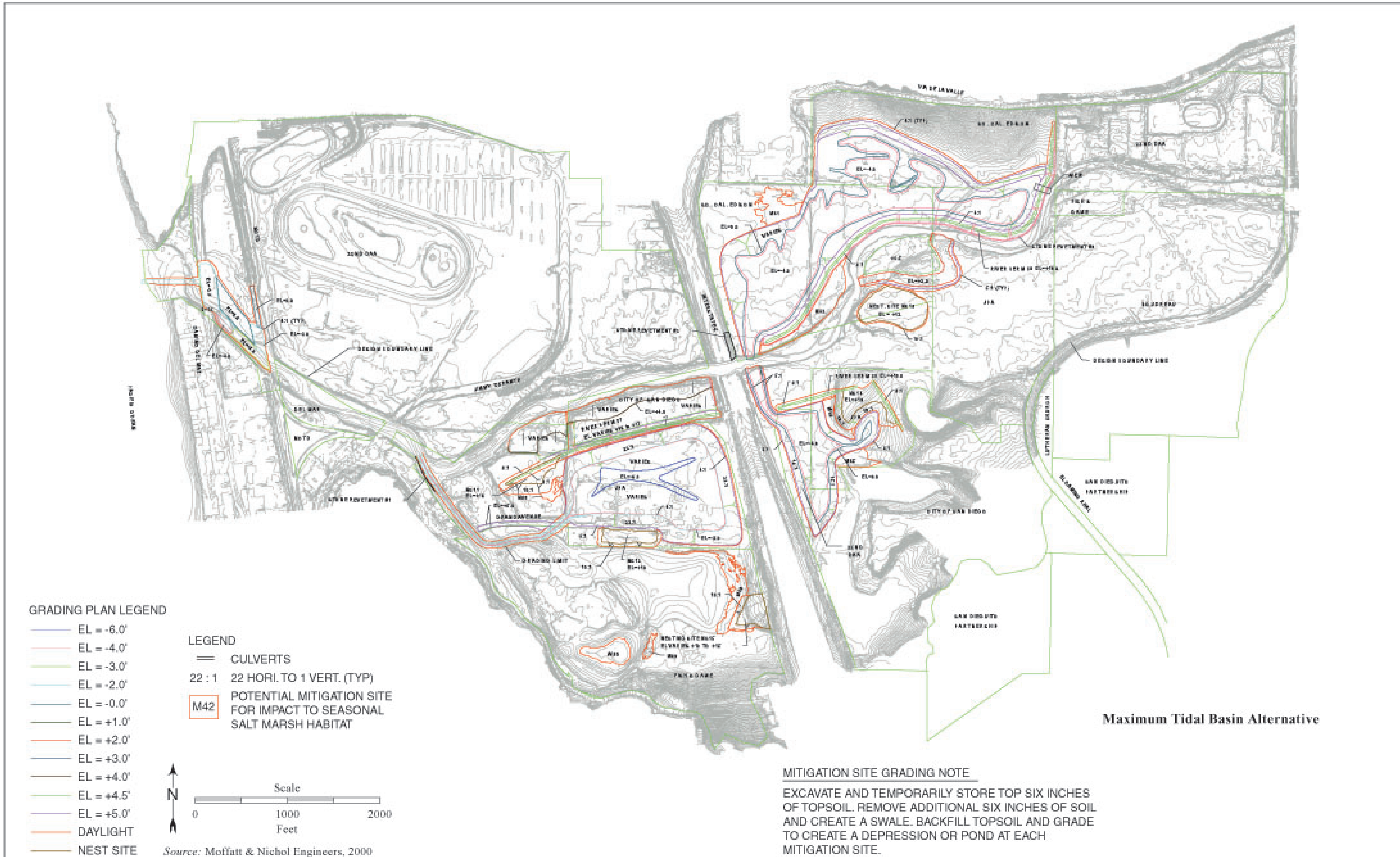


Figure 2.3.2-2. Grading Plan for Tidal Restoration and Nesting Sites - Maximum Tidal Basin Alternative

Stone revetment #1, described in section 2.3.1.4.4, would not be required under this alternative. Therefore, the total rock required under this alternative would be reduced to 65,700 tons (Table 2.3.1-5).

All other aspects of this alternative are identical to the Mixed Habitat Alternative.

Table 2.3.2-1a. Tidal Habitat Created for the Maximum Tidal Basin Alternative: Full Project Implementation*

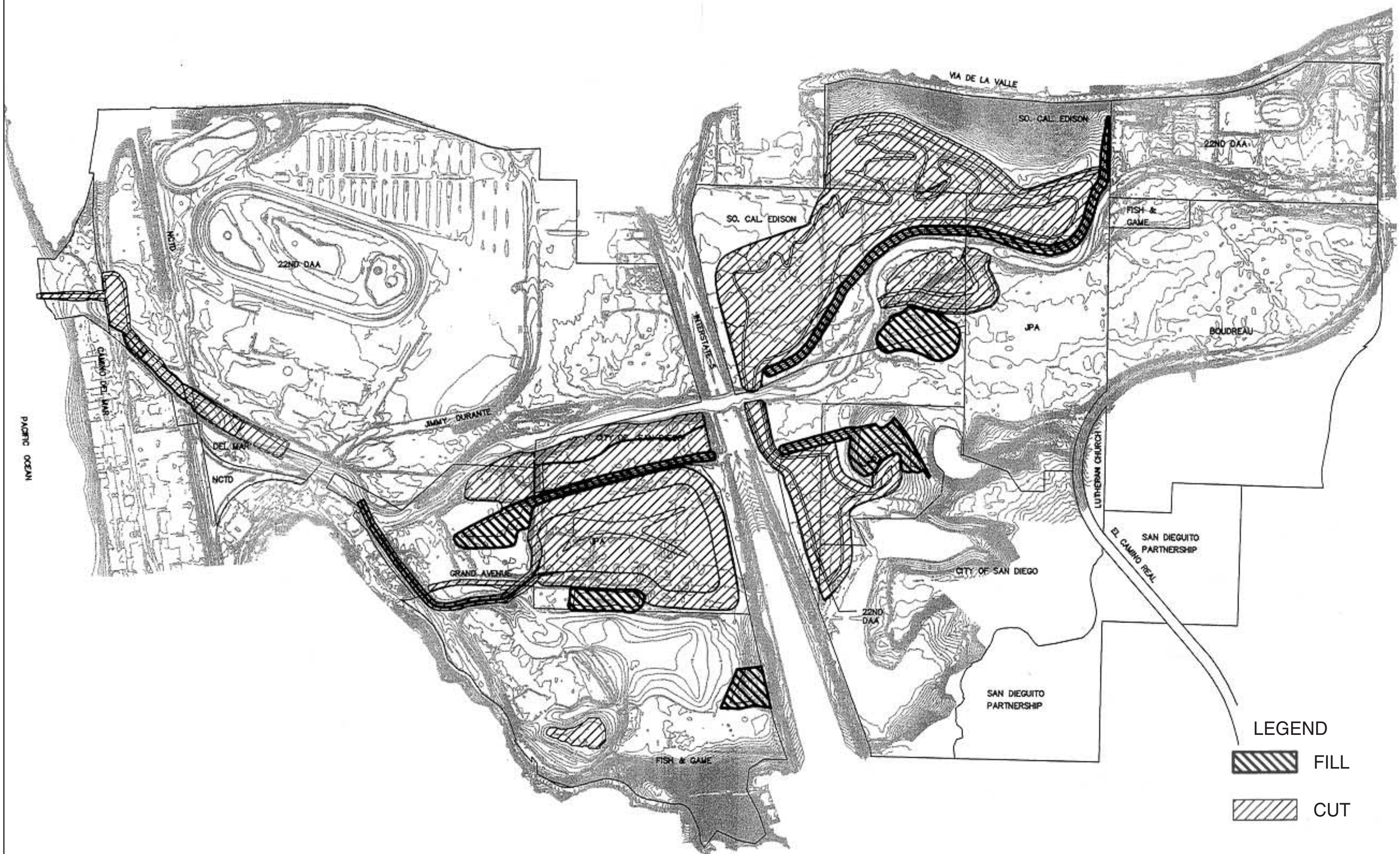
Habitat	*Restored Area (acres) a*	*Eliminated Area (acres) b*	*Converted Area (acres) c*	*Total Impacted Area (acres) d=b+c*	*Net Change (acres) a-d*
Tidal Wetland (below +4.5 feet NGVD					
Subtidal	75.20	0.49	0.87	1.36	73.84
Frequently Flooded Mudflats	19.20	0.00	0.00	0.00	19.20
Frequently Exposed Mudflats	2.69	0.00	0.00	0.00	2.69
Low Coastal Salt Marsh	14.91	0.00	0.01	0.01	14.90
Mid Coastal Salt Marsh	24.49	0.00	0.55	0.55	23.94
High Coastal Salt Marsh	16.05	1.83	0.84	2.67	13.38
Total Tidal Wetland	**152.54**	**2.32**	**2.27**	**4.59**	**147.95**
Nontidal Wetland (above +4.5 feet NGVD					
Seasonal Salt Marsh	0.00	1.60	18.77	20.37	-20.37
Transitional Wetlands	15.37	0.00	0.00	0.00	15.37
Total Nontidal Wetland	**15.37**	**1.60**	**18.77**	**20.37**	**-5.00**

* The calculation of net acreage changes does not take into account the need to provide a 4:1 mitigation ratio for wetland habitat losses shown in the 3rd column (item b in the calculation). To quantify the effect of a 4:1 mitigation ratio, net changes would be calculated as Restored Area (a) - 4 x Eliminated Area (b) - Converted Area (c).

Table 2.3.2-1b. Tidal Habitat Created for the Maximum Tidal Basin Alternative: SCE Project Implementation (excludes Module 6B, Module 16, and Nesting Sites)*

Habitat	*Restored Area (acres) a*	*Eliminated Area (acres) b*	*Converted Area (acres) c*	*Total Impacted Area (acres) d=b+c*	*Net Change (acres) a-d*
Tidal Wetland (below +4.5 feet NGVD					
Subtidal	60.08	0.49	0.87	1.36	58.72
Frequently Flooded Mudflats	13.07	0.00	0.00	0.00	13.07
Frequently Exposed Mudflats	1.82	0.00	0.00	0.00	1.82
Low Coastal Salt Marsh	11.45	0.00	0.01	0.01	11.44
Mid Coastal Salt Marsh	19.98	0.00	0.55	0.55	19.43
High Coastal Salt Marsh	14.36	0.00	0.84	0.84	13.52
Total Tidal Wetland	**120.76**	**0.49**	**2.27**	**2.76**	**118.00**
Nontidal Wetland (above +4.5 feet NGVD					
Seasonal Salt Marsh	0.00	0.65	13.56	14.21	-14.21
Transitional Wetlands	9.57	0.00	0.00	0.00	9.57
Total Nontidal Wetland	**9.57**	**0.65**	**13.56**	**14.21**	**-4.64**

* The calculation of net acreage changes does not take into account the need to provide a 4:1 mitigation ratio for wetland habitat losses shown in the 3rd column (item b in the calculation). To quantify the effect of a 4:1 mitigation ratio, net changes would be calculated as Restored Area (a) - 4 x Eliminated Area (b) - Converted Area (c).



Scale

0 500 1000

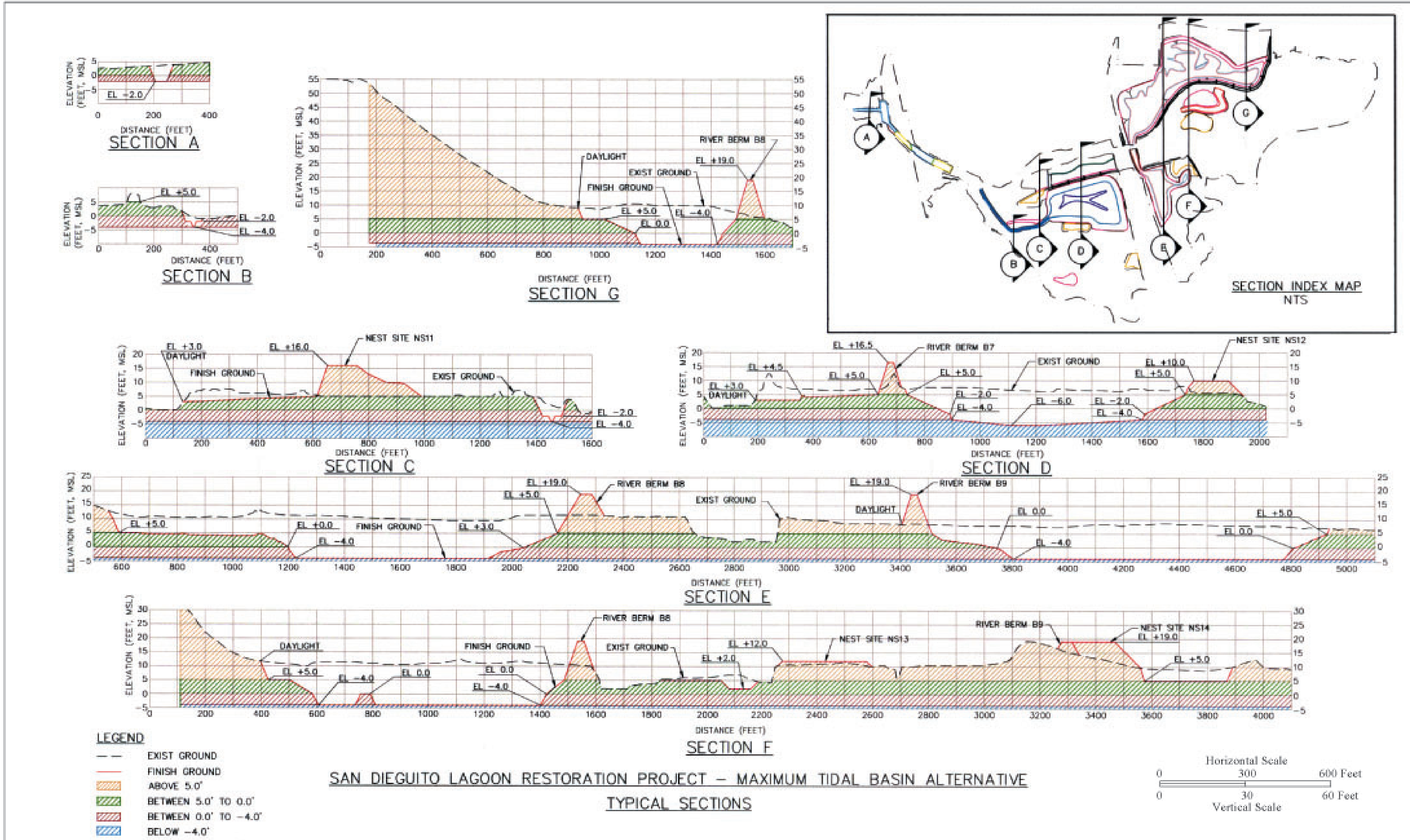
Feet

N

SAN DIEGUITO LAGOON RESTORATION PROJECT - MAXIMUM TIDAL BASIN ALTERNATIVE
CUT AND FILL AREAS

Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.2-3. Maximum Tidal Basin Alternative - Cut and Fill Areas



Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.2-4. Typical Sections - Maximum Tidal Basin Alternative

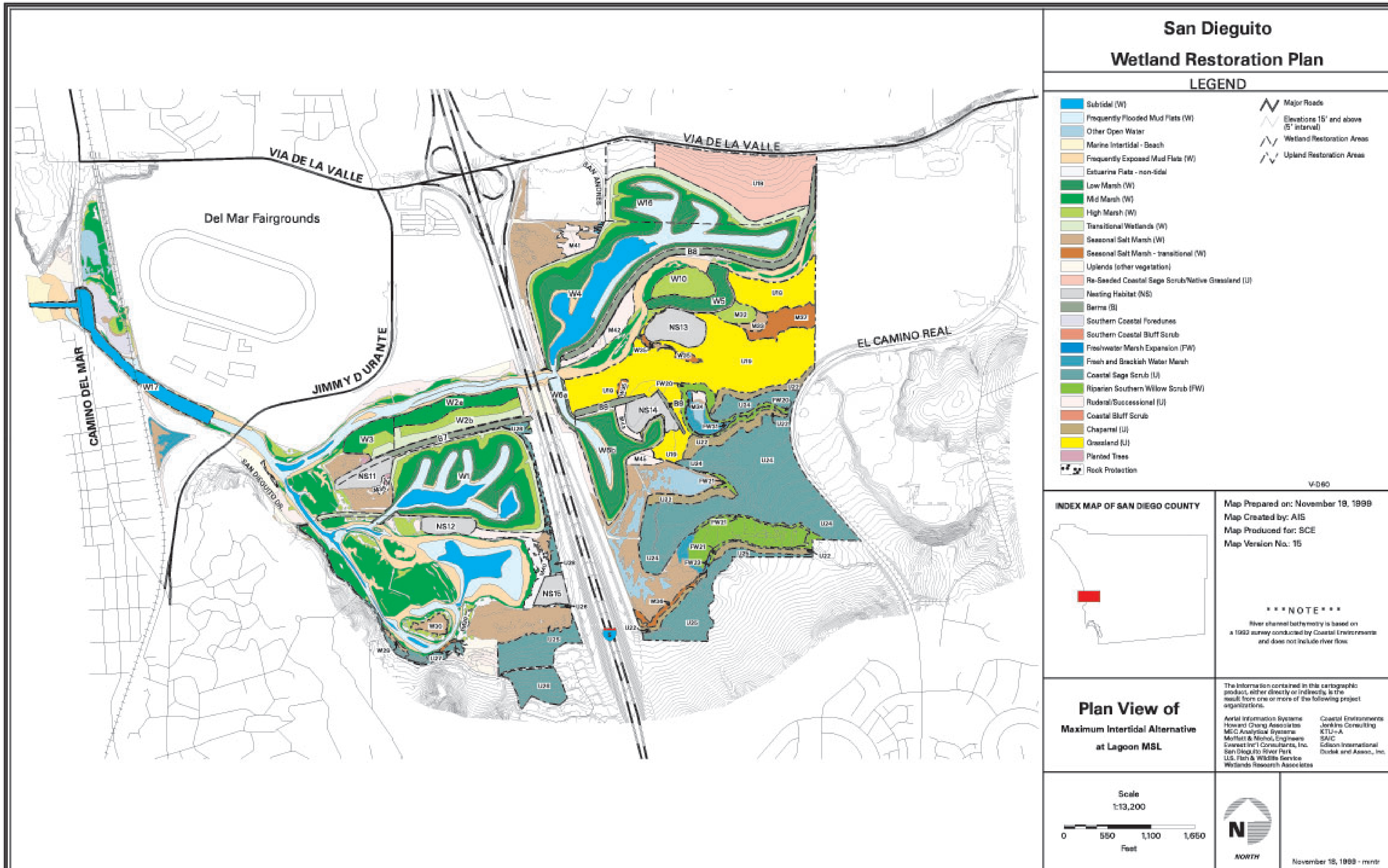
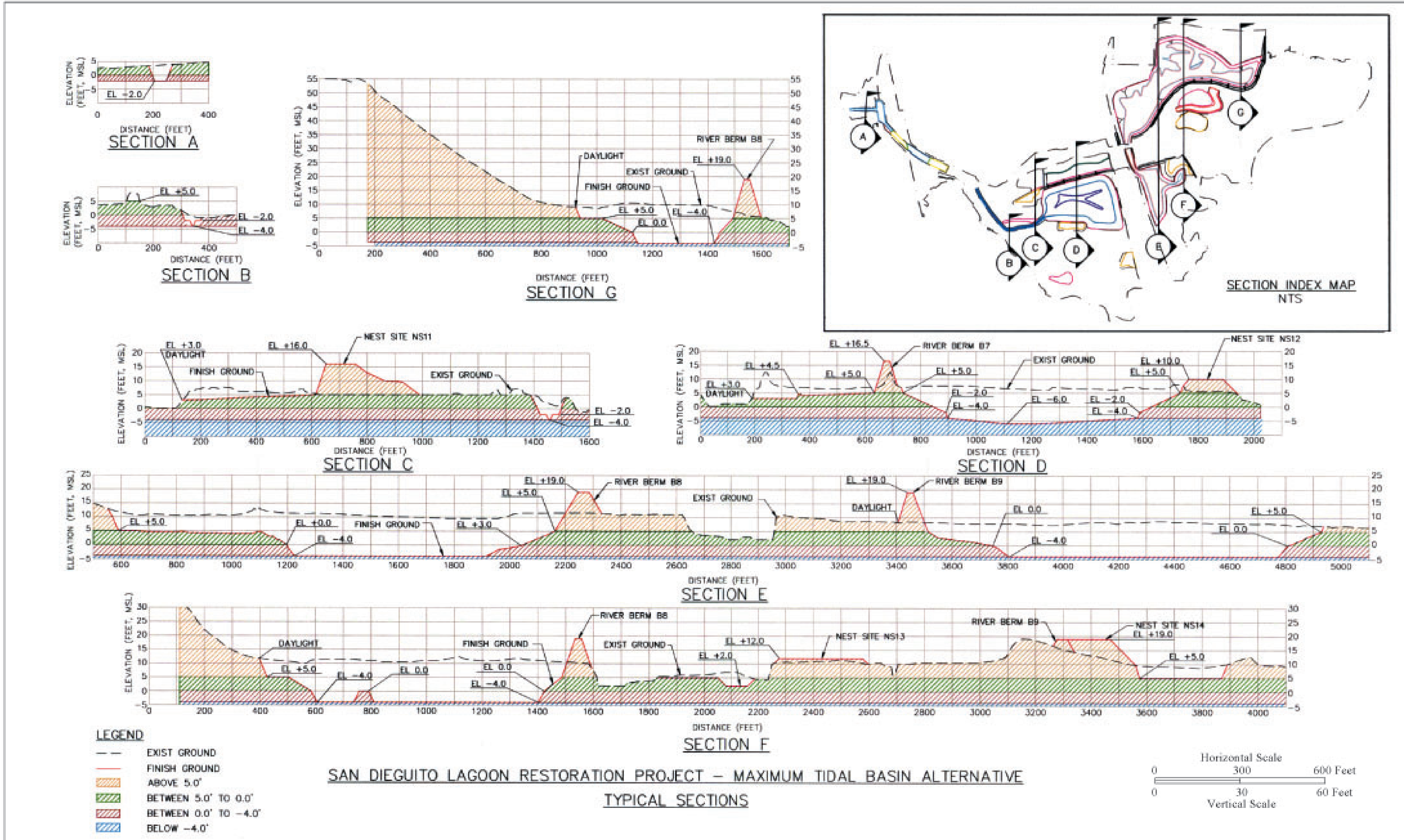


Figure 2.3.3-1. Plan View of Maximum Intertidal Alternative



Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.2-4. Typical Sections - Maximum Tidal Basin Alternative

Table 2.3.2-2. Maximum Tidal Basin Alternative — Cut and Fill Summary

Site Name	*Construction Site No.*	*Land Owner*	*Area* [5] *(acres)*	*Neat Line Cut (yd^3)*	*Overdredge*[1] *Cut (yd^3)*	*Fill*[2] *(yd^3)*	*Sand Fill*[3] *(yd^3)*
Lagoon	W1	JPA	46.1	771,600	99,000		
Marsh	W2a	City of San Diego	6.4	38,500	14,000		
High Marsh / Transitional Wetlands	W2b	City of San Diego	8.7	26,800	19,000		
New Tidal Area / Marsh	W3	JPA	5.5	16,600	12,000		
Intertidal Lagoon / Marsh	W4	SCE & JPA	53.8	919,700	116,000		
New Channel	W5	SCE & JPA	6.4	55,900	14,000		
Intertidal Lagoon / Marsh	W6a	City	2.5	37,400	5,000		
Intertidal Lagoon / Marsh	W6b	22nd DAA	17.5	241,000	38,000		
River Berm No. 1	B7	JPA	4.7			26,800	
River Berm No. 2	B8	SCE & JPA	7.7			78,800	
River Berm No. 3	B9	City & JPA	2.1			20,000	
New Tidal Area / Marsh	W10	SCE & JPA	5.3	23,400	11,000		
Nesting Site No. 1 [4]	NS11	JPA	2..2 / 4.3			51,600	18,200
Nesting Site No. 2 [4]	NS12	JPA	1.2 / 3.4			4,400	8,500
Nesting Site No. 3 [4]	NS13	SCE & City	5.1 / 6.3				19,800
Nesting Site No. 4 [4]	NS14	JPA	3.3 / 4.6			15,200	21,800
Nesting Site No. 5 [4]	NS15	CDFG	1.9 / 2.9				9,000
Intertidal Lagoon / Marsh	W16	SCE	22.8	394,200	49,000		
Inlet Channel / Channel to Lagoon	W17	22nd DAA, JPA, CDFG, NCTD, St. Lands	19.4	90,400	42,000		
Mitigation Site	W30	CDFG	2.2	1,800			
Mitigation Site	M38	JPA	0.6	500			
Mitigation Site	M39	CDFG	0.4	400			
Mitigation Site	M40	CDFG	3.5	2,800			
Mitigation Site	M41	SCE	2.6	2,100			
Mitigation Site	M42	SCE	4.2	3,400			
Mitigation Site	M43	JPA	1.3	1,000			
Mitigation Site	M45	JPA	1.4	1,100			
Total			247	**2,628,600**	**419,000**	**196,800**	**77,300**
			Net Cut	**2,431,800**	**2,850,800**		

1. Assume 2 feet of overdredge over two / thirds of the entire construction site area.
2. Based on 15% shrinkage recommendation contained in “Geotechnical Investigation: Material Characterization and Disposal, San Dieguito Lagoon Restoration, Del Mar, California,” M&T Agra, Inc., October 22, 1993
3. Sand imported from offsite unless geotechnical investigation determines suitable on-site material is available.
4. Top area at grade break / footprint area at existing elevation
5. Includes nesting site footprint areas and mitigation sites.

Table 2.3.3-1a. Tidal Habitat Created for the Maximum Intertidal Alternative: Full Project Implementation*

Habitat	*Restored Area (acres) a*	*Eliminated Area (acres) b*	*Converted Area (acres) c*	*Total Impacted Area (acres) d=b+c*	*Net Change (acres) a-d*
Tidal Wetland (below +4.5 feet NGVD					
Subtidal	16.48	0.49	0.87	1.36	15.12
Frequently Flooded Mudflats	26.59	0.00	0.00	0.00	26.59
Frequently Exposed Mudflats	6.92	0.00	0.00	0.00	6.92
Low Coastal Salt Marsh	34.58	0.00	0.01	0.01	34.57
Mid Coastal Salt Marsh	38.66	0.00	0.55	0.55	38.11
High Coastal Salt Marsh	24.83	1.83	0.84	2.67	22.16
Total Tidal Wetland	148.06	2.32	2.27	4.59	143.47
Nontidal Wetland (above +4.5 feet NGVD					
Seasonal Salt Marsh	0.00	1.60	18.77	20.37	-20.37
Transitional Wetlands	19.75	0.00	0.00	0.00	19.75
Total Nontidal Wetland	19.75	1.60	18.77	20.37	-0.62

* The calculation of net acreage changes does not take into account the need to provide a 4:1 mitigation ratio for wetland habitat losses shown in the 3rd column (item b in the calculation). To quantify the effect of a 4:1 mitigation ratio, net changes would be calculated as Restored Area (a) - 4 x Eliminated Area (b) - Converted Area (c).

Table 2.3.3-1b. Tidal Habitat Created for the Maximum Intertidal Alternative: SCE Project Implementation (excludes Module 6B, Module 16, and Nesting Sites)*

Habitat	*Restored Area (acres) a*	*Eliminated Area (acres) b*	*Converted Area (acres) c*	*Total Impacted Area (acres) d=b+c*	*Net Change (acres) a-d*
Tidal Wetland (below +4.5 feet NGVD					
Subtidal	16.48	0.49	0.87	1.36	15.12
Frequently Flooded Mudflats	19.85	0.00	0.00	0.00	19.85
Frequently Exposed Mudflats	4.87	0.00	0.00	0.00	4.87
Low Coastal Salt Marsh	23.74	0.00	0.01	0.01	23.73
Mid Coastal Salt Marsh	31.07	0.00	0.55	0.55	30.52
High Coastal Salt Marsh	21.20	0.00	0.84	0.84	20.36
Total Tidal Wetland	117.21	0.49	2.27	2.76	114.45
Nontidal Wetland (above +4.5 feet NGVD					
Seasonal Salt Marsh	0.00	0.65	13.56	14.21	-14.21
Transitional Wetlands	13.01	0.00	0.00	0.00	13.01
Total Nontidal Wetland	13.01	0.65	13.56	14.21	-1.20

* The calculation of net acreage changes does not take into account the need to provide a 4:1 mitigation ratio for wetland habitat losses shown in the 3rd column (item b in the calculation). To quantify the effect of a 4:1 mitigation ratio, net changes would be calculated as Restored Area (a) - 4 x Eliminated Area (b) - Converted Area (c).

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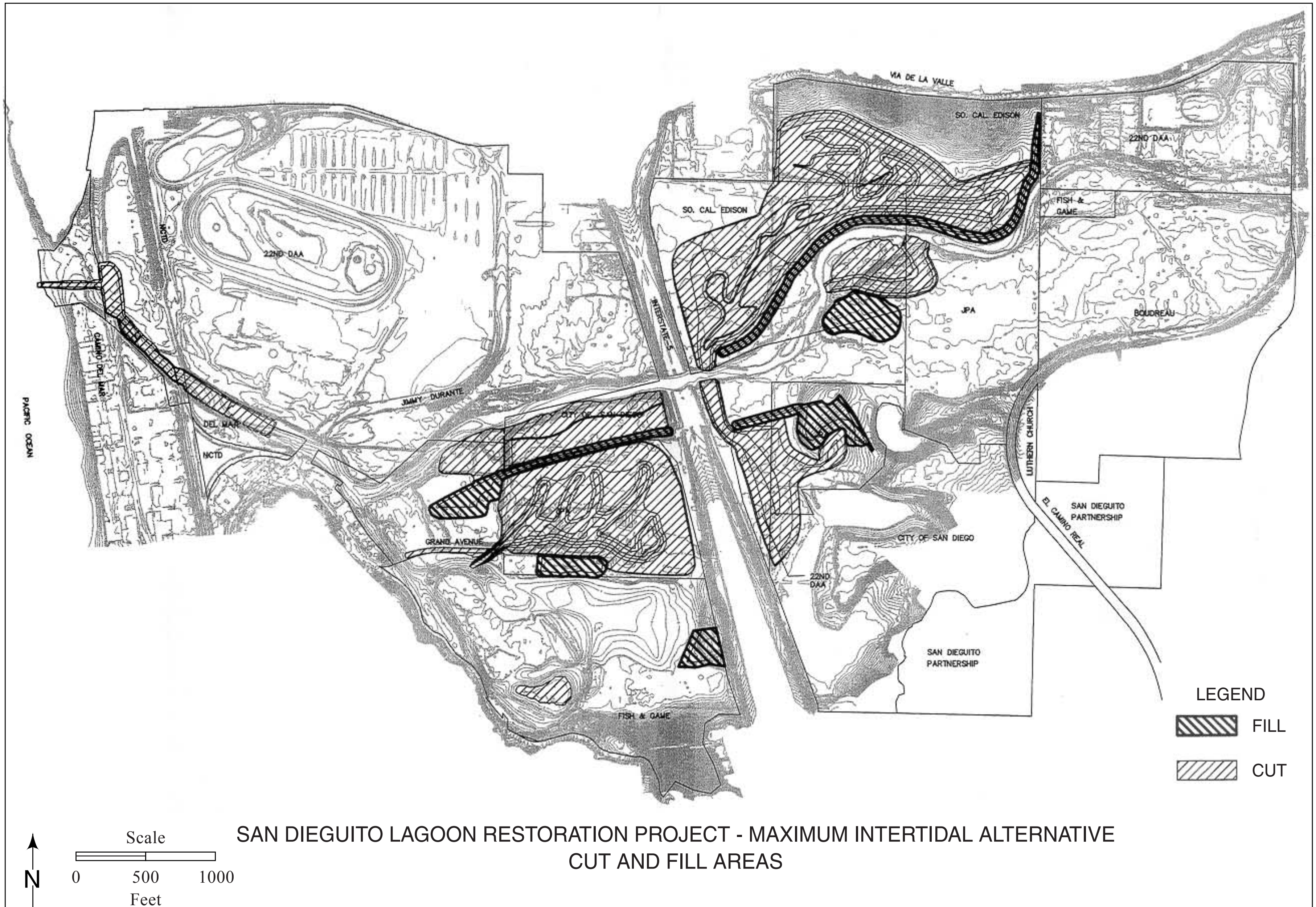


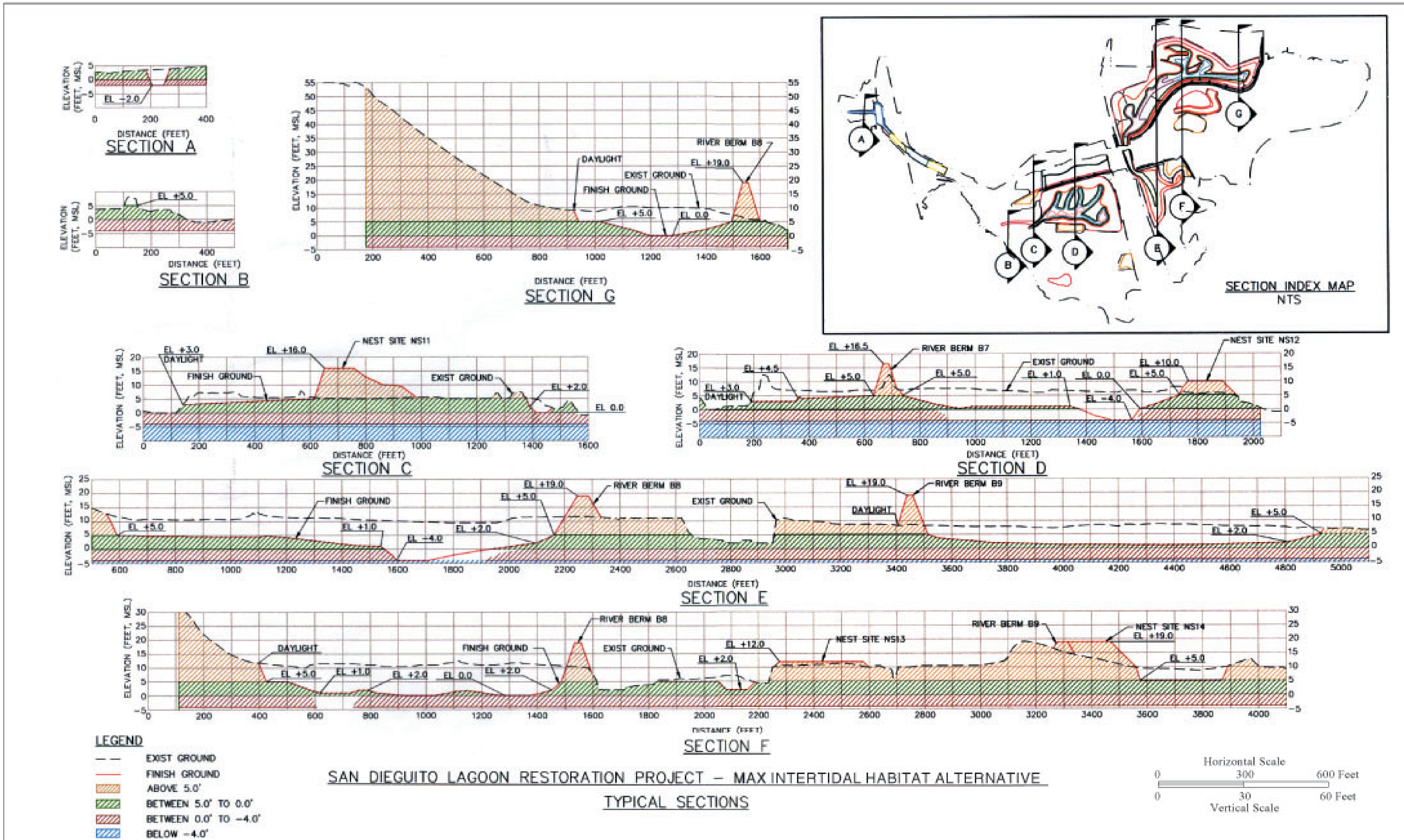
Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.3-3. Maximum Intertidal Alternative - Cut and Fill Areas

Table 2.3.3-2. Maximum Intertidal Alternative — Cut and Fill Summary

Site Name	*Construction Site No.*	*Land Owner*	*Area* [5] *(acres)*	*Neat Line Cut (yd^3)*	*Overdredge*[1] *Cut (yd^3)*	*Fill*[2] *(yd^3)*	*Sand Fill*[3] *(yd^3)*
Lagoon	W1	JPA	46.1	476,000	99,000		
Marsh	W2a	City of San Diego	6.4	38,500	14,000		
High Marsh / Transitional Wetlands	W2b	City of San Diego	8.7	26,800	19,000		
New Tidal Area / Marsh	W3	JPA	5.5	16,600	12,000		
Intertidal Lagoon / Marsh	W4	SCE & JPA	53.8	733,000	116,000		
New Channel	W5	SCE & JPA	6.4	55,900	14,000		
Intertidal Lagoon / Marsh	W6a	City	2.5	25,500	5,000		
Intertidal Lagoon / Marsh	W6b	22nd DAA	17.5	158,300	38,000		
River Berm No. 1	B7	JPA	4.7			26,800	
River Berm No. 2	B8	SCE & JPA	7.7			78,800	
River Berm No. 3	B9	City & JPA	2.1			20,000	
New Tidal Area / Marsh	W10	SCE & JPA	5.3	23,400	11,000		
Nesting Site No. 1 [4]	NS11	JPA	2..2 / 4.3			51,600	18,200
Nesting Site No. 2 [4]	NS12	JPA	1.2 / 3.4			4,400	8,500
Nesting Site No. 3 [4]	NS13	SCE & City	5.1 / 6.3				19,800
Nesting Site No. 4 [4]	NS14	JPA	3.3 / 4.6			15,200	21,800
Nesting Site No. 5 [4]	NS15	CDFG	1.9 / 2.9				9,000
Intertidal Lagoon / Marsh	W16	SCE	22.8	310,600	49,000		
Inlet Channel / Channel to Lagoon	W17	22nd DAA, JPA, CDFG, NCTD, St. Lands	19.4	73,900	42,000		
Mitigation Site	W30	CDFG	2.2	1,800			
Mitigation Site	M38	JPA	0.6	500			
Mitigation Site	M39	CDFG	0.4	400			
Mitigation Site	M40	CDFG	3.5	2,800			
Mitigation Site	M41	SCE	2.6	2,100			
Mitigation Site	M42	SCE	4.2	3,400			
Mitigation Site	M43	JPA	1.3	1,000			
Mitigation Site	M45	JPA	1.4	1,100			
Total			247	**1,951,699**	**419,000**	**196,800**	**77,300**
			Net Cut	**1,754,800**	**2,173,800**		

1. Assume 2 feet of overdredge over two / thirds of the entire construction site area.
2. Based on 15% shrinkage recommendation contained in "Geotechnical Investigation: Material Characterization and Disposal, San Dieguito Lagoon Restoration, Del Mar, California," M&T Agra, Inc., October 22, 1993
3. Sand imported from offsite unless geotechnical investigation determines suitable on-site material is available.
4. Top area at grade break / footprint area at existing elevation
5. Includes nesting site footprint areas and mitigation sites.



Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.3-4. Typical Sections - Maximum Intertidal Habitat Alternative

2.3.4 Hybrid Alternative

The Hybrid Alternative (Figure 2.3.4-1) includes a combination of elements provided in the Mixed Habitat Alternative and the Maximum Intertidal Alternative. Specifically, this alternative combines the western tidal basin proposal (Area W1) of the Mixed Habitat Alternative with the low and mid salt marsh and intertidal mudflats proposals that are included in the Maximum Intertidal Alternative for Areas W4 and W16. Taking into account anticipated impacts to existing wetlands, this alternative would result in a net gain of approximately 143 acres of subtidal, intertidal, seasonal, and transitional wetland habitats. (This does not include any additional acreage that could be required to mitigate for wetland impacts associated with habitat restoration or trail construction.)

Listed in Tables 2.3.4-1a and b are the acreages for the various wetland habitats that would be created under this alternative using the CCC staff's provisional definition of the upper boundary of high salt marsh (+4.5 feet NGVD). Acreages are provided by area and include the overall restoration proposal as well as the SCE project.

The tidal wetland restoration component of the Hybrid Alternative would have the same footprint as the Mixed Habitat Alternative, impacting 225 acres of tidal and upland property. The grading plan proposed for this alternative is illustrated in Figure 2.3.4-2. Excavation to implement this alternative would result in approximately 2,070,750 (without W17) cubic yards of cut, which allows for up to a half-foot of overdredge (104,750 cubic yards). Of that, 196,800 cubic yards could be used to construct the proposed berms and nesting sites. The proposed cut and fill areas for the tidal restoration component of the project are illustrated in Figure 2.3.4-3. Implementation of the SCE project, which excludes Area W6b, would generate approximately 1,902,950 (without W17) cubic yards of excavated material. Excavation of Area W6b under this alternative would generate an additional 158,300 cubic yards of material.

Excavated material that is not used to construct the river berms or nesting sites would have to be disposed of using some combination of the disposal site options discussed previously in section 2.3.1.6. Presented in Table 2.3.4-2 is a breakdown of the proposed construction sites, the owner of record for each site, the site acreage, and the proposed cut and fill volumes for each site. Typical cross sections of the proposed changes in grade across the site are provided in Figure 2.3.4-4.

All other aspects of this alternative are identical to the Mixed Habitat Alternative.

2.3.5 Reduced Berm Alternative

The Reduced Berm Alternative (Figure 2.3.5-1) proposes a reduction in the overall restoration of the project area in order to reduce the number and extent of berms required for the project. Under this alternative, restoration of the old sewage pond area located immediately to the south of the river and west of I-5 would be eliminated, thereby eliminating the need for a berm in this location. In addition, only minimal restoration would occur east of I-5 and north of the river. Under this alternative, the berm identified as Area B8 would be reduced to a length of 1,200 feet, 3,050 feet shorter than that proposed under the other restoration alternatives. To the southeast of I-5, the berm would be reconfigured to border the edge of a reduced restoration area rather than extend east/west from the restored area to nesting site NS14.

Table 2.3.4-1a. Tidal Habitat Created for the Hybrid Alternative: Full Project Implementation*

Habitat	*Restored Area (acres) a*	*Eliminated Area (acres) b*	*Converted Area (acres) c*	*Total Impacted Area (acres) d=b+c*	*Net Change (acres) a-d*
Tidal Wetland (below +4.5 feet NGVD					
Subtidal	40.57	0.49	0.87	1.36	39.21
Frequently Flooded Mudflats	22.98	0.00	0.00	0.00	22.98
Frequently Exposed Mudflats	5.97	0.00	0.00	0.00	5.97
Low Coastal Salt Marsh	29.75	0.00	0.01	0.01	29.74
Mid Coastal Salt Marsh	31.83	0.00	0.55	0.55	31.28
High Coastal Salt Marsh	19.43	1.83	0.84	2.67	16.76
Total Tidal Wetland	150.53	2.32	2.27	4.59	145.94
Nontidal Wetland (above +4.5 feet NGVD					
Seasonal Salt Marsh	0.00	1.60	18.77	20.37	-20.37
Transitional Wetlands	17.37	0.00	0.00	0.00	17.37
Total Nontidal Wetland	17.37	1.60	13.56	14.21	-3.00

* The calculation of net acreage changes does not take into account the need to provide a 4:1 mitigation ratio for wetland habitat losses shown in the 3rd column (item b in the calculation). To quantify the effect of a 4:1 mitigation ratio, net changes would be calculated as Restored Area (a) - 4 x Eliminated Area (b) - Converted Area (c).

Table 2.3.4-1b. Tidal Habitat Created for the Hybrid Alternative: SCE Project Implementation (excludes Module 6B, Module 16, and Nesting Sites)*

Habitat	*Restored Area (acres) a*	*Eliminated Area (acres) b*	*Converted Area (acres) c*	*Total Impacted Area (acres) d=b+c*	*Net Change (acres) a-d*
Tidal Wetland (below +4.5 feet NGVD					
Subtidal	40.57	0.49	0.87	1.36	39.21
Frequently Flooded Mudflats	16.34	0.00	0.00	0.00	16.34
Frequently Exposed Mudflats	3.82	0.00	0.00	0.00	3.82
Low Coastal Salt Marsh	18.54	0.00	0.01	0.01	18.53
Mid Coastal Salt Marsh	24.06	0.00	0.55	0.55	23.51
High Coastal Salt Marsh	16.35	0.00	0.84	0.84	15.51
Total Tidal Wetland	119.68	0.49	2.27	2.76	116.92
Nontidal Wetland (above +4.5 feet NGVD					
Seasonal Salt Marsh	0.00	0.65	13.56	14.21	-14.21
Transitional Wetlands	10.63	0.00	0.00	0.00	10.63
Total Nontidal Wetland	10.63	0.65	13.56	14.21	-3.58

* The calculation of net acreage changes does not take into account the need to provide a 4:1 mitigation ratio for wetland habitat losses shown in the 3rd column (item b in the calculation). To quantify the effect of a 4:1 mitigation ratio, net changes would be calculated as Restored Area (a) - 4 x Eliminated Area (b) - Converted Area (c).

Excavation of Area W1 to the west of I-5 would be similar to that proposed for the Maximum Intertidal Alternative. To the east of I-5, three areas of wetland restoration are proposed. Area W4 (18.6 acres) would only utilize the western end of the Horseworld property and would be graded to create three channels at a maximum depth of +1 foot NGVD with the surrounding area graded to +2 feet NGVD. This grading would create habitat to support intertidal mudflats and bands of low, mid, and high salt marsh. A channel graded to the depth of +1 foot NGVD would be created in Areas W6a and W6b. In Area W6b, the area around the channel would be graded to support low marsh habitat. Areas W10 and W5 would be prepared as described for the Mixed Habitat Alternative.

As indicated in the grading plan (Figure 2.3.5-2) for this alternative, Area W1, located to the west of I-5, would generally be excavated to the elevations proposed for the Maximum Intertidal Alternative, however, no restoration would occur in the area to the north between Area W1 and the river. Areas W4, W6a, and W6b, located to the east of I-5, would be excavated to a maximum depth of +1 feet NGVD. No tidal restoration would occur east of San Andres Drive. Taking into account anticipated impacts to existing wetlands, this alternative would result in a net gain of approximately 71 acres of coastal wetland habitat. (This does not include any additional acreage that could be required to mitigate for wetland impacts associated with habitat restoration or trail construction.)

Tables 2.3.5-1a and 1b list the acreages for the various wetland habitats that would be created under this alternative using the CCC staff's provisional definition of the upper boundary of high salt marsh (+4.5 feet NGVD). Acreages are provided by area and include the overall restoration proposal as well as the SCE project.

Excavation for the tidal wetland restoration component of this alternative would impact 153 acres of the overall project site, a smaller construction footprint than the other alternatives. Excavation in accordance with the grading plan would generate approximately <u>776,750 (without W17)</u> cubic yards of cut, which allows for up to <u>a half-foot</u> overdredge (<u>59,500</u> cubic yards). Of that, 73,200 cubic yards could be used to construct the proposed berms and an additional 71,200 cubic yards could be used to construct the bases of the nesting sites. The proposed cut and fill areas for the tidal restoration component of the project are illustrated in Figure 2.3.5-3. Implementation of the SCE project, which excludes Area W6b, would generate approximately <u>655,250 (without W17)</u> cubic yards of excavated material. Excavation of Area W6b under this alternative would generate an additional 115,000 cubic yards of material.

Excavated material that is not used to construct the river berms or nesting sites would have to be disposed of using some combination of the disposal site options discussed previously in section 2.3.1.6. Presented in Table 2.3.5-2 is a breakdown of the proposed construction sites, the owner of record for each site, the site acreage, and the proposed cut and fill volumes for each site. Cross sections through the site that illustrate the anticipated changes in the topographic characteristics of the site are presented in Figure 2.3.5-4.

Under this alternative, a stone revetment would be required along the I-5 slope, as described in section 2.3.1.4.4. However, stone revetments #1 and #3 would not be necessary. Therefore, under this alternative, the amount of rock imported to the site for project implementation would be reduced to 1,400 tons (Table 2.3.1-5).

Also under this alternative, the Via de la Valle property would not be used for wetland restoration, and would therefore revert back to developable land that could be developed in accordance with the City of San Diego's North City Future Urbanizing Area Framework Plan. Additionally, under this alternative the Interpretive Overlook Trail would be eliminated and the amount of dredge material to be disposed of would be significantly reduced. All other aspects of this alternative are identical to the Mixed Habitat Alternative.

2.3.6 No Action Alternative

This alternative assumes that no tidal restoration would occur within the planning area, therefore, the need for berms and dredge disposal sites would be eliminated. In addition, this alternative would eliminate the proposal to maintain the river mouth in an open configuration. Unless another entity was to take responsibility for this activity, the No Action Alternative could result in future closures of the river mouth. No new nesting sites would be created, and nesting site NS15, which currently exists, would not be restored.

Under this alternative, no upland or freshwater habitat restoration would occur and the public access, interpretive, and other use proposals included in the draft Park Master Plan would be eliminated. As in the Reduced Berm alternative, the Via de la Valle property would revert back to developable land. The development status of SCE's Horseworld property, the 88.6 acres located east of I-5 and north of the river, is unclear. Existing conditions on the site may limit its development potential to those uses permitted in the Framework Plan for open space. In general, the conditions in this portion of the western river valley would remain in the current state under this alternative.

2.4 COMPARISON OF PROJECT ALTERNATIVES

The project alternatives for Mixed Habitat, Maximum Tidal Basin, Maximum Intertidal, Hybrid, Reduced Berm, and No Action are summarized in Table 2.4-1, in accordance with general project elements for the overall footprint (acres), volume to excavate/dredge, net tidal and non-tidal habitat created (acres), and key variables such as berms, tern nesting sites, inlet excavation/maintenance, and public access and interpretive plans. In general, it is evident from the table that the principal differences among the action alternatives are the amount of soil and sediment that would be excavated or dredged, with all except the Reduced Berm Alternative creating approximately the same net number of tidal and non-tidal habitat acres (146 and 192, respectively). The Reduced Berm Alternative would also be characterized by a smaller project footprint, acres and locations of berms, and public access plan. Important differences among the action alternatives then focus on the net amount of various tidal habitats (e.g., open water versus intertidal/mudflat and low, mid, or high marsh) that would be created. Primary differences are evident for the amount of open water (much higher for Maximum Tidal and much lower for Maximum Intertidal) and, conversely, the amount of marsh habitat (much higher for Maximum Intertidal and Mixed Habitat and much lower for Maximum Tidal Basin. Impacts associated with each alternative are detailed in Chapter 4, as compared to existing/baseline conditions described in Chapter 3.

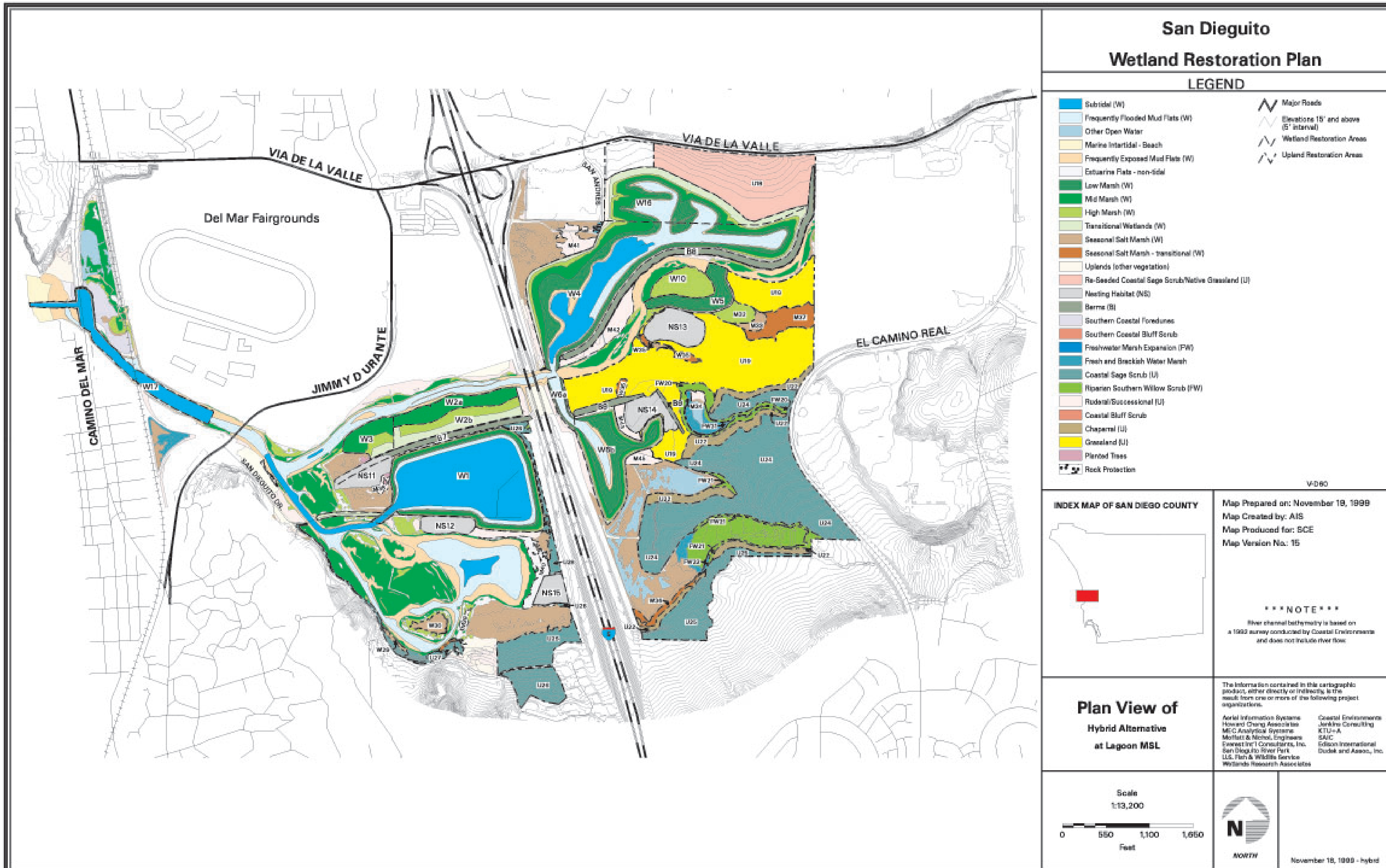
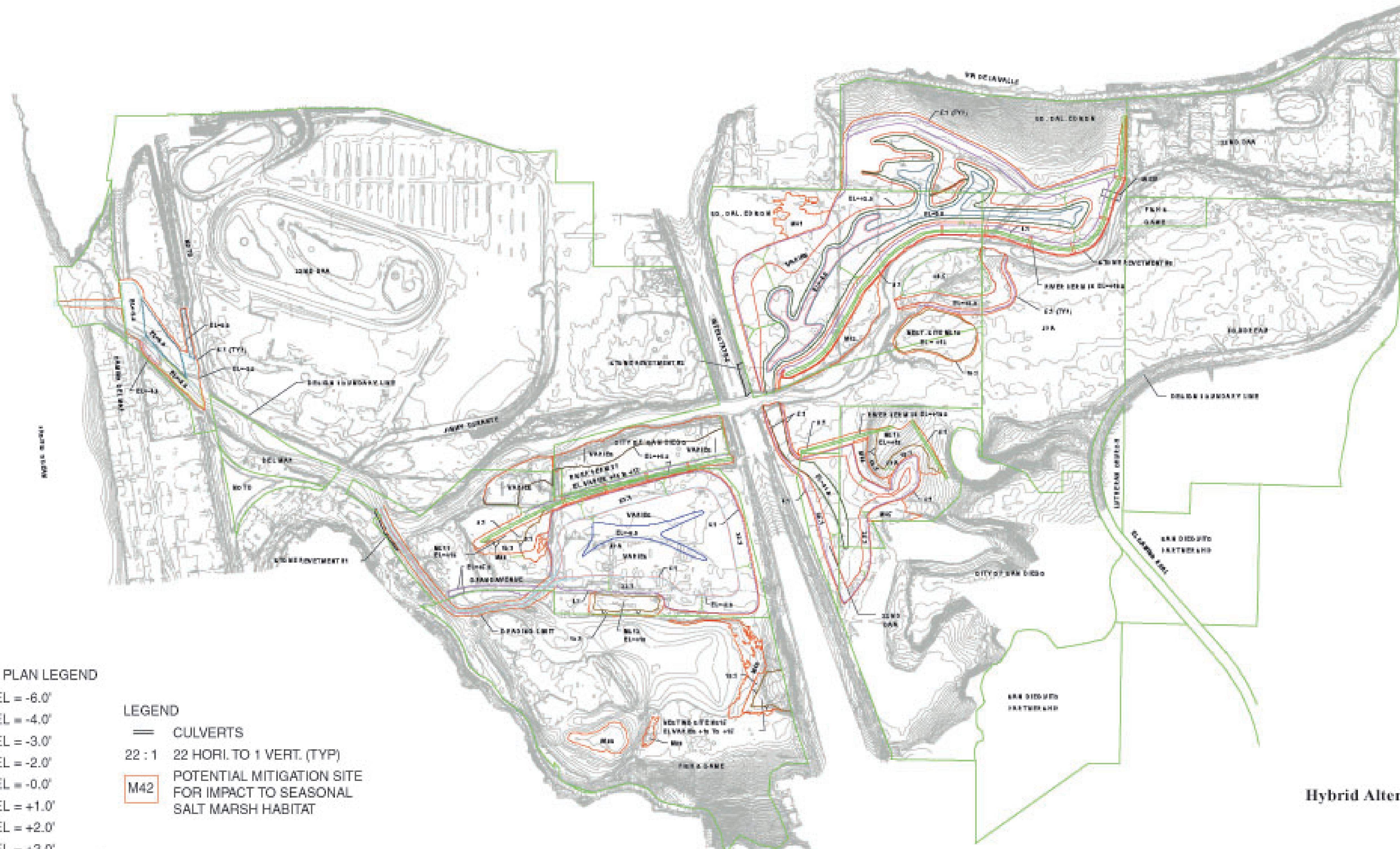


Figure 2.3.4-1. Plan View of Hybrid Alternative

Table 2.3.4-2. Hybrid Alternative — Cut and Fill Summary

Site Name	Construction Site No.	Land Owner	Area [5] (acres)	Neat Line Cut (yd³)	Overdredge[1] Cut (yd³)	Fill[2] (yd³)	Sand Fill[3] (yd³)
Lagoon	W1	JPA	46.1	771,700	99,000		
Marsh	W2a	City of San Diego	6.4	38,500	14,000		
High Marsh / Transitional Wetlands	W2b	City of San Diego	8.7	26,800	19,000		
New Tidal Area / Marsh	W3	JPA	5.5	16,600	12,000		
Intertidal Lagoon / Marsh	W4	SCE & JPA	53.8	730,500	116,000		
New Channel	W5	SCE & JPA	6.4	55,900	14,000		
Intertidal Lagoon / Marsh	W6a	City	2.5	25,500	5,000		
Intertidal Lagoon / Marsh	W6b	22nd DAA	17.5	158,300	38,000		
River Berm No. 1	B7	JPA	4.7			26,800	
River Berm No. 2	B8	SCE & JPA	7.7			78,800	
River Berm No. 3	B9	City & JPA	2.1			20,000	
New Tidal Area / Marsh	W10	SCE & JPA	5.3	23,400	11,000		
Nesting Site No. 1 [4]	NS11	JPA	2..2 / 4.3			51,600	18,200
Nesting Site No. 2 [4]	NS12	JPA	1.2 / 3.4			4,400	8,500
Nesting Site No. 3 [4]	NS13	SCE & City	5.1 / 6.3				19,800
Nesting Site No. 4 [4]	NS14	JPA	3.3 / 4.6			15,200	21,800
Nesting Site No. 5 [4]	NS15	CDFG	1.9 / 2.9				9,000
Intertidal Lagoon / Marsh	W16	SCE	22.8	313,100	49,000		
Inlet Channel / Channel to Lagoon	W17	22nd DAA, JPA, CDFG, NCTD, St. Lands	19.4	90,400	42,000		
Mitigation Site	W30	CDFG	2.2	1,800			
Mitigation Site	M38	JPA	0.6	500			
Mitigation Site	M39	CDFG	0.4	400			
Mitigation Site	M40	CDFG	3.5	2,800			
Mitigation Site	M41	SCE	2.6	2,100			
Mitigation Site	M42	SCE	4.2	3,400			
Mitigation Site	M43	JPA	1.3	1,000			
Mitigation Site	M45	JPA	1.4	1,100			
Total			247	**2,263,700**	**419,000**	**196,800**	**77,300**
			Net Cut				

1. Assume 2 feet of overdredge over two / thirds of the entire construction site area.
2. Based on 15% shrinkage recommendation contained in "Geotechnical Investigation: Material Characterization and Disposal, San Dieguito Lagoon Restoration, Del Mar, California," M&T Agra, Inc., October 22, 1993
3. Sand imported from offsite unless geotechnical investigation determines suitable on-site material is available.
4. Top area at grade break / footprint area at existing elevation
5. Includes nesting site footprint areas and mitigation sites.



GRADING PLAN LEGEND

- EL = -6.0'
- EL = -4.0'
- EL = -3.0'
- EL = -2.0'
- EL = -0.0'
- EL = +1.0'
- EL = +2.0'
- EL = +3.0'
- EL = +4.0'
- EL = +4.5'
- EL = +5.0'
- DAYLIGHT
- NEST SITE

LEGEND

- CULVERTS
- 22 : 1 22 HORI. TO 1 VERT. (TYP)
- M42 POTENTIAL MITIGATION SITE FOR IMPACT TO SEASONAL SALT MARSH HABITAT

N

Scale

0 1000 2000

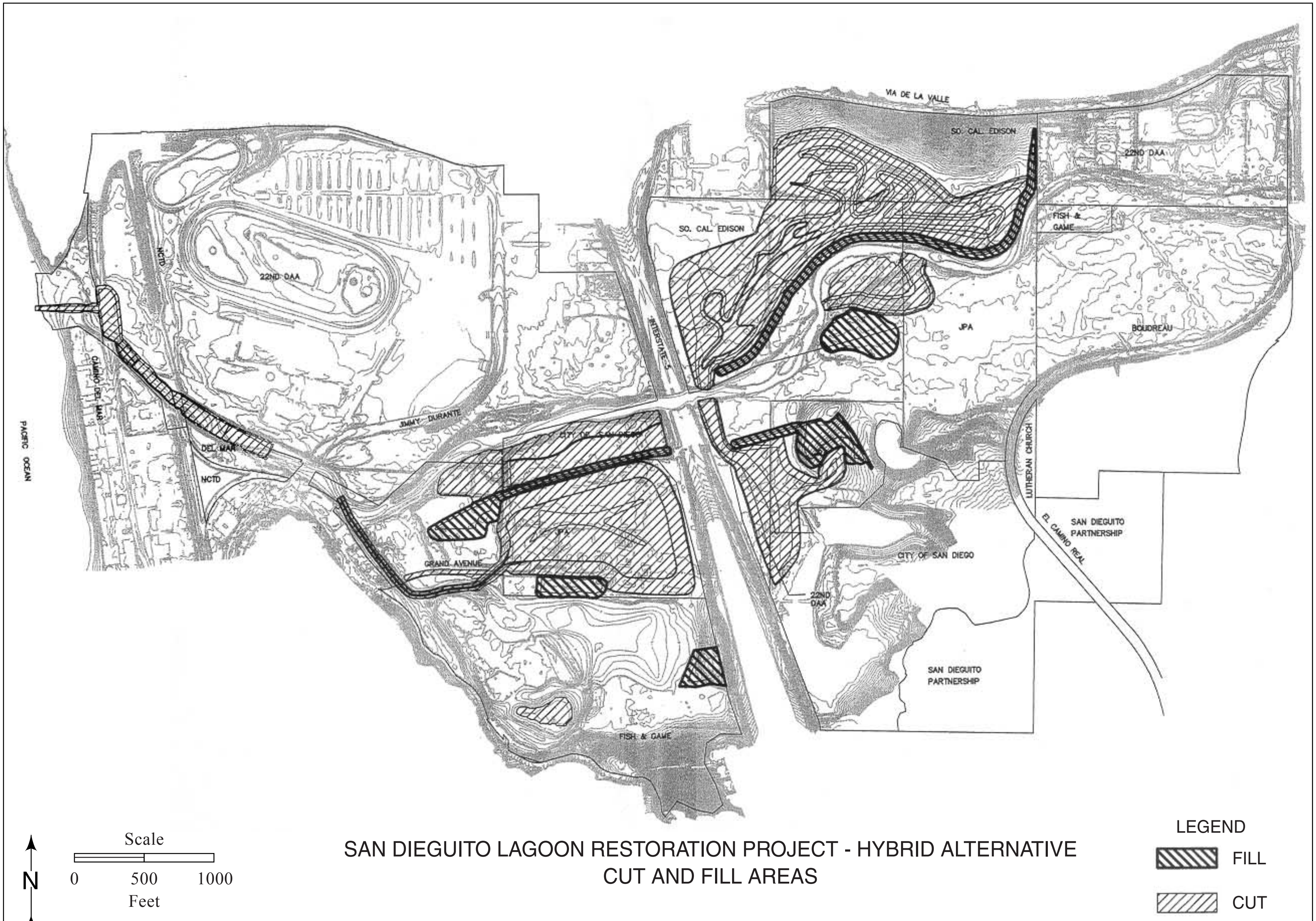
Feet

Source: Moffatt & Nichol Engineers, 2000

MITIGATION SITE GRADING NOTE

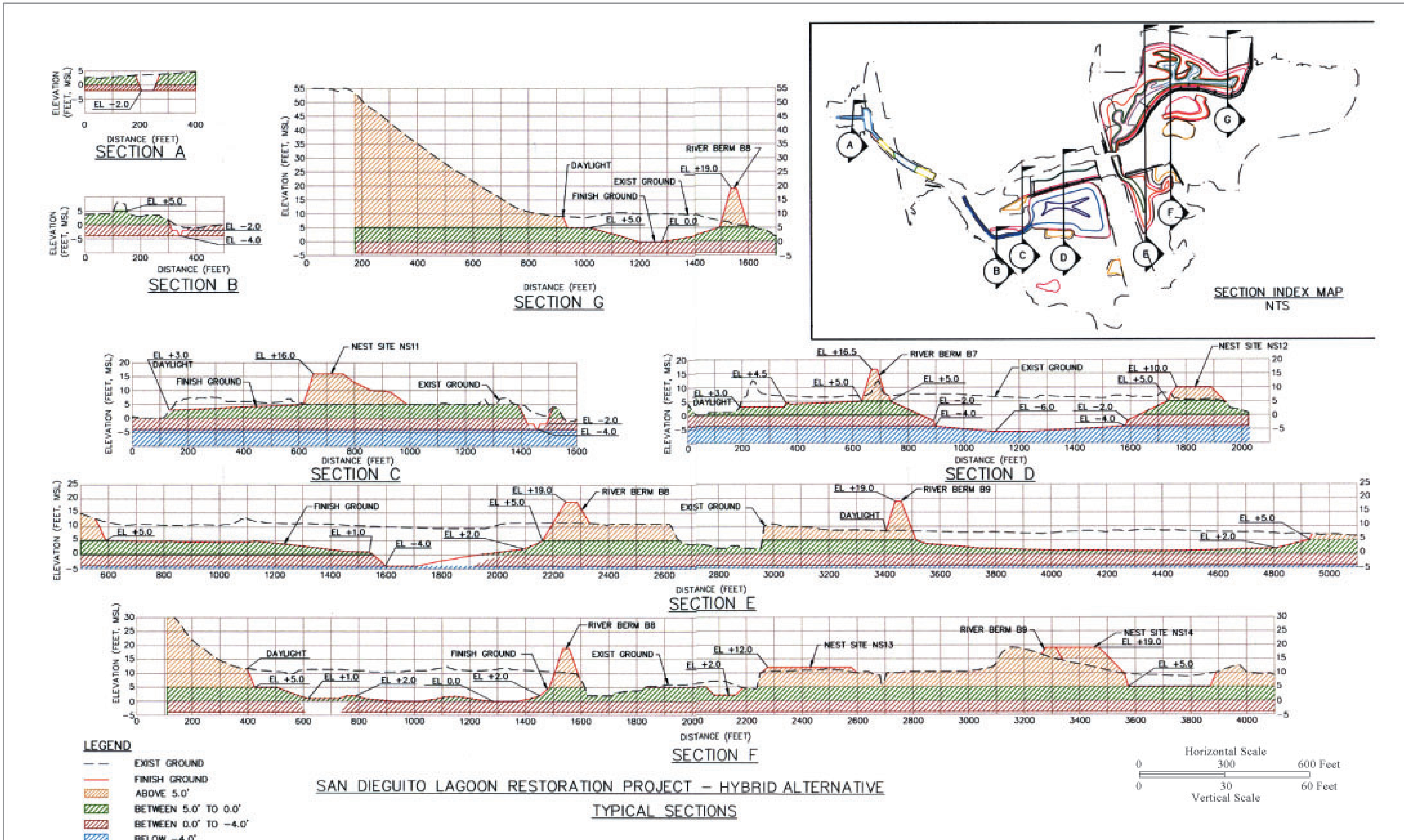
EXCAVATE AND TEMPORARILY STORE TOP SIX INCHES OF TOPSOIL. REMOVE ADDITIONAL SIX INCHES OF SOIL AND CREATE A SWALE. BACKFILL TOPSOIL AND GRADE TO CREATE A DEPRESSION OR POND AT EACH MITIGATION SITE.

Figure 2.3.4-2. Grading Plan for Tidal Restoration and Nesting Sites - Hybrid Alternative



Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.4-3. Hybrid Alternative - Cut and Fill Areas



Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.4-4. Typical Sections - Hybrid Alternative

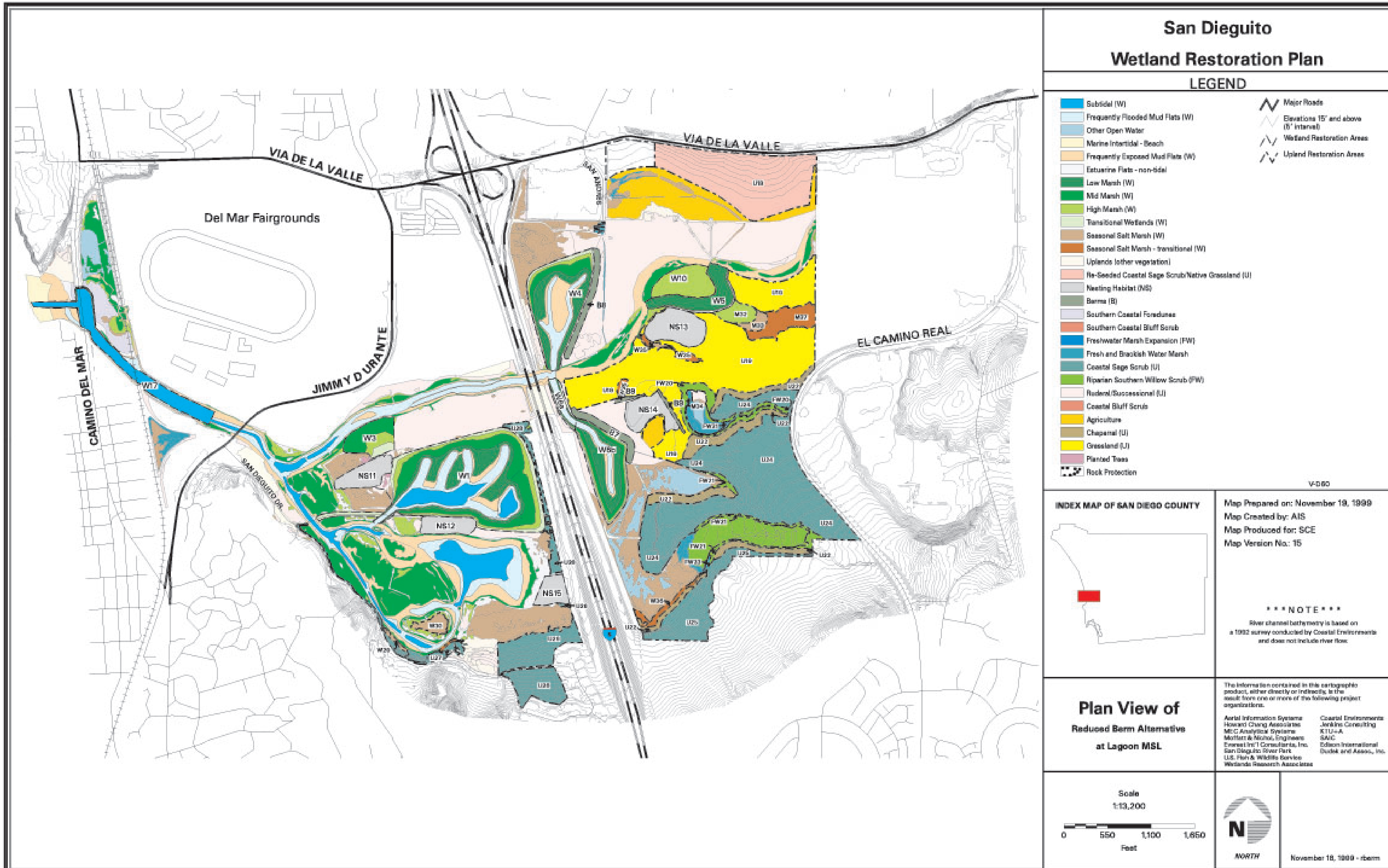


Figure 2.3.5-1. Plan View of Reduced Berm Alternative

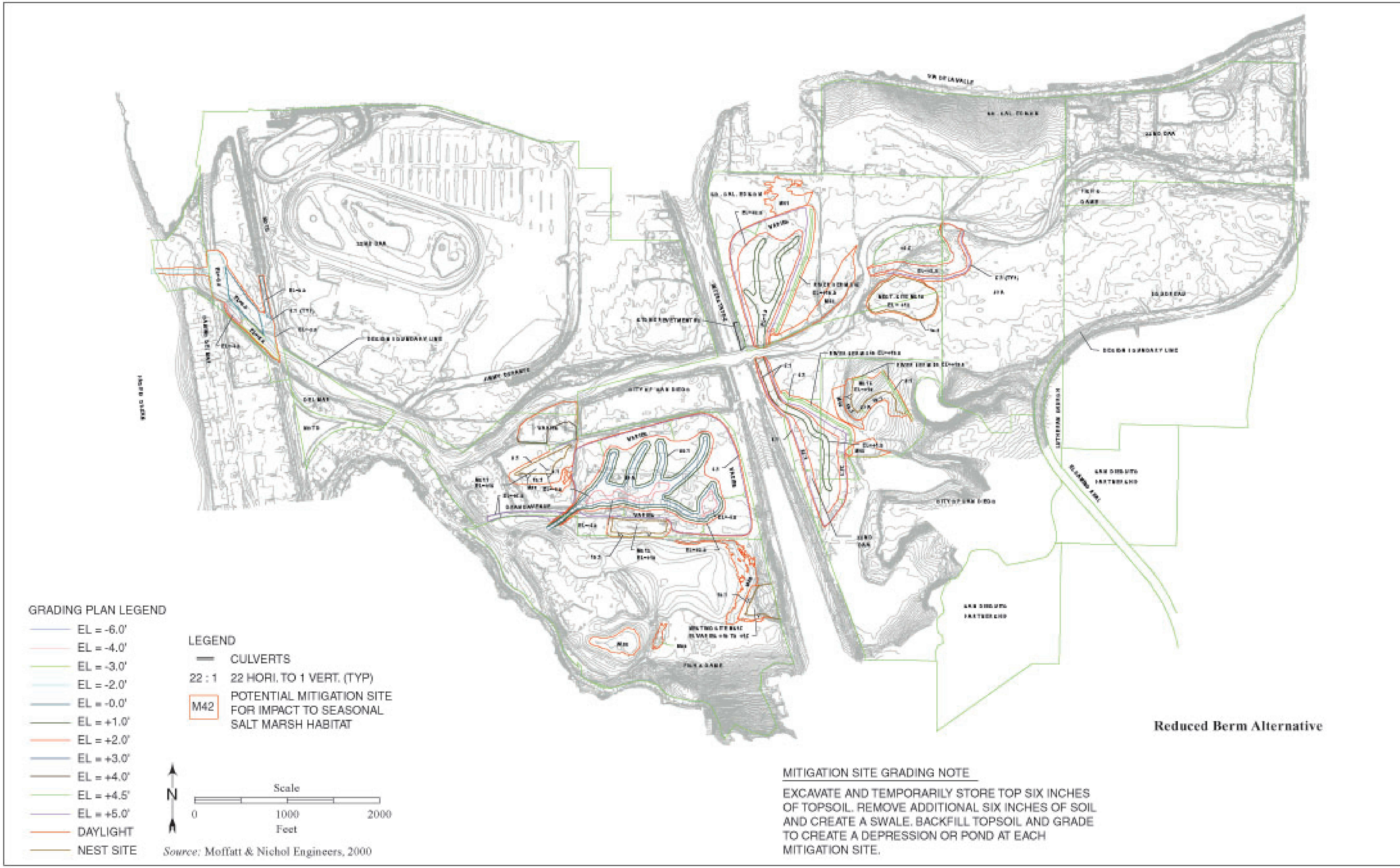


Figure 2.3.5-2. Grading Plan for Tidal Restoration and Nesting Sites - Reduced Berm Alternative

Table 2.3.5-1a. Tidal Habitat Created for the Reduced Berm Alternative: Full Project Implementation*

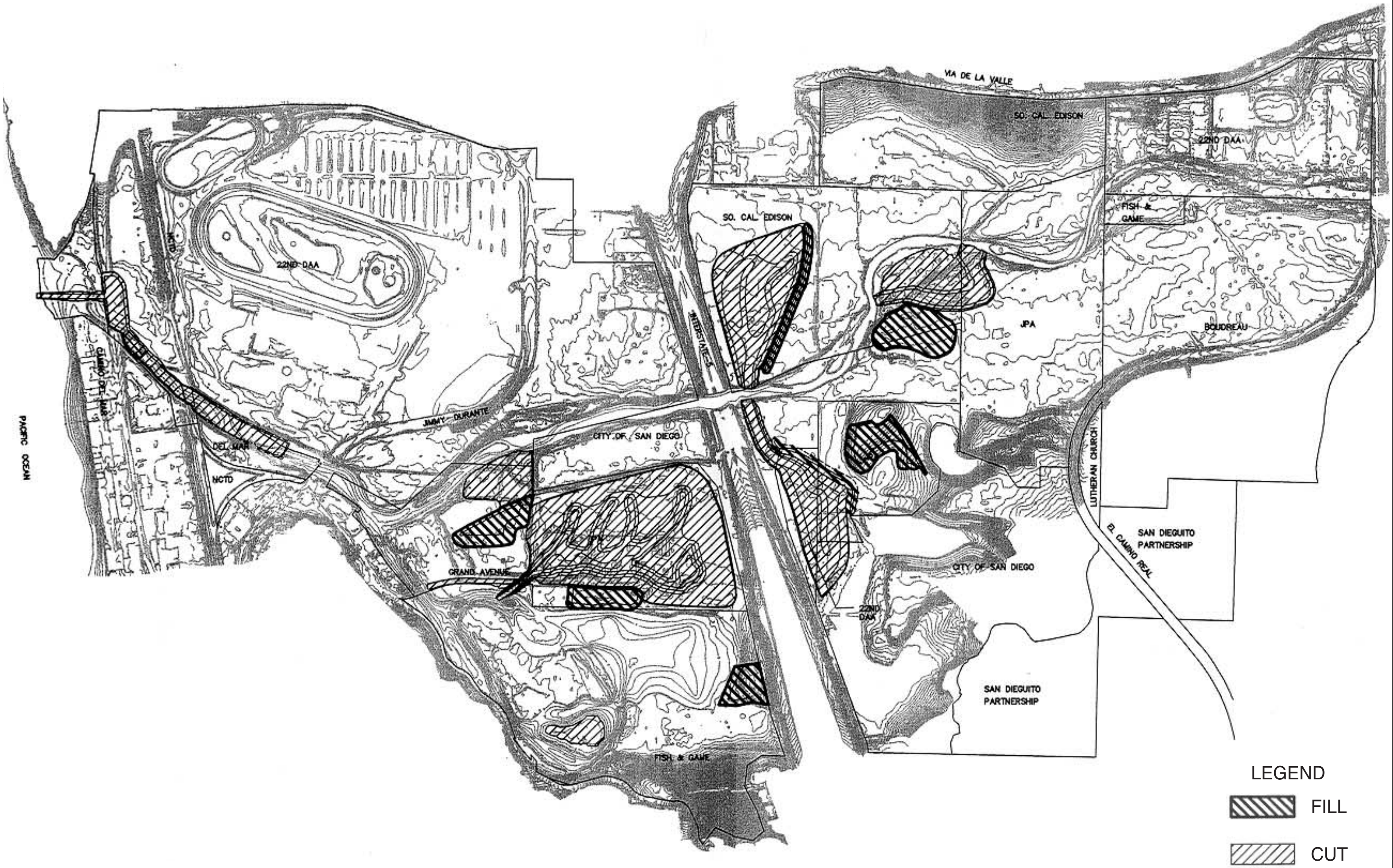
Habitat	*Restored Area (acres) a*	*Eliminated Area (acres) b*	*Converted Area (acres) c*	*Total Impacted Area (acres) d=b+c*	*Net Change (acres) a-d*
Tidal Wetland (below +4.5 feet NGVD					
Subtidal	5.16	0.00	0.97	0.97	4.19
Frequently Flooded Mudflats	14.30	0.00	0.00	0.00	14.30
Frequently Exposed Mudflats	8.54	0.00	0.00	0.00	8.54
Low Coastal Salt Marsh	22.64	0.00	0.01	0.01	22.63
Mid Coastal Salt Marsh	20.29	0.00	0.34	0.34	19.95
High Coastal Salt Marsh	19.32	1.91	0.76	2.67	16.65
Total Tidal Wetland	90.25	1.91	2.08	3.99	86.26
Nontidal Wetland (above +4.5 feet NGVD					
Seasonal Salt Marsh	0.00	1.60	16.31	17.91	-17.91
Transitional Wetlands	2.50	0.00	0.00	0.00	2.50
Total Nontidal Wetland	2.50	1.60	16.31	17.91	-15.41

* The calculation of net acreage changes does not take into account the need to provide a 4:1 mitigation ratio for wetland habitat losses shown in the 3rd column (item b in the calculation). To quantify the effect of a 4:1 mitigation ratio, net changes would be calculated as Restored Area (a) - 4 x Eliminated Area (b) - Converted Area (c).

Table 2.3.5-1b. Tidal Habitat Created for the Reduced Berm Alternative: SCE Project Implementation (excludes Module 6B, Module 16, and Nesting Sites)*

Habitat	*Restored Area (acres) a*	*Eliminated Area (acres) b*	*Converted Area (acres) c*	*Total Impacted Area (acres) d=b+c*	*Net Change (acres) a-d*
Tidal Wetland (below +4.5 feet NGVD					
Subtidal	5.16	0.00	0.97	0.97	4.19
Frequently Flooded Mudflats	12.80	0.00	0.00	0.00	12.80
Frequently Exposed Mudflats	7.53	0.00	0.00	0.00	7.53
Low Coastal Salt Marsh	18.13	0.00	0.01	0.01	18.12
Mid Coastal Salt Marsh	17.89	0.00	0.34	0.34	17.55
High Coastal Salt Marsh	17.61	0.00	0.76	0.76	16.85
Total Tidal Wetland	79.12	0.00	2.08	2.08	77.04
Nontidal Wetland (above +4.5 feet NGVD					
Seasonal Salt Marsh	0.00	0.08	13.43	13.51	-13.51
Transitional Wetlands	2.29	0.00	0.00	0.00	2.29
Total Nontidal Wetland	2.29	0.08	13.43	13.51	-11.22

* The calculation of net acreage changes does not take into account the need to provide a 4:1 mitigation ratio for wetland habitat losses shown in the 3rd column (item b in the calculation). To quantify the effect of a 4:1 mitigation ratio, net changes would be calculated as Restored Area (a) - 4 x Eliminated Area (b) - Converted Area (c).



N

Scale

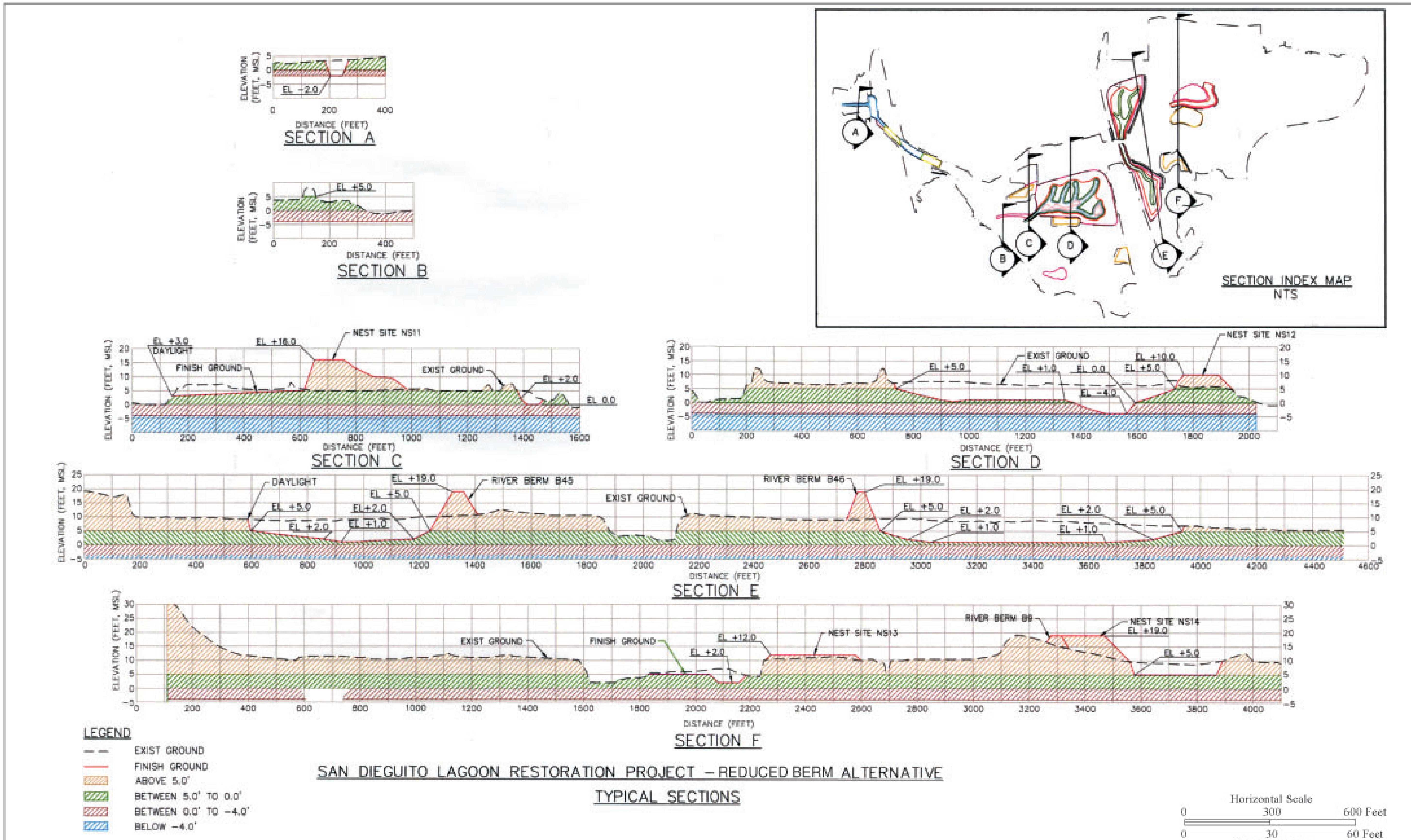
0 500 1000

Feet

SAN DIEGUITO LAGOON RESTORATION PROJECT - REDUCED BERM ALTERNATIVE
CUT AND FILL AREAS

Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.5-3. Reduced Berm Alternative - Cut and Fill Areas



Source: Moffatt & Nichol Engineers, 1999

Figure 2.3.5-4. Typical Sections - Reduced Berm Alternative

Table 2.4-1. Comparison of Alternatives (all acres and volumes approximate)

Project Elements	***Mixed***	***Max. Tidal***	***Max. Intertidal***	***Hybrid***	***Reduced Berm***	***No Action***
Excavation / Dredging Footprint (acres)	206	206	206	206	153	0
Excavation / Dredging Volume (million cubic yds.)	2.537	2.979	2.293	2.614	1.304	0
Net Non-Tidal Habitat Gained (acres)	192	192	192	192	176	0
Net Tidal Habitat Gained (acres)*	146	146	146	146	75	0
• open water	27	76	6	30	2	0
• intertidal flats	5	5	17	13	7	0
• marsh	114	65	123	103	66	0
Tern Nesting Site Creation (usable acres)	13.7	13.7	13.7	13.7	13.7	0
Berms (acres)	12.7	12.7	12.7	12.7	5.3	0
Inlet Excavation and Maintenance (max. initial acres impacted)	19.4	19.4	19.4	19.4	19.4	0
Public Access Trails and Interpretive Plan	Note 1	Note 1	Note 1	Note 1	Note 2	0

Note 1 Coast to Crest Trail, Mesa Loop Trail, Interpretive Overlook Trail, Wetland Treatment Ponds, Nature Center, Staging / Parking Areas.
2 Same as Note 1, but no Interpretive Overlook Trail.
* Refer to Tables 2.3.1-1, 2.3.2-1, 2.3.3-1, 2.3.4-1, and 2.3.5-1 for details of specific types of habitat (open water, intertidal, low, mid, and high marsh).

3. ENVIRONMENTAL SETTING

3.1 LAND USE

This section addresses land ownership, existing land use, and recreation. The land use policies and regulations as well as land use designations and zoning affecting the site, are discussed in Chapter 5.0, Consistency with Adopted Plans and Policies. Potential discretionary actions and approvals such as general plan amendments, encroachment permits, leases, and other similar actions that would be needed for the proposed project are identified in section 1.9, Required Permits and Approvals.

Land Ownership

The project area is located in the San Dieguito River Valley within the City of Del Mar and the northern portion of the City of San Diego, adjoining the Pacific Ocean shoreline. Land ownership is illustrated in Figure 3.1-1. Owners in the project area include San Dieguito River Park JPA, Southern California Edison (SCE), the City of Del Mar, the City of San Diego, the San Dieguito Partnership, the 22nd District Agricultural Association, California Department of Fish and Game, the North County Transit District, and several private owners. Lands within I-5 and the associated right-of-way are owned by Caltrans. The proposed project is located within the Focused Planning Area of the San Dieguito River Park.

Existing Land Use

Figure 3.1-2 illustrates the existing land uses in the project site and vicinity. Table 3.1-1 identifies existing land uses corresponding to the area of ownership shown in Figure 3.1-1. Most of the bordering lands, although shown in the existing land use map for context, are excluded from the land use calculations presented in the table. The map includes these additional locations to provide an overview of surrounding land uses that might affect or be affected by the project.

Table 3.1-1. Existing Land Use—San Dieguito Project Area

Land Use Category	*Acres*	*Percent*
Vacant	596	48.0
Commercial/Commercial Recreation	261	21.0
Agriculture	211	17.0
Open Water	99	8.0
Recreation	61	4.9
Roads and Railroads	6	0.5
Single Family Residential	5	0.4
Utilities	2	0.2
Total	**1,241**	**100**

The largest land use category in the project area (see Table 3.1-1) is vacant land followed by commercial/commercial recreation uses. Vacant lands consist of a combination of areas such as previously cultivated transitional lands, wetlands, seasonal marsh, salt marsh, coastal foredunes, and portions of the California Department of Fish and Game Ecological Reserve. Most of the lands within the project boundaries described as commercial use consist of commercial recreation such as the Del Mar Racetrack/Del Mar Fairgrounds operated by the 22nd District Agricultural Association. The racetrack has a seven-week racing season (from the third week of July to the first week of September), and the Del Mar Fair operates for 20 days during the middle of June and early July. Approximately 200 other non-fair activities such as concerts, music festivals, and sporting events draw large crowds and are scheduled throughout the remainder of the year at the fairgrounds. While visitor use of the fairgrounds and racetrack do not directly affect the river, lagoon, and beach area; increases in vehicular traffic, parking, and pedestrian crossings occur when the fairgrounds are in use.

Within the project boundary, active agriculture (tomatoes) is primarily located on the northern and eastern portions of the project area. A 0.03-acre parcel of land classified as Farmland of Statewide Importance overlaps a portion of the eastern part of the site and extends east and south of the site. Additionally, a 43-acre parcel of Prime Farmland is located in the northeastern portion of the site just south of Via de la Valle; it adjoins 152 acres of land classified as Farmland of Local Importance (see section 3.5.2, Natural Resources, for additional discussion of agricultural lands in the project area and section 3.15, Socioeconomics, for a discussion of commercial agriculture in San Diego County).

Open water areas consist of the San Dieguito Lagoon and River. Recreation and open space areas located on the northeast portions of the project area include a horsepark/equestrian center operated by the 22nd District Agricultural Association. About 170 horses are stabled at this facility, which also provides a practice ring and covered arena. The Rancho Santa Fe Polo Club is located east of this area.

Single-family residential homes on beachfront property are located immediately south of the river mouth. Condominiums are located off Camino Del Mar adjacent to the river. Other residential uses include homes in the Racetrack View Drive area.

Regional access to the project area is provided by I-5, which bisects the site. Via de la Valle, a major east-west arterial roadway intersecting I-5, forms the northern boundary of the site and provides local access to coastal areas, shopping, restaurant, and residential areas, and the Del Mar Racetrack/Del Mar Fairgrounds. The NCTD Railroad crosses through the western portion of the site. Railroad uses include commuter rail, freight, and long-distance passenger service. Five bridges cross the San Dieguito River within the project site. From west to east, they include Camino Del Mar (U.S. Highway 101), the AT&SF Railroad, Jimmy Durante Boulevard, Grand Avenue, and I-5. El Camino Real borders the eastern portions of the site. No structures remain on the site of an abandoned airport west of I-5. The City of Del Mar operates a public works yard east of the railroad and south of the river. An existing sewer force main crosses the river, generally along the bottom, from a pump station located on the fairgrounds to the Del Mar public works yard. Utility easements cross portions of the project area (see section 3.13 for a description of public utilities).

Existing land uses adjacent to the project area include public recreation, retail/commercial, commercial recreation, residential, agricultural, and vacant areas. The Scripps Preserve, a pedestrian overlook, is located on the ocean bluffs north of the river overlooking the river mouth. Other adjacent land uses include a hotel, driving range (Surf and Turf), and a mini golf center, located north of the river on the west side of I-5 (southwest quadrant of the I-5/Via de la Valle intersection). A community commercial center, which includes a grocery store and other

Figure 3.1-1

Land Ownership in the Project Area

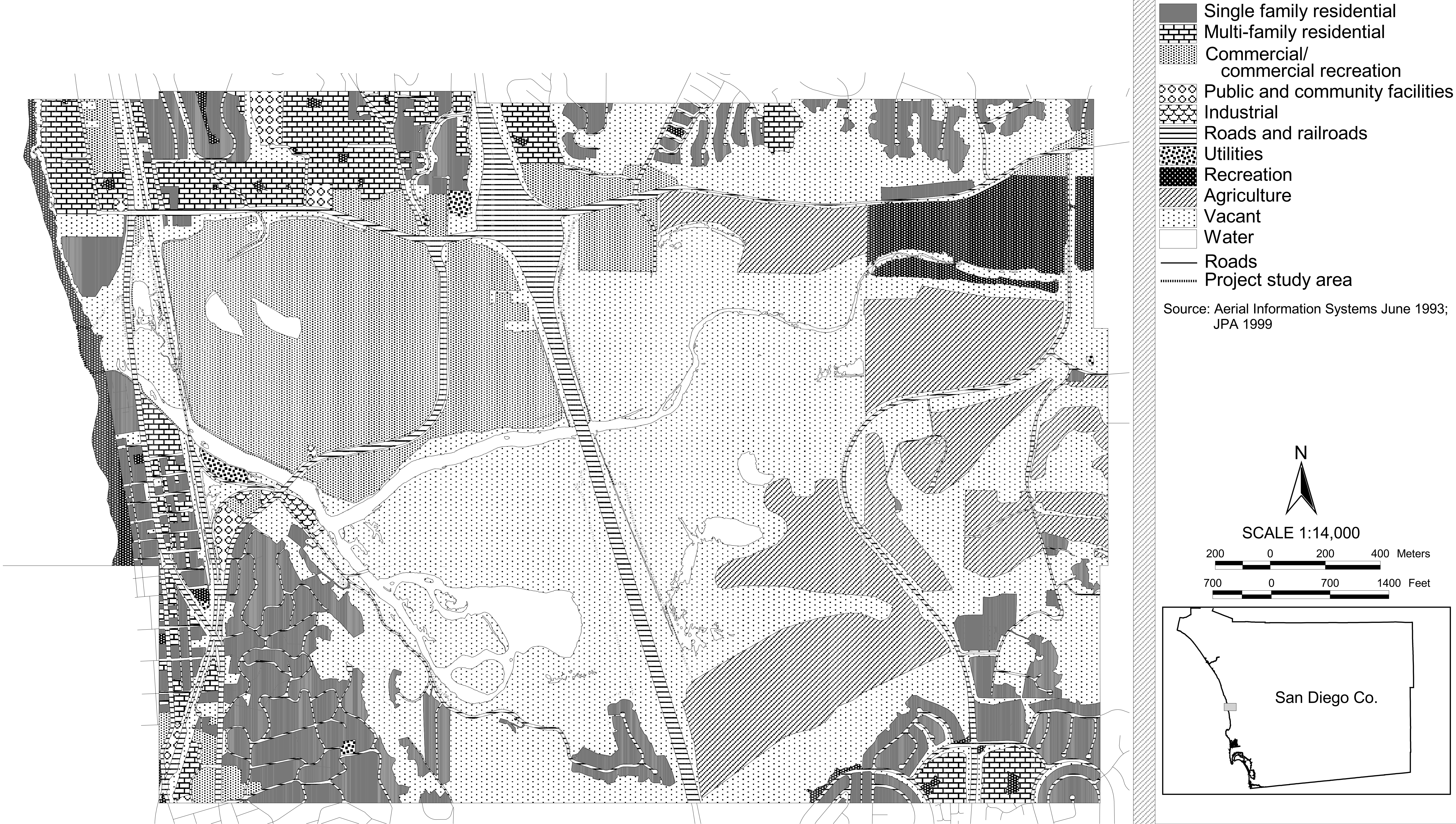


Figure 3.1-2

Existing Land Use in the Project Area

supporting uses, is located in the southeast quadrant of the same intersection. South of the project area, existing land uses include protected hillsides, residential uses, and vacant areas. On the east, adjacent land uses include agricultural and vacant lands as well as newly constructed residential uses.

Recreation

Portions of the project area are currently used by the public for recreation, including organized and informal uses, and in some cases, unauthorized uses. The *San Dieguito Wetlands Restoration Study Area Human Use Inventory* (KTU+A 1994) provides an inventory of the recreation uses within and surrounding the current project area. Portions of that study are summarized below. Additional information on river conditions such as water depth and velocity that affect recreational use, are summarized below and discussed further in section 3.10, Public Safety.

The study area for the Human Use Inventory is bounded by the Pacific Ocean shoreline to the west, El Camino Real to the east, Via de la Valle to the north, and the bluffs of Crest Canyon, and the southern residential areas to the south. The study area is further divided into subareas, referred to as A, B, and C (see Figure 3.1-3), corresponding to the level of detail given to their investigation. Subarea A, which received the most study, extends from the shoreline eastward along the San Dieguito River to the bridge crossing Jimmy Durante Boulevard. Subarea B contains the majority of the study area, including most areas east of I-5 and areas west of I-5 that are south of Jimmy Durante Boulevard. The San Dieguito River and areas farther south are contained within this subarea. Subarea C, which received less investigation, includes lands east of I-5 owned by the 22nd District Agricultural Association and the commercial areas at the southeast corner of the intersection between I-5 and Via de la Valle.

Data contained in the Human Use Inventory were gathered by KTU+A using four primary methods: field visits, photography, meetings/teleconferences, and review of existing documentation. Existing recreation uses, both authorized and unauthorized, in the project study area are illustrated in Figure 3.1-4. All uses, authorized and unauthorized, were studied in order to understand the full extent of the uses occurring in the area, as well as to understand the recreation needs of the area.

Subarea A is the most heavily used part of the study area. Uses include passive activities such as sunbathing and picnicking and other activities such as dog walking, ball games, biking, boating, walking, boogie-boarding, swimming, and surfing. The generally level, sandy area immediately north of the river and west of Camino Del Mar is frequently used for organized competitive sporting events such as volleyball and bocce ball tournaments, private parties, lifeguard training programs, and staging of organized charity walks. Dogs are allowed on the beach, with leashes required from June to September. In other months, leashes are not required.

Access to the area of beach in the vicinity of the river mouth is available from several directions, including from the north and south along the shoreline and from Camino Del Mar (Highway 101). When accessing this area from Camino del Mar, users have the option of entering the area from either the north or south of the river channel. From the north, there is a large sandy area that extends from Camino Del Mar down to the shoreline, and users generally follow along the edge of Scripps Bluff to reach the beach. From the south, users can take an informal path that has been

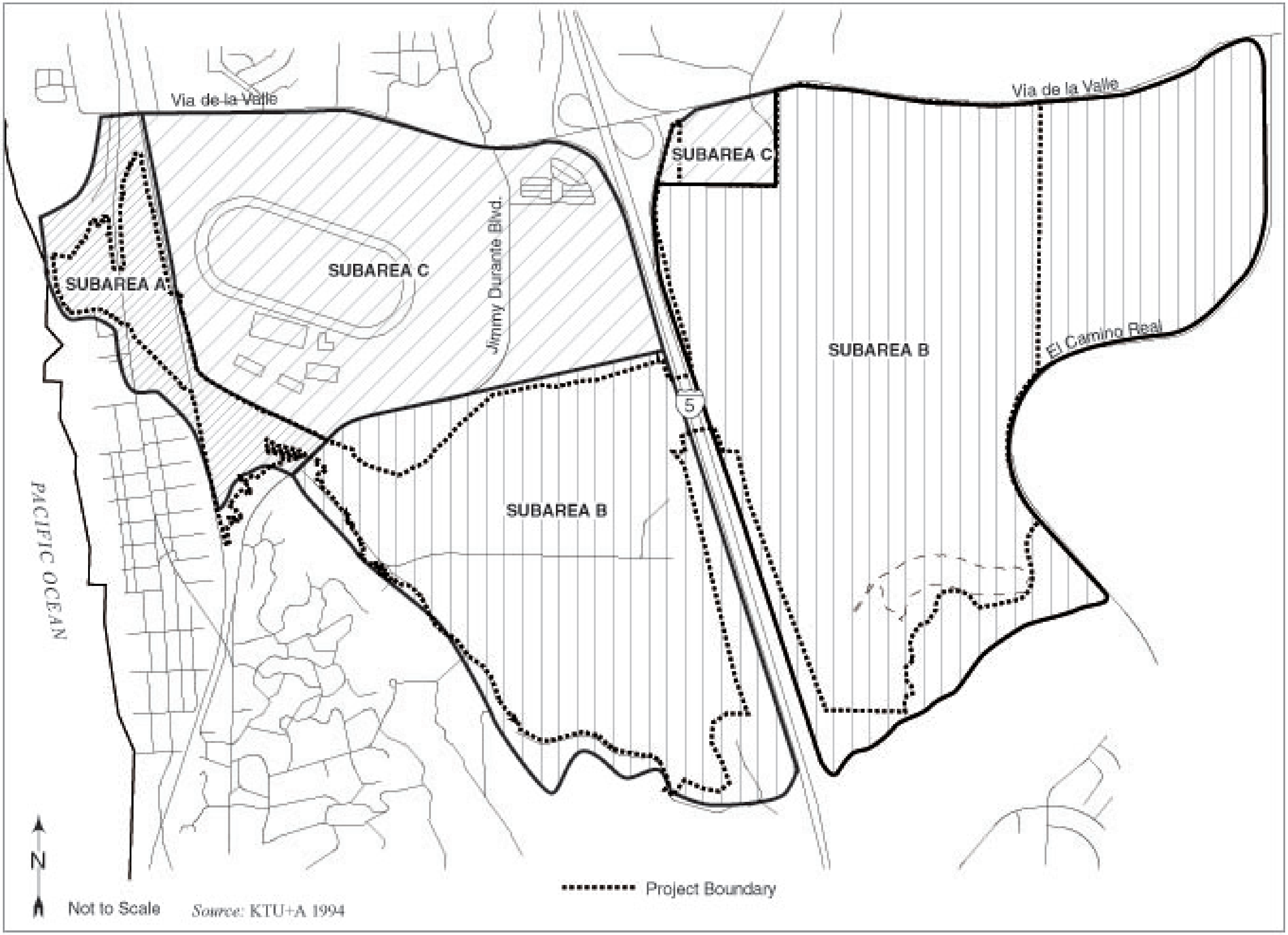


Figure 3.1-3. Human Use Inventory Subareas

ACTIVITIES

1 Sunbathing / Picnicking
2 Volleyball / Bocce
3 Sunbather Observed on Island*
4 Motorboat and Kayaking Observed*
5 Transient / Migrant Encampment*
6 Retriever Training Observed in this Area*
7 Dog Walking / Running (On and off leash)
8 Birdwatching / Least Terns Observed
9 Equestrian Activities
10 Hiking / Mountain Biking

USES / FACILITIES Existing

11 Model Planes and Fly Zone
12 S.D.G & E. Easement
13 Locked Gate to Private Property
14 Produce Stand
15 Site of Caltrans Const. Project Truck Climbing Lane
16 Least Terns Protection Fencing
17 Restaurant
18 Seasonal Portable Toilets
19 Overlook with Benches
20 Retriever Training Allowed in this Area
21 Dogs Allowed on Beach (leashed June - Sept.)
22 Hot Air Balloon Launching*
23 Caltrans Mitigation Area for I-5 Construction *(in progress)*

CIRCULATION

24 Access to Racetrack from North and South via RR Track*
25 Construction Access to Beachfront Properties
26 Cars Parked within AT&SF R.O.W.*
27 Overnight Camping Observed
28 Area used heavily for Dog Walking / Running*
29 Paths under I-5
30 Eroded Path
31 Sign Reading "Authorized Vehicles Only"

* *indicates unauthorized use*

Primary Vehicle Circulation
Secondary Vehicle Circulation
Bridges
A. T. & S. F. Railroad
Land Ownership Boundaries
Wetlands Restoration Design Boundary
Vicinity Planning Area
Significant Views
Designated Bicycle Lanes (Class 2)
Undesignated Bicycle Routes
Restricted Bicycle Use
Equestrian Trails
Conceptual "Coast to Crest" Trail Corridor
Pedestrian Tracks
Dog Walking / Running*
Bicycle Tracks*
Equestrian Tracks*
Existing Water Boundary

Source: KTU+A 1994

Figure 3.1-4. Existing Conditions from 1994 Human Use Inventory

created along the top of the existing riprap-lined slope. Once near the beach, however, it is necessary to climb down the rocks to reach the beach.

The inventory included observation of joggers/walkers attempting to cross the San Dieguito River channel at various times of the day during various tide and current conditions. When the tide is out, crossing the channel is relatively easy; however, shoes need to be removed since the water is knee-deep. Some joggers/walkers walked eastward to Camino Del Mar, climbed the riprap slope, crossed the river on the pedestrian path provided on the west side of the bridge, then climbed back down the embankment to the beach on the south side of the river and resumed their trip. Others chose not to cross the channel and turned back in the direction from which they had come. As tides increased, adults and children were observed playing, swimming, and boogie-boarding in the river channel.

At higher tides, water is waist deep, moves quickly, and can create a safety hazard to those attempting to cross the river, especially children. Sand on the river bottom can shift under foot, and crossing becomes increasingly difficult, yet many pedestrians continue to cross the river. Lifeguards warn all visitors to stay out of the river due to the increased velocity and frequently rescue individuals swept into the current.

The width, depth, and velocity of water in the river and inlet vary depending on tidal flows, season, and weather conditions (see section 3.10, Public Safety). The average inlet width varies from 50 feet east of the railroad trestle and Camino Del Mar Bridge to 20 feet along the beach. Average inlet channel depths from the shoreline to within 50 feet of the railroad trestle are 2 to 3 feet below mean sea level. Average inlet channel currents are about 1 foot/sec with peak flows as much as 3 feet/sec. The City of Del Mar Lifeguard Department (personal communication, Vergne 1999) estimates that during the summer, an average of six rescues per day takes place in the inlet area and related surf zone; however, no deaths have been recorded from aquatic causes. Only one or two rescues per week occur in winter months.

The James G. Scripps Preserve, an overlook area with two wooden benches, located immediately north of the San Dieguito River at the Pacific Ocean, can be reached by way of a relatively steep paved pathway from the beach below. Although several signs mark the way and caution pedestrians to stay on the path, several unauthorized foot trails have been worn into the hillside creating safety hazards and erosion problems.

The area east of Camino Del Mar receives significant foot traffic. Pedestrian tracks and foot paths are located next to the railroad right-of-way. A paved walkway adjacent to the housing development located immediately south of the river is used for pedestrians and bicycles. Examples of unauthorized recreation use of the area include sunbathers on the river "island," motor boat and kayak use in the river, and pedestrian access to the race track by crossing the railroad tracks. Transient encampments have been observed under the Jimmy Durante Boulevard Bridge as recently as March 1993, but none were observed during the field work for the inventory.

Subarea B, including the area east of the Jimmy Durante Boulevard Bridge to I-5, contains the California Department of Fish and Game Ecological Reserve. Signs are posted prohibiting entry to protect endangered species habitat. Bird watching occurs in adjacent areas. A number of tracks and pathways popular for hiking and dog walking are present in the area surrounding the lagoon. Access from the south residential areas is via the trail system within Crest Canyon. Dog retriever training historically has taken place in nearby areas, but in August 2000, the Fish & Game Commission took action to delete the Special Regulation that had allowed retriever training in the Ecological Reserve in order to stop impacts to sensitive habitats and listed species nesting sites. Despite the presence of a permanent pipe gate restricting access across the abandoned Grand Avenue Bridge, the paved roadway (original access to the abandoned airfield) and area east of it are popular for walking/running, hiking, and mountain biking, which are not authorized.

The intensity of activities in Subarea B east of I-5 to El Camino Real, south of the San Dieguito River, is much less than in areas west of I-5. The predominant unauthorized uses include horseback riding, hiking, dog walking, and mountain biking. Access to this area from the southern residential areas is by way of a network of pedestrian trails worn into the hillside.

East of I-5 between Via de la Valle and the San Dieguito River, the most intensive recreational use is in the horsepark/showpark owned by the 22nd District Agricultural Association. Several equestrian trails begin at the equestrian facility, and continue to the west, south, and east.

Portions of Subarea C located west of I-5 include the fairgrounds/racetrack described previously, as well as miniature golf, a driving range, and a hotel. A community commercial center is located in the southeast quadrant of I-5 at Via de la Valle and San Andres Drive. The commercial activities at the center encourage pedestrian traffic from adjacent properties. Limited equestrian, hiking, and mountain biking activity occurs within the existing utility easement/maintenance access road that starts at the terminus of San Andres Drive and follows west along the southern edge of the commercial site then turns south paralleling I-5 to the northern edge of the San Dieguito River.

Designated bicycle lanes and informal equestrian trails cross portions of the project study area. Designated bicycle lanes are located along portions of Via de la Valle west of I-5, Del Mar Coast Boulevard, Jimmy Durante Boulevard, and El Camino Real. Informal equestrian trails are located south of the horsepark/show park and along nearby portions of El Camino Real. A public trail easement extends from El Camino Real east along the southern edge of the Polo Field lease.

3.2 HYDROLOGY/COASTAL PROCESSES/WATER QUALITY

3.2.1 Hydrology

The San Dieguito River, including major tributaries Guejito Creek, Santa Maria Creek, and Santa Ysabel Creek, drains an area of 345.5 square miles. The watershed extends from the higher elevations on Volcan Mountain (in the Laguna Mountains) near Julian to the Pacific Ocean and has a total approximate length of 48 miles (Figure 3.2-1). Approximately 88 percent of the total drainage area is controlled by dams. Lake Hodges, located approximately 10.5 miles upstream from the coast, traps virtually the entire bed material load (coarse sediment) from upstream sources, with only wash load (clays and silts) traveling through the reservoir during floods.

Prior to construction of the dams, the main source of sediment load for the San Dieguito River was derived from the highlands, as evidenced by the granular nature of the sand and gravel alluvial deposits of the valley areas. As most of the sediment load is now intercepted by Lake Hodges, the present sediment source area represents the 42 square mile coastal watershed downstream of Lake Hodges and the remaining alluvial deposits of the lower reaches of the river. A recent sand mining operation near the Via de Santa Fe Bridge excavated sand deposits from the river. Until the excavated area fills in, this site will represent an additional sediment sink, intercepting essentially all the bed load arriving from upstream.

The lower reaches of the San Dieguito River have been incised into the broad coastal terrace, creating a 2,000- to 3,000-foot-wide, relatively level, alluvial valley. The actual low-flow channel traversing the valley floor is typically only 200 to 300 feet wide. The river valley in the 5.5-mile reach between the ocean and the sand mining site at Rancho Santa Fe has been modified extensively by development, although the path of the low-flow river channel remains very similar to what it was in the 19th century. Important features in this reach include the following:

- A natural beach berm at about mile 0.03, which can (and usually does) close the river mouth to all tidal flow.
- The Railroad Bridge at mile 0.27.
- A long, narrow, nearly straight channel from the beach to about mile 0.60 (the inlet channel).
- The Camino Del Mar (Highway 101) Bridge at mile 0.07.
- The Jimmy Durante Boulevard Bridge at mile 0.56.
- A sharp turn between mile 0.60 and mile 0.80.
- A long, narrow, nearly straight channel from mile 0.80 to about mile 1.50 (the west channel).
- The I-5 Bridge at mile 1.38.
- A series of broad meanders between mile 1.50 and mile 2.27.
- A utility corridor (major crossing) at about mile 2.27.
- The El Camino Real Bridge at mile 2.61

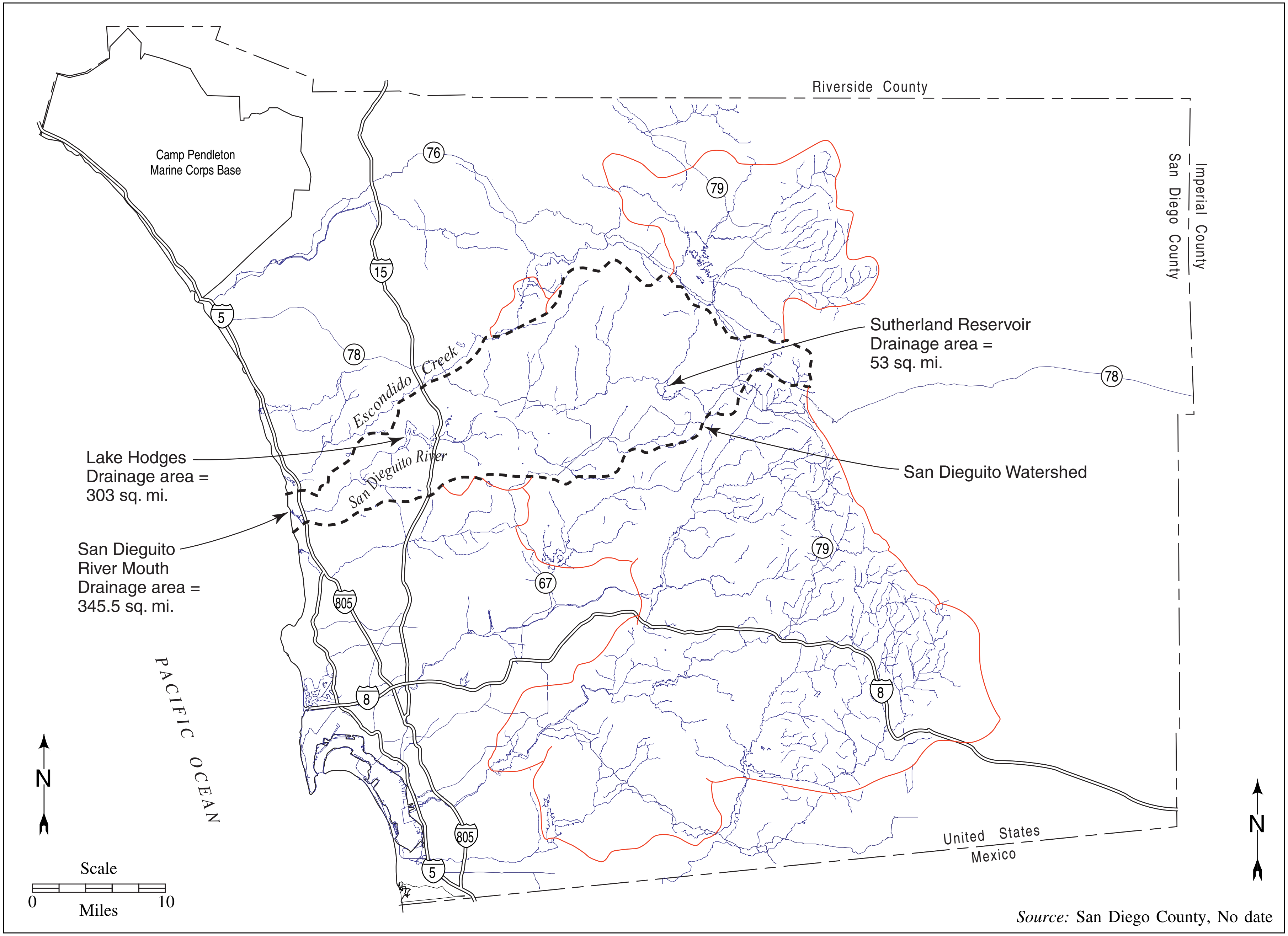


Figure 3.2-1. San Dieguito Watershed

3.2.1.1 Surface Runoff

Precipitation is the main source of water to the watershed. An understanding of this relationship provides a rational method of evaluating the intensity and duration of a particular design storm at any location within the San Dieguito watershed. Rainfall must be of sufficient intensity and duration to exceed the soil's moisture absorbing capacity and travel downslope. The duration must also be long enough to allow the runoff at any location to travel overland until it reaches more defined drainage paths, the San Dieguito River, and, ultimately, the coastline. Within the San Dieguito watershed, the travel time for precipitation falling in Julian to reach the coastline, neglecting the presence of upstream dams, is approximately 3 days. As a result, storm duration must exceed 3 days for runoff occurring near the easternmost areas to affect flooding associated with rainfall 3 days later along the coast (San Diego County 1985).

San Diego and vicinity has a mild subtropical climate. The moderating influence of the Pacific Ocean provides minor temperature differences between summer and winter. In San Diego's semi-arid climate, rainfall is strongly seasonal, with a short wet season in the winter and dry conditions during summer. Winter storms usually occur from November through April, with the greatest frequency and intensity normally occurring from December through March. Storms may last for several days, and are usually accompanied by widespread precipitation in the form of rain or occasionally with snow in the higher elevations. The majority of Southern California's most serious floods resulted from the passage of winter storms.

Rainfall measured at Lindbergh Field, from the time records were started in 1850 to date, ranges from a high of approximately 26 inches in 1883-84 to a low of approximately 3.5 inches in 1961-62 (Figure 3.2-2). The 30-year average (1941 to 1970) for the County indicates a range in average annual rainfall from 9 inches near the coast to approximately 32 inches near Cuyamaca State Park in the mountains to the east (Figure 3.2-3).

San Diego County operates approximately 90 stream flow stations, both recording and crest stage gauges, throughout San Diego, with seven stations within the San Dieguito watershed. These data are analyzed for each water year (October 1 through September 30), and peak flows, along with average daily and monthly flows are reported. Annual flow volumes are also reported for all of the recording gauge stations. In addition, the Flood Control Group has installed and operates telemetered recording gauge stations to record unusual water level variations at six reservoirs throughout the County, including Lake Hodges.

3.2.1.2 Flooding

The U.S. Army Corps of Engineers (USACE) and the County of San Diego have performed hydraulic studies of the San Dieguito River and its tributaries to define the design flows (i.e., floods that occur on average once in a specified period) at various locations within the watershed. Design discharges for the lower San Dieguito River (Chang 1997) are listed in Table 3.2-1.

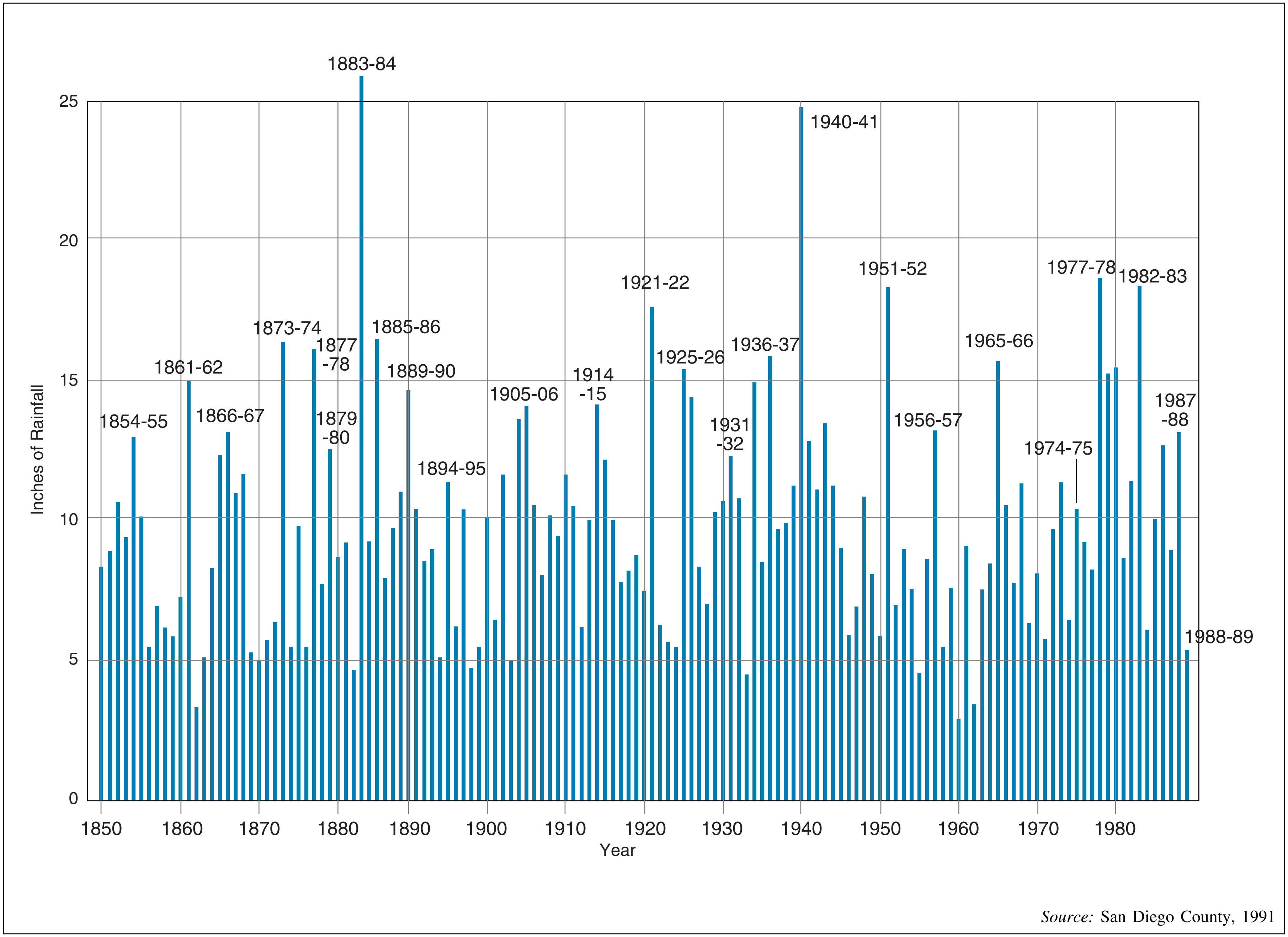


Figure 3.2-2. San Diego's Annual Rainfall History

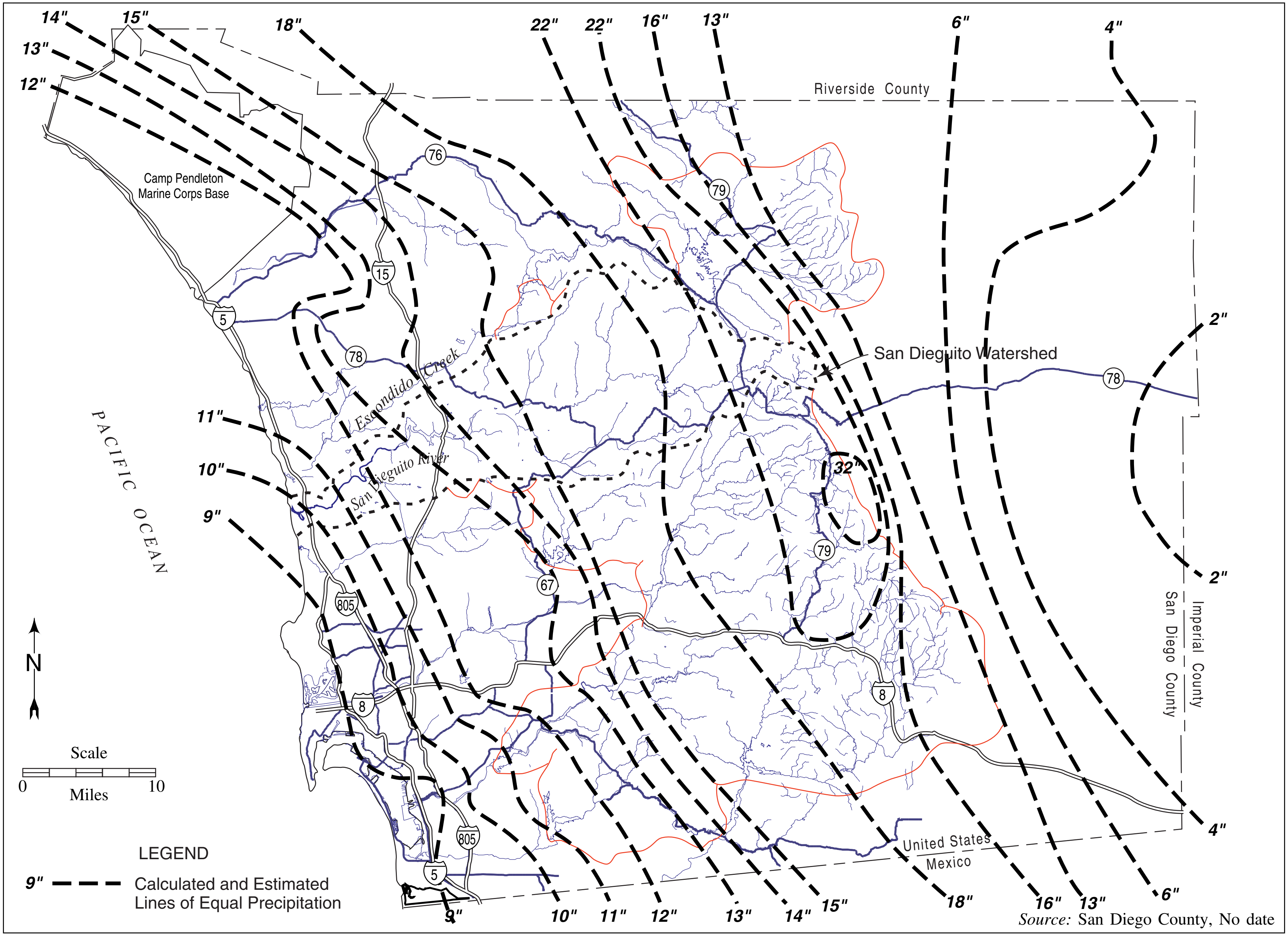


Figure 3.2-3. Annual Rainfall Contours - 30 Year Average, 1941 to 1970

Table 3.2-1. Design Discharges for Lower San Dieguito River

Flood Event	*Peak Discharge (cfs)*
10-Year	5,700
50-Year	31,400
100-Year	41,800
Source: Chang 1997.	

The existing low-flow river channel may contain a 2-year flood event, whereas all other flood events can be expected to overflow the channel and spill out onto the valley floor. Intermediate flood flows, after breaching the low-flow channel, quickly spread out across the valley floor, causing significant areal inundation. The El Niño-induced flooding in the early 1980s, on several occasions, flooded low-lying lands throughout the valley, including the residential area east of Camino Del Mar, just south of the river. Extensive flooding permeated much of the fairgrounds, including the parking lots both east and west of Jimmy Durante Boulevard; the alluvial floor of Crest Canyon to the south; the westerly, southerly, and easterly margins of the Via de la Valle shopping center just east of I-5; and a 2,000-foot width of low-lying lands extending from I-5 up to El Camino Real (Figure 3.2-4). Under existing conditions, the 100-year flood would essentially cover the entire valley floor, extending from near Via de la Valle on the north to the base of the southerly valley sidewalls.

The U.S. Flood Disaster Protection Act requires that the 100-year flood be considered in protecting cities from gradually rising floodwaters. San Diego County uses the 100-year flood in preparing "flood-prone area maps," which provide guidelines for development and floodplain management within the river environment. Table 3.2-2 provides the probability of the 100-year design flood occurring or being exceeded within a given project design life.

Table 3.2-2. Probability of 100-Year Design Flood

Project Design Life (years)	*Probability of at Least One Peak Flood Equal to or Exceeding the 100-Year Design Flood Flow during the Project Design Life*
100	63%
50	39%
25	22%
10	10%
1	1%
Source: Linsley & Franzini 1964	

The National Flood Insurance Program, in developing Flood Hazard Boundary Maps (FHBM), uses the computer program HEC-2 to develop the maximum water surface elevation for defining the flood hazard boundary. This delineates areas subject to inundation by the base 100-year flood. The HEC-2 program, developed by the USACE Hydraulic Engineering Center (HEC), is a fixed-boundary model that requires digitizing a sufficient number of river cross sections to characterize the existing river geometry. The computer then balances total hydraulic heads of adjacent river sections, and successively computes the water surface elevation in an upstream or downstream

Figure 3.2-4. View of San Dieguito River Valley during the 1982-1983 El Niño Floods

direction, depending on the type of flow (USACE 1982). The FEMA 100-year and 500-year inundation limits for the study area are shown on Figure 3.2-5 (FEMA 1983; 1986a; 1986b).

The existing hydraulic environment within the lower San Dieguito River was modeled by SCE consultants utilizing a total of 44 river cross sections considered representative of the downstream 2.8 miles of the river. The approximate locations of these river cross sections are shown on Figure 3.2-6, with section numbers corresponding to river mile station extending upstream from the river mouth. The computed water surface elevations for the 100-year flood events, based on the HEC-2 computer modeling, are presented in Table 3.2-3. Graphical representations of both the water surface profile and channel bed elevation are shown on Figure 3.2-7 (Chang 1998b).

Table 3.2-3. Computed Water-Surface Elevations for 100-Year Flood Based on Existing Conditions

Section River Mile	*Location*	COMPUTED WATER-SURFACE ELEVATION, FEET, NGVD*	
		HEC-2	*FLUVIAL-12*
0.00	River Mouth	8.3	0
0.07	Highway 101 Bridge	11.0	1.6
0.13		12.4	3.5
0.27	Railroad Bridge	13.1	6.1
0.33		13.5	7.5
0.41		14.2	9.4
0.56	Jimmy Durante Bridge	16.1	10.2
0.71		17.2	13.1
1.00		17.5	13.7
1.16		17.7	14.2
1.38	I-5 Bridge	17.8	15.0
1.57		18.8	16.4
1.81		19.0	16.9
2.09	East End of Levee	19.2	17.6
2.18		19.3	17.7
2.27		19.4	17.9
2.35		19.4	18.1
2.44		19.5	18.3
2.53		19.7	18.7
2.61	El Camino Real	19.5	19.2
2.69		20.5	20.6
*National Geodetic Vertical Datum of 1929 (NGVD)			

National Geodetic Vertical Datum of 1929 was formerly called "Sea Level Datum of 1929" or "mean sea level." The datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific coasts, although it does not necessarily represent local mean sea level at any particular place. As sea level continues to change due to global warming or cooling (melting or adding to the polar ice caps), the mean sea level tidal datum is revised by determining the arithmetic mean of hourly sea level heights observed over the 19-year national tidal datum epoch. Since global sea levels are continuing to rise, the current mean sea level datum (MSL) is presently 0.19 foot above the NGVD datum.

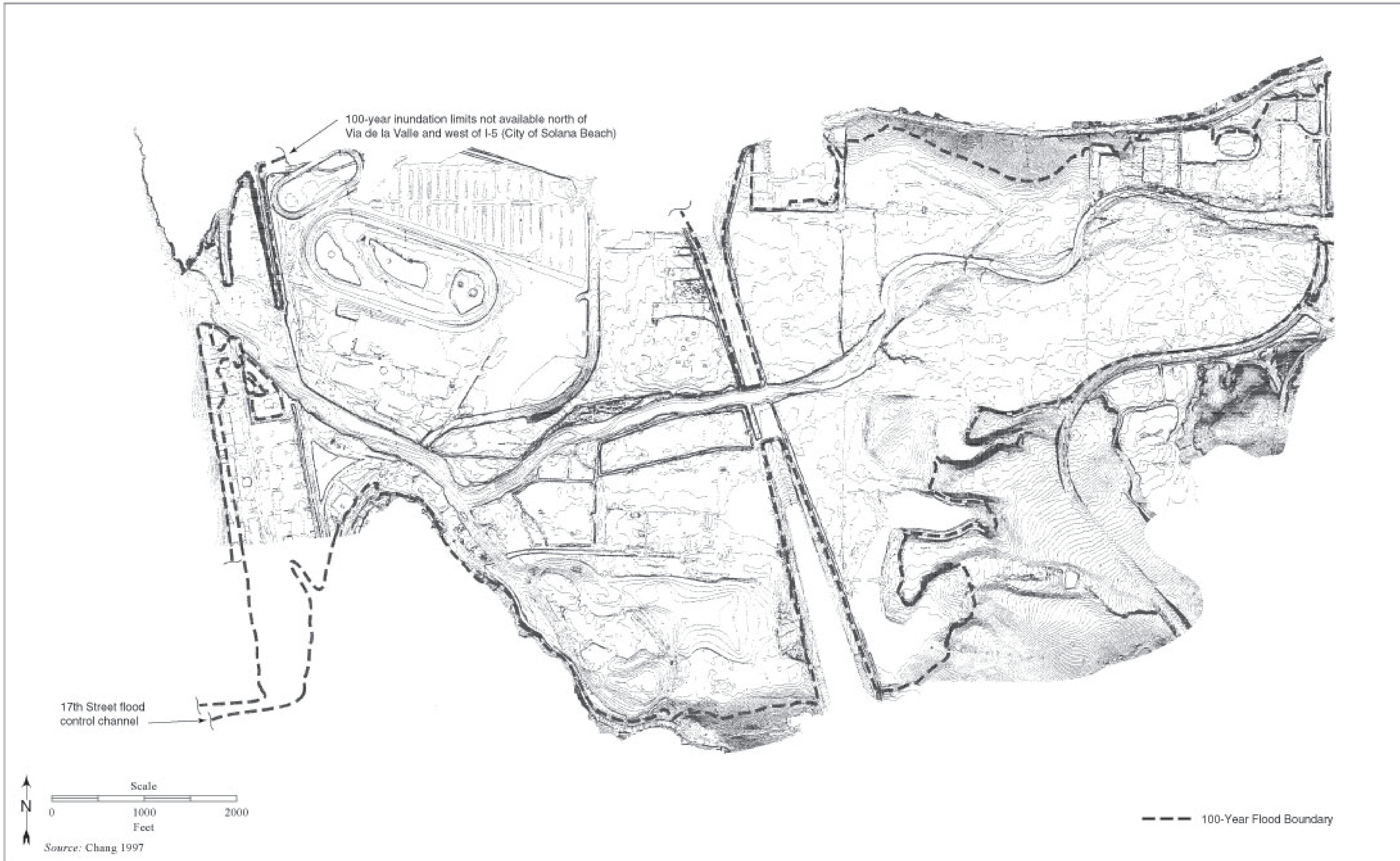
The WGVD datum used for this project is a fixed, land-based datum that does not change with sea level. Values of tidal characteristics in Table 3.2-4 are based on water level measurements from 1960 to 1978. Tide characteristics due to changes in mean sea level vary seaonally and decadally.

Although not used for this study, the North American Vertical Datum of 1988 (NAVD 88) is now being used more frequently throughout California and elsewhere across the United States. Unlike the NGVD 29 datum, the NAVD 88 datum represents a single datum elevation throughout the United States, with the base station located at the mouth of the St. Lawrence River in Quebec, Canada. This single station Mean Sea Level elevation now represents a national baseline datum, which, unlike NGVD, is not coincident with local sea level at any given tidal station. As NGVD 29 varies from location to location, the conversation from NAVD 88 to NGVD 29 also varies, with the NAVD 88 baseline for La Jolla being 2.21 feet below NGVD 29 and for Del Mar being 2.23 feet below NGVD 29. See Table 3.2-4 for additional information on datums.

Floodplain mapping in San Diego County is complicated by the fact that streams in Southern California are typically ephemeral (i.e., they flow intermittently). Typically, the streams are also quite steep, and have relatively high flow velocities that tend to erode the banks and bed of the river during flood flows. Conversely, deposition may occur during slower flows. Erosion and scour occur in alluvial valleys, sometimes damaging utilities and road crossing, and often encroaching on structures, roads, and property adjacent to the floodway. Sediment deposition can also occur in other areas, increasing the river's conveyance to spreading floodwaters beyond the limits predicted by HEC-2.

The National Flood Insurance Program mandates the use of HEC-2 as the basic tool for floodplain mapping for federal insurance studies. The model assumes fixed stream boundaries; however, both FEMA and the USACE acknowledge that ephemeral streams, such as the San Dieguito River, generally do not have fixed boundaries. The HEC-2 program may have deficiencies when evaluating the flood inundation limits within ephemeral streams. Both FEMA and the USACE also realize that an erodible-boundary model, capable of including channel bed scour and fill (or aggradation and degradation), width variation and physical constraints, such as bank protection, grade control structures, and bedrock outcroppings, would more realistically model the fluvial processes typical of the ephemeral rivers in the arid southwest.

The impact of floodplain encroachment (i.e., filling in land that used to flood) is an important consideration related to the location of the Del Mar Fairgrounds' property, the Horsepark, commercial and industrial development along Via de la Valle in the lower northern portion of the floodplain, and residential and other light commercial development along the lower southern margin of the floodplain. Floodplain encroachment constricts channel flow, thereby increasing water depths, flow velocities, and the potential for channel bed scour. Although the fairgrounds and other floodplain encroachments are still subject to flooding because these properties are not elevated enough to completely remove them from the 100-year flood inundation limits, encroachment into the natural floodplain has a negative impact on the natural fluvial processes through this section of the river. As indicated in Figure 3.2-5, significant flooding affects most of

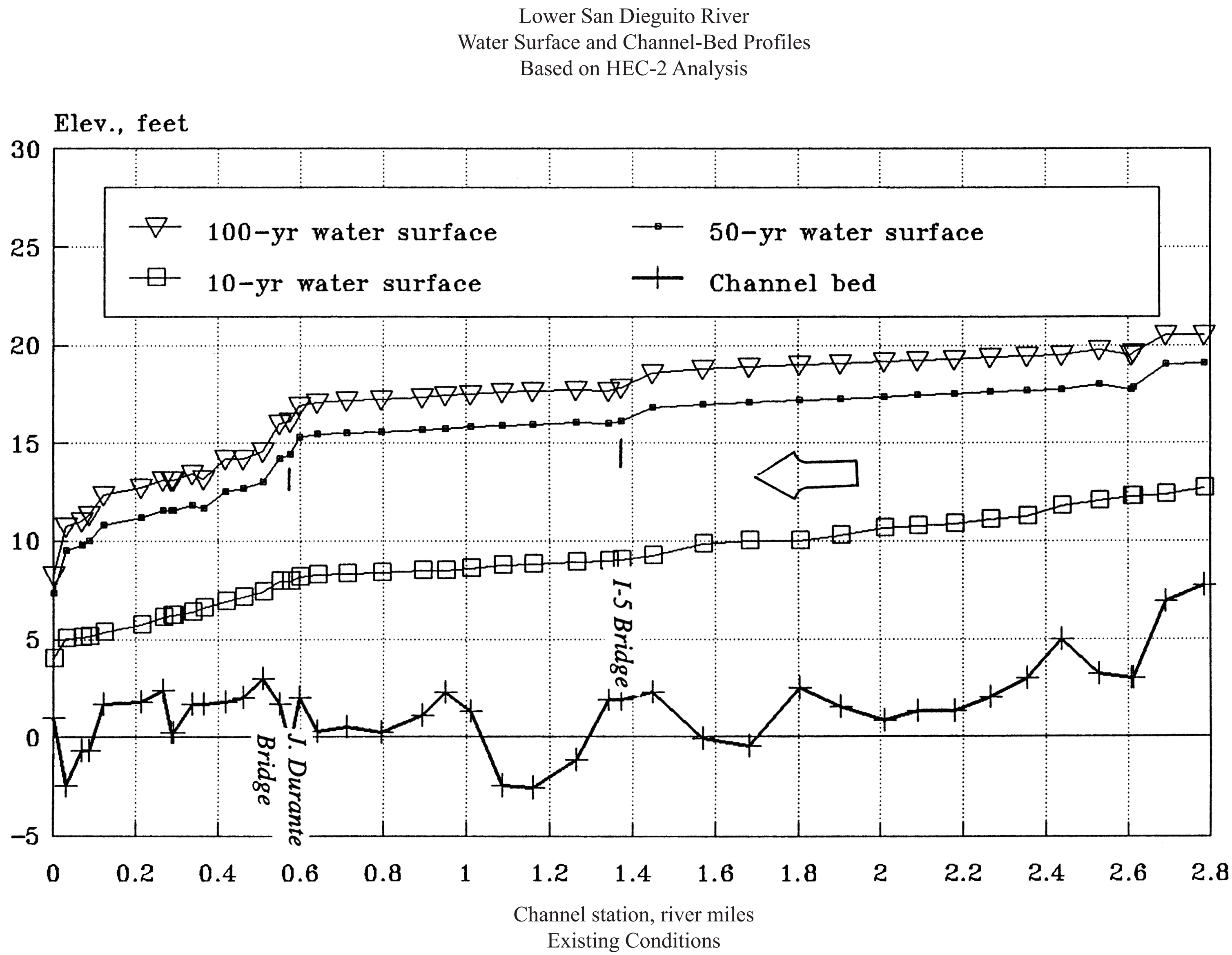


Source: Chang 1997

Figure 3.2-5. Lower San Dieguito River 100-Year Flood Inundation Limits

Source: Moffatt & Nichol Engineering, 1999

Figure 3.2-6. Lower San Dieguito River Hydraulic Modeling Cross Sections



Source: Chang 1997

Figure 3.2-7. Computed Water Surface Profiles for the 10-, 50-, and 100-Year Floods

the low-lying development downstream of El Camino Real, creating potential problems for many low-lying areas, both in terms of flood inundation and riverine scour.

Bridges typically provide a constriction in the flow area, thereby affecting water surface and bed elevations for some distance upstream and downstream, depending on the severity of the constriction. On the upstream side, there will be an increase in water elevation for a given flow and possibly a consequent reduction in velocities and deposition of sediment. Conversely, flow velocities accelerate through the constriction, causing streambed degradation at and immediately downstream of the constriction. Additionally, local scour will occur around bridge pilings and abutments, which are controlled primarily by the dimension and shape of the structure (HEC 1977). Local scour can easily exceed 5 feet in depth, which may negatively impact the stability of the structure and/or abutment.

Five bridges currently cross the San Dieguito River within the study area:

- Railroad Bridge at mile 0.27
- Camino Del Mar (Highway 101) Bridge at mile 0.07
- Jimmy Durante Boulevard Bridge at mile 0.56
- I-5 Bridge at mile 1.38
- El Camino Real Bridge at mile 2.61

An additional bridge on Grand Avenue crosses one of the tributary channels within the lagoon south of the main course of the San Dieguito River.

Both the Railroad and the Jimmy Durante Boulevard bridges and their associated abutments cause significant channel constrictions, and they are not capable of passing the 100-year design flood under the bridge soffit (the underside of the bridge) in their existing condition. The significant constriction associated with these bridge abutments would result in overtopping of the bridges and increased channel bed scour, threatening the stability of these structures.

The Railroad Bridge, due to its wood trestle-type construction, also creates the potential for significant debris (trees, branches, etc.) loading during flood flows, which could in fact clog the entire channel conveyance up to the bridge deck and impact water surface profiles upstream of the bridge. Although the Railroad Bridge may become undermined and fail during a design storm, the debris load could temporarily create significant upstream flooding prior to bridge failure (Chang 1999b).

Scour potential throughout the lower reaches of the San Dieguito River was also evaluated with the computer model FLUVIAL-12, developed by Dr. Howard Chang (1984, 1988, 1994, 1997). Unlike the HEC-2 model, FLUVIAL-12 simulates the combined effects of flow hydraulics, sediment transport, and river channel changes for a given flow period. These interrelated changes are coupled in the model for each time step, simulating channel bed scour and fill, taking into account physical constraints such as bank protection, grade control structures, and bedrock outcroppings. The model also addresses the impacts of general scour at bridge crossings, response to sand and gravel mining, and channelization (Chang 1997). Of greatest significance are model predictions regarding scour at the mouth of the lagoon during severe flood flows, which results in a substantially lower computed water-surface elevation near the mouth of the river. The model also accounts for river scour that would naturally occur elsewhere within the riverine system, where man-made constrictions into the floodplain accelerate flood flows. The computed water-surface elevations from the 100-year flood, based on the FLUVIAL-12 model, are also presented in Table 3.2-3, with a graphical presentation of both the water-surface profile and channel bed elevations shown in Figure 3.2-8 (Chang 1997). Also shown on the figure is the significant river bed scour in the vicinity of the bridges and downstream sections of the river. Following the 100-year flood, the predicted channel bed elevation at the river mouth would be approximately –9 feet, or substantially lower than the existing river mouth elevation. Scour channel widths from the Jimmy Durante Bridge to the river mouth range from 260 feet to 700 feet and locally much wider further upstream. Channel scour and flooding are important considerations for evaluating the environmental consequences of the individual restoration alternatives (Chapter 4).

3.2.2 Lagoon Hydraulics

Unlike the unprotected open coastline, coastal lagoons are protected from coastal waves and permit large habitat diversity that is affected by tidal exchange with ocean waters when the lagoon mouth is open and brackish to freshwater conditions as the lagoon mouth becomes silted. Although river flooding is primarily responsible for shaping the major active water courses within the lagoon, albeit substantially influenced by human encroachments, it is the tidal exchange or lack thereof that controls biologic diversity within the lagoonal system. With the river mouth closed, a brackish, and eventually freshwater, system is fed predominantly by upland sources, with changes in water level occurring more slowly due to evaporation and percolation into the aquifer being offset by riverine flows fed by rainfall, irrigation, and other domestic runoff. When the channel mouth is open, however, tidal exchange becomes the dominant factor in controlling lagoonal habitat.

Inlet stability is determined primarily by the diurnal tidal prism within the lagoon, maintaining sufficient tidal velocities to scour sand from the entrance channel compared to the tendency for longshore transport to overrun and silt-in the lagoon mouth. Although described in greater detail in section 3.2.3 (Coastal Processes), under existing conditions the inlet has historically remained open about 34 percent of the time, although during decades dominated by El Niño (e.g., 1920s, 30s, 80s, and 90s) the lagoon has been open about 65-75 percent of the time. The tidal prism is the volume of water enclosed by the planes of mean higher high water (MHHW) and mean lower low water (MLLW) within the lagoon. (As described in section 3.2.3.2, MHHW and MLLW represent the elevations of the average higher and lower of the semidiurnal daily tides, or a total elevation difference of 5.37 feet). The 12.4-hour tidal cycle provides the hydraulic gradient to push water into the lagoon during the rising tide and allow water to gravity-flow out of the lagoon during the subsequent falling tide. As much of the lagoon interior is above MLLW, the present tidal prism is substantially below its most efficient hydraulic capacity. As tidal migration within the inner reaches of the lagoon, especially at or above MLLW, is proportional to the water depth, continued siltation has a significant impact on tidal exchange throughout the entire lagoon. Thus, without some form of restoration, the lagoon will continue to experience additional infill, eventually creating a seasonal marsh habitat, transitioning into upland habitat void of the wetland influence. Conversely, significant improvements in tidal exchange can occur with modest levels of maintenance dredging.

Up until the last few hundred years, the natural conditions of the lagoon were characterized by a lagoon mouth that was approximately 3,500 feet wide and was dominated by sand bar-building

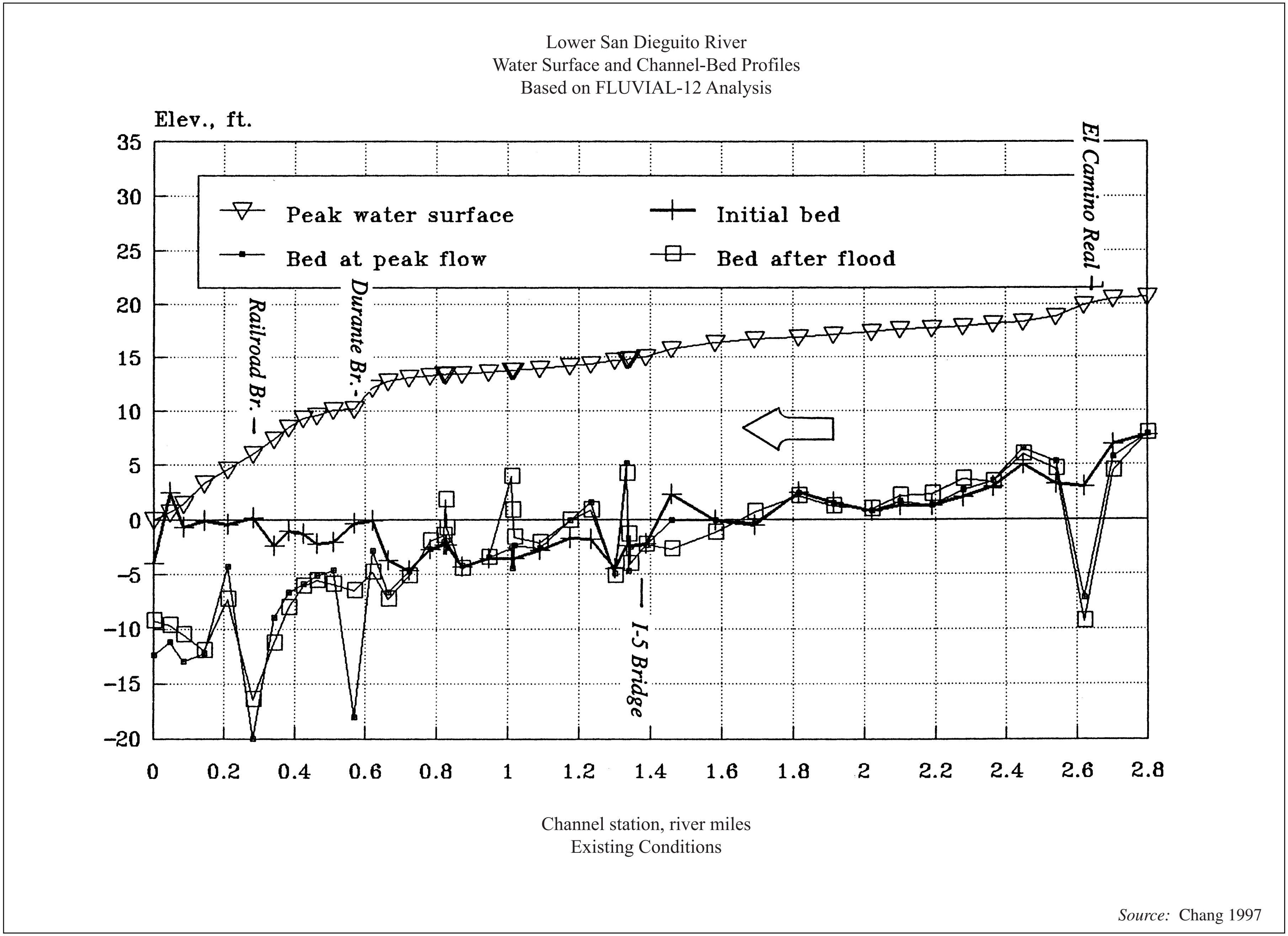


Figure 3.2-8. Simulated Changes in Water-Surface and Channel-Bed Profiles during the 100-Year Flood under Existing Conditions

processes, with the river mouth migrating from the existing headland (Scripps Bluff) north of the current river mouth to a short distance southerly of 17th Street, which forms the southerly banks of the ancestral San Dieguito River (Kennedy and Peterson 1975). Fluvial processes continued to infill the San Dieguito River Valley, depositing alluvial sediments into the littoral zone during the larger flood flows and slowly building up the elevation of the valley floor during more quiescent times. The contemporary beach berm on which the Del Mar beachfront homes exist, likely formed within the last 150 years in response to strong southerly storms, creating the northerly extending Baymouth Bar, with the river discharging near the northerly headland. Subsequent construction in this area, which has permanently altered the previous natural conditions, has maintained the river mouth at its present northerly extent, with the Baymouth Bar now supporting Camino Del Mar and the adjacent residential improvements on both sides of the roadway.

Human activities within the floodplain, including both flood plain development and transportation corridors crossing the floodplain, which impact tidal circulation within San Dieguito Lagoon can be classified into three distinct categories:

- Floodplain encroachment, along with construction of highway and railroad corridors has changed the nature of the circulation and the dynamics of the inlet. Roadway and railway embankments, and their associated bridge openings, have created finite choke points within the riverine system, forcing both the daily tidal exchange and the more infrequent flood flows through more well-defined corridors, which during flood flows contribute to stream bed degradation at each of these choke points. The presence of elevated floodplain encroachments, including those of the Del Mar Fairgrounds and the commercial development along Via de la Valle, further confine and define the tidal hydraulics within the lagoon.
- Land-use practices and disturbance of natural land cover have increased erosion rates within the watershed and sediment delivery rates to the lagoon. The consequences of these human impacts are most prevalent within that portion of the upland watershed downstream from Lake Hodges Dam, where urbanization and the associated increase in impermeable surfaces has elevated base flows into the river system, which increases scour potential and sediment production.
- Decreases in sediment supply to the littoral cell have changed the lagoon mouth in a manner that suppresses natural closures in the lagoon. As indicated in section 3.2.3, the available sand supply within the Oceanside Littoral Cell (OLC) has been significantly reduced, and current longshore transport rates are often insufficient to overrun the tidal currents that would otherwise scour the channel entrance and keep the inlet open.

Inlet Constrictions

In the late 1800s, a railroad bed was constructed as a filled causeway across the lagoon mouth. Only a small trestle was used to allow flow between the lagoon and the ocean. The first permanent highway bridge was built in the early 1900s, just west of the railroad trestle, with the majority of the roadbed on an infilled embankment extending into the lagoon, with only a small opening to pass flood flows. Sometime thereafter, a third roadway, Jimmy Durante Boulevard, encroached into the lagoon southeasterly of what is today the Del Mar Fairgrounds. In 1965, a fourth causeway was built for I-5, approximately 1.3 miles upstream from the river mouth. In the 1970s, a rock revetment was constructed along the current southerly edge of the river mouth to protect beachfront properties along Sandy Lane. The revetment near the mouth of the lagoon has also confined the location of the inlet channel and prevented migration in response to littoral forces. These constrictions or choke points have altered the physical behavior of the lagoon over the last 100 years. These conditions promote the retention of beach materials, as well as fine-grained sediment from upland sources, within the lagoon. This, in turn, reduces the tidal prism and increases sedimentation rates in the lagoon, as well as the potential for future inlet closures.

Watershed Land Use

The earliest maps of San Dieguito Lagoon date from 1887 and depict several miles of tidal channels, marsh, and mud flat extending from the lagoon mouth well inland past the present location of I-5. Although the railroad had been built by this time, the lagoon mouth clearly had an open channel. The marsh area alone is believed to have been over 600 acres, while the entire lagoon probably covered 1,000 acres.

San Dieguito Lagoon has undergone major filling activities that have replaced over half of the marsh acreage. The railroad, Highway 1, and Jimmy Durante Boulevard were built on fill in the lagoon. Early land development (1905) by the South Coast Land Company filled the southern lagoon between Highway 1 and the railroad. The Del Mar Fairgrounds were built on a 200-acre section of the northern lagoon in 1935. The wetlands east and west of Jimmy Durante Boulevard were progressively filled or developed. Del Mar airport was built on lagoon wetlands during World War II. The construction of I-5 in 1966 through the middle of the lagoon isolated the wetlands on the eastern edge of the lagoon. Another fill for a shopping center in the 1970s further reduced the wetland acreage. Two large dams were constructed on the San Dieguito River, greatly reducing freshwater inflows. The result of all these activities was year-round closure of the lagoon mouth beginning in the late 1940s. Only large winter floods forced the mouth open.

The California Coastal Conservancy began an enhancement project for San Dieguito Lagoon in 1978. The original enhancement plan, produced by the City of Del Mar, was implemented in part with a $1.3 million grant from the Coastal Conservancy in 1983. A tidal basin was dredged in a 70-acre area of the southern lagoon, and an enormous gully in Crest Canyon was restored with the dredge spoils. The lagoon mouth was opened, returning tidal flows in the river channel to El Camino Real.

Lagoon hydraulics, including the tidal prism, sill depth, and current velocities, are important to the distribution and extent of different biological habitat types within the Lagoon. Variations in astronomical tides and the less frequent contributions to even higher water levels, including sustained onshore winds, waves, and low pressure systems, along with the more pervasive climatic events such as El Niño, further elevate coastal sea level and, thus, contribute to similar transient elevated water levels with the lagoonal system. The extreme water surface elevations within the lagoon help support the mid-marsh and high-marsh habitats. Large storm events can move significant volumes of littoral sands and overrun the tidal flows, which would otherwise sustain an open lagoon mouth, thereby completely closing off tidal exchange until the beach berm is either breached by additional upland runoff or maintenance dredging,

Each of the proposed restoration alternatives would alter the current conditions at San Dieguito in an effort to restore the lagoon's previous natural conditions. This would be accomplished by maintaining the inlet in an open configuration and increasing the tidal prism of the lagoon. Each of these alternatives would maintain an open inlet and would restore the lagoon's tidal prism to varying degrees. The most significant differences between the alternatives would be the increased frequency and extent of exposed intertidal mud flat. Each alternative would sustain a different equilibrium low energy sill depth, with the sill depth elevation inversely proportional to the tidal prism. Increases in tidal prism would also result in increased tidal current velocities during peak flood and ebb flows for any given tidal range.

3.2.3 Coastal Processes (Oceanography)

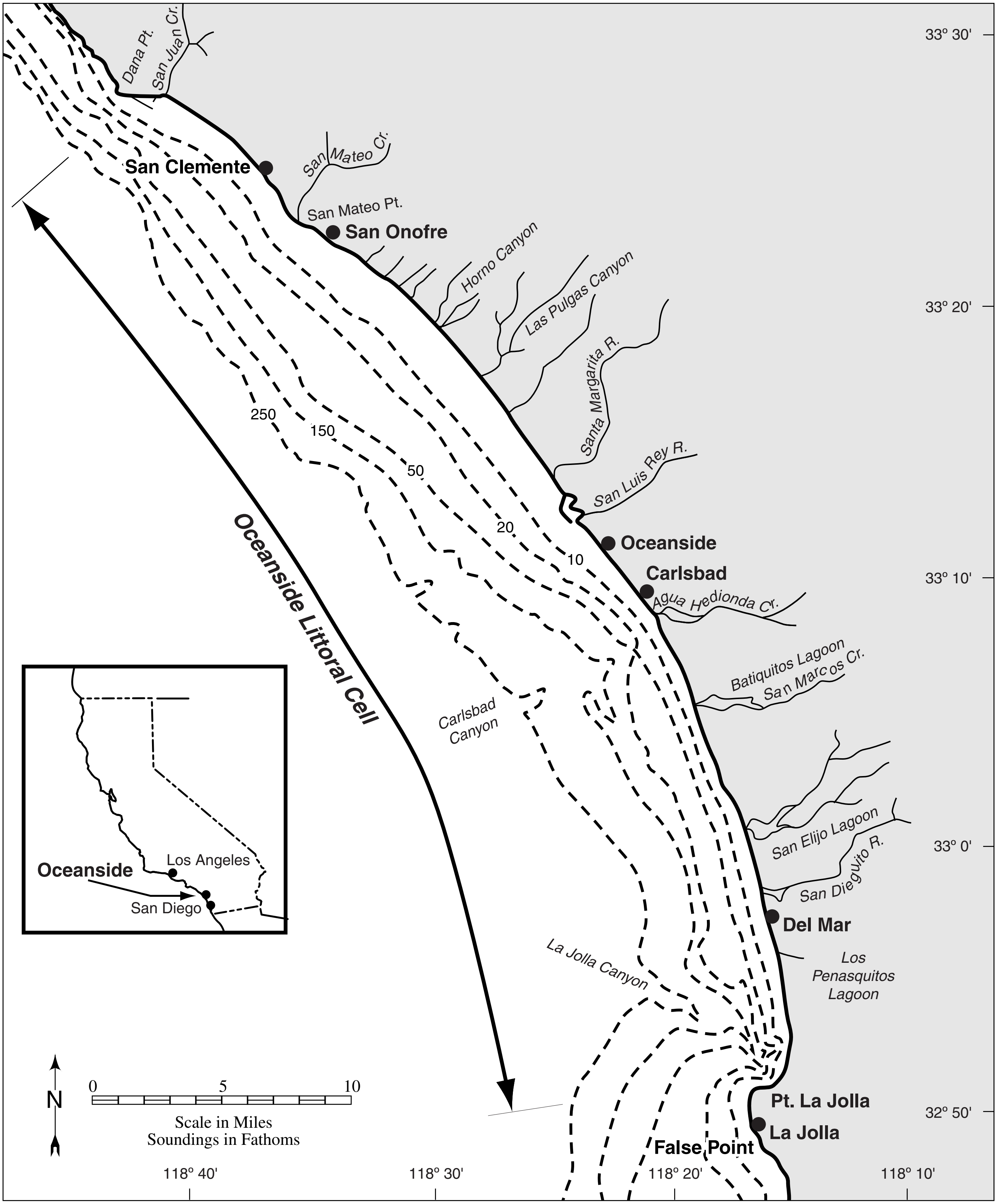
3.2.3.1 Oceanside Littoral Cell

The project study area is situated within the southern half of the OLC. A littoral cell is a coastal compartment that contains a complete cycle of littoral (beach) sedimentation, including sources, transport pathways, and sediment sinks. The OLC extends for approximately 57 miles from Dana Point to Point La Jolla (Figure 3.2-9). The coast from Dana Point to La Jolla is primarily narrow, seasonal, sand beaches backed by sea cliffs. Other coastal features include headlands, cobble beaches, rivers, creeks, tidal lagoons, man-made shoreline and bluff protection systems, and major harbor structures. The natural sources of sand for the beaches within the littoral cell are sediment discharge from rivers and streams, and cliff erosion. Another source of sand for the beaches is beach nourishment projects, where sand is taken from an inland source or from another littoral setting and placed by man onto the beach. Sand moves along the shoreline predominantly to the south, with occasional reversals. The primary sinks for beach sands, where sands are permanently lost, are the Scripps and La Jolla Submarine Canyons at the southern end of the littoral cell. Sand is diverted offshore, outside the littoral system, by the Oceanside Harbor jetty system. In addition, Oceanside Harbor and Agua Hedionda Lagoon trap beach sands as they move along the shoreline. However, these sediments are periodically reintroduced back into the littoral system through maintenance dredging projects and, therefore, they are not permanently lost.

The OLC and the project area have been the subject of many shoreline studies since the early 1960s. Most of these studies were conducted by the USACE as part of their Beach Erosion Control Study Program. Shoreline retreat and beach erosion within the OLC and particularly in the Oceanside area were problems that warranted federal studies as far back as 1955. In addition, many of the more recent reports were produced by the USACE as part of the Coast of California Storm and Tidal Wave Study (Inman et al. 1986; USACE 1985, 1987a, 1987b, 1988, 1989, and 1991). Recently, the shoreline and unprotected coastal bluff segments in the OLC have experienced an increase in erosion due to long-term impacts of coastal urbanization. Damming rivers, sand mining, and hardening of the shoreline has resulted in significant narrowing of the beaches within the OLC, including the shoreline in front of the study area. While the shoreline throughout the OLC is eroding, the shoreline in the immediate study area is eroding at a comparatively slower rate, primarily due to sediment load input of the San Dieguito River.

3.2.3.2 Sea Level and Nearshore Waves

The level of the ocean (sea level) plays an important role in coastal processes and shoreline erosion. As sea level rises, the shoreline moves farther toward land. This enables waves to erode the shoreline farther back on the beach profile. Sea level is primarily influenced by the tides (sun/moon gravitational effect). The mean tide range is about 3.7 feet, with the lowest annual tide at about -2.0 feet MLLW datum and the highest annual tide about 7.8 feet MLLW (USACE 1989, 1991). MLLW is 2.75 feet below mean sea level. The diurnal range is 5.4 feet while the extreme



Source: USACE, 1991

Figure 3.2-9. Oceanside Littoral Cell

range is near 10 feet. Table 3.2-4 shows the relationship of the tidal datums and the extreme observed water levels.

Table 3.2-4. Water Levels at La Jolla

	Datum MLLW (ft)
Highest Observed Water Level (Nov 13, 1997)	7.94
Mean Higher High Water (MHHW)	5.37
Mean High Water (MHW)	4.62
Mean Sea Level (MSL)	2.75
National Geodetic Vertical Datum (NGVD)	2.56
Mean Low Water (MLW)	0.93
Mean Lower Low Water (MLLW)	0.00
Lowest Observed Water Level(Dec 11, 1933)	-2.6

Sea level in the study area is also influenced by winds, waves, low pressure systems, and short- and long-term climatic events. Strong winds and high waves can pile water up along the shoreline, resulting in a rise in sea level. Extreme low pressure systems, such as hurricanes (chubascos), can also result in a rise in sea level. The combined effects of wind, waves, and low pressure can, in rare cases, raise sea level about 1 foot. However, this storm-induced rise in sea level is over a relatively short period of time, such as a few days. During inter-annual large-scale climatic events, such as the El Niño in 1982-83, sea level was about 0.85 feet higher than normal for 1 to 2 years (USACE 1989, 1991). During November of 1997, sea level reached a maximum height of 7.94 feet above MLLW. Analysis of sea level observations over the last nine decades suggests a mean rate of sea level rise of 0.64 feet per century. Sea level is expected to rise about 0.2 feet over the next 25 years as a result of long-term climate effects, such as global warming (USACE 1989, 1991).

Waves provide the primary energy responsible for driving coastal processes. There are two classifications of waves, *sea* and *swell*, that reach the study area. Sea waves are generated by local winds and have a short period (less than 7 seconds between successive waves) and a low height (usually less than 3 feet). Swell waves are generated by distant storms and travel hundreds to thousands of miles before reaching the study area. The period of swell waves is longer (7 to 20 seconds), with swell wave heights ranging from 1 foot to 20 feet. Swell waves tend to have the greatest impact on the shoreline because swells provide the majority of the energy responsible for moving beach sands.

Swell waves approach the study area from different directions and vary in size and period. Figure 3.2-10 shows the wave windows for the San Diego Region. There are three seasons that make up the annual wave climate in the study area: winter (October — March), transitional (April — June), and summer (July — September). Waves from the northwest generated by North Pacific extra-tropical storms predominate during winter. Southern Hemisphere extra-tropical storms produce southerly waves that impact the shoreline within the study area during summer. The offshore Channel Islands dissipate wave energy and modify deep water waves before they can reach the

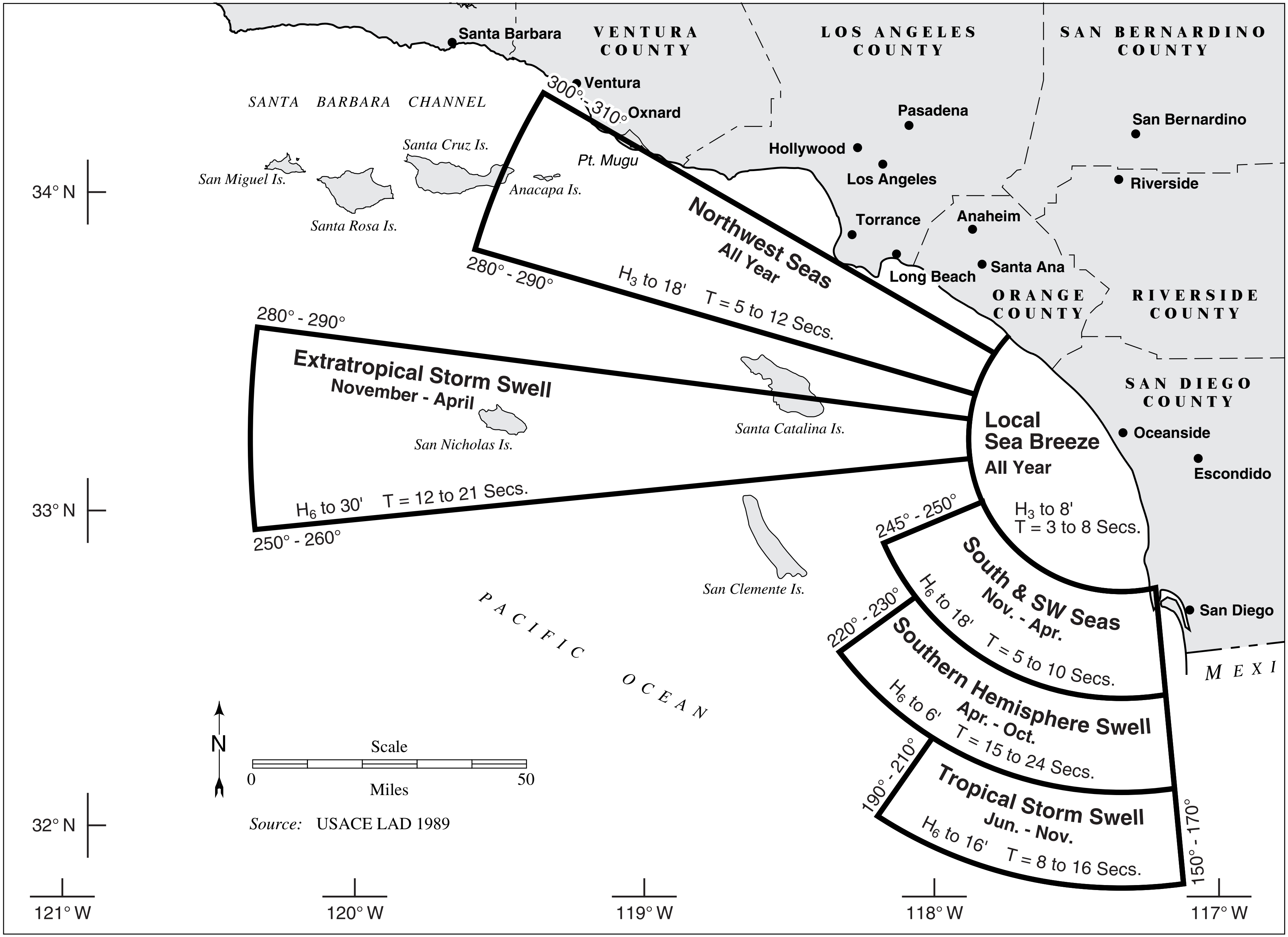


Figure 3.2-10. Wave Exposure for the San Diego Region

shoreline. The nearshore wave climate is complex due to the various effects of island sheltering, diffraction, refraction, and wave shoaling. The bathymetry in the study area is generally parallel to the shoreline. There are no large headlands or significant bathymetric features, such as submarine canyons, in the immediate study area.

Breaking waves in the study area normally range from 2 to 5 feet, although waves of 6 to 10 feet are not uncommon. A shallow water wave measuring gauge has been located off of Del Mar for the last two decades. The mean characteristic wave height according to the wave gauge is 6.2 feet. Large waves can impact the study area year round and usually last about 2 to 3 days. Extreme event waves during times of high sea level, are responsible for the majority of the shoreline erosion. Table 3.2-5 presents the significant wave height for extreme nearshore waves versus return period (recurrence interval) at Del Mar and is based on wave gauge data and hind-casting conducted by the Scripps Institution of Oceanography.

Table 3.2-5. Significant Wave Heights at Del Mar

Return Period (years)	*Significant Wave Height (feet)*
5	13.0
10	14.5
25	16.5
50	18.0
100	19.4

Source: USACE 1991.

3.2.3.3 Nearshore Currents

Nearshore currents move sand along the shoreline and into and out of the coastal portion of the study area. There are four primary sources for nearshore currents: (1) wave-driven currents, (2) wind-driven surface currents moving approximately in the direction of the wind, (3) tidal currents which trend parallel to shore and switch direction with the falling or rising tide, and (4) currents near the mouth of San Dieguito River that are a result of river flow and/or tidal exchange within the wetland.

Currents offshore of the surfzone are primarily tidal-driven and weak (velocities of inches/sec) compared to typical surfzone currents. Typical wind-driven surface currents within the surfzone are also small when compared to the wave-driven currents. Waves are the primary source of energy that drive currents within the surf zone. Larger waves produce stronger currents. There are two types of surf zone currents, on-offshore currents and longshore currents. The first type moves sands in the on-offshore direction. The most familiar on-offshore current is a rip current. Rip currents commonly occur in the study area and, under large wave conditions, can travel in excess of 1 foot/sec (Inman et al. 1986). Longshore currents move sands along the shoreline, typically from north to south and occasionally from south to north (USACE 1991). The strength of the longshore current increases with wave height. Under large wave conditions, longshore current velocities can reach 1.6 feet/sec or greater (Inman et al. 1986).

River currents and tidal currents are the dominant currents at the San Dieguito River inlet. River flow into the surf zone during major rainfall events is by far the strongest current. River flows at the Highway 101 Bridge can be as strong as 10 feet/sec. The river flow may be slightly augmented by the existing ebb tidal flow leaving the estuary. The nominal existing tidal flow when the inlet is open is about 1 foot/sec with peak flows as much as 3 feet/sec. The actual tidal flow varies depending upon the tidal range and the height of the sill across the inlet. For low flow conditions, the river currents are dissipated within the surf zone. During flood flows the river currents can extend out beyond the surf zone, forming a plume with the fine grain sediment-laden waters.

3.2.3.4 Beach Sediment Sources

Littoral sediments within the OLC originate primarily from the upland watershed. Beach sands in the study area are a product of the erosion of the land within the littoral cell. These sands are delivered to the shoreline by the rivers and streams, erosion of the coastal cliffs, and beach nourishment (USACE 1991). Numerous rivers and streams discharge sediment into the OLC as shown in Figure 3.2-9. The largest drainage basins are regulated by dams, which trap sands behind them. The resulting reduction in sediment load is as much as 88 percent (San Dieguito River), but more commonly about 50 percent (Santa Margarita River). The various lagoons and marshes are not considered to contribute significant amounts of sediments to the shoreline. The total amount of sediment arriving at the coast from rivers and streams varies from 53,000 to 426,000 cubic yards per year (USACE 1991). The total cumulative deficit of sand yield to the beaches as a consequence of damming of rivers is estimated to be 27,000,000 cubic yards (Jenkins and Wasyl 1998).

In addition to sand beaches, extensive shingle (gravel) beaches exist throughout most of the OLC. This shingle, which became exposed during storms in 1980 and again in 1983 (Kuhn and Shepard 1984), originate from the upland watersheds of North County, where the Eocene-aged cobble conglomerates occur locally with maximum thicknesses upward of 500 feet (Kennedy and Peterson 1975). Where the conglomeratic formations are incised by rivers, such as San Marcos Creek (Batiquitos Lagoon), the eroded sediments (gravels, sands, silts and clays) are transported to the coast and deposited in nearshore deltas where they feed the littoral system. The finer fraction is lost first, and the sands begin their longshore migration until intercepted by a submarine canyon or deposited offshore in water depths too great for later onshore movement. The gravels and cobbles, being larger and hence less susceptible to both longshore and seasonal offshore-onshore movement, tend to accumulate on the shore platform or on deeper scoured sand surfaces (as in the case of river mouths and the low-lying areas of Del Mar) and are re-exposed during periods of sand depletion. A shingle beach is only intermittently exposed along Del Mar following periods of intense storm activity that remove the beach sands, exposing the more erosion-resistant shingle.

Coastal bluffs ranging in height from 10 to 350 feet occur along about 90 percent of the shoreline in the OLC. The bluffs, when not protected by a wide sand beach, will erode when subject to wave attack. Bluff erosion is episodic, and can occur as isolated events at limited areas for site-specific causes. The northern end of the shoreline within the study area is characterized by coastal bluffs. Historically, the coastal bluffs have contributed beach sediments to the littoral system.

Beach nourishment and sand bypassing have occurred on numerous occasions within the OLC. The primary sites for beach nourishment have been in front of Agua Hedionda Lagoon, south of the Oceanside Harbor, in front of the San Onofre Nuclear Generating Facility, and at Doheny State

Beach. Sand bypassing, in which sand is artificially passed around a littoral barrier, has taken place at Oceanside Harbor and Agua Hedionda. Approximately 10,000,000 cubic yards of sand have been artificially placed on the beaches in the OLC, and about 15,500,000 cubic yards of sand have been by-passed around coastal structures within the cell (USACE 1991).

3.2.3.5 Shoreline Characteristics and Beach Sediment Transport

The beaches immediately to the south of the San Dieguito River are characterized by a gentle offshore slope, a steeper beach face, and a narrow seasonal beach backed by shore protection. Most of the backshore region is stabilized by vertical sheet pile seawalls and quarry stone revetments (riprap). These shore protection structures have been subject to wave runup and overtopping since construction. Overtopping of the revetments and seawalls has resulted in damage to residences behind the structures. Overtopping occurs annually, with extreme and damaging overtopping occurring during the coincidence of high tides, high waves, and when the beach fronting the structures is eroded away. A quarry stone revetment on the southern embankment of the tidal inlet acts much like a jetty. This revetment provides partial protection for the adjacent homes from wave overtopping and fixes the southern boundary of the inlet. The beaches in Del Mar are essentially a barrier sand spit in front of a river valley. The beaches immediately to the north of the San Dieguito River are seasonal sand/cobble beaches backed by coastal bluffs protected by intermittent shore protection structures.

The inlet to the San Dieguito River is a dominant feature along this section of shoreline. The geometry of the inlet both in the past and in the future determines the tidal exchange within the small lagoon. The inlet meanders, but it is essentially trapped between the quarry stone revetment on the south and the bluff headland about 750 feet to the north. The inlet geometry varies across the beach but becomes less varied as one proceeds into the lagoon. This is due to the presence of bridge structures for Camino Del Mar and the railroad. The maximum observed natural channel depth in the inlet is about 7 feet below MSL. The maximum channel depth at the inlet location occurs as a result of scour by river currents during flood events. The maximum inlet width varies from 260 feet east of the railroad, to 360 feet east of Camino Del Mar, to over 600 feet along the beach. The inlet east of Camino Del Mar is stabilized by the presence of a revetment along the southern boundary and by the presence of the two bridges and other improvements to the Fairgrounds.

The inlet is closed periodically by the longshore movement of sand. When the inlet is closed no tidal exchange occurs between the lagoon and the ocean. Over the past 50 years direct observations of the inlet status (open or closed) have shown that river flooding is the major natural determinant of inlet conditions on time scales longer than a few years (Elwany et al. 1998). The quarry stone revetments to the south of the inlet are most vulnerable to wave overtopping when flooding has scoured sands at the base of the revetments. Over short periods (months to years) the inlet status is determined primarily by the available tidal prism within the lagoon and the littoral sand transport. Currently, the available diurnal mean tidal prism is about 195 acre feet. Analysis of the observations reveal that the inlet remained open historically about 34 percent of the time. The tendency to remain open is vastly smaller during dry weather (12 percent) versus periods of above average rainfall (66 percent). To accurately describe the historic natural conditions, the conditions of the lagoon prior to 1905 must be considered. Prior to filling the historic wetland for highways, railroads, and development, as well as damming the river to create Lake Hodges, the historic records suggest that the river mouth was always open. By the 1940s, the historic natural condition had been so profoundly altered that the lagoon mouth closed for many years, opening occasionally as a result of significant storm events.

The existing “altered” conditions of these wetlands has been recorded over the years and indicates that the mouth has been open to tidal (ocean) waters about 75 percent of the time over the periods from 1926-1939 and from 1980-1989, and open over 50 percent of the time from 1990–1995 (Jenkins and Wasyl, 1996). Since the early 20s, river flow has been the main determinant of whether the inlet remains open or closed and, as a result, the inlet has experienced prolonged closure during dry periods such as during the drought years of 1989-1992. As a result of El Niño events of 1998, the lagoon mouth remained open for over a year. It wasn’t until April 1999 that the mouth once again closed. Since that time, the sand plug has built up to its present condition. When the inlet is open and there is the coincidence of high waves and high tides, waves can travel up the inlet. In most instances these waves are less than 2 feet high and dissipate by the time they reach the railroad bridge.

Waves and wave-driven currents are responsible for changing the shoreline in the study area. Wave-driven currents not only move sand up and down the coast but also on and offshore. Transport perpendicular to the shoreline is termed cross-shore transport. Cross-shore transport is responsible for the seasonal changes in the width of the beach. The cross-shore transport rates change seasonally due to the seasonal variation in wave energy reaching the shoreline. During winter months, sand is transported offshore. This results in a narrow sand beach and sometimes a cobble beach within the study area. Following periods of large waves, portions of the beach within the study area only exist at lower tides. During summer months and periods of smaller waves, the sand is transported onshore resulting in a wider beach. The depth of water offshore at which the beach profile does not change is about 35 feet below MSL.

Longshore transport of sediment by currents has been studied by numerous investigators during the past 30 years. The Coast of California Storm and Tidal Wave Study (USACE 1991) contains a discussion of the methodology and conclusions of these studies. The rate at which sand is moved along the shoreline is controlled by wave energy and the availability of moveable sediment. The longshore transport rate in the Del Mar vicinity from 1945-1977 ranged between 100,000 and 250,000 cubic yards per year. As the availability of moveable sediment became increasingly scarce, the longshore transport rate declined and from 1978-1987 ranged from zero to 40,000 cubic yards per year. The direction of sediment transport depends upon the direction of the wave energy. Waves that approach from the north and northwest tend to drive sands to the south. Waves from the south and southwest tend to drive beach sands to the north. Historically, the net annual transport has been to the south, but in recent years, the net annual transport may actually be to the north. In the near future, longshore transport rates will be comparable to the period from 1978-1987 (USACE 1991). If sand is returned to the beach, then the rate will increase to values representative of the period from 1945-1977 (USACE 1991). The direction of net annual transport in the future will depend on the dominant direction of wave energy, and the net transport will greatly depend on the availability of movable sand.

In general, the shoreline in the study area is eroding. The erosion rate varies with the availability of sand and intensity of the wave climate. Retreat of the coast may occur gradually, at a relatively uniform rate, or episodically in large increments, followed by long periods of little or no retreat. Gradual retreat is well-represented by annualized retreat rates; however, the annualized rates do not adequately describe the nearly instantaneous retreat of several feet or tens of feet that may occur episodically. An annualized retreat rate of the shoreline in the study area over the last 6,000 years is about 15 feet per year. Recent bluff failures to the north of the study area in the City of Solana Beach have resulted in shoreline retreat as much as 10 feet.

3.2.3.6 Beach Sediment Sinks

Coastal structures within the OLC and the study area determine to some extent the configuration of the shoreline and beach profile. As sand moves along the shoreline, it ultimately ends up at a location where it cannot return to the littoral cell. This location is called the sediment sink. There are three submarine canyons within the OLC. Carlsbad Canyon lies in the middle of the littoral cell, but it is believed that the canyon is too far offshore to be an active sink for littoral sediments. The primary sink for beach sands is Scripps Submarine Canyon, which intercepts most of the southward moving sand before it reaches La Jolla Submarine Canyon. However, these two canyons meet offshore, combining into one large submarine canyon.

3.2.3.7 Sediment Budget

Sediment budgets are used to quantify the combined influence of sediment sources, sediment transport, and sediment sinks likely to cause a change in shoreline position. Sediment budgets are also used to forecast future net changes in the shoreline. The USACE completed a detailed analysis of a sediment budget in 1987 and again in 1991 as part of the Coast of California Storm and Tidal Waves Study. They concluded that, in general, the OLC has a growing sand deficit of about 27 million cubic yards in 1991. Beaches in the Del Mar study area are eroded by wave action and very dependent upon the re-supply of sand by the San Dieguito River to replace the losses.

3.2.4 Water Quality

The following sections describe the quality of groundwaters, surface waters, and coastal (marine) waters in the area.

3.2.4.1 Groundwater

Only a small portion of the San Diego region is underlain by permeable geologic formations that can accept, transmit, and yield appreciable quantities of groundwater. The principal groundwater basins in the San Diego region are confined to small, shallow, alluvial-filled valleys. Within the lower reaches of the San Dieguito River Valley, which is typically 2,000 feet wide and locally up to 6,000 feet wide, the estimated thickness of the aquifer is only 100 to 150 feet. M&T Agra (1993a) indicated that sediments that form the aquifer consist primarily of interbedded sands and silts, with occasional clay lenses.

Groundwater development in the lower reaches of the San Dieguito River Valley has been limited primarily to shallow alluvial aquifer wells adjacent to the San Dieguito River. The nearest producing well is on the north side of the valley, approximately 4,500 feet upstream from El Camino Real, and the main center of groundwater withdrawal is 1.25 miles upstream. These wells have been developed primarily for agricultural uses. Although appreciable amounts of water have been extracted from wells located east of El Camino Real, groundwater quality degrades dramatically to the west in the area of the San Dieguito Lagoon. Groundwater quality most likely degrades as a result of saltwater intrusion under the lagoon, although few data are available to characterize groundwater salinities. A boundary forms between fresh and salt groundwater because of the difference in specific gravity. Fresh groundwater is 2.5 percent lighter than salt groundwater, and will float on top of the salt groundwater. The location and shape of the interface depends on the hydrodynamic balance between salt and fresh groundwater. The ocean and tidal flows provide a constant source of salt groundwater to the underlying sediments. This balances against the flux of fresh groundwater flowing down the alluvial aquifer. In the San Dieguito River aquifer, pumping appears to seasonally lower the groundwater table approximately 10 feet at the main location of withdrawal 1.25 miles upstream from El Camino Real (Hargis 1998, 1999). This causes a temporary reversal of flow in the downstream portion of the alluvial aquifer, thus promoting saltwater intrusion. The extent and impact of this problem has not been quantified.

The Water Quality Control Plan for the San Diego Basin 9 (California Regional Water Quality Control Board 1994) indicates that the study area is located within the Solana Beach hydrologic area of the San Dieguito Hydrologic Unit, Basin No. 5.10. The beneficial uses of groundwater in this area have been designated municipal, agricultural, and industrial. However, these beneficial uses do not apply in areas west of the easterly boundary of the I-5 right-of-way, and this area is exempt from the policy pertaining to sources of drinking water.

3.2.4.2 Surface Waters

Water quality (temperature, salinity, pH, light transmittance/clarity, and dissolved oxygen and nutrient concentrations) in San Dieguito Lagoon reflects freshwater and seawater inputs, conditions and processes within the watershed, and biological and physical processes within the lagoon. Previous studies of coastal lagoons have shown that inlet closures, and restrictions to tidal mixing with seawater, can have profound effects on water quality. Tidal exchange between the lagoon and the ocean moderates seasonal changes in water quality conditions that would otherwise accompany inlet closure. Natural processes (sand accretion due to alongshore transport) periodically close the tidal inlet (see section 3.2.3). Between October 1994 and September 1997, Boland (1998) estimated that the inlet to San Dieguito Lagoon was open approximately 90 percent of the time. Following closures, the inlet is re-opened either artificially (by bulldozing) or by wave and river current scouring.

Over the past century, conditions within San Dieguito Lagoon have been altered due to man's influence. These changes include reductions in open water areas due to filling and sedimentation associated with construction activities. During 1940 to 1974, water quality within the lagoon was affected by discharges into the San Dieguito River of approximately 200,000 to 300,000 gallons per day of sewage from treatment ponds. During this period, a layer of sludge up to 18 inches thick formed in parts of the channel. These sewage inputs ceased when the City of Del Mar was connected to the municipal (City of San Diego) wastewater treatment system. Further, portions of the project area were used as a Naval air station, a municipal airfield, and as an unlicensed landfill (MEC 1992). During 1983-1984, approximately 500,000 cubic yards of sediments were dredged from the area presently known as the Fish and Game Basin. This effort was conducted, in part, to increase the tidal prism and promote water movement and mixing within different areas of the lagoon. San Dieguito Lagoon and surface waters within the immediate watershed are not 303(d) listed waters, which are defined by Section 303(d) of the Clean Water Act as those surface waters which do not meet water quality standards.

Temperature

Coastal Environments (1993a) performed weekly water quality measurements in both surface and bottom waters at nine locations within the Lagoon over a 1-year period (1992-1993). Values for several water quality parameters, including temperature, are summarized in Table 3.2-6 for the West (the portion of the river located between the Jimmy Durante Road and Highway 101 bridges), North (the portion of the river located between I-5 and the sharp bend in the river channel at mile 0.6), and South (the channel that connects the Fish and Game Basin to the river) channels.

Lagoon waters exhibited a wide temperature range (7 to 33 ºC), which reflected the effects of daily and seasonal heating cycles, and inputs and mixing of freshwater and seawater sources at individual locations. For example, water temperatures at a single location varied over a tidal cycle by as much as 2 degrees, while variations in temperatures up to 10 degrees occurred at different locations during a single sampling survey. The maximum difference between surface and bottom temperatures was 2 degrees. However, the overall ranges in temperatures within different portions of the Lagoon were similar (Table 3.2-6).

Table 3.2-6. Summary of Water Quality Data Collected within San Dieguito Lagoon during 1992-1993

	Temperature (ºC)	*Salinity (ppt)*	*Dissolved Oxygen (mg/L)*	*pH*
West Channel	7-33	0.2-43	1.6-14.3	7.0-8.9
North Channel	10-30	0.2-44	0.4-12.7	6.4-8.6
South Channel	9.4-31	0.8-46	3.3-12.3	7.2-8.8
Fish and Game Basin	10-32	1.4-48	3.6-13.3	6.9-9.0

Source: Coastal Environments (1993a).

Boland (1998) performed biweekly temperature measurements in near-bottom waters at five locations within the Lagoon over a 3-year period (1994-1997), including 2 dry years and 1 wet year. These measurements were performed at approximately the same time of day to minimize daily (diurnal) variation. Temperatures of bottom waters varied seasonally from approximately 13 to 22 ºC, with colder temperatures in winter (December through February) and warmer temperatures during late summer (August and September). Temperatures within the Fish and Game Basin occasionally were up to several degrees warmer than water temperatures in other areas of the lagoon. Otherwise, temperatures at different areas typically did not vary by more than approximately two degrees during individual surveys.

For comparison, water temperatures in Batiquitos Lagoon in 1997 (following completion of restoration) ranged from about 13.5 to 25 C (Merkel & Associates 1997). Prior to restoration, water temperatures in the lagoon were on average 6 C warmer than the adjacent ocean waters (CH2M Hill 1989). These differences between pre- and post-restoration conditions reflect the moderating effects of continuous mixing with seawater on water temperatures within a coastal lagoon.

Salinity

Salinity values for coastal lagoons are expected to vary widely depending on the inputs and mixing of freshwater and seawater and effects of evaporation.

Coastal Environments (1993a) measured salinities in San Dieguito Lagoon waters from 0.2 to 48 parts-per-thousand (ppt). Similar salinity ranges occurred within each of the four general regions of the lagoon (Table 3.2-6). Lower salinity values occurred during winter following periods of rain, whereas the highest salinity conditions occurred during summer, reflecting the effects of higher seasonal evaporation rates.

Boland (1998) measured salinities in San Dieguito Lagoon bottom waters from 15 to 40 ppt, although values typically were within the 25 to 33 ppt range. Low salinity conditions typically were short-lived (less than four weeks) during a period in which the lagoon inlet was open 90 percent of the time. During portions of the year, salinity values in areas east of I-5 were up to 15 ppt lower than those in waters near the inlet, reflecting relatively higher contributions from freshwater than in other areas of the Lagoon. Periodically elevated bottom water salinities within the Fish and Game Basin reflected the effects of evaporation and poor exchange with waters in the main channel. Periods of low salinity conditions may persist for periods of weeks, depending on the volume of freshwater inputs and extent of tidal exchange with the ocean.

For comparison, the salinity of waters within Batiquitos Lagoon presently ranges from 28 to 34 ppt. However, prior to restoration, salinity values exhibited much greater seasonal variability, with typical salinities from 0 to 10 ppt during winter and from 30 to 40 ppt during summer, although salinities up to 100 ppt were reached during drought years (Merkel & Associates 1997).

Dissolved Oxygen

Dissolved oxygen concentrations in coastal lagoons can also vary widely depending on the influences of freshwater and seawater inputs, as well as the daily and seasonal changes in photosynthesis and respiration rates by submerged vegetation.

Coastal Environments (1993a) reported dissolved oxygen concentrations within San Dieguito Lagoon waters ranging from 0.4 to 14.3 mg/L. The overall ranges in values for different areas of the Lagoon were generally similar, although the minimum concentrations measured within the South Channel and Fish and Game Basin (3.3 and 3.6 mg/L, respectively) were higher than those in the West and North Channel areas (Table 3.2-6). This is important because prolonged exposures to low oxygen concentrations (less than 3 mg/L) can be stressful to aquatic organisms.

Boland (1998) noted that lagoon waters were well-oxygenated (3 to 8 mg/L) during periods when the tidal inlet remained open, whereas relatively low levels (1 mg/L) occurred when the inlet was closed and mixing was restricted. Low dissolved oxygen also followed periods of rainfall when large amounts of organic material with a high oxygen demand were transported into the Lagoon. Consistently low dissolved oxygen concentrations also occurred within the Fish and Game Basin, compared to other sites, which was attributed to the high abundance and respiration of submerged vegetation.

Dissolved oxygen concentrations within Batiquitos Lagoon presently range from approximately 5 to 8 mg/L. Prior to restoration, concentrations in the lagoon were much more variable, ranging from 1.6 to 18.6 mg/L (Merkel & Associates 1997).

Alkalinity/Acidity (pH)

The pH of lagoon waters can vary in response to seasonal differences in freshwater and seawater inputs and daily and seasonal variations in biological processes (photosynthesis).

Coastal Environments (1993a) reported pH values ranging from 6.4 to 9.1, with higher values occurring in autumn, probably associated with maximum seasonal photosynthesis rates. The ranges in pH values were similar for different areas of the lagoon. For comparison, the pH of Batiquitos Lagoon water ranges from 7.2 to 8.4 (Merkel & Associates 1997). This relatively small range reflects the greater exchange to the ocean and the large buffering capacity of seawater.

Water Clarity/Turbidity

No direct measurements of water clarity within San Dieguito Lagoon have been conducted. Based on observations in other coastal lagoons, water clarity is expected to reflect phytoplankton abundance, sediment resuspension, and sediment loads from runoff. Thus, conditions can be expected to vary seasonally in response to winter storms and biological cycles.

Nutrients

Nutrient (e.g., nitrate, phosphate, and silicate) concentrations reflect watershed influences, inputs and mixing of freshwaters and seawater, and biological processes (uptake and recycling by plants) within the lagoon. Runoff from agricultural, equestrian, and urbanized areas within the watershed, and erosion of soils containing fertilizers, can represent important sources of excess nutrient loads.

No recent nutrient data (i.e., collected within the past 10 years) exist for San Dieguito Lagoon. From 1979 to 1983, the Regional Water Quality Control Board, San Diego Region sampled nutrient concentrations in six coastal lagoons within San Diego County, including San Dieguito. Water samples were analyzed for total nitrogen (total inorganic nitrogen plus total organic nitrogen), total inorganic nitrogen (nitrate, nitrite, and ammonia nitrogen), total phosphate phosphorus, and orthophosphate phosphorus. Nutrient concentrations within the coastal lagoons exhibited strong seasonality, particularly with respect to wet and dry seasons (October to March and April to September, respectively). Average seasonal concentrations of total inorganic nitrogen, total nitrogen, orthophosphate phosphorus, and total phosphate phosphorus ranged from 0.47 to 0.65 mg/L, 1.3 to 1.8 mg/L, 0.09 to 0.1 mg/L, and 0.13 to 0.14 mg/L, respectively. These concentrations were generally similar to those in other brackish water lagoons within San Diego County.

3.2.4.3 Coastal Marine Waters

Measurements of water quality conditions in the ocean immediately adjacent to the mouth of the San Dieguito River have not been performed. Nevertheless, expected conditions can be characterized using data from other coastal areas within the general region.

Temperature

The temperatures of nearshore waters are expected to vary seasonally, from about 10 to 20 ºC, generally with lower temperatures during winter and highest temperatures in late summer. These general seasonal patterns may be altered periodically by the effects of localized upwelling events. During summer, surface waters may reach temperatures several degrees warmer than those in near-bottom waters.

Salinity

The salinity of coastal waters is expected to range between 33 and 34 ppt, and values typically do not vary as dramatically as those in lagoon waters. Slightly higher salinity conditions accompany upwelling events, and lower salinity conditions occur, especially in surface waters, near the mouths of coastal rivers and lagoons following rainstorms. Otherwise, seasonal variations and depth-related differences in seawater salinity are expected to be minimal.

Dissolved Oxygen

Relatively greater variations in dissolved oxygen concentrations are expected to reflect depth distributions and seasonal cycles of photosynthetic organisms (phytoplankton), periodic upwelling events, and movement and mixing of different coastal water masses. Dissolved oxygen concentrations in nearshore waters of the Southern California Bight typically are within 5 to 10 mg/L, although slightly lower concentrations may occur in near-bottom waters following upwelling events.

Alkalinity/Acidity

The pH of seawater does not vary widely (i.e., more than a few tenths of a pH unit) due to its large buffering capacity. Typically, pH values are expected to be within a range of 7.9 to 8.2.

Clarity/Light Transmittance

The clarity of nearshore ocean waters will vary in response to river runoff, especially following storm events, the effects of sediment resuspension caused by wave action, and seasonal plankton blooms. In general, the clarity of seawater increases with greater distance from shore, as the effects of coastal runoff and wave action are reduced.

Nutrients

Nutrient concentrations in coastal waters of the Southern California Bight also vary seasonally in response to upwelling events, biological processes (uptake and regeneration), and the magnitude of inputs from runoff and river discharges. Typical nutrient concentrations in Southern California Bight waters are: nitrate — 5 to 200 nanomoles; phosphate — 0.1 to 0.5 micromoles; silicate — less than 5 micromoles; and ammonium 0.3 micromoles (Eganhouse and Venkatesan 1993).

3.3 GEOLOGY/SOILS

The San Dieguito Lagoon is located in a seismically active area where strong ground shaking can be expected. Although no active faults underlie the lagoon, earthquake-induced ground failure is possible within on-site sediments. The grain size and chemical characteristics of sediments and soils within the San Dieguito project area reflect the properties of the source materials within the watershed and effects of alterations such as dredging and construction. Sediment quality will reflect the recent as well as historical contaminant inputs. Historical discharges from the sewage treatment plant to the lagoon, accidental spills or releases associated with operations at the airfield, and watershed inputs, including runoff of pesticides and fertilizers from agricultural sites, are potential sources of contaminants to the lagoon. Distributions of chemical contaminants also reflect the grain size patterns because finer grained sediments typically have a greater affinity for contaminants than coarser grained materials.

3.3.1 Seismicity

The San Dieguito Lagoon is located within the regional influence of several active and potentially active faults. Earthquakes originating within 60 miles of the site are capable of generating significant ground shaking. Figure 3.3-1 shows the relationships to the project site of several faults capable of producing this type of shaking. The active Rose Canyon / Newport-Inglewood fault zone, located approximately three miles west of the lagoon, is considered the source of potentially the most severe earthquake-induced effects. A maximum probable earthquake (the magnitude which has a 10 percent probability of exceedance in a 100-year period) of Richter magnitude 6.5 on this fault could result in peak horizontal ground accelerations of 0.48g (48 percent of the acceleration due to gravity) at the lagoon. A repeatable high ground acceleration of 0.31g is possible in association with this event. Similarly, a maximum credible earthquake (maximum earthquake that appears capable of occurring under the currently understood tectonic framework of California) of magnitude 7.0 could result in peak horizontal ground accelerations of 0.47g to 0.51g at the site (M&T AGRA, Inc. 1993a; Ninyo & Moore 1998a, 1998b, 1999). See Table 3.3-1 for a summary of earthquake scenarios resulting from movement of this and other faults in the area.

Table 3.3-1. Seismic Parameters for Maximum Probable Earthquakes

	Fault-to-Site Distance (miles)	*Maximum Probable Earthquake Magnitude*	ESTIMATED ACCELERATION (g)	
			Peak Horizontal Bedrock	*Repeatable High Ground*
Agua Blanca-Coronado Bank	17	7.1	0.18	0.12
Offshore Zone of Deformation	14	6.5	0.17	0.11
Rose Canyon	2	6.5	0.48	0.31
San Clemente	52	6.6	0.04	0.04
San Diego Trough	27	6.1	0.06	0.06
San Miguel-Vallecitos	48	6.8	0.06	0.06
Whittier-Elsinore	28	7.2	0.13	0.13
San Jacinto	52	7.2	0.06	0.06
Source: Ninyo & Moore 1999				

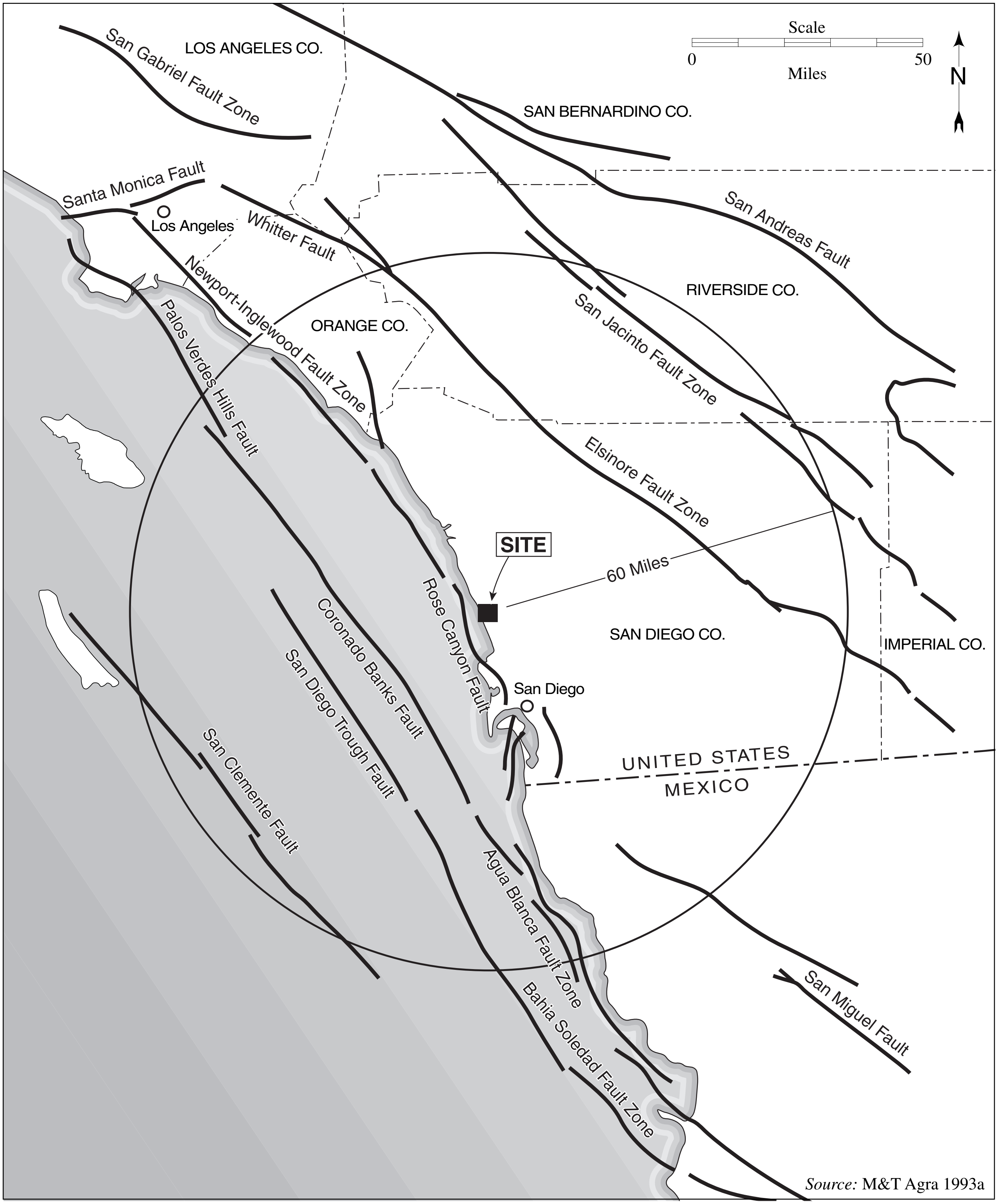


Figure 3.3-1. Regional Fault Map, San Dieguito Lagoon

No active fault traces are known to lie beneath the site, therefore, surface fault rupture is very unlikely. However, numerous northeast-striking faults apparently offsetting deposits of Quaternary age (approximately 2 million years and younger), but not necessarily Holocene age (11,000 years and younger), have been mapped in the higher ground along the coast north and south of the San Dieguito Lagoon (Kern 1987). Quaternary age faults are considered potentially active whereas Holocene faults are considered active. Similar potentially active faults may be concealed beneath the more recent sediments in the Lagoon, however, the probability of fault rupture occurring on one of these faults is very low (M&T AGRA, Inc. 1993a; Ninyo & Moore 1999).

Liquefaction of cohesionless soils can be caused by strong earthquake-induced ground motion. Research and historical data indicate that loose granular soils (with silt contents less than approximately 35 percent and clay contents less than approximately 20 percent) that are saturated by a relatively shallow groundwater table are most susceptible to liquefaction. Due to the presence of a shallow groundwater table and relatively loose granular soils at the site, the potential for liquefaction is considered high. Sediment most likely to liquefy in the event of an earthquake would be within the upper 25-foot layer. Liquefaction could induce approximately 2 to 12 inches of settlement at the site. Effects of liquefaction would be highly variable across the site. In addition, lateral spreading (horizontal movement of soils) of on-site materials (in existing conditions) up to 1 foot is possible in the event of a large seismic event (Ninyo & Moore 1998a, 1998b, 1999).

3.3.2 Soils/Stratigraphy

The San Dieguito Lagoon forms the lowest reaches of an incised valley (San Dieguito River valley) now backfilled with sediment. The sediments filling this portion of the valley consist of a thin upper unit of relatively recent alluvium, overlying older, thicker accumulations of alluvial and nearshore marine sediments (Figure 3.3-2). In addition, areas of artificial fill are present in the vicinity of the former Del Mar Airport, the bridge abutments, and roadways (M&T AGRA, Inc. 1993a; MEC Analytical Systems 1992; Ninyo & Moore 1998a, 1998b). Ogden (1999) divided the proposed footprint of dredging and excavation into three areas: (1) the Lagoon Area, located west of Interstate 5 (I-5) and south of the San Dieguito River (also known as the Airfield Property); (2) Horseworld, located east of I-5 and north of the San Dieguito River; and (3) South Wetlands, located east of I-5 and south of the San Dieguito River (Figure 3.3-2). The following is a description of sediments in these and other areas of the proposed lagoon restoration project.

Surficial Soil Deposits

Surficial soils in the vicinity of the lagoon consist primarily of sand, silt loam, and tidal flats (clay to very fine sand range), with lesser amounts of fine loamy sand, loamy sand, and loam (Figure 3.3-3). In addition, made land (i.e., artificial fill), coastal beach gravel and sand, and terrace escarpments are present (USDA 1973).

Recent Alluvium

The Recent alluvium consists predominantly of soft, sandy to clayey silts with lesser amounts of sands, clays and loose, fine silty sands, to a depth of approximately 15 to 20 feet below ground surface (Figures 3.3-4 and 3.3-5, Table 3.3-2).

Table 3.3-2 San Dieguito Lagoon Project Grain Size Results

Sample Identification	*Depth (ft-BGS)*	*Soil Type*	*Percent Gravel (>2mm)*	*Percent Sand (>0.075mm)*	*Percent Fines (<0.075mm)*
0-10 feet					
LG-1	0-4	ML	1	48	51
LG-1	5-7	SP-SM	0	91	9
LG-2	0-4	ML	2	48	50
LG-2	6-8	SM	0	73	27
LG-3	0-4	SM	0	50	50
LG-4	0-4	SM	0	60	40
LG-5	0-4	SM	1	60	39
LG-5	4-5	ML	0	30	70
LG-6	0-4	SM	0	55	45
LG-6	4-6	SM	0	80	20
LG-7	0-4	ML	0	50	50
LG-7	4-6	SM	1	59	40
LG-8	0-4	ML	0	45	55
LG-8	4-6	ML	0	44	56
LG-9	0-4	ML	0	48	52
LG-9	4-6	ML	0	48	52
LG-9	8-10	SP-SM	0	91	9
LG-10	0-4	SM	4	54	42
LG-10	4-6	SP-SM	2	83	15
LG-10	8-10	SP-SM	0	90	10
		Average	**0.6**	**60.4**	**39.1**
10-20 feet					
LG-2	10-12	SP	0	96	4
LG-2	15-17	SM-SP	1	84	15
LG-3	10-12	SP	5	90	5
LG-4	15-17	SP	0	95	5
LG-5	10-12	SM	0	82	18
LG-6	10-12	SP-SM	5	83	12
LG-7	10-12	SP-SM	0	91	9
LG-8	10-12	SM	0	80	20
LG-8	15-17	SP-SM	0	90	10
LG-9	14-16	SP-SM	1	91	8
LG-10	15-17	SP-SM	2	92	6
		Average	**1.3**	**88.5**	**10.2**
20-52 feet					
LG-1	20-22	SM	0	72	28
LG-1	28-30	SP-SM	0	89	11
LG-1	45-47	SP-SM	0	92	8
LG-2	30-31	SP-SM	2	90	8
LG-3	35-37	SM-SP	5	83	12
LG-3	45-47	SP-SM	0	92	8
LG-4	20-22	SM-SP	0	94	6
LG-5	20-22	SP-SM	0	92	8
LG-5	35-37	SP-SM	0	91	9
LG-5	50-52	SP-SM	2	88	10
LG-6	40-42	SP	4	92	4
LG-8	45-47	SP-SM	2	92	6
LG-10	45-47	SP-SM	1	90	9
		Average	**1.2**	**89.0**	**9.8**

Table 3.3-2 San Dieguito Lagoon Project Grain Size Results (continued)

Sample Identification	*Depth (ft-BGS)*	*Soil Type*	*Percent Gravel (>2mm)*	*Percent Sand (>0.075mm)*	*Percent Fines (<0.075mm)*
HW-14	0-4	ML	0	49	51
HW-14	9-10.5	SM	0	74	26
HW-15	0-4	ML	0	43	57
HW-15	9-10.5	ML	1	17	82
HW-16	0-4	SM	0	55	45
HW-17	0-4	SM	0	53	47
HW-18	0-4	SP-SM	1	87	12
HW-18	4-6	SP-SM	1	89	10
HW-19	0-4	SM	1	87	12
HW-19	20-21.5	ML	2	43	55
HW-20	0-4	ML	0	50	50
HW-20	9-10.5	ML	0	35	65
HW-20	20-22	SM	0	70	30
HW-21	0-4	SM	1	54	45
HW-21	9-10.5	ML	0	20	80
HW-21	20-22	SP-SM	15	77	8
HW-21	25-26.5	SP	0	96	4
HW-22	0-4	SM	1	57	42
HW-22	9-10.5	CL	0	20	80
HW-22	20-22	SM	2	76	22
		Average	**1.3**	**57.6**	**41.2**
SW-11	0-4	ML	1	47	52
SW-11	4-6	ML	0	22	78
SW-12	0-4	SM	1	57	42
SW-12	8-10	SM	5	75	20
SW-13	0-4	SM	6	65	29
SW-13	7-15	ML	0	42	58
		Average	**2.2**	**51.3**	**46.5**
CH-26	3-4.5	ML	0	18	82
CH-26	4.5-6	SM	0	84	16
		Average	**0.0**	**51.0**	**49.0**

Source: Ogden 1999

These dark-colored, semi-cohesive silts are appreciably different in appearance, grain size, and consistency compared with typical North County beach sands. These deposits generally decrease in grain size with distance from the ocean. In the eastern portion of the site, in the vicinity of Horseworld and the South Wetlands, silts and silty sands, with interbedded clays, comprise the bulk of the material (Figure 3.3-4). To the west, in the vicinity of the Lagoon Area, fine silty sands and fine sands are more pervasive and locally comprise the bulk of the material. In the Lagoon Area, fine-grained sands are present below a depth of 3 to 7 feet (Figure 3.3-5). These fine-grained sediments are interpreted to be overbank deposits laid down by waning flood waters (M&T AGRA, Inc. 1993a; MEC Analytical Systems 1992; Coastal Environments 1993; Ogden 1999; Ninyo & Moore 1999). Specifically, fine-grained sand deposits are present in the vicinity of area W-1, a proposed subtidal/basin area under some action alternatives (Chapter 2) that could be overexcavated for potential beach sand replenishment. Based on the proposed size of this subtidal area, up to approximately 2.5 million cubic yards of sand could be excavated for beach sand replenishment, assuming fine grained sand deposits (less than 20 percent fines) are present beginning at depths of 5 to 10 feet and continuing to depths of at least 55 to 60 feet (Figure 3.3-5) (Ogden 1999).

Channel Sands

In contrast to the fine-grained Recent alluvial deposits, the active river channels and point bars are underlain by relatively clean, fine- to medium-grained sands, up to five feet in thickness, with local silt and clay layers. These deposits are present primarily between the ocean and Jimmy Durante Boulevard.

Older Alluvium

Clean fine sands and silty sands, interpreted to be alluvial materials which have been reworked in the nearshore marine environment, underlie the Recent alluvium, beneath a depth of 10 feet below ground surface. These older alluvial sands contain beds with abundant clam and oyster shell fragments and are distinctly more compact than the overlying, younger deposits. In the seaward portions of the site (i.e., in the vicinity of Camino Del Mar and the railroad bridges), the older alluvial/marine sands generally consist of clean sands and are very dense below elevation –10 to –25 feet NGVD. Older alluvial sediments in the Lagoon Area consist of clean sands from a depth of 10 to 52 feet below ground surface. Older alluvial sediments east of I-5 (i.e., the Horseworld and South Wetlands areas) generally consist of silty sands, which are finer grained than those sediments located west of I-5 (Ninyo & Moore 1998a, 1998b; Ogden 1999).

The contact between the older and Recent alluvium is an irregular, apparently erosional surface generally between elevation –2 and –10 feet NGVD (M&T AGRA, Inc. 1993a). Deep borings drilled in the western portion of the lagoon indicate the older alluvial materials are underlain by sedimentary bedrock at a depth in excess of 70 feet (San Diego Soils and Engineering 1983; Tetra Tech 1991). Similarly, deep borings drilled in the eastern portion of the lagoon, in the vicinity of the El Camino Real widening project, indicate alluvium is present at depths in excess of 111 feet. Alluvial deposits in this area consist primarily of very loose to dense, silty to clayey sand and fine sand, and very soft to firm, silty clay to clayey silt (Ninyo & Moore 1998a, 1998b).

Artificial Fill Deposits

The fill materials located in the vicinity of the former airfield consist of silts, silty sands, and clay, presumably of local derivation. Fill is present in this area to a maximum depth of approximately +3 NGVD (Ninyo & Moore 1999). Fill material present in the vicinity of the El Camino Real widening project consists of very loose to medium dense, silty and clayey sand, and firm sandy clay, to a depth of 2 to 13 feet (Ninyo & Moore 1998a, 1998b).

Marine Sediments

U.S. Navy (1995) evaluated the grain size and chemical characteristics of intertidal and subtidal sediments off Del Mar. Sediments collected at depths of 10 feet, 20 feet, and 30 feet off the Del Mar Beach consisted entirely of sand-sized particles.

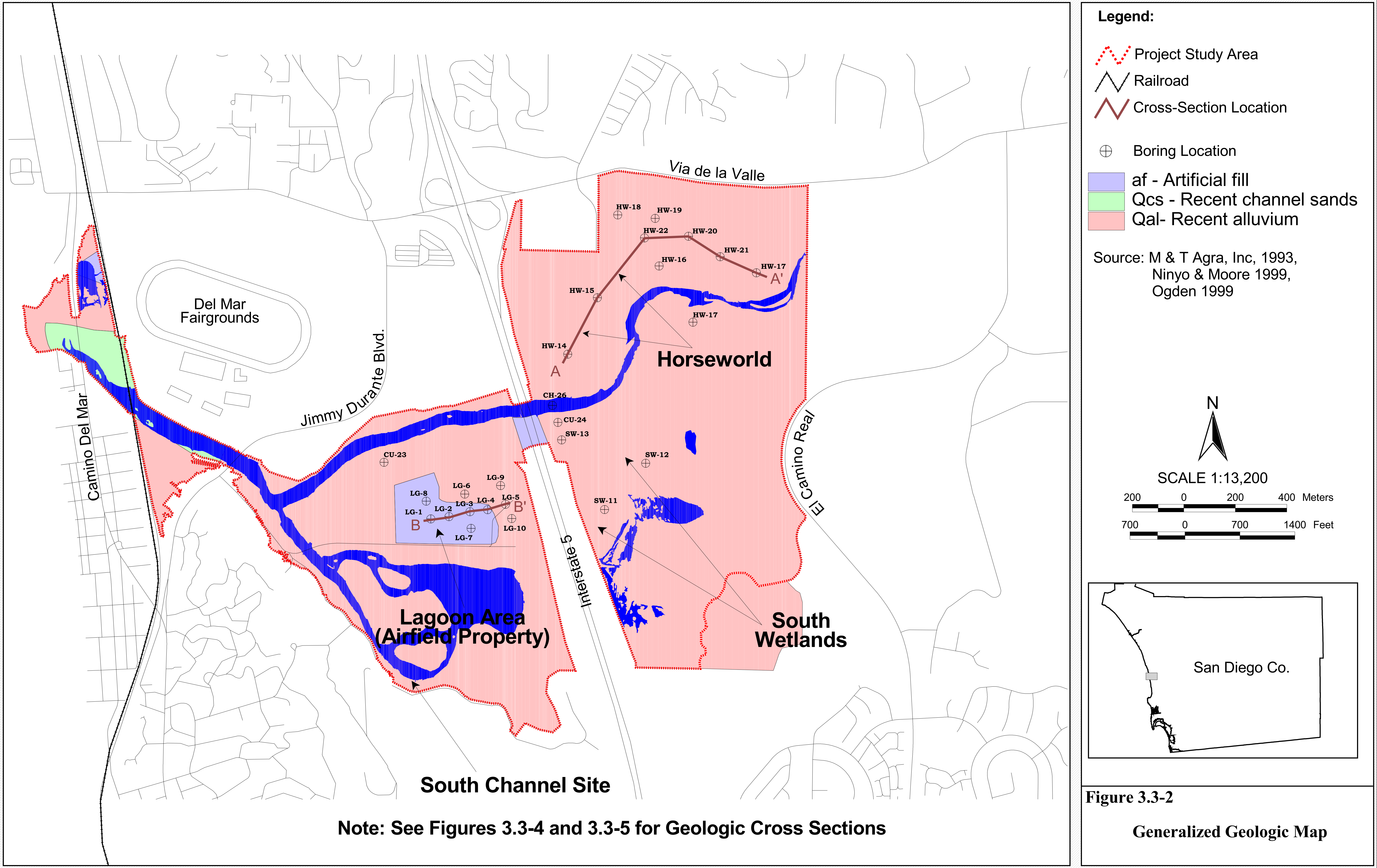


Figure 3.3-2

Generalized Geologic Map

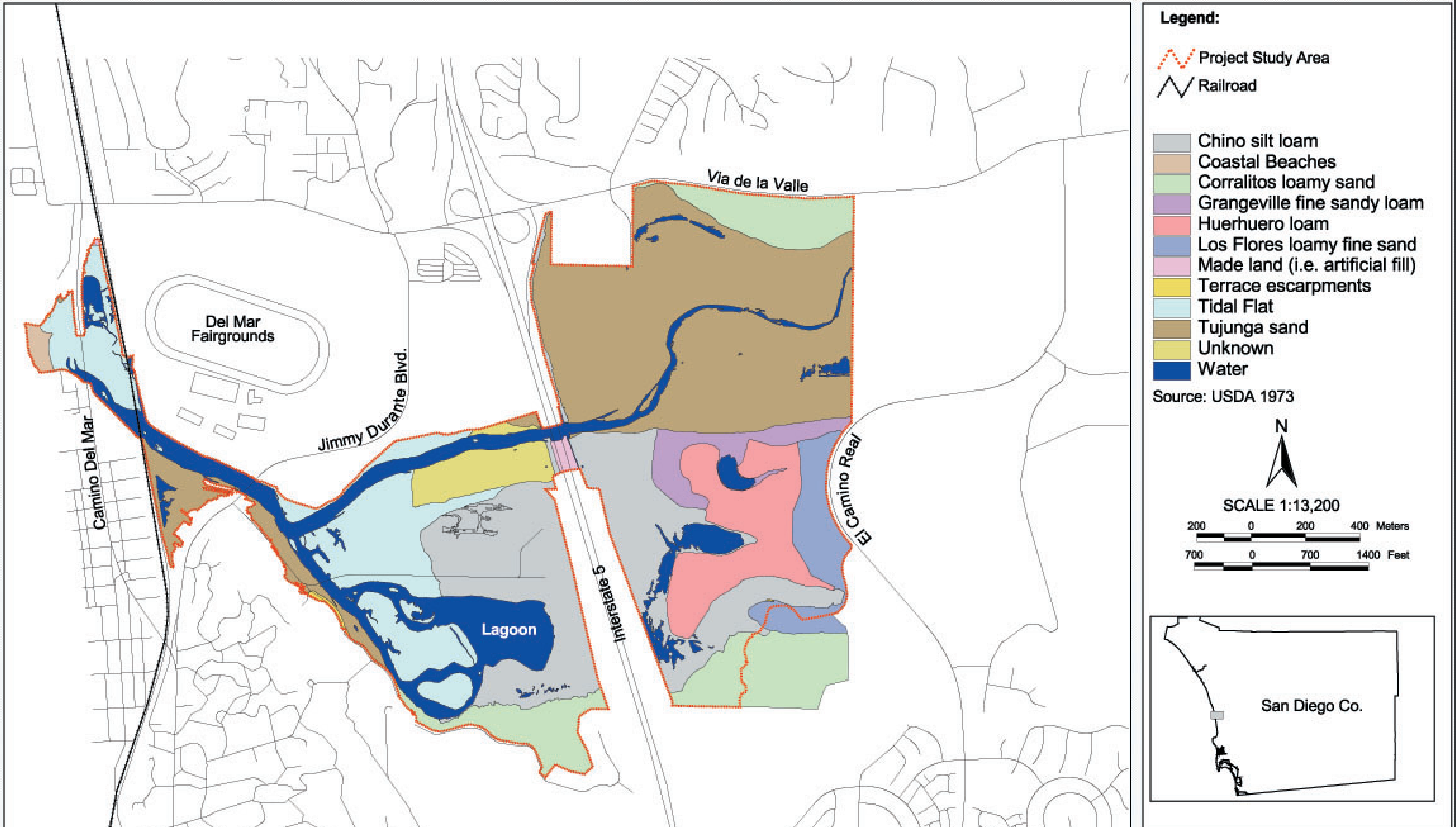
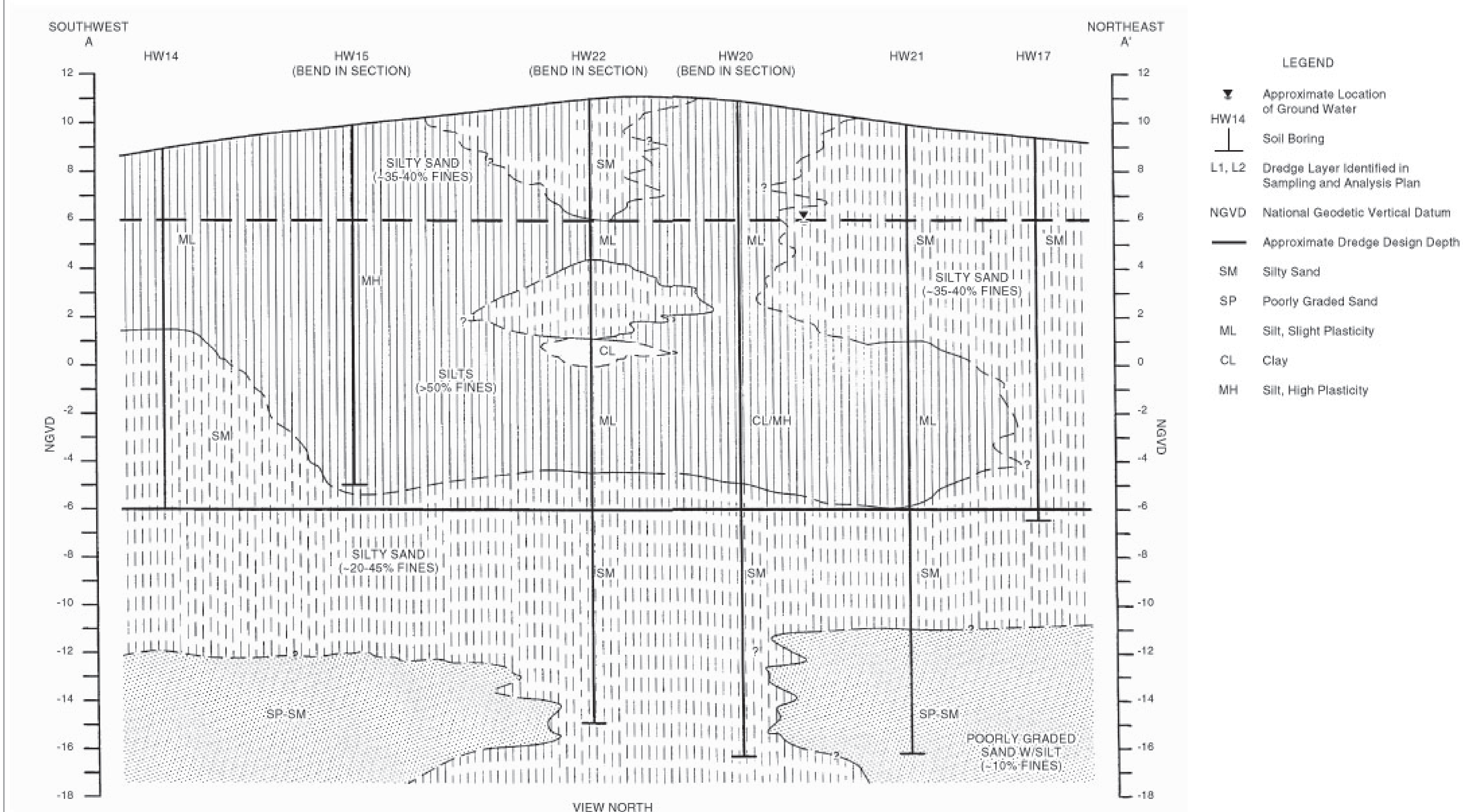


Figure 3.3-3

Soils Map

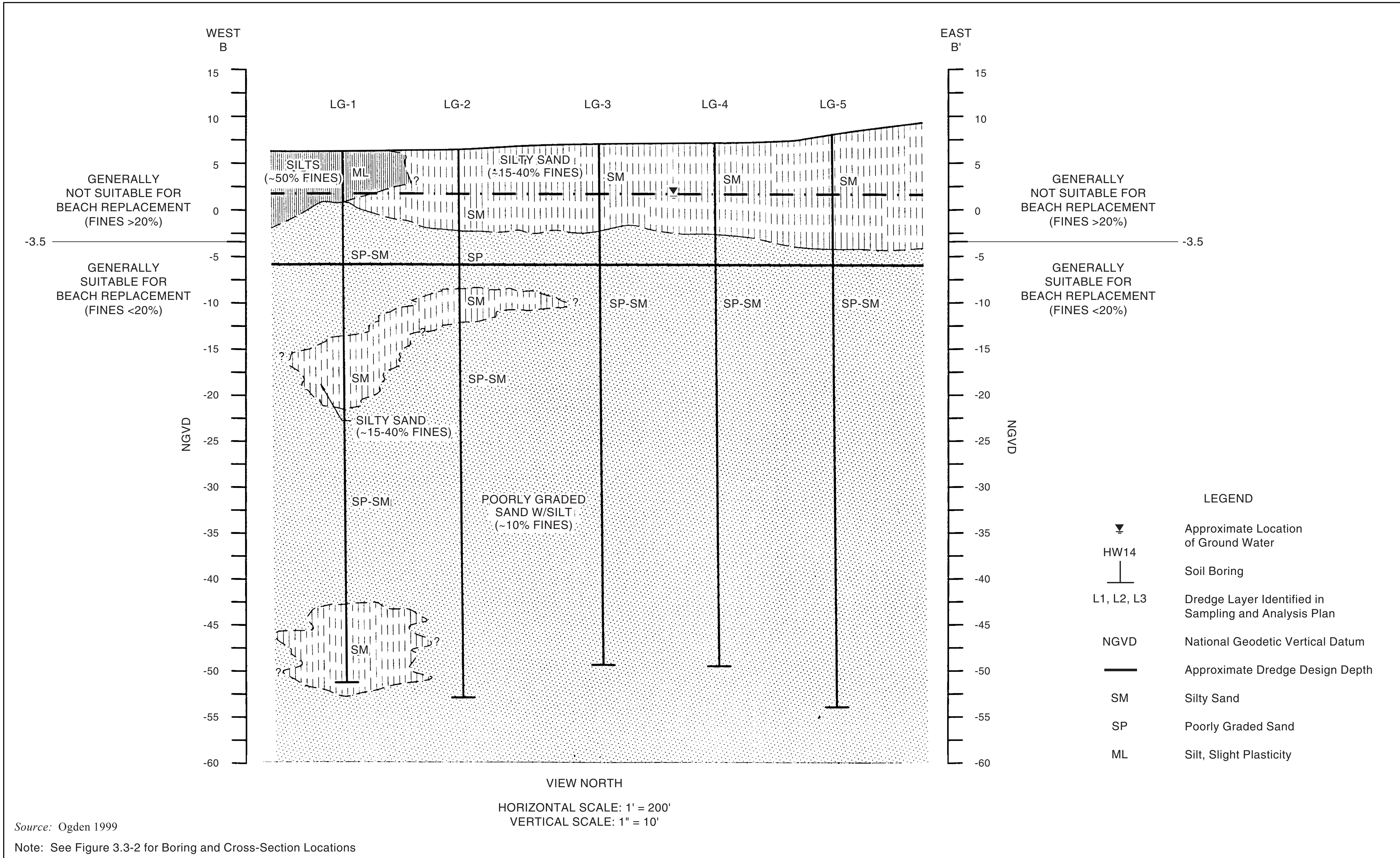


Source: Ogden 1999

Note: See Figure 3.3-2 for Boring and Cross-Section Locations

HORIZONTAL SCALE: 1' = 400'
VERTICAL SCALE: 1" = 4'

Figure 3.3-4. Geologic Cross-Section A-A'



Source: Ogden 1999

Note: See Figure 3.3-2 for Boring and Cross-Section Locations

Figure 3.3-5. Geologic Cross-Section B-B'

3.3.3 Soil/Sediment Contamination

Airfield Property

An 89-acre portion of the site bounded by San Dieguito River to the north, I-5 to the east, Jimmy Durante Boulevard to the west, and the Fish and Game Property to the south was formerly used as an airfield (Figure 3.3-2). A Phase I Environmental Site Assessment (ESA) completed for the property (Tetra Tech 1991) indicated the U.S. Navy built an air station on the site in the late 1930s and early 1940s for use as an air patrol station for coastal California. The air station contained administration buildings and general quarters, air ship staging docks, ammunition bunkers, underground fuel storage tanks, and a runway. The airport buildings were subsequently used for commercial businesses until the facilities were demolished. At least two underground storage tanks were documented as occurring on the property. No records have been located regarding tank removals. Sewage aeration and infiltration ponds constructed by the City of Del Mar were closed in the late 1960s or early 1970s. The property was used as an unregulated landfill for household waste until 1970 (MEC Analytical Systems 1992; Tetra Tech 1991).

A Phase II Environmental Site Assessment (MEC Analytical Systems 1992) was completed at the airfield property to delineate potential areas of subsurface contamination, as determined by the Phase I report. The Phase II report indicated that no significant amounts of organic lead, total petroleum hydrocarbons (TPH), total recoverable petroleum hydrocarbons (TRPH), metals, pesticides, polychlorinated biphenyls (PCBs), or polychlorinated aromatic hydrocarbons (PAHs) were found in on-site soils (Figure 3.3-6, Tables 3.3-3, 3.3-4, and 3.3-5). Soil samples were not collected in the vicinity of the former ammunition bunkers due to safety concerns (see section 3.10.5).

Horseworld, Southern Wetlands, and Lagoon Areas

Chemical characteristics of lagoon sediments and soils are based on information from a recent investigation by Ogden (1999) and a regional sediment quality study that included one sampling site within the South Channel area (Anderson et al. 1998) (Figure 3.3-2).

The Ogden (1999) study measured the chemical properties of soils from discrete layers within borings collected at several locations within each of the Horseworld, Southern Wetlands, and Lagoon areas. Ranges in values for primary and trace constituents are summarized in Table 3.3-6. In general, the results indicate that both near-surface and subsurface soils have a low organic content with undetectable sulfides and neutral acidity/alkalinity conditions. Further, the soils are uniformly devoid of chemical contaminants, with the exception of detectable concentrations (0.27 mg/kg) of the pesticide derivative DDE in the surface layer of sediments from one of the Horseworld locations. Because DDE was not detected in the subsurface sediments from this location, or in surface or subsurface layers from other adjacent areas, there is no indication of widespread contamination with pesticide residues. In total, the soils from areas considered for dredging/excavation appear to be free of significant chemical contamination and are expected to be suitable for upland or aquatic disposal.

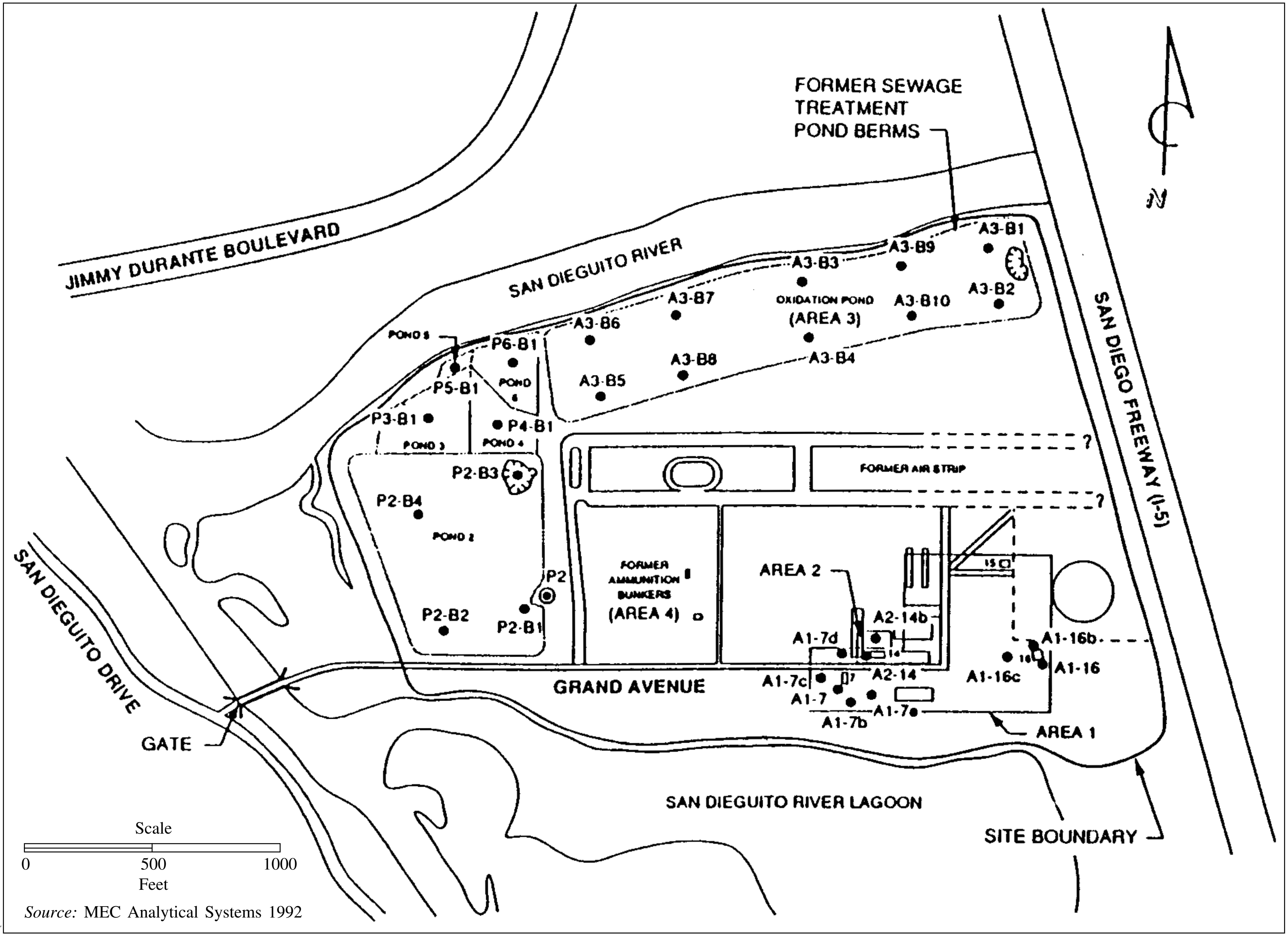


Figure 3.3-6. Airfield Property Soil Sampling Locations

Table 3.3-3. Summary of Soil Characterization
Airfield Property-Areas 1 and 2

Structure	*7*						*16*					
Core Location	*A1-7*	*A1-7*	*A1-7B*	*A1-7C*	*A1-7D*	*A1-7E*	*A1-16*	*A1-16*	*A1-16B*	*A1-16B*	*A1-16C*	*A1-16C*
	(6.5')	(9.5')	(3.5')	(4.5')	(4.0')	(3.0')	(Surf)	(4.5')	(Surf)	(6.0')	(Surf)	(6.0')
Organic Lead (mg/kg)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TPH (mg/kg)	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	5250	<10.0
TRPH (mg/kg)	6.3	6.3	9.5	7.9	7.9	7.9	50.6	7.9	19.7	12.8	9020	12.8
Benzene (µg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene (µg/kg)	<1.0	<1.0	<1.0	<1.0	15.9	64.6	14.0	109	<1.0	<1.0	12.6	36.0
Ethylbenzene (µg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylene (µg/kg	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0

Structure	*14*		
Core Location	*A2-14*	*A2-14B*	*A2-14B*
	(4.5')	(Surf)	(4.5')
Organic Lead (mg/kg)	<0.5	<0.5	<0.5
TPH (mg/kg)	<10.0	<10.0	<10.0
TRPH (mg/kg)	6.3	6.3	6.3
Benzene (µg/kg)	1.9	2.2	<1.0
Toluene (µg/kg)	70.5	80.0	84.1
Ethylbenzene (µg/kg)	<1.0	19.4	29
Xylene (µg/kg)	<3.0	43.5	111

Note: See Figure 3.3-6 for sampling locations.
Source: MEC Analytical Systems 1992

Table 3.3-4 Summary of Soil Characterization
Airfield Property-Oxidation Pond

Structure	*Oxidation Pond*									
Core Location	*A3-B1*	*A3-B2*	*A3-B3*	*A3-B4*	*A3-B5*	*A3-B6*	*A3-B7*	*A3-B8*	*A3-B9*	*A3-B10*
Antimony (1)	2.77	2.70	3.58	3.82	2.08	2.10	2.72	1.90	2.06	3.10
Arsenic	1.3	0.805	1.58	1.89	0.984	1.46	1.39	0.934	1.07	<0.941
Barium	149.0	79.9	189	193	102	196	162	142	165	148
Beryllium	0.3	0.046	0.297	0.368	0.192	0.299	0.279	0.218	0.320	0.301
Cadmium	<0.158	1.36	<0.157	<0.157	<0.160	0.504	<0.152	<0.146	<0.157	<0.151
Chromium	21.6	378	26.9	28.0	19.8	22.9	22.7	19.0	21.3	22.4
Cobalt	10.9	0.506	13.7	15.2	7.95	11.1	11.2	9.33	10.9	12.0
Copper	24.4	122	30.8	36.4	9.36	56.8	37.2	29.8	31.0	39.3
Lead	6.82	16.3	8.20	8.80	5.96	15.1	7.12	7.39	6.09	6.29
Mercury	<0.018	<0.019	<0.020	<0.018	<0.018	0.268	<0.018	0.025	<0.020	<0.019
Molybdenum	<0.098	0.624	<0.098	<0.098	<0.100	<0.090	<0.095	<0.091	<0.098	<0.094
Nickel	8.40	194	10.0	11.1	7.06	8.70	9.14	7.07	8.22	8.68
Selenium	2.76	2.53	5.55	2.44	3.93	2.33	6.32	<0.913	4.55	4.37
Silver	<0.079	<0.078	<0.078	<0.078	<0.080	0.368	<0.076	0.320	<0.078	<0.075
Thallium	19.0	6.18	26.7	30.9	16.1	22.6	25.2	17.6	24.7	23.5
Vanadium	60.3	8.63	73.8	86.7	46.7	60.1	59.5	53.0	52.7	62.0
Zinc	49.0	90.0	58.5	66.8	31.8	100	60.2	48.6	53.8	71.7
Toluene (µg/kg)	ND	5.00	50.0	ND	10.0	ND	38.0	48.0	9.00	ND
Pesticides (µg/kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PAHs (µg/kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	

Notes: 1. All metal values are in mg/kg
PAH-Polychlorinated aromatic hydrocarbons
See Figure 3.3-6 for sampling locations.
Source: MEC Analytical Systems 1992

Table 3.3-5. Summary of Soil Characterization
Airfield Property – Ponds 2 through 6

Structure	*Pond 2*				*Pond 3*	*Pond 4*	*Pond 5*	*Pond 6*
Core Location	*P2-B1*	*P2-B2*	*P2-B3*	*P2-B4*	*P3-B1*	*P4-B1*	*P5-B1*	*P6-B1*
Antimony (1)	<1.86	<2.07	<1.95	<1.86	<1.95	<1.90	<1.94	<1.78
Arsenic	26.7	33.1	17.0	14.4	31.0	27.2	24.7	34.3
Barium	204	208	132	99.0	165	168	170	188
Beryllium	0.864	0.885	0.597	0.502	0.804	0.805	0.709	0.850
Cadmium	<0.297	<0.331	<0.312	<0.297	<0.312	<0.304	<0.310	<0.285
Chromium	23.2	23.3	14.6	12.8	19.9	18.6	16.9	21.4
Cobalt	13.9	13.4	9.12	7.65	11.1	11.8	10.4	12.9
Copper	88.1	24.7	28.3	20.1	37.3	31.2	13.2	30.4
Lead	8.91	9.07	6.08	4.58	8.48	7.93	6.63	7.95
Mercury	0.074	0.066	0.065	0.034	<0.039	<0.039	<0.034	<0.039
Molybdenum	<0.186	<0.207	<0.195	<0.186	<0.195	<0.190	<0.194	<0.178
Nickel	10.7	8.89	6.53	5.70	8.84	8.12	7.57	8.96
Selenium	<1.86	<2.07	<1.95	<1.86	<1.95	<1.90	<1.94	<1.78
Silver	<0.149	<0.165	0.172	<0.149	<0.156	<0.152	<0.155	<0.14.3
Thallium	63.6	61.4	43.4	34.6	61.6	53.3	53.2	62.7
Vanadium	73.0	71.2	47.2	36.4	58.6	60.6	51.2	67.0
Zinc	67.5	50.5	39.6	30.6	48.6	47.8	37.8	51.3
Toluene (µg/kg)	56.0	25.0	13.0	ND	ND	25.0	ND	ND
Pesticides (µg/kg)	ND	ND	ND	ND	ND	ND	ND	ND
Total PAHs (µg/kg)	ND	ND	ND	ND	ND	ND	ND	ND

Notes: 1. All metal values are in mg/kg
PAH-Polychlorinated aromatic hydrocarbons
Source: MEC Analytical Systems 1992
Source: See Figure 3.3-6 for sampling locations.

Table 3.3-6. Summary of Chemical Characteristics of Sediments and Soils within the San Dieguito Lagoon Project Area

	HORSEWORLD*		SOUTH WETLANDS*		LAGOON*			
	Layer 1	*Layer 2*	*Layer 1*	*Layer 2*	*Layer 1*	*Layer 2*	*Layer 3*	*Layer 4*
Tot. Vol. Solids (%)	0.4-2.9	0.7-3.5	1.2-1.9	0.8-3.1	2.0-2.6	0.7-0.9	0.4-0.9	0.3-0.6
Tot. Org. Carbon (%)	0.03-0.2	0.04-0.32	0.04-0.17	0.02-0.36	0.2-0.3	0.04-0.1	0.03-0.11	0.02-0.08
Sulfides (mg/kg)	ND	ND	ND	ND	ND	ND	ND	ND
pH	7.96-8.69	7.98-8.47	7.28-8.68	7.75-8.39	7.94-8.18	7.86-8.00	7.76-8.18	7.73-8.17
Spec. Cond. (mmhos/cm)	567-6480	843-10,100	887-9890	622-17,300	3590-5400	5550-5970	7080-8930	8850-11,700
Chloride (mg/kg)	143-2292	200-6114	158-3910	139-8970	1380-2860	2460-2790	2990-3850	3790-5870
Nitrate (mg/kg)	1.0-10.3	0.9-4.4	3.6-18.0	1.8-12.9	1.8-3.5	1.2-1.7	0.9-1.7	1.2-1.6
Phosphorus (mg/kg)	132-441	214-596	70-228	98-249	187-243	146-197	118-150	61-182
Calcium (mg/kg)	917-6060	1090-4740	2120-7570	1330-3730	3660-4610	1830-2340	5380-15,000	7040-18,900
Magnesium (mg/kg)	1940-11,700	1530-15,400	2720-8380	2060-11,600	7610-10,300	4070-5380	2000-2170	1050-1430
Potassium (mg/kg)	1700-10,400	1370-14,200	3120-7840	1900-10,500	7170-10,100	4040-5490	1850-2000	656-1140
Sodium (mg/kg)	596-5790	678-8280	1170-4040	992-11,900	2180-3840	2030-2620	2160-3190	2750-3480
Boron (mg/kg)	ND-3.3	ND-18.8	ND	ND	ND-4.4	ND-1.8	ND	ND
Arsenic (mg/kg)	0.6-1.9	0.6-3.0	0.9-1.3	0.6-2.8	0.4-1.0	ND-0.4	0.6-2.1	0.6-0.9
Cadmium (mg/kg)	ND-0.27	ND-0.32	ND-0.21	ND	ND	ND	ND-0.18	ND-0.14
Chromium (mg/kg)	5.4-34	4.5-40	10-22	6.9-30	21-28	13-16	6.0-8.2	3.1-4.9
Copper (mg/kg)	3.3-26	2.8-31	8.7-14	3.4-19	13-19	9.8-160	4.7-6.1	5.2-7.3
Lead (mg/kg)	1.9-18	1.8-10	2.8-4.4	1.7-4.9	2.9-3.9	1.1-1.6	0.65-1.2	0.38-1.2
Mercury (mg/kg)	ND-0.028	ND	ND-0.04	ND-0.03	ND	ND	ND	ND
Nickel (mg/kg)	2.6-12	2.2-15	4.6-7.8	2.4-12	7.0-9.8	3.9-5.3	2.0-3.2	1.1-2.3
Selenium (mg/kg)	ND-1.8	ND-0.74	ND	ND	ND	ND	ND	ND
Silver (mg/kg)	ND-0.61	ND-0.26	ND	ND-0.14	ND	ND	ND	ND
Zinc (mg/kg)	12-62	9.9-71	20-43	9.7-53	38-51	27-33	12-13	8.3-9.5
TRPH (mg/kg)	ND-12.5	ND-13.3	ND-16.8	ND-9.7	ND	ND	ND-10.9	ND
PCBs (mg/kg)	ND	ND	ND	ND	ND	ND	ND	ND
PAHs (mg/kg)	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides (mg/kg)	ND-0.27	ND	ND	ND	ND	ND	ND	ND
Tot. Phenols (mg/kg)	ND	ND	ND	ND	ND	ND	ND	ND
Tot. Phthalates (mg/kg)	0.02-0.15	ND-0.23	0.016-0.046	0.019-0.042	0.036-0.052	0.023-0.037	ND-0.041	0.029-0.079

Layer 1: ground surface to +3 NGVD;
Layer 2: +3 NGVD to -6 NGVD;
Layer 3: -6 NGVD to –30 NGVD;
Layer 4: –30 NGVD to –60 NGVD.

ND = not-detectable
* Location depicted on Figure 3.3-2.
Source: Ogden 1999

South Channel Site

Sediments from the South Channel site (Figure 3.3-2) sampled by Anderson et al. (1998) contained several metals at or near background concentrations (arsenic — 6.3 mg/kg; cadmium — 0.13 mg/kg; chromium — 46.7 mg/kg; copper — 20.8 mg/kg; lead — 15.4 mg/kg; mercury — non-detectable; nickel — 12.6 mg/kg; silver — 0.18 mg/kg; selenium — non-detectable; and zinc — 87.2 mg/kg). Polychlorinated biphenyl's (Aroclor 1254 – 3.6 µg/kg), several pesticides and pesticide derivatives, including dieldrin (12.7 µg/kg), p,p'-DDE (36.4 µg/kg), o,p'-DDE (3.41 µg/kg), and o,p'-DDD (1.52 µg/kg), and tributyltin (0.02 µg/kg), were also present in trace amounts. Similarly, trace quantities (less than 10 µg/kg) of three polycyclic aromatic hydrocarbons, fluoranthene, pyrene, and benzo(b)fluoranthene, were present in the sediment. These compounds are typical components of automobile exhaust that likely were added to the lagoon by aerial deposition or runoff. Despite the generally low contaminant concentrations, the report concluded that concentrations of dieldrin and DDE were sufficiently high to represent potential adverse effects to aquatic organisms. Additional testing further indicated that the sediment was acutely toxic to one marine test species (*Rheopoxynius abronius*) but not others (*Ampelisca abdita*). Based on these results, the study characterized sediments from this location as impacted. Similar results were observed for sediments from Los Penasquitos Lagoon, which were toxic to test organisms but contained minimal chemical contamination. Nevertheless, the area of San Dieguito Lagoon sampled for this study is not being considered for dredging as part of the proposed action.

Other Areas

Several areas of potential contamination located adjacent to the Lagoon restoration area were also documented in the Phase I ESA report (Tetra Tech 1991), including a municipal burn dump and leaking underground storage tank (UST) sites at the Del Mar Fairgrounds. The burn dump, which is located north of the Airfield Property, immediately north of the San Dieguito River, has been issued a low priority rating by the State of California. A representative of the California Regional Water Quality Control Board (RWQCB) indicated that three active leaking UST sites are located at the Del Mar Fairgrounds (specifically the Del Mar Thoroughbred Club), which is also located immediately north of the San Dieguito River. The exact location of these UST sites within the Fairgrounds, with respect to the San Dieguito Lagoon, is unclear. These sites are located to the north of the river outside the proposed boundaries of the proposed excavation area for the current project. The soil and groundwater have been adversely impacted by petroleum hydrocarbons (i.e., diesel, gasoline) at each of these sites, however, it is currently unclear whether the contamination extends into the lagoon restoration area. Groundwater is present at a depth of 5 to 6 feet at the UST sites (personal communication, Corey Walsh 1998). Other contaminated sites were identified within a 1-mile radius of the airfield site; however, all of these properties are located a sufficient distance from the lagoon restoration area to not be considered a threat to the soils of the lagoon.

Marine Sediments

Concentrations of selected chemical constituents, listed in Table 3.3-7, are characteristic of clean, uncontaminated marine sediments. For comparison, the average concentrations of these constituents in sediments from other areas of the Southern California Bight that are considered not significantly altered by anthropogenic activities are also presented in Table 3.3-7. Concentrations of chemical contaminants in sediments offshore from Del Mar Beach are consistently lower than those contaminant concentrations in other areas of the Bight, although these differences likely are related, in part, to differences in the grain size characteristics.

Table 3.3-7. Grain Size and Chemical Characteristics of Coastal Marine Sediments

	DEL MAR [1]		SOUTH. CALIFORNIA BIGHT [2]
	Intertidal	*Subtidal*	*Non-Anthropogenic Sites*
Sand / Gravel (%)	100	100	57.6
Silt (%)	0	0	42.4
Clay (%)	0	0	-
Tot. Org. Carbon (%)	0.05	0.14	0.67
Sulfides (mg / kg)	<0.2	<0.2	-
Arsenic (mg / kg)	0.7	1.0	5.2
Cadmium (mg / kg)	0.02	0.02	0.3
Chromium (mg / kg)	2.5	11.4	32
Copper (mg / kg)	0.5	3.3	12
Lead (mg / kg)	1.8	2.6	9
Mercury (mg / kg)	<0.01	<0.01	0.03
Nickel (mg / kg)	1.0	3.6	18
Selenium (mg / kg)	<0.1	<0.2	0.28
Silver (mg / kg)	<0.3	<0.3	0.14
Zinc (mg / kg)	4.8	16.0	55
TRPH (mg / kg)	<1.0	6.0	-
Total PAHs (mg / kg)	ND	ND	<0.3
Total PCBs (mg / kg)	ND	ND	0.005
Total Pesticides (mg / kg)	ND	ND	0.009
Organotin (mg / kg)	ND	ND	-
Halomethanes (mg / kg)	ND	ND	-
Volatile Organics (mg / kg)	ND	ND	-
Other Semivol. Org. (mg / kg)	ND	ND	-

Notes: 1. U.S. Navy 1995
2. Schiff and Gossett 1998

3.3.4 Soil Plantability

The ability of plants to become established in excavated soils (plantability) was evaluated by Ogden (1999) based on specific conductance readings, measurements of soil minerals, and calculated sodium adsorption ratios. Based on this evaluation, they concluded that shallow and deeper soils in the Lagoon Area are generally unsuitable for plant growth due to the high salt content. The surface 3 feet in the Horseworld and South Wetland Areas have potentials for supporting plant growth, whereas deeper soils are considered generally unsuitable for supporting plant growth. Ogden (1999) also concluded that soils presently supporting native salt marsh species might be suitable for replanting with salt marsh species following excavation and relocation.

3.3.5 Soil Corrosivity

The corrosivity of on-site sediments was analyzed by Ninyo & Moore (1999) to evaluate its effect on concrete structures. Test results indicated the pH of the soil samples tested ranged from 6.9 to 8.7, which is considered neutral to slightly alkaline. The minimum electrical resistivity measured in the laboratory ranged from 164 to 275 ohm-cm, which is considered severely corrosive to ferrous (iron) materials. The chloride content of the soil samples ranged from 1,275 to 2,275 ppm, which is considered to be extremely corrosive to ferrous materials. The soluble sulfate content of the soil samples ranged from 0.04 to 0.17 percent, which represents a negligible moderate sulfate exposure for concrete.

3.4 BIOLOGICAL RESOURCES

Background and Overview

The San Dieguito Lagoon has the largest watershed area (about 350 square miles) of the six San Diego County coastal lagoons, and, prior to the late 1800s, provided the greatest expanse (about 600 acres) of estuarine open water and wetland habitats in San Diego County between the Santa Margarita River and Mission Bay (Mudie et al. 1976; Sea Science Services and Pacific Southwest Biological Services 1980; MEC 1993). This wetland system had developed gradually over several thousand years as slowly rising sea levels flooded the lower San Dieguito River valley, and marsh vegetation established on sedimentary deposits resulting from tidal and fluvial processes.

Between the 1880s and 1970s, landfilling for development, the construction of rail and road corridors, and agricultural operations reduced the extent of estuarine open waters and wetlands to about 200 acres, while constraining or eliminating tidal and riverine influences in remaining wetlands. As a consequence of the reduced tidal prism, from approximately 850 acre-feet in 1889 to approximately 120 acre-feet, lagoon closures due to natural berming of the river mouth became common from the 1940s onward. Lagoon closure undoubtedly exacerbated the effects of sewage effluent, which was discharged into the lagoon from 1940 to 1974, as well as the effects of urban and agricultural runoff. Episodes of flooding have also resulted in large volumes of sediment and debris being deposited in existing wetlands (MEC 1993).

In its present condition, the San Dieguito Lagoon represents a valuable but greatly diminished wetland ecosystem relative to historic conditions. Although the lagoon, including non-tidal wetlands and flats southeast of the I-5 crossing, continues to provide regionally important feeding and resting areas for migratory birds along the Pacific Flyway; as well as tidal open water, mudflat, and salt marsh habitats for a variety of birds, fishes, and invertebrates (MEC 1993), it has suffered significant damage as a result of human alteration. Restoration of this lagoon would substantially improve the biological value of this resource. The excavation and restoration of a tidal basin with bordering salt marsh on California Department of Fish and Game (CDFG) property in 1982 halted the trend of declining acreage and quality of estuarine habitats, but the lagoon remains vulnerable to periods of closure and resulting extremes of temperature, salinity, and dissolved oxygen. Reduced habitat areas and the history of lagoon closures and consequent poor water quality probably account for the absence of many species of plants and animals that occur in other Southern California salt marshes (Sea Science Services and Pacific Southwest Biological Services 1980; Zedler 1982; MEC 1993).

This section provides a habitat-by-habitat description of vegetation, wildlife, and aquatic biota, followed by a species-by-species discussion of rare, threatened, or endangered species, within the project area boundaries. In the habitat descriptions, additional subheadings are identified where necessary to fully describe the resource.

The primary sources of historic information are the San Dieguito Baseline Biological Survey, which incorporated results of field studies conducted during 1992-1993 (MEC 1993), and the updated version of that report prepared by Josselyn (1997). These studies combined field observations and sampling with aerial photography to define and map habitats on the site. Biological resource information was also assembled for the *San Dieguito River Park Concept Plan* (Jones et al. 1993; JPA 1994 a, 1994b).

The EIR/EIS team conducted independent field investigations, literature review, and review of more recent (1997-99) aerial photography as necessary to confirm or correct previously assembled information. Field surveys were conducted by systematically visiting all accessible parts of the restoration area, focusing on the characterization of native habitats and comparing these observations with the existing information.

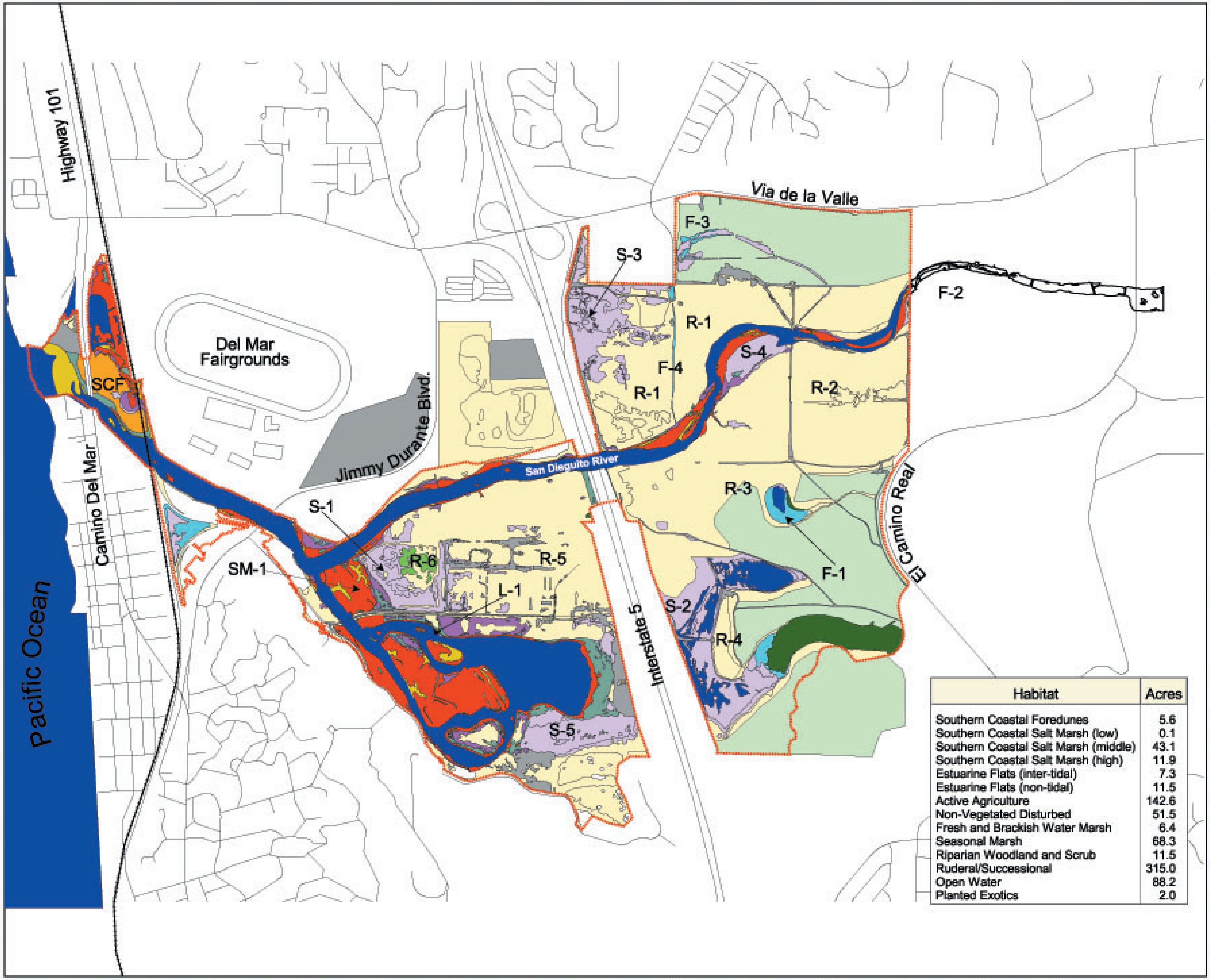
Habitat types are generally defined by the dominant vegetation community, except in cases where vegetation is lacking (e.g., open water). The original habitat map of the project site (MEC 1993; Josselyn 1997) was based on a modified version of the Holland (1986) system, resulting in the classification and mapping of 26 habitat types that include 13 different vegetation types. Some of the mapped habitat types grade into each other, making their differentiation difficult, particularly when the “boundaries” between such habitats (based, for example, on the extent of ponding or the composition of the vegetation) may shift in response to changes in land use, precipitation, river flooding, El Niño-related changes in sea level, and episodes of lagoon closure over a 5- to 10-year period. In a few cases as noted below, certain transitional habitats are included within broader categories for the sake of simplicity and to provide a more cohesive description of ecological functions.

Figure 3.4-1 shows the distribution and acreage of habitats within the project area.

The distribution and quality of wetland habitats in the San Dieguito Lagoon ecosystem reflects the interaction of tidal-marine and freshwater influences operating within a strongly modified topographic basin. Human modification of the landscape has tended to segregate marine and freshwater influences and has eliminated marine-freshwater transitional habitats that were undoubtedly common at the interface between the river floodplain and the historic lagoon. Tidal exchange is now confined within a tidal basin that is limited to the river channel and a relatively small area of historic and restored salt marsh and lagoon southwest of the I-5 crossing. Non-tidal freshwater and seasonal wetlands (see below) are confined to a series of basins in the surrounding floodplain above the zone of tidal influence.

Within the existing tidal basin, tidal exchange maintains the physical and chemical conditions (see section 4.2) that allow marine and tidal salt marsh species to disperse and persist, and it determines the vertical and horizontal distribution of habitats where various species can survive. As long as the mouth of the lagoon remains open and where tidal circulation is unrestricted, the daily, biweekly, and seasonal periodicities of tidal flooding and drainage as a function of elevation are predictable, as is the zonation of subtidal and intertidal habitats with respect to elevation. Normal patterns of inundation and emersion are disrupted during periods of inlet closure when tidal exchange ceases. At these times, which coincide with low flows in the river due to seasonal or long-term drought, continuously submerged areas stagnate and experience rising temperatures and depleted levels of oxygen; salinity may rise or fall, depending on the influx of freshwater; and pollutants from watershed sources such as agricultural and urban runoff may become concentrated in the lagoon.

Within the tidal basin, freshwater influences are comparatively weak much of the time, as the Mediterranean climate of the region produces relatively long periods of low flow in the lower San Dieguito River. These dry periods are punctuated, however, by brief, seasonal episodes of rainfall and heavy runoff that bring reduced salinity, inputs of sediment and woody debris, and erosion that can reshape the river channel. Wetland habitats in non-tidal basins are subject to extreme



Habitat	Acres
Southern Coastal Foredunes	5.6
Southern Coastal Salt Marsh (low)	0.1
Southern Coastal Salt Marsh (middle)	43.1
Southern Coastal Salt Marsh (high)	11.9
Estuarine Flats (inter-tidal)	7.3
Estuarine Flats (non-tidal)	11.5
Active Agriculture	142.6
Non-Vegetated Disturbed	51.5
Fresh and Brackish Water Marsh	6.4
Seasonal Marsh	68.3
Riparian Woodland and Scrub	11.5
Ruderal/Successional	315.0
Open Water	88.2
Planted Exotics	2.0

Figure 3.4-1

Existing Habitats within the San Dieguito Wetland Restoration Project Area

variability in the duration and depth of flooding as a function of seasonal and long-term variations in rainfall.

The following descriptions provide scientific names for all plants and non-avian wildlife species discussed in text. Bird names follow standardized English nomenclature used in the American Ornithologist's Union (AOU) Checklist of North American Birds. In the habitat by habitat wildlife discussions included in this section, a species identified with a primary habitat type may be found in other habitat types as well. For example, many waterfowl use open water for feeding, shorelines and shallow areas for wading, and marsh vegetation for cover and nesting. Some waterfowl species, such as Canada geese, will also use upland areas for feeding.

3.4.1 Open Water (Subtidal) and Intertidal Mudflats

This category includes both permanently inundated subtidal areas and contiguous unvegetated intertidal (estuarine) mudflats, the latter ranging from frequently flooded (extreme low water to mean sea level) to frequently exposed (above mean sea level). Along the open coast of San Diego County, the boundary between subtidal and intertidal habitats is at -4.0 feet NGVD. Within the lagoon, the boundary is a function of the *sill* elevation at the river mouth, which determines the depth to which water can drain out of the lagoon at low tide. Hence many areas of potential intertidal mudflat become subtidal open water when tidal flushing is reduced due to higher sill heights or when the mouth of the lagoon is closed. At present the mouth of the lagoon, when open, has a sill elevation of about 0 NGVD (Jenkins and Wasyl 1998); lower elevations are subtidal. The upper elevational limit of mudflats is a function of the lower limit of salt marsh vegetation which, in the case of low salt marsh (see section 3.4.2 below), may extend downward to approximately +1.5 feet NGVD (Josselyn and Welchel 1999). Obviously, mudflats can extend higher in the absence of low salt marsh vegetation.

Most of the elevational range typically associated with intertidal mudflats is subsumed within the open water habitat as shown in Figure 3.4-1. This is appropriate because broad, low-intertidal flats are mostly lacking. Instead, there are relatively narrow unvegetated transition zones along banks and slopes separating subtidal open water from bordering salt marsh habitats. River and channel banks throughout the lagoon have been steepened by scour, and the areas of intertidal mudflat shown in Figure 3.4-1 represent frequently exposed mudflats that are protected from scour by surrounding salt marsh vegetation.

It is important to recognize that lagoon hydrology has, historically, been unstable due to closure of the inlet for extended periods of time (Elwany et al. 1995, 1998; section 3.2 of this document). During these periods, potential areas of intertidal mudflat that would otherwise have experienced regular cycles of flooding and exposure became continuously ponded or exposed depending on water elevations, and subject to severe disruption of the normal physical and chemical conditions associated with tidal flushing (Sea Science Services and PSBS 1980; MEC 1993). As a result, in addition to being of limited extent, true intertidal mudflats have only existed on an intermittent basis within the lagoon, and the associated biota have periodically been decimated by episodes of lagoon closure (MEC 1993).

The following subsections describe the occurrence of various types of organisms in open water and adjacent tidal mudflat habitats.

3.4.1.1 Plankton

Plankton are free-floating or weakly swimming plants and animals that form the base of the aquatic food chain. Plankton communities vary considerably from season to season due to changing conditions of temperature and salinity and prevailing currents. Phytoplankton studies conducted in nearshore waters off Southern California (Tetra Tech 1985, USEPA 1988) indicated that diatoms are the largest component of the phytoplankton community, followed by dinoflagellates. For example, diatoms and dinoflagellates were numerically dominant in phytoplankton samples collected from well-flushed embayments such as Mugu Lagoon (Macdonald 1976) and Mission Bay (Fairbanks 1969 as cited by Rieger and Beauchamp 1975). The makeup of plankton communities in most Southern California lagoons tends to be similar within a region because of transport by currents, tides, and river flows.

Phytoplankton communities in San Diego County lagoon typically consist of pennate (oval-shaped) and chain-forming diatoms such as *Pleurosigma* and *Gyrosigma* (Zedler and Nordby 1986) and dinoflagellates such as *Gymnodinium* spp. *Pleurosigma* and *Gyrosigma* are a primary food source for various species of molluscs and fishes.

Similar to phytoplankton communities, species composition and abundance of zooplankton in tidal lagoons in the Southern California region are assumed to be similar to those of coastal waters. Based on several studies, including Tetra Tech (1985) and USEPA (1988), the major holoplankton groups include copepods, euphausids, and chaetognaths. Calanoid and harpacticoid copepods (microcrustaceans) are likely the most common zooplankton species based on their predominance in many other Southern California embayments (SDG&E 1980, SDUPD 1993). Also, larvae of benthic polychaetes (segmented worms) and molluscs carried by currents into the area may represent an additional food source for many local fishes and invertebrates.

Other plankton assemblages within San Dieguito Lagoon probably include fish eggs and larvae (ichthyoplankton). Based on collections of adult fishes by Greenwald (1985) in the lagoon, the most common ichthyoplankton likely occurring in open water habitats include topsmelt (*Atherinops affinis*), California killifish (*Fundulus parvipinnis*), and diamond turbot (*Hypsopsetta guttulata*). The distribution of several ichthyoplankton species in South San Diego Bay were described by McGowan (1981), who found that eggs of the deepbody anchovy (*Anchoa compressa*) and diamond turbot were the most commonly collected species.

3.4.1.2 Benthic Invertebrates and Algae

Invertebrates are important components of aquatic ecosystems and represent a food source for many fish and birds. Benthic invertebrates consist of infauna (organisms living in the sediments) and epifauna (organisms living on the sediments). Information on benthic invertebrates was previously collected by Pacific Southwest Biological Services, Inc. (PSBS) (1979), Greenwald (1984), MEC (1993), and summarized by Josselyn (1997). MEC (1993) collected 42 intertidal and 60 subtidal invertebrate species using both cores and benthic trawls. When the lagoon inlet was closed and there was no tidal exchange, intertidal habitats were defined as being about 1 foot above the water line in an area that would have been intertidal had the lagoon been open (MEC 1993).

The most common intertidal infaunal invertebrates collected were polychaete worms from several families including capetellids (*Capitella “capitata”*) and spionids (*Polydoras* and *Streblospiol*), oligochaetes, small bubble snails (*Cylichnella inculta*), clams (*Tagelus subteres*), and phoronids, and a variety of insects (MEC 1993). Commonly observed intertidal epifauna (not sampled systematically) include California horn snail (*Cerithidea californica*) shore crabs (*Pachygrapsus crassipes and Hemigrapsus oregonensis*) (MEC 1993). Community composition and species abundances were extremely variable between fall 1992 and spring 1993 sampling periods, reflecting physical and chemical conditions brought about by heavy river flows which breached the lagoon inlet in the aftermath of a prolonged period of lagoon closure (MEC 1993).

A list of the five most common subtidal infaunal invertebrate species collected by MEC (1993) at various habitats throughout San Dieguito Lagoon is presented below in Table 3.4-1. Some of these species included polychaete worms such as spionids (*Boccardia*, *Boccardiella*, *Polydora*, *Prionospio*, *Pseudopolydora*, and *Streblospio*) and amphipods (*Corophium*, *Grandidierella*, *Hyallela*, and *Tethygenia*). Other common species in subtidal habitats include snails (*Cylichnella*, Hydrobiidae, and Rissoidae) and clams (*Cryptomya* and *Tagelus*).

Table 3.4-1. Most Common Subtidal Infaunal Invertebrate Species Collected at San Dieguito Lagoon Before (November 1992) and After (April 1993) a Major Rainfall Event (MEC 1993)

	November 1992			April 1993		
Habitat	*Taxon*	*Mean per m²*	*Percent*	*Taxon*	*Mean per m²*	*Percent*
Outer Tidal Channel	Capitella "capitata"	3875.0	36.3	Chironomidae larva	1006.9	78.8
	Cylichnella inculta	1236.1	11.6	Oligochaeta	208.3	16.3
	Polydora nuchalis	1166.7	10.9	*Polydora ligni*	27.8	2.2
	Nematoda	111.1	10.4	*Polydora* spp.	13.9	1.1
	Corophium sp.	972.2	9.1	*Boccardia probosoidea*	13.9	1.1
Inner Tidal Channel	Capitella "capitata"	5680.6	21.6	Oligochaeta	2791.7	68.3
	Streblospio benedicti	5222.2	19.9	Capitella "capitata"	680.6	16.6
	Phoronida	4236.1	16.1	Chironomidae larva	263.9	6.5
	Cylichnella inculta	3861.1	14.7	*Streblospio benedicti*	166.7	4.1
	Oligochaeta	3027.8	11.5	*Grandidierella japonica*	41.7	1.0
Tidal Creeks	Cylichnella inculta	3472.2	25.4	Oligochaeta	5805.6	58.1
	Capitella "capitata"	3069.4	22.4	Capitella "capitata"	1722.2	17.2
	Polydora nuchalis	3055.6	22.3	Phoronidae	944.4	9.4
	Oligochaeta	2166.7	15.8	Cylichnella inculta	500.0	5.0
	Tagelus subteres	430.6	3.1	*Streblospio benedicti*	250.0	2.5
Open Saline Ponds	Capitella "capitata"	5125.0	42.0	Oligochaeta	16708	89.8
	Cylichnella inculta	2805.6	23.0	Capitella "capitata"	819.4	4.4
	Polydora nuchalis	1861.1	15.3	*Polydora nuchalis*	541.7	2.9
	Tagelus subteres	930.6	7.6	Chironomidae larva	388.9	2.1
	Oligochaeta	361.1	3.0	Tagelus subteres	41.7	0.2
Brackish Water	Polydora nuchalis	868.1	39.7	Chironomidae larva	538.2	80.3
	Hydrobiidae	527.8	24.1	Oligochaeta	41.7	6.2
	Capitella "capitata"	402.8	18.4	Hyalella azteca	41.7	6.2
	Cylichnella inculta	159.7	7.3	Aphididae adult	41.7	6.2
	Oligochaeta	104.2	4.8	Miridae adult	6.9	1.0

Areas along the San Dieguito River channel west of I-5 had greater numbers of individuals and more species than areas east of I-5 where brackish water predominated (MEC 1993). Densities of subtidal invertebrates west of I-5 were 2 to 8 times higher (350-900 individuals/m^2) than areas east of I-5 (150 individuals/m^2). The most abundant species in the marine areas west of I-5 included molluscs and crustaceans such as shrimp, phoronids, and clams (e.g., *Tagelus*) (MEC 1993).

Seasonal patterns in invertebrate abundance are commonly observed, with generally higher numbers of individuals in the spring and summer for most species and lower abundances during the rainy season (October to February). Invertebrate species composition also varied on a seasonal basis. For example, no more than seven taxa were collected at a single station by beam trawls on any given month, while the species composition generally ranged between 22 and 37 per station. This is likely due to a high turnover in species composition during seasonal cycles.

Common subtidal macroinvertebrates collected by MEC in 1992-93 and similarly expected at present included the California horn snail, the snail *Nassarius tegula*, the shrimp *Palaemon ritteri*, the white bubble snail *Haminoe vesicula*, crayfish (F. Astacidae), and water boatmen (F. Corixidae), the latter being found in more brackish habitats upstream. During 1998 (this study), a colony of fiddler crabs (*Uca crenulata*) was also observed in a small area of mud flat along the south bank of the river channel, and swimming crabs (*Portunus xantusii*) were abundant in shallow submerged habitats along the river.

Algae occur in the lagoon on a seasonal basis, more frequently during spring and summer months, and in the upstream, brackish areas (MEC 1993). Eelgrass (*Zostera marina*), a flowering plant that forms extensive beds in shallow water in many west coast bays and estuaries, is absent from the lagoon, probably as a result of a combination of lack of tidal flushing in the more protected areas and scouring by stormwater runoff in the main channel. Where present elsewhere, eelgrass beds provide an extremely productive habitat and support a high diversity of invertebrates and fishes, including juveniles that utilize eelgrass beds as a nursery and refuge from predation.

3.4.1.3 Fishes

The San Dieguito Lagoon provides a protected shallow water habitat for a variety of marine, estuarine, and freshwater fishes. The periodic submergence of tidal mudflats and wetlands affords access to productive foraging grounds for fishes, and the intermingling of open water and vegetated wetlands provides nursery areas for many marine species (MEC 1993). Such areas are of limited extent in the lagoon in its current state due to the confinement of tidal exchange to a small fraction of its historic extent, and to relatively steep banks and the scarcity of small tidal creeks along the lagoon's shorelines. The fish fauna of the lagoon changes seasonally as river flows transport freshwater species downstream and cause reduced salinities that strictly marine species cannot tolerate. The effects of seasonal and long-term variations in freshwater flows are amplified by the closure of the mouth of the lagoon. Prolonged closure results in hypersaline conditions west of I-5, and predominantly freshwater conditions east of I-5 (MEC 1993).

Historical information about the fish species composition and diversity in San Dieguito Lagoon is reported in Carpelan (1960), Greenwald (1984), PSBS (1979), and MEC (1993). Carpelan (1960) reported collecting topsmelt, California killifish, and mosquitofish (*Gambusia affinis*). Greenwald (1984) collected 21 fish species including California killifish, topsmelt, longjaw mudsuckers (*Gillichthys mirabilis*), striped mullet (*Mugil cephalus*), and mosquitofish. Of these species, topsmelt was the most common, comprising approximately 63 percent of the catch. Similar species composition was found by MEC (1993). Several other fish species collected by PSBS (1979) and Greenwald (1984), but not MEC (1993) included bay pipefish (*Syngathus leptorhynchus*), California corbina (*Menticirrhus undulatus*), halfmoon (*Medialuna californiensis*), opaleye (*Girella nigricans*), and walleye surfperch (*Hyperprosopon argenteum*) (Table 3.4-2). Species reported only by MEC (1993) included barred pipefish (*Syngnathus auliscus*), bat ray (*Myliobatis californica*), bluegill (*Lepomis macrochirus*), brown smoothhound shark (*Mustelus henlei*), California grunion (*Leuresthes tenius*), California needlefish (*Strongylura exilis*), jacksmelt (*Atherinopsis californiensis*), northern anchovy (*Engraulis mordax*), queenfish (*Seriphus politus*), and white croaker (*Genyonemus lineatus*) (Table 3.4-2).

Recent sampling in winter (December 1997) and spring (May 1998) at both river and basin sites resulted in a total of 19 species and unidentified individuals from two families, Atherinidae (silversides) and Gobiidae (gobies) (Schroeter et al. 1998) (Table 3.4-2). The most abundant species (number per 100 m^2) collected in the open water basins in winter 1997 were topsmelt and miscellaneous gobies, while deepbody anchovy, topsmelt, and longjaw mudsuckers were most abundant in spring 1998. Results were different at the river sites, with striped mullet (*Mugil cephalus*), topsmelt, and mosquitofish being most abundant in winter 1997. Spring 1998 sampling at river sites resulted in topsmelt being the most abundant fish species. Other common species collected during spring 1998 at river sites included striped mullet, California halibut, and yellowfin goby (Schroeter et al. 1998).

Mean fish abundances were lower in open water habitats such as intertidal channel and tidal creeks (300 individuals/100 m^2) than in brackish water areas and open saline ponds (500-600 individuals/100 m^2) (MEC 1993). Similar to intertidal and subtidal invertebrates, seasonal differences in species composition were reported by MEC (1993). For example, yellowfin goby (*Acanthogobius flavimanus*), other small gobies (Gobiidae), and several marine species were replaced by estuarine species such as barred pipefish, California killifish, longjaw mudsucker, mosquitofish, and topsmelt during the summer months. All fish species except mosquitofish, showed a seasonal decrease in abundance during the fall and onset of the rainy season while the mouth was open (MEC 1993). Fish diversity (number of species) also showed seasonal trends, with more species being collected during spring and summer months (April to October) than in the winter months. This is primarily due to lowered salinity levels when the mouth was closed to tidal circulation (December 1992), or during rainy months (October to February).

Mudflat habitats are generally rich in inorganic nutrients and organic food. Macroinvertebrates such as polychaetes, snails, and crabs use the mud flat habitats, as well as other intertidal salt mash areas during both high and low tides to filter food from the circulating water and search for other prey items. At high tide, several fish species occupy the lower mud flats, including California killifish, bay goby, striped bass, and topsmelt. In contrast, most of these fish species move out of the mud flats into deeper channel waters at low tide. One exception is bay gobies, which hide in their burrows on the mud flats between tides.

California grunion are common offshore and spawn on sandy beaches at high tides. They were collected in the outer tidal channel habitat (MEC 1993) and may spawn on the sandy intertidal beach surrounding the mouth of the lagoon.

<u>A discussion of the lack of Essential Fish Habitat (EFH) for managed species in the project region is presented in Appendix C-7.</u>

Table 3.4-2. Fish Species Collected in San Dieguito Lagoon, 1979-1998

		STUDIES			
Common Name	*Scientific Name*	*PSBS (1979)*	*Greenwald (1984)*	*MEC (1993)*	*Schroeter et al. (1998)*
Brown smoothhound	*Mustelus henlei*			X	
Round stingray	*Urolophus halleri*				
Bat ray	*Myliobatus californica*			X	
Threadfin shad *	*Dorosoma petenense*		X	X	X
Northern anchovy	*Engraulis mordax*			X	
Deepbody anchovy	*Anchoa compressa*		X	X	X
Carp *	*Cyprinus carpio*		X	X	X
California needlefish	*Strongylura exilis*			X	
California killifish	*Fundulus parvipinnis*	X	X	X	X
Mosquitofish *	*Gambusia affinis*	X	X	X	X
Topsmelt	*Atherinops affinis*	X	X	X	X
Jacksmelt	*Atherinopsis californiensis*			X	
California grunion	*Leuresthes tenius*			X	
Bay pipefish	*Syngnathus leptorhynchus*		X		X
Barred pipefish	*Syngnathus auliscus*			X	X
Staghorn sculpin	*Leptocottus armatus*	X	X	X	X
Arrow goby	*Clevelandia ios*		X		X
Bay goby	*Lepidogobius lepidus*				X
Shadow goby	*Quietula y-cauda*		X		X
Cheekspot goby	*Ilypnus gilberti*	X			X
Yellowfin goby	*Acanthogobius flavimanus*		X	X	X
Barred sand bass	*Paralabrax nebulifer*				
Bluegill *	*Lepomis macrochirus*			X	
Queenfish	*Seriphus politus*			X	
California corbina	*Menticirrhus undulatus*		X		
White croaker	*Genyonemus lineatus*			X	
Opaleye	*Girella nigricans*	X	X		
Halfmoon	*Medialuna californiensis*		X		
Striped mullet	*Mugil cephalus*	X	X	X	X
Barred surfperch	*Amphistichus argenteus*	X			
Shiner surfperch	*Cymatogaster aggregata*		X	X	
Walleye surfperch	*Hyperprosopon argenteum*		X		
Longjaw mudsucker	*Gillichthys mirabilis*	X	X	X	X
California halibut	*Paralichthys californicus*		X	X	X
Diamond turbot	*Hypsopsetta guttulata*	X		X	X
Note: * Non-native species that are washed into the lagoon by freshwater flows.					

3.4.1.4 Birds

Open water habitats in combination with tidal and non-tidal flats and vegetated wetlands at San Dieguito Lagoon are regionally important foraging and resting areas for water-associated migratory birds along the Pacific Flyway, as well as for summer-resident and breeding species. The open water habitat provides resources for species that forage on vegetation (American coot, American wigeon, cinnamon teal, gadwall, lesser scaup, mallard, northern pintail and northern shoveler) and invertebrates (white-faced ibis, bufflehead, pied-billed grebe and ruddy duck [MEC

1993]). Grebes, cormorants, pelicans, herons, egrets, gulls, terns, osprey and belted kingfisher all frequent the open water habitat to hunt for fish and tadpoles (in freshwater). This habitat is also important for cliff swallows, which forage for flying insects over the open water and which nest in the hundreds under the I-5 bridge (SAIC unpublished field notes).

Many of the waterfowl and shorebird species associated with open water habitat are winter visitors in Southern California, so the total number of birds utilizing the open water habitat on the project area is highest in winter. This area is important during the breeding season for some species, especially Forster's, Caspian, and California least terns (an endangered species; section 3.4.8). These species use the open water habitat for foraging and may breed in the project area during some years. Terns forage primarily over the open water of estuarine, palustrine, and riverine habitats. California least terns forage primarily in the open water habitats. Many species, especially gulls, pelicans, and some shorebirds, bathe in open water areas to maintain the integrity of their feathers. Some species of ducks, grebes, and other species may rest during the day or roost at night on the water surface, although the surrounding vegetation is often preferred.

Intertidal mudflats are important foraging areas for most shorebirds, as well as herons and egrets, ibis, and, to a lesser extent, gulls. These habitats are limited in the lagoon at present and occur at the river mouth, around the edges of salt marsh in the southwest part of the restoration area, and in narrow zones adjacent to the river banks. Shallow water and mudflat habitats in non-tidal basins east of I-5 are also heavily used by shorebirds and waterfowl. The worms, arthropods, snails and other invertebrates found in the mud flats attract large numbers of shorebirds during their annual migrations. Hundreds of sandpipers, dowitchers, dunlin, willet, whimbrel, marbled godwit, and other shorebirds are observed in the saltmarsh habitat along the channels and mudflats every spring and fall (MEC 1993). Many of these species overwinter in the project area.

3.4.2 Salt Marsh

3.4.2.1 Vegetation

This habitat type is essentially synonymous with "Southern Coastal Salt Marsh" as the term is widely used (Holland 1986) to define the vegetation that occurs within the range of regular (daily) to irregular (less often than daily) flooding by high tides (Ferren et al. 1995). In the project area, this corresponds to elevations between approximately +1.5 and +5 feet NGVD. The lower part of this range overlaps with unvegetated channel banks and flats as discussed previously, and the upper part includes unvegetated saline flats (=non-tidal estuarine flats in Figure 3.4-1). The upper end of this range (roughly +4.5 to +5 feet NGVD), where tidal inundation occurs less than once a year on average (Jenkins and Wasyl 1999d), represents a transition zone between tidal wetlands and non-tidal upland or seasonal wetland habitats.

Salt marsh vegetation typically exhibits vertical zonation, in which different dominant species or groups of species consistently occur within a particular elevational zone. This reflects the differing tolerances, growth, and reproduction of the constituent species in response to changing physical (and presumably biological) factors along the elevational gradient. At the lower limit of salt marsh vegetation, temperature and salinity conditions are relatively stable (although this stability is disrupted when tidal exchange is blocked), but vascular plants must contend with permanently saturated, anaerobic soil conditions, as well as currents and wave action when they are submerged. Higher on the shore, periods of tidal flooding occur less frequently and are of shorter duration, resulting in greater variation in temperature and soil moisture. Soil salinity is also more variable due to seasonal cycles of rainfall and drought, with hypersaline conditions developing during summer-fall. Substrate qualities also influence the development of the vegetation within a particular zone. Sandy soils, for example, drain more rapidly and do not retain nutrients to the same degree that finer soils do. Sandy soils are less conducive to the establishment of salt marsh vegetation (Zedler 1996b).

Salt marsh habitats are critical sources of primary and secondary production for California estuaries, and they support a high concentration of native plant and animal species, some of which are rare or endangered. Salt marsh vegetation is characterized by a dense growth of native herbaceous, semi-succulent, and/or suffrutescent (semiwoody, shrublike) species that form an essentially continuous cover 1 to 3 feet in height. The most common and characteristic species is pickleweed (*Salicornia virginica*). Three subtypes of salt marsh — low, middle, and high — can be distinguished on the basis of elevation (which determines frequency of tidal flooding) and dominant plant species, as described below.

Low Salt Marsh

Low salt marsh, and the adjacent edges of intertidal mudflats and channel banks, typically occur in the vicinity of mean high water where the shoreline is alternately exposed by low tides and inundated by high tides on a daily basis. Typical elevations for low salt marsh are +1.5 to +2.5 feet NGVD. Low marsh vegetation is characterized by Pacific cordgrass (*Spartina foliosa*), which is generally missing from Southern California estuaries that do not have good tidal flushing (Zedler 1982). The occurrence of low marsh vegetation in the project area is limited to a successful reintroduction along the north shore of the lagoon (L-1 on Figure 3.4-1). Observations during 1998 confirmed that cordgrass is thriving and gradually expanding around the area of introduction. The filling of most of the historic tidal marsh in the lagoon and the subsequent history of lagoon closures may have caused the extirpation of cordgrass elsewhere in the lagoon. Another consideration is that most remaining areas, particularly along the river, generally lack sheltered, gently sloping mudflat-marsh transition zones at the elevations that would be most suitable for low marsh establishment.

Middle Salt Marsh

Middle salt marsh occurs within the zone of irregular (less than daily [Ferren et al. 1995]) flooding by the higher high tides, and is typically dominated by pickleweed. Typical elevations for middle marsh are +2.2 to +3.5 feet NGVD, although middle and high marsh communities intergrade, especially where topography is irregular, up to elevations of +4.5 feet in the project area. This marsh type includes many areas where the vegetation is patchily dominated by species other than pickleweed, especially alkali heath (*Frankenia salina*), glasswort (*Salicornia subterminalis*), fleshy jaumea (*Jaumea carnosa*), and salt grass (*Distichilis spicata*). Some investigators would consider these areas to be "high salt marsh," however, notwithstanding, the boundary between middle and high salt marsh in the project area is indistinct (see below). Both vegetation types occur together on gently sloping benches or platforms that rise abruptly above surrounding channel and mudflat habitats.

The largest areas of middle salt marsh are around the periphery of the lagoon and adjacent to the channel leading to the lagoon. Smaller patches of the habitat type also occur between I-5 and the railroad right-of-way and along the banks of the San Dieguito River inland nearly to El Camino Real (Figure 3.4-1).

High Salt Marsh

High salt marsh intergrades with middle salt marsh, but typically extends from +3.5 to +4.5 feet NGVD, the latter being the upper limits of tidal flooding. The transition between middle and high marsh within this range is often indistinct, but is generally marked by the decreasing dominance of pickleweed and increasing diversity of other species.

An upper transition zone between about +4.5 and +5 feet NGVD is frequently occupied by high salt marsh vegetation in the study area, but this zone may also support non-tidal upland or seasonal marsh habitats. This upper zone occasionally receives tidal inundation between 1 day/year to 1 day in 10 years (Jenkins and Wasyl 1999d). However, the vegetation is still subject to tidal influence where the underlying soils become saturated by tidal flooding. Where the soils are on slopes or benches not subject to seasonal ponding or tidal saturation from below non-native, weedy species are more prevalent in this transition zone. Non-tidal, seasonal flooding in small basins or drainage areas within this zone can blur the distinction between seasonal and high salt marsh since many of the same species found in high salt marsh (e.g., pickleweed, glasswort, and salt grass) also occur on seasonally flooded saline soils.

The upper boundary, between high salt marsh and adjacent habitats not subject to tidal influence is fairly sharp in many areas due to the existence of low levees or abrupt transitions between stream terraces around the upper edges of the tidal salt marsh throughout the project area. The levees located on the north side of the confluence between the main river channel and the channel leading southward to the lagoon rise abruptly to 2 to 3 feet above from salt marsh elevations and are typically vegetated by introduced weedy species.

In addition to the species mentioned for middle salt marsh, high salt marsh vegetation includes several distinctive native species, including sea lavender (*Limonium californicum*), spearscale (*Atriplex triangularis*), salt marsh sand spurry (*Spergularia marina*), woolly sea blite (*Suaeda taxifolia*), alkali bulrush (*Scirpus maritimus*), and spiny rush (*Juncus acutus*); the latter two species are often associated with freshwater inflow. Several naturalized non-native species may be present at the upper edges of the high salt marsh, and become increasingly common as elevation increases in transitional habitats above +4.5 feet NGVD. These include rabbitsfoot grass (*Polypogon monspeliensis*), sickle grass (*Parapholis incurva*), and iceplant (*Mesembryanthemum nodiflorum*). Salt pans or unvegetated flats that are flooded by the highest tides are interspersed with vegetated areas within the high salt marsh.

3.4.2.2 Fishes and Invertebrates

Fishes and invertebrates utilize the salt marsh for a variety of activities, including feeding, reproduction (nursery grounds), and protection against predation (Zedler 1982). The salt marsh fish and invertebrate communities in many Southern California embayments and lagoons, including San Dieguito, are fairly similar in species composition, although open systems are more diverse than lagoons subject to frequent closure (MEC 1993). Macroinvertebrates such as polychaetes, snails, and crabs use intertidal salt mash areas during both high and low tides to filter food from the circulating water and search for other prey items. Several fish species, including California killifish, bay goby, striped bass, and topsmelt move into these highly productive habitats to forage at high tide. Habitat use by marine species is disrupted during periods of lagoon inlet closure, when the salt marsh is likely to either be inaccessible (and desiccated) due to prolonged exposure, or subject to stagnant conditions or fresh water inflows which are inhospitable to marine species (MEC 1993). A discussion of the lack of Essential Fish Habitat (EFH) for managed species in the project region is presented in Appendix C-7.

Numerically dominant benthic organisms in this habitat includes annelid worms such as polychaetes and oligochaetes *(Capitella capitata*, *Pseudopolydora paucibranchiata*, and *Streblospio benedicti*), arthropods (gammarid and caprellid amphipods, isopods, ostracods, and cumaceans), and molluscs (gastropods and pelecypods) (SAIC 1997a). Most of these organisms are widely distributed in many California coastal bays and estuaries. The most abundant surface-dwelling invertebrates typically found on mudflats comprising lower salt marsh are horn snails (*Cerithidea californica*), salt marsh snails (*Melampus olivaeceous*), yellow shore crabs (*Hemigrapsus oregonensis*), and lined shore crabs (*Pachygrapsus crassipes*) (Zedler 1982). Scripps Institution of Oceanography (SIO) recently compared structure and function in Southern California coastal wetlands and found that macrofaunal assemblages in most marsh systems were dominated by oligochaetes, representing approximately 54 to 89 percent of the individuals greater than 300 microns (SIO 1995). Polychaete species, representing 10 to 20 percent of the fauna at each site were typified by *Polydora ligni, S. benedicti*, and *Capitella*.

3.4.2.3 Wildlife

Coastal salt marsh habitat does not support many non-avian wildlife species primarily due to regular tidal inundation. This habitat is typically characterized by the prevalence of pickleweed. Pickleweed stands constitute the most important habitat for Belding's savannah sparrow, a state-listed endangered species (section 3.4.8). This habitat also supports seed-eating species such as house finch and song sparrow and insectivorous birds such as black phoebe, cliff swallow, and northern mockingbird (MEC 1993). Birds of prey, such as American kestrel, red-tailed hawk, white-tailed kite, northern harrier, and loggerhead shrike, hunt from the air or from high perches over the entire project area, including the salt marshes. Herons and egrets forage from the aquatic edge of the salt marsh, primarily hunting fish in the adjacent water. Some shorebirds and wading birds that forage in the tidal mudflats will move upward and forage in adjacent salt marsh during high tides when the mudflats are submerged. Macroinvertebrates, such as the salt marsh snail, yellow shore crabs, and lined shore crabs, that live in the vegetated marsh are eaten by willets and other shorebirds. The high marsh zone, including unvegetated salt pans, along with adjacent transitional and upland habitats, is typically used as a high tide loafing area by most shorebirds and wading birds that forage on exposed tidal flats or salt marsh habitats nearby.

Regions of high salt marsh and adjacent transition zones that are partially vegetated with upland species support species such as western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), and various rodent species, if the areas are large enough or connected to other upland habitat. Montgomery (SJM Biological Consultants 1994) reported trapping southern harvest mouse (*Reithrodontomys megalotis*), house mouse (*Mus musculus*), and deer mouse (*Peromyscus maniculatus*) in the high salt marsh habitat on the project site.

3.4.3 Seasonal Marsh

3.4.3.1 Vegetation

Seasonal marsh habitats are non-tidal wetlands and transitional (wetland-to-upland) habitats that are flooded to varying degrees by seasonal rainfall and runoff. These habitats typically occur on flats or in shallow basins where drainage is poor and soils are saline, either because of historical connections to the San Dieguito River estuary, or because of the concentration of salts during cycles of flooding and evaporation. As a result, seasonal marsh vegetation is often characterized by salt-tolerant species that include the typical (tidal) high salt marsh plants mentioned previously (section 3.4.2.1), as well as other species often associated with disturbed wetlands or saline soils, such as curly dock (*Rumex crispus*), cocklebur (*Xanthium strumarium*), tamarisk (*Tamarix* sp.), heliotrope (*Heliotropium curassavicum*), and toad rush (*Juncus bufonius*). Weedy, non-native annual grasses, currently present around the upper, drier edges of the flats and basins that support seasonal marsh, were probably more abundant in the aftermath of drought when the 1992-93 field surveys occurred (MEC 1993).

Habitats previously identified and mapped as seasonal salt marsh and seasonal salt marsh — transitional (MEC 1993; Josselyn 1997) are combined within this habitat type, as are adjacent areas mapped as palustrine or riverine flats. All of these areas occur above +4.5 feet NGVD. Field investigations in 1998 indicated that these habitat types overlap and that their separation is somewhat arbitrary. In addition, the vegetation of these habitats can change significantly in response to years of drought or heavy (e.g., El Niño influenced) rainfall, blurring the distinctions between seasonal marsh and seasonal marsh-transition areas.

As noted previously, the transition zone between +4.5 and +5 feet NGVD can support seasonal or tidal high salt marsh, or non-wetland habitats, depending on local soil and drainage conditions. Seasonal marsh habitats on the project site are heterogeneous and occur in several different locations, which are distinct in terms of history as well as present-day vegetation and ecological functions and values. The more noteworthy areas are as follow:

- Between the lagoon and the river channel, an area of now-diked but formerly tidally influenced middle to high salt marsh is mapped as seasonal marsh (S-1 in Figure 3.4-1). This area is seasonally flooded by rainfall, and may also be subject to spillover flooding during high water levels that result from a combination of river flooding and high tides. This area retains middle-to-high salt marsh vegetation and, if not for the low dikes that surround it, would provide a prime example of a gradual transition from tidal salt marsh to adjoining upland habitats.
- The construction of I-5 isolated two “arms” of the historic lagoon and adjacent flats on the south side of the river, east of I-5 (S-2 in Figure 3.4-1). Rainfall and runoff from the surrounding hills to the south and east now accumulate in a deep, permanent pond in the northern arm, and in a shallower, more seasonal pond in the southern arm. These ponds, although non-tidal, are fringed by typical tidal salt marsh species such as pickleweed, alkali heath, and glasswort. Bordering flats that in 1992-93 were mapped as agricultural or ruderal (MEC 1993) now support seasonal marsh as well; the habitat map has been updated to reflect current conditions.
- East of I-5 at the northern edge of the project area is an extensive area of seasonal marsh on old alluvial deposits at the northern edge of the river floodplain (S-3 in Figure 3.4-1). The large area that supports seasonal marsh is a shallow basin whose drainage to the river is impeded by the land (ruderal habitat) to the south, which is at slightly higher elevations. Prior to development of the area to the north, small drainages flowed into the river valley in this area, and the river channel apparently flowed through this area north of its present location (MEC 1993). The deposition of sediment on the old marsh plain resulted in above-tidal elevations, but the salinity of the soils and poor drainage result in the persistence of salt marsh vegetation, especially pickleweed, glasswort, and alkali heath.

On its northern edge, the vegetation includes a greater prevalence of brackish wetland species, such as cocklebur, curly dock, nut-sedge (*Cyperus eragrostis*), and bulrushes (*Scirpus* spp.). These species are common where freshwater runoff from the now-developed shopping center to the north is impounded in ditches and/or by old graded roadways. Seasonal marsh to the south is drier and includes salt pans (previously mapped as palustrine flats) located in shallow, seasonally ponded low areas that meander through vegetated "islands" of pickleweed and glasswort.

- Seasonal marsh habitat also occurs on a sand bar "island" associated with a river meander in the eastern part of the project area (S-4 in Figure 3.4-1). This area was originally mapped as seasonal salt marsh — transitional (MEC 1993), and it is situated between tidally influenced middle and high salt marsh and ruderal upland habitat. The vegetation is a heterogeneous assemblage of both wetland and non-wetland species that includes sandbar willow (*Salix exigua*), tamarisk, beach primrose (*Camissonia cheiranthifolia*), telegraph weed (*Heterotheca grandiflora*), and ripgut brome (*Bromus diandrus*).

3.4.3.2 Wildlife

There are four major portions of the project area containing seasonal marsh habitat (Figure 3.4-1). The seasonal marsh habitat associated with the upper portions of the historic lagoon (S-2 in Figure 3.4-1) provides some of the most diverse and valuable habitat for animal species on the project site. Several species of amphibians, reptiles, and birds live or forage in the area of this wetland habitat. Although there is evidence of halophytic vegetation in this area, both western toads (*Bufo boreas*) and Pacific tree frogs (*Pseudacris regilla*) breed in this habitat (MEC 1993, SAIC 1998 field observations). Because open water persists throughout the year, this area provides valuable summer habitat for these amphibians and other wildlife species as well.

Areas with persistent standing water would attract numerous mammal species including coyote (*Canis latrans*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), mule deer (*Odocoileus hemionus*) and cottontail rabbit (*Sylvilagus auduboni*) (MEC 1993). Not only do animals come to these areas to drink, but this habitat should be valuable for foraging and breeding. California vole (*Microtus californicus*) and dusky-footed woodrat (*Neotoma fuscipes*) were both found in this habitat (SJM Biological Consultants 1994). Pools that support emergent aquatic vegetation provide resources for several waterfowl species including mallard, cinnamon teal, ruddy duck, and American coot; and pied-billed, horned, and eared grebes (MEC 1993, SAIC 1998 field observations). _The seasonal marsh vegetation surrounding the open water supports numerous killdeer and black-neck stilts. Other avian species likely using this aquatic habitat include great blue, black-crowned night, and green herons; and snowy and great egrets. Raptors such as Cooper's hawk, osprey, and northern harrier frequently hunt here (SAIC 1998).

The two portions of seasonal marsh habitat located to the south (S-5, Figure 3.4-1) and north (S-1 in Figure 3.4-1) of the lagoon and the seasonal marsh along San Dieguito River (S-4 in Figure 3.4-1) are primarily vegetated with pickleweed and support wildlife species similar to those described for the high salt marsh habitat. The seasonal marsh south of the lagoon provides especially good habitat for Belding's savannah sparrows; several family units were observed in this area during the SAIC surveys for this project (1998). The seasonal salt marsh habitat north of San Dieguito River (S-3 in Figure 3.4-1) contains more weedy species and grasses and is closer to urban development. Belding's savannah sparrows have been observed in this region (MEC 1993), but most of the other wildlife species generally expected to occur in this area are more tolerant of human disturbance.

Montgomery (SJM Biological Consultants 1994) noted house mouse and southern harvest mouse in this area. Other wildlife species include western fence lizard, side-blotched lizard, cottontail rabbit, and Botta's pocket gopher (*Thomomys bottae*). Large burrow complexes of California ground squirrel (*Spermophilus beecheyi*) are present along the berm separating this area from a nearby parking lot.

3.4.3.3 Aquatic Biota

Aquatic portions within the seasonal marsh habitats at San Dieguito Lagoon hold water for highly variable periods, depending on the frequency and duration of rainfall, seasonal temperatures, and site topography. During flooded conditions, unicellular and colonial/filamentous algae may become abundant in these pools. These non-vascular plants are valuable in terms of primary productivity and as a food resource for invertebrates.

The most conspicuous aquatic inhabitant of the ephemeral pools within the seasonal marsh is the water boatman (Insecta, family Corixidae). Corixids feed on a wide variety of plant and animal matter, including diatoms, filamentous algae, rotifers, and other small planktonic animals. Corixids also prey upon mosquito larvae (Usinger 1956), which were noted in increasing numbers in the higher reaches of the seasonal marsh. The dominance by corixids is consistent with observations of this species in brackish, seasonally inundated areas elsewhere, and within other Southern California coastal lagoons closed to regular tidal flushing. For example, Nordby (1990) found corixid and midge larva to be the most abundant organisms in San Elijo Lagoon, an adjacent lagoon system to the north, that is typically closed to tidal influence. Additionally, corixids were a dominant invertebrate represented at Batiquitos Lagoon prior to restoration of that system (Michael Brandman Associates 1988).

In addition to the corixids and mosquito larva (family Culicidae), other common organisms observed were dipteran larva and adults, predaceous diving beetles (family Dytiscidae), ostracods, and harpacticoid copepods (Crustacea, Harpacticoida). Adult diptera (e.g., midges) were also common around the water edges. Other aquatic animal groups expected to occur within seasonal marsh habitat include polychaete and oligochaete worms. Depending on environmental conditions, food resources, and predators, the density of the above organisms can fluctuate widely. However, the number of species represented in these ephemeral conditions is expected to be relatively low.

During 1998, some of the areas previously identified as seasonal marshes retained water through the summer and into the late fall months when the first rains of the 1998-99 season occurred. This enabled the persistence of organisms not otherwise expected to occur on a regular basis. For example, isolated, shallow ponded areas on the east side of I-5 and south of the San Dieguito River supported a high number of striped mullet (*Mugil cephalus*) (to 20 cm length), and modest numbers of mosquitofish (*Gambusia affinis*). The mullet is a typical inhabitant of coastal areas, particularly lagoons, and is often found near river mouths. Juvenile mullet typically spend as much as a year or more in coastal brackish wetlands before moving into fully saline waters. The mosquitofish is a freshwater species, though it is reported to also frequent brackish water (Page and Burr 1991). Salinity was measured at 14.1 ppt in the isolated pond supporting these two species in December 1998. Despite the salinity a Pacific tree frog (*Pseudacris regilla*) was also observed in the pickleweed surrounding this seasonal pond. Because of the seasonal nature of these ponded areas, fish occurrence is expected to be sporadic within and between years. Furthermore, the presence of fish is expected to significantly affect the total number of individuals and the relative abundance of particular aquatic invertebrate species.

3.4.4 Fresh and Brackish Water Marsh

3.4.4.1 Vegetation

Fresh and brackish water marsh habitats occur along drainages or in basins that remain flooded for much of the year and may include significant areas of open water. Soil moisture is sufficient in these areas to support tall emergent vegetation such as cattails (*Typha latifolia*), and/or bulrushes (*Scirpus* spp.). The major examples of these habitats in the project area are as follow:

- Around the edges of the teardrop-shaped pond east of I-5 (F-1 in Figure 3.4-1). The extent of marsh vegetation, especially tules (*Scirpus californicus*) in this location has expanded considerably compared to what was mapped in 1992-93 (MEC 1993). Willows have also grown rapidly around this pond in recent years.
- At the head of the lower arm of the historic lagoon described previously (near R-4 in Figure 3.4-1), where brackish marsh is transitional between seasonal marsh on the flats and downstream, and riparian woodland and scrub in the drainage upstream.
- Along the river, beginning near the upstream limit of tidal flux and continuing upstream beyond El Camino Real (F-2 in Figure 3.4-1). This location is noteworthy for the transition from riverine to estuarine conditions.
- In what is apparently an old meander channel of the river, near the northern edge of the project area (F-3 in Figure 3.4-1). At this location, three species of bulrushes (*Scirpus americanus*, *S. californicus*, and *S. maritimus*) are intermingled in the deeper areas of the remnant channel where surface water accumulates, while seasonal marsh occurs around the edges.
- Another area of freshwater marsh (primarily bulrushes) that occurs in a linear ditch that extends southward from behind the shopping center (F-4 in Figure 3.4-1). This habitat is supported by year-round runoff from a storm drain that terminates at the southeast corner of the shopping center.

3.4.4.2 Wildlife

The most important freshwater marsh habitats for wildlife include the teardrop-shaped wetland east of I-5, areas along San Dieguito River east of El Camino Real and within portions of an old drainage ditch running north to south, east of I-5. Brackish marsh is primarily found along San Dieguito River west of El Camino Real and within a portion of ruderal habitat south of Via de la Valle.

The freshwater habitat found at the teardrop-shaped wetland (F-1 in Figure 3.4-1) and along San Dieguito River east of El Camino Real (F-2 in Figure 3.4-1) is some of the most important in the project area in terms of food and cover for numerous wildlife species. The freshwater marsh in the drainage ditch running north to south, east of I-5 (F-4 in Figure 3.4-1) consists of only a narrow band of cattails and provides less cover and foraging for most wildlife species.

Brackish and freshwater marshes on site support the highest avian densities in the project area (MEC 1993). Birds occurring in the freshwater habitat along San Dieguito River and in the teardrop-shaped wetland include those described above under open water habitat, which includes species that forage for vegetation, invertebrates, and fish. Mosquitofish (*Gambusia affinis*) and tadpoles found in this habitat are prey for numerous species of wading birds including great blue heron, snowy egret, great egret, green heron, and black-crowned night heron (MEC 1993). The heavy cover of cattails and other aquatic vegetation provides roosting and nesting habitat for species such as mallard, American coot, pied-billed grebe, cinnamon teal, and ruddy duck (MEC 1993). Other avian species that commonly use this habitat for both foraging and nesting include marsh wren, common yellowthroat, and song sparrow. Shorebirds such as killdeer, sandpipers, yellowlegs, dunlin, and dowitchers roost and forage for invertebrates along the perimeter of the teardrop-shaped wetland and along San Dieguito River. Belding’s savannah sparrows were recorded utilizing the brackish marsh habitat along San Dieguito River up to the transition to freshwater marsh (SAIC 1998).

The freshwater marsh habitat supports Pacific tree frogs and western toads, both of which breed in San Dieguito River, the drainage ditch, and the teardrop-shaped wetland. Western spadefoot toads (*Spea = [Scaphiopus] hammondii*), a California Species of Concern (CSC), have been observed on site (Josselyn 1997) and marginal habitat for this species is present at the teardrop-shaped wetland and along the sandier portions of the river. Reptile species found in the vegetation surrounding both freshwater and brackish marshes include western fence lizard, side-blotched lizard, gopher snake (*Pituophis melanoleucus*), and common kingsnake (*Lampropeltis getulus*) (MEC 1993). The freshwater habitat is also suitable for southwestern pond turtles (*Clemmys marmorata*), which is a Federal Species of Concern (FSC) and CSC. Although this species has not been observed on site, this turtle has been recorded in San Dieguito River upstream of the project area (Josselyn 1997).

Mammal species such as raccoon, striped skunk, feral cat (*Felis catus*), long-tailed weasel (*Mustela frenata*), coyote, and opossum use this rich habitat for hunting and scavenging. Other mammals found in the thick vegetation typical of this habitat type include California vole (SJM Biological Consultants 1994), cottontail, and deer mouse.

3.4.4.3 Aquatic Biota

Few if any differences are expected between the aquatic plants and animals species identified above for the seasonal marsh and areas specified as fresh and brackish water. Corixids and dipteran larvae are likely to be the most abundant organisms in brackish water marsh, with ostracods and beetles (dytiscids) well represented during periods of non-tidal inundation.

Freshwater marshes support the majority of animal groups previously discussed, although the component species may differ slightly and some species of mosquito larvae may occur in higher numbers in freshwater conditions. Another characteristic species identified in freshwater habitat is a non-native crayfish, *Procambarus clarki*, which has become well established in coastal Southern California streams and ponds. Where freshwater occurs either in streams or at ponded locations within seasonal streams, non-native fish including mosquitofish, green sunfish (*Lepomis cyanellus*), and possibly largemouth bass (*Micropterus salmoides*) are intermittently represented. During periods of heavy runoff, other fish species from upstream can move into the lagoon environment. These include common carp (*Cyprinus carpio*), brown bullhead (*Ictalurus nebulosus*), and threadfin shad (*Dorosoma petenense*). Areas of on-site freshwater marsh have also been documented to support the Pacific chorus frog and California toad (*Bufo boreas halophilus*).

3.4.5 Riparian/Southern Willow Scrub

3.4.5.1 Vegetation

Riparian and southern willow scrub habitats in the project area consist of stands of willows (*Salix* spp.), mulefat (*Baccharis salicifolius*), arrow weed (*Pluchea sericea*), and occasional cottonwood trees (*Populus fremontii*). They occur under low-salinity conditions in ponds and streams, often in association with fresh and brackish water marshes. Heavily disturbed sites often support non-native tamarisk as well. These habitats are of limited extent in the project area, although they are more common immediately upstream. Their major occurrences are as follow:

- Around the northeast edge of the "teardrop" pond (F-1 in Figure 3.4-1) east of I-5, a stand of willows mixed with mulefat and a few cottonwoods has grown rapidly in response to plentiful rainfall in recent years, providing a wooded canopy that overlooks the marsh and open water habitats of the pond.
- Beginning at the project area boundary and extending upstream in the southern arm of the historic lagoon (near R-4 in Figure 3.4-1), there is an extensive wooded area of willows and mulefat, with scattered eucalyptus trees. Downstream, the habitat grades into brackish and seasonal marsh associated with a large, shallow basin that provides seasonal open water and mudflats.
- A few patches of riparian scrub vegetation, including occasional tamarisks and one thicket of arrow weed, occur along the banks of the river, beginning near the Horsepark property (area near F-2 in Figure 3.4-1) and continuing to El Camino Real and beyond.
- Near the terminus of San Andres Drive, a small patch of willows has grown in response to freshwater flows from a storm drain outfall.

3.4.5.2 Wildlife

The willow riparian and mulefat scrub habitats are restricted to small portions of the project area, primarily the habitat extending eastward from the historic upper lagoon east of I-5. The major portion of this habitat is actually outside of the project footprint. However, because the project area surrounds this habitat and some wildlife species utilizing this habitat will move into habitats inside the project footprint, a more detailed description of this habitat is provided.

This habitat, especially where willows dominate, provides areas for cover, foraging, breeding, nesting, and natural perch sites for numerous species that also use most of the other habitat types on site. Habitat value increases with increasing height and density of the vegetation. Several avian species are closely associated with willow stands including insectivore (orange-crowned warbler, yellow-rumped warbler, Wilson's warbler, common yellowthroat, black phoebe, ruby-crowned kinglet, and plain titmouse), and seed eaters (song sparrows, house finch, and American goldfinch). This area provides suitable habitat for nesting least Bell's vireo, an endangered species. One individual was observed during a 1998 survey for this project (Merkel & Associates 1998). It could not be determined whether breeding was occurring. Great horned owls and barn owls may roost in these habitats during the day. During spring and summer, this habitat supports breeding by yellow-breasted chat (CSC), warbling vireo, common bushtit, Anna's hummingbird, Nuttall's woodpecker, mourning dove, brown-headed cowbird, Bullock's oriole, goldfinches, and house wren. Cooper's hawk (CSC) and white tailed kite (a "special" status animal) forage and are likely breeders in the thicker stands of willows (SAIC 1998). Other raptors common to the project area include red-tailed hawk, red-shouldered hawk, northern harrier (CSC), and American kestrel (MEC 1993). The willows in the project area also provide valuable habitat for birds migrating through the area including warblers, flycatchers, buntings, and some species of sparrows. It is probably also used occasionally by California gnatcatchers.

Rodent species, including the dusky-footed woodrat (*Neotoma fuscipes*), northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*), deer mouse, and western harvest mouse were identified in this habitat (SJM Biological Consultants 1994). These rodent species and others such as ground squirrels and Botta's pocket gopher attract larger predators including coyote, long-tailed weasel, and feral cat. Other mammals frequenting the riparian area include raccoon, opossum, striped skunk, mule deer, and rabbits, all of which use this habitat for browsing and cover (field observations, SAIC 1998). Larger mammals use riparian habitat as a corridor to move between different areas.

Several reptile species are expected to be common within or adjacent to the riparian corridor include gopher snake, western rattlesnake (*Crotalus viridis*), western fence lizard, side-blotched lizard, and southern alligator lizard (*Elgaria [=Gerrhonotus] multicarinatus*).

3.4.5.3 Aquatic Biota

Areas of pooled water within riparian woodlands and scrub support species typical of the freshwater marsh discussed above, and which are common in coastal Southern California. These consist of aquatic insects in nymphal or larval state, as well as adults that may be either aquatic or terrestrial. Common examples are corixids, various beetles, and the larvae of dragonflies (Odonata), stoneflies (Plecoptera), and a diversity of dipteran species (flies, midges, and mosquitoes). Water striders (family Gerridae) were recorded in open water within the mature riparian woodland in the southeast portion of the study area. Crayfish were present in these areas as evidenced by their cast exoskeletons (field observations, Merkel & Associates 1998). The Pacific chorus frog was also identified in this habitat.

3.4.6 Ruderal/Successional and Agricultural

3.4.6.1 Vegetation

More than half of the project area supports ruderal/successional and agricultural habitats. This is a diverse grouping that includes areas where the native vegetation has been severely disturbed by human activities (e.g., disking, grading, or other means). Lands that are currently maintained for crop production are mapped separately (Figure 3.4-1) as active agricultural areas. In ruderal/ successional areas, the vegetation is in varying stages of recovery from past disturbance. Areas that have been chronically disturbed within recent years are at the "ruderal" end of the spectrum and support mostly non-native annual grasses and forbs and a few native species that opportunistically colonize open disturbed sites. At the "successional" end of the spectrum are areas that were last disturbed more than 5 to 10 years ago and, at least in some parts, are undergoing succession to coastal scrub or other native vegetation types. Areas mapped as ruderal/successional include in a few places "woody exotics" (MEC 1993), non-native trees or shrubs that were planted or apparently have escaped from plantings.

Ruderal examples of this habitat type are the former agricultural fields east of I-5 (R-1 through R-3 on Figure 3.4-1). These areas are subject to disking for weed control and tend to be dominated by herbaceous vegetation. This includes introduced annual grasses such as ripgut brome, wild oats (*Avena barbata*), and ryegrass (*Lolium multiflorum*), or weedy annual forbs like black mustard (*Brassica nigra*), iceplant (*Mesembryanthemum nodiflorum*), London rocket (*Sisymbrium irio*), prickly lettuce (*Lactuca serriola*), alkali mallow (*Malvella leprosa*), common tarweed (*Hemizonia fasciculata*), and alkali weed (*Cressa truxillensis*). Low areas where water drainage accumulates on the north side of the river support curly dock and wild rye (*Leymus triticoides*) (R-1 in Figure 3.4-1). Areas previously mapped (MEC 1993) as "seasonal salt marsh" and "seasonal salt marsh — transitional" on the south side of the river (R-2 in Figure 3.4-1) had been disked, and possibly drained by ditching as of 1998. Therefore, these areas are included as part of the ruderal/successional habitat. Two isolated pepper trees (*Schinus molle*, a non-native species) occupy a hilltop within ruderal habitat (R-3 in Figure 3.4-1).

The blufftop area of R-4 on the inland side of I-5 (Figure 3.4-1) is in active agriculture as of 1999, but was previously ruderal during recent years. During field surveys in 1998, the steep, eroding slope along the western edge of the bluff was sparsely vegetated with scattered wild oats (*Avena barbata*), coast goldenbush (*Isocoma menziesii*), fennel (*Foeniculum vulgare*), and common tarweed (*Hemizonia fasciculata*). The Del Mar aster (*Lessingia filaginifolia* var. *linifolia*), a sensitive plant species, was found there during the SAIC (1998) surveys.

West of I-5, in the area formerly occupied by the abandoned airfield, substantial reestablishment of native shrubs is occurring, suggesting an eventual succession to coastal scrub (R-5 in Figure 3.4-1). These shrubs primarily include coast goldenbush, but also California sagebrush (*Artemisia californica*) and quail bush (*Atriplex lentiformis*). A few pepper trees and native (though possibly planted on the site) elderberries (*Sambucus mexicana*) also occur in this area. Dense stands of spearscale were also noted in low areas. Patches of salt marsh vegetation, often with small salt pans intermingled, are scattered throughout this area, on graded flats associated with the abandoned airfield.

Adjacent to the diked high marsh discussed previously (R-6 in Figure 3.4-1), ruderal/successional habitat includes a stand of non-native myoporum (*Myoporum laetum*), probably planted at this location, a few dying tamarisks, and abundant coast goldenbush, intermingled with patches of salt marsh vegetation and small areas of salt pan. This area does not appear to have been graded or filled, unlike the area of the old airfield to the east, and may be a remnant of the historic wetland-to-upland transition zone.

3.4.6.2 Wildlife

Ruderal habitat and agricultural fields offer limited resources for most native wildlife species due to the level of repeated human disturbance. Most of this habitat in the project area is no longer being planted with crops, so the habitat is left undisturbed except for periodic mowing or disking. Several species that are associated with human disturbance, such as ground squirrel, pocket gopher, deer mouse, house mouse, and cottontail rabbit, can utilize the areas surrounding the agricultural fields or quickly recolonize the open spaces after disturbances such as mowing or disking have occurred. Evidence of ground squirrel and pocket gopher burrow complexes is common in these habitats throughout the project area (field observations, SAIC 1998). Montgomery (SJM Biological Consultants 1994) reported house mouse, southern harvest mouse, and deer mouse at several trapping locations within the ruderal habitats on site. These small mammals attract predators including coyote, feral cat, gray fox, long-tailed weasel, and several species of raptors. Herons and egrets normally are associated with wetland habitat, but they can also hunt small to medium-sized rodents in the ruderal habitat.

Reptile species documented in this habitat by MEC (1993) include side-blotched lizard, western fence lizard, orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*, FSC, CSC), and southern Pacific rattlesnake (*Crotalus viridis helleri*). Unpublished SAIC field notes (1998) also recorded coastal western whiptail (*Cnemidophorus tigris multiscutatus*, FSC) and common kingsnake. Diagnostic indications of the San Diego coast horned lizard (*Phrynosoma coronatum blaivillei*, FSC, CSC) were observed on dirt roads within this habitat (MEC 1993). Other reptile species expected to be present but not documented include gopher snake and red coachwhip snake (*Masticophis flagellum piceus*).

These habitats support a relatively small variety of avian species. A few bird species specialize in open grassy fields where they are relatively abundant. These include killdeer, horned lark, blackbirds, European starling, American crow, common raven, rock dove, and mourning dove. Depending on the presence of seed-bearing vegetation, this habitat can also be utilized by house finch, goldfinches, and sparrows. The habitat also supports a variety of insects, which attract flycatchers such as Say’s phoebe.

Due to periodic disturbance typical of these habitats, their quality as foraging habitat changes significantly over time, slowly in the case of successional areas, rapidly in agricultural areas. The abundance and diversity of birds can therefore change substantially in the same place from one time to another. Canada geese, for example, are occasionally abundant in some agricultural fields, but may be entirely absent from other fields or at other times. During their annual migration in winter, hundreds of Canada geese have historically foraged in the agricultural areas east of I-5, attracted mainly by the barley and other crops grown there and the presence of nearby water and cover. According to a study conducted during the winter of 1993/1994 (USFWS 1994b), Canada goose arrival to the project area was found to correspond to the availability of newly sprouted vegetation in the agricultural areas. The birds utilized non-native herbaceous plant species that began to grow prior to seeding crops and after agricultural clearing activities and rainfall (USFWS 1994b). Due to the general lack of cover in disturbed and non-vegetated ruderal habitats and the episodic high level of human activity, these areas are rarely used for roosting, and almost never for avian breeding. Exceptions include rough-winged swallows observed nesting in cavities located along an eroded bank within the ruderal habitat area (SAIC unpublished field observations 1998) and some successional areas with thistle and other tall vegetation that may support some breeding. In addition, the stand of *Myoporum* found within the ruderal habitat (R-6 in Figure 3.4-1) supports breeding for several avian species. These include California towhee, northern mockingbird, Bewick’s wren, and potentially white-tailed kites, which were observed exhibiting courtship behavior in this area several times during the SAIC (1998) surveys.

3.4.6.3 Aquatic Biota

Aquatic habitats are largely lacking from the extensive ruderal fields; however, following the initial rain of the 1998-99 wet season, small pools of water formed along dirt roads north of the river and immediately south of the shopping center on the east side of I-5. While the observed corixids and mosquito larva are expected inhabitants of these temporary pools, very low numbers of mosquitofish were also present in some pools. These fish presumably originated from the freshwater marsh and associated small ponded areas located to the east (off site). Temporary pools such as these, including those forming in road ruts, could also provide breeding habitat for the western spadefoot (*Spea [=Scaphiopus] hammondi*), which was reported by MEC (1993) from a small pond on the south side of the river, east of I-5.

3.4.7 Southern Coastal Foredunes

3.4.7.1 Vegetation

Southern Coastal Foredune habitat is restricted in distribution and limited in size within the project area. A small patch (approximately 5 acres) mapped as foredune is located adjacent to the Pacific Ocean west of I-5 and north of the river channel. Typical plants associated with this habitat include sand-verbena (*Abronia umbellata*), red sand verbena (*Abronia maritima*), and sea rocket (*Cakile maritima*). The habitat at this location is subject to frequent disturbance by flood events and heavy human use (MEC 1993; Josselyn 1997) and supports a poorly developed plant community on flats or very low hummocks. No dunes are present.

3.4.7.2 Wildlife

Foredunes in the project area occur only in an area bordered by San Dieguito River on the south, Camino Del Mar on the west, the train tracks on the east, and the salt marsh and lagoon on the north (Figure 3.4-1). This small patch of foredune habitat supports few wildlife species due to the proximity of roads and recreational areas and the lack of cover. Some wildlife species tolerant of human presence such as pocket gophers, western fence lizard, cottontail rabbit, and ground squirrel are expected to be present in low numbers. Other species including raccoon, feral cat, and coyote are expected to be present infrequently while foraging. Avian species include a few insect-eating birds such as Say's phoebe and shorebirds including black-necked stilt, willet, whimbrel, and dowitchers (field observations, SAIC 1998). Belding's savannah sparrows that were recorded in the nearby salt marsh habitat occasionally feed or rest in the foredune habitat (SAIC 1998). Gulls may also rest and preen here, as well as scavenge for food. When human use of the area including pets is at a peak, such as during summer and many warm weather days that can occur episodically throughout the year, the avian species would be less likely to be present.

3.4.8 Rare, Threatened or Endangered Species

Table 3.4-3 (located at the end of section 3.4) provides a detailed, species by species account of the status, distribution, and habitat of sensitive plant, fish, and wildlife species, including insects and invertebrates, identified as potentially occurring on the San Dieguito site. Figure 3.4-2 shows the site-specific locations of sensitive plant species identified from the site.

This table addresses the following:

- Federally or State-Listed and Proposed Threatened or Endangered Species
- California Native Plant Society (CNPS) List 1 B Plant Species (Rare and Endangered in California and Elsewhere)
- California Wildlife Species of Special Concern (identified by the California Department of Fish and Game)
- Other Sensitive Plant Species (CNPS Lists 2, 3, and 4)

- Species of Local Concern (identified as sensitive in a variety of sources, as noted) and MSCP target species.

More detailed accounts follow for the following threatened or endangered species listed under the federal Endangered Species Act of 1973, as amended, or the California Endangered Species Act. There are no federally or state-listed endangered or threatened plant species on the site. Other sensitive plant and wildlife species are discussed in Table 3.4-3.

- Pacific Little Pocket Mouse
- California Brown Pelican
- California Least Tern
- Light-footed Clapper Rail
- Western Snowy Plover
- Coastal California Gnatcatcher
- Least Bell's Vireo
- Belding's Savannah Sparrow

Pacific Little Pocket Mouse

The Pacific little pocket mouse (*Perognathus longimembris pacificus*) was emergency listed following the discovery of a single population at the Dana Point Headlands in 1993. Upon expiration of the emergency rule, the species was federally listed as endangered under the Endangered Species Act on September 26, 1994 (59 *Federal Register* 5306). In addition, the Pacific little pocket mouse is a California Department of Fish and Game species of special concern.

The Pacific little pocket mouse is one of nineteen recognized subspecies of the little pocket mouse (*Perognathus longimembris*), and the smallest member of the family Heteromyidae. The pocket mouse has buff to grayish upperparts and a white belly. This species of pocket mouse (*Perognathus longimembris*) typically has 1 to 2 litters a year (Burt and Grossenheider 1976).

Current occupied habitat is estimated to be less than 400 total hectares (1,000 acres) (USFWS 1998b). Historically, Pacific little pocket mouse distribution was much more extensive. Five historic populations have been extirpated, and the remaining eight historic locations are threatened by habitat destruction or fragmentation. The Pacific little pocket mouse is endemic to the coast of Southern California. Populations are restricted to the coastal strip of Southern California from the vicinity of the U.S./Mexican border north to El Segundo, Los Angeles County. Pacific pocket mice occur on coastal fine-grain, sandy or gravelly substrates. They are known to inhabit coastal strand, coastal dune, river alluvium, and coastal sage scrub growing on marine terraces (Grinnell 1933; Meserve 1972; Erickson 1994). The species has not been reported more than 2.5 miles from the ocean (USFWS 1998b).

Pacific little pocket mice are at least partially fossorial and relatively sedentary. They may become torpid, and estivate or hibernate in response to adverse environmental conditions (USFWS 1998b). They are primarily granivorous, feeding on small seeds.

The Pacific little pocket mouse was reported from San Dieguito Lagoon in a 1979 study; however, a lead investigator (Steve Montgomery) stated the account was likely based on misidentification of a juvenile San Diego pocket mouse (*Chaetodipus fallax fallax*). A second, more recent report of a specimen just outside the study area cannot be confirmed. Subsequent trapping efforts in the area revealed no evidence of Pacific pocket mouse presence (SJM Biological Consultants 1994).

California Brown Pelican

The California brown pelican (*Pelecanus occidentalis californicus*) was listed as an endangered species under the federal Endangered Species Act in 1970. This listing was mainly due to decreased population numbers resulting from extensive DDT effects in the late 1960s and 1970s. This species is currently under consideration for de-listing due to the substantial recovery of populations and the achievement of recovery goals.

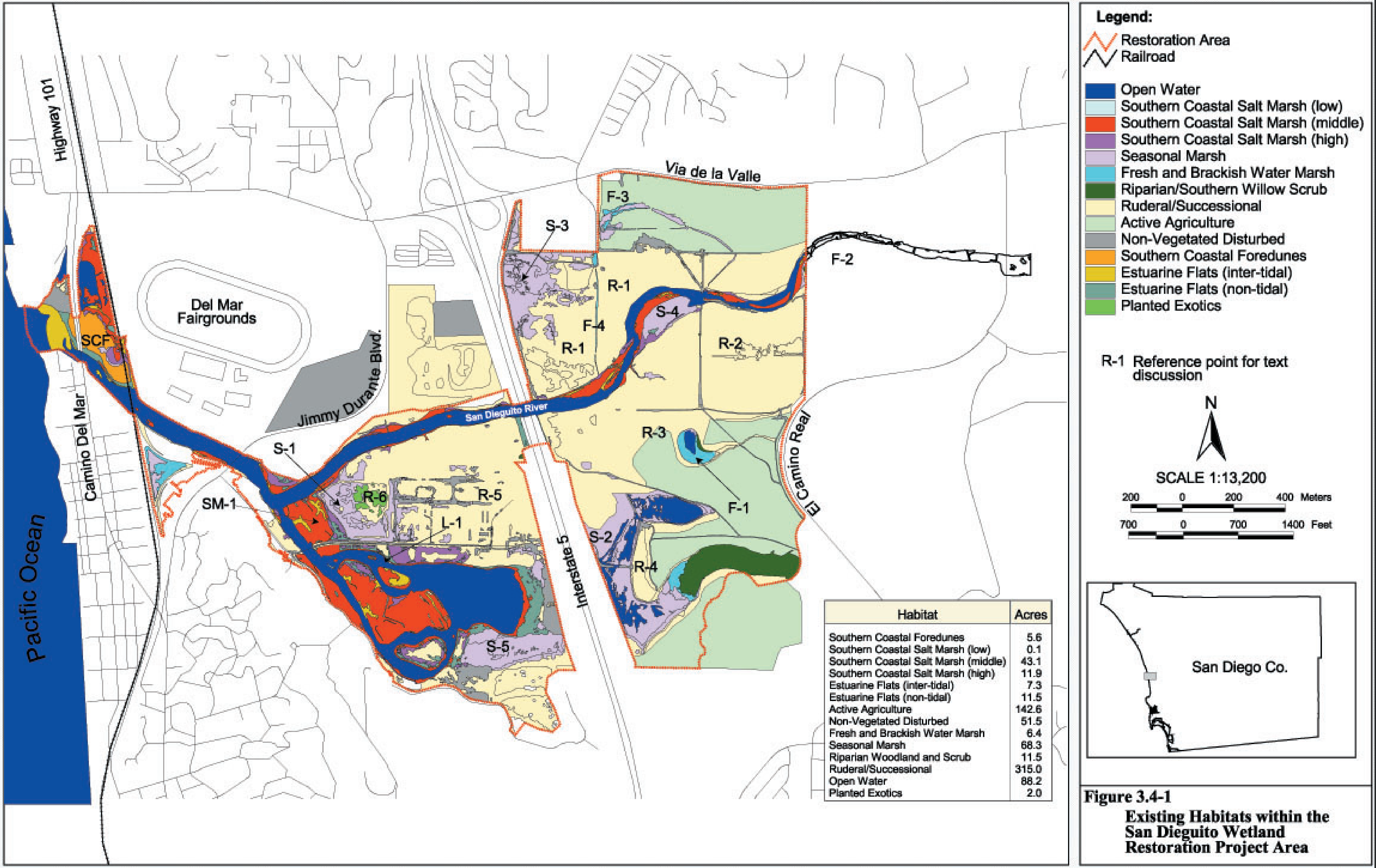
The California brown pelican is one of the six recognized subspecies of brown pelican occurring in tropical and subtropical waters of the Atlantic and Pacific oceans. The species is a large bird weighing up to 8 pounds with a wing span of up to 7 feet (Pereksta 1995). The adult bird has a grayish/brown body, and yellow/white head and neck. The sexes are similar, but adult males tend to be larger and have longer bills. The red gular pouch found on adults during courtship is only common in west coast birds.

Four discrete, breeding populations of the California brown pelican occur along the Pacific coast of North America (Pereksta 1995). The breeding range extends from the Channel Islands located off the California coast to Nayarit and Acapulco, Mexico. The non-breeding range can extend from Vancouver, British Columbia south to El Salvador. Approximately 90-95 percent of California brown pelicans breed on islands off the coast of mainland Mexico.

California brown pelicans are colonial nesters and require nesting grounds that receive limited disturbance, are free from mammalian predators, and close to foraging sites. Nest sites for the northernmost populations are generally located on steep, rocky slopes. Large, bulky stick nests are built on the ground or in low brush. The southernmost population on the Mexican mainland may nest in mangrove trees; while the Gulf of California and Baja California populations are generally found on arid islands using comparatively smaller nests in areas with less nesting material.

Roosting sites for wintering brown pelicans on the California coast are defined as “any substrate used to rest, maintain external body condition, find protection from adverse environmental factors, and interact with other conspecifics” (i.e., while not flying or swimming) (Jaques and Anderson 1987). Brown pelicans congregate at night roosts and spend considerable portions of most days on land. Day roosts may act as centers to facilitate the finding of food and attracting other groups of birds. Successful roosts are typically away from areas of direct human intrusion. Night roosts are generally characterized as being surrounded by water on all sides, with good protection from waves, tide, and wind. In a competition for space on crowded roosts at offshore rocks, juveniles are often concentrated in more exposed areas while adults occupy the more protected locations.

Adult brown pelicans are efficient predators that spend considerable time loafing and roosting rather than hunting (Pereksta 1995). The birds are opportunistic and may shift day roosts in response to the distribution of fish food. Food resources utilized by the California brown pelican now seem to hinge disproportionately on the northern anchovy (*Engraulis mordax)* (Anderson et al. 1980). From 1972-1979, anchovies were found to comprise approximately 92.4 percent of a local pelican diet that included 2,195 fish items (Gress and Anderson 1983).



Habitat	Acres
Southern Coastal Foredunes	5.6
Southern Coastal Salt Marsh (low)	0.1
Southern Coastal Salt Marsh (middle)	43.1
Southern Coastal Salt Marsh (high)	11.9
Estuarine Flats (inter-tidal)	7.3
Estuarine Flats (non-tidal)	11.5
Active Agriculture	142.6
Non-Vegetated Disturbed	51.5
Fresh and Brackish Water Marsh	6.4
Seasonal Marsh	68.3
Riparian Woodland and Scrub	11.5
Ruderal/Successional	315.0
Open Water	88.2
Planted Exotics	2.0

Figure 3.4-1

Existing Habitats within the San Dieguito Wetland Restoration Project Area

At San Dieguito Lagoon, the brown pelican was reported to be common in the summer and fall, but uncommon in the winter and spring (Josselyn 1997). However, focused avian surveys at the lagoon (MEC 1993) found this species in low numbers, and nearly all recorded observations were in the ocean environment, just west of the lagoon enhancement area. This species does not breed in the vicinity of the study area.

California Least Tern

The California least tern (*Sterna antillarum browni)* is listed as an endangered species by the federal government and the State of California. The status of least tern colonies and populations has been monitored in California since the late 1960s, with systematic monitoring since 1978 (Fancher 1992). Populations have generally experienced an increase in numbers over time coincident with predator management efforts at nesting colonies. The lowest numbers for this species were recorded in 1978, at 832 breeding pairs (Fancher 1992). Substantial population increases have been observed in the 1990s, and the 1998 status of the species is reported to be approximately 4,009 pairs at 40 colonies (Keane 1998). The 1980 recovery goal of 1,200 pairs at 20 secure coastal ecosystems (California Least Tern Recovery Plan, USFWS 1980) is presently undergoing revision.

The California least tern is a migratory bird that winters in Central and South America, and summers in northern Baja California and the central and southern coast of California. This species typically arrives in California to breed in early April and remains through mid-September. Sandy beaches and constructed dredge spoil areas close to lagoons, estuaries, and coastal embayments serve as nesting sites for the least tern. There are over 40 colony sites ranging from San Francisco Bay to Southern California and Mexico. Relatively successful nesting sites include Venice Beach, Terminal Island, Bolsa Chica Ecological Reserve, Huntington Beach, Santa Margarita River Estuary, Batiquitos Lagoon, Mission Bay, San Diego Bay, and Tijuana Estuary.

Least terns exhibit a high degree of nest fidelity from year to year (Atwood and Massey 1988). Mortality is highest for eggs and young at the colony, and substantially decreases for fledglings. Site fidelity appears to be most effected by reproductive failure associated with human disturbance, predation, and vegetative encroachment on the nest site. Reproductive success is also closely dependent on the availability of nearby food resources. Foraging activity is generally conducted within two miles of the colony (Atwood and Minsky 1983).

Least terns feed exclusively on small fishes captured in shallow nearshore waters, particularly at or near estuaries and river mouths (Massey 1974; Collins et al. 1979; Atwood and Minsky 1983; Atwood and Kelly 1984; Minsky 1984; Bailey 1984). Most prey species have a general size range of less than 9 cm in length and a body depth of less than 1.5 cm (Atwood and Kelly 1984). The size of the prey items taken is limited by both the gape of the tern and its ability to swallow various sized fish at different stages of tern growth. The unsuitability of certain spiny fish species and the width of a fish body also determine prey choice.

The nest is a simple scrape or depression in the sand, and two to three buff, speckled eggs are incubated for an average period of 21 days. Fledging generally occurs 20 days after hatching. Parents will continue to feed juveniles late in the season because they do not become proficient at capturing prey until close to the time of migration.

Predation at colony sites is recognized as the primary cause of individual losses. Predators include raptorial birds, opportunistic avian and mammalian predators of chicks and eggs, and to a lesser degree, reptiles and colonial insects such as ants. Managed colonies have curbed some of the predation problems facing least terns; however, predation is still the greatest threat to the species. In addition to predation, other factors may also influence the success of a tern nesting colony. Weather disturbances to incubating and brooding adults may subject eggs and chicks to blowing sand, extremes in temperature, and leave the eggs/chicks more susceptible to predation events. Increased human presence may also attract opportunistic predators (gulls, ravens, etc.) to the vicinity of a nesting colony, and render some nesting sites unsuitable. Newly constructed buildings, bridges, signs, and construction equipment may provide hunting perches for predatory bird species, potentially increasing predation at a nesting colony. Finally, while in-water construction is a less obvious threat to least tern breeding success, an increase in turbidity may impair the tern's ability to capture fish, and thus cause the tern to seek out more distant foraging areas. Greater travel distance to foraging sites would result in a longer reunion time for adults returning to feed their young. Where predation pressures are significant, this increased reunion time may be critical to the success of a colony.

Copper's foraging ecology study for San Diego Bay (1985) showed terns regularly forage up to 2.3 miles from their nesting colonies in the bay. Massey and Atwood (1980) saw many birds foraging 4 miles from a colony; however, they suspected birds found farther than 2.5 miles to be nonbreeders. Collins et al. (1979) observed some feeding flights 1-2 miles out to sea. Hay (1978) noted that California least tern colony sizes varied greatly regardless of distance to primary foraging areas. He stated that principal foraging areas appeared to be determined by the time in the breeding cycle, age class, and prey availability. Adults will go farther and spend more time getting large fish for themselves but shift foraging strategy to get more but smaller fish for small chicks (Atwood and Minsky 1983).

At San Dieguito Lagoon, Josselyn (1997) states that "open ocean near the lagoon's mouth is used consistently by . . . the California least tern . . ." In addition, throughout the breeding season individuals have been observed foraging along the open water of the San Dieguito River and restored embayment (Josselyn 1997). A 1992 breeding season study conducted by MEC (1993) indicated a maximum of 106 observations of least tern foraging within San Dieguito Lagoon. Observations of least tern use varied significantly according to habitat type, with the greatest number of observations at a saline pond (106) and the least at saltmarsh pond (1-2 observations) (MEC 1993).

In 1996, approximately 5 acres of nesting habitat was created by CDFG within San Dieguito Lagoon, however, no nesting has occurred at this site, which has become overgrown with weeds and is now unsuitable for nesting by terns (MEC 1993). The closest California least tern breeding colony is located at Batiquitos Lagoon approximately 9 miles to the north, where there are five artificially constructed nesting areas. Several of these nesting areas have been very successfully used by both California least tern and western snowy plover.

California least terns have a very poor nest establishment record at San Dieguito Lagoon, and an even worse nest success (number of fledglings produced) record. The most recent nesting attempts at San Dieguito Lagoon were in 1992, when seven pairs reportedly attempted nesting on the flotsam line at the east end of the lagoon (personal communication, Dillingham CDFG 1998) but no fledglings were produced. Prior to 1992, there were 4 to 5 pairs reported in 1980 but only one fledgling was produced, and in 1979 one pair produced no fledglings. The limited extent and poor quality of nesting habitat appears to be a key factor in the lack of breeding success of this species at San Dieguito (personal communication, Fancher, USFWS 1999).

Light-Footed Clapper Rail

The light-footed clapper rail (*Rallus longirostris levipes*) is one of three subspecies of clapper rail (*Rallus longirostris*) found in California. All three clapper rail subspecies are both state and federally listed as endangered under CESA and the federal ESA. Light-footed clapper rails are dependent on the coastal marshes of Southern California and northern Baja California Mexico, where they are year-round residents. Although salt marsh vegetation, typically with a preponderance of cordgrass (*Spartina foliola*), appears to be the rail's primary habitat, freshwater and brackish water marshes dominated by pickleweed (*Salicornia* spp.), bulrush (*Scirpus* spp.) and cattail (*Typha* spp.) may also be used. These alternate habitats, when occupied, are typically located in proximity to salt marshes or are a relatively short-distance upstream from an estuary.

Marsh habitat appears to be essential for both nesting and foraging. Food items include fish, clams, crabs, snails, insects, and other invertebrates (Steinhart 1990). The nest is typically made out of dried cordgrass, which is woven into surrounding live, standing cordgrass. Without freshwater input, surrounding cordgrass will be stunted resulting in a conspicuous nest that is vulnerable to predators, particularly at high tide (Steinhart 1990). Clapper rail nesting occurs from mid-March to July with most egg laying occurring from early April to early May.

The light-footed clapper rail ranges from Carpinteria Marsh in Santa Barbara County south to San Quintín, Baja California, Mexico. In 1998, 17 sites were found to support at least one pair of light-footed clapper rails. Yearly censusing for light-footed clapper rails has been performed since 1980. In recent years, a high number of 325 breeding pairs were recorded in 1996, with 307 documented in 1997 (Zembal et al. 1996, Zembal 1998). However, a precipitous decline occurred in 1998 as only 222 pairs (a 28 percent decline) were detected at a total of 17 occupied sites. This decline may be due to extreme weather conditions associated with an El Niño storm season. Perhaps of greatest importance is that of the 222 pair recorded in 1998, 189 (85 percent) of these occur at only three sites (Upper Newport Bay, Tijuana Marsh NWR, and Seal Beach NWR) (Zembal 1998). Only three of the remaining 14 sites support more than four pairs. Clearly this species is in extreme danger of extirpation at the majority of sites where it is known to occur.

The decline of the light-footed clapper rail is believed to be directly related to the degradation and destruction of salt marsh habitat. It has been estimated that only about 8,500 acres of salt marsh remain between Santa Barbara and the U.S.-Mexico border (USFWS 1985). The remaining, often fragmented habitat leaves the rail vulnerable to predation by both native and non-native species. At Seal Beach National Wildlife Refuge, the population declined from 30 to 6 pairs in just six years, and was attributed to predation by the non-native red fox (*Vulpes vulpes*), which had become established at the site. Other threats to this species include feral cats and raccoons (Zembal et al. 1996).

Although the light-footed clapper rail has been irregularly reported at San Dieguito Lagoon over the past 10 years, it was not detected during any annual census conducted between 1998 and 1999 (Zembal 1998; personal communication, Jack Fancher 2000). Breeding light-footed clapper rail activity has not been recorded from San Dieguito Lagoon (Josselyn 1993, Unitt 1984). The preferred nesting habitat of the species, low marsh dominated by cordgrass, is represented at San

Dieguito Lagoon only at a very small site, where it was reintroduced. The closest known breeding location is San Elijo Lagoon (Unitt 1984).

Western Snowy Plover

The Pacific coast population of the western snowy plover (*Charadrius alexandrinus nivosus*) was listed as a federally threatened species on March 5, 1993 (58 *Federal Register* 12874). Poor reproductive success (largely due to human disturbance), inclement weather, loss of nesting habitat, and encroachment of the introduced beachgrass (*Ammophila arenaria*) led to the decline in both the breeding and wintering populations of this species (USFWS 1993). Continued threats to species survival and recovery include human disturbance, predation, and overall loss of nesting habitat. Human disturbance appears to have the most detrimental effect on plover reproductive success, however, raptorial birds, corvids, and several mammal species have been documented preying upon plover nests or chicks. The greatest losses of western snowy plover habitat have occurred in Southern California.

The current breeding range of the western snowy plover extends along coastal beaches from southern Washington to southern Baja California, Mexico. Breeding is also reported from the California Channel Islands. Prior to 1970, snowy plovers bred at 53 coastal California locations. Presently, breeding occurs at only approximately 20 mainland locations. The breeding population in California declined sharply from an estimated 1,565 adults in 1980 to 1,386 in 1989. This decline included a 55 percent decline in north San Diego County and a 41 percent decline in San Diego Bay (USFWS 1993).

Snowy plovers breed in loose colonies. Sand spits, dune backed beaches, sparsely to unvegetated beach strands, open areas around estuaries, and beaches at river mouths are preferred nesting areas. Nest sites are typically flat, open areas with sandy substrates and little to no vegetation. Snowy plovers have been shown to display breeding site fidelity. The breeding season extends from March 1 through September 15. Egg laying typically begins in mid-March. Three eggs are commonly laid in a shallow depression nest. Incubation lasts approximately 27 days. Chicks are precocial and leave the nest almost immediately, but do not gain the ability to fly for about 31 days. Males attend their young for approximately 29-47 days (Warriner et al. 1986). Snowy plovers forage on invertebrates.

Eleven monthly surveys conducted from April 1992 through April 1993 recorded a total of 50 observations of western snowy plovers at San Dieguito Lagoon (MEC 1993). The mean number of birds per survey was about five, with a high count of 36 in December (wintering individuals). An influx of “overwintering” birds is a typical phenomenon for Southern California beaches. The majority of birds were found in beach and/or estuarine flat habitats, which were located either southwest of the Del Mar Fairgrounds or approximately 450 meters south of the river mouth.

Extant undisturbed nesting habitat on the site is limited, a likely factor in the species’ lack of breeding success at San Dieguito. In 1992, a single pair of snowy plovers was found nesting around the margin of the saline pond in San Dieguito Lagoon. The nest was located approximately 450 meters south of the river mouth (MEC 1993). In 1998, 156 snowy plover nests were observed at nine sites in San Diego County. The closest nesting site to San Dieguito is Batiquitos Lagoon, where five nesting areas have been constructed. In 1998, these created nesting areas supported 17 percent of the nests observed in the County (Powell et al. 1998).

Southwestern Willow Flycatcher

The southwestern willow flycatcher (*Empidonax traillii extimus*) was federally listed as an endangered species on March 29, 1995 (USFWS, 1995). This species occurs in dense riparian habitat normally vegetated with willows (*Salix* spp.) with a scattered overstory of cottonwood (*Populus* sp.), but is also found in stands of tamarisk (*Tamarix* spp.) or arrowweed (*Pluchea sericea*). The breeding range of this subspecies of willow flycatcher includes southern California, southern Nevada, southern Utah, Arizona, New Mexico and western Texas. The cause of this species' decline is due partially to the extensive loss of suitable riparian habitat and brood parasitism by brown headed cowbirds.

Due to the lack of dense willow riparian habitat in the project area, this species is not expected to breed within the project boundaries. During the fall and spring migrations, Southwestern willow flycatchers may be expected as infrequent visitors to the area in any of the trees or large shrubs onsite. On August 21, 1997, the USFWS included the San Dieguito River between Lake Hodges and Interstate-5 as part of the southwestern willow flycatcher's critical habitat including those areas where riparian habitat does not currently exist but may become established naturally or by habitat restoration (USFWS 1997).

California Gnatcatcher

The California gnatcatcher (*Polioptila californica*) is a member of the Black-tailed Gnatcatcher group which occupies arid scrublands of the southwestern United States, including Southern California, north-central and western Mexico, and Baja California, Mexico (Atwood 1988). The California gnatcatcher occurs along coastal Southern California and into Baja California, Mexico. The coastal California gnatcatcher (*Polioptila californica californica*) is the only subspecies of the California gnatcatcher that occurs within the United States. It is presently found primarily in San Diego, Orange, and western Riverside counties, having been largely extirpated from Ventura, San Bernardino, and Los Angeles counties. Habitat loss and fragmentation are the two most probable causes of this species' decline, though other factors such as brood parasitism by brown-headed cowbirds (*Molothrus ater*), and predation by domestic pets may also be factors in some areas.

Two petitions were submitted to the USFWS on September 21, 1990 to list the coastal California gnatcatcher as a federally endangered species. A third petition was submitted on December 17, 1990 by the Natural Resources Defense Council requesting emergency listing of the species. A Final Rule was made on March 25, 1993 when the species was listed as a federally threatened species. The California gnatcatcher is listed as a Species of Special Concern by the California Department of Fish and Game.

California gnatcatchers are most typically found as year-round residents of coastal sage scrub habitats. Open areas of chaparral (e.g., chamise-dominated) and other open scrubland habitat may also be occupied by gnatcatchers. Typical plants of gnatcatcher-occupied habitat include California sagebrush (*Artemisia californica*), flat-top buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), San Diego County viguiera (*Viguiera laciniata*), coast cholla (*Opuntia prolifera*), and common chamise (*Adenostoma fasciculatum*). Relatively taller shrubs such as laurel sumac (*Malosma laurina*) and/or lemonadeberry (*Rhus integrifolia*) are also often present.

In San Diego County, California gnatcatchers occur from near sea level up to approximately 1,000 feet elevation. However, in Riverside County, California gnatcatchers were observed in habitat up to 2,400 feet, but were more typically found in relatively lower elevations (below 1,800 feet) (PSBS 1994).

Most nesting occurs between March and July. A small, cup nest is typically built from 2-3 feet off the ground in a low-to-moderate sized shrub. Nest building occurs over a 4-10 day period, after which 2-5 eggs may be laid. Both sexes incubate the eggs, which hatch in approximately 14 days. Nestlings fledge in approximately 16 days, and thereafter remain in association with the adults for 3 weeks. Early season fledglings may be driven away by the parents, which may then re-nest. Late season fledglings may remain with the adults for extended periods (Atwood 1990). Nest failures are common, and may be due to predation, nest parasitism, or other factors.

Documented home ranges of California gnatcatchers are variable, but tend to be from approximately 7 to 25 acres in size (PSBS 1989a; ERCE 1989, 1990a, 1990b; Bontrager 1991). Home ranges tend to be smaller in coastal areas as compared to inland localities. Home ranges may be considerably smaller in the breeding season, and as drying conditions develop in drought deciduous habitats. Home ranges may expand and/or shift to include riparian fringe and/or dense non-deciduous shrub vegetation (PSBS 1989a).

Atwood (1992) estimated the maximum number of California gnatcatcher pairs occurring within the United States ranged from 1,811 to 2,291, based on sub-sampling density estimates and remote sensing. Others have suggested similar numbers (e.g., Jones 1991). The exact number of California gnatcatchers is not known, but is expected to fluctuate from year to year due to environmental and stochastic events such as fire. More importantly, there is strong agreement among experts that the actual number of birds is of secondary concern with regard to long-term habitat preservation/management for this species (Atwood 1990, 1992; Salata 1991).

On the San Dieguito project site, suitable habitat for the California gnatcatcher is extremely limited and consists of a modest number of big saltbush and several scattered coyote brush located just west of I-5. No resident California gnatcatchers were identified during focused surveys for this species in 1998 (Merkel & Associates 1998). Three pairs of gnatcatchers are known to occur in far more suitable habitat off-site to the immediate south, west of I-5 and south of the residential access road (personal observation, R. Woodfield, Merkel & Associates, Inc. 1998). California gnatcatchers have also been observed on the naturally vegetated north facing slopes located east of I-5 and below the Carmel Valley community (personal communication, V. Touchstone, San Dieguito River Park JPA 1999). Although much of the native upland vegetation in this region of coastal San Diego County has been lost to urban or agricultural development, California gnatcatchers continue to be common residents wherever even small patches (approximately 5 acres or greater) of sage scrub remain (personal observations, D. Mayer and C. Reiser, Merkel & Associates 1991-1998). Three individuals were observed moving through the property during one of the gnatcatcher surveys (Merkel & Associates 1998). Based on the behavior of these birds and the absence of sightings on follow-up visits, these gnatcatchers were judged to be dispersing juveniles.

Least Bell's Vireo

The least Bell's vireo (*Vireo bellii pusillus*) was listed as an endangered species under the State Endangered Species Act on October 2, 1980 (CDFG 1998b) and under the Federal Endangered Species Act on May 2, 1986 (USSFWS 1986). The listing was primarily attributed to the synergistic effects of habitat loss and brood parasitism by the brown-headed cowbird (*Molothrus ater*). At the time of federal listing, the least Bell's vireo population was estimated at 300 pairs. Current population estimates are not available, but 1996 census data indicated a population increase to 1,346 pairs (USFWS, unpublished data).

Historically the least Bell's vireo was widespread and abundant from interior northern California, south through the Sacramento-San Joaquin Valleys and Sierra Nevada foothills, and in the coast ranges from Santa Clara south to approximately San Fernando, Baja California, Mexico. Populations were also found in Owens Valley, Death Valley and throughout the Mojave Desert (USFWS 1998a). Currently the least Bell's vireo breeding distribution is restricted to eight Southern California counties and portions of Baja California, Mexico.

The least Bell's vireo is an obligate riparian species during the breeding season, typically inhabiting structurally diverse woodlands along watercourses. Breeding habitat may include cottonwood-willow forests, oak woodlands and mule fat scrub. Less is known about the wintering habitat of this species; however, they do not appear to be dependent on riparian woodland. Vireos are known to winter in mesquite scrub vegetation in arroyos, but they may use palm groves and agricultural or residential hedgerows (USFWS 1998a).

Least Bell's vireos typically arrive on their Southern California breeding grounds between mid-March and early April. Males arrive in advance of females, and returning adult breeders may arrive before hatch-year birds (USFWS 1998a). The vireos generally remain on the breeding grounds through August or September. Males establish and defend territories from 0.5 to 0.75 acres in size (USFWS 1998a). Nesting chronology is well documented for this vireo. Nest building commences a few days after pair formation, and generally lasts four to five days. Egg laying begins 1-2 days after nest completion and the eggs (typically 3-4) are incubated for 14 days. Nestlings are tended until fledging at 10-12 days, after which adults feed the fledglings for at least two weeks (USFWS 1998a). Although multiple nesting attempts per season are not uncommon, most pairs fledge young from only one to two nests.

Predation is a major cause of nest failure, particularly in areas of little brood parasitism. Predators include western scrub jays (*Aphelocoma californica*), Cooper's hawks (*Accipiter cooperii*), gopher snakes (*Pituophis melanoleucus*), numerous mammalian predators, and ants. Human disturbance may also be a source of nest disturbance and ultimate failure.

Least Bell's vireos are insectivorous, primarily utilizing foliage gleaning and hovering foraging techniques. Their diet consists of a variety of insects, most often captured within vegetation three to six meters in height (USFWS 1998a).

At San Dieguito Lagoon, adequate riparian habitat exists on-site to potentially support at least one to two vireo pairs. Late 1998 breeding season observations indicated the presence of a solitary, singing male (Merkel & Associates 1998). Breeding records from this site are not known.

Belding's Savannah Sparrow

The Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) was listed as state endangered under the California Endangered Species Act on January 10, 1974. Development along the Southern California coast has eliminated much of this species habitat. Many of the high tidal marsh areas utilized by this species for nesting have been diked or filled for houses, roads, and other uses. In 1986, only approximately 2,274 pairs of Belding's savannah sparrows were found in 27 California marsh areas (Steinhart 1990). Two-thirds of the marshes inhabited by the Belding's savannah sparrow are privately owned. However, approximately 45 percent of the individuals are located on U.S. Navy lands and in the Tijuana Estuary National Wildlife Refuge (Steinhart 1990).

Belding's savannah sparrows are year-round residents of the coastal salt marsh from Santa Barbara County south into Baja California, Mexico. This species nests in pickleweed (*Salicornia virginica*), just above the high tide line. Nesting has also been observed in salt grass (*Distichlis spicata*). Breeding season ranges from February through September, but nesting usually occurs from mid-March through early July. Individuals engage in chasing and vocalizing, and males defend small territories. A concealed cup nest is constructed usually with its rim flush to the ground. Three to five eggs are incubated for approximately 12-13 days. Young fledge from the nest at between seven and ten days, after which, both adults tend to the fledglings (Ehrlich et al. 1988). Pairs may reclutch.

Belding's savannah sparrows feed on sand flies and insects found on mudflats, beaches and coastal vegetation. Wintering habitat may include upland habitats.

Belding's savannah sparrows have been consistently observed at San Dieguito Lagoon. Pairs were observed in association with the salt marsh during the breeding season. Large flocks congregate in the salt marsh, as well as forage in upland areas outside of the breeding season. Surveys conducted from April 1992 through April 1993 recorded a total of 884 Belding's savannah sparrows at San Dieguito Lagoon. These results were comparable to those of 1986 surveys, suggesting a stable population (MEC 1993).

Belding's savannah sparrow habitat in the San Dieguito River area consists mainly of salt marsh in the intertidal zones where *Salicornia virginica* is prevalent. Slightly higher elevations are often dominated by *Salicornia subterminalis* or vegetated with non-native weedy species such as mustard and grasses. The primary savannah sparrow habitat therefore occurs immediately adjacent to the shoreline. The density of sparrows declines with distance away from the shoreline. At distances of 3-5 meters from the shoreline in some places, to 10 or so meters in others, savannah sparrows become scarce or absent.

During the SAIC June-July 1998 surveys for this species, savannah sparrows were observed on the eastern side of the I-5 around the brackish lagoon, on the CDFG preserve property, in the saltmarsh habitat at the river mouth and along the San Dieguito River. They were also occasionally found in ruderal areas adjacent to their preferred habitat. A tendency was found for savannah sparrows to be less common where the habitat was less extensive (such as where only a narrow strip of habitat occurs along a shoreline). Where the habitat extended over a wider area, sparrow densities were higher per unit area of habitat. The SAIC surveys resulted in 107 savannah sparrow observations within the project area. Seventy-five of those savannah sparrows were observed on the CDFG property. Birds were observed in pairs or more frequently as groups of four to five individuals presumed to represent family units.

3.4.9 Sensitive Habitats

The City of San Diego and the CDFG consider the following habitats present within the project boundaries as biologically sensitive habitats: open water, salt marsh, seasonal marsh, fresh and brackish water marsh, riparian woodland and scrub. This designation is related to species richness, importance to wildlife and sensitivity to development (City of San Diego 1994). Wetlands are also considered sensitive by federal and state resource agencies as well as local conservation organizations. Southern coastal foredunes habitat represented onsite by one small area near the river mouth is classified as sensitive, based on rarity and ecological value, according to the guidelines in the Land Development/Zoning Code Update (City of San Diego 1997).

Wildlife Corridors

Wildlife corridors are considered biologically significant by the City of San Diego (1994), which defines wildlife corridors as:

> . . . areas of land where development would sever a connection between two habitats. Connections need not be wide; narrow corridors can be used by many plant and animal species. The area with habitat value to which the site is connected must be at least 10 acres in size.

Jurisdictional Wetlands (USACE and Other Agencies)

Wetland Regulation Requirements

Wetland environments are highly restricted in nature and have been even more restricted by the activities of man. A long history of dredging and filling, channelization, and clearing has resulted in diminishment of wetlands to the extent that many agencies have adopted regulations to protect wetlands and even seek to restore lost habitats and values. This section addresses the applicable regulatory programs affecting the proposed project work.

Defining Characteristics

Wetlands have many distinguishing features, the most notable of which is the presence of standing or flowing water, unique wetlands soils, and vegetation adapted to, or tolerant of, saturated soils. Riparian wetlands typically exhibit a high groundwater table because of their proximity to a river, stream, or other body of water and are distinctive because of their linear form. Conversely, tidally influenced wetlands, such as San Dieguito Lagoon, exhibit the distinctive leveling and erosional forms associated with tidally driven coastal processes.

These wetland characteristics are evident within the study area where tidal and freshwater influence has created a diverse wetland system. These wetland areas fall under the jurisdiction of a variety of local, state, and federal agencies. The following describes the three parameters used to determine the presence/absence of wetlands and non-wetland water streambeds on the site.

Hydrophytic Vegetation. Vegetation communities which met the criteria of wetland-associated vegetation were dominated by a preponderance (> 50 percent) of species classified as obligate wetland plants (OBL), facultative wetland plants (FACW), or facultative plants (FAC) based on the National List of Plant Species that Occur in Wetlands (U.S. Fish & Wildlife Service 1988). Obligate wetland plants are defined as occurring almost always (estimated probability >99 percent) in wetlands under natural conditions. Facultative wetland plants are defined as occurring usually in wetlands (estimated probability > 67 percent to 99 percent). Facultative plants are defined as having a similar likelihood (estimated probability 33 percent to 67 percent) of occurring in both wetlands and non-wetlands.

Wetland Hydrology. Hydrologic wetland indicators included both surficial flow characteristics (e.g., visual observation of surface flow, drainage patterns, water marks, and drift lines) and sub-surficial field observations (e.g., presence of free water in a test pit). Hydrologic indicators were also used to define non-wetland waters of the United States. Most of this flow information consisted of drainage patterns and water-borne debris accumulated at the base of existing vegetation.

Hydric Soils. To confirm the presence of hydric soils, soil test pits were excavated using a shovel. Soils taken from depths ranging from 12 to 18 inches were examined for physical and chemical evidence of hydric conditions. Soils were evaluated using the chroma index from the Munsell Soil Color Charts (Munsell Color 1974); however, soil color was not used as the only indicator in the study area's mineral sandy soils. Other indicators of hydric soils such as vertical streaking, high organic matter content in the surface horizon, mottling, spodic zones, and organic pans were also sought during the survey.

Under Section 404 of the Clean Water Act, wetlands and other “Waters of the U.S.” cannot be dredged or filled without a permit from the U.S. Army Corps of Engineers (USACE). Non-wetland areas protected as Waters of the U.S. are generally defined as the limits of ordinary high water, whereas USACE and USEPA regulations recognize wetlands as a Special Aquatic Site based on three criteria: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology, as defined in the 1987 USACE Wetland Delineation Manual. Section 404(b)(1) requires that the placement of fill in defined wetlands be avoided unless there is no practicable alternative. The City of San Diego Resource Protection Ordinance considers an area a wetland if it meets any one of the three criteria: wetland vegetation, soils or hydrology. The California Coastal Commission and the CDFG use a similar one-criterion approach.

Probable Section 404 jurisdictional wetlands and other Waters of the U.S., amounting to 268 acres, are shown in Figure 3.4-3. Within the San Dieguito wetland restoration area, in lieu of a detailed delineation, the conservative assumption has been made that all areas of tidal and non-tidal open water, tidal and non-tidal flats, marsh (freshwater, brackish, seasonal, and salt marshes included), and transitional habitats constitute probable Section 404 jurisdictional waters and/or wetlands. The USACE (personal communication, D. Zoutendyk 1999) has tentatively agreed with this approach. Wetland delineations were completed for portions of SCE’s property by Wetlands Research Associates, however, these have not yet been verified by USACE. These areas have also been recognized as wetlands by the CCC based on a review of SCE restoration plans.

Elsewhere within the project area, the USACE has delineated jurisdictional wetlands on the 22nd District Agricultural Association’s Surf and Turf property and East Parking Lot — areas that may be used as a disposal site (Chapter 2). More recent delineations of these areas (BRG 1996a, 1996b) have not yet been accepted, and so the Corps’ original (1993) delineation of these areas is reflected in Figure 3.4-3.

Figure 3.4-3. Probable Section 404 Wetlands and other Waters of the United States within the San Dieguito Lagoon Project Study Area

A recent consultant's delineation of the trail corridor area (Tierra 1999) suggests that much or all of the trail where it is placed along an existing graded and/or gravel road across the restoration area north of the river and east of I-5 could be jurisdictional. Pending further review of this area by the USACE and other agencies, the area of potential jurisdictional wetland as mapped in Figure 3.4-3 is limited to areas of the trail alignment where wetland habitat characteristics are clearly represented within or immediately adjacent to the existing road.

Multiple Species Conservation Program (MSCP)

The MSCP is a regional conservation program that identifies conservation lands that provide habitat for multiple species including federally and state listed threatened or endangered species. Species identified in the MSCP would be considered adequately preserved as long as lands proposed for open space and habitat preservation within a Multi-Habitat Planning Area (MHPA) are conserved, including designated biological core areas, linkages, and potential preserve areas. Core areas are those that support a high concentration of sensitive biological resources which, if lost or fragmented, could not be replaced or mitigated elsewhere. Linkages are essential connections enabling wildlife movement between Biological Core Areas. The proposed project lies within the northern portion of the City of San Diego Subarea Plan and the project site includes a Biological Core Area and a 90 percent Habitat Preserve Area. In addition, several species within the project area that are not listed by the resource agencies are considered "covered" by the MSCP. Species found within the project site that are included in the MSCP list of covered species are described in Table 3.4-3. These species include California brown pelican, American peregrine falcon, light-footed clapper rail, Western snowy plover, California least tern, southwestern willow flycatcher, coastal California gnatcatcher, least Bell's vireo, Belding's savannah sparrow, reddish egret, white-faced ibis, northern harrier, Cooper's hawk, long-billed curlew, western burrowing owl, cactus wren, Southern California rufous-crowned sparrow, large-billed savannah sparrow, tricolored blackbird, Canada goose, southwestern pond turtle, orangethroat whiptail, salt marsh skipper, salt marsh bird's beak, Nuttall's lotus and Del Mar sand aster. The southern mule deer and American badger are included in the MSCP list of covered species and may be present on the project site but are not listed in Table 3.4-3 (City of San Diego 1997).

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region

Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
Federally or State Listed and Proposed Threatened or Endangered Species		
Mammals		
Pacific Little Pocket Mouse (*Perognathus longimembris pacificus*)	Federal: FE State: SSC	The Pacific little pocket mouse is restricted to the coastal strip of Southern California from the vicinity of the U.S./Mexico border northward to El Segundo, Los Angeles County. It occurs in coastal strand, coastal dune, river alluvial, or coastal sage scrub habitat on marine terraces within 2.5 miles of the coast (USFWS 1998b). The soils of occupied habitat are typically fine grain, sandy substrate. Very few remaining populations are known. These contain relatively few individuals and are highly susceptible to habitat disturbance. Pacific little pocket mouse was reported from the San Dieguito area by PSBS (1979), but a lead investigator of that study (Stephen Montgomery) believes that account was based on a misidentification of a juvenile San Diego pocket mouse (*Chaetodipus fallax fallax*). A more recent report of a Pacific little pocket mouse being caught just outside the study area cannot be confirmed due to the lack of a photograph or detailed measurements. Furthermore, following that reported sighting, an intensive trapping effort was made at the point of the reported capture and at all suitable habitat in the vicinity and surrounding areas of San Dieguito Lagoon. No Pacific little pocket mouse can be confirmed in the vicinity (SJM Biological Consultants 1994). Although this species may have occurred historically in the area, there is no information that it currently exists. Also, the suitable habitat in the region is generally well distanced from the proposed area of impact for the project.
Birds		
California Brown Pelican (*Pelecanus occidentalis californicus*)	Federal: FE State: SE MSCP	This is a marine species found along both the Atlantic and Pacific coasts of the United States south into Central America. *P.o. californicus*, the west coast subspecies, does not breed north of Monterey, California. It is uncommon inland at the Salton Sea, and rarely occurs at freshwater sites. Population density tends to fluctuate with various environmental conditions, such as water temperature and fish abundance. In the 1960s there was a drastic decline along the California and Gulf coasts due primarily to eggshell thinning caused by DDT. Populations have been increasing and, currently, the brown pelican's status is considered stable. In San Diego County, the brown pelican occurs along the entire coastline, including lagoons, bays, and around harbor docks and piers. No breeding occurs within the County. Brown pelicans are regularly observed in the study area, but are usually seen in low numbers (see species account).
American Peregrine Falcon (*Falco peregrinus anatum*)	State: SE, FP MSCP	The peregrine falcon has a rather sporadic distribution in North America. This species showed a dramatic population decline, particularly noted in the 1960s and 1970s, due to pesticide (e.g., DDT) poisoning. However, it has since made a considerable comeback with the aid of environmental restrictions on the use of pesticides, captive breeding, and re-introduction of peregrines into the wild. The U.S. Fish & Wildlife Service recently (8/99) removed the peregrine falcon from the endangered species list, although it remains on the State list of endangered species. This is generally a migrant or fall/winter visitor (early September through April) to San Diego County, but a small population is now resident in the region. Formerly up to ten pairs nested in San Diego County (Unitt 1984). Currently, three pairs appear to be resident in or around San Diego Bay, and a fourth pair is found at Mission Bay. Peregrine falcons typically nest on cliff faces and sometimes buildings or bridges (e.g., Coronado Bridge). Peregrine falcons forage over estuaries, coastlines, mountains, and extensive grasslands and agricultural fields. Primarily a bird eater, they prey on ducks, shorebirds, seabirds, and doves. In urban settings, pigeons are a preferred prey item. The peregrine falcon is reported to be an uncommon visitor to San Dieguito Lagoon (Josselyn 1997).

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region
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Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
Federally or State Listed and Proposed Threatened or Endangered Species		
Birds		
Light-footed Clapper Rail (*Rallus longirostris levipes*)	Federal: FE State SE, FP MSCP	This subspecies ranges from Carpinteria Marsh in Santa Barbara County south to San Quintín, Baja California, Mexico. It is generally restricted to coastal salt marshes with a predominance of *Spartina*; however, it has also been found in freshwater marshes just upstream from estuaries. The light-footed clapper rail is one of the most endangered birds in the United States with a total population of only 233 pairs found at 14 sites in 1999 (CDFG 1992; Zembal, USFWS unpublished data). The light-footed clapper rail was observed at San Dieguito Lagoon in 1988 during surveys for the Del Mar Grand Prix (PSBS 1989b) and intermittently since then. However, it was not detected during any annual census conducted between 1989 and 1998 (Zembal 1998) and this species is not known to breed at the lagoon.
Western Snowy Plover (*Charadrius alexandrinus nivosus*)	Federal: FT State: SSC MSCP	The western snowy plover is present in suitable habitat along the entire length of California and Oregon. It occurs on sandy beaches, lagoons, tidal mudflats, and rarely in interior dry lakes and receding lakeshores. Breeding sites in San Diego County include Tijuana, Sweetwater, and Santa Margarita River mouths, Batiquitos and other coastal lagoons in central/north San Diego County, and along the Silver Strand. Within suitable habitat, this species is very narrowly distributed. It has greatly declined as a breeding species and remains vulnerable to extirpation due to habitat loss and nest disturbance. Locally, the situation has improved as the result of the construction of five artificial nesting areas at theBatiquitos Lagoon.There is a single documented nesting attempt for San Dieguito Lagoon. This was in 1992 (MEC 1993). Lack of suitable undisturbed nesting habitat on the site is believed to limit nesting by the species-see species account.
California Least Tern (*Sterna antillarum browni*)	Federal: FE State SE, FP MSCP	The California least tern is a coastal breeder from San Francisco Bay south to San Quintín in Baja California, Mexico. This subspecies winters along the Pacific Coast of Mexico to Central America, although little is known about their wintering grounds. Nesting is colonial on sandy areas with a high concentration of crushed shells, and generally close to foraging areas. Relatively shallow waters along coastal shores, bays, and estuaries are the preferred foraging areas, where they feed on small fish. Loss of, and disturbance at, nesting sites is believed to be the principal limiting factor on the recovery of this species. Breeding colonies are limited in extent, and fledging rates are highly variable and recently very low, primarily due to heavy predation from domestic cats, dogs, ravens, crows, and small raptors. Off-road vehicles have also had deleterious effects on the nesting areas. Nesting sites are considered extremely sensitive. A created least tern nesting site is maintained just west of I-5, south of the San Dieguito River, but no nesting has been documented there. Breeding records are summarized in the species account. The limited extent and poor quality of nesting habitat on site are believed to be key factors in the lack of recent breeding on site.
Southwestern Willow Flycatcher (*Empidonax traillii extimus*)	Federal: FE State SE MSCP	This neotropical subspecies of the willow flycatcher breeds in the southwestern United States and northwest Mexico. High quality willow riparian woodland, and in some cases oak riparian woodlands, are the preferred breeding habitat. Within San Diego County, breeding populations are restricted to the Santa Margarita River (on Camp Pendleton) and the Upper San Luis Rey River. However, during migration willow flycatchers may be found in any trees or large shrubs throughout San Diego County (Unitt 1984), therefore this species could occur on-site for relatively brief periods during the spring and fall. While the on-site occurrence of migrating willow flycatchers would not be considered biologically significant, the USFWS-defined critical habitat for this species includes the portion of the San Dieguito River east of I-5 up to Lake Hodges.

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region
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Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
Federally or State Listed and Proposed Threatened or Endangered Species		
Birds		
Coastal California Gnatcatcher (*Polioptila californica californica*)	Federal: FT State: SSC MSCP	California gnatcatchers occur in extreme southwestern California and Baja California, Mexico. Within the United States, the species is primarily found in San Diego, Orange, and western Riverside counties, having been largely extirpated from Ventura, San Bernardino, and Los Angeles counties. Typical occupied habitat is Diegan and Riversidean sage scrub, maritime succulent scrub and, less commonly, open chaparral. An estimated 85-90 percent of this species' habitat has been lost to urban or agricultural development, and much of that remaining has been highly fragmented. The United States population is estimated to be between 1,200 and 2,000 pairs (Atwood 1990). Suitable gnatcatcher habitat is extremely limited on site, being restricted to a small area of big saltbush and scattered coyote brush near the west side of I-5, a short distance north of the created least tern nesting site. No resident gnatcatchers have been identified in this area, but there is limited potential for establishment of a territory at some point in the future. During focused California gnatcatcher surveys in 1998 (Merkel & Associates 1998), three individual California gnatcatchers were observed on one of four site visits, slightly west of the area described above. These birds were judged to be juveniles, which were presumably dispersing through the site. Nesting occurs in coastal scrub in a canyon southwest of the site (Merkel & Associates 1998) and gnatcatchers have been observed on the slopes to the south of the project, just to the east of I-5 (personal communication Victoria Touchstone 1999)..
Least Bell's Vireo (*Vireo bellii pusillus*)	Federal: FE State: SE MSCP	Least Bell's vireos are primarily found from Santa Barbara County southward to northern Baja California, Mexico. The majority of the breeding population is found on major drainages at Camp Pendleton; along the Sweetwater, Tijuana, Otay, San Diego, and San Luis Rey rivers in coastal San Diego County; and in the Prado Basin of western Riverside County. A few breeding territories have been recorded at the western edge of the desert such as at the Lower Willows in Coyote Creek on the Anza-Borrego Desert. The least Bell's vireo is restricted as a breeder to riparian woodlands, nesting primarily in willow thickets but occasionally using other riparian trees and shrubs. Formerly, this species occurred throughout the central valley, but populations severely declined due to habitat loss and fragmentation, and as a result of heavy brood parasitism by the brown-headed cowbird (*Molothrus ater*). In the past several years, there has been a marked increase in the vireo population, and the species is now being found in drainages, or portions of drainages, that were unoccupied in recent decades. The population increase is most probably due to aggressive trapping of brown-headed cowbirds in the vicinity of vireo nesting sites. Not previously documented from the property, focused searches in 1998 at the mature willow riparian woodland located near the site boundary east of I-5 and south of the San Dieguito River found this species to be present (Merkel & Associates 1998). The late seasonal timing of the surveys did not allow conclusive observations of nesting/fledging activity; however, the repeated observation of at least one vireo suggests that the species was resident to the area. Habitat quality is suitable for nesting by vireos (see species account and Appendix B).
Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*)	Federal: none State: SE MSCP	Belding’s savannah sparrow is restricted to well developed, pickleweed-dominated salt marsh habitats in Southern California coastal lagoons. Relatively large populations are recorded at Mugu Lagoon, Tijuana Marsh, Upper Newport Bay, Sweetwater Marsh, Anaheim Bay, Santa Margarita River Estuary, Bolsa Chica Wetlands, and Los Peñasquitos Lagoon. Although populations have been generally stable since late 1970s, there is evidence of possible long-term population declines. The species is a common breeder in pickleweed habitats throughout the site (see species accounts and Appendix B).

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region
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Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
Federally or State Listed and Proposed Threatened or Endangered Species		
Amphibians		
Arroyo Toad (*Bufo californicus*)	Federal: FE State: SSC	In San Diego County, arroyo toads are known from a number of the major river systems or tributaries to these systems; generally in the upper, more remote, portions of the watersheds. Most of the remaining populations are very small and isolated by alteration of the habitat, such as dams and reservoirs, which harbor non-native fish predators. This species has been extirpated from much of its native U.S. range. Arroyo toads have not been documented from the study area or nearby portions of the San Dieguito River. They are present in Guejito Creek (Merkel & Associates, staff observations), placing them within the San Dieguito River watershed; however, they are not expected on-site.
Fishes		
Tidewater Goby (*Eucyclobius newberryi*)	Federal: FE State SSC	This species occurs from the Smith River in Del Norte County southward to Agua Hedionda in San Diego County (USFWS 1994a). It is limited to a few brackish water lagoons, and is considered extremely rare and sensitive throughout its habitat. Within San Diego County, this species is presently known from five drainages on Camp Pendleton. No present or historical records of occurrence exist for this species in San Dieguito Lagoon. The site lies south of its known range (see species account).
Plants		
Orcutt's Spineflower *(Chorizanthe orcuttiana)*	Federal: PE State: CE CNPS: List 1B	This species is endemic to San Diego County where it is known to be extant from only three small populations: one at Oak Crest Park in Encinitas and two on Point Loma (Reiser 1994). All sites have unusually clean, loose sandy soils present. The nearest population is in Oak Crest Park in Encinitas. Orcutt's spineflower has also been historically collected at North Torrey Pines Preserve (south of the San Dieguito Lagoon project site) (Reiser 1994). Suitable habitat for this species would most likely consist of sandy open terrain on the periphery of sage scrub. Such habitat is not represented on site, so this species is not expected in the project area.
Salt Marsh Bird's-Beak *(Cordylanthus maritimus* ssp. *maritimus)*	Federal: FE State: CE CNPS: List 1B MSCP	Salt marsh habitat, particularly slightly raised terrain surrounded by salt marsh, is the preferred habitat of this small annual. In Imperial Beach the colony grows at the edge of a salt pan. Tidal inundation of this area is occasional. In Newport Beach, a portion of the habitat is apparently shell and sand dredgings. The range of this species includes San Luis Obispo, Ventura, Santa Barbara, Los Angeles, Orange, and San Diego counties, and Baja California, Mexico. Only two confirmed populations of salt marsh bird's-beak exist in San Diego County, located in Imperial Beach and Chula Vista (Reiser 1994). This species is not known to have occurred historically in the marsh associated with the San Dieguito Lagoon or in the San Dieguito Valley, and has not been found in recent surveys. It is not known or expected to occur in areas affected by the project.

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region
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Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
California Native Plant Society List 1B Plant Species		
Southern Tarplant *(Hemizonia parryi* ssp. *australis)*	Federal: none State: none CNPS: List 1B	Valley and foothill grasslands, alkaline locales, and peripheral salt marsh are all utilized by the southern tarplant. In the Del Mar locale, the soils are mapped as Chino silt loam and the salt marsh vegetation is found only yards away. This species is known from San Diego, Orange, Ventura, Los Angeles, and Santa Barbara counties. At Upper Newport Bay, this plant grows in mesic grasslands with an ocean influence; most of the surrounding vegetation there consists of invasive non-native weeds. It is extremely rare at that site and approaching extirpation (Reiser 1994). Within the project area, this species was observed at several locations, many of which supported hundreds to thousands of individuals at scattered locations along the upper banks of both sides of the San Dieguito River. This species was also common (thousands observed) along dirt roads and other disturbed sites south and east of the shopping center located east of I-5 and north of the San Dieguito River. One dense stand of southern tarplant (~.1 acre with approximately 70 – 80 percent cover), is present east of the shopping center and north of a wetland area.
Coulter's Goldfields *(Lasthenia glabrata* ssp. *coulteri)*	Federal: none State: none CNPS: List 1B	This species occurs in salt marsh areas near the coast at the extreme upper end of tidal inundation. It has also been noted on the periphery of vernal pools such as near Miramar Airfield, and in alkaline marshes in the inland valleys of western Riverside County. Typically restricted to the periphery of alkaline and freshwater wetlands, it is apparently declining at many of the historical locations where it was previously collected. Its distribution covers San Diego, Orange, Riverside, Los Angeles, Kern, Santa Barbara, San Bernardino, San Luis Obispo, and Ventura counties, Santa Rosa Island, and Baja California, Mexico. A sizeable population is concentrated at the east end of Penasquitos Lagoon. A small population was also found south of Miramar Road west of the intersection with Eastgate Mall (Reiser 1994). Coulter's goldfields was reported by Mudie *et al.* (1976) and by MEC (1993) as occurring in San Dieguito Lagoon, in three patches located in coastal salt marsh along the southern edge of the CDFG restoration site (west of I-5 and southeast of Del Mar Fairgrounds). Further monitoring during 1995-1997 revealed that the population includes a fourth patch over 250 meters east of the three previously identified patches (Adam Whelchel, personal communication). Recent SAIC surveys reported hundreds of individuals at one location in a low swale on the southwest side of the I-5 bridge that crosses San Dieguito River in an area sparsely vegetated with pickleweed and weedy herbaceous plants. This species also occurs within the ecological preserve area south of the lagoon.
Nuttall's Lotus *(Lotus nuttallianus)*	Federal: none State: none CNPS: List 1B MSCP	Coastal dunes, particularly well protected back-dunes with minimal human foot traffic, are the preferred habitat of Nuttall's lotus. Soils are mapped as beach sands and riverwash. Populations are severely reduced in number due to recreational use of beaches and sand cleaning machines. This species is only known from southern San Diego County and northern Baja California, Mexico. A small population occurs in Torrey Pines State park near the salt marsh. Historical reports are from sites along the beaches in Encinitas and Del Mar (possibly extirpated), at the south end of Cardiff State Beach, and at Carlsbad State Beach just south of the mouth of Batiquitos Lagoon (Reiser 1994). A small population of Nuttall's lotus was reported during earlier studies of San Dieguito Lagoon (PSBS 1979). This population was located in coastal sand dunes, west of I-5 and south of Del Mar Fairgrounds; however, it could not be relocated during the MEC (1993) survey. Although recent surveys did not report the presence of Nuttall's lotus, it has a high potential of occurring on-site due to historical observations and the presence of suitable habitat.

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region

Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
California Wildlife Species of Special Concern		
Mammals		
San Diego Black-tailed Jackrabbit *(Lepus californicus bennettii)*	Federal: none State: SSC	This subspecies of jackrabbit occurs along coastal slopes of California from Point Conception - Mount Piños southeast to Pasadena, western Anza-Borrego Desert, and south to San Quintín, Baja California, Mexico (Hall 1981). They are generally found only in large areas of open sage scrub or sage scrub / grassland habitat. The San Diego black-tailed jackrabbit has presumably declined due to habitat loss and fragmentation resulting from urban development. The San Diego black-tailed jackrabbit was observed at San Dieguito Lagoon by Mudie et al. (1976) and PSBS (1979), but was not recorded by MEC (1993).
Northwestern San Diego Pocket Mouse (*Chaetodipus fallax fallax*)	Federal: none State: SSC	This pocket mouse occurs along the coastal slope of extreme Southern California (Orange, San Diego, and western Riverside counties). Banning is the approximate northeastern limit, ranging westward to the coast and southward to Jacumba and on to San Quintín, Baja California, Mexico. This species is widespread within suitable habitat, consisting of sage scrub, chaparral, and sometimes oak woodland vegetation. This species has presumably suffered loss of habitat due to regional urban and residential development, as well as historic clearing for agriculture. The San Diego pocket mouse was the most abundant species captured during a 1994 small mammal trapping survey (SJM Biological 1994). It was found both east and west of I-5 in areas supporting elements of sage scrub and / or ruderal grassland habitat.
San Diego Desert Woodrat (*Neotoma lepida intermedia*)	Federal: none State: SSC	This subspecies of woodrat occurs in coastal California and Baja California, ranging from San Luis Obispo south to the San Bernardino Mountains, Redlands south to Julian and Dulzura, and into Baja California. It is believed to be widespread within suitable sage scrub, chaparral, and oak woodland habitat. The species is believed to be declining as urban encroachment continues to eliminate and fragment existing habitat. No desert woodrats were captured during focused small mammal trapping efforts in 1994, which included placing traps adjacent to cactus stands which would typically be expected to support this species (SJM Biological 1994). A related but non-sensitive species, the dusky-footed woodrat (*Neotoma fuscipes*), was captured during the previous small mammal trapping investigation.
Birds		
Reddish Egret (*Egretta rufescens*)	Federal: none State: SSC MSCP	The reddish egret breeds along the Gulf coast and along the west coast of Mexico, including Baja California north to San Quintín. This heron disperses more widely during the non-breeding season. It is uncommon throughout its range; however, it is a regular visitor, in small numbers, to pickleweed marshes during the winter months. It is not known to breed in California. Locations where this species has been found in San Diego County include the Tijuana River, San Diego Bay, and San Diego River (Unitt 1984). The reddish egret is reported to be a rare winter visitor to the study area (Josselyn 1997).
White-faced Ibis (*Plegadis chihi*)	Federal: none State: SSC MSCP	The white-faced ibis ranges from the western United States south to Argentina. Nesting is restricted to dense marshes receiving little human-associated disturbance. In San Diego County, it formerly nested at Guajome Lake, but is no longer known to breed anywhere in California (Unitt 1984). In San Diego County, white-faced ibis are uncommonly observed foraging in freshwater and brackish water marshes, and irrigated lands; they are most typically found in small numbers in the fall / winter season (Unitt 1984). White-faced ibis are documented on-site (MEC 1993; Merkel & Associates, staff observation 1999), and expected to occur on a regular but infrequent basis.

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region

Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
California Wildlife Species of Special Concern		
Birds		
Osprey (*Pandion haliaetus*)	Federal none State: SSC	Osprey are widely distributed throughout the Americas, Europe, and Asia near aquatic environments (Johnsgard 1990). They are primarily found near seacoasts, bays, lagoons, rivers, and lakes where fish are common, although terrestrial vertebrates may also be taken. In Southern California, osprey are more commonly seen from mid-September through April, but may occur throughout the year (Unitt 1984). In San Diego County this raptor is regularly found in low numbers on San Diego Bay, Mission Bay, Batiquitos Lagoon, and Agua Hedionda Lagoon, as well as on interior water bodies such as at Lake Hodges, Lake Poway, Lake Wohlford, and others. Although it has historically nested in San Diego Bay (Unitt 1984), recent nesting within the County is extremely limited. In the past, thinning of eggs due to DDT was a major concern. Osprey are observed at San Dieguito Lagoon throughout most of the year and are non-breeding residents. Two individuals were repeatedly sighted from October to December 1998 (Merkel & Associates, staff observations 1998)
Northern Harrier (*Circus cyaneus*)	Federal: none State: SSC MSCP	The northern harrier is widespread across North America, but is a very localized breeder. This species typically winters southward to northern South America and the Caribbean (Johnsgard 1990). Although fairly common as a wintering species (*i.e.*, September to March), breeding is extremely limited in coastal Southern California. This decline as a breeding species in Southern California is attributed to fragmentation and loss of open habitat. Nest sites are particularly susceptible to disturbance because the nest is built in areas of dense, low-growing vegetation or on the ground. Locally, nesting is known or suspected in the Tijuana River Valley, Proctor Valley, Sorrento Valley, and the coastal plain of Camp Pendleton (Unitt 1984). Favored foraging habitat includes salt marsh, freshwater marsh, grasslands, agricultural fields, and open sage scrub. A pair of northern harriers was consistently observed in the study area, including the late spring and summer season (Merkel & Associates and SAIC 1998). On-site breeding is therefore suspected.
Sharp-shinned Hawk (*Accipiter striatus*)	Federal: none State: SSC	Sharp-shinned hawks are distributed throughout Mexico, the United States, and Canada (Johnsgard 1990). They are fairly common winter visitors to Southern California, and may occasionally breed in the transverse and peninsular ranges in woodland and montane coniferous forest (Zeiner *et al.* 1990a). During its migration this species is observed foraging throughout the coastal, foothill, and mountain zones. Sharp-shinned hawks may have formerly nested in Southern California mountain ranges. Summer sightings of sharp-shinned hawk are rare, and its current breeding status is uncertain. Sharp-shinned hawks are expected to occur as rare winter visitors to the study area.
Cooper's Hawk (*Accipiter cooperii*)	Federal: none State: SSC MSCP	Cooper's hawks are found throughout the United States, northern Mexico, and southern Canada. In Southern California they are resident and breed in cismontane areas, and in coastal San Diego County are most typically associated with oak and riparian woodlands (Unitt 1984), and in some locations non-native (e.g., eucalyptus) woodlands (Merkel & Associates, staff observations). Although typically a woodland species, they may also be seen soaring overhead. In the non-breeding season, this species is less restricted to wooded areas and will utilize more open habitats such as grasslands. Cooper's hawks have reportedly declined throughout California as a breeding species. Habitat destruction in lowland riparian areas is a major threat to this species, as well as direct or indirect human disturbance at nest sites. In 1998, Cooper's hawks were confirmed nesting in the willow woodland located on the south side of the San Dieguito River and east of I-5 (Merkel & Associates 1998).

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region

Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
California Wildlife Species of Special Concern		
Birds		
Merlin (*Falco columbarius*)	Federal: none State: SSC	Merlin generally breed in the northern half of Canada and winter as far south as northern South America and the Caribbean (Johnsgard 1990). They are not known to breed in California, and are uncommon to rare fall / winter visitors through most of Southern California. Lone merlins are generally seen in the San Diego County region from late August through March (Unitt 1984). Favored foraging areas are agricultural fields, oak savannah, grasslands, and mudflats with an abundance of avian prey, which comprise greater than 90% of their diet (Ehrlich et al. 1988). Wintering populations have severely declined since approximately 1900 (Unitt 1984). Migratory merlin are expected to occur on-site on a seasonal basis, and have been observed immediately south of the study area in Crest Canyon during informal Audubon Society surveys at the lagoon (Rachel Woodfield, Merkel & Associates staff biologist, personal observation).
Prairie Falcon (*Falco mexicanus*)	Federal: none State: SSC	Prairie falcons are a species of the western United States and Mexico (Johnsgard 1990). This falcon is an uncommon winter visitor to Southern California and a rare breeding resident. Approximately twenty nest sites are known for San Diego County (Unitt 1984). Most nests are concentrated in the desert, although a limited population still breeds on the coastal slope (Unitt 1984). Collection records indicate that this falcon was never common in the area, even prior to widespread urban development. The extant coastal population is nearly extirpated. Most prairie falcons are typically seen in open, arid country such as grasslands, deserts, and interior valleys with agricultural and fallow fields (Unitt 1984). Wintering birds may also be seen foraging at coastal mudflats and lake margins. San Diego County populations remain vulnerable to extirpation due to habitat loss and nest disturbance. Prairie falcons are not documented from the study area, but as this is a migratory species with a preferred foraging habitat of extensive grasslands and open fields, it may occur on-site on a limited basis during the fall / winter season.
Long-billed Curlew (*Numenius americanus*)	Federal: none State: SSC MSCP	The long-billed curlew nests in both wet and dry uplands of the central western states (NGS 1987). Within California, long-billed curlews are only documented to breed in Siskiyou, Modoc, and Lassen counties (Zeiner et al 1990). Wintering long-billed curlews occur along coastal California and Texas south into Mexico, as well as in some inland areas of California and Texas (NGS 1987). Typical wintering habitat includes beaches and mudflats in both fresh and saltwater habitats. Long-billed curlews are present at San Dieguito Lagoon, where they are common in the winter and during migration (MEC 1993). Limited numbers were reported for summer months (MEC 1993).
Western Burrowing Owl (*Speotyto cunicularia hypugaea*)	Federal: none State: SSC MSCP	Burrowing owls are primarily found in the western United States and Mexico (NGS 1987). They are characteristic of open plains, grasslands, fields, and pastures. The decline of burrowing owls in San Diego County is attributed to the conversion of grasslands and pasturelands into row-crop agriculture and urban development (Remsen 1978, MSCP 1995). Measures to control rodents may also be adversely affecting burrowing owl populations in some areas. In coastal San Diego County, burrowing owls have greatly declined due to expanding urbanization (Unitt 1984), and the few remaining colonies support low numbers of individuals (MSCP 1995). Burrowing owls are not recorded for the site but there are large tracts of land that appear suitable. This species is given low-to-moderate potential for on-site occurrence.

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region

Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
California Wildlife Species of Special Concern		
Birds		
California Horned Lark (*Eremophilia alpestris actia*)	Federal: none State: SSC	Several subspecies of horned larks occur throughout North America. Although several other subspecies are reported to occur and may breed in San Diego County, *E.a. actia* is most common on the coastal slope. Preferred habitats are mostly non-vegetated lands such as sandy shores, grassland, open agricultural fields, and open scrubland (Unitt 1984). This is a common breeding resident, abundant migrant and winter visitor in Southern California (Unitt 1984). Horned larks are reported to occur at San Dieguito Lagoon where they were found principally associated with transition habitat, which consists of ruderal, agricultural, or nonvegetated disturbed habitats (MEC 1993). On-site occurrence by this species is expected throughout the study area wherever such open, largely barren habitats occur. This would include the upper portions of mudflats west of I-5 as well the extensive, disturbed fields east of I-5.
Cactus Wren (*Campylorhynchus brunneicapillus*)	Federal: none State: SSC MSCP	Cactus wrens occur in Mexico and the southwestern United States, including the southern portions of California, Nevada, Arizona, New Mexico, and Texas. Suitable habitat consists of sage scrub and desert scrub supporting a substantial cactus component. This species has suffered dramatic declines on the coastal slope of San Diego County (Unitt 1984). The few remaining coastal locations in the county include Sweetwater / San Miguel region, Otay Ranch, San Pasqual Valley, and San Elijo Lagoon (Unitt 1984). Habitat conversion, disturbance, and fragmentation are the presumed causes of the decline of this species. On-site habitat is extremely limited, consisting of a few, large individual prickly-pear cactus (*Opuntia* sp.) observed west of I-5. Cactus wrens are not expected in the study area.
Loggerhead Shrike (*Lanius ludovicianus*)	Federal: none State: SSC	Loggerhead shrikes occur throughout the United States, south-central Canada, and northern Mexico. The northern populations are migratory, and in Southern California resident populations are augmented by an influx of wintering individuals in the fall. Shrikes are characteristic of open country with scattered trees or other perch sites. Loggerhead shrikes are declining throughout their range (Graham 1990), possibly due to pesticides, habitat loss, and / or other factors. In San Diego County, the loggerhead shrike is still fairly common in large tracts of grassland, agricultural field, and open scrubland habitats (Unitt 1984). Loggerhead shrikes reportedly have been observed at San Dieguito Lagoon (Josselyn 1997), and suitable habitat is extensive. This species has high potential to nest in the study area.
Yellow Warbler (*Dendroica petechia*)	Federal: none State: SSC	The yellow warbler is a neotropical migrant which breeds throughout the United States (except the southeastern states) and most of Canada (NGS 1987). This was formerly a widespread breeder in California riparian habitats, particularly tall, mature riparian woodlands. The yellow warbler declined in numbers due to habitat destruction and brood parasitism by brown-headed cowbirds (Remsen 1978). Identified as one of the three species most frequently parasitized by cowbirds (Ehrlich et al. 1988), the yellow warbler appears to have greatly benefited from the cowbird trapping program initiated for the least Bell's vireo. The yellow warbler was not detected during the focused surveys for the least Bell's vireo (Merkel & Associates 1998). At this time, the on-site riparian woodlands may not offer the height or maturity preferred by the yellow warbler, but this species likely would occur in the study area for brief periods during migration.

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region

Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
California Wildlife Species of Special Concern		
Birds		
Yellow-breasted Chat (*Icteria virens*)	Federal: none State: SSC	The yellow-breasted chat is a neotropical migrant occurring throughout much of the United States in the summer (NGS 1987), but avoids the more arid deserts. The chat was formerly a widespread breeder in riparian habitats throughout California (Remsen 1978). Although the larger breeding populations are found along major drainages supporting extensive riparian woodland / scrubland habitat, low numbers may also occur in smaller, more isolated tracts of suitable habitat (Merkel & Associates, staff observations). Habitat destruction and brood parasitism by brown-headed cowbirds are presumed causes of the decline of this species. It has apparently increased significantly in numbers over the past several years, presumably benefiting from the cowbird trapping program initiated for the least Bell's vireo. The yellow-breasted chat was identified in the willow riparian woodland east of I-5 and south of the San Dieguito River (Merkel & Associates 1998). This species may also utilize the tall, weedy vegetation near other wetland areas in the study area.
Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*)	Federal: none State: SSC MSCP	This subspecies of rufous-crowned sparrow occurs in coastal Southern California from Santa Barbara County southward into Baja California, Mexico (Rising 1996). Most of the Southern California birds are located on the coastal plains and into the foothills, with a few noted in the higher transmontane desert of San Diego County. This species utilizes sparse, low scrub or chaparral, often in rocky areas or intermixed with grasses (Rising 1996). It is considered sensitive due to regional losses of sage scrub vegetation; however, the species is still widespread and common in suitable habitat. Rufous-crowned sparrows are resident in off-site, upslope scrublands and are expected to occasionally forage within the study area. In addition, juvenile rufous-crowned sparrows are expected to occur on-site during periods of dispersal.
Bell's Sage Sparrow (*Amphispiza belli belli*)	Federal: none State: SSC	This subspecies of sage sparrow ranges from Trinity County along the coastal slope southward to northwestern Baja California (Rising 1996). In San Diego County breeding birds are patchily distributed, with records primarily from the interior coastal plain and into the foothills, skipping the higher mountains, and then again on the eastern slopes of the mountains such as near Banner. Sage scrub and chaparral are both utilized by this sparrow. Bell's sage sparrow is declining, primarily through loss and fragmentation of habitat. It is generally found only in large habitat blocks, and is absent from many areas of apparently suitable habitat (Merkel & Associates, staff observations) (Unitt 1984). Bell's sage sparrows are not expected on-site due the lack of extensive sage scrub vegetation. Furthermore, off-site habitat is relatively limited and fragmented, and this species is not documented from adjacent lands.
Large-billed Savannah Sparrow (*Passerculus sandwichensis rostratus*)	Federal: none State: SSC MSCP	This subspecies of savannah sparrow has an extremely unusual migration pattern. It breeds in the marshes at the mouth of the Colorado River in Baja California, Mexico, and migrates northwestward to its wintering grounds in Southern California. During its winter stay in coastal California, this large, pale subspecies is found in salt marshes and along the beachline. It is typically found foraging on mudflats and in pickleweed along the water's edge. It is uncommon but regularly found on southern San Diego Bay. The large-billed savannah sparrow has principally declined because of destruction of its breeding habitat at the mouth of the Colorado River in Mexico. The large-billed savannah sparrow is given low-to-moderate potential for on-site occurrence. Suitable habitat is extensive in the study area.

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region

Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
California Wildlife Species of Special Concern		
Birds		
Tricolored Blackbird (*Agelaius tricolor*)	Federal: none State: SSC MSCP	Tricolored blackbirds are endemic to California and a small area of extreme southern Oregon (NGS 1985). This species is locally common in coastal San Diego County, but is semi-nomadic during the non-breeding season (Unitt 1984). Large concentrations have been found on the lower San Luis Rey River, Whalen Lake, and near San Pasqual (Unitt 1984). Breeding occurs in large colonies in extensive fresh water marshes where cat-tail and bulrush are abundant. During winter this blackbird occasionally forages in cultivated lands and on lawns. Tricolored blackbirds are believed to be slowly declining due to habitat loss, primarily through draining or of dewatering larger ponds. Low potential exists for on-site breeding by tri-colored blackbirds due to the limited extent of freshwater marsh. Use of the site is expected, on at least an irregular basis, during the non-breeding season.
Reptiles		
Orangethroat Whiptail (*Cnemidophorus hyperythrus beldingi*)	Federal: none State: SSC MSCP	The U.S. distribution of the orangethroat whiptail is limited. It ranges northward to Corona Del Mar in Orange County and Colton in San Bernardino County, southward to Riverside and San Diego counties (Stebbins 1985). Once widespread throughout suitable habitat, the species is vulnerable to extirpation due to habitat fragmentation and urban encroachment. Although often associated with sage scrub vegetation, this whiptail also can be found regularly in chaparral and at the edges of riparian habitats. The orangethroat whiptail was reported as occurring within the project area (Josslyn 1997), and has been observed in surrounding lands south of the study area (PSBS 1988).
Southwestern Pond Turtle (*Clemmys marmorata pallida*)	Federal: none State: SSC, FP MSCP	This subspecies occurs from the Monterey area south into Baja California (Stebbins 1987). In San Diego County, the largest remaining populations are found on Camp Pendleton. Limited numbers still occur found within Escondido Creek, Guejito Creek, Santa Margarita River, and San Luis Rey River. Despite its wide distribution, there is a high level of local concern due to very low recruitment, presumably due to predation by non-native species and the loss of breeding habitat adjacent to riparian areas. Southwestern pond turtles are known to occur in the San Dieguito River upstream of the study area (MEC 1993) but are believed unlikely to occur on a regular basis, or in significant numbers, within the study area.
San Diego Horned Lizard (*Phrynosoma coronatum blainvillii*)	Federal: none State: SSC, FP MSCP	This horned lizard is reported from Kern County, southern Ventura County, and the Los Angeles basin southward through Orange, San Bernardino, Riverside, and San Diego counties into Baja California (Stebbins 1985). Once widespread throughout suitable habitat, this species is extremely vulnerable to extirpation due to habitat degradation, collection as a pet, and residential development. Evidence of this species was reported in Josselyn (1997); presumably this consisted of characteristic scats made up almost exclusively of ants. Horned lizards are expected to be widely distributed in low densities within the disturbed non-agricultural lands of the project area.

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region

Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
		California Wildlife Species of Special Concern
		Reptiles
Coronado Skink (*Eumeces skiltonianus interparietalis*)	Federal: none State: SSC	This subspecies of the western skink has a very limited range within the United States (Stebbins 1985). It extends from northwest Baja California, Mexico (including the Coronado Islands) northward through coastal San Diego and Orange counties and into the Los Angeles region. It occupies a variety of habitat types including sage scrub, chaparral, woodlands, and grasslands, but is seldom seen except beneath debris following seasonal rains. Although vulnerable to habitat fragmentation and disturbance associated with urban development, this species is believed to still be fairly common within suitable habitat. The Coronado skink has good potential to occur on-site.
Silvery Legless Lizard (*Anniella nigra argentea*)	Federal: none State: SSC	This legless lizard ranges along coastal California from San Francisco south to northern Baja California (Zeiner et al. 1988). It is believed to be widespread within suitable habitat; however, it typically remains buried in sandy soils or beneath leaf litter and is seldom observed. Urban development continues to fragment existing habitat. This species has a high potential to be present on-site due to the extensive suitable habitat located west of I-5.
		Amphibians
Western Spadefoot (*Spea hammondi*)	Federal: none State: SSC	The western spadefoot toad is known mostly from the Central Valley, bordering foothills, and the Coast Ranges south of San Francisco Bay and extending into northwestern Baja California, Mexico (Zeiner *et al.* 1988). Spadefoot toads are widely distributed and estivate in a variety of habitat types but are generally restricted to ephemeral pools and stock ponds for breeding. They are vulnerable to local extirpation due to reduction in available breeding sites. This species was reported from a small pond on the south side of the San Dieguito River and east of I-5 (MEC 1993).
		Other Sensitive Plant Species
Red Sand-Verbena *(Abronia maritima)*	Federal: none State: none CNPS: List 4	This fleshy herbaceous perennial grows in prostrate mats on well-developed beach dunes. It occurs optimally on semi-stabilized dunes away from the heavy foot-traffic of humans, which has severely degraded habitat on most of the Southern California beaches. It is now very restricted on such beach dunes. It is reported in San Diego County, Orange County, Los Angeles County, Santa Catalina Island, San Clemente Island, San Nicolas Island, Santa Cruz Island, Anacapa Island, San Miguel Island, Ventura County, Santa Barbara County, San Luis Obispo County, and Baja California. Red sand-verbena has been found near the mouth of the San Dieguito River. Other nearby locations include Cardiff, Torrey Pines Beach, Agua Hedionda Lagoon, and a site north of Via de la Valle and west of El Camino Real (Reiser 1994).

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region

Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
Other Sensitive Plant Species		
Lewis's Evening Primrose *(Camissonia lewisii)*	Federal: none State: none CNPS: List 3	This small annual grows in very sandy substrates near the beach, typically on beach bluffs. It is severely reduced in numbers along the immediate coast, but is locally abundant north of San Dieguito Lagoon in open coastal habitat similar to that within the study area. The species range includes San Diego County, Orange County, and Los Angeles County, as well as Baja California, Mexico. The closest population is located on an isolated hillside abutting Penasquitos Lagoon, adjacent to the freeway. Other known populations are in San Luis Rey, Crown Point, Mission Bay, Balboa Park, and the south end of San Diego Bay (Reiser 1994). This species has moderate potential to be present in sandy openings within the study area. Because of its ephemeral habitat and small stature, this species can be easily overlooked in areas of potential habitat. About 10 individuals were found offsite at the base of bluffs north of the river mouth during surveys conducted for this project.
Sea Dahlia *(Coreopsis maritima)*	Federal: none State: none CNPS: List 2	Sandstone cliffs near the ocean are the preferred microhabitat of sea dahlia. The moist sea breezes are presumably a significant factor in providing optimal habitat for this perennial. Gaviota fine sandy loams are utilized at the Point Loma Subbase while the Torrey Pines population grows on Terrace Escarpment sandstone. Sea dahlia typically occurs on steep, ocean-facing, highly eroding slopes where competition from other shrubs is limited. Absence of herbivory may also play a role in the existing cliff-side locales. This plant is known from San Diego County and Baja California, Mexico. The largest neighboring population of sea dahlia is at Torrey Pines Preserve. Smaller populations are located north of the terminus of Swallowtail Drive in Encinitas and north of Manchester Road in Encinitas. Sea dahlia populations have also been reported northwest of the Del Mar Racetrack, in the Crest Canyon drainage in Del Mar (just south of the study area), and west of Fourth Street in Del Mar (Reiser 1994) Previous information concerning sea dahlia presented in the San Dieguito Lagoon Enhancement Plan (PSBS 1980) indicated that only seven individual plants were known occurring at two separate locations (coastal scrub) within the project area (MEC 1993). During the MEC (1993) survey, no sea dahlia were found within the site. Recent surveys (SAIC 1998) also did not identify the presence of this species; however, it is capable of growing in the salt marsh habitat located east of Camino Del Mar.
Del Mar Mesa Sand Aster *(Corethrogyne filaginifolia* var. *linifolia)*	Federal: none State: none CNPS: List 1B MSCP	Typical habitat of the Del Mar sand aster is coastal mixed chaparral in sandy, open locales. This form of the widely ranging cudweed aster seems to thrive on partially disturbed sandy soils, suggesting that habitat can be created given the proper geology and soils. Terrace Escarpments are mapped in La Zanja Canyon and at a number of sites where this aster grows. It has a limited range in the Del Mar region but can be locally common in sandstone habitats. This species was considered for federal listing status but was denied due to taxonomic questions; more genetic work is needed on the Del Mar plants to appropriately address its taxonomy. The Jepson Manual (Hickman 1994) has included this subspecies in *Lessingia filaginifolia* var. *filaginifolia* (California aster); however, the CNPS inventory (Skinner and Pavlick 1993) still identifies this subspecies as a separate taxon (Reiser 1994). A few (4-5) open, sprawling individuals of this species were found approximately one-third of the way up an eroded, 20-foot high, west-facing sandy bluff southeast of I-5, where it crosses the San Dieguito River. The bluff face is sparsely vegetated with non-native grasses and weeds, with a few individuals of native species including coast goldenbush and common tarweed, and is surrounded by ruderal weedy and non-native grass habitats.

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region

Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
Other Sensitive Plant Species		
San Diego Marsh-Elder *(Iva hayesiana)*	Federal: none State: none CNPS: List 2	Creeks or intermittent streambeds are the preferred habitat for this low-growing, conspicuous shrub. It is rarely situated on seeps near creeks. Typically, the riparian canopy is open allowing substantial sunlight to reach this marsh elder. Sandy alluvial embankments with cobbles are frequently utilized. Within the southwestern portion of San Diego County, this plant may occur in steep watercourses where other riparian vegetation is not present. While soils are usually mapped as Riverwash, these steeper locations can include various series including San Miguel-Exchequer or Huerhuero loams. This species occurs in San Diego County and Baja California, Mexico. San Diego marsh-elder is locally common along Penasquitos Creek from just east of I-15 west to I-5. A vigorous population grows on an well-developed riparian creek west of Lake Hodges and south of Del Dios Highway and the San Dieguito River. Smaller populations have been seen west of Black Mountain Road and north Penasquitos Canyon, and east of Fairbanks Ranch near Lusardi Canyon (Reiser 1994). Within the project area, a few individuals of this species were found at two locations. Three individuals were observed on the north edge of the river floodplain in seasonal wetland vegetated with bulrush, salt-marsh bulrush, loosestrife, cockle-bur (*Xanthium* sp.), nutsedge, spikerush, and a mixture of other common wetland and weedy herbaceous plants. Three additional individuals were observed within a sand deposit along the southern bank of the San Dieguito River, east of I-5.
Southwestern Spiny Rush *(Juncus acutus* ssp. *leopoldii)*	Federal: none State: none CNPS: List 4	This rush utilizes coastal salt marsh at brackish locales, alkaline meadows, and riparian marshes. At mid-elevations this species may occur in limited numbers along drainages with willow riparian vegetation or sycamore woodland. On the desert, spiny rush may grow at palm oases. A variety of soil types are used including Tujunga sand and Riverwash. Wherever water can pond along substantial seasonal drainages, this rush has potential habitat. It usually drops out of the flora at moderate elevations. It occurs in San Diego, Los Angeles, Santa Barbara, Ventura, Orange, and San Luis Obispo Counties, and Baja California, Mexico. Southwestern spiny rush is common in marshes throughout coastal San Diego County. It is frequently found on the eastern periphery of coastal lagoons such as Agua Hedionda, San Elijo, and San Dieguito (Reiser 1994). This species is present in the study area at scattered locations in high marsh habitats along the banks of San Dieguito River both upstream and downstream from I-5.
Estuary Sea-blite *(Suaeda esteroa)*	Federal: none State: none CNPS: List 4	The periphery of coastal salt marsh is the habitat of this fleshy shrub. Soils at such locales are usually mapped as Tidal Flats. Oftentimes, only a narrow band of terrain on the very periphery of the salt marsh is utilized by this species. The species is rare and sporadically distributed at higher elevations of coastal salt marshes. It occurs in San Diego, Ventura, Orange, Los Angeles, and Santa Barbara Counties, and Baja California, Mexico. The closest populations of estuary sea-blite occur in the vicinity of San Diego Bay. It also occurs within the Federal Wildlife Refuge at Imperial Beach, east of Seacoast Drive. Estuary sea-blite was not observed in recent surveys of the project area; and is considered to have a low potential for occurring on-site given the lack of historic records and its absence from other coastal lagoon where seasonal closures of the mouth eliminate tidal flux for long periods.

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region

Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
Other Sensitive Plant Species		
Woolly Sea-blite *(Suaeda taxifolia)*	Federal: none State: none CNPS: List 4	This herbaceous perennial is usually restricted to coastal salt marsh; rarely it grows in peripheral scrublands adjacent to salt marshes or as isolated plants along beaches, but can be locally common in coastal salt marsh habitat. Its distribution includes San Diego, Orange, Los Angeles, Ventura, and Santa Barbara Counties; Anacapa, Santa Barbara, San Clemente, Santa Cruz, Santa Catalina, San Nicolas, and Santa Rosa Islands; and Baja California, Mexico. In San Diego County, woolly sea-blite occurs all along the coast. Populations are known to exist in San Dieguito Lagoon, as well as in San Elijo Lagoon, Batiquitos Lagoon, Agua Hedionda Lagoon, and Mission Bay. Woolly sea-blite was found in limited numbers within high salt marsh habitats of the project site on both sides of I-5 during surveys for this project
Species of Local Concern		
Birds		
Canada Goose (*Branta canadensis*)	Federal: none State: none MSCP	Canada geese occur throughout the United States and Canada (NGS 1987). They are considered an abundant but localized winter visitor to San Diego County, where wintering populations have declined due to the loss of wetlands / open fields (Unitt 1984). A flock of Canada geese was observed in December 1998, and they have been regular winter visitors during prior years (MSCP 1995) (Merkel & Associates, staff observations). A recent study by Manning (USFWS 1994b) showed that the San Dieguito River Valley is an important foraging area for wintering populations of Canada geese, from the end of November until the beginning of March. These birds roost nightly at other locations, primarily San Elijo Lagoon. During the day, however, about 30% of the geese in the valley were found using seasonal salt marsh, agricultural, and non-native grasslands within the project site, east of I-5. The other 70% were found on private property (Fairbanks Ranch) located upstream from the project site.
Species of Local Concern		
Birds		
White-tailed Kite (*Elanus leucurus*)	Federal: none State: SA, P	The white-tailed kite's range extends along the Pacific Coast northward into Oregon and southward into northern Baja California, Mexico, with California's central valley and coastal plain as centers of activity (Johnsgard 1990). Within San Diego County there is an influx of birds in the fall / winter (Unitt 1984). Local breeding birds primarily occur on the coastal plain, and a few pairs nest at inland, foothill locations; this species is quite uncommon at higher elevations and in the desert (Unitt 1984). Records indicate kites were historically uncommon in San Diego County prior to large-scale urban expansion. Marshes and grassy bottomlands, flanked by large native or non-native trees, are favored sites for winter roosts. The Southern California coastal plains occupied by kites are undergoing rapid, large-scale habitat conversion due to residential development. While historic population fluctuations have made their present status difficult to determine, the numbers of breeding individuals are thought to be declining locally, and wintering populations may be diminishing as well due to loss of winter foraging habitat and communal roost sites. Two pairs of white-tailed kites are believed to have nested in the study area, based upon consistent observations of kites on each side of I-5 (Merkel & Associates, staff observations 1998) (SAIC, staff observations 1998).

Table 3.4-3. Rare, Threatened, Endangered, and Sensitive Species in the Project Region

Common Name, Scientific Name	*Current Listing*	*Status, Distribution, and Habitat Use*
		Reptiles
Two-striped Garter Snake (*Thamnophis hammondi*)	Federal: none State: SA	The two-striped garter snake ranges north as far as the South Coast Ranges west of the San Joaquin Valley, south to the Peninsular Range and the Southern California coast (Stebbins 1985). It is typically found in the vicinity of creeks, rivers, and freshwater marshes. This species is occasionally found in stock ponds and in the spring frequents vernal pools and adjacent mesic areas (Merkel & Associates, staff observations). Peripheral habitats can include chaparral, sage scrub, and woodlands, but there is usually at least a seasonal source of water nearby. Once widespread throughout its range, this species is extremely vulnerable to extirpation due to recent wetland habitat degradation and urban encroachment. Non-native fish and bullfrogs also prey on young garter snakes. This species is given high potential to occur on-site due to the extensive amount of suitable habitat.
		Invertebrates
Salt Marsh Skipper (*Panoquina errans*)	Federal: none State: SA MSCP	This species occurs in narrow coastal strand from Santa Barbara County to southern tip of Baja California. This species is dependent on high salt marsh supporting its larval host plant, salt grass (*Distichlis spicata*). The regional reduction in salt marsh habitat has extirpated this species from much of its historic range. This butterfly occurs in salt grass of the high marsh located throughout the lagoon study area (MEC 1993).

Key: FE = Federal Endangered; FT = Federal Threatened; SE = State Endangered; ST = State Threatened; FP = Fully Protected (State); SP = Specially Protected (State); SA = Special Animal (State); SSC = Species of Special Concern; MSCP = Multiple Species Conservation Program; CNPS List 1B = Plants rare, threatened, or endangered in California and elsewhere; CNPS List 2 = Plants rare, threatened, or endangered in California but more common elsewhere; CNPS List 3 = Plants about which we need more information — a review list; CNPS List 4 = Lists of limited distribution — a watch list

3.5 NATURAL RESOURCES

This section addresses mineral resources and agricultural resources.

3.5.1 Mineral Resources

The following discussion focuses on the regional significance of aggregate resources that are actively mined in San Diego County. No other mineral resources of value are expected within the project site.

Aggregate consists of sand, gravel, and crushed rock. Aggregate is considered a mineral commodity and provides bulk and strength for a multitude of uses in metropolitan areas, especially in developing areas where new construction is common. Sand and crushed rock are used as aggregate in Portland cement concrete (PCC) and asphaltic concrete (AC). Blocks of granite rock are quarried for decorative rock, monuments, and surface plaster. Large irregular blocks of stone are quarried for use as riprap. Decomposed granite is taken from pits for use as a base under road pavements and cold-mixed asphaltic pavement.

Aggregate materials are classified as either reserves or resources. Reserves are defined by the California Division of Mines and Geology (CDMG) as the "aggregate material believed to be acceptable for commercial use that exists within property boundaries owned or leased by an aggregate producing company, and for which permission allowing extraction and processing has been granted by the proper authorities." Aggregate resources include "reserves as well as all similar potentially usable aggregate materials that can be economically mined in the future, but for which no use permit allowing extraction has been granted."

The scarcest aggregate deposits in San Diego County are those which are suitable for use as PCC aggregate. The materials specifications for PCC aggregate are more restrictive than for other aggregate types. As a result, fewer deposits satisfy these specifications.

The State Mining and Geology Board has designated areas within San Diego County as having aggregate resources of regional significance. This information has been generated for the benefit of local lead agencies, as specified by the Surface Mining and Reclamation Act of 1975. Section 1, Subsection 7 of the State Mining and Geology Board Guidelines for Classification and Designation of Mineral Lands, adopted in 1978, requires the State Geologist to review mineral land classification information after a period of no longer than 10 years to determine whether reclassification and/or revision of projected requirements of construction materials is necessary (CDMG 1996).

The project site lies within the western San Diego County Production Consumption Region (P-C Region), as identified in CDMG Open-File Report 96-04. The report identifies areas according to the presence and absence of significant sand and gravel deposits through the development of a mineral resource zone (MRZ) classification system. Under the four possible classifications within the western San Diego County P-C Region, the project site is classified as an MRZ-1 region. The MRZ-1 classification refers to areas where adequate information indicates that no significant mineral deposits are present or where it is judged that there is little likelihood for their presence. This zone is applied where well-developed lines of reasoning, based upon economic geologic principles and adequate data, demonstrate that the likelihood for occurrence of significant mineral deposits is nil or slight.

The Conservation Element of the County of San Diego General Plan identifies the region of the county with the largest quantity of aggregate deposits and the greatest market for construction quality aggregate as the metropolitan market area, which is the area located south of the San Dieguito River Valley and west of the Laguna Mountains (San Diego County 1990), outside the project boundaries.

3.5.2 Agricultural Resources

3.5.2.1 Overview of Agricultural Resources in the General Project Area

Agricultural resources in the vicinity of the proposed project site are shown on Figure 3.5-1. All mapped categories are a minimum of 10 acres, with the exception of Grazing and Water, which are a minimum of 40 acres. Most of the area immediately surrounding the project site is classified as Urban and Built-up land or Other (definitions of important farmland categories are provided in Table 3.5-1). Most agricultural land in the immediate project vicinity lies east of the site in and near Gonzalez and McGonigle canyons. Other important farmland in the vicinity is generally found in canyons and valleys east of I-5.

San Diego County has experienced a steady loss of agricultural land due to an increase in the amount of Urban and Built-up Land over the past decade, as shown on Table 3.5-2. The amount of land actually under production has increased from 77,609 acres in 1987 to 170,917 acres in 1997, however (San Diego County Department of Agriculture, Weights & Measures 1998). Details regarding the amount of land currently in production in San Diego County and the economic value of agricultural production are included in section 3.15.

3.5.2.2 Agricultural Resources on the Project Site

Farmland classifications within the project site boundaries and the immediate vicinity are shown on Figure 3.5-2. A roughly 34-acre parcel of land classified as Farmland of Statewide Importance overlaps a portion of the eastern part of the site and extends east and south of the site. About 27 acres of a potential offsite disposal site, DS36, also share this classification. Additionally, a 43-acre parcel of Prime Farmland is located in the northeastern portion of the site just south of Via de la Valle; it adjoins 152 acres of land classified as Farmland of Local Importance.

Tomatoes currently are grown on several parcels of irrigated land located in the northeastern and southeastern portions of the project area, as shown on Figure 3.1-2, section 3.1. The largest parcels included within the restoration area boundaries together comprise about 83 acres. These parcels correspond to the area classified as Prime Farmland and portions of the land classified as Farmland of Statewide Importance as shown on Figure 3.5-2. DS36 also contains about 24 acres of land under cultivation. A portion of the approximately 600 acres of the project site that are vacant includes land formerly used for agriculture.

Table 3.5-1. Definitions for Important Farmland Categories

Farmland Category	*Definition*
Prime Farmland	Land that has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. Prime Farmland must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.
Farmland of Statewide Importance	This land is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to hold and store moisture. Farmland of Statewide Importance must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.
Unique Farmland	This is land of lesser quality soils used for the production of specific high economic value crops at some time during the two update cycles prior to the mapping date. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. Unique farmland is usually irrigated, but may include nonirrigated orchards or vineyards as found in some climatic zones in California. Examples of crops on Unique Farmland include oranges, olives, avocados, rice, grapes, and cut flowers. This category does not include publicly owned lands for which there is an adopted policy preventing agricultural use.
Farmland of Local Importance	This is land of importance to the local agricultural economy and is determined by each county's Board of Supervisors and local advisory committees. Examples of this type of land could include dairies, dryland farming, aquaculture, and uncultivated areas with soils qualifying for Prime Farmland and Farmland of Statewide Importance.
Grazing Land	Grazing land is land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock.
Urban and Built-up Land	This is used for residential, industrial, commercial, construction, institutional, and public administrative purposes; railroad yards; cemeteries; airports; golf courses; sanitary landfills; sewage treatment plants; water control structures; and other development purposes.
Other Land	Other land is that which is not included in any of the other mapping categories. The following types of land are generally included low-density rural development; brush, timber, and other lands not suitable for livestock grazing; government lands not available for agricultural use; roads systems for freeway interchanges; vacant and nonagricultural land larger than 40 acres in size and surrounded on all sides by urban development; confined livestock facilities of 10 or more acres; strip mines and borrow and gravel pits; a variety of other rural land uses.
Water	Water areas with an extent of at least 40 acres.

Note: None of these categories includes publicly owned lands for which there is an adopted policy preventing agricultural use.
Source: Department of Conservation, no date.

Table 3.5-2. San Diego County Land Use Conversions (1986 to 1996)

	NET ACREAGE CHANGED					
Land Use Category	*1984-86*	*1986-88*	*1988-90*	*1990-92*	*1992-94*	*1994-96*
Prime Farmland	-3,178	-563	371	-115	-217	-700
Farmland of Statewide Importance	-11,599	-482	228	-1,078	-504	-58
Unique Farmland	-1,255	1,540	1,591	-359	-1,310	-1,414
Farmland of Local Importance	15,701	-3,817	-4,228	-4,735	2,016	679
Important Farmland Subtotal	**-331**	**-3,322**	**2,038**	**-6,287**	**-15**	**-1,493**
Grazing Land	-3,918	-3,874	-3,992	-5,939	-1,546	-1,897
Agricultural Land Subtotal	**-4,249**	**-7,196**	**-6,030**	**-12,226**	**-1,561**	**-3,390**
Urban and Built-up Land	11,277	9,981	13,214	9,273	4,425	5,584
Other Land	-7,028	-2,813	-7,284	2,953	-2,918	-2,194
Water Area	0	28	100	0	54	0
Total Area Inventoried	2,165,074	2,167,896	2,167,896	2,167,895	2,167,895	2,166,692

Source: Department of Conservation 1998b

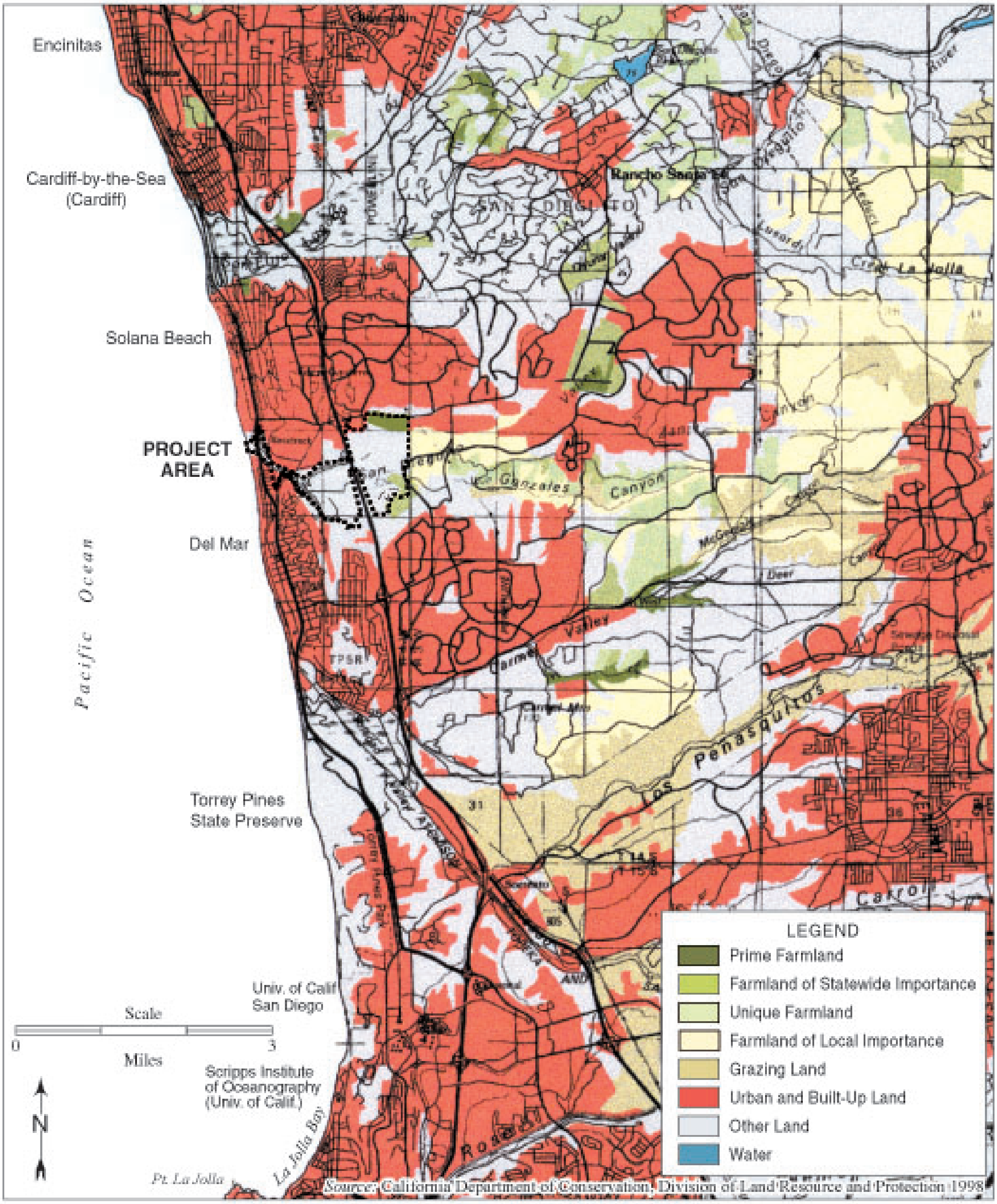


Figure 3.5-1. Important Farmland in Northwestern San Diego County

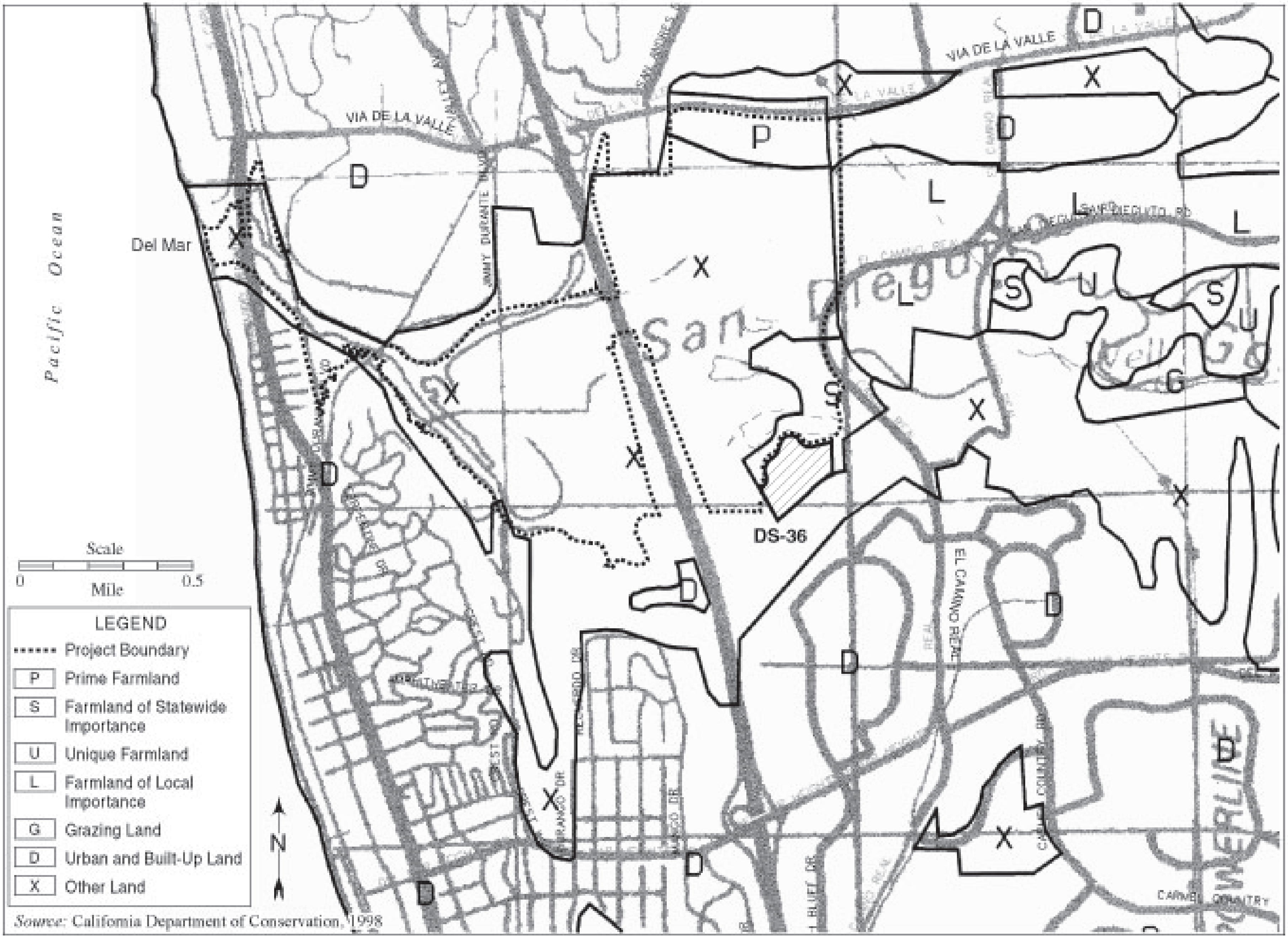


Figure 3.5-2. Important Farmland within and near the Project Boundaries

3.6 LANDFORMS AND VISUAL QUALITY

3.6.1 Landforms

The project study area, which extends from El Camino Real west to the Pacific Ocean, consists of a broad, relatively flat floodplain surrounded by gentle to relatively steep hillsides and coastal bluffs. The most prominent landforms within and adjoining the project site include the following:

- Beach area located to the north and south of the river mouth;
- Steep, east-facing slopes of Scripps Bluff, located at the coast just to the north of the river mouth;
- Existing tidal basin located in the Fish and Game Ecological Reserve;
- Remnant seasonal wetlands located just to the east of I-5 and south of the river;
- Eroded, west-facing bluff face also located east of I-5 and south of the river; and
- Naturally vegetated hillsides near the southeast edge of the study area that separate the lower lying properties within the river valley from the Carmel Valley community.

The San Dieguito River Park Concept Plan (JPA 1994a) identifies the San Dieguito Lagoon as the most prominent landform feature in this area.

Ground surface elevations within the study area range from below sea level at the beach to approximately 170 feet above MSL at the southeasternmost corner of disposal site DS36 (Figure 3.6–1). Elevations on the airfield property (location W1 on the plan views of the various alternatives) range from 8.3 to 9.5 feet above MSL. The Horseworld property, owned by SCE, is located to the east of I-5 and entirely within the floodplain, with current elevations ranging from 7.5 to 12 feet above MSL. The property to the northeast, the Via de la Valle property, includes portions of the river floodplain, as well as a relatively gentle slope the rises out of the floodplain to Via de la Valle. The top of this slope ranges from approximately 35 feet MSL at the northwest property boundary to a high point of about 52 feet above MSL.

To the east of I-5 and south of the river, the characteristic landforms include the floodplain and a slightly higher land mass that extends out as finger ridges from El Camino Real west toward I-5. Elevations in the floodplain average about 10.5 feet above MSL, while the adjoining ridges range from 20 feet above MSL near the western edge to about 60 feet MSL near El Camino Real. This higher landmass gradually rises in elevation with the lower elevations occurring in the northwest and steadily increasing to southeast where elevations exceed 130 feet above MSL.

Two of the disposal site options being considered include the Del Mar Fairgrounds parking lot and an area immediately to the east referred to as the Surf and Turf property. Both of these sites are located within the floodplain. Elevations vary from 6 to 8 feet above MSL on the parking lot. The Surf and Turf property ranges in elevation from a low of about 5.5 feet above MSL near the southeast corner to about 12 feet above MSL at the northwest boundary.

3.6.2 Visual Quality

Unobstructed views of the project site are available from numerous public roads and open space areas throughout the western river valley. The views from these public areas are described from west to east in the following paragraphs. Several photographs are also provided to illustrate the visibility of the restoration area. These photographs, along with a figure showing the location from which these photographs were taken, are included in section 4.6.

Views from the Beach

From the beach, views of the project site are limited to those of the river mouth. Long-distance views to the east are blocked by the Highway 101 Bridge. Views of the river mouth vary depending upon hydrologic conditions. For example, in December 1998, the river formed a channel that allowed water from upstream to flow into the ocean and tides to flow east into the lagoon. However, by May 1999, the river mouth had closed and the view from the beach was of a wide sandy beach stretching the entire length between Scripps Bluff Preserve and the homes located along Sandy Lane to the south.

Views from Scripps Bluff Preserve Overlook

Much of the project site is visible from the Scripps Bluff Preserve Overlook. The closest views are of the river mouth and Highway 101. Also in immediate view is the river channel between Highway 101 and Jimmy Durante Boulevard. A portion of the south channel that connects the river to the Fish and Game property, located beyond the Jimmy Durante Bridge, is also visible. Due to landform characteristics, I-5, and existing development on the Fairgrounds, it is difficult to see much of the area proposed for tidal restoration. Only glimpses of Areas W1 and W4 are provided. Portions of the far eastern end of the project, including the City of San Diego’s 105-acre parcel and the adjoining southern slopes of the river valley that are currently under cultivation, are visible from this vantage point.

Views from Highway 101

From the footpath, bike lane, or roadway where Highway 101 crosses the river mouth, views of the beach and ocean are available to the west. To the east, various levels of visibility are provided depending upon whether the view is from the north or southbound lanes. The river channel between the Highway 101 Bridge and the Jimmy Durante Bridge is visible; however, for much of the distance across the bridge, the distant views of the valley are blocked by the racetrack grandstand. Near the southern end of the bridge, the southern slopes of the river valley, including the location of proposed disposal site DS36, are visible.

Views from the Paved Walkway between Highway 101 and the Railroad Bridge

Looking west from this public walkway, views of the beach and river mouth are blocked by the Highway 101 Bridge, but much of the eastern end of the project is visible from this location. Along the pathway, views of the river channel dominate the foreground. The railroad and Jimmy Durante bridges are very visible. Also included in the viewshed are the I-5 embankment and the southern slopes of the San Dieguito River Valley.

Views from Jimmy Durante Boulevard

There is limited visibility of the western project area from Jimmy Durante Boulevard due to the roadway’s super-elevated curve design. Glimpses of the airfield property can be seen from the Jimmy Durante bridge, as can the riverbanks to the east and west of the bridge. To the west, the

Figure 3.6-1. Topographic Characteristics of the Western San Dieguito River

main view is of that portion of the river channel that occurs between Jimmy Durante Boulevard and the railroad bridge.

Views from the Grand Avenue Bridge

The main views from the Grand Avenue Bridge are of the restored Fish and Game property and the airfield property. The riverbanks near the Jimmy Durante Bridge are also visible from this vantage point. Views of the project area east of I-5 are essentially blocked by the freeway embankment.

Views from I-5

Looking west from both the north and southbound lanes, the entire western end of the project site is visible from the freeway to the ocean. Views to the east include all of the area from the freeway east to beyond El Camino Real. Near the southern end of the river valley, the views from the freeway include side views of the north-facing slopes that extend from the freeway east to El Camino Real.

Views from Via de la Valle

Traveling east from Highway 101 along Via de la Valle, glimpses of the southern slopes of the San Dieguito River Valley are provided through the bottlebrush trees that line the Fairgrounds' northern border. Views are then blocked by buildings and elevational changes from the eastern end of the fairgrounds until just past San Andres Drive, well east of I-5. From about San Andres Drive to the western boundary of Horsepark, travelers along Via de la Valle have an unobstructed view of the valley and the southern slopes beyond. The slopes adjacent to Via de la Valle drop off quickly into the floodplain, allowing for sweeping views of the river valley. This portion of the valley is generally under various stages of cultivation, with views ranging from large open areas of weedy vegetation or freshly plowed fields with clear plastic protection to fully developed tomato fields. Several power lines cross the view corridor, including one that runs along the southern edge of Via de la Valle and several others that extend across the river valley to the edge of the floodplain and beyond. Open water is generally visible within the seasonal wetlands located just to the east of the I-5 embankment. The lower slopes of the valley's southern hillsides have been under cultivation for many years. The upper slopes support native coastal chaparral vegetation, which is preserved as dedicated open space. Views of the project area west of I-5 are blocked by the I-5 embankment.

Views from El Camino Real

From the San Dieguito River southward to just before the major curve on El Camino Real, travelers along El Camino Real can see the main portion of the floodplain between El Camino Real and I-5. The slopes along the northern edge of the river valley are visible; however, the views of the southern slopes are obscured by higher intervening landforms. Once through the curve, the southern slopes of the river valley come into view, as does the City of San Diego's 105-acre parcel. Distant views of areas south of the river are also available to northbound travelers through this stretch of the roadway. Near the southern extent of the agricultural fields, travelers on El Camino Real looking west have unobstructed views of the western river channel and ocean beyond.

Views from High Bluff Overlook Park

The most dramatic views of the project site are provided from High Bluff Overlook Park located along High Bluff Drive at the top of the southern river valley slopes. Views from this vantage point are from east of El Camino Real to the ocean, and well to the north of Via de la Valle. In the foreground, the naturally vegetated slopes at the top of the river valley's southern slopes are visible. Below the boundaries of the preserved open space, the view changes to that of cultivated fields that continue to slope down to an intermediate bluff top that overlooks the seasonal wetlands situated just to the east of the I-5 embankment. These seasonal wetlands are also visible from the overlook, as is a small teardrop-shaped wetland that generally only contains water during the rainy season. Also visible is a ribbon of riparian habitat that extends from El Camino Real west into the southern end of the seasonal wetlands. This riparian area supports native willows, as well as about 18 non-native eucalyptus trees at various levels of maturity. Five to eight larger eucalyptus trees also occur to the north of the riparian area near El Camino Real.

The broad floodplain extends north toward Via de la Valle with no noticeable elevational changes until the valley floor gently rises up to the existing roadway. The San Dieguito River bisects the floodplain, and glimpses of the water within the river are available from this vantage point. To the north of the river, the commercial shopping center located at the southeast corner of the I-5/ Via de la Valle intersection is visible. Behind the center on the Horseworld property are views of seasonal salt marsh and disturbed vegetation areas. Within the seasonal salt marsh, one can see open patches of white saltpan.

East of San Andres Drive, the views are of a gentle slope that is currently under cultivation. To the east is the 22nd District Agricultural Association's Horsepark property. Numerous equestrian facilities are visible, although somewhat screened by the non-native trees that line the northern edge of the river.

I-5 bisects the viewshed at an elevation significantly higher than the surrounding floodplain. The freeway slopes have been revegetated with coastal sage scrub species that give the slopes a brown tone during most of the year. Views from I-5 westward include the open water and restored salt marsh areas of the Fish and Game Ecological Reserve, located to the southwest of I-5. To the north of this resource area is the vacant land referred to as the airfield property. The airfield property appears as a flat weedy area that supports greenish brown vegetation in the winter. The site's appearance is brightened by the yellow hues provided by weedy mustard plants in the late spring, but it soon returns to its typical greenish brown tones by early summer. Beyond the airfield property are views of the San Dieguito River.

Farther to the north are the dirt overflow parking lots and driving range that are owned and operated by the 22nd District Agricultural Association. Some of the views of the parking lots are obscured by large truck trailers parked along the northern edge of the river. The typical height of these trailers is 13.5 feet. To the northwest is the Fairground's main paved parking lot, with the racetrack grandstand just beyond that to the northwest. Farther to the west are views of the river channel and the ocean.

Visual Significance of the Project Area

The San Dieguito River Park Concept Plan (JPA 1994a) identifies this area as the "western gateway to the river valley" and recommends that the "sweeping open space views" be preserved. This plan goes on to recommend that “view opportunities of the lagoon and ocean from trails and existing circulation routes” be preserved and where appropriate, enhanced. Although no state scenic highways or locally designated scenic routes have been established in the project area, the City of San Diego’s Progress Guide and General Plan (1989b) not only indicates that I-5 through the project area is eligible for state designation, but it also recommends I-5 for designation as a State Scenic Highway.

3.7 TRAFFIC, ACCESS, AND CIRCULATION

The study area roadway system includes the regional highways and local streets that provide access to the San Dieguito wetland restoration project site. The existing conditions relative to this roadway network are described below. Key streets and highways are illustrated on Figure 3.7-1.

Regional access to the project area is provided by I-5, a north-south freeway that bisects the project site and extends south to San Diego and north to the Los Angeles area. Within the study area, I-5 is eight lanes wide and has interchanges at Via de la Valle and Del Mar Heights Road.

Local access is provided by Via de la Valle, Del Mar Heights Road, El Camino Real, Camino Del Mar, Jimmy Durante Boulevard, San Andres Drive, San Dieguito Drive, and Grand Avenue. Via de la Valle (County Highway S6) is an east-west arterial route that extends from Camino Del Mar at the coast in the city of Del Mar to the Rancho Santa Fe community to the east. It runs along the north side of the San Dieguito Lagoon and has an interchange with I-5 near the northeast corner of the Del Mar Fairgrounds.

Del Mar Heights Road is an east-west arterial route that extends from Camino Del Mar at the coast in the city of Del Mar to the Carmel Valley community to the east. It is located approximately 1.5 miles south of the San Dieguito project site and has an interchange with I-5.

El Camino Real is a north-south trending arterial route that extends from Carmel Mountain Road in the Sorrento Valley area on the south to the city of Encinitas on the north. It crosses the San Dieguito River at the east end of the project site.

Camino Del Mar (Highway 101) is a north-south arterial route that runs along the coast through the city of Del Mar. North of Del Mar in the city of Solana Beach, the name of the road changes to Old Highway 101; while south of Del Mar in the Torrey Pines area, the name changes to North Torrey Pines Road. Camino Del Mar crosses the mouth of the San Dieguito River near the west end of the Del Mar Fairgrounds.

Jimmy Durante Boulevard is a north-south street that provides a link between Camino Del Mar and Via de la Valle along the south and east sides of the Del Mar Fairgrounds. It crosses the San Dieguito Lagoon near the south end of the fairgrounds.

San Andres Drive is a two-lane north-south street that intersects with Via de la Valle and extends south for one block into the project site and north into the city of Solana Beach. The proposed visitor's center, described in Chapter 2, would be accessed from San Andres Drive.

San Dieguito Drive is a north-south local street that runs south from Jimmy Durante Boulevard along the west side of the San Dieguito Lagoon. Grand Avenue was once an east-west local street that provided vehicular access from San Dieguito Drive to the old airfield property. Although the road surface and bridge that crosses the San Dieguito Lagoon still exists, access is restricted by a locked gate at the south end of the bridge. Racetrack View Drive is a two-lane east-west street that intersects San Dieguito Drive and extends east toward I-5 along the north side of Crest Canyon Park.

The responsible agency, classification, number of lanes, and current daily traffic volumes for the study area roadways are shown in Table 3.7-1.

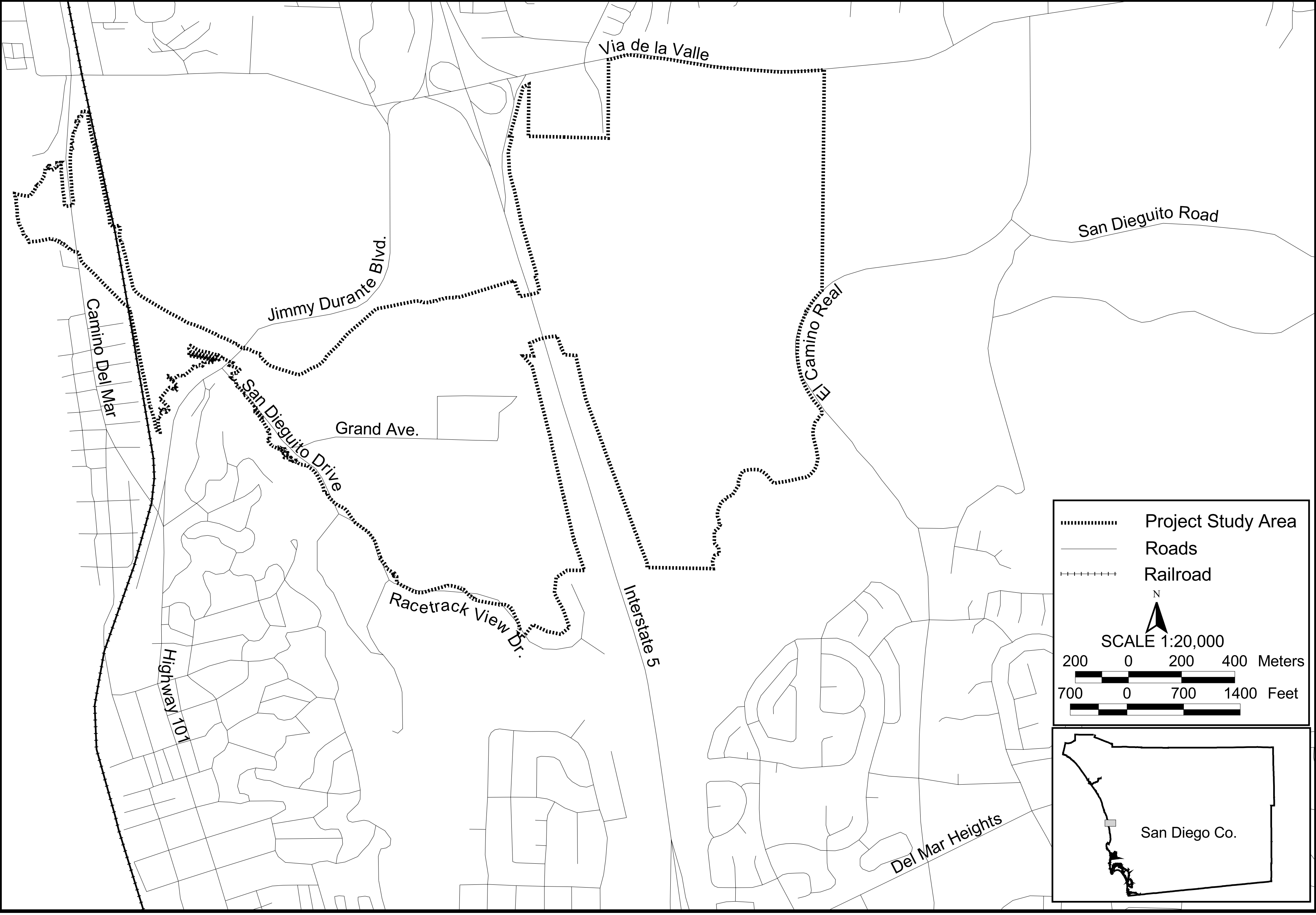


Figure 3.7-1. Key Streets and Highways in the Project Area

Table 3.7-1 Roadway Characteristics and Daily Traffic Volumes

Roadway/Segment	*Responsible Agency*	*Classification*	*No. of Lanes*	*Existing Daily Traffic Volume*	*Capacity*	*Level of Service*
Interstate 5						
N of Via de la Valle	Caltrans	Freeway	8	187,000	150,000	F
Via de la Valle to Del Mar Hts	Caltrans	Freeway	8	202,000	150,000	F
S of Del Mar Heights Road	Caltrans	Freeway	8	209,000	150,000	F
Via de la Valle						
E of Camino Del Mar	Del Mar / SD County	Major	2	15,700	15,000	F
Jimmy Durante Blvd to I-5	Del Mar / SD County	Major	4	33,500	40,000	D
I-5 to San Andres Drive	San Diego / SD County	Major	4	33,100	40,000	D
San Andres to El Camino Real	San Diego / SD County	Collector	2	21,000	15,000	F
E of El Camino Real	San Diego / SD County	Collector	2	15,200	15,000	F
Del Mar Heights Road						
Camino Del Mar to I-5	Del Mar / San Diego	Primary Arterial	6	35,000	60,000	B
I-5 to El Camino Real	San Diego	Primary Arterial	6	37,600	60,000	C
E of El Camino Real	San Diego / SD County	Primary Arterial	6	18,500	60,000	A
El Camino Real						
S of Via de la Valle	San Diego	Collector	2	12,300	15,000	D
N of Del Mar Heights Rd	San Diego	Major	4	12,700	40,000	A
Camino Del Mar						
S of Via de la Valle	Del Mar / SD County	Major	4 / 2	19,700	40,000	B
S of Jimmy Durante Blvd	Del Mar / SD County	Major	2 / 4	24,700	40,000	C
Jimmy Durante Boulevard						
S of Via de la Valle	Del Mar	Major	4	19,100	40,000	B
N of Camino Del Mar	Del Mar	Major	2	8,900	15,000	C
San Andres Drive						
N of Via de la Valle	San Diego / Solana Bch	Collector	2	6,600	10,000	C
S of Via de la Valle	San Diego	Collector	2	4,000	10,000	A
San Dieguito Drive						
S of Jimmy Durante Blvd	Del Mar	Collector	2	3,000	10,000	A
Grand Avenue						
E of San Dieguito Drive	Del Mar / San Diego	Local	2	negligible	8,000	A
Racetrack View Drive E of San Dieguito Drive	San Diego	Local	2	<500 (est)	8,000	A

Source: 22nd District Agricultural Association 1998; City of San Diego Development Services Department 1998.

3.8 AIR QUALITY

Air quality in the project area and surrounding region would be affected by emissions from construction and operation of the project. This section describes the existing air quality resource of the project region and applicable regulations that would apply to the various alternatives.

Air quality in a given location is defined by the concentration of various pollutants in the atmosphere, generally expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). The significance of a pollutant concentration is determined by comparing it to a national and/or state ambient air quality standard. These standards represent the maximum allowable atmospheric concentrations that may occur and still protect public health and welfare with a reasonable margin of safety. The national standards are established by the EPA and termed the National Ambient Air Quality Standards (NAAQS). The NAAQS are defined as the maximum acceptable ground-level concentrations that may not be exceeded more than once per year except for annual standards, which may never be exceeded. State standards, established by the California Air Resources Board (ARB), are termed the California Ambient Air Quality Standards (CAAQS). The CAAQS are at least as restrictive as the NAAQS and include pollutants for which there are no national standards. The national and state ambient air quality standards are shown in Table 3.8-1. As discussed in greater detail under "Local Regulations" below, the San Diego County Air Pollution Control District (SDCAPCD) establishes emission limitations and control requirements for stationary sources, based upon their source type and magnitude of emissions.

The main pollutants of concern considered in this air quality analysis include volatile organic compounds (VOCs), ozone (O_3), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_2), and particulate matter less than 10 microns in diameter (PM_{10}). Although VOCs or NO_x have no established ambient standards, they are important as precursors to O_3 formation.

Region of Influence

The area affected by project emission sources would include the western end of the San Dieguito River Valley and adjacent to roadways used by construction vehicles to transport dredging sediment offsite. Specifically identifying the region of influence (ROI) for air quality requires knowledge of the pollutant type, source emission rates, the proximity of project emission sources to other emission sources, and local and regional meteorology. For inert pollutants (other than O_3 and its precursors), the ROI is generally limited to a few miles downwind from a source. The ROI for O_3 may extend much farther downwind than for inert pollutants. Ozone is formed in the atmosphere by photochemical reactions of previously emitted pollutants called precursors. Ozone precursors are mainly NO_x and photochemically reactive VOCs. In the presence of solar radiation, the maximum effect of precursor emissions on ozone levels usually occurs several hours after they are emitted and therefore many miles from the source. Ozone and its precursors transported from other regions can also combine with local emissions to produce high local O_3 concentrations. Therefore, depending on the wind conditions, the ROI for O_3 could include much of the San Diego Air Basin (SDAB), which includes all of San Diego County.

Table 3.8-1. National and California Ambient Air Quality Standards

			National Standards [a]	
Pollutant	***Averaging Time***	***California Standards***	***Primary*** [b,c]	***Secondary*** [b,d]
Ozone	1-hour	0.09 ppm (180 µg / m³)	0.12 ppm (235 µg / m³)	Same as primary
Carbon monoxide	8-hour	9 ppm (10 mg / m³)	9 ppm (10 mg / m³)	—
	1-hour	20 ppm (23 mg / m³)	35 ppm (40 mg / m³)	—
Nitrogen dioxide	Annual	—	0.053 ppm (100 µg / m³)	Same as primary
	1-hour	0.25 ppm (470 µg / m³)	—	—
Sulfur dioxide	Annual	—	0.03 ppm (80 µg / m³)	—
	24-hour	0.04 ppm (105 µg / m³)	0.14 ppm (365 µg / m³)	—
	3-hour	—	—	0.5 ppm (1,300 µg / m³)
	1-hour	0.25 ppm (655 µg / m³)	—	—
PM_{10}	Annual (arithmetic mean)	—	50 µg / m³	Same as primary
	Annual (geometric mean)	30 µg / m³	—	—
	24-hour	50 µg / m³	150 µg / m³	Same as primary
Lead	Calendar quarter	—	1.5 µg / m³	Same as primary
	30-day average	1.5 µg / m³	—	—

Notes:
(a) Standards, other than for ozone and those based on annual averages, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.
(b) Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.
(c) Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that states implementation plan is approved by the EPA.
(d) Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

Baseline Air Quality

The EPA designates all areas of the United States as having air quality better than (attainment) or worse than (nonattainment) the NAAQS. The criteria for nonattainment designation varies by pollutant: (1) an area is in nonattainment for O_3 if its NAAQS has been exceeded more than three discontinuous times in 3 years, and (2) an area is in nonattainment for any other pollutant if its NAAQS has been exceeded more than once per year. Pollutants in an area are often designated as unclassified when there is a lack of data for the EPA to form a basis of attainment status. Presently, the SDAB is in nonattainment of the NAAQS for O_3. The western portion of the county (the portion of the County generally west of the interior desert region) was historically in nonattainment of the NAAQS for CO. The main sources of CO emissions are on-road vehicles. Due to a reduction in emissions caused by national emission standards for new vehicles and a state vehicle emissions testing program, the region has attained the CO standards since 1991. As a result, the EPA in June 1998 redesignated the region to attainment of the CO NAAQS. Consequently, the region is now considered a maintenance area for CO. The EPA considers the SDAB to be a serious O_3 nonattainment area.

The SDAB recorded nine exceedances of the national O_3 standard in 1998, although the transport of O_3 precursor emissions from the Los Angeles metropolitan area contributed to seven of the exceedance days. Due to its serious nonattainment rating, the SDAB must attain the O_3 standard by November 1999, although the Clean Air Act Amendments of 1990 (1990 CAA) allows for two one-year extensions beyond the final compliance date (through 2001). If the SDAB fails to attain the O_3 standard, the SDCAPCD will have to develop a new O_3 State Implementation Plan (SIP), outlining how additional emission control measures would bring the region into attainment.

The ARB also designates areas of the state that are in attainment or nonattainment of the CAAQS. An area is in nonattainment for a pollutant if its CAAQS has been exceeded more than once in three years. Presently, the SDAB is in attainment of the CAAQS for all air pollutants except O_3 and PM_{10}. The county is considered a severe ozone nonattainment area by the ARB. The severe designation is given to an area if the fourth highest pollutant concentration recorded in a 3-year period ranges between 0.16 and 0.20 ppm.

Ozone concentrations are generally the highest during the summer months and coincide with the period of maximum insolation. Maximum O_3 concentrations tend to be regionally distributed, since precursor emissions become homogeneously dispersed in the atmosphere. Inert pollutants, such as CO, tend to have the highest concentrations during the colder months of the year, when light winds and nighttime/early morning surface-based temperature inversions inhibit atmospheric dispersion. Maximum inert pollutant concentrations are usually found near an emission source.

Baseline Air Emissions

An emission rate represents the mass of a pollutant released into the atmosphere by a given source over a specified period. Emission rates can vary considerably depending on the type of source, time of day, and schedule of operation. Emissions for the entire SDAB are periodically updated by the APCD for planning purposes to forecast future emissions, to analyze emission control measures, and as input data for regional air quality modeling. The 1996 inventory represents the most current emissions data available for the SDAB that has been approved by the ARB (ARB 1998).

The total air emissions that occurred in the SDAB during 1996 are displayed in Table 3.8-2. These data show that (1) on-road vehicles emit a major portion of air pollutants within the SDAB, including 54 percent of the ROG, 73 percent of the NO_x, and 73 percent of the CO, (2) surface coatings and solvent usage produces 27 percent of ROG, and (3) and miscellaneous processes, such as construction and demolition and dust from paved/unpaved roads, produces 66 percent of the PM_{10} emissions. The Interstate 5 freeway is the largest source of air emissions in proximity to the project site.

Table 3.8-2. 1996 Emission Inventory for the San Diego Air Basin

(tons/day)

Source Type/Category	*TOG*	*ROG*	*CO*	*NO_x*	*SO_x*	*PM_{10}*
Stationary Sources						
Fuel combustion	5	2	21	16	2	1
Waste disposal	160	2	0	0	0	3
Cleaning and surface coatings	37	31	---	---	---	---
Petroleum production and marketing	64	5	---	---	---	---
Industrial process	5	4	---	---	---	3
Total Stationary Sources	**270**	**45**	**21**	**16**	**3**	**7**
Area-wide Sources						
Solvent Evaporation	35	34	---	---	---	0
Miscellaneous Processes	36	11	120	4	0	92
Total Area-wide Sources	**71**	**45**	**120**	**4**	**0**	**92**
Mobile Sources						
On-road vehicles	140	130	1100	160	3	5
Other mobile sources	18	17	130	38	5	4
Total Mobile Sources	**160**	**150**	**1300**	**200**	**8**	**9**
Total Natural Sources	**6**	**4**	**67**	**1**	**---**	**10**
Total San Diego County	**510**	**240**	**1500**	**220**	**11**	**120**

Source: ARB 1998. Data may reflect rounding errors.

Regional Climate

The climate of San Diego County is classified as Mediterranean, characterized by dry summers and wet winters. The major influences on the regional climate are the Eastern Pacific high pressure system, topography, and the moderating effects of the Pacific Ocean. Seasonal variations in the position and strength of the high pressure system are a key factor in area weather changes.

Precipitation

Precipitation within the project area occurs as rainfall. However, snowfalls do occur in the higher elevations of the Laguna and Cuyamaca Mountains to the east. Over 90 percent of the total annual precipitation in the project area occurs from November through April. Annual precipitation increases from about 11 inches per year along the coast to as much as 40 inches in the highest mountain ranges.

Although most of the regional precipitation in the project area is produced by winter storm systems from the north Pacific, summer rainfall can occur. This precipitation occurs from the influx of tropical moisture from Mexico into the region. Thunderstorms and rainshowers from these tropical air masses are infrequent and usually occur in the interior mountain and desert regions.

Temperature

Due to the moderating effect of the Pacific Ocean and lower elevation, temperatures are less extreme along the coastal sections of the project area compared to more inland locations. Maximum temperatures during the summer months average in the 70s (degrees Fahrenheit) along the coast to the low 90s in the interior foothills. Minimum summer temperatures average in the low 60s over most of the project area. Maximum temperatures during winter months average in the 60s. Minimum winter temperatures are usually in the upper 40s along the coast to the low 30s in the inland foothills.

Prevailing Winds

Concurrent with the presence of the Eastern Pacific High west of California, a thermal low pressure system persists in the interior desert region due to intense insolation. The resulting pressure gradient between these two systems produces a westerly, onshore air flow in San Diego County for most of the year. Sea breezes usually occur during the daytime and disperse air pollutants toward the interior regions. During the evening hours and colder months of the year, sea breezes are often replaced by land breezes that blow in the opposite direction toward the offshore areas. This is the case at the project site, where relatively cold air drains out of the San Dieguito River Valley and produces easterly winds.

During the colder months, the Eastern Pacific High often combines with high pressure over the continent to produce extended periods of light winds and low-level inversion conditions in the region. These atmospheric conditions can produce adverse air quality. Excessive build-up of high pressure over the continent can produce a “Santa Ana” condition, characterized by warm, dry, northeast winds. Santa Ana winds help to ventilate the air basin of locally generated emissions. However, Santa Ana conditions can also transport air pollutants from the Los Angeles metropolitan area into the region. When stagnant atmospheric conditions occur during a Santa Ana, local emissions, combined with pollutants transported from the Los Angeles metropolitan area, can lead to significant O_3 impacts in the project area.

Applicable Regulations and Standards

Air quality regulations were first promulgated by the EPA with the implementation of the federal Clean Air Act (CAA) in 1969. This act established the NAAQS and delegated the regulation of air pollution control to the states. The *CAA Amendments of 1977* established air quality planning processes and required areas in nonattainment of a NAAQS to develop a SIP that demonstrates attainment of the NAAQS. The following section provides a summary of the federal, state, and local air quality rules and regulations that apply to the project actions.

Federal Regulations

The *CAA Amendments of 1990* (1990 CAA) established new federal nonattainment classifications, new emission control requirements, and new compliance dates for nonattainment areas. The nonattainment classifications are based on a design day value, which is the fourth highest pollutant concentration recorded in the nonattainment area during a 3-year period. The requirements and compliance dates are based on the severity of the nonattainment classification.

Local Regulations

1994 O_3 SIP Revision for the San Diego Air Basin, is a comprehensive plan to bring the SDAB into compliance with the national O_3 standard by the 1999 mandate for serious O_3 nonattainment areas. The *1994 SIP* demonstrates attainment of the O_3 standard with on- and off-road motor vehicle emission controls proposed by the ARB and existing stationary source emission controls currently adopted by the SDCAPCD. The EPA approved this plan in January 1997.

1998 Triennial Regional Air Quality Strategy (RAQS) Revision, is the plan to bring the SDAB into compliance with the CAAQS. This plan includes all feasible control measures that can be implemented for the reduction of O_3 precursor emissions. Control measures for stationary sources proposed in the *RAQS* and adopted by the SDCAPCD are incorporated into the *Rule and Regulations, County of San Diego APCD*. Since the CAAQS are more restrictive than the NAAQS, emission reductions beyond what would be required to show attainment for the NAAQS will be needed to comply with the state standards. Consequently, the focus of attainment planning in California has shifted from the federal to state requirements.

San Diego County Air Pollution Control District (SDCAPCD) Rules and Regulations (1999). The SDCAPCD is responsible for achieving and maintaining the state and national ambient air quality standards within the SDAB. This responsibility is performed by the regulation of stationary sources of air pollution. The *SDCAPCD Rules and Regulations* establish emission limitations and control requirements for stationary sources, based upon their source type and magnitude of emissions. Pursuant to Rule 10, persons that propose to operate a new or modified emission source must first obtain an Authority to Construct (ATC) from the SDCAPCD prior to construction. Final approval to operate is provided in the form of a Permit to Operate (PTO). SDCAPCD Rule 20, Standards for Granting Permits, and other New Source Review Rules (20.1 through 20.8), outline thresholds that trigger (1) the application of best available control technologies (BACT), (2) dispersion modeling analyses, and (3) emission offsets, as part of the ATC/PTO process. SDCAPCD Rule 1200, Toxic Air Contaminants — New Source Review, also states that any stationary source that requires an ATC/PTO and emits toxic air contaminants (TACs) must evaluate the potential health risks from these TACs as part of the permit process. Although not presently proposed as part of the project, use of a diesel-powered hydraulic dredge would require an ATC/PTO.

3.9 VECTORS AND ODORS

3.9.1 Vectors

This section discusses the prevalence and distribution of vector populations in the project area. The term "vector" is used to denote a carrier of disease organisms. The vector may be purely mechanical, as exemplified by houseflies spreading enteric organisms, or biological, wherein the disease organism multiplies or undergoes change within the vector, as exemplified by the development of encephalitic viruses in mosquitoes. Nuisance organisms also are addressed with the understanding that they are not generally considered disease carriers but do present nuisance effects to human and domestic animal populations.

3.9.1.1 Mosquitoes

Mosquitoes are small, fragile, two-winged insects that belong to the family *Culicidae*. Their distribution is worldwide, and several hundred species have been described. They are not only annoying pests, but some are known carriers of human and animal diseases. A basic requirement for completion of the mosquito life cycle and development of adult mosquitoes is the presence of standing water. Most adults remain close to their point of origin, but their traveling ability is heavily dependent on physical phenomena such as wind. Some mosquitoes feed on mammalian and other animal hosts, while others feed on fruits and plant nectars. Only the female mosquito has mouthparts developed for bloodsucking and, therefore, is the known or suspected vector of human diseases. In San Diego County, the only significant disease associated with mosquitoes is encephalitis, which can affect both humans and animals. It should be noted, however, that there have been very few encephalitis cases of mosquito origin in the County. No mosquito trapped in and around the project area has ever tested positive for encephalitic viruses within the past approximately 20 years (personal communication, MacBarron 1999). Mosquitoes in the project area are potential nuisances to human and animals. Secondary infections and allergic reactions resulting from the bite of any mosquito species exacerbate their nuisance effect. In San Diego County, the mosquito season typically occurs between April and October.

San Diego County has implemented an aggressive mosquito surveillance and abatement program in the San Dieguito River Valley, including the project area. Three trap stations are located in or around the project area: south of the lagoon along Racetrack View Drive, on El Camino Real near disposal site DS33, and east of the project area on San Dieguito Road west of the Fairbanks County Club (refer to Chapter 2 for general map of the project area showing these locations). Five species of mosquitoes are of potential concern in the project area, each of which is addressed in the following discussion (personal communication, MacBarron 1999).

The most important mosquito species of potential concern to human populations is *Culex tarsalis*. This mosquito can be a carrier of Western encephalitis, although as previously stated, this virus has not been found in any mosquito within San Diego County in many years. This mosquito is predominant in the summer months and thrives in freshwater and brackish water seasonal marsh areas (see Figure 3.4-1, section 3.4, which depicts existing habitats of these types). In the project area a site of potential concern is the seasonal marsh habitat located south of the lagoon (area S-5), west of I-5. The county performs annual mosquito abatement in this area. Other breeding areas for this species are in the vicinity of nesting site NS11 (area S-1), the triangular-shaped marsh area located south of the river channel between the railroad tracks and Jimmy Durante Blvd., the area around disposal site DS35 (area S-2 and F-1), the S-3 area south of the shopping center at the southeast corner of I-5 and Via de la Valle, and the marsh area (area F-3) immediately east of this shopping center. The county performs abatement in these areas on an as-needed basis.

Another mosquito species of potential concern, especially to horses, is *Aedes squamanger*. This mosquito is not known as a human disease vector, but is a vector for California encephalitis, which infects horses. This is of particular importance since the project area and immediate surroundings are occupied by a large horse population. Horses are present at the Del Mar Fairgrounds during racing season and at the Del Mar Thoroughbred Horsepark and San Diego Polo Grounds year-round. This mosquito has not been implicated as a human disease carrier, but, like all mosquitoes, it is a nuisance and annoyance. It is prevalent in the spring and generally occurs in the same areas as *C. tarsalis* (i.e., freshwater and brackish water seasonal marsh areas). The county performs abatement for this species in seasonal marshes of the project area on an as-needed basis during the spring.

Other mosquitoes are present in the project area, but are not suspected as disease vectors, only as human and animal nuisances. *Aedes taeniorhynchus* is prevalent in salt marsh areas west of the present lagoon and area SM-1. It is especially prevalent in the coastal salt marsh located immediately west of the fairgrounds (see Figure 3.4-1). This species occurs in the summertime and can become a nuisance for humans and animals at the fairgrounds during the Del Mar Fair and horse racing season. These areas are abated every year by county officials. Another species, *Aedes dorsalis,* has not been a major problem in recent years but has, in the past, experienced population explosions in the seasonal marsh areas, especially the area just south of the shopping center located at the southeast corner of I-5 and Via de la Valle. *Culex erythrothorax* is a summer and springtime mosquito that occurs in densely vegetated freshwater marshes. It is particularly predominant along the river both east and west of El Camino Real, largely outside the project area.

3.9.1.2 Other Vector and Nuisance Species

The Chironomid midge is often mistaken for a mosquito. It is a small, delicate insect that is mosquito-like in appearance, but lacks scales on the wings and does not have a long proboscis (it does not bite). Midges often occur in large swarms, usually in the evening, and the humming of these swarms can often be heard from a considerable distance. The seasonal, freshwater ponds on the east side of I-5 in the area of S-2 and F-1 (Figure 3.4-1) provide an ideal area for midge breeding. Swarms of midges have been reported in the neighborhood on the bluffs to the south, overlooking the project area. Midges have not been implicated in the transmission of disease; however, due to their large numbers, they are a human nuisance. The county has an aggressive abatement program for midges that entails introducing mosquitofish (*Gambusia affinis*) into the ponds. This fish eats the larvae of mosquitoes and midges as they hatch from eggs.

The project area does not present a favorable breeding ground for domestic flies, such as the housefly and lesser housefly, which can carry enteric diseases. Flies have been a problem at the fairgrounds in past years due to the large quantity of waste material generated from horses and other domestic animals, but this has no direct relevance to the project area. Ticks are no more of a problem in the project area than they are in the rest of the county. Ground squirrels, as potential carriers of the organism causing plague, are common in many upland areas in the project region (section 3.4). However, in the lower elevation areas of San Diego County, including the project area, there have been no reported cases of plague since the early 1940s, and only about 40 cases during that same period in the higher elevation areas of the county (personal communication,

J. Lang 1999). Therefore, there is no significant public health concern from this vector in the project region. Harvest mice, potential carriers of hantavirus, are also common in many upland areas including the project region (section 3.4); however, there have been no reports of human infection with this virus in San Diego County (personal communication, J. Lang 1999). Human contact with mice in the project area is minimal, and the predominant strain of the virus in these rodents is of less concern than the typical disease-causing strain. Therefore, the potential for hantavirus transmission to humans in the project area is low.

3.9.2 Odors

Odor conditions can develop seasonally in the project area, particularly in aquatic habitats, and detract from the aesthetic value. Algal die-offs can create strong odors that may last for a month or more during the summer. These strong odors are often characterized as having a “rotten egg smell” and can be a nuisance to nearby residents and visitors to the area. However, according to the California Department of Fish and Game, San Dieguito Lagoon generally does not have an odor problem because oxygen levels are high enough to prevent odors from decomposition of organic material (personal communication, T. Dillingham 1999). This is because the flow of the San Dieguito River keeps the dissolved oxygen levels high, and the mouth of the lagoon rarely stays closed long enough to deplete dissolved oxygen levels. The San Diego County Air Pollution Control District also stated that no reports of odors associated with the San Dieguito Lagoon have been logged (personal communication, Gary Hartnett 1999). The City of Del Mar, however, received numerous odor complaints in May 1999, likely due to decomposition under reduced oxygen conditions following the closure of the lagoon mouth in April 1999 (personal communication, M. Tuchscher 1999). These recent complaints follow a two-year period of no complaints.

Odors have been a historic problem at other lagoons in San Diego County. For example, in August 1997, San Elijo Lagoon had a major fish kill and subsequent odor-generating event due to unchecked algae growth and dissolved oxygen depletion. The odors were reportedly due to “lack of oxygen resulting from a combination of heat, evaporation and rampant algal bloom” (*San Diego Union-Tribune* 1997). To mitigate the loss of fish and odor, the county hired a heavy-equipment contractor to dredge the mouth of the lagoon. The public did not complain about any odors associated with the dredging, most likely because the odors associated with the previous fish kill were more severe.

The Batiquitos Lagoon Enhancement Project involved the dredging of approximately 3 million cubic yards out of the lagoon to permanently open the channel to the ocean (*San Diego Union-Tribune* 1994a). However, during some phases of the dredging project strong odors occurred that were described as a “rotten eggs” (*San Diego Union Tribune* 1994b). This was attributed to organic material in the dredged sediment. There are no sediment data from San Dieguito on compounds such as sulfides that are typically associated with odors such as these, so it is not possible to predict the odor potential. However, since San Dieguito has been a more open (tidally influenced) system than Batiquitos, prior to the enhancement project, it is likely that sulfide and organic levels, and therefore odor potential, is lower.

3.10 PUBLIC HEALTH/PUBLIC SAFETY

This section discusses current San Dieguito River characteristics as they relate to human activity in and around the river, established flood hazards, the existence of hazardous materials, degraded water quality, and wildlife in the project area and their potential to affect public safety under current configurations and conditions.

3.10.1 San Dieguito River and River Mouth

Public Use

The beach area around the San Dieguito River Inlet (the area west of the Camino Del Mar Bridge) is one of the most popular aquatic recreational locations in San Diego County. The beach area north and south of the inlet attracts sunbathers, swimmers, surfers, other water sport enthusiasts, and walkers. The beach area north of the inlet is known as Dog Beach and is one of the few beaches in the county that permits dogs as long as they are under the control of their dog owners. Mandatory leashing of dogs is required in the summer months but not the winter months. During the summer months, it is estimated that as many as 1,500 — 2,000 people visit the Dog Beach area each day, and that over 2,000 people per day can use the beach area south of the inlet extending to the main lifeguard office (Coast Boulevard) during the summer (personal communication, Vergne 1999). Approximately half of these people typically enter the water during each visit for swimming, surfing, or crossing the river to get from one side of the beach to the other. During the winter months the number of visitors decreases by about half. Approximately 750 to 1,000 visitors a day are common during favorable weather conditions in the winter. Typically, very few people other than surfers enter the water during the winter months unless very favorable weather conditions prevail. Occasional river crossing occurs during the winter.

The beach area east of the Camino Del Mar Bridge attracts fewer people than the beach area west of the bridge. Nevertheless, a significant number of people (e.g., 200 to 300 in the summer) visit this area each day for walking (with and without dogs) and other activities, such as volleyball. Occasionally, people in kayaks or some other type of small boat transit up the San Dieguito River, even though this is an illegal activity. It is possible for small boats such as kayaks to paddle a couple miles up the river, beyond the I-5 bridge. This area also attracts some swimmers — especially families with small children since the river current is minimal at and near slack tides, particularly in the summer.

Channel Characteristics

The location, size, and depth of the inlet channel west of the Camino Del Mar Bridge can be highly variable due to seasonal and yearly differences, especially those influenced by El Niño conditions (see section 3.2.3.5). However, the overall width or horizontal (generally north/south) extent of the channel is limited by the existing rock revetment on the south side and the bluff headland on the north side of the inlet. At times the river pattern flows approximately parallel to the revetment directly toward the ocean. At other times the river takes a turn to the northwest and flows closer to the bluff before reaching the ocean. The meandering of the river becomes less varied as it gets closer to the Camino Del Mar Bridge. The pattern and direction of river flow east of this bridge is for the most part fixed, except perhaps during extreme weather conditions with excessive river flows. The average inlet width varies from 50 feet east of the railroad trestle and Camino Del Mar

Bridge to 20 feet along the beach. Maximum inlet width varies from 260 feet east of the railroad trestle to 360 feet east of Camino Del Mar, to over 600 feet along the beach. In some cases, the river mouth closes and no channel cuts across the beach.

Channel Depth

Inlet channel depth is partially dependent on the width. Average depths from the shoreline to within 50 feet of the railroad trestle are 1 to 2 feet below mean sea level (MSL; approximately the same as NGVD), but have been as deep as 7 feet below mean sea level. This translates into water column depths (the depth of water in which a person would stand or wade) from 0 to 5 feet, with maximum depths even higher. Typical water column depths are around 2 to 3 feet. The depth of the inlet channel immediately west of the Camino Del Mar Bridge averages 2 to 4 feet below MSL representing an equivalent water column depth range of 2 to 7 feet. Maximum depths have been even higher than this, resulting in deeper water column depths. Several cut off wood pilings from older bridge supports are present in this area of the channel. The depths in this area are increased due to the typical increase in river current velocities as water moves through the more constricted portion of the inlet channel due to the presence of the bridge. One of the effects of the constriction and consequent increased river current velocities is local streambed degradation or scour, which deepens the channel. Average water column depths between the bridge and railroad trestle vary from 2 to 4 feet.. East of the trestle, water column depths average 2 to 3 feet.

Channel Currents

During a normal season average inlet channel currents are about 0.5 feet/sec (0.3 knots) but can reach to about 2.3 feet/sec (1.4 knots) during peak flows , as detailed in section 3.2.3.3. During atypical seasons (e.g., El Niño conditions) the average inlet channel currents are around 0.9 feet/sec (.5 knots) and can reach as high as 3.2 feet/sec (2 knots) during peak flows. An exception is in the immediate vicinity of the Camino Del Mar Bridge where current velocities can increase substantially. Maximum tidally induced currents in the channel near the bridge can exceed 3.1 feet/sec, while average velocities in this area are closer to 1.5 to 2 feet/sec (0.9 to 1.2 knots). The river flowing into the surf zone during major rainfall events is by far the strongest current. River flows at the bridge can be as high as 10 feet/sec (6 knots). The river flow may be slightly augmented by the existing ebb tidal flow leaving the lagoon. Rip currents at the surf zone can travel in excess of 1 foot/sec. Maximum rip currents during rainfall events can be much higher. As a general rule, river currents are stronger during the winter months.

Existing Safety Issues

The Del Mar beach area is under the jurisdiction of the city Lifeguard Department (personal communication, Vergne 1999). The safety record of Del Mar beaches is distinguished in that there has never been a recorded human death directly related to aquatic activities, such as swimming and surfing. During the summer months, a lifeguard tower is staffed near the bluff. When river currents are excessive, a second lifeguard patrols the inlet area on foot. During winter months, no lifeguards are posted in the inlet area, but they periodically patrol the area by vehicle. The Del Mar Lifeguard Office estimates that during the summer months, an average of six rescues per day takes place in the inlet area and related surf zone. The number of rescues in the winter months drops to approximately one or two per week.

Del Mar lifeguards have identified three scenarios in the inlet channel area that present the greatest potential hazards to public safety. The first scenario occurs in the surfzone directly in line with the river outfall, where strong river currents can add to rip currents. People trapped in the rip currents are drawn out into the ocean. The second scenario occurs in the deep channel area immediately west of the Camino Del Mar Bridge. People swimming and playing in the water at this location can be overcome by the currents, lose their footing and balance, and get drawn toward the ocean. This scenario is exacerbated by the presence of the many wood pilings that present additional hazards. The frequency of aquatic mishaps at this location can increase during ebb (outward-flowing) tides. The third scenario also occurs in the area around the bridge due to strong tidal flow into the lagoon. Under this scenario, people can be overcome by the currents and get drawn into the lagoon area. Unusually high tides (such as those that occur during spring and fall) add to the severity of the hazard. The presence of the wood pilings also exacerbates the potential hazards under this scenario.

3.10.2 Flood Hazards

Existing flood conditions, including FEMA 100- and 500-year inundation limits for the project area, are presented in section 3.2.1.2. In general, the Del Mar Fairgrounds and most of the project area west of I-5 are within the 100-year flood plain.

3.10.3 Sediments and Water

The principal sediment quality investigations that have been performed at the project site are in the former airport area. However, some additional sampling was conducted by the State Water Resources Control Board in 1997 near the Grand Avenue Bridge area, as discussed in section 3.3. Sub-surface sediment investigations are not relevant to this discussion since under existing conditions there is no reasonable pathway of human exposure (i.e., there is no human contact with these sediments since they are sub-surface). Surface sediments, however, do present the possibility of human exposure. A limited number of surface soil samples were collected in the former airport area in 1992 (MEC 1992). These results are also discussed in section 3.3.3. An oil-stained area of soil yielded 5,250 mg/kg TPH and 9,020 mg/kg TRPH. The only organic constituent detected was toluene at a concentration of 12.6 µg/kg. Another surface sample was collected near what may have been septic tank or oil/water separator. Benzene was detected at a concentration of 2.2 µg/kg, toluene at 80 µg/kg, ethylbenzene at 19.4 µg/kg and xylene at 43.5 µg/kg. None of these results exceed regulatory action levels or EPA Region 9 risk-based values.

As discussed in section 3.3.3, a 1999 study (Ogden 1999) measured the chemical properties of soils from discrete layers within borings collected at several locations within each of the Horseworld, southern wetlands, and lagoon areas. Ranges in values are presented in Table 3.3-3. All of these samples were collected from areas that are currently under water where the likelihood of direct human contact is negligible. Even if human exposure were possible under current conditions, only one parameter, arsenic, comes close to presenting a significant risk to human health using USEPA Region 9 risk-based values. The single, highest concentration of arsenic (3.0 mg/kg) was detected in a subsurface sample (Layer 2) at Horseworld. EPA Region 9 estimates that the 1×10^{-6} risk based concentration, under industrial types of exposures (which has a lower exposure duration and frequency than residential exposures), is 3.0 mg/kg. It should be emphasized that under current conditions there is no likely route of human exposure so the risk is negated. Potential risks to human health associated with the various project alternatives are discussed in section 4.10.

Based on available data, significant risk to human health associated with exposure of chemical constituents in surface water and groundwater in the project area under current conditions is not expected.

3.10.4 Wildlife

As indicated in section 3.4.5.2, rattlesnakes are present in the San Dieguito River Valley, typically encountered in the ruderal habitat located to the east of the beach (e.g., at least hundreds of feet east of Camino Del Mar). However, following significant storms, rattlesnakes have been washed down the river to the beach. Rattlesnake bites are not usually deadly to humans, especially when prompt medical attention is obtained. The bite, however, can lead to significant discomfort and affect human health.

3.10.5 Other Public Health and Safety Issues

The portions of the project area west of I-5 were part of a Naval Auxiliary Air Station during World War II. The Navy established a Lighter-than-Air (LTA) Base and provided mooring for up to two dirigibles (MEC 1992). The dirigibles were used to patrol Southern California waters for enemy submarines. The blimps used radar and magnetic anomaly detection equipment along with visual sightings. In the event of submarine detection, depth charge explosives were deployed from the LTA aircraft. Military improvements constructed at the facility included housing for 68 enlisted personnel and 25 officers, mess facilities for 100, a landing mat, oil surfacing, two mooring circles, fuel storage facilities, and five ordnance storage igloos. Very little remains of this facility, but there are still potential safety hazards as described below:

- Navy records indicate that when the facility was closed at the end of the World War II, the facility was decontaminated of all ordnance. The five ordnance storage bunkers were used for the storage of inert materials, pyrotechnics, small arms, fuels and detonators, and high explosives. Oral history suggests that target practice with live ordnance did not occur within the boundary of the military installation. The property was used as a civilian airport for 10 years with no documentation of ordnance ever being discovered (MEC 1992). Since the airport closed, the level of human activity in the airport area probably declined significantly but, nevertheless, there are no records of ordnance discoveries since the construction of the highway in approximately 1960. It is unlikely that any unexploded ordnance remains on the project area, but a measure of uncertainty still exists.
- At least four of the five ordnance storage bunkers remain on the property but are dilapidated. Each one is constructed of concrete, and concrete debris is scattered around each bunker. The only conceivable safety hazard presented by the bunkers is to children who might be inclined to explore in the airport area and enter one of these bunkers and slip, trip, or fall.

3.11 CULTURAL RESOURCES

3.11.1 Introduction

Existing conditions for cultural resources in the project area have been identified through record searches, literature review, conversations with previous project investigators, archaeological field surveys, archaeological monitoring of subsurface soil borings, and historic resource evaluation. As a result of these investigations, the project area has been completely inventoried for archaeological and historical resources. Appendix E is the archaeological and historical technical report for the project. Letters were sent to local Native Americans for comment. No comments have been received.

Site record and literature searches for the project area and vicinity were conducted in 1998 at the San Diego Museum of Man and the South Coastal Information Center at San Diego State University. Archaeological records of all known sites within the record search area were compiled and plotted on project maps. Previous cultural resource studies conducted within or immediately adjacent to the project area were collected and reviewed. The record searches were followed by personal communications with other archaeologists with previous experience in the project area. Archaeological reports, site records and other information on file at the City of San Diego Environmental and Planning Division also were inspected. Background research indicated that most of the project area has been previously surveyed at least once; many areas have been surveyed repeatedly. Although a number of archaeological sites have been recorded within the project area, they have been evaluated as insignificant because they lack integrity and research potential, are no longer present, or are isolated artifacts (Eighmey and Cheever 1993).

The literature search indicated a number of areas within the project had not been surveyed within the last 5 years, and City of San Diego guidelines required re-survey of these areas. Such a survey was conducted in the summer of 1998. The 1998 survey found only one cultural resource, the remains of the U.S. Naval Auxiliary Air Facility, Del Mar and its successor the Del Mar Airport. The resource was recorded on a State of California Primary Record and evaluated for significance. The evaluation concludes the site lacks integrity and does not meet criteria for listing in the California Register of Historic Resources or the National Register of Historic Places and does not otherwise meet any other state or local significance criteria (SAIC 1999).

In 1998 project archaeologists also monitored excavation of 24 subsurface soil borings within the project area in order to evaluate the potential for buried sites. No cultural remains were noted and none are expected. However, the potential for buried sites cannot be ruled out completely (SAIC 1999).

3.11.2 Cultural Setting and Recorded Sites

Archaeological research for northern San Diego County has identified at least two major cultural traditions, the Archaic and Late Prehistoric, based on general economic trends and material culture. For San Diego County, the Archaic generally includes the period from 9000 and 1300 years ago, while the Late Prehistoric includes from 1300 years to historic contact. The Historic Period covers the time from Spanish contact to the present (Gallegos and Associates 1993:1-12).

The San Dieguito River Valley has been a focus of archaeological research since Malcolm Rogers' work in the early 1920s (Warren et al. 1965). Recent investigations include a number of extensive cultural resource overview, survey, and testing/mitigation projects. These include Cardenas and Wade (1986); Eighmey and Cheever (1993); Eighmey and Cheever (1996); Gallegos and Associates (1993); Cardenas (1984), and Berryman and Woodman (SAIC 1999; see Appendix E).

Eighteen cultural resources have been recorded within the project boundaries. With two exceptions, sites recorded within the EIR/EIS project area were evaluated by Eighmey and Cheever (1993, 1996) and found to be insignificant in accordance with City of San Diego *Guidelines for the Determination of Significance of Archaeological Sites* and *CEQA Guidelines Appendix K*. Most sites were tested and found to be shallow deposits that had lost integrity due to 20 years of agricultural tilling (Eighmey and Cheever 1993). Other sites in the project area were either not re-located or were isolated artifacts that had been recorded as sites. With the exception of site W-3493 and the U.S. Naval Auxiliary Air Facility (later known as the Del Mar Airport), the site descriptions that follow are excerpted from Eighmey and Cheever (1993) or their later summary (Eighmey and Cheever 1996). Descriptions of site W-3493 and the airfield are based on Berryman and Woodman (SAIC 1999; see Appendix E).

CA-SDI-05957

> This site is located on a gently sloping ridge south of Via de la Valle . . . . Originally recorded by Richard Carrico, the site was described as a shell midden with over 300 artifacts on the surface. At the time it was recorded, Carrico noted the presence of flaked stone tools, manos, metates, and two types of pottery. At the time of the 1984 update (Hector 1984), the site's surface component measured 400 by 600 feet and a note was made that plowing and discing had obscured and disturbed surface constituents, greatly reducing the observable site materials.
>
> A 1988 RECON site check (Cheever and Wade 1989) confirmed the observations made in 1984. Only a light scatter of shell was noted on the surface and a single flake was the only surface artifact located. A cursory re-survey during the course of this investigation revealed that SDI-5957 has been severely impacted by intensive agriculture, specifically tomato farming. Very few shell fragments and no other artifactual material were relocated on the surface during the 1989 visit.
>
> This site was tested for importance during the course of cultural resource assessment for The Villages at Stallions Crossing (Eighmey and Cheever 1993). Testing included the excavation of 40 shovel test pits, six 1-meter sample units, and four mechanically excavated trenches. At the time of the fieldwork, the site area was planted in strawberries, corn, tomatoes, and squash. The southern portion of the recorded limits of the site was clear of all vegetation.
>
> The results of the excavation effort include the recovery of less than 20 grams of shell and 2 lithic artifacts. The site appears to have been destroyed by agricultural activities (Eighmey and Cheever 1996: 22, 25).

CA-SDI-07287

> This site was originally recorded during a 1979 RECON field survey by Charles Carrillo . . . . The site area was described as a disturbed scatter of flakes, stone tools, and shell. Some pottery was observed at the site. Hector (1984) observed pottery

on a remnant portion of the site on the north side of Via de la Valle and determined that the site measured 300 by 300 feet. Further observations were that the site probably contained a subsurface component.

Several flakes (one each of blue, red, and yellow agate), pieces of angular waste, three cores, a few tools, five pottery fragments, and a few fragments of shell were observed during the 1988 RECON site visit (Cheever and Wade 1989). The possibility of a subsurface deposit was again noted.

Inspection of this site during a 1990 visit . . . revealed a substantial and extensive surface scatter. Observed surface artifacts include large amounts of shell and Tizon Brown ware. Chert, obsidian, and metavolcanic debitage were present on the site at the time of this visit, as were mano and metate fragments.

A formal site importance assessment of this site was undertaken as part of the environmental review for The Villages at Stallions Crossing (Eighmey and Cheever 1993). The testing at this site included the excavation of 60 shovel test pits, ten 1-meter sample units, and four mechanically excavated trenches. At the time of the fieldwork, most of the recorded surface extent of the site was supporting mature tomato plants.

A number of flaked lithic artifacts and groundstone artifacts were recovered from this site. In addition, ceramic sherds and debitage were recovered from the site surface, samples units, and shovel test pits. A small amount of animal bone and shell were also retrieved (Eighmey and Cheever 1996: 22, 25).

SDI-5957 and SDI-7287 have demonstrated an absence of subsurface associations among the preserved artifacts and ecofacts and have become so widely dispersed as to be virtually nonentities from an archaeological standpoint. While there are preserved materials at SDI-7287, aside from their collection as curiosities they retain no meaningful scientific value . . . historic land use practices have destroyed both of these resources (Eighmey and Cheever 1993: 136).

CA-SDI-07288

This site, . . . as observed by Hector in 1984, consisted of one flaked lithic tool. Because no other cultural materials were observed at the time, the site was determined to be nonsignificant and no further measures were recommended. During the 1988 field check (Cheever and Wade 1989), the isolated tool was not relocated and no additional cultural materials were found. No further work has been conducted at this site, which appears to be an artifact isolate that is probably associated with SDI-7287. Based on the extensive plowing of the soil in these areas, movement of artifacts from a site location to a secondary setting appears to be a strong likelihood (Eighmey and Cheever 1996: 26).

CA-SDI-07289

This site was described by Hector in 1984 as a limited shell scatter. The site was relocated during the 1988 RECON field check (Cheever and Wade 1989) and the evaluation by Hector was confirmed . . . . The site consists of a very sparse surface scatter of marine shellfish remains with no other associated materials.

As with SDI-7288, it appears that SDI-7289 is a separate recording of displaced material from SDI-7287 (Eighmey and Cheever 1996: 26).

CA-SDI-07290

This site was originally recorded by Carrillo as a small scatter of shellfish debris and stone tools. Midden soil was observed in 1984 by Hector, who provided an estimated surface extent of 100 by 100 feet.

The surface boundaries of the site were verified during the 1988 RECON field check (Cheever and Wade 1989). Cultural materials observed in the field include a dense scatter of shell, one flaked lithic tool, and several flakes . . . . The integrity of the cultural resource deposit at this location has been greatly affected by agriculture. The prehistoric component is scattered and sparse, but is apparently overlain by a historic deposit that was previously unrecorded. Testing on this site was completed by RECON in 1990 and the site was determined to be important per the criteria of CEQA; however, it is unlikely that this site represents a significant resource area per the criteria of RPO [City of San Diego Resource Protection Ordinance] . . . (Eighmey and Cheever 1996: 26-27).

Review of the original testing report (Eighmey and Cheever 1993) provides additional data that support the conclusion that the site lacks integrity and significance. All historic and prehistoric materials were found intermixed in a 60-cm deep plowzone and lack stratigraphic integrity and context. The prehistoric materials were low in quantity, quality, and variety and consisted of 194 g of shellfish, two hammerstones, one core, two undifferentiated flake tools, 17 pieces of debitage, one mano, one undifferentiated ground stone artifact, and three pieces of pottery (Eighmey and Cheever 1993: 130-131). All flaked stone tools were from the surface of the site. The historic materials noted in 1993 include one circular, mortared bricked feature, a large pile of what appear to be foundation cobbles that have been stacked around existing pepper trees by agricultural workers, and a low density of domestic debris. The historic materials are believed to be associated with structures shown on the 1904 and 1935 USGS Del Mar quadrangle. The exact number and nature of these structures is unknown, but “This structure was probably a residence, and was accompanied by a masonry cased well or vertical cistern, which was later capped and equipped with a hand pump (Eighmey and Cheever 1993: 132).

Although the original report suggested there was a possibility (but no direct physical evidence) that the existing pepper trees could have protected part of the site from agricultural disturbance (Eighmey and Cheever 1993: 131), the historic component of the site has been now been destroyed (personal communication, D. Cheever 1998). This conclusion is supported by the recent archaeological survey (SAIC 1999), which only noted two pieces of fragmented concrete at the site despite excellent surface visibility (personal communication, Berryman 1999).

CA-SDI-07291

> This site was originally described in 1979 by Carrillo as a scatter of shell with flaked stone tools and two manos . . . . During the survey by Hector in 1984, evidence of a subsurface cultural deposit was noted. The site was estimated to measure 200 by 100 feet.
>
> The 1988 RECON survey confirmed the location of this site and the dimensions (Cheever and Wade 1989). Only shell was noted during that survey; the stone tools were not relocated. This site was proposed to have the potential for a subsurface deposit.
>
> Recent testing by RECON for The Ranch at Stallions Crossing [project] has revealed that this site has been effectively destroyed by agricultural activities (Eighmey and Cheever 1996: 27).

CA-SDI-07292

> This site was recorded as the location of one core. The isolate was not relocated during subsequent surveys and no other cultural remains have been found in the area where the isolated artifact was originally recorded . . . . No additional work has been conducted at this location, which should be modified from a site record to an isolate record (Eighmey and Cheever 1996: 27).

CA-SDI-07293

> This site was recorded by Carrillo in 1979 as consisting of a scatter of stone tools (including one mano) and shell with possible midden deposits . . . . Hector (1984) noted that site materials were present and covered an area of approximately 100 by 100 feet.
>
> The 1988 RECON field check resulted in the relocation of the site and confirmation that shell and flaked lithic artifacts (two cores and several flakes) are still present (Cheever and Wade 1989). It was estimated that the site measured 200 by 200 feet.
>
> During the recent testing program conducted at this site for The Ranch at Stallions Crossing PRD, this site was found to have a ceramic component, although disturbance to the stratigraphic integrity of the site precluded placement of the ceramics within a meaningful context. The conclusions of the testing program are that the site has been severely damaged by agriculture and the remaining site elements do not represent important or scientifically useful data . . . (Eighmey and Cheever 1996: 28).

CA-SDI-07295

> This site was recorded in 1979 by Carrillo as the location of two isolated artifacts on an alluvial fan at the base of one of the river terraces in the drainage. The artifacts were identified as a mano fragment and a flake.

Neither of these artifacts were relocated during the 1988 RECON survey . . . (Cheever and Wade 1989) and the location of these isolates has not been confirmed by subsequent investigations (Eighmey and Cheever 1996: 28).

CA-SDI-07297, CA-SDI-07298, CA-SDI-07299

All of these site numbers apply to the southwestern end of a highly eroded bluff . . . . The sites were recorded in 1979 by Carrillo as individual light scatters of shellfish remains and one isolated mano. Hector (1984) observed that these three sites consisted of a contiguous shell midden deposit with stone tools. The deposit was thought to extend as deep as 50 cm below the surface. The differences in the locations of the site may be the result of a portion being revealed by weather action exposing previously obscured parts of the resource area. Based on Hector's survey, the three separate site areas were subsumed into one site area referred to as SDI-7298 and site updates filed.

For the purposes of the field effort for the cultural assessment completed as part of The Ranch at Stallions Crossing PRD, the site was treated as SDI-7298.

The 1988 field check of the site areas produced results consistent with Hector's 1984 descriptions; however, erosion of the site and ongoing collection of artifacts uncovered by plowing and erosion were noted as contributing to the gradual destruction of the resource area (Cheever and Wade 1989).

SDI-7298 is closely associated with SDI-7300, Locus B . . . . The majority of the recorded shell deposits within this area are thought to be associated with the middle to late Pleistocene, or older. These are fossil shellbeds, not the result of cultural activity. Similar shell deposits are eroding out of exposed beds of the adjacent cut terrace. Much of the shell shows signs of mineralization and the represented species include oyster.

Cultural deposits associated with these shell fragments, if present, have been effectively destroyed by recent leveling and agricultural processes. Any cultural association is probably due to secondary redeposition resulting from the erosion of materials from SDI-7300 Locus B, located on the bluff immediately overlooking these sites. Testing has not revealed any subsurface material on this site . . . (Eighmey and Cheever 1996: 28-29).

CA-SDI-07300, CA-SDI-07301

This site was original recorded by Carrillo in 1979 as consisting of an abundance of shellfish debris, flaked lithic artifacts, and groundstone implements . . . . The site was also characterized as having midden soil. The most recent observations of the site confirm Carrillo's recorded comments; however, there has been considerable surface disturbance since the 1979 site record was made.

The dimensions and exact locations of SDI-7300 and SDI-7301 are rather ambiguous. The original site form indicates that SDI-7300 is isolated on the extreme west of the terrace, but assigns a very large dimension to the scatter, while SDI-7301 is recorded as a single cluster of manos on the surface of the terrace . . . . The 1984 update indicates that the site extended farther along the knoll but is still located along the western slope (Hector 1984). No update was filed for SDI-7301.

The RECON 1988 survey indicates that SDI-7400 measures roughly 400 feet by 200 feet, based on the dispersal of surface artifacts and ecofacts (Wade 1989). The subsequent 1989 RECON survey update project, however, shows the artifact scatter extending up the slope to adjoin SDI-7301 (Cheever and Wade 1989). This latter study indicates that SDI-7301 should be subsumed within, and is essentially a locus of, the larger SDI-7300 site complex. The archaeological materials on this knoll have been subsumed under the designation of SDI-7300.

The 1990 RECON investigation of this site for The Ranch at Stallions Crossing PRD involved extensive testing on this site (Eighmey and Cheever 1993). The most recent observations of the artifact distribution at this site indicate that the artifacts have been displaced significantly from earlier observations and the scientific value of the site has been severely impacted by agriculture . . . (Eighmey and Cheever 1996: 29).

CA-SDI-10,118

This site was recorded by Cardenas in 1986, during the survey for the proposed El Camino Real realignment project. The site is recorded as a temporary camp consisting of two loci. Locus A is described as a light shell and lithic scatter including one ground stone implement. Locus B is described as very sparse lithic scatter with a few pieces of shell. Little potential for a subsurface deposit was indicated. The site was included in the testing program for several sites within the El Camino Real impact area (Cardenas and Robbins-Wade 1986).

The eastern and northern edges of the site were tested for archaeological significance as outlined by City of San Diego guidelines. As a result, the north and east site boundaries were refined and it was determined that the specific area that was tested did not represent a significant resource. No determination of importance was made regarding the remainder of the site area.

The 1989 RECON survey found no evidence of cultural material in the area where SDI-10,118 is recorded. It is possible that all surface lithics were recovered during the RBR & Associates test; however, neither shell nor dark soil was observed at the plotted location. The possibility that buried remains of the site still existed was considered (Cheever and Wade 1989).

Early testing of this site in 1990 . . . and the 1993 RECON investigation of this site for The Ranch at Stallions Crossing [project] confirmed the presence of buried cultural material (Eighmey and Cheever 1993). This site was relocated as a single locus of substantial shell and lithic concentrations . . . . Testing revealed that a buried deposit exists and contains considerable amounts of shell and debitage (Eighmey and Cheever 1993).

The 1990 field effort included the excavation of 17 shovel test pits and 2 sample units. In addition, a surface collection was accomplished. In 1993 a second phase of testing was completed during which a second surface collection was completed and 10 sample units and 35 linear meters of mechanically excavated trench were accomplished. A single hearth feature, ground stone, and flaked lithic artifacts and debris were recovered, as was a large quantity of shell. The deposit appears to be localized and concentrated at a depth of some 50 to 60 cm below the current ground surface.

While this site produced flaked lithic and ground stone artifacts, as well as shell and animal bone, the research value of the remaining materials was determined to be not important and no further work was recommended (Eighmey and Cheever 1996: 29-30).

CA-SDI-10535/H

This historic site was recorded by RBR & Associates as a standing structure, which was present as late as March 1986. In December of that year, RECON archaeologists confirmed that the structure had been destroyed and the former structure site was under cultivation (Hector 1986).

As of 1990 the site location consisted of a localized but notable scatter of building debris and domestic materials. The site was tested as part of the cultural resource evaluation of The Ranch at Stallions Crossing PRD (Eighmey and Cheever 1993) and was found to be a non-important resource area (Eighmey and Cheever 1996: 30-31).

W-3493

Documentation for this site is limited to the archaeological site record prepared in 1984 by S.M. Hector. The only cultural remains noted were shellfish. The site was not relocated during the 1998 survey (SAIC 1999) and is presumed destroyed by agricultural activities.

SDI-15065 (U.S. Naval Auxiliary Air Facility, Del Mar; Del Mar Airport)

During the 1920s, the Navy established an emergency landing field within the project area. Although the actual date of establishment has not been determined, by 1928 the landing field was a cleared, rectangular strip known as the San Dieguito Field. In 1941, the Navy acquired additional property and in 1942 established the U.S. Naval Auxiliary Air Facility, Del Mar as a base for lighter-than-air (LTA) dirigibles. After the war, the property served as the Del Mar Airport until it was closed in 1959 as a result of the construction of I-5, which removed the eastern third of the former airfield. The property housed a variety of small firms until 1968, when the property was vacated.

An archaeological survey of the property was initially conducted by Cardenas (1984). Based on his surface inspection, Cardenas concluded “the abandoned Del Mar Airport and associated structures are recent (less than 50 years old) and in a generally poor state of preservation. It is concluded that the historic site is not significant and, consequently, not potentially eligible for inclusion in the National Register” (Cardenas 1984:27). Additional descriptive and historical data was later collected by Tetra Tech (1991) and SAIC (1997b). The archaeological technical report prepared for the wetland restoration project (Appendix E) includes a compilation of all existing data and the results of the 1998 re-survey of the property. The site was recorded during the 1998 re-survey and designated SDI-15065.

All buildings onsite have been demolished and removed and the site lacks integrity and significance (Cardenas 1984; Tetra Tech 1991; SAIC 1997b, 1999). Only slab foundation pads, several collapsed sections of concrete ordnance magazine walls, decomposed asphalt surfacing, a circular path that served as a mooring circle, and remains of septic and storage tanks and pipes remain. None of the remains exhibit a sense of original setting, function, or design elements. None are considered significant in either use of material or construction technique. None of the features have associated trash deposits or artifacts that can yield historically or scientifically important information. Previous archival studies (Tetra Tech 1991, SAIC 1997b) have documented the historic use of the site. Building pads associated with non-military uses of the site are not considered historically important because of their age and lack of integrity. The resource is not considered significant by federal, state, or local criteria (see Appendix E for additional details).

Grand Avenue Bridge

Grand Avenue, now known as Palm Lane, spans a tributary drainage south of the San Dieguito River. Archival research, field inspection, and significance evaluation of the Grand Avenue Bridge were conducted in June 1999 (see Appendix E). The bridge is not considered a significant resource.

No as-built plans for the bridge were located during archival research conducted at the Del Mar Historical Society, Del Mar Public Works and the Del Mar Planning Department. The earliest known record of the bridge is a 1943 right-of-way plat and profile prepared for the U.S. Naval Auxiliary Air Facility (Record Survey Map #962; on file with the City of Del Mar, Planning Department). Based on the right-of-way plat map, the Grand Avenue Bridge was constructed between 1942 and 1943 to improve access to the facility. Additional historic documentation of the bridge was not found.

The Grand Avenue Bridge is a common bridge type that required minimal architectural planning and design. There is no evidence to suggest the bridge was associated with a prominent bridge designer or historically important individuals. Constructed of wood, the bridge is 152 feet long, 27.5 feet wide, and supported on eight five-pier bents (frameworks) with lateral cross-bracing. The roadway deck is paved with tar and gravel. Wooden railings line the bridge. The northern railings are constructed with 4 by 4-inch cross-pieces supported by 6 by 6-inch upright timber posts. On the outside of the northern railings are 25 wood hangers, supporting a 24-inch metal pipe. Railing construction on the southern side is similar with the exception that there is an 8-inch pipe mounted to the interior of the bridge. There is no evidence of major repairs or modifications. At some point in time the bridge was painted white.

The Grand Avenue Bridge documented in this study is considered “historic” in that it is more than 50 years old. This feature is not currently listed on the National Register of Historic Places or the Department of Transportation (CalTrans) listing of significant bridges. This common type of bridge is reflective of bridges built during the war effort, using local materials and workmanship. The wood used in construction is reflective of commonly obtained technology and available raw materials. The bridge has lost its association with the U.S. Naval Auxiliary Air Facility, which has been demolished. The bridge is not connected with historically important individuals. Based on its common type of construction, and loss of associated buildings and original setting as a part of a larger facility, the bridge is not considered eligible for any federal, state, or local listing. The bridge will be recorded as a part of SDI-15065. No further documentation is recommended for this feature.

In summary, archaeological and historical investigations indicate the project area has been completely inventoried for cultural resources. Numerous small artifact scatters and other archaeological and historical resources that were once present in this area have been evaluated, determined insignificant, and subsequently destroyed or diminished in integrity. Remains of the historic U.S. Naval Auxiliary Air Facility, Del Mar are present in the project area but all buildings have been removed and the resource lacks integrity and does not meet any criteria for listing in the California Register of Historic Resources or the National Register of Historic Places. The existing Grand Avenue Bridge once provided access to the Air Facility, but is also not considered a significant resource. Excavation of 24 subsurface soil borings within the project area was monitored by project archaeologists with negative results (Appendix E). The inventory results indicate the project area does not contain archaeological or historical resources that may be considered significant by federal, state, or local criteria, although there is a slight potential for buried archaeological resources. See Appendix E for additional details regarding previous investigations and the 1998 archaeological survey, historical evaluations, and monitoring projects.

Table 3.11-1 Current Status of Sites Recorded within the San Dieguito Wetland Restoration Project Area

(page 1 of 2)

Site No.	*Original Description*	*Current Condition/Status/Reference*
SDI-5957	Scatter of shell and lithics	Site impacted by agriculture. Testing / evaluations – Eighmey and Cheever 1993. Status: Not significant. No integrity.
SDI-7287	Scatter of lithics, shell, groundstone, pottery, fire-affected rock	Site impacted by agriculture. Testing / evaluations – Eighmey and Cheever 1993 Status: Not significant. No research potential.
SDI-7288	Scatter of shell and lithics	Area impacted by agriculture. Could not be relocated by Cheever and Wade 1989. Status: Not significant. No research potential.
SDI-7289	Shell scatter	Area impacted by agriculture. Could not be relocated by Eighmey and Cheever 1993. Assumed destroyed. Status: Not significant.
SDI-7290	Low density prehistoric artifact scatter and historic materials, structural remnants and brick feature	Site impacted by agriculture. Testing / evaluations – Eighmey and Cheever 1990, 1993. Status: Not significant. No integrity. Historic component and structural remains have been destroyed since 1993 (personal communication, D. Cheever 1998).
SDI-7291	Scatter of shell, one lithic, small amounts of historic debris	Impacted by agriculture. Testing / evaluations – Eighmey and Cheever 1993. Status: Not significant. No integrity, no research potential.
SDI-7292	Isolated lithic	Could not be relocated by Eighmey and Cheever 1993. Status: Not significant. No research potential.
SDI-7293	Scatter of shell, groundstone, lithic	Site impacted by agriculture. Testing / evaluations – Eighmey and Cheever 1993. Status: Not significant. No integrity, no research potential.
SDI-7295	Two isolated artifacts	Artifacts could not relocated by Cheever and Wade 1989.
SDI-7297, 7298, 7299	Redeposited scatters of fossilized shell, one lithic artifact and one pottery sherd. Eighmey and Cheever 1993 subsume all sites under SDI-7298	Shell is non-cultural and redeposited by land leveling. Cultural materials probably eroded downhill from nearby site (SDI-7300). Testing / evaluations – Eighmey and Cheever 1993. Status: Not significant. No integrity, no research potential.

Table 3.11-1 Current Status of Sites Recorded within the San Dieguito Wetland Restoration Project Area

(page 2 of 2)

Site No.	*Original Description*	*Current Condition/Status/Reference*
SDI-7300, 7301	7300 and 7301 both contain shell, chipped stone, ground stone. Eighmey and Cheever 1993 subsume both sites under SDI-7300	Site impacted by agriculture. Testing / evaluations – Eighmey and Cheever 1993. Status: Not significant. No integrity, no research potential.
SDI-10,118	Shell, bone, chipped stone, ground stone	Site impacted by agriculture, but intact deposits remain. Testing / evaluations – Eighmey and Cheever 1993. Status: Intact, but research potential exhausted by testing and evaluation.
SDI-10,535	Historic structure (present until 1986)	Structure destroyed (Hector 1986). Testing / evaluation – Eighmey and Cheever 1993. Status: Not significant. No integrity, no research potential.
SDI-15065	Remains of the historic airfield known as U.S. Naval Auxiliary Air Facility, Del Mar and later as Del Mar Airport	All structures destroyed, no intact archaeological remains (Tetra Tech 1991, SAIC 1997b). Testing / evaluation – Berryman and Woodman (SAIC 1999) and Cardenas (1984). Status: Not significant. No integrity, no research potential.
W-3493	Shell scatter described in 1984 as “midden”	Not relocated, assumed destroyed by agriculture. Testing / evaluation – Berryman and Woodman (SAIC 1999) Status: Not significant.
—	Grand Avenue Bridge (associated with SDI-15065)	Intact bridge but associated facility destroyed. Testing / evaluation - Berryman and Woodman (SAIC 1999) Status: Not significant. No historical or architectural merit, loss of association with formal naval facility.

3.12 PALEONTOLOGICAL RESOURCES

As defined here, paleontological resources (i.e., fossils) are the remains and / or traces of prehistoric plant and animal life exclusive of man. Fossil remains such as bones, teeth, shells, leaves, etc. are found in the geologic deposits (i.e., bedrock geologic formations) within which they were originally buried. For the purposes of this report, paleontological resources can be thought of as including not only the actual fossil remains but also the collecting localities and the geologic deposits / formations containing those localities. Paleontological resources represent a limited, nonrenewable, and impact-sensitive scientific and educational resource.

3.12.1 Methods and Data Sources

Because of the direct relationship between fossils and the geologic formations within which they are entombed, knowing the geology of a particular area and the fossil productivity of particular rock formations can enable reasonable predictions of where fossils will (or will not) be encountered. A review was conducted of relevant published geological reports (Hertlein and Grant 1939; Weber 1963; Kennedy 1975), unpublished geotechnical reports (Ninyo & Moore 1999; Ogden Environmental and Energy Services 1999), published paleontological reports (e.g., Valentine 1959; Deméré 1980), and museum paleontological site records (Department of Paleontology, San Diego Natural History Museum). In addition, a survey of the project area was carried out to field check the results of the literature and record reviews.

These combined data served as the basis for evaluating the paleontological resource significance of the project area.

3.12.2 Description of Geology

As summarized on the Del Mar, CA, 7.5' USGS quadrangle geologic map of Kennedy (1975) the general geology of the project area consists of Eocene-age lagoonal and marine sandstones and mudstones overlain by a thin veneer of late Pleistocene and Holocene-age colluvium and alluvium, and bay and beach deposits. The Eocene deposits (Delmar and Torrey Sandstone formations) form the northern and southern slopes of San Dieguito Valley and lie just outside of the project boundaries. The Pleistocene deposits occur on the northern, southern, and eastern margins of the project area and directly overlie the Eocene deposits. These Pleistocene deposits may extend into the subsurface beneath the Holocene valley-fill deposits. The Holocene deposits occur across the entire valley floor east of I-5 and also underlie the tidal inlet, channel, and lagoon areas west of I-5. These deposits extend to an unknown depth and as mentioned above may overlie Pleistocene deposits.

Bay Point Formation

Kennedy (1975) assigned the Pleistocene deposits in the San Dieguito River Valley to the Bay Point Formation. This rock unit is typically a nearshore marine sedimentary deposit of late Pleistocene age (approximately 220,000 years old), although portions of the formation were deposited in nonmarine (i.e., fluvial and alluvial) settings. Typical exposures of the Bay Point Formation consist of light gray, friable to partially cemented, fine- to coarse-grained, massive and cross-bedded sandstones. Because the Bay Point Formation is generally exposed at sea level, its total thickness and relationship with underlying formations is unknown. The Bay Point Formation was originally named for a sequence of deposits along the north shore of Mission Bay (Hertlein and Grant 1939) and has subsequently been extended to rocks considered to have been deposited during the same interval of time elsewhere in San Diego County.

During the field walkover deposits mapped as Bay Point Formation were observed around the perimeter of the project area (i.e., the alluvial apron on the northern border of the Horseworld area, the elevated river terraces in the Southern wetland area, and the alluvial apron on the southern border of the lagoon area; Figure 3.12-1). Where exposed, these deposits consisted of two different sedimentary rock types. In the lagoon area on the southwest side of I-5, the Bay Point Formation consists of gray, fine-grained, friable siltstones and mudstones. Here bedrock exposures are very limited and were only observed in shallow tributary exposures and in one fenced area designated as a biological preserve. Shell fragments of estuarine molluscs were seen in the biological preserve, but these shell remains are likely derived from modern dredge spoils. In the southern wetland area on the southeast side of I-5, the Bay Point Formation consists of an 18-foot thick sequence of reddish-brown, coarse-grained, friable to compact sandstones and silty claystones. The presence of carbonate concretions and small ironstone concretions in this stratigraphic sequence suggests a nonmarine origin for these deposits. Geotechnical borehole logs (Ninyo & Moore 1999) in the southern wetland area indicate that these nonmarine deposits extend to at least a depth of 14 feet.

Quaternary Alluvium

As mapped by Kennedy (1975) much of the floor of the San Dieguito River Valley is underlain by Quaternary alluvium and slopewash. This encompasses the areas both east and west of I-5, including the western channel and tidal inlet. The Quaternary alluvial deposits consist of unconsolidated sediments (gravels, sands, silts, and clays) that have accumulated in low-lying areas through depositional processes still active in the San Dieguito River Valley and at its river mouth. Good exposures of Quaternary alluvial deposits are generally lacking in the project area because of vegetation cover, ongoing cultivation, or paved and disturbed surfaces. This condition makes detailed inspection difficult. Geotechnical boring logs (Ninyo & Moore 1999), however, indicate that in the shallow subsurface the Quaternary alluvium consists of brown friable, fine sandy silt; reddish-brown, micaceous, silty fine sand, and gray to grayish-brown, friable fine sands. At depth, these deposits become finer grained and contain locally abundant shell remains of estuarine molluscs. In the lagoon area west of I-5, fine sands with locally abundant shell remains were encountered at depths between 15 and 50 feet below sea level (also see section 3.3). In the Horseworld area east of I-5, fine sands with locally abundant shell remains were encountered at depths between 10 and 15 feet below sea level. This shell material is presumably Holocene in age, although an older Pleistocene age assignment cannot be ruled out.

3.12.3 Geological Sensitivity

High sensitivity is assigned to geologic formations known to contain paleontological localities with rare, well-preserved, critical fossil materials for stratigraphic or paleoenvironmental interpretation and fossils providing important information about the paleobiology and evolutionary history (phylogeny) of animal and plant groups. Generally speaking, highly sensitive formations produce vertebrate fossil remains or are considered to have the potential to produce such remains.

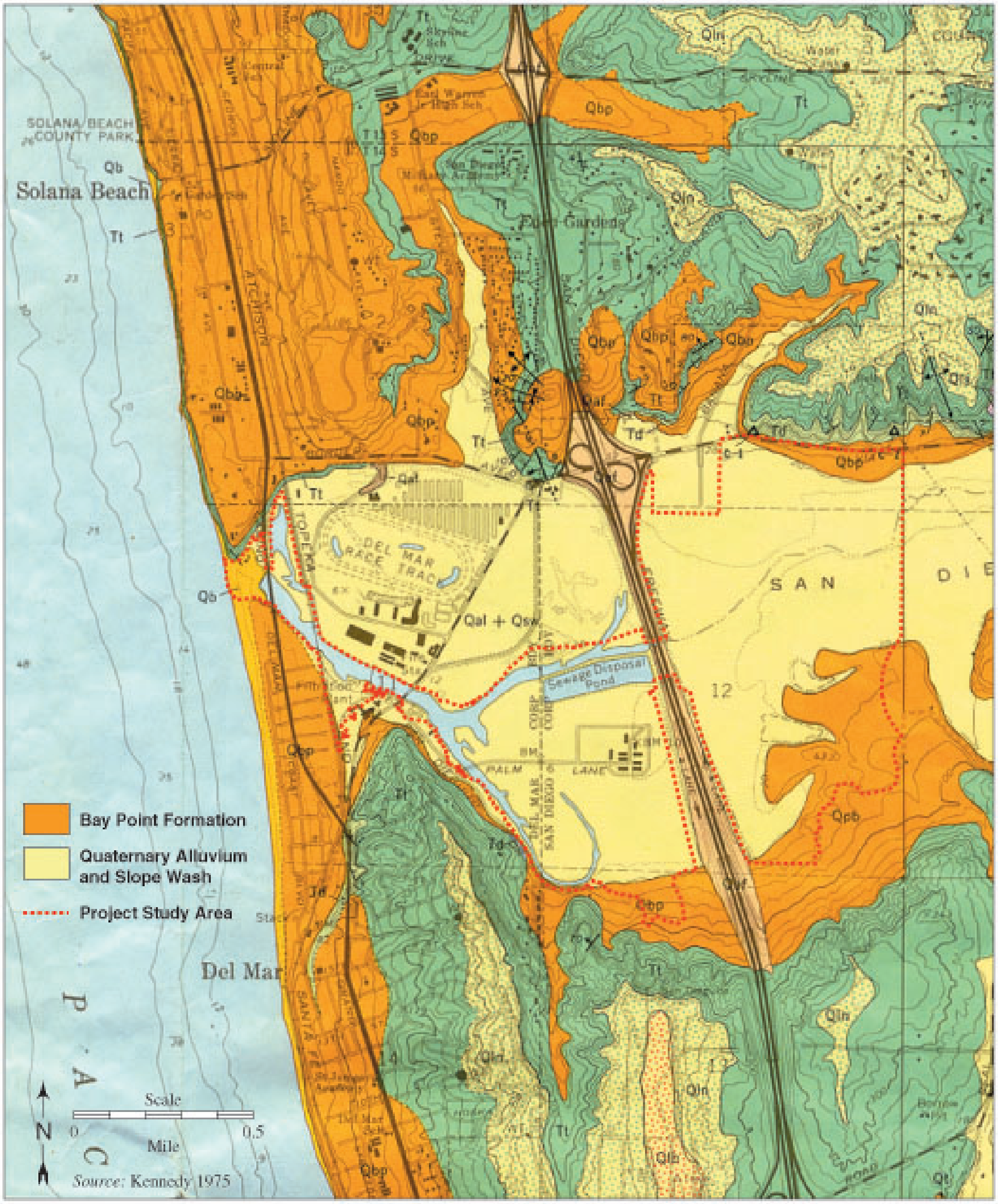


Figure 3.12-1. The Bay Point Formation in the Vicinity of the Project Area

Moderate sensitivity is assigned to geologic formations known to contain paleontological localities with poorly preserved, common elsewhere, or stratigraphically unimportant 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 is assigned to 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 produce invertebrate fossil remains in low abundance.

Zero sensitivity is assigned to geologic formations that are entirely igneous in origin and therefore have no potential for producing fossil remains. This sensitivity also applies to disturbed materials such as are found in landfills and stockpiles.

3.12.4 Paleontology

Museum paleontological locality records do not document any known fossil localities within the project boundaries and none were discovered during the field walkover.

It is important to note that many fossil sites presently on record in San Diego County have been discovered only during residential development activities or during highway and freeway construction projects. This close correlation between fossil sites and construction is due to the combination of two main factors: (1) surface weathering, which quickly destroys most fossil materials in natural exposures; and (2) vegetation and soil, which effectively cover potentially fossil-bearing deposits. Often it is not possible to recover well-preserved fossils until grading creates fresh, unweathered exposures. Also, because of the amount of grading proposed for some sites, the probability is increased that grading will unearth rich fossil horizons.

Bay Point Formation

The Bay Point Formation in coastal San Diego County has produced large and diverse assemblages of well-preserved marine invertebrate fossils, primarily molluscs (Stephens 1929; Hertlein and Grant 1939; Valentine 1959; Deméré 1980). Remains of fossil marine vertebrates, including sharks, rays, and bony fish, also have been recovered from the Bay Point Formation (Deméré and Walsh 1993). Locally abundant remains of terrestrial mammals including ground sloth, rodent, fox, horse, tapir, mastodon, and mammoth, also have been recovered from this rock unit. The recorded fossil localities in the Bay Point Formation have been collected from both natural exposures such as sea cliffs and also from construction-related excavations.

Although no fossil localities are currently known from the Bay Point Formation within the project boundaries, the paleontological records search revealed the presence of an important fossil locality in this rock unit as exposed less than ¼-mile north of the project area. This locality (SDSNH locality 2904) was discovered and collected in 1976 during grading for the Flower Hill Shopping Center northeast of the intersection of I-5 and Via de la Valle. SDSNH locality 2904 (equals SDSNH locality 0069; Stephens 1929) yielded a diverse assemblage of well-preserved marine invertebrates from a single shell hash bed (Deméré 1980). The Bay Point Formation as exposed at SDSNH locality 2904 consists of a thick sequence of fine-grained, friable sandstones deposited on and against Eocene-age sedimentary rocks. The fossil-producing horizon was discovered at an elevation of approximately 60 feet, well above the present floor of the San Dieguito River Valley.

During the field walkover, no fossils were observed in deposits mapped as Bay Point Formation. Geotechnical boring logs indicate the presence of shell material in subsurface layers in the Horseworld area east of I-5 (Ninyo & Moore 1999). These shell layers may be within the Bay Point Formation, in which case they would be considered paleontological resources. In contrast, if these shell layers are within the Quaternary alluvial deposits they would not be considered paleontological resources. The boring logs describe the deposits containing these shell layers as sandy silts and silty fine sands. This terminology implies that the deposits are non-bedrock sediments. The Bay Point Formation however, is typically an unlithified rock unit with thick sequences of friable fine-grained sandstones that would be commonly logged as unconsolidated sands in the subsurface. It was not possible to examine the shell remains noted in the boring logs to determine their actual age assignment.

Detailed examination of exposures in the southern wetland area east of I-5 revealed trace fossils, root casts, and insect burrows in the lower portion of the stratigraphic section. The presence of such ichnofossils (trace fossils) preserved in a calcareous concretionary zone implies that soil conditions at the time of deposition were good for the preservation of bone and that vertebrate fossils could possibly be recovered in these nonmarine deposits within the project boundaries. In support of this potential, recent residential construction activities at the San Diego Museum of Natural History (SDMNH) fossil locality #4279, located less than 0.5-mile east of Old El Camino Real, has resulted in the recovery of Pleistocene horse and mammoth remains from deposits mapped as Bay Point Formation. In addition, a partial skeleton of a ground sloth was recovered from the Bay Point Formation as exposed at SDMNH fossil locality #4164 on the north side of San Dieguito River Valley approximately 1 mile east of the Horseworld project area. (Unpublished records for both fossil localities are on file at the SDMNH.)

In summary, the Bay Point Formation has a locally high paleontological resource sensitivity in San Diego County. This high sensitivity rating is based in part on the recovery of large and diverse assemblages of paleoenvironmentally significant fossil molluscs and in part on the recovery of rare and significant assemblages of Pleistocene land mammals.

Quaternary Alluvium

Deposits mapped as Quaternary alluvium have not, for the most part, produced significant paleontological resources in coastal San Diego County. The only exceptions have been in the Tijuana River Valley and in the Santa Margarita River Valley where remains of mammoth have been reported (Deméré and Walsh 1993). In both cases, the fossils were probably recovered from older alluvium on the margins of the drainages, rather than from the Holocene deposits out in the middle of the valley. Because of their very young age, later Quaternary alluvial deposits in San Diego County are typically assigned a low paleontological resource sensitivity.

3.13 UTILITIES/PUBLIC FACILITIES

This section discusses the public utility services and facilities that exist within and adjacent to the project site. The utilities considered in this section include telephone and cable television lines, gasoline and oil pipelines, gas and electric lines, storm drains, and sanitary sewer and water lines**.** The only public facilities considered in this section are bridges. No other significant public facilities occur within the project area.

Telephone

Pacific Bell Telephone Company (Pacific Bell) owns a duct bank consisting of 30 4-inch ducts located along the eastern edge of the I-5 right-of-way (see Figure 3.13-1). These ducts carry cable and fiber optics that are an integral part of the Southern California telephone network. The duct bank runs under the San Dieguito River within a buried 42-inch-diameter steel casing. The casing is buried approximately 1 foot below the soil surface.

Pacific Bell also owns an overhead telephone line that is located on the southwestern boundary of the project area. As shown in Figure 3.13-1, the line is located along Racetrack View Drive and for the most part is not within the boundary of the restoration area. Other telephone lines owned by Telco are strung along poles on Via de la Valle adjacent to the northern boundary of the project area (see Figure 3.13-1).

Cable Television

Southwestern Cable TV and Daniels Cable TV both have cable lines in the project area (see Figure 3.13-1). The cable lines are primarily located near the western end of the project site and service residential customers in Del Mar.

Gasoline and Oil Pipelines

Santa Fe Pacific Pipeline, Inc. owns one 16-inch pipeline and one 10-inch pipeline that cross near the eastern portion of the project area within the San Diego Gas and Electric (SDG&E) utility corridor. The corridor is located outside of the project boundary, as shown in Figure 3.13-2. (The utility corridor is 150 feet wide and also contains a gas transmission main and overhead electric lines.) The 16-inch and 10-inch pipelines are used to carry fuels (gasoline and oil) between Los Angeles and San Diego counties.

Gas Lines

SDG&E owns a 30-inch gas transmission main that is located in the main utility corridor that crosses near the eastern portion of the project area. Another gas line, a 12-inch high-pressure line, is located within the project area. This 12-inch line is owned by Southern California Gas Company and crosses the San Dieguito River attached to the side of the Camino Del Mar Bridge. The locations of both gas lines are shown in Figure 3.13-2.

Electricity

Various sizes of overhead electric lines exist within and around the project area. Three 230-kilovolt (kV) lines run through SDG&E's 150-foot-wide utility corridor located near the eastern part of the project site (see Figure 3.13-3). Three 69-kV lines also cross the site at various locations. One 69-kV line crosses the San Dieguito River near Jimmy Durante Boulevard, a second crosses the river and the site between I-5 and El Camino Real, and the third crosses the southwestern portion of the site close to Racetrack View Drive (see Figure 3.13-3). All other lines near the project site are 12-kV lines. SDG&E is responsible for all of these lines and is in the process of adding a 12-kV line to the existing utility poles on the south side of El Camino Real.

Storm Drains

The City of Del Mar, Caltrans, and the City of San Diego own storm drains near the project site, as shown in Figure 3.13-3. The 22nd District Agricultural Association also owns storm drains that are located on the Del Mar Fairgrounds (Figure 3.13-3). All drains convey storm water into either the San Dieguito River or San Dieguito Lagoon.

Sanitary Sewer Lines

The City of Del Mar owns several sewer lines that are within the boundaries of the project area (see Figure 3.13-4). The 22nd District Agricultural Association has a 6-inch sanitary force main located in the San Dieguito River, approximately midway between the Jimmy Durante Boulevard Bridge and the Railroad Bridge. The sewer line extends from the existing lift station at the Del Mar Fairgrounds and conveys sewage to the Del Mar sewage system. On May 18, 2000, Dr. Hany Elwany conducted a study to determine the location of this line, which was installed by the District in about 1981. Through the use of a magnetometer and an underwater compressed air pressure jet system, Dr. Elwany determined that the top of the existing sewer line is located at –5 feet NGVD, or slightly lower by several inches.

Water

Water lines near the boundaries of the proposed project are owned by the cities of Del Mar and San Diego (see locations in Figure 3.13-5). The only locations where the water lines cross the project boundary into the project site are attached to the Jimmy Durante Boulevard Bridge over the San Dieguito River, along portions of Racetrack View Drive, and within the area south of the Del Mar Fairgrounds on the south side of the San Dieguito River.

Bridges

Five bridges cross the San Dieguito River within the project site. From west to east, they include Camino Del Mar (Highway 101), Railroad, Jimmy Durante Boulevard, Grand Avenue, and I-5 bridges (Figures 2.3.1-1 and 2.3.1-2). The Grand Avenue Bridge, an old bridge that is no longer used for traffic circulation, is located to the south of the river in an area previously restored by the California Department of Fish and Game.

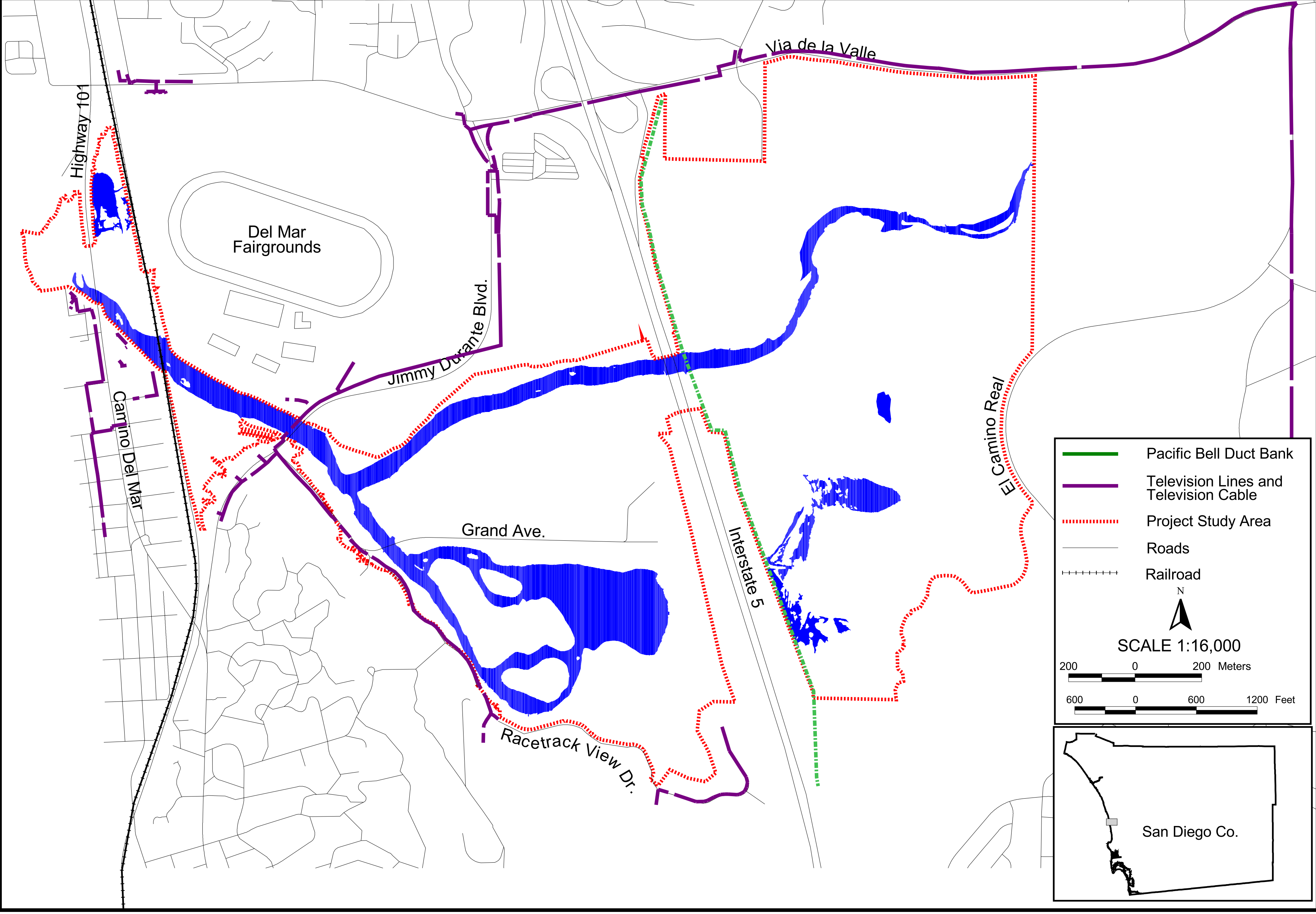


Figure 3.13-1. Locations of Existing Telephone Lines and Television Cable Lines in the Vicinity of the Project

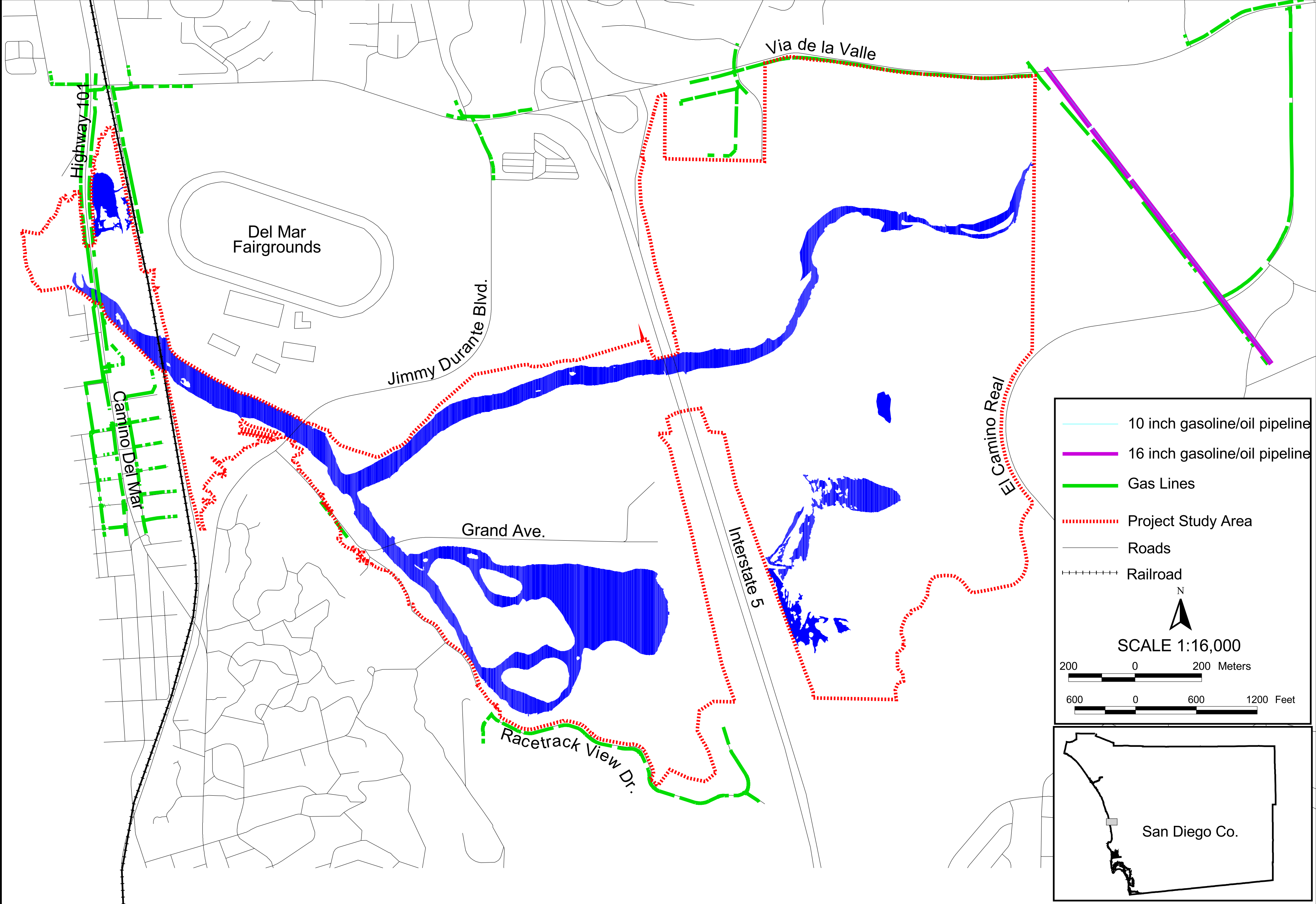


Figure 3.13-2. Locations of Existing Gasoline/Oil Pipeline and High Pressure Gas Lines in the Vicinity of the Project

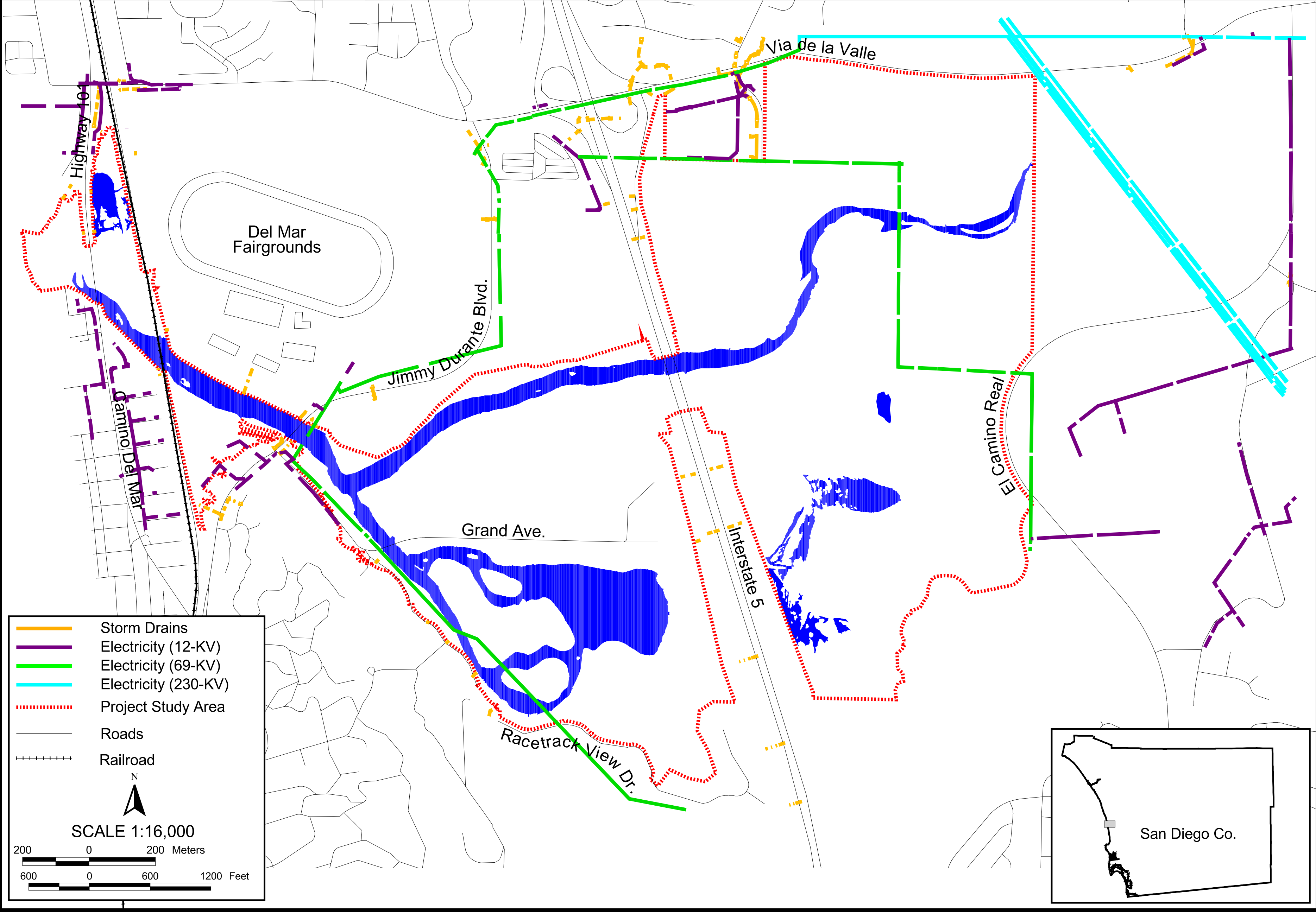


Figure 3.13-3. Locations of Existing Electric Lines and Storm Drains in the Vicinity of the Project

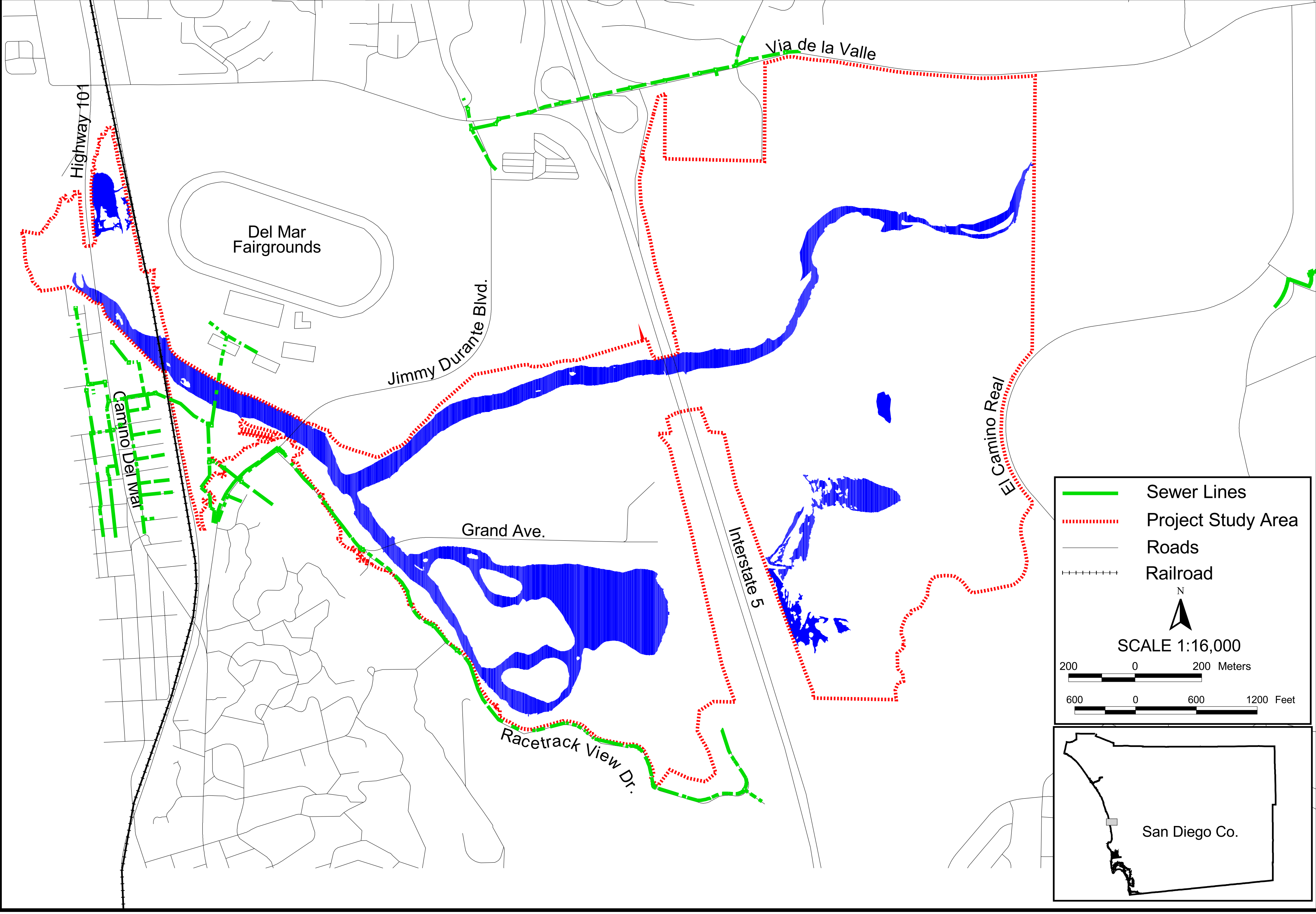


Figure 3.13-4. Locations of Existing Sewer Lines in the Vicinity of the Project

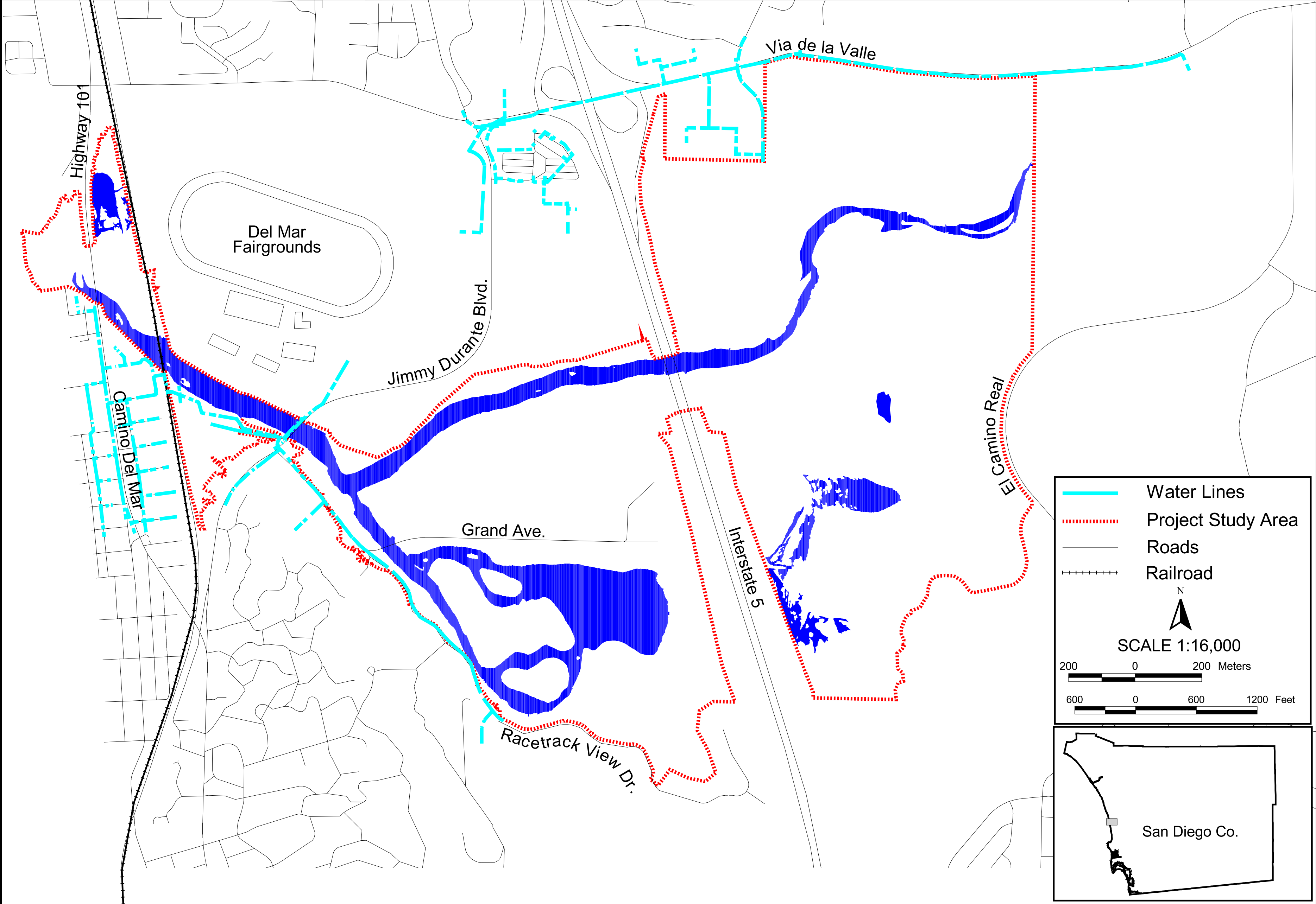


Figure 3.13-5. Locations of Existing Water Lines in the Vicinity of the Project

3.14 NOISE

3.14.1 Setting

Fundamental Concepts of Environmental Acoustics

Noise is commonly defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound can be caused by its *pitch* or its *loudness*. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity can be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, several noise measurement scales are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement that indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 3.14-1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level or dBA*. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 3.14-2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

The sensitivity to noise increases during the evening and at night, because excessive noise interferes with the ability to sleep, so 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level, CNEL*, is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 P.M. — 10:00 P.M.) and a 10 dB addition to nocturnal (10:00 P.M. — 7:00 A.M.) noise levels. The *Day/Night Average Sound Level,* L_{dn}, is essentially the same as CNEL,

Table 3.14-1 Definitions of Acoustical Terms

Term	*Definitions*
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 P.M. to 10:00 P.M. and after addition of 10 decibels to sound levels measured in the night between 10:00 P.M. and 7:00 A.M.
Day / Night Noise Level, L_{dn}	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 P.M. and 7:00 A.M.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Table 3.14-2 Typical Sound Levels Measured in the Environment and Industry

At a Given Distance From Noise Source	*A-Weighted Sound Level in Decibels*	*Noise Environments*	*Subjective Impression*
	140		
Civil Defense Siren (100')	130		
Jet Takeoff (200')	120		Pain Threshold
	110	Rock Music Concert	
Diesel Pile Driver (100')	100		Very Loud
	90	Boiler Room	
Freight Cars (50')		Printing Press Plant	
Pneumatic Drill (50')	80		
Freeway (100')		In Kitchen With Garbage Disposal Running	
Vacuum Cleaner (10')	70		Moderately Loud
		Data Processing Center	
	60		
		Department Store	
Light Traffic (100')	50		
Large Transformer (200')			
	40	Private Business Office	Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing
	0		

with the exception that the evening time period is dropped and all occurrences during this 3-hour period are grouped into the daytime period.

Effects of Noise

Hearing Loss

While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise, but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise.

The Occupational Safety and Health Administration (OSHA) has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over eight hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

Sleep and Speech Interference

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noise of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA L_{dn}. Typically, the highest steady traffic noise level during the daytime is about equal to the L_{dn} and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12-17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57-62 dBA L_{dn} with open windows and 65-70 dBA L_{dn} if the windows are closed. Levels of 55-60 dBA are common along collector streets and secondary arterials, while 65-70 dBA is a typical value for a primary/major arterial. Levels of 75-80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, and those facing major roadways and freeways typically need special glass windows.

Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that the causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 55 dBA L_{dn}. At an L_{dn} of about 60 dBA, approximately 2 percent of the population is highly annoyed. When the L_{dn} increases to 70 dBA, the percentage of the population highly annoyed increases to about 12 percent of the population. There is, therefore, an increase of about 1 percent per dBA between an L_{dn} of 60-70 dBA. Between an L_{dn} of 70-80 dBA, each decibel increase increases by about 2 percent the percentage of the population that is highly annoyed. People appear to respond more adversely to aircraft noise. When the L_{dn} is 60 dBA, approximately 10 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 2 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a 3 percent increase in the percentage of the population highly annoyed.

Regulatory Background

Federal

The federal government has established suggested land use compatibility criteria for different noise zones (Guidelines for Considering Noise and Land Use Planning and Control, June 1980). Residential areas are considered compatible where the L_{dn} is up to 65 dBA.

State

The State of California has not adopted any quantitative regulations applicable to the proposed project. The California Environmental Quality Act (CEQA) has established guidelines to evaluate the significance of effects of environmental noise attributable to a proposed project. CEQA asks the following questions.

Would the project result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or Noise Ordinance, or applicable standards of other agencies?
- Exposure of persons to or generation of excessive groundborne vibration or ground-borne noise levels?
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Local

The project is located within both the City of San Diego and the City of Del Mar. The City of San Diego’s General Plan (1989b) establishes exterior noise standards of 65 CNEL for residential areas and nature and wildlife preserves and 75 CNEL for retail commercial areas. The city’s Noise Abatement and Control Ordinance identifies one-hour average sound level limits, as shown on Table 3.14-3.

Table 3.14-3 Applicable Limits in the City of San Diego

Land Use Zone	*Time of Day*	*One-Hour Average Sound Level (dB)*
Residential (R-1)	7 A.M. to 7 P.M. 7 P.M. to 10 P.M. 10 P.M. to 7 A.M.	50 45 40
Residential (R-2)	7 A.M. to 7 P.M. 7 P.M. to 10 P.M. 10 P.M. to 7 A.M.	55 50 45
R-3, R-4, and all other Residential	7 A.M. to 7 P.M. 7 P.M. to 10 P.M. 10 P.M. to 7 A.M.	60 55 50
All Commercial	7 A.M. to 7 P.M. 7 P.M. to 10 P.M. 10 P.M. to 7 A.M.	65 60 60
Manufacturing/Industrial	Any time	75

The ordinance specifies that construction activities shall not occur between the hours of 7 P.M. and 7 A.M. or on City holidays (except Columbus Day and Washington's Birthday) or on Sundays without a permit granted by the Noise Abatement and Control Administrator. Except under emergency conditions, average construction noise levels are not to exceed 75 dBA at or beyond the property lines of areas zoned for residential use between 7 A.M. and 7 P.M.

Del Mar's General Plan states that 65 dB is the maximum level considered compatible with unrestricted residential usage. The city's Noise Ordinance establishes one-hour average sound level limits at receiving properties (see Table 3.14-4). These levels are subject to adjustment depending on the duration of the noise.

Table 3.14-4 Applicable Limits in the City of Del Mar

Land Use Zone	*Time of Day*	*One-Hour Average Sound Level (dB)*
Residential/Open Space Overlay	7 A.M. to 10 P.M. 10 P.M. to 7 A.M.	50 40
Commercial	7 A.M. to 10 P.M. 10 P.M. to 7 A.M.	60 50
Railroad Right-of-Way	7 A.M. to 10 P.M. 10 P.M. to 7 A.M.	60 55

Under the ordinance, no construction work is to be performed on Sundays or City holidays or before 9 A.M. or after 7 P.M. on Saturday or before 7 A.M. or after 7 P.M. Monday through Friday. Construction activities are not to cause an hourly average sound level greater than 75 decibels on property zoned or used for residential purposes.

3.14.2 Existing Noise Environment

This section describes the existing noise environment at the project site and in the surrounding residential areas. Noise levels were monitored over a continuous 24-hour period at three locations designated LT-1, -2, -3 and for shorter periods at locations designated S-1, -2, -3 on Figure 3.14-1, and summarized below. These monitoring locations were selected to represent the noise environment in sensitive residential areas adjacent to the project site.

Measurement location LT-1 was located in the residential area north of Via de la Valle overlooking the project site on the east side of I-5. The noise monitor was located at the top of the ridge overlooking the project site at the end of Caminito Sagunto. Major ambient noise sources affecting this residential area are vehicular traffic on I-5 and Via de la Valle. The results of the measurements are shown in Figure 3.14-2. The measured day/night average noise level was an L_{dn} of 61 dBA. Typical average daytime noise levels range from 55 to 60 dBA.

Measurement location LT-2 was in the residential area located south of the project area and west of I-5. The noise monitor was located in an open space area behind homes at the end of Racetrack View Drive. The only significant source of noise was vehicular traffic on I-5. Typical average daytime noise levels range from 55 to 60 dBA, with levels increasing during the morning rush hour to between 60 and 65 dBA. The results of these measurements are shown in Figure 3.14-3. The measured L_{dn} at this location was 63 dBA.

Noise monitoring location LT-3 was in the James G. Scripps Bluff Preserve, on top of the bluff overlooking the beach. This monitoring location was selected to characterize existing ambient noise levels in the residential areas located on either side of the beach that may be affected by construction activity in this area. Local traffic and the sound of the surf were the most significant noise sources. These sources generated typical noise levels of 55 to 60 dBA. Trains passing on the nearby railroad track generated intermittent noise levels of 65 to 70 dBA. The results of these measurements are shown in Figure 3.14-4. Average noise levels were typically about 55 to 60 dBA during the daytime and about 50 to 55 dBA during the evening and nighttime. The measured day/night average noise level was an L_{dn} of 61 dBA.

Short-term measurements were made at three additional locations to characterize existing ambient noise levels on the project site. The results of these measurements are shown in Table 3.14-5. The data indicate that average noise levels during the daytime throughout most of the project site ranged from about 50 to 60 dBA. Most of the project site is below the elevation of I-5, and as such, has a direct line of sight to portions of the freeway.

Table 3.14-5. Short-Term Ambient Noise Levels

Site Locations of 10-Minute Spot Measurements	*L_{eq} (dBA)*	*L_{max} (dBA)*	*L(1) (dBA)*	*L(10) (dBA)*	*L(50) (dBA)*	*L(90) (dBA)*
S1 — Approximately 200 feet from San Dieguito River and 980 yards from I-5 at 10:15 A.M.	55	57	57	56	55	54
S-1 — Approximately 200 feet from San Dieguito River and 980 yards from I-5 at 5:07 P.M.	51	53	53	52	51	47
S-2 — Approximately 200 feet from San Dieguito River and 720 yards from I-5 at 5:07 P.M.	56	—	—	—	—	—
S-3 — 330 feet south of San Andres Access Road south of shopping center at 4:45 P.M.	61	67	67	64	61	59

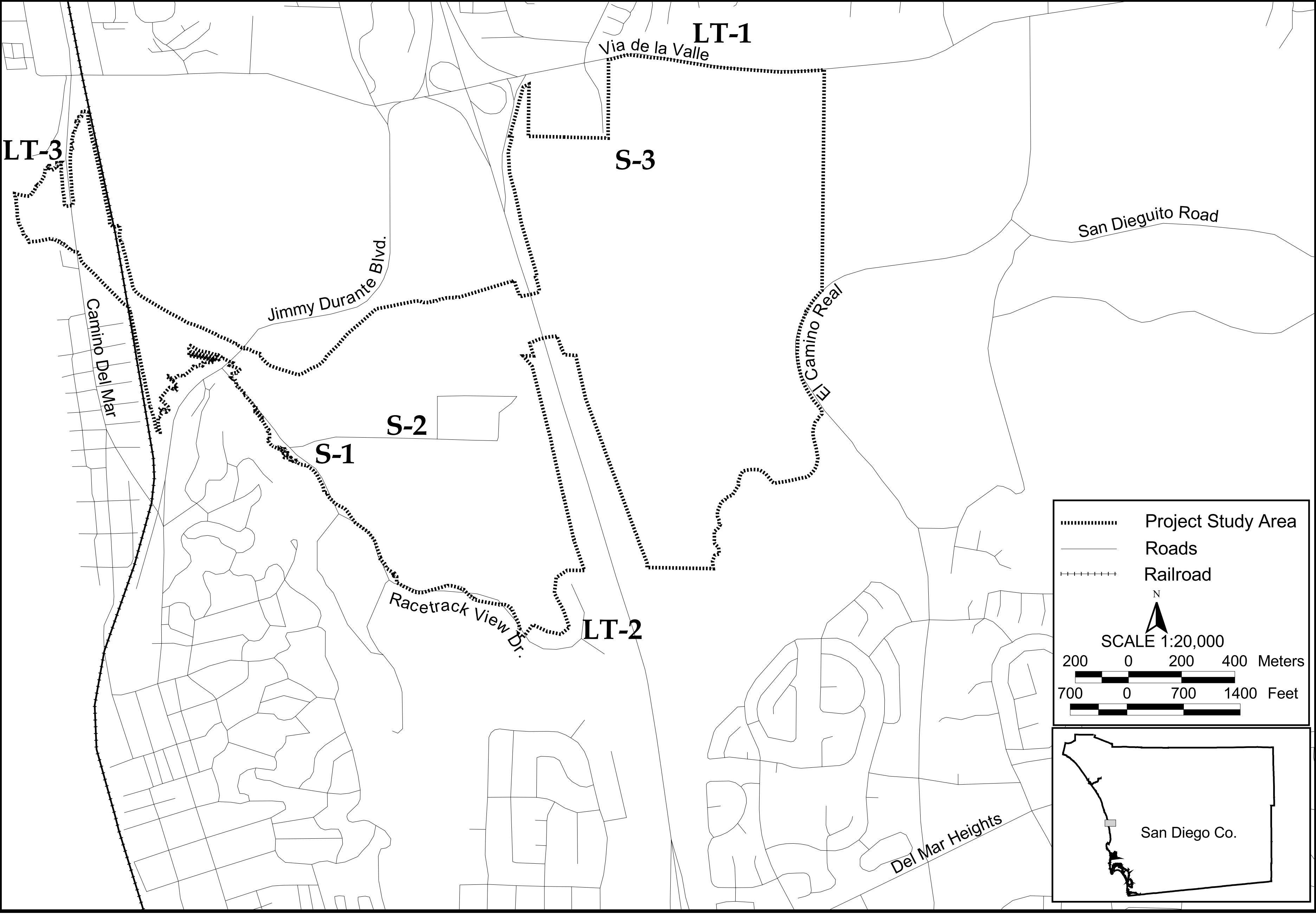


Figure 3.14-1. Noise Measurement Locations

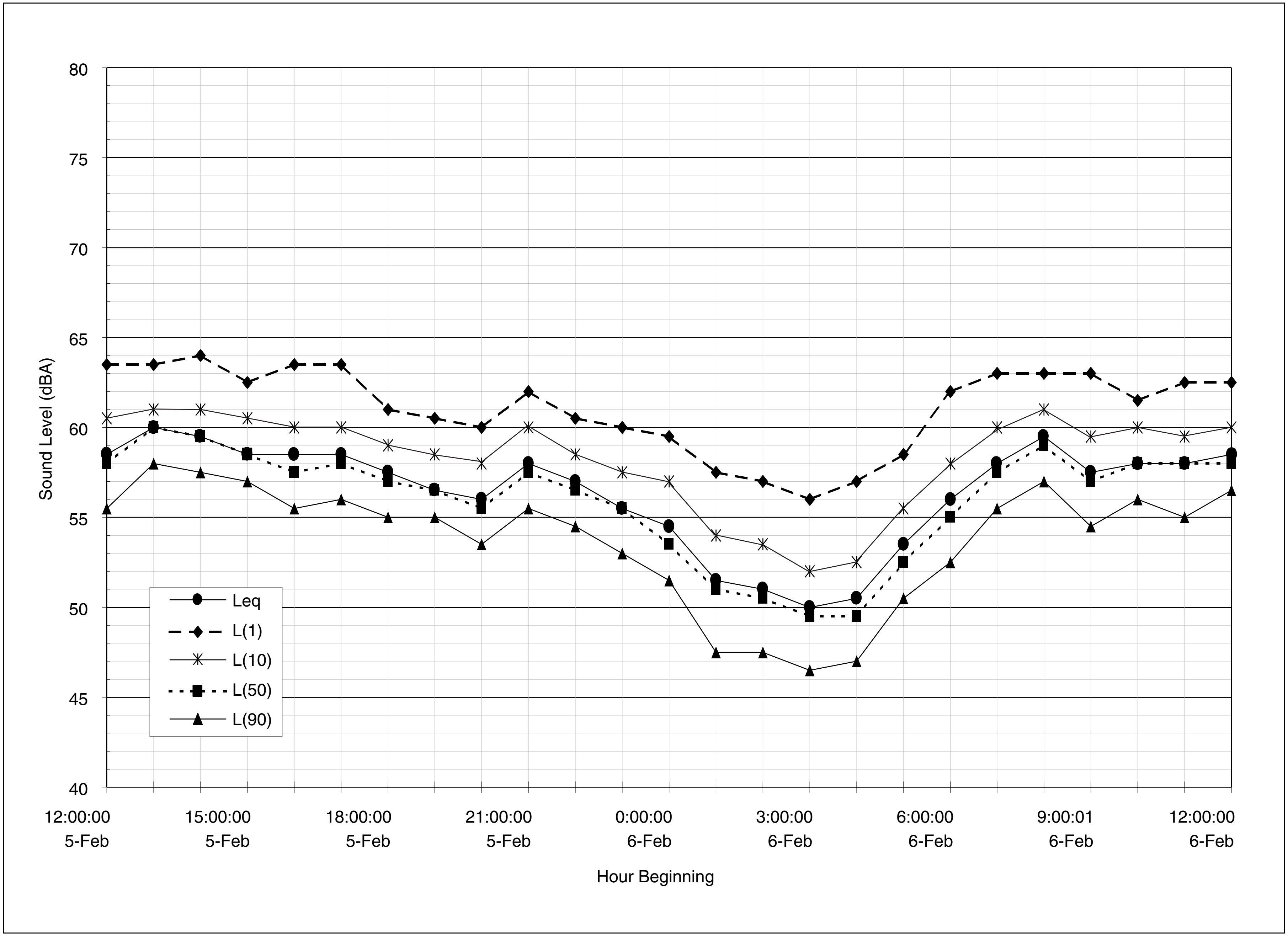


Figure 3.14-2. Noise Levels at Site LT-1, Residential Area North of Via de la Valle

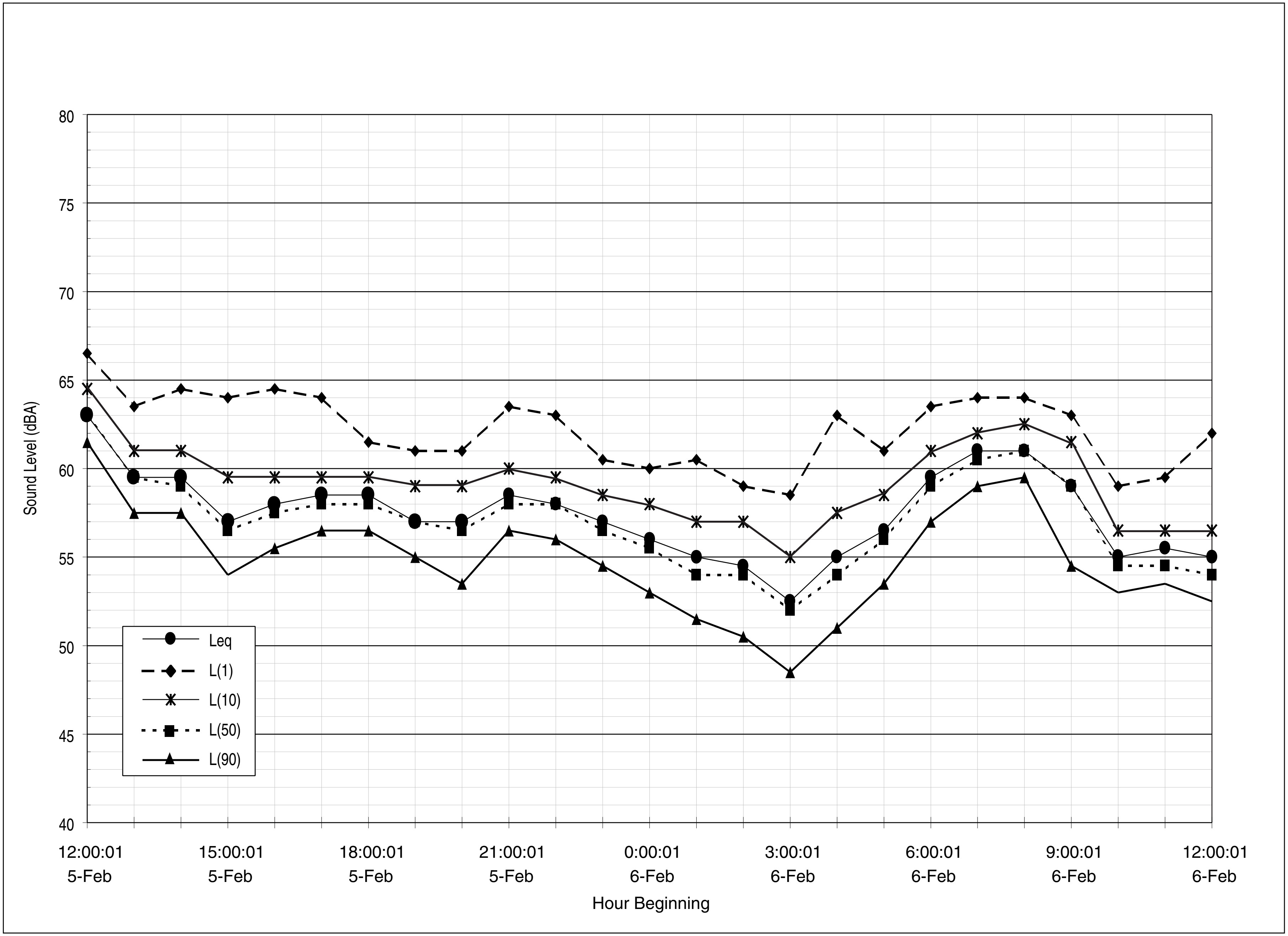


Figure 3.14-3. Noise Levels at Site LT-2, Residential Area South of the Project Area and West of I-5

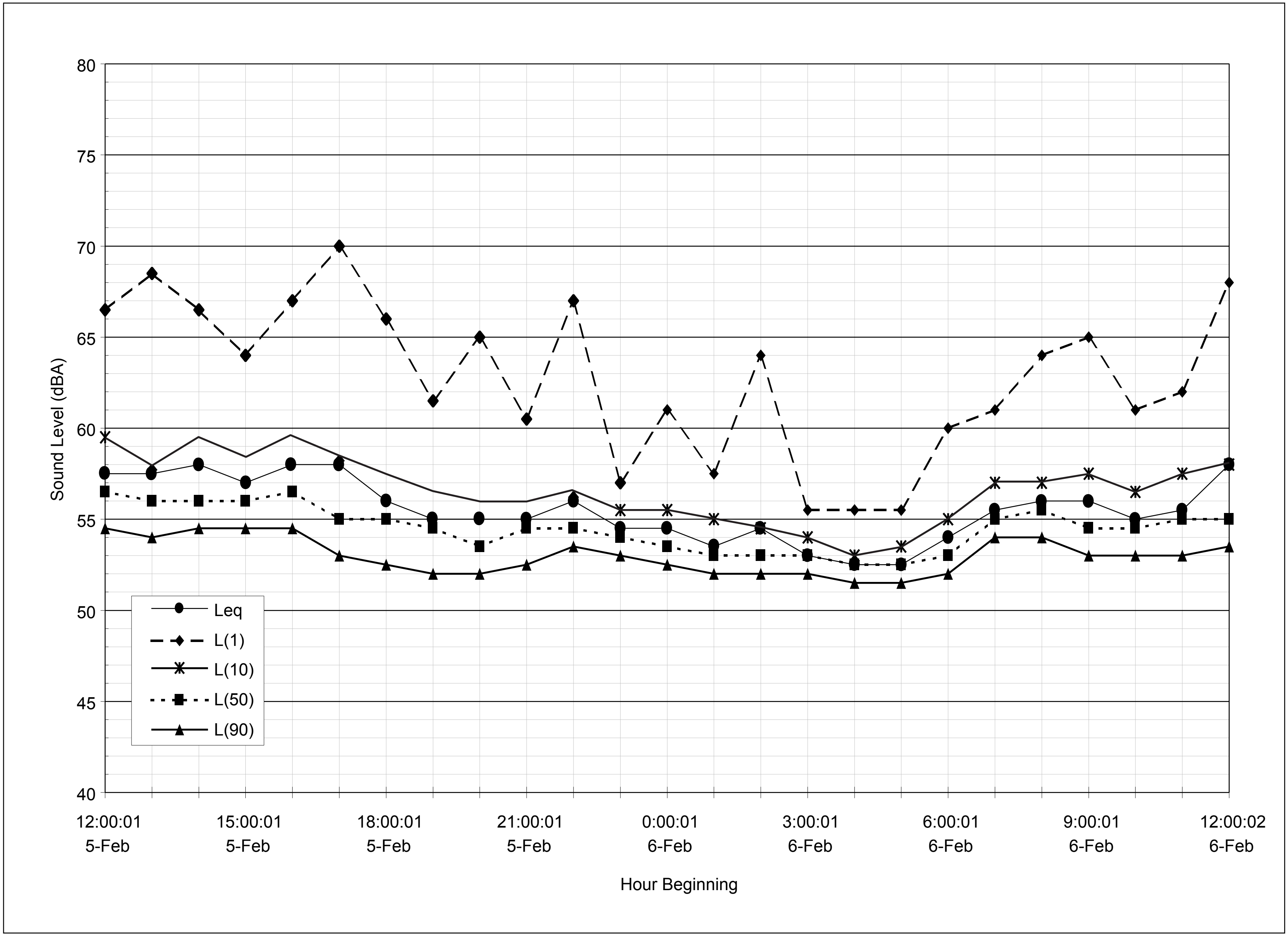


Figure 3.14-4. Noise Levels at Site LT-3, James G. Scripps Bluff Preserve Overlook

3.15 SOCIOECONOMICS

This socioeconomic analysis addresses population, employment, and housing for the City of San Diego and the City of Del Mar and commercial agriculture for San Diego County.

The project site is located within the northwesternmost portion of the City of San Diego and the northern portion of the City of Del Mar. Table 3.15-1 provides information on existing and projected population, housing, and employment conditions for these two cities. The information in the table was obtained from the San Diego Association of Governments (SANDAG).

Table 3.15-1. Population, Housing, and Employment, City of San Diego and the City of Del Mar

Socioeconomic Characteristics	*San Diego*	*Del Mar*
Total Population		
1997	1,197,077	5,147
1990	1,110,549	4,860
1980	875,538	5,017
% Change 1980-1990	27%	-3%
% Change 1990-1997	8%	6%
Forecast 2000	1,314,248	5,299
Forecast 2005	1,409,990	5,330
Forecast 2015	1,573,656	5,248
% Change 1990-2015	42%	8%
Housing		
1990	431,722	2,514
Forecast 2000	473,187	2,565
Forecast 2005	513,371	2,581
Forecast 2015	591,437	2,581
% Change 1990-2015	37%	3%
Employment		
1990	668,512	2,909
Forecast 2000	687,978	2,895
Forecast 2005	742,947	2,898
Forecast 2015	822,468	2,893
% Change 1990-2015	23%	-1%
Median Household Income 1997 [1]	$40,837	$68,231

Note: 1. Median household income is expressed in 1996 dollars.
Source: SANDAG 1999.

Population

The City of San Diego had an estimated population of approximately 1.2 million persons in 1997, compared to just over 1.1 million persons in 1990 and 875,000 persons in 1980 (see Table 3.15-1). This represents a 27 percent population increase from 1980-1990 and an 8 percent increase from 1990-1997. SANDAG prepared a regional growth forecast in 1995, referred to as the Interim Series 8 Regional Growth Forecast. That forecast projects a 42 percent change in population for the City of San Diego between 1990 and 2015, with the population growing to over 1.5 million persons by 2015.

The City of Del Mar had an estimated population of approximately 5,147 persons in 1997, compared to 4,860 persons in 1990 and 5,017 persons in 1980. This reflects a 3 percent decrease from 1980-1990 and a 6 percent increase from 1990 and 1997. SANDAG's growth forecast projects an overall 8 percent change in population for the City of Del Mar between 1990 and 2015, with the population growing to 5,248 persons by 2015, but showing a slight decrease from 5,330 persons in 2005.

Housing

There were 431,722 housing units in the City of San Diego in 1990. SANDAG projects a 37 percent increase in the number of housing units from 1990 to 2015, reaching a total of 591,437 units in 2015. This change is 5 percentage points less than the 42 percent change in population during the same period.

There were 2,514 housing units in the City of Del Mar in 1990. SANDAG projects a 3 percent increase in the number of housing units from 1990 to 2015, reaching a total of 2,581 units in 2015. This change is 5 percentage points less than the 8 percent change in population during the same period. No new housing is projected between 2005 and 2015.

Employment

There were 668,512 jobs in the City of San Diego in 1990. SANDAG projects a 23 percent change in the number of jobs from 1990 to 2015, reaching a total of 822,468 jobs in 2015. This change is 12 percentage points less than the 37 percent change in housing units during the same period, indicating a decrease in the jobs/housing ratio from 1.55 in 1990 to 1.39 in 2015.

There were 2,909 jobs in the City of Del Mar in 1990. SANDAG projects a 1 percent decrease in the number of jobs from 1990 to 2015, for a total of 2,893 jobs in 2015. This change represents a decrease in the jobs/housing ratio from 1.16 in 1990 to 1.12 in 2015.

The median household income in the City of San Diego in 1997 was $40,837 and $68,231 in the City of Del Mar.

Agriculture

Approximately 150 to 200 acres of land at the eastern end of the project area contain active agriculture. Most of this acreage is irrigated and planted in tomatoes. Other lands in the project area were previously used for agriculture and are now vacant, containing transitional vegetation (i.e., ruderal/successional vegetation). The information provided below describes agriculture acreage and agricultural production values for San Diego County, as well as county-wide tomato production.

San Diego County contained 170,917 acres of land in agriculture in 1997 compared to 169,555 in 1996 and 172,829 acres in 1995 (San Diego County Department of Agriculture, Weights & Measures 1997, 1998). The average farm size in San Diego County is 79 acres compared to a statewide average of 373 acres. San Diego County reported a value of $1.139 billion in agricultural production in 1997, $1.114 in 1996, and $1.049 in 1995.

Nursery products and flower crops, which were grown on 8,295 acres, comprised the single largest category of agricultural production value in the county in 1997 (see Table 3.15-2). These crops were valued at $705 million, which is 62 percent of the total county production value, or about $85,000 per acre. Generally poor soil conditions and the high cost of water in the county create an incentive to produce high value crops on smaller farms.

Table 3.15-2. San Diego County Agriculture Acres and Value — 1997

Products	*Acres*	*Production Value*
Nursery Products and Flower Crops	8,295	$704,988,190
Fruit and Nut Crops	42,384	215,090,527
Livestock and Poultry Products	Not applicable	85,395,203
Vegetable Crops	13,227	112,364,649
Livestock and Poultry	Not applicable	14,082,554
Field Crops	107,011	5,650,940
Apiary Products	Not applicable	1,153,787
Specialty Crops	Not applicable	629,850
Total	**169,555**	**$1,139,355,000**

Source: San Diego County Department of Agriculture, Weights and Measures 1998.

In 1997, vegetable crops comprised approximately 13,227 acres, or 7.8 percent of the total agricultural acreage in the county. Vegetable crops had an agricultural production value of approximately $112 million in that year, which equates to approximately $8,600 per acre. Tomato crops (both fresh tomatoes and cherry tomatoes) comprised 4,887 acres in 1997 and had a related production value of $28 million. This equates to approximately $5,700 per acre of tomato crops. In 1997, fruit and nut crops in San Diego County comprised 42,384 acres and $215 million in production value.

3.16 ENVIRONMENTAL JUSTICE

3.16.1 Executive Order 12898

Since the 1970s, public awareness and concern has increased about evidence that low-income and minority communities often suffer disproportionately from exposure to unhealthy environmental conditions. Excessive exposure to lead, hazardous materials in the workplace, noise and air pollution, and the frequent location of industry and infrastructure developments in these communities are key concerns for the environmental justice movement. In response, President Clinton issued a special Executive Order (12898) in 1994 to raise awareness and bring environmental justice issues into public policy debate.

The EPA (1998a) offers the following definition of *environmental justice*:

> The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

The goal of this "fair treatment" is not to shift risks among populations, but to identify potential disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.

The President's Executive Order requires that "to the greatest extent practicable . . . each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations."

Furthermore, the order reiterates that federal agencies must analyze the environmental effects, including human health, economic, and social effects, of its actions. This includes their effects on minority and low-income communities, when such analysis is required by the National Environmental Policy Act (NEPA). The USFWS is the federal Lead Agency on this project under NEPA and is thus responsible for ensuring that environmental justice issues are addressed.

Application of this Executive Order to NEPA documentation suggests that two questions be examined: (1) is a federal project with significant adverse environmental impacts being proposed in a community comprised largely of minority or low-income persons, and (2) would any significant adverse human health or environmental effects of the project disproportionately affect minority or low-income persons?

The Executive Order does not mandate special mitigation measures for environmental justice impacts, and no formal, commonly accepted significance criteria have been adopted. However, the Presidential Memorandum accompanying the Executive Order does direct federal agencies to include measures to mitigate disproportionately high and adverse environmental effects of proposed federal actions on minority and low-income populations. Federal agencies also are required to give affected communities opportunities to provide input into the NEPA process, including identification of mitigation measures.

3.16.2 Minority and Low-Income Populations in the Project Area

The EPA (1998) provides guidance in determining whether there is a minority or low-income community that is to be addressed in NEPA analyses. Minority populations are considered to be those that comprise over 50 percent of an affected area. A minority population also may be considered to be present if the minority population percentage of the affected area is "meaningfully greater" than the minority percentage in the general population or other "appropriate unit of geographic analysis." Low-income populations are those that fall within the annual statistical poverty thresholds from the Bureau of the Census "Current Population Reports, Series P-60 on Income and Poverty."

The population affected by the San Dieguito Wetland Restoration Project is contained within two zip code areas that encompass the project site, zip code areas 92014 and 92130, as shown in Figure 3.16-1. The racial breakdown of the population living within these two zip code areas as of January 1998 is detailed in Table 3.16-1.

Table 3.16-1. Racial Breakdown of the Population Living within the Zip Code Areas that Encompass the San Dieguito Wetland Project

	ZIP CODE				TOTAL AREA	
	92014		92130			
Race	*Population*	*Percent*	*Population*	*Percent*	*Population*	*Percent*
White[1]	13,897	92	17,730	77	31,627	83
Hispanic	610	4	1,822	8	2,432	6
Black / Asian	79	1	115	0	194	<1
Other race	594	4	3,450	15	4,044	11
Total	**15,180**	**100[2]**	**23,117**	**100**	**38,297**	**100**

Notes: 1. Non-Hispanic
2. Numbers may not add to 100 due to rounding.
Source: SANDAG 1999.

As shown on Table 3.16-1, minorities comprise substantially less than 50 percent of the total population of the two zip code areas that underlie the project area under consideration.

The project site also falls within three subregional areas, as defined by SANDAG. Most of the site falls within the Del Mar-Mira Mesa subregional area, although portions fall within the San Dieguito and North San Diego subregional areas, as well (see Figure 3.16-1). Demographic information for these subregional areas is current as of January 1998. Table 3.16-2 presents a comparison of the racial breakdown of those living within these three subregional areas as of January 1, 1998. Whites constitute a clear majority in each of these regional subareas.

The household income for each of the zip codes areas and subregional areas is shown on tables 3.16-3 and 3.16-4. The median household income for zip code areas 92014 and 92130 is $71,728 and $86,186, respectively. The median household income for the subregional areas is as follows: Del Mar-Mira Mesa, $61,171; San Dieguito, $61,988; and North San Diego, $56,962 (SANDAG 1999).

Although information is not available on household size, it would appear that most households are well above the current federal poverty threshold of $16,704 per year for a family of four.

Table 3.16-2. Racial Breakdown of the Population in the Three Subregional Areas

	DEL MAR-MIRA MESA		SAN DIEGUITO		NORTH SAN DIEGO	
Race	*Population*	*Percent*	*Population*	*Percent*	*Population*	*Percent*
White[1]	80,509	63	66,169	78	61,287	74
Hispanic	11,549	9	14,937	18	7,193	9
Black	3,907	3	402	0	2,045	2
Asian or Other	32,398	25	2,983	4	12,822	15
Total	**128,363**	**100**	**84,491**	**100**	**83,347**	**100**

Note: 1. Non-Hispanic
Source: SANDAG 1999

Table 3.16-3. Households by Income Range in the Zip Code Areas that Encompass the San Dieguito Project Boundary

	ZIP CODE	
	92014	*92130*
Less than $10,000	264	144
$10,000–$14,999	62	51
$15,000–$24,999	203	261
$25,000–$34,999	553	419
$35,000–$49,999	905	886
$50,000–$74,999	1,146	1,723
$75,000–$99,999	668	1,778
$100,000 or more	2,165	3,297
Total Households	**5,966**	**8,559**

Source: SANDAG 1999.

Table 3.16-4. Households by Income Range in the Three Subregional Areas

	Del Mar-Mira Mesa	*San Dieguito*	*North San Diego*
Less than $10,000	1,125	1,322	1,146
$10,000–$14,999	501	1,002	882
$15,000–$24,999	1,978	2,450	2,213
$25,000–$34,999	4,193	2,839	3,199
$35,000–$49,999	7,645	4,688	5,400
$50,000–$74,999	11,978	6,579	8,102
$75,000–$99,999	6,501	4,111	4,500
$100,000 or more	7,667	7,920	4,750
Total Households	**41,588**	**30,911**	**30,192**

Source: SANDAG 1999

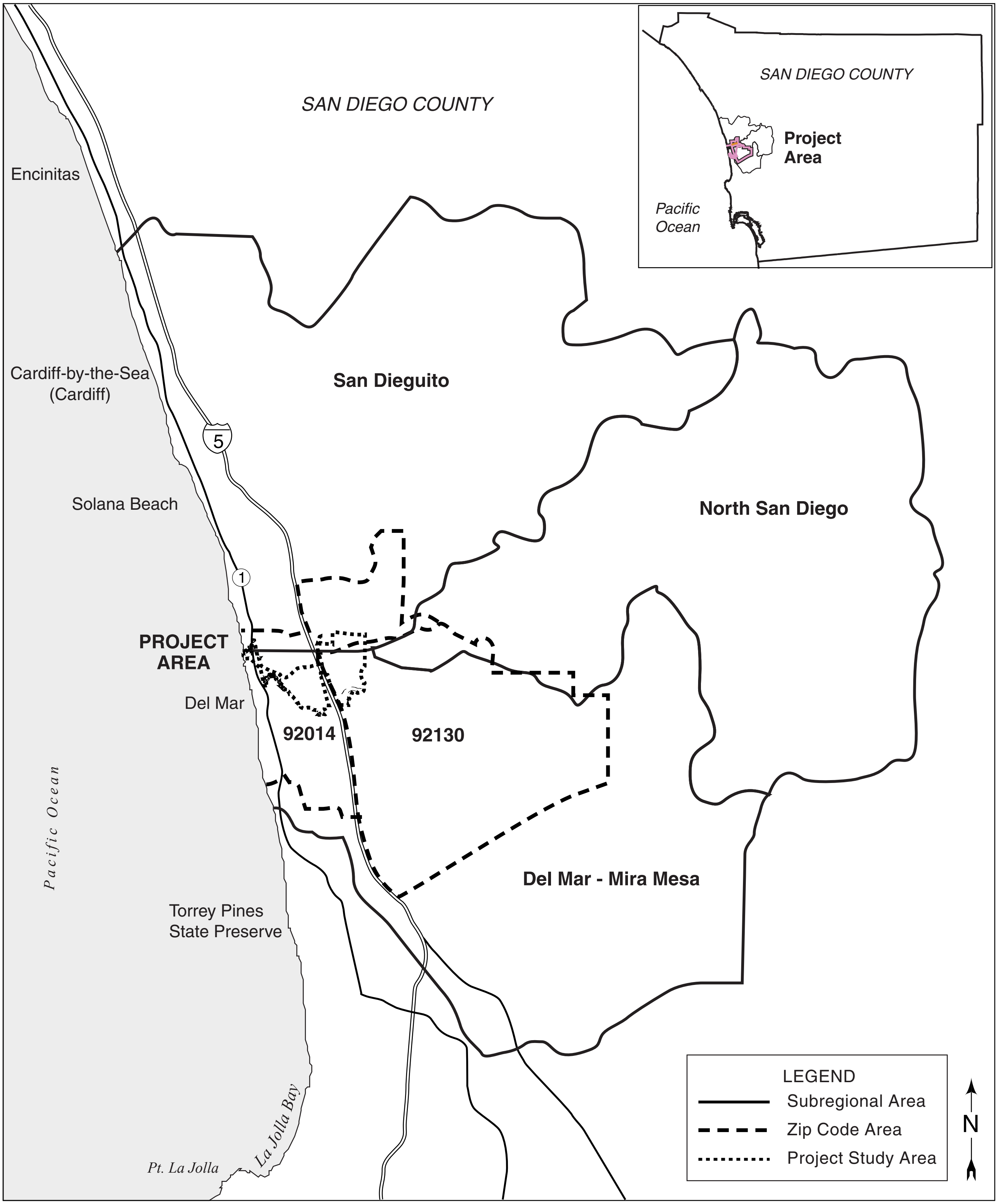


Figure 3.16-1. Zip Codes and Subregional Areas Near the Project Site

For purposes of comparison, the City of Del Mar as a whole is 93 percent white and has a median income of $66,320. The City of San Diego is 55 percent white and has a median income of $40,940 (SANDAG 1999). Although the percentage of minorities in the immediate project area is higher than that of the City of Del Mar, it is much lower than that of the City of San Diego as a whole, and the population of the project area clearly is predominantly white. The median household income is well above the federal poverty level.

4. ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

This chapter provides analysis and evaluation of the environmental consequences of implementing the action and no action alternatives, and, where feasible and appropriate, mitigation measures. As part of the impact summaries four classes of impacts are used: Class I (adverse, significant, and unmitigable), Class II (adverse, significant, but mitigable to less significant), Class III (adverse but less than significant), and Class IV (beneficial).

4.1 LAND USE

Significance Criteria

Land use impacts would be significant if:

- Substantial or extreme use incompatibility occurred.
- Substantial development, conversion, altered use, or intensity of land use occurred, where the resulting activity or use pattern created significant noise, traffic, public safety, or similar environmental impacts that would substantially and adversely affect the use of such lands or adjacent areas.
- Substantial displacement of public recreation activities or opportunities occurred and there was a lack of available comparable recreation opportunities due to capacity constraints, access limitations, or location.

The significance criteria for land use were developed based on the City of San Diego's Significance Determination Guidelines (revised January 1994). Several of the land use significance criteria included in the city's guidelines address inconsistencies or conflicts with adopted plans or land use designations. The consistency of project alternatives with plans and policies is specifically addressed in Chapter 5 of the EIR/EIS, as opposed to this Land Use section. The Land Use section describes existing land use conditions in the project area and analyzes potential land use conflicts with the proposed project alternatives and their associated uses. Therefore, the significance criteria in this section address use compatibility not plan compatibility. In addition, the criteria address issues that are relevant to the specific coastal setting of the project, such as recreation.

Regulatory Setting

Lands on the project site are located within the jurisdiction of the City of San Diego and the City of Del Mar and are subject to the planning and zoning requirements of those local governments. The entire study area is also located within the Coastal Zone. Designated public lands, for example, the California Department of Fish and Game Ecological Reserve and the JPA-owned lands, are also managed in accordance with management plans or regulations adopted by the applicable public agency.

4.1.1 Mixed Habitat Alternative

4.1.1.1 Construction Staging and Access Areas

Four construction staging areas are proposed within the project boundaries (refer to Figure 2.3.1-13). Sites SA3 and SA4 could be used for up to 1 to 2 years, while sites SA1 and SA2 would be used for a shorter duration. Most of the staging areas would have access from existing roads, but access to site SA3 would require the construction of a new, up to 30-foot-wide unpaved access road. Haul roads would also be constructed within the project boundaries to allow transport of excavated material from within the project area to the various disposal sites.

Compatibility Issues

Use of haul roads and staging areas could temporarily increase noise and visual impacts in nearby areas. Construction staging areas would, for the most part, be returned to their previous condition following construction and any temporarily installed water or power would be removed. Figures 3.1-2 and 3.1-4 (Chapter 3, section 3.1, Land Use) show the location of sensitive uses, including residential areas and recreation activities in the project area.

Beachfront properties along Sandy Lane south of the river inlet would be exposed to temporary noise and visual impacts from activity occurring at construction staging area SA1. These activities would occur for 1 to 2 months if the activity is limited to only channel dredging. A longer construction period of approximately six to eight months would be required if the overdredge disposal option (i.e., over-excavation of the basin at area W1, as described in section 2.3.16) is selected. Because activities in this area would be temporary, impacts to surrounding residents are considered adverse, but less than significant (Class III). Noise impacts, which have been considered as a factor in determining land use impacts on residences, can be mitigated to less than significant at SA1, as described in section 4.11. Construction staging areas SA2, SA3 and SA4 consist mostly of vacant lands. Staging area SA2 would be located in an industrial area on the east side of San Dieguito Drive on land owned by the City of Del Mar. Residential uses on the hillside above the site would experience temporary noise and visual impacts for a period of up to four to six months as a result of stone revetment construction. If dredging is selected as the preferred method for excavating area W1 and the adjoining channel, this construction staging area could be utilized as a launch point for the dredge equipment for an additional six to eight months. The land use impacts associated with the use of construction staging area SA2 are considered adverse but less than significant (Class III).

Construction staging Area SA3, located along the west side of I-5 and south of the river, consists of open space property owned by CDFG. This site is located approximately 500 feet north of homes along Racetrack View Drive. A temporary construction trailer would most likely be placed at this staging area and water and electricity could be extended to the site. Use of area SA3 for initial project construction would last 1 to 2 years. Once the restoration is complete, the trailer and other equipment would be removed but the pad would most likely be permanently retained as a construction staging area for periodic maintenance of the restoration site. Use of SA3 could produce potentially significant impacts on residences along Racetrack View Drive, which would be reduced to less than significant through mitigation (Class II).

The construction plans include the proposal to construct a construction access road from San Dieguito Drive southeast to construction staging area SA3. This access road would be located approximately 100 feet from houses on Racetrack View Drive. During project construction, use of this road, which would be gated, would be limited to purposes of mobilization, demobilization, and occasional truck traffic for equipment maintenance or exchange. This road would be maintained for the life of the project in order to provide access for periodic project maintenance and management. Although use of this road would be limited during project construction as well as in the future for periodic maintenance, issues associated with dust and noise could impact those residents located closest to the road. These impacts are potentially significant, but would be mitigated to below a level of significance through appropriate mitigation (Class II). If the road were to be used for construction worker access on a daily basis, impacts to residences would be potentially significant; however, SCE has agreed to mitigation measures that would avoid such impacts (Class II).

Construction staging area SA4 would be located behind a community shopping center located at I-5 and Via de la Valle. The site would be situated just to the south of the southern terminus of San Andres Drive on vacant land owned by SCE. A construction trailer could be located on the site and water and electricity could be extended to the area. SA4 would be used for a period of 1 to 2 years. Access to SA4 would be via an existing utility easement that begins at the end of San Andres Drive and follows behind the shopping center toward I-5. Access for existing utility maintenance would not be impacted by the project. No sensitive land uses occur in the vicinity of SA4, therefore, no land use impacts are anticipated.

The haul roads that would be constructed within the project site to connect restoration areas to potential disposal sites would be used primarily for sediment transport. None of these roads would be located in proximity to sensitive land uses, therefore, no land use impacts are anticipated as a result of road construction or use.

Recreational Issues

Construction staging Area SA1, to be located on the beach at the river mouth, would be utilized for approximately 1 to 2 months for channel dredging and sand disposal and an additional six to eight months if the overdredge disposal option is selected. This construction area would be fenced for safety and security reasons, however, the project would also provide a fenced path of adequate size to permit beach users and lifeguard equipment to get from Camino Del Mar, north of the bridge, to the beach north of the river channel, thus permitting continued access to the beach through the duration of the project. During construction, access across the beach at the river mouth would be maintained. However, once the channel inlet is dredged, access across the river would be more difficult as described below. Crossing the beach via the bridge at Camino Del Mar would still be possible since access along the north side of the river to Camino Del Mar would be provided and the informal trail from the south side of the bridge to the beach that is located along the rip rap would not be blocked by any construction activity. Therefore, no impacts to beach access from Camino Del Mar are anticipated during construction. However, portions of the beach area between the railroad bridge and the ocean would not be available for use by the public during construction, resulting in the loss of areas currently used for recreational purposes such as volleyball, sunbathing, and playing in the channel inlet. Use of area SA1 would therefore result in a temporary adverse impact on recreation during construction. Assuming public access to nearby unfenced portions of the beach is retained, the primary impact would be the loss of recreation within the immediate construction area at the river mouth and the inability for walkers and joggers to easily cross the river mouth along the beach. These impacts on are considered to be adverse, but less than significant (Class III).

No impacts to currently authorized recreational uses are anticipated as a result of the use of construction staging areas SA2, SA3, and SA4. Unauthorized access into the Fish and Game property from Racetrack View Drive would be eliminated as a result of the construction of the proposed access road to construction staging area SA3. Access to this area would be eliminated once fencing is installed along the entire length of the road. This fencing is required for safety and securing during construction and for habitat protection from human and domestic animal intrusion following restoration of the area. This loss of informal and unauthorized recreational access would be considered adverse, but not significant (Class III). In addition, the loss of this access would be offset by the provision of authorized access on designated trails within other portions of the restoration area.

4.1.1.2 Excavation and Dredging

This section addresses excavation as well as inlet dredging and maintenance.

Compatibility Issues

Most of the areas identified for excavation and dredging are currently classified as vacant, open water, agriculture, or recreation. Once grading begins, agricultural lands located east of I-5 containing tomato crops would be displaced, as described in greater detail in section 4.5, Natural Resources. Excavation west of I-5, inlet dredging, and maintenance dredging would produce temporary noise and night lighting impacts on residential areas, primarily those along Sandy Lane and portions of Racetrack View Drive and San Dieguito Drive (Class III). Impacts to residents along Sandy Lane would primarily occur during initial dredging (1 to 2 months) and then periodically, during maintenance dredging at approximately <u>8-month</u> intervals. Construction activity west of I-5 in the vicinity of area W1 would occur for a period of 1 to 2 years. None of these effects would substantially alter the existing uses, but could create temporary, potentially significant land use impacts that would be mitigated through the implementation of a public outreach and information program that would assist residents in understanding the purpose and duration of particular activities as well as handle any complaints from surrounding residents regarding issues related to construction (Class II). Once the project is completed, the ultimate use as habitat restoration would be consistent with open space uses in the surrounding area.

Recreation Issues

Recreation issues from excavation and dredging relate to potential effects on the inlet channel/river crossing and changes in access to/displacement of other recreation uses within the project site. Figure 3.1-4 (see section 3.1, Land Use) identifies recreation activities in the project area based on the 1994 Human Use Inventory conducted by KTU+A.

<u>This restoration project proposes to maintain the inlet channel in a permanently open configuration. Such a proposal would more closely reflect the conditions of the lagoon inlet prior to any significant alteration of the floodplain or surrounding watershed. It would also reflect the conditions of the river mouth approximately 36% of the time over the past 68 years, during which time the river mouth was recorded as being open to tidal waters. More recently, the inlet channel</u>

has been recorded as open approximately 75% of the time for the period 1980 through 1989 and about 56% of the time between 1990 and 1995.

Maintaining the inlet channel as proposed would result in the permanent conversion of a maximum of 1.8 acres of sandy area that is presently between the railroad bridge and the inlet sill (a total area of about 9.5 acres) during those periods in which the inlet channel is closed. This conversion from dry sand to an open inlet channel would reduce the area available for activities such as volleyball, bocce ball, picnicking, sunbathing, and dog walking.. During low flows, the inlet channel would, however, be available for other public uses such as swimming. As discussed previously, even under existing conditions, changes in the inlet and beach width and tidal/river flow do occur that reduce the amount of areaavailable for recreational activities. This is because the availability of the channel and the surrounding inlet area for recreation varies depending upon the conditions at any one time. Following heavy rains, the channel may be wider and deeper than at drier times of the year, while during dry years the inlet channel may close completely thus providing a large open sandy area. Also during dry years, the water in the channel has on occasion been deemed a potential health risk and the channel area has been closed to public use. The proposed project would significantly reduce the variability of these conditions. The project's effect on recreational opportunities at the river mouth is considered potentially adverse but less than significant (Class III), since this area is not always available for use under current conditions, and there would continue to be room for volleyball and other activities on the beach area both north and south of the river mouth. Crossing of the river channel would be different than under present conditions (see section 4.2, Hydrology and section 4.10, Public Health /Public Safety). Increases in water depth and velocity in the river inlet would potentially affect recreation use of the beach at and near the river inlet. The river channel itself is often used for recreation (e.g., wading or swimming), although some of the activities that occur here are unauthorized (e.g., kayaks transiting up the river). Potential changes in channel depth and velocity as a result of the project are not specifically analyzed as a recreation impact, although they may constitute a public safety issue and are analyzed in section 4.10, Public Health / Public Safety.

As described in section 4.10, the amount of time the inlet mouth would be difficult to cross (based on a conservative assumption of one foot depths) would be about 80% of the time, representing an increase of about 32% compared to existing conditions. Beach access and use would still be available in areas north and south of the river inlet and crossing of the inlet would be possible, although more inconvenient , by using the bridge at Camino Del Mar. Prior study of beach use conducted in association with the Human Use Inventory (KTU+A 1994) recommended that an improved connection between the lower beach areas and the bridge at Camino Del Mar be implemented as a part of the restoration project. This would provide both a better alternative for pedestrians when the river mouth cannot be crossed by foot and improve lateral beach access at all times. This feature was not proposed as part of the project plans, but is included as a required mitigation measure.

Based on the above information, the project has the potential to significantly alter present conditions for beach users by reducing the ability for pedestrians to cross at the river inlet. Although such conditions would be present during certain times of the year under current conditions, the proposed project would make crossing the river more difficult most of the time; therefore, this represents a significant change in current use patterns. At the time the Draft EIR/EIS was prepared, no mitigation for this impact was proposed. The result was the identification of a significant and unmitigated impact (Class I). Since that time, the City of Del Mar has provided information indicating that improvement of an existing pedestrian pathway along the south side of the river may be feasible. The applicant has agreed to work with the City of Del Mar to design, in accordance with City of Del Mar standards, and improve a pedestrian pathway along the south side of the river. This pathway would be incorporated into the existing riprap. It would be required to meet the design standards specified by the City of Del Mar. Natural wave conditions in this area may render this area unsafe, as sometimes occurs under existing conditions, and require the pathway to be closed during periods of high wave activity. Such a pathway would provide access from the south side of the river to Camino Del Mar, where beach goers could then use the existing pathway on the Camino Del Mar bridge to cross the river. Once across the river, an existing pathway would provide access back down to the beach on the north side of the river.

The incorporation of this pathway would mitigate the above-identified impact to below a level of significance. If however, during project design, it is determined that such a pathway is in fact not feasible, or could not be permitted by one or more of the required permitting agencies, then the impact would remain significant and unmitigated (Class I). Additional periodic disruption of beach use would occur during maintenance dredging, representing an adverse but mitigable impact (Class II).

Permanent loss of access due to the proposal to remove the Grand Avenue Bridge and loss of an informal trail and informal recreation uses west of I-5 and east of the Jimmy Durante Bridge would produce adverse impacts, which would be offset through provision of the trail plan for the area (Class III). A permanent pipe gate currently restricts access across the Grand Avenue Bridge and it is posted for “No Trespassing”, nevertheless unauthorized access is common. Visitors would still have opportunities to view the area from the Grand Avenue Bridge viewing platform, however physical access would be eliminated. Recreation activities currently accessed by the existing bridge and the informal trail, including dog training, walking, hiking/mountain biking, and dog walking/running, some of which are currently unauthorized, would be eliminated. It is necessary to eliminate access across the Grand Avenue Bridge, as public access into the project site would be incompatible with wetland restoration. This is due to human effects such as noise, litter, erosion and habitat disruption, which could adversely affect sensitive habitats and wildlife. The trail proposals included within the overall project description would replace the undesignated and uncontrolled recreation usage that currently occurs on portions of the project site and would provide surrounding residents and area visitors with a variety of passive recreational opportunities. Although informal recreation activities occur east of I-5, they generally occur within existing utility easements due to ease of accessibility. The proposed project would have a minimal impact on existing utility easements and would actually be providing additional recreational opportunities in areas currently closed to public use. Therefore, the project would have a beneficial impact on recreational uses east of I-5 (Class IV).

4.1.1.3 Disposal Sites Options

Compatibility Issues

A variety of disposal site options have been considered including on-site upland disposal, off-site disposal, and overexcavation of area W1. The latter option involves excavating beach quality sand from depths below the design grade for the W1 tidal basin and replacing the sand with material generated from elsewhere in the restoration site. The locations of the various disposal site options are illustrated in Chapter 2, Figure 2.3.1-13).

Two of the disposal site options being considered are located on property owned by the 22nd District Agricultural Association. One site (DS37) is the main paved parking lot located to the north and west of Jimmy Durante Boulevard and the other site (DS38) includes the District's eastern dirt parking lot and Surf and Turf property, located to the east of Jimmy Durante Boulevard. If disposal occurred during peak times, such as the fair or racing season, impacts to the District's facilities would be potentially significant but mitigable (Class II). Disposal on the main parking lot would require the removal and ultimate replacement of the existing asphalt surface. Use of the driving range and adjoining dirt parking lot could not involve any soil removal or surfacing following disposal. Should either of these options be implemented, it would be necessary to coordinate with the District to ensure that the disposal is timed to avoid high use periods at the fairgrounds.

Disposing of excavated material on District sites would raise the main parking lot by one to four feet and the eastern parking lot and Surf and Turf property by 3.5 to 9.5 feet. Although the main parking lot would be raised slightly from its existing elevation, it would continue to be subject to flooding during a 100-year flood. The eastern disposal site (DS38) would be raised to elevation 15 feet MSL. Current calculations indicate that the 100-year flood elevation in this general area is approximately 17.5 feet MSL per HEC-2 analysis and 14.2 feet per Fluvial 12 modeling (see section 4.2 for additional details). Use of DS38 as a disposal site could potentially enable the District to develop this area with other uses in the future. This would represent a potential indirect revenue benefit to the District (see section 4.15, Socioeconomics), but would also create potentially adverse land use and environmental impacts such as increased intensity of use in proximity to wetlands, and increased traffic related to new development. In addition, the loss of delineated wetlands, as described in section 4.4, would represent a significant impact. If DS38 is selected as a disposal site for the project, any future use of the site for purposes other than parking or a driving range would require subsequent environmental review in accordance with CEQA to evaluate project-specific impacts.

Portions of proposed disposal sites DS32, located east of I-5 and just to the south of Via de la Valle and sites DS33 - DS36, located south of the river and west of El Camino Real, are currently under cultivation. Use of one or more of these sites would permanently displace the existing agricultural use within the specific disposal area. Therefore, disposal on any one of these sites would not be compatible with the existing agricultural use, thus representing a significant and unmitigable impact on agriculture, which is described in section 4.5, Natural Resources. It should be noted however that even without the use of these disposal sites the agricultural use of the properties could be displaced by the proposal to restore these areas to native upland habitat.

Disposal site locations associated with the proposed berms and nesting sites would have similar effects to those discussed in sections 4.1.1.4 and 4.1.1.5 below. Residential areas located adjacent to the disposal sites, especially those units located just to the east of El Camino Real would experience short-term visual and noise effects from disposal site activities; however, there would be no long-term compatibility issues associated with disposal. If in the future, the current property owners (i.e. City of San Diego for sites DS33 - DS35 and the San Dieguito Partnership for DS36) propose uses other than those outlined by the Park Master Plan, the development of those uses would then be subject to subsequent environmental review in accordance with CEQA.

The disposal site option that would involve overexcavating area W1 would result in the need to stockpile material on the old airfield property while sand was excavated from the area proposed as a tidal basin. Once sand excavation is completed, the stockpiled material would be placed in the excavated pit and the area would be restored to subtidal and intertidal habitat. The homes located along Racetrack View Drive and San Dieguito Drive would experience short-term visual and noise effects from these disposal site activities; however, there would be no long-term compatibility issues associated with disposal. The effects of this disposal option on residents along Sandy Lane are addressed in section 4.1.1.1. Impacts on land use compatibility as a result of the implementation of the overexcavation option are considered to be adverse but less than significant (Class III).

Displacement of Recreational Uses

For the overexcavation alternative, if beach disposal were used, it would disrupt recreational use for 6 to 8 months on up to 30 acres of the beach located north and south of the river inlet. Use of portions of the beach would periodically be restricted in order to accommodate the sand disposal activities. This would represent a temporary adverse but less than significant impact (Class III). Once on-shore disposal is completed, the additional sand, estimated at 8,000 cubic yards per day, would be a benefit to beach users.

Nearshore disposal would also have potential temporary adverse impacts on beach users from equipment on the beach and in the water (Class III).

4.1.1.4 Berms and Infrastructure Protection

Compatibility Issues

The three proposed berms (see figures 2.3.1-1 and 2.3.1-2) would be located in existing undeveloped areas and would not have impacts on existing developed land uses. Infrastructure protection measures including slope protection, water control structures, utility corridor and bridge protection (e.g., relocation of 69-kV transmission lines east of I-5), and erosion control have been incorporated into the project and would not be considered incompatible with existing land uses. Impacts of the berms and infrastructure protection on existing land use would be negligible.

Recreation Issues

The eastern portions of berm B8 located south of Via de la Valle would be used as part of the proposed Interpretive Overlook Trail, which if implemented would create a recreation benefit (Class IV). There would be no adverse effects on existing recreation.

4.1.1.5 Nesting Sites

Compatibility Issues

The five proposed nesting sites (see Figure 2.3.1-1) would be located in undeveloped areas and would have no adverse effects on existing land uses.

Recreation Issues

In order to ensure successful nesting results at the three nesting sites proposed in the western portion of the restoration area, fencing would be installed that would prevent access into the western restoration area. Currently, informal access into the area is occurring. This access would be eliminated as a result of project implementation, however the loss of this recreational opportunity would be offset by the provision of new recreational opportunities elsewhere in the restoration project. The nesting sites proposed for the area east of I-5 would enhance bird viewing opportunities along the proposed trails, especially for users of the Mesa Loop Trail, which is designed as a wildlife viewing area. Although these sites would also be fenced, no current public access occurs in these areas. Impacts on recreation from the various nesting site proposals are considered potentially adverse but not significant (Class III).

4.1.1.6 Public Access/Interpretation

This section addresses the compatibility of proposed trails, interpretive features and 22nd District Agricultural Association uses with land uses and recreation in the project area.

4.1.1.6.1 Trails

The project includes the proposed Coast to Crest Trail and two nature interpretive trails (the Mesa Loop Trail and the Interpretive Overlook Trail).

COMPATIBILITY ISSUES

The proposed trail system has been designed to direct existing and new public access onto well-defined trails. For the most part, these trails are located at the edge of the project area and away from areas that would be dredged and excavated for restoration purposes. None of the trails would occur immediately adjacent to existing residential development or other sensitive land uses. The trail that would be located closest to existing residential development would be the Mesa Loop Trail. This trail would be located across El Camino Real from newly constructed homes. Activity on this trail would be limited to pedestrian use only. Use of the trail and associated parking area would be restricted to the hours between dawn and dusk. Based on these use restrictions, this trail is not anticipated to result in any land use compatibility impacts.

The Coast to Crest Trail, which is proposed to extend along the north side of the San Dieguito River from Jimmy Durante Boulevard to El Camino Real, would comprise two side-by-side trails: a 4-foot-wide tread surface trail for hikers and equestrians and an 8-foot wide hardened surface trail for bicyclists and other users. Portions of the preferred trail alignment would occur along the southern edge of District property, specifically the area between Jimmy Durante Boulevard and I-5 and the area east of the Via de la Valle property along the southern edge of Horsepark.

From Jimmy Durante Boulevard east to the western edge of the existing Surf and Turf driving range, the trail would be constructed along the southern edge of the District's seasonal parking lot. To avoid land use conflicts between District uses and trail use, a lodgepole fence would be provided between the northern edge of the trail and the District's existing uses. Through the use of fencing, as well as coordination with the District to determine the best alignment for the trail through the southern parking lot, land use conflicts in this area could be avoided (Class II). An analysis of potential impacts related to the loss of some parking spaces in this area is provided in section 4.7.

The portion of the trail that extends from the southern parking lot east to I-5 would be aligned along the southernmost end of the golf driving range. Possible conflicts between trail use and driving range activities include the potential for a trail user to be hit by a golf ball as a result of an exceptionally long drive, as well as the potential for trail users to leave the trail and enter the driving range. The estimated distance from the golf tees, which are located on the north end of the range, to the range's south end is approximately 300 yards (personal communication, N. Brouwer 1999). At times, the grassy area containing the tees is moved as much as 20 yards to the south. Some players at the range are reported to hit up to approximately 300 yards. According to T.F. Hardman, a consultant on golf equipment, the average distance hit by a tour professional player is about 275 yards, while low handicap amateur golfers generally reach a total distance of 250 yards. Average amateur golfers hit a maximum of 200 yards to 230 yards total distance (David Evans and Associates Inc. 1999). These distances typically include a roll of approximately 25 yards on the ground. Under optimum ball flight conditions, a ball hit 250 yards would reach a height of 117 feet at 200 yards from the tee, decreasing to 23 feet in height at 240 yards from the tee, and at 250 yards the ball would generally be rolling. Conditions such as wind velocity and temperature also affect ball flight. It therefore appears that the trail would be sufficiently separated from the tees so that trail use at the southern end of the driving range would not adversely affect the operation of the driving range under typical conditions. To further reduce the potential for conflicts, a 5 to 6-foot-high fence with 1-inch or smaller mesh would be provided between the driving range and the trail. The installation of fencing and coordination with the District on final trail design would reduce potentially significant impacts to less than significant (Class II).

The preferred alignment for the Coast to Crest Trail east of the Via de la Valle property is to travel along the north side of the San Dieguito River near the southern end of the Horsepark property. This alignment could result in potentially significant land use conflicts between the existing equestrian operation and public trail uses (Class II). Potential conflicts could result from several sources, including physical disruption of existing Horsepark activities and proximity of public trail uses to private equestrian uses. There is limited space available between the river and existing Horsepark activities, therefore, in order to construct a public trail in this space, it may be necessary to bisect one or more of the existing Horsepark activity areas such as the cross-country course an/or the southeast pasture area. In addition, the proximity of public trail uses including bicycling, hiking, and horseback riding could disturb resident horses boarded in the barns along the southern end of the property. The current trail design does include the use of fencing to separate trail users from Horsepark activities, however, to avoid the types of conflicts described above, the ultimate alignment must be coordinated with the District, which would be one of the agencies with final approval authority for this segment of the trail.

An alternative alignment that would avoid the Horsepark property is also being considered. This alignment would cross the San Dieguito River near the southeast corner of the Via de la Valle property and enter the Boudreau property. Within the Boudreau property the trail would either follow along the existing SDG&E easement to the El Camino Real/San Dieguito Road intersection or follow along the northern and eastern edge of the property to the intersection of El Camino Real and San Dieguito Road. From El Camino Real, the trail would head north to reconnect with the existing public trail located north of the river and east of El Camino Real. Under this alternative the trail would be constructed only after active crop production was no longer occurring on the property. This would avoid issues related to pesticide use. If, however, the property is ultimately developed for some other use, the trail could be incorporated into the project design assuming the property owner continues to have an interest in doing so. Use conflicts could be minimized through coordination with the property owner. Because the trail could only be constructed on the property with the property owner's approval, no significant impacts are anticipated. This alternative alignment would take trail users a considerable distance out of direction in order to avoid the Horsepark property.

Another design feature proposed for the Coast to Crest Trail to ensure compatibility between trail uses and sensitive habitat is the installation of lodgepole or post and cable fencing along the southern and eastern edge of the trail to separate trail users from existing and soon to be created wetland areas. The proposed physical separation of trail users from adjacent uses would avoid conflicts with most adjacent land uses and would discourage people from going off the trail.

The Coast to Crest Trail has been aligned at the outermost edge of the project area to reduce potential impacts to sensitive areas. Nevertheless, two portions of the trail would occur within the 100-foot buffer that separates the restored habitat from other uses. One such segment of the trail would extend for about 1,100 feet from the I-5 Bridge north to a point 100 feet north of restoration module W4. This segment of the trail would be aligned within an existing utility easement used by Pacific Bell to maintain its fiber optic cables that parallel I-5. Another portion of the trail that would occur within 100 feet of the restored wetland extends for 477 feet from the southern terminus of San Andres Drive to an existing driveway cut that is the proposed access point for the future Nature Center. The latter segment would be located within the existing road right-of-way. The final project design will maximize the separation between the upper limit of restored wetlands and the edge of the trail, and although the trail will be located well above the limit of restored wetlands, it appears that encroachment within a nominal 100-foot buffer zone may be unavoidable in these two areas. Measures have been included in the project description (section 2.3.1.8) and section 4.4.1.3.2 (Biological Resources) that would ensure that the buffer, although less than 100 feet wide in places, would function as intended, reducing potential impacts to wetlands to a less than significant level.

The proposed Interpretive Overlook Trail to be located south of the Via de la Valle property would be located on existing undeveloped lands owned by the JPA. It would be designated for pedestrian use and would extend out on berm B8. Fencing and landscaping would be provided at the trail end point to prevent public access to areas containing sensitive habitat. No land use impacts are anticipated as a result of this trail proposal.

RECREATION ISSUES

No existing recreation would be displaced by the proposed trails. The proposed trail system would create extensive recreation benefits and would reduce impacts from loss of informal recreation areas and activities created by the restoration components of the project (Class IV).

4.1.1.6.2 Interpretive Features

COMPATIBILITY ISSUES

No sensitive land uses occur in proximity to the proposed site for the Water Treatment Ponds, an interpretive feature to be located at the south end of San Andres Drive that would provide environmental education for visitors, as well as improve the quality of water entering the restored wetland system from an existing storm drain. No impacts related to land use compatibility are anticipated from this proposal.

The proposed Nature Center would provide environmental education/interpretive exhibits and access/parking for recreation users of the Coast to Crest Trail. The center would be located on six acres, most of which consist of agricultural lands currently planted in tomatoes. The parking area and structures for the Nature Center would be set back approximately 100 feet or more from Via de la Valle and access would be provided to the site from San Andres Drive. The nearest sensitive land uses to the proposed center are the homes located on the bluffs above Via de la Valle to the north of the site. This residential area is set back from the road with vacant or landscaped areas in between. In consideration of surrounding uses, design features are proposed for the center that would minimize any potential compatibility issues. These include providing native landscaping (i.e. Torrey pines and other native vegetation) on the north side of the site to protect and improve views to the site from the street and surrounding areas, limiting lighting to that required for security needs, and prohibiting parking on the site after hours. The proposed location, access, and design of the site would be compatible with the mixed uses in the surrounding area, therefore, no land use impacts are anticipated.

RECREATION ISSUES

No existing recreation would be displaced by the proposed interpretive features. The proposed interpretive features would create recreation benefits and would reduce impacts from loss of informal recreation areas and activities created by the restoration components of the project.

4.1.1.6.3 Staging/Parking Areas

COMPATIBILITY ISSUES

Four trail staging/parking areas would be provided as part of the public access portions of the project (see Figure 2.3.1-15). These areas are needed to ensure adequate access for visitors and to avoid parking impacts in surrounding neighborhoods and commercial areas. The staging/parking areas would be open from dawn to dusk; night use would be prohibited. Impacts from the four staging areas on land use would be less than significant (Class III), as described below. The primary staging area, located at the Nature Center, would contain 60 automobile spaces and 15 trailer/bus spaces. The project incorporates features that would minimize conflicts with residential uses on the north side of Via de la Valle. These include access via San Andres Drive, a 100-foot setback from Via de la Valle, use of native trees and shrubs to soften the appearance of the structure, prohibiting overnight parking, and limiting night lighting to that needed for security purposes only.

The Mesa Loop Trail, located west of El Camino Real, includes a 25-space parking area. Construction of this staging area and associated trail would displace existing agriculture/tomato crops (see section 4.5). Access in and out of the site would be limited to right turns only unless a signal is installed in the future. This would minimize conflicts with traffic and with the adjacent Villas development across El Camino Real. No parking or other use of this staging area would be permitted between the hours of dusk to dawn. Impacts on existing land use would be less than significant.

Five parking spaces could be accommodated at the foot of the Grand Avenue Bridge off San Dieguito Drive, near a proposed viewing area for the restored wetlands. Portions of the Grand Avenue Bridge would be removed and no trails would be provided in this area. Impacts from the staging area would be minimal; visitors already frequent this location to view the wetlands.

A 20-car parking area is proposed at the westernmost end of the District's south overflow parking lot in an area where soil is currently stored for use at the Fair's flower show. Therefore, this proposal would result in the need to identify a new storage site for the soil. Use of this area for trail staging would not be available during the Fair and races. Because this use would require coordination and approval from the District prior to implementation, no impacts to the District's operations are anticipated.

RECREATION ISSUES

No recreation uses would be displaced by the proposed staging / parking areas.

4.1.1.7 Twenty-Second District Agricultural Association Uses

Compatibility Issues

The proposed seasonal use of the tram would supplement the use of buses to transport visitors from parking areas on the Horsepark property to the Del Mar Fairgrounds, which would benefit visitors to the Fair and provide an alternative to bus use of public streets for some riders. The tram would use the bicycle portion of the proposed Coast to Crest Trail, an 8-foot-wide hard-surfaced trail designed to Caltrans Class 1 bicycle standards. During use of the tram, which would occur for 21 days in June and July during the Fair and on the first day of racing, it would be necessary for bicyclists and other users of the hard-surfaced trail to share the trail with the tram. The tram would operate at speeds of 10–15 miles per hour and could cause conflicts with bike and other users on the hard surfaced trail as these users would find it necessary to get off the trail in order to permit the tram to pass. The hard-surfaced trail is aligned side-by-side with the 4-foot-wide compacted soil hiking / equestrian trail. The presence of a large, motorized vehicle on the paved trail could also conflict with equestrians and hikers using the adjoining trail. These conflicts relate to disruption in the overall recreational experience, as well as to the effects that the presence of the tram could have on a horse's behavior. Trams would also increase noise levels (about 70 to 75 dBA at 50 feet) along the trail, which could affect non-motorized users of both trails (see section 4.14, Noise). In addition, effects of noise from the tram on wildlife may be a concern (see section 4.4 Biological Resources). Use of the tram is considered to be a beneficial impact on Fair operations since it would provide a convenience for visitors. However, the addition of a motorized use on this portion of the Coast to Crest Trail could result in significant user conflicts due to the physical intrusion on the trail, which would be exacerbated by increased noise levels and visual intrusion. This is of particular concern with respect to equestrians, who may encounter the tram under the I-5 bridge, where the trail would be widened by 2 feet for the tram, and to disabled users, who may have to leave the paved trail in order to permit the tram to pass. Although temporary in nature (approximately one month out of the year) these impacts are considered potentially significant and unmitigable (Class I). Widening portions of the trail may partially reduce these conflicts but they would still remain potentially significant, and closure of the trail to recreation users during tram use to avoid these conflicts is not considered a feasible measure due to the loss of recreation use.

The JPA has also agreed to consider the possible lease or transfer of 15 to 20 acres on the Via de la Valle property (area U18) to the District for one or more uses, including a thoroughbred training track with a chain link fence enclosure, uncovered show rings, cross-country course, demonstration agricultural uses for youth in conjunction with the Fair, relocation of show barns from Horsepark, staging of truck trailers during the Fair, and overflow parking during the Fair and special Horsepark events. The Via de la Valle property is currently under cultivation, however, this use could be displaced by the project with or without District use of this area since it is proposed as a potential disposal site (DS32). If disposal is not permitted on this site, the property would not be transferred to the JPA and no District uses would occur in association with this project.

Assuming lease or transfer of area U18 to the District is proposed, the uses being considered are for the most part equestrian-related or temporary Fair activities. Such uses would be compatible with similar existing uses on the south side of Via de la Valle. There is, however, the potential for significant land use impacts to residential areas located to the north of the site across Via de la Valle if public address systems are used (i.e., a Class II noise/nuisance impact) and/or if night lighting is visible (i.e., a Class II visual impact). Conflicts with recreation use of the Coast to Crest Trail, including noise and visual effects, would be minimized though use of setbacks and fencing. The impact of District uses on the Via de la Valle property to surrounding residential areas are considered to be potentially significant but could be reduced to less than significant through implementation of mitigation measures described for noise (section 4.14) and visual resources (section 4.6) (Class II).

4.1.2 Maximum Tidal Basin Alternative

For most of the action alternatives, the project footprint would be the same, although the acreage in each type of habitat would vary. The Reduced Berm Alternative however would utilize considerably less acreage on the east side of I-5. Impacts to land use and recreation from the Maximum Tidal Basin Alternative would be similar to the Mixed Habitat Alternative and the discussion of mitigation measures would be the same. Currents could be slightly higher than the Mixed Habitat Alternative (see sections 4.2 and 4.10 for more details), making crossing of the river inlet by recreation users slightly more difficult.

4.1.3 Maximum Intertidal Alternative

The impacts to land use and recreation from the Maximum Intertidal Alternative would be similar to the Mixed Habitat Alternative, although staging area SA2 may not be required and SA3 would be needed for a shorter period of time. Mitigation measures would be the same.

4.1.4 Hybrid Alternative

The impacts to land use and recreation from the Hybrid Alternative would be similar to the Mixed Habitat Alternative and mitigation measures would be the same.

4.1.5 Reduced Berm Alternative

Impacts to land use and recreation from the Reduced Berm Alternative would be similar to the Mixed Habitat Alternative. However, the Interpretive Overlook Trail would be eliminated, reducing some of the public access and recreation benefits of the project. Most of the restoration north of the river and east of I-5 would not occur. The upland area identified as U18 on the Via de la Valle property would not be included in this alternative; however, this area could still be used as a disposal site. Staging area SA2 may not be required under this alternative. Impacts identified as significant for the Mixed Habitat Alternative would remain significant under this alternative and mitigation measures would be identical.

4.1.6 No Action Alternative

Under the No Action Alternative, existing conditions described in this section would not be affected by the project. The project and the associated public access features would not occur, and therefore the recreation benefits from the proposed trails, interpretive features, and Nature Center would be eliminated. Project-related recreation impacts (Class II) on beach access and use and on other recreation uses would be eliminated and no changes to the Grand Avenue Bridge would occur. Potential project-related impacts on residential areas (Class II) from construction and maintenance activities would also be eliminated. Potential conversion, due to the project, of agricultural lands located east of I-5 would not occur. However, without the project, agricultural lands on the Via de la Valle property would potentially be developed for residential uses, whereas these development rights have currently been transferred to another property (refer to Chapter 2). Adverse, less than significant (Class III) impacts on other non-residential uses, including the Agricultural District use, would not occur.

4.1.7 Mitigation Measures

The mitigation measures listed below would be applicable to all of the alternatives except the No Action Alternative.

To reduce compatibility impacts to residences along Racetrack View Drive from use of SA3 to a less than significant level, the following measures shall be made a condition of the Coastal Development Permit and / or other discretionary permits required for the project.

- Hours of operation at SA3 shall be limited to 7 A.M. to 7 P.M. and nighttime lighting shall be shielded and limited to that needed for security and nighttime maintenance, should this activity be permitted by the appropriate land use authorities. The construction contractor shall be responsible for implementing this mitigation, with oversight by SCE or JPA.

- Use of the proposed new haul road for construction access to SA3 shall be limited to mobilization, demobilization, and occasional truck traffic for equipment maintenance and exchange and hours of operation limited to 7 a.m. to 7 p.m. Use of the haul road for daily access by construction workers going to and from the work site shall be prevented. The construction contractor shall be responsible for implementing this mitigation, with oversight by SCE or JPA.

To reduce compatibility impacts to residences along Sandy Lane and west of I-5 in the vicinity of area W1, and to reduce recreation impacts to beach users from maintenance dredging, the following measures shall be implemented.

- As a condition of the Coastal Development Permit and / or other discretionary permits required for the project, a public outreach / public comment program shall be developed by the applicant and approved by the appropriate affected agencies (City of Del Mar, City of San Diego, CCC, JPA).

To reduce the impact to beach access associated with the depth and velocity of water within the inlet channel after project implementation, the following mitigation measure shall be implemented:

As a condition of the Coastal Development Permit and prior to the approval of discretionary permits required for the project from the City of Del Mar, the applicant shall be prepare, to the satisfaction of the City of Del Mar, a design for a pedestrian access way along the south side of the inlet channel that would accommodate access to Camino Del Mar. In addition, the applicant shall also agree to fund and construct said pathway prior to opening the inlet channel. If based on additional design work, the City of Del Mar determines that the pathway is in fact technically infeasible, an alternative access way to Camino Del Mar shall be considered.

To reduce compatibility impacts on property owned by the 22nd District Agricultural Association from proposed disposal sites DS37 (the main paved parking lot located to the north and west of Jimmy Durante Boulevard) and DS38 (the District's eastern dirt parking lot and Surf and Turf property, located to the east of Jimmy Durante Boulevard), the following measure should be implemented.

- Disposal sites DS37 and DS38 shall not be used during peak times such as the Del Mar fair or racing season.

To reduce compatibility conflicts between the proposed Coast to Crest Trail and existing activities at the Agricultural District's Surf and Turf golf driving range and a seasonal parking lot, the following measures would be implemented. These measures could be made a condition of any future agreement between the District and the JPA regarding trails.

- A 5 to 6-foot-high fence with 1-inch or smaller mesh shall be provided between the driving range and the trail.
- A lodgepole or post and cable fence shall be provided between the trail and the District's parking areas.
- The final trail design and alignment shall be coordinated with the District in order to minimize potential conflicts.

To reduce use conflicts between public use of the proposed Coast to Crest Trail and equestrian activities at the District's Horsepark property, the following measures would be implemented. These measures could be made a condition of any future agreement between the District and the JPA regarding trails.

- Prior to construction of the Coast to Crest Trail, the JPA shall coordinate the trail alignment with the District to ensure that use conflicts have been minimized. Measures such as the installation of fences, gates, and possibly vegetative screening shall be considered and District staff shall be consulted to determine the best alignment for the trail through the Horsepark facility.

Mitigation measures identified for noise and visual resources would apply to District use of U18, which includes portions of the Via de la Valle site and would reduce compatibility impacts to nearby residences to a less than significant level.

4.2 HYDROLOGY/WATER QUALITY

This section discusses impacts from the proposed project alternatives to hydrology and water quality, including river, lagoon, and coastal hydrology, and surface and groundwater quality.

Significance Criteria for Hydrology

Impacts of the proposed project on river and lagoon hydrology would be considered significant if:

- A change in the floodplain or floodway boundary occurred that either substantially increased the floodplain footprint or exacerbated flooding conditions within areas outside of the project footprint or non-project areas designated for open-space habitat conservation.
- River or debris flow conditions were substantially altered, potentially causing damage to structures or exposing the public to substantial risk.
- The amount of river sediments destined for the beach and littoral cell is substantially reduced.

Significance Criteria for Coastal Processes

Impacts of the proposed project on the coastal hydrology would be considered significant if:

- Alterations in tidal inlet or nearshore currents are produced that substantially increase the erosion rate of beach sediments, modify beach or nearshore bottom topography, or increase risks of damage to coastal structures.

Significance Criteria for Water and Sediment Quality

Impacts from the proposed project to water and sediment quality would be considered significant if:

- Increased runoff associated with construction of impervious surfaces substantially alters beneficial uses of groundwater.
- Changes in hydrological conditions result in sedimentation in downstream areas and/or alterations in circulation patterns that substantially inhibit mixing or promote stagnation.
- Pollutants are generated or released to the environment that are in violation of applicable federal or state standards, hazardous to human health, or deleterious to biological communities.
- Disposal of dredged sediments/excavated soils results in substantial adverse changes to water or sediment quality, toxicity or bioaccumulation of contaminants in aquatic biota, or declines in wildlife habitat.

These criteria are based, in part, on the City of San Diego Planning Department Significance Determination Guidelines under CEQA (1994).

Numerous hydraulic considerations were evaluated for the various alternatives to assess the class of impact. These included the following:

- Modifications to existing drainage patterns;
- Changes to stream-flow velocities;
- Stream bed scour affecting utilities;
- Roadway pier/abutment scour;
- Flood debris;
- Tidal fluctuations; and
- Tidal currents.

Consideration was also given to project components expected to affect water and sediment quality, as follows:

- Excavation and maintenance of the tidal inlet to promote continual exchange between the wetlands and the ocean;
- Excavation/dredging of soils and sediments to create/restore wetlands and disposal of dredged materials;
- Construction of berms along the San Dieguito River to maintain existing flood flows and direct sediment transport to the ocean;
- Placement of culverts through two river berms to balance water levels in the tidal lagoons and river channel;
- Construction of a weir along the eastern edge of berm B8 to eliminate backwater effects on the upstream river channel; and
- Construction of public access to areas near the wetlands.

Many of the components of the proposed project are common to all alternatives except the No Action Alternative (see section 2.3.1.13). Specifically, these include excavation and maintenance of the tidal inlet, restoration of historic tidal wetlands on the west and east sides of I-5, evaluations of dredged material disposal options, berm, culvert, and weir construction along the river channel, and increased public access are components of each of the alternatives.

The proposed wetland restoration project entails a substantial alteration of the lower reaches of the San Dieguito River. This project would improve the hydraulic efficiency of the main channel, while sustaining a healthy biological habitat within constructed off-channel areas protected from flood flows. The Mixed Habitat, Maximum Tidal Basin, Maximum Intertidal, and Hybrid Alternatives all utilize the same main channel design, in terms of hydraulic geometry, conveyance, and restoration habitat mix, whereas the habitat mix in off-channel basins varies with each alternative. In contrast, the Reduced Berm Alternative effectively reduces the extent of project changes, but also reduces the amount of restored habitat (section 2.3.1).

All of the proposed alternatives incorporate earthen berms constructed within the floodway of the San Dieguito River to more efficiently convey riverine sediments to the beach and improve the quality of the off-channel habitat. Regardless of the off-channel habitat mix, the river berms would provide a significant benefit by protecting constructed habitat from potential damage by floods and sedimentation from the river, as would occur under existing conditions without the berms.

Primary differences among the alternatives related to hydrology and water and sediment quality are the size of the tidal prism and volumes of dredged materials generated by the specific alternatives. The similarities and differences in potential impacts to water and sediment are discussed for each alternative in the following sections.

4.2.1 Mixed Habitat Alternative

The Mixed Habitat Alternative includes both tidal wetland and non-tidal (e.g., upland, riparian, and freshwater) habitat components. This alternative is similar to the Maximum Tidal Basin, Maximum Intertidal, and Hybrid Alternatives because the project footprint, berm plan, and amount and location of restored seasonal salt marsh habitat are identical. The primary differences between these four alternatives are the amounts of dredged material generated and the type and amount of tidal habitat that would be restored. The hydraulic and sedimentological characteristics of the alternative have been evaluated using mathematical modeling to assess the river channel behavior under existing and modified conditions (Chang 1997, 1998a-c, f, g, 1999a, b). The Mixed Habitat Alternative (Figure 2.3.1-1) would create off-channel tidal basins and, at the same time, incorporate berms to maintain effective river flow while bypassing the tidal basins. This would maintain sand flow down the river to avoid potential scour impacts. The numerical modeling shows that the project would not change the potential scour for infrastructure (e.g., bridges and utilities) and would maintain the present sediment delivery to the beach and nearshore zone. A more detailed description of this process is provided in section 4.2.1.4.

Creation of tidally driven off-channel basins would support the main objective of providing functional wetland habitat. At the same time, this design eliminates the undesirable effects of siltation and habitat degradation common to on-channel lagoonal systems.

Berms are common to all of the restoration alternatives, excluding the No Action Alternative. Fewer berms would be required under the Reduced Berm Alternative. Berms are proposed within the main channel to confine the erosive, high-velocity 100-year flood flows within a well-defined, relatively narrow, on-channel corridor, which can efficiently transport riverine sediments through the system and onto the beach and nearshore zones. When evaluating the hydraulics system that operates downstream of I-5, the high marsh and seasonal marsh would likely be damaged (eroded) during flood flows, enabling efficient conveyance of riverine sediments to the beach. Conversely, off-channel habitat development south of the berm would remain protected from the damaging flood flows. This is because the high velocity flood waters would be confined within the berms, and flood flows would be directed past the mouth of the side channel access into the southerly off-channel habitat area.

This concept of an effective flow area (where the majority of the river's hydraulic capacity exists) compared to the ineffective flow areas (where stagnant water accumulates as flood waters rise) is illustrated on Figure 4.2-1 (reproduced from the Hydraulic and Fluvial Study for Wetland Restoration in San Dieguito River, prepared by Chang, September 1997). The figure provides a graphic model of the San Dieguito River for a flood flow of 20,000 cubic feet per second (cfs). As indicated in the figure, the length and density of arrows represent the velocity and areal distribution of flow, with the majority of flood flow confined to the effective flow area. As indicated above, the effective flow area represents the deeper, hydraulically efficient section of the river valley where the berms have been strategically placed to confine and direct the high velocity flood waters through the lower reaches of the lagoon. Thus, these confined flows represent the vast majority of the flood waters otherwise referred to as the effective flow area. Conversely, the ineffective flow areas, or those well outside of the relatively narrow on-channel corridor, still become inundated by both tidal exchange and flood waters. However, the actual flow velocities within these off-channel areas, especially during flood flows, are relatively low due to the directional control afforded by the berms and riparian vegetation within the off-channel areas. The design and location of the berms, along with the proposed grading, including certain side channel access areas, allow tidal exchange into the off-channel habitat, but prevent the more infrequent flood flows from entering the off-channel areas due to the directional control afforded by the berms and regraded topography. Environmental consequences of the potential alternatives to hydrologic conditions are discussed in sections 4.2.1.2 and 4.2.1.4.

4.2.1.1 Construction Staging and Access Areas

Hydrology and Coastal Processes

Inasmuch as staging areas SA3 and SA4 (equipment storage and field offices) are located at least 700 feet from the main river channel and at least one mile from the shoreline, they are sufficiently distant from both so as to have no impacts on either river hydraulic conditions or coastal processes. Similarly, staging area SA2 (stockpiled excavated materials), while located adjacent to the main channel, is nevertheless elevated sufficiently so as not to encroach into the floodplain, and would therefore have no effect on river hydraulic processes. Staging area SA2 is about 2,200 feet from the shoreline and thus would not affect coastal processes either. The use of best management practices (BMPs) such as the use of hay bales, sand bags, and check dams to protect stored excavated materials from river flows would further reduce the potential for erosion in the event of high river flows during construction.

Since staging area SA1 (stockpiled excavated materials) is located at the shoreline near the river mouth, materials stored here could potentially influence river hydraulics or coastal processes if either a significant flood event or a high surf event occurred during construction that was severe enough to inundate the staging area and erode some amount of the stockpiled materials. While this is a possibility, the actual likelihood of such an occurrence is quite small. It would require a significant storm event to occur during a period when stockpiled materials were located relatively close to either the surf zone or the banks of the main river channel. The potential impact is for stockpiled materials to be washed out of the stockpile area either by river flow or high waves. In either case, the material could enter the nearshore zone and mix with other suspended sediments that would be present during a storm event.

To minimize the loss of stockpiled materials to the surf zone at storage area SA1, materials would be stored away from the main channel and as far landward as possible during construction. The use of BMPs such as sand bags or silt fences around stockpiled materials would also minimize

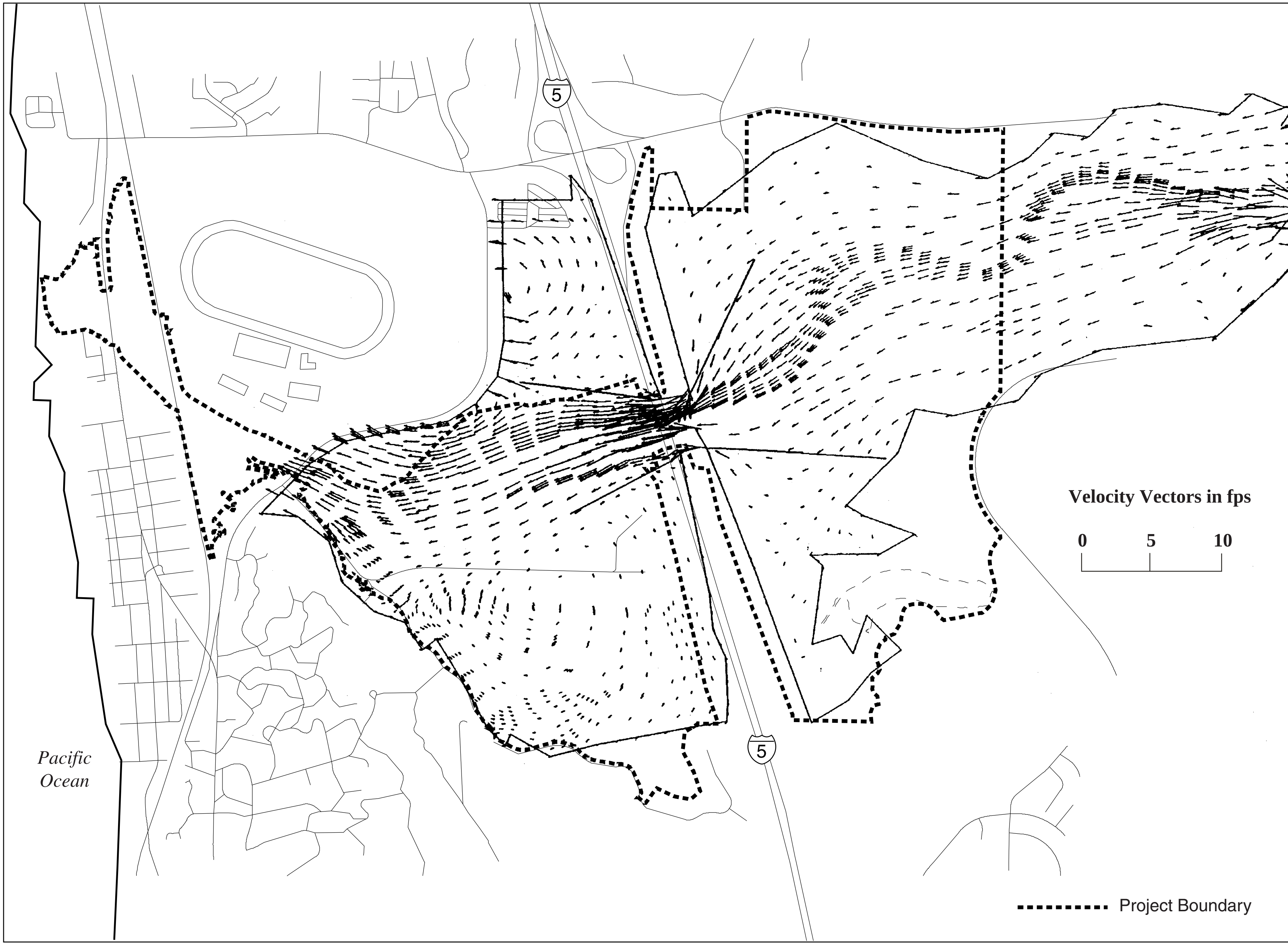


Figure 4.2-1. Lower San Dieguito River – Proposed Project Effective Flood Area Visualization with 20,000 cfs

impacts. Construction activities for all inland staging areas would likely occur during the dry season (between May and September per NPDES regulations), and thus would further minimize potential impacts. Further, a storm water pollution prevention plan (SWPPP) would be required for construction activities because the construction footprint would be larger than 5 acres. The permit will require best management practices (BMPs) that would include both structural and non-structural measures to ensure that runoff from the construction site does not add pollutants to runoff in amounts that would adversely affect water quality. Storage area SA1 is further regulated by the Coastal Commission and other resource agencies concerned with beach and nearshore environmental impacts. The Coastal Commission does not permit the placement of material on the beach between Memorial Day and Labor Day. Beach disposal would also have to be scheduled around any potential grunion spawning periods and any other environmental constraints. Based on these considerations, potential impacts associated with construction staging and access areas are considered to be potentially adverse but not significant (Class III).

Water Quality

Of the four proposed construction staging and access areas, two (SA1 and SA2) would be used, in part, for stockpiling and transferring excavated materials, whereas the other two (SA3 and SA4) would be used for equipment storage and field offices. Construction staging and equipment storage activities would not intentionally generate waste materials or effluent streams with potentials for impacting water quality. However, initial stockpiling of excavated materials at SA1 and SA2 would produce a dewatering effluent consisting of site waters initially associated with the dredged material. Unless contained, the runoff from the stockpile area would flow into adjacent surface waters. Dredged materials stockpiled at SA1 would consist of sand-sized materials from the inlet channel. Runoff would produce a turbid plume, with high suspended solids concentrations, within the inlet channel and nearshore waters directly offshore from the river mouth. This would be similar in appearance to river discharge following a rainfall or storm event. The effects of runoff from SA2 would be similar, but the turbidity plume would likely be confined primarily to the river channel. As discussed in section 3.3, results from recent testing indicate that soils and sediments from areas that would be excavated do not contain substantial concentrations of chemical contaminants (Ogden 1999). Therefore, soluble pollutants would not be expected to occur in runoff waters in amounts exceeding water quality standards or causing possible degradation of receiving waters.

If impounded, the dewatering effluent would evaporate into the atmosphere and/or infiltrate the soil and return to the groundwater table. The groundwater at the staging and access areas is saline, so no mixing with fresh groundwater is expected. As discussed in section 3.3, results from recent testing indicate that soils and sediments from areas that would be excavated do not contain substantial concentrations of chemical contaminants (Ogden 1999). Therefore, no soluble pollutants would be redistributed by this process. Equipment storage and field offices (SA3 and SA4) would not generate any wastes or effluents expected to affect groundwater unless appreciable amounts of hydraulic fluid or oils were spilled or leaked from equipment onto the ground and into the aquifer. However, such impacts could be avoided through the implementation of standard construction precautions and Best Management Practices (BMPs; section 4.10). Potential impacts to groundwater quality from construction staging and access areas are considered potentially significant, but mitigable (Class II).

Activities at staging areas SA3 and SA4 would not generate any wastes or effluents that are expected to affect water quality. However, construction staging could affect water and sediment/soil quality if petroleum products, such as hydraulic fluid or oils, were spilled or leaked from equipment onto the ground and then transported to the river or tidal channels by surface runoff following a rainstorm. This potential impact would be avoided by following BMPs (section 4.10). BMPs would help ensure that any substantial spills or leaks are quickly cleaned up and affected soils are containerized for offsite disposal, and/or areas where these materials were stored and used are confined within a temporary berm. Based on these assumptions, potential impacts to water and sediment quality from construction staging and access areas are considered potentially significant, but mitigable (Class II).

4.2.1.2 Excavation and Dredging

The Mixed Habitat Alternative requires excavation/dredging of 1.99 million cubic yards of soils/sediments (section 2.3.1.4). Excavation and dredging operations required for this alternative would be performed in accordance with applicable local, State, and Federal regulations (see section 1.9). Three general categories of effects from excavation and dredging are expected: (1) improved hydraulic efficiency and the beneficial impacts derived from improved tidal circulation/mixing in the lagoon, and related benefits to water and sediment quality, as well as the littoral sand supply to local beaches; (2) short-term impacts associated with physical disturbance of sediments, resulting in localized increases in suspended sediment concentrations and corresponding decreases in water clarity and dissolved oxygen levels; and (3) possible post-dredging changes in sediment texture.

Under present conditions, the inlet to San Dieguito Lagoon is subject to periodic and prolonged closure due to accumulation of beach sands and an inadequate daily tidal prism (section 3.2). Prolonged inlet closure results in degradation of water quality and habitat losses within the wetlands, as well as removal of sands from the littoral sand supply (Jenkins and Inman 1999e). Consequently, one of the goals of the project is to restore the aquatic functions by opening the tidal inlet and maintaining tidal exchange between the ocean and lagoon/wetland. This would be accomplished through initial excavation and periodic dredging of the inlet channel (described in section 2.3.1.4.2). Inlet excavation and maintenance dredging are project components common to all alternatives except the No Action Alternative. Of all the project components, opening and maintaining the tidal inlet to allow continuous exchange between the wetlands and ocean would have the greatest beneficial effect on water and sediment quality. Opening the inlet channel is also expected to amend the sand supply (or decrease sand erosion) to local beaches. This conclusion assumes that the hydrological performance of the restored wetlands achieves the intended (modeled) conditions, as specified in Chang (1997, 1998a-g, 1999a, b). An important component is that adequate tidal exchange occurs throughout the lagoon, including the newly created wetlands, and sediment accumulation within the wetlands does not alter future circulation patterns.

Hydrology

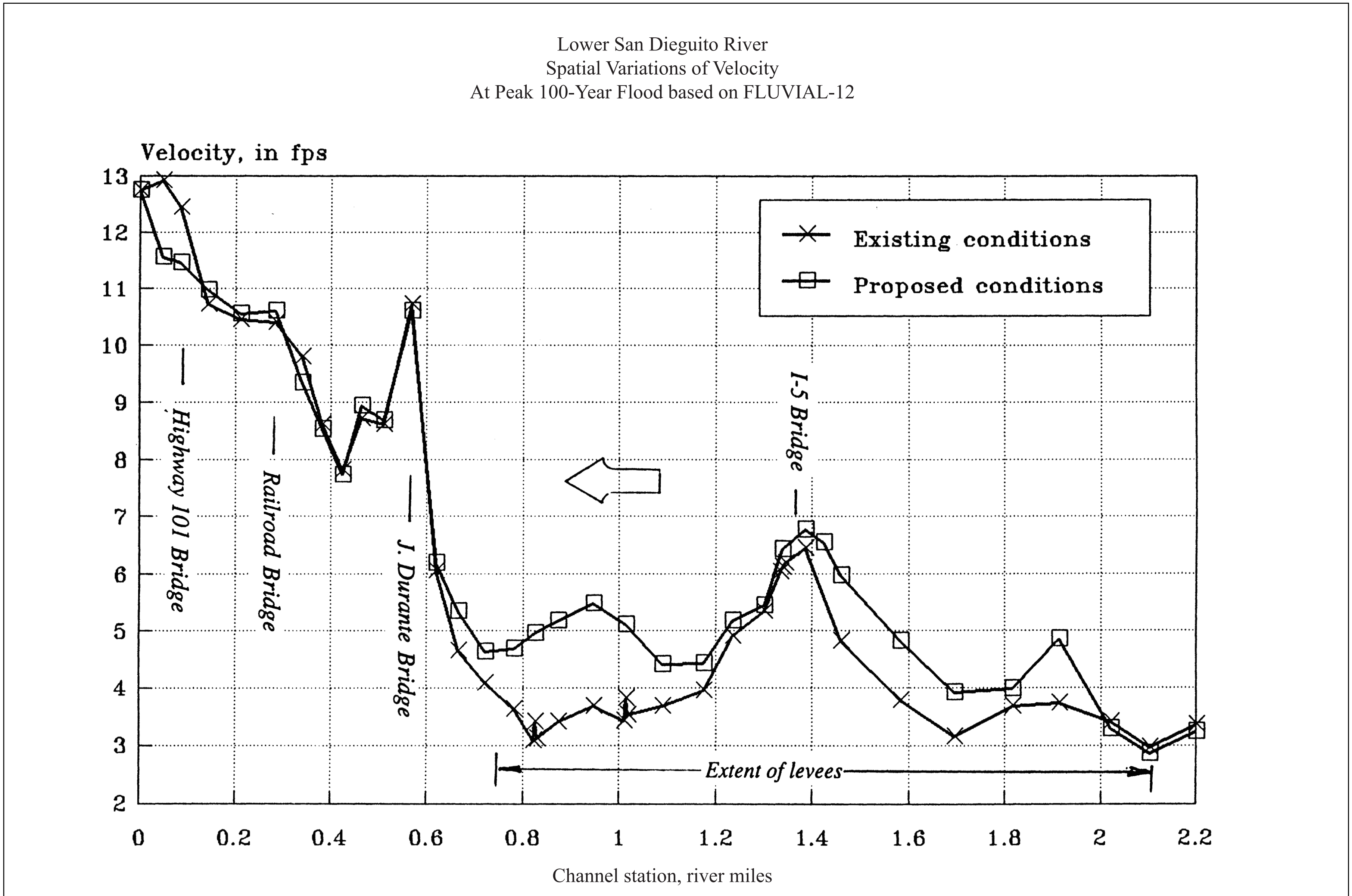
The project would not result in any increase in the floodplain footprint, nor exacerbate flooding conditions within areas outside of the project footprint or non-project areas designated for open-space habitat conservation (Chang 1997, 1998a-g, 1999a, b). Substantial changes proposed for the floodplain and floodway are intended to protect and improve off-channel habitat. Berms are an essential feature of the wetland restoration project. Because some of the proposed berms are within the established floodway, it would be necessary to revise the floodway in order to accommodate the berms. FEMA regulations state that new hydraulic analyses may be required to determine if there is an increase in flooding resulting from (1) any physical alteration within a FEMA-designated floodplain; (2) fill encroachment into an established floodway; or (3) increase in the base flood elevation (BFE) as a result of a physical alteration of the 100-year floodplain. The proposed project falls within the FEMA regulations for new hydraulic analyses, and a FEMA Floodway Map Revision would be required as a part of this project.

The proposed project would not result in a substantial alteration of river or debris flow conditions that increase the potential for damage to structures or expose the public to substantial risk (Chang 1997, 1998a-g, 1999a, b). The berms would alter the river hydraulics and improve the hydraulic capacity through the main channelized section, as shown in Figure 2.3.1-1. This alternative would substantially reduce flood flows throughout the majority of the floodplain, but the hydraulically improved floodway would now carry the majority of all flood flows. On-channel flows would increase locally and could reach velocities that are two times higher than existing conditions. Figure 4.2-2 shows the change in channel velocity from existing to proposed conditions for the 100-year design flood. As indicated on Figure 4.2-2, significant increases in channel velocities generally occur in the relatively broad, unaltered (natural), low-lying areas between Jimmy Durante Bridge and I-5, and again upstream of I-5 and downstream of the Horsepark. In areas where significant increases in velocity would occur, the existing flow is well below 4 feet per second (fps). In virtually all cases (excluding the lower channelized section of river), channel velocities under proposed conditions would be maintained below 6 fps to limit channel bank and channel bed scour. This is a significant but mitigable impact (Class II) by implementing the various engineered erosion control measures proposed as part of the project. As indicated previously, within the off-channel areas or over the majority of the floodplain, flow velocities under the proposed project would be lower than for the existing conditions.

Water-surface elevations for the 100-year flood, computed utilizing both the rigid boundary HEC-2 model and the erodible boundary FLUVIAL-12 model, are presented in Table 4.2-1. Water-surface elevations, and thus flooding potential, for the proposed alternative would be at or below existing conditions (Chang 1997, 1998a-g, 1999a, b).

As indicated in the table, computed water-surface elevation depends on the choice of numerical model used. Although FEMA utilizes the HEC-2 model for developing their National Flood Insurance Program rates, the technical community generally agrees that the erodible model (FLUVIAL-12) more accurately reflects actual conditions. Regardless of the model used, the flooding potential would be reduced under the proposed project, thus providing a beneficial impact (Class IV).

Consideration has also been given to project effects on water-surface (water-level) profiles under more frequent flooding conditions compared to the existing conditions, where the low-flow channel is breached above the 2± year (pre-dam) storm. (The low-flow channel for most perennial streams typically contains the 2± year storm. However, for ephemeral streams such as the San Dieguito River, depending upon soil conditions and basin hydrology, the low-flow channel may carry upwards of the 4-year storm. The presence of dams on a river significantly changes the basin flooding characteristics by attenuating flood peaks, such that the pre-dam 2± year discharge, capable of being carried in the low-flow channel, may now represent a statistically more infrequent flood flow downstream of the dam, possibly approaching a 5 to 10-year return period storm



Source: Chang 1997

Figure 4.2-2. Variation in Velocity at the Peak 100-Year Flood

(personal communication, Chang). As indicated on Figure 4.2-3, the proposed project would have a more significant beneficial effect under conditions of more frequent flood flows, due primarily to the improved channel hydraulics.

Table 4.2-1. Water Surface Elevations for 100-Year Flood

		COMPUTED WATER-SURFACE ELEVATION, FEET, NGVD			
		HEC-2		FLUVIAL-12	
*River Mile Section**	*Location*	*Existing Conditions*	*Proposed Conditions*	*Existing Conditions*	*Proposed Conditions*
0.00	River Mouth	8.3	6.5	0	0
0.07	Highway 101 Bridge	11.0	11.0	1.6	1.4
0.13		12.4	11.9	3.5	2.1
0.27	Railroad Bridge	13.1	12.4	6.1	5.5
0.33		13.5	12.7	7.5	6.6
0.41		14.2	13.5	9.4	8.3
0.56	Jimmy Durante Bridge	16.1	15.8	10.2	9.2
0.71		17.2	16.8	13.1	12.2
1.00		17.5	17.0	13.7	13.4
1.16		17.7	17.3	14.2	14.1
1.38	I-5 Bridge	17.8	17.2	15.0	14.8
1.57		18.8	18.2	16.4	16.1
1.81		19.0	18.6	16.9	16.8
2.09	East End of Levee	19.2	18.9	17.6	17.5
2.18		19.3	19.1	17.7	17.7
2.27		19.4	19.2	17.9	17.9
2.35		19.4	19.3	18.1	18.1
2.44		19.5	19.3	18.3	18.3
2.53		19.7	19.6	18.7	18.7
2.61	El Camino Real	19.5	19.3	19.2	19.2
2.69		20.5	20.4	20.6	20.6
* See Figure 3.2.1-5 for locations					

The project would not decrease the amount of river sediments transported to the beach (Chang 1997, 1998a, 1998e, 1998f, 1999). To the contrary, the project would improve sediment delivery to the beach and nearshore zone, with additional beach quality sands generated from proposed dredging to be placed on the beach. The additional sediment delivery to the beach results in large part to the change in river hydraulics caused by construction of the berms. With some minor encroachment into the existing floodplain, the berms slightly narrow the cross-sectional area of flow during storm flows and, as a result, slightly increase flow velocities. These higher flow velocities increase the sediment-carrying capacity of the river, causing a net increase in sediment delivery to the beach over the life of the project. The difference between the existing sediment delivery and the sediment delivery for the proposed project is summarized in Table 4.2-2. The net difference of 20,000 tons (230,000 vs. 210,000) over the 30-year life of the project represents an average increase of 667 tons per year delivered to the beach (Chang 1997).

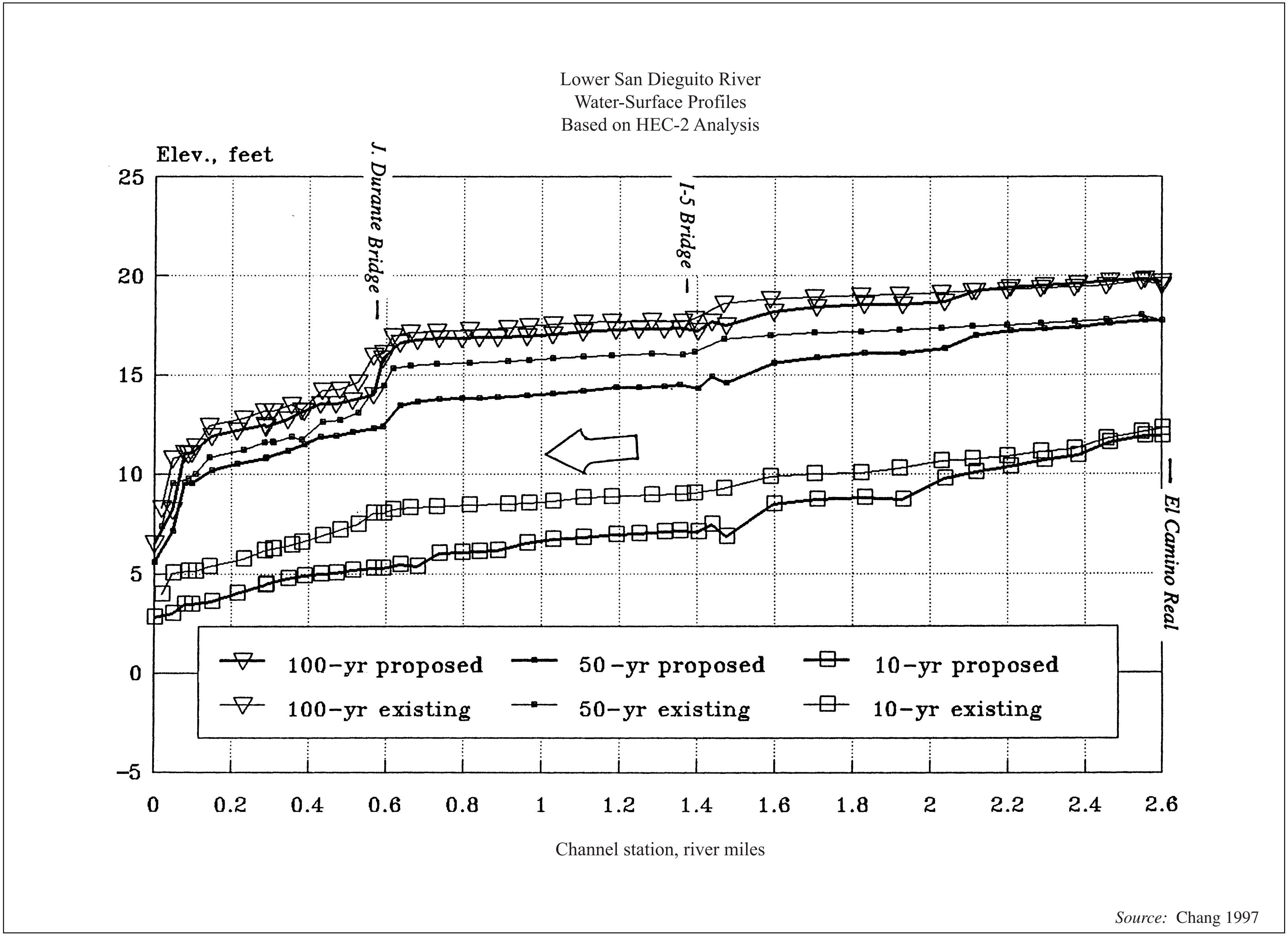


Figure 4.2-3. Comparison of Water-Surface Profiles Between Existing and Proposed Conditions

Table 4.2-2. Comparison of Sediment Deliveries in 30-Year Time Span

Structure	*Location River Mile*	*Total Sediment Delivery 1,000 tons*	
		Existing	*Proposed*
River Mouth	0	210	230
Highway 101 Bridge	0.07	210	230
Railroad Bridge	0.27	210	230
Jimmy Durante Bridge	0.56	210	230
Inlet Channel Entrance	0.72	186	187
I-5 Bridge	1.38	94	104
Utility Corridor	2.27	58	61
El Camino Real Bridge	2.61	77	79

Therefore, this would be a beneficial impact (Class IV).

The impact of floating debris was also evaluated (Chang 1998g), recognizing that the accumulation of debris would create an additional constriction and increase water-surface elevations upstream of the debris accumulation. The proposed project would not increase debris production, however, the more efficient channel flow would limit the deposition of debris within the fringes of the floodplain, as often occurs under existing conditions. Thus, there is an unquantifiable but small increase in the potential to convey debris from the upstream watershed through the project area. The railroad bridge, with its multiple pile bents, has and would accumulate a significant debris load, which could clog the entire channel conveyance up to the bridge deck. Although the railroad bridge would fail during a design storm (Chang 1997, 1998), prior to its failure, reduction in channel conveyance would have a significant impact on the water-surface profiles for a short distance upstream of this bridge. A worst case water-surface (water-level) profile upstream of this bridge, assuming total debris clogging and the bridge sustaining peak flood flows prior to its failure, is shown on Figure 4.2-4. Although this would be significant, this impact exists under present conditions, and the increased potential associated with the proposed project is considered to be insignificant (Class III).

Most of the numerical modeling for the proposed project utilized an ocean control elevation of zero (0) feet NGVD (-0.19 feet Mean Sea Level [MSL]), although limited modeling was also conducted under both the existing and proposed conditions during a 100-year flood, superimposed on a spring tide with El Niño effects (Chang 1997, 1998b, 1999). This scenario recognizes that a flood peak could coincide with a tidal high, resulting in substantially higher downstream water-surface elevations than would occur with an ocean surface at elevation 0 feet NGVD. The corresponding range in downstream control elevations extends from a tidal high of +5.5 feet NGVD to -3.4 feet NGVD. Water surface elevations, given these three tidal control elevations, for both existing and proposed conditions, are shown on Figures 4.2-5 and 4.2-6, respectively. However, since the proposed project would reduce upstream water-surface elevations and, hence, flooding of adjacent low-lying properties when compared to existing conditions, this would represent a beneficial impact (Class IV).

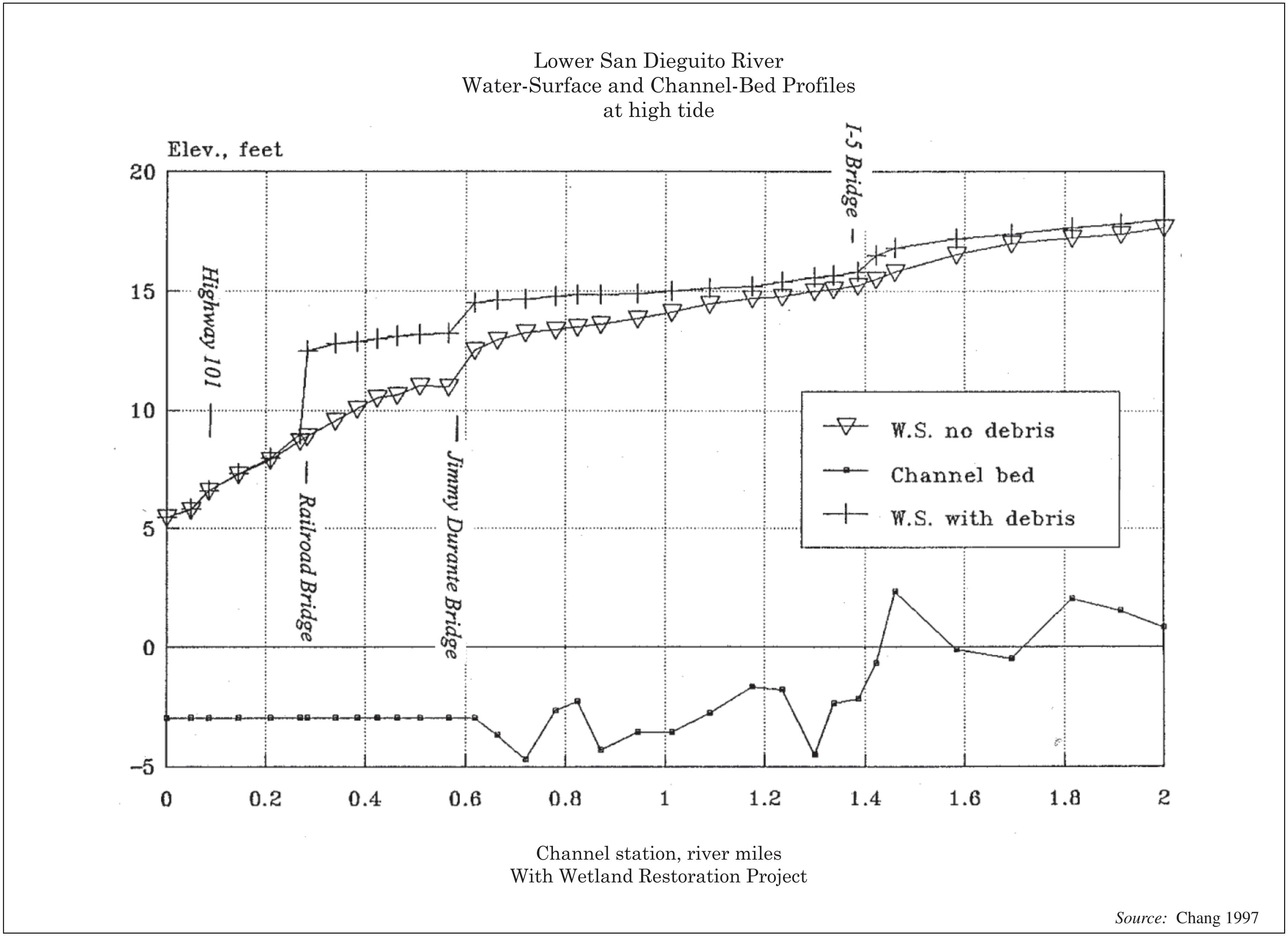


Figure 4.2-4. Simulated Water-Surface Profiles Assuming Full Debris Blockage of Railroad Bridge at Peak Flow

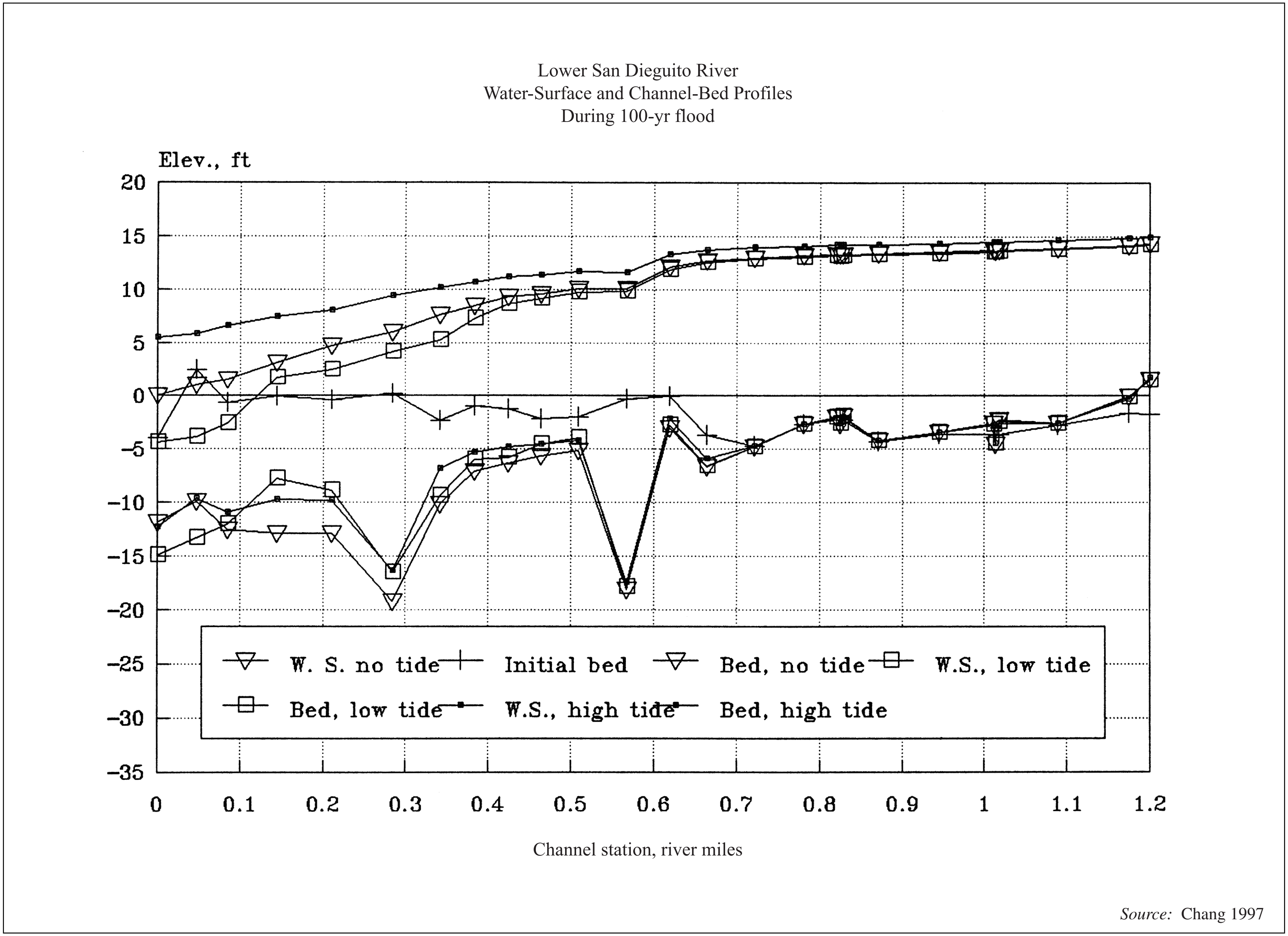
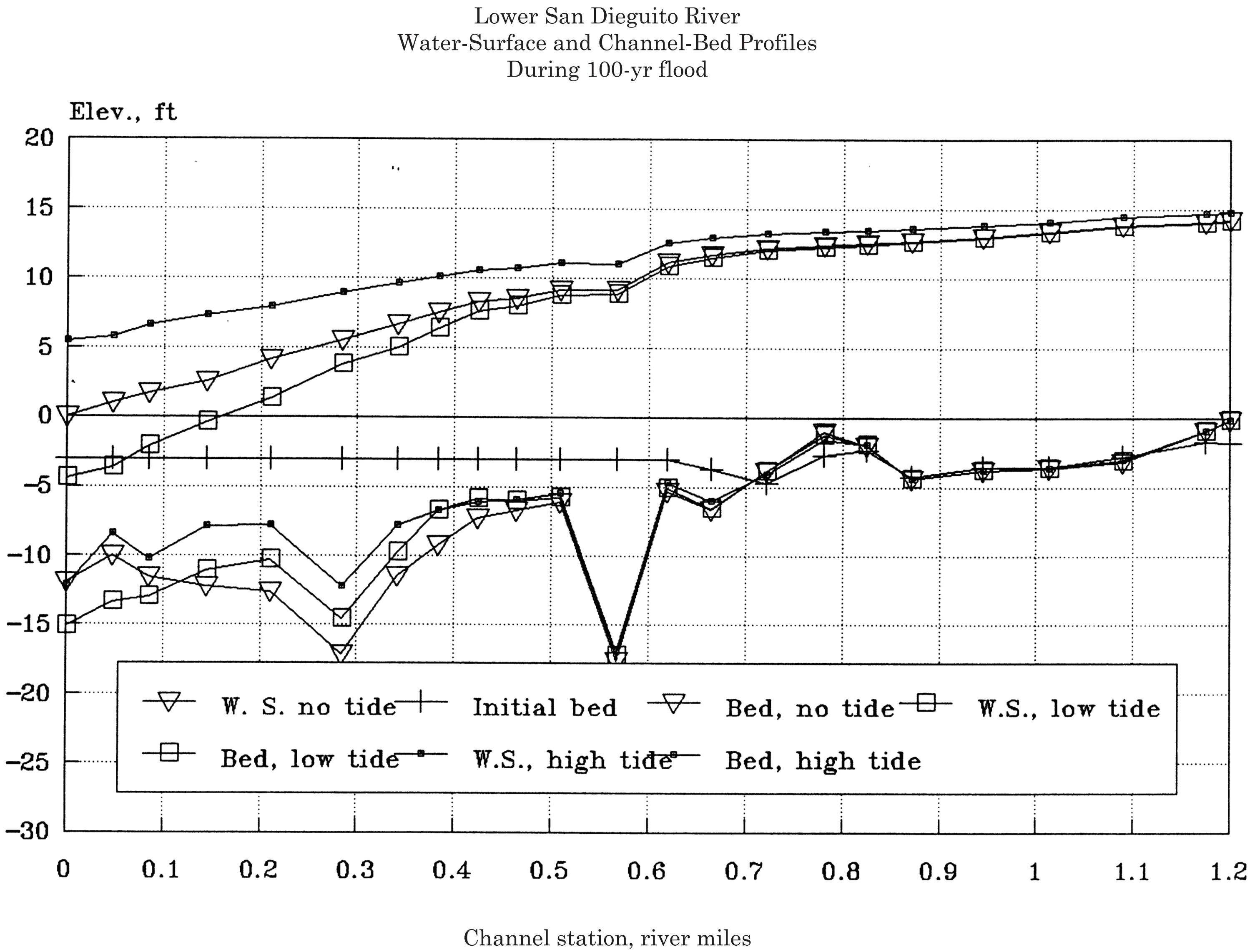


Figure 4.2-5. Simulated Water-Surface and Channel-Bed Profiles During the 100-Year Flood Under Existing Conditions for Three Tidal Variations



Source: Chang 1997

Figure 4.2-6. Simulated Water-Surface and Channel-Bed Profiles During the 100-Year Flood Under Proposed Conditions for Three Tidal Variations

Coastal Processes

The project would not result in a substantial increase in the erosion rate of beach sediments (Chang 1997, 1998a, 1998e-f, 1999), and, according to the fluvial modeling conducted by SCE's consultants, would slightly increase the amount of sand delivered to the shoreline. This would serve to slow the beach erosion rate. The beach erosion rate is dependent on the incoming wave energy and the availability of sand. The proposed project would not impact the incoming wave energy but would cause a beneficial increase in the availability of sand (Class IV). Sand and cobbles from the river and from the longshore transport would be deposited into the inlet channel, and periodically removed and returned to the nearby beach as part of the inlet maintenance program (section 2.3.1). The project would alter the nearshore bottom topography in the vicinity of the inlet. Design depths would increase about 1 foot (from –1.0 to –2.0 feet NGVD). However, this depth is well within the range of inlet depths that occur naturally (section 3.2) and would occur in the future with the No Action Alternative. The project would not substantially alter the existing formation and occurrence of small bottom topography features in the surfzone such as holes and bars (Class III).

Inlet currents resulting from the proposed project would be comparable to currents that occur naturally (section 3.2). However, proposed alterations in off-channel habitat would increase the tidal prism within the lagoon and wetlands, thereby increasing the day-to-day tidal currents. The two sources of inlet currents are tidal flow and the river flow. The strongest inlet currents are from river flood currents. When the inlet is open, the dominant current in the adjacent nearshore region (water depths less than 10 feet) would also be the river currents. The proposed project would not alter the river flow at the inlet or in the nearshore. Existing tidal currents are much weaker than the river currents. Analysis of the tidal currents (Jenkins and Wasyl 1999c) shows that the tidal currents into the lagoon will be slightly larger than the tidal currents out of the lagoon. The maximum spring tidal current for the Mixed Habitat Plan will be about 42 percent higher (1.37 feet/sec more) than the existing (lagoon open) spring tidal conditions. Because of the increase in tidal prism and resulting exchange of water between the ocean and lagoon, the average tidal current at the inlet will increase and, therefore, the maximum tidal currents will increase. The maximum daily tidal currents, under both spring and neap tide conditions, will last only about 10 to 15 minutes. Table 4.2-3 compares the absolute maximum annual tidal inlet velocities for the existing conditions and for the proposed restoration alternatives. Because the increase in the average tidal currents is relatively small compared to the strength of the surfzone currents, the project would not result in a substantial increase in the surfzone currents. Surfzone currents, both longshore and rip currents in the presence of the proposed project, would be within the range of existing conditions (section 3.2). Because the project would not substantially change the nearshore currents, bottom topography would not change significantly. Overall impacts would be less than significant (Class III).

The project would not increase the risk of damage to the quarry stone revetment along the southern boundary of the tidal inlet or the seaward facing revetment in front of the properties to the south (Jenkins and Wasyl 1999e). The engineering design conditions for the revetments in the vicinity of the inlet are based on flood flows of the river, and the maximum scour and wave conditions at the structure. The project would not change the maximum wave scour and extreme wave conditions at the revetments. In addition, the project would not change the maximum scour due to the river flow. The elevation of the toe of the revetment along the southern boundary of the inlet is not known. However, the revetment has in the past been subject to significant damage as a result of extreme river flow. If the inlet channel migrates to the south, the runup elevation on the revetment would increase for moderate storms having recurrence intervals of 10 years or less (Jenkins 1999). These types of conditions do not result in overtopping of the structure. During storms with a 20-year recurrence interval or greater, the retreating beach profile would undercut the depth of the restored inlet channel so that the inlet depth is not significantly different than under naturally occurring conditions. Therefore, the restored inlet would have no effect on the existing vulnerability of the revetment to overtopping by extreme events.

Table 4.2-3. Maximum Inlet Tidal Currents for Hydroperiod Envelope (Jenkins and Wasyl 1999c)

	Maximum Flood Current (ft/sec)	*Maximum Ebb Current (ft/sec)*	*Root Mean Squared Current (ft/sec)*
Mixed Habitat	+4.63	-4.25	1.46
Maximum Tidal Basin	+4.78	-4.59	1.77
Maximum Salt Marsh	+4.09	-3.66	1.29
Hybrid	+4.61	-3.98	1.45
Reduced Berm	+4.15	-3.71	1.36
Existing	+3.26	-2.50	0.86

The numbers in Table 4.2-3 <u>are</u> the maximum value for the hydro-period envelope. The maximum values are due to the extreme high water event of November 1997 as listed above.

Water Quality

Existing water quality in the lagoon is characterized by large temporal (daily and seasonal) variations, as well as significant depth-related differences (stratification), in several parameters which are characteristic of stagnant, poorly-mixed conditions (see section 3.2). These include periods of significantly altered salinity, reduced oxygen (hypoxic) levels, and elevated temperatures. These conditions have important consequences for supporting biological productivity (see section 4.4). For example, the flora and fauna of coastal wetlands are adapted to salinity characteristic of nearshore ocean waters (e.g., 34 ppt), and substantial variations can be deleterious (Zedler et al. 1994). Elevated salinity (hypersalinity) restricts the growth of marsh vegetation, while lowered salinity (hyposalinity) may affect the growth and survival of sensitive marsh species while promoting colonization by brackish water species (Zedler 1996a,b). Nutrient cycling, especially nitrogen, is also important for growth of marsh vegetation (Zedler 1991).

Improved circulation and tidal exchange is expected to reduce potentials for stagnation and the large temporal variations in water quality parameters because freshwater inputs would be continually mixed with ocean waters. Increased mixing would reduce potentials for development of depth-related stratification, low oxygen or hyposaline conditions, and improve nutrient cycling within the wetlands. Additionally, planned increases in the spatial extent of marsh vegetation could improve the removal efficiencies for contaminants (metals, organics, and nutrients) added to the marsh by urban runoff. In some areas, excavation would convert one type of wetlands habitat (e.g., seasonal salt marsh) to a tidal-influenced marsh habitat. Restoring tidal exchange to these areas is also expected to reduce the seasonal variations in water quality characteristics. Thus, changes related to excavation/dredging represent potential improvements to water and sediment quality <u>within the lagoon</u> and are considered beneficial impacts (Class IV).

<u>Under the present conditions, pollutants including bacteria from sources within the watershed can accumulate within the lagoon when the inlet is closed and tidal exchange with ocean waters is</u>

restricted. Further, opening the inlet, either mechanically or following large rainfall events, can release pollutants that have accumulated in the lagoon to the ocean. The initial excavation of the inlet channel for this project alternative may similarly release accumulated pollutants from the lagoon to the ocean, thereby causing elevated bacteria levels and turbidity levels near the river mouth for a period of several days. These effects will be addressed in the 401 Water Quality Certification. Regardless, maintaining tidal exchange between the lagoon and ocean will reduce subsequent potentials for pollutant accumulation within the lagoon, as well as the long-term frequency and extent of similar pollutant “flushes” in the future.

Dredging/excavation would also cause resuspension of bottom sediments, resulting in increased suspended sediment and turbidity levels, as well as increases in oxygen demand and releases of dissolved sulfides. Results from recent testing of soils and sediments within the project area (see section 3.3) indicate that materials proposed for excavation/dredging are not chemically contaminated. In particular, sediments typically have a low organic content and contain low concentrations of sulfides, trace metals, and organics, including chlorinated pesticides, PCBs, and polycyclic aromatic hydrocarbons (Ogden 1999). Therefore, excavation/dredging is not expected to release pollutants to the environment in excess of applicable federal or state standards, present hazards to human health, or endanger biological communities. Elevated turbidity conditions are expected to dissipate quickly as resuspended particles settle to the bottom after dredging is completed. Similarly, any related decreases in dissolved oxygen concentrations or increases in sulfide concentrations would rapidly decline if the site waters were well-mixed and subject to aeration (oxidation). These short-term impacts to water quality are considered significant, but mitigable (Class II).

Excavation/dredging is not expected to alter sediment quality, as represented by bulk levels of trace contaminants (section 3.2). However, some localized changes to sediment texture (i.e., grain size distribution) may occur following dredging because grain size properties are not uniform with depth below the surface and altered flow conditions within the river are expected to change sediment deposition patterns. Localized changes in sediment texture could affect the rates and patterns of sediment recolonization by bottom-dwelling organisms (see section 4.4).

No groundwater impacts are anticipated from increased or altered tidal flow in San Dieguito Lagoon. Saltwater intrusion would not be substantially increased or decreased by the project because the rate of groundwater withdrawals upstream from El Camino Real (section 3.2) would not be affected by the proposed project.

Excavation/dredging is a long-term, beneficial impact (Class IV) because this is expected to restore tidal exchange and improve circulation within the lagoon which, in turn, is expected to improve overall water quality and biological habitat. Keeping the river mouth open would indeed restore permanent tidal exchange, which is considered the “historic” natural condition.

4.2.1.3 Disposal Sites

Hydrology and Coastal Processes

Since disposal sites are limited to the off-channel ineffective flow areas, and thus there is essentially no reduction in hydraulic conveyance, there are no anticipated impacts to hydraulic conditions or coastal processes from disposal of dredged materials. As indicated on Figure 3.2.1-5, limited filling is proposed within the 100-year floodplain, most notably the 22nd District

<u>Agricultural Association</u> parking lot and the Surf and Turf property, both of which are limited to the off-channel ineffective flow areas. As such, the primary impact of this proposed grading is a very minor reduction in available storage within the 100-year inundated footprint. Although these off-channel fills would not affect the hydraulic conveyance of the on-channel flow areas, the cumulative impact of a reduction in the 100-year inundated flood volume would result in an insignificant increase in peak discharge and maximum water surface elevation. This change in available storage, however, is considered very small, with increases in peak discharge and water-surface elevation likely minimal (personal communication, <u>H.</u> Chang). Given the above considerations, impacts to hydrology from off-channel disposal reducing the available storage volume is judged to be adverse but not significant (Class III).

Water Quality

This alternative would generate an estimated <u>1.99</u> million cubic yards of excavated materials requiring disposal or re-use. Soils and sediments excavated from the site do not contain significant amounts of chemical contaminants (see section 3.3) and, therefore, do not need to be treated as hazardous waste. Disposal options fall into two general categories: (1) upland (on-site) disposal, including creation of nesting habitat and berm construction; and (2) ocean disposal, including beach and nearshore disposal. Comments received during scoping recommended use of dredged materials for beach nourishment to the maximum extent possible. However, this disposal option is only appropriate for coarse-grained (predominantly sand-sized) materials. Although the excavated soils are not chemically contaminated, the grain size characteristics of most materials generally would not be considered suitable, with the exception of a relatively small volume of sediments from the inlet channel, for direct placement on the beach (see section 3.3).

ON-SITE DISPOSAL

As described in section 2.3.1, an estimated 195,100 cubic yards of the excavated materials would be used onsite for construction of berms and bases of nesting sites NS11, NS12, and NS14. An additional 77,300 cubic yards of sand-sized sediments from the inlet channel would be used to cover the surface of the nesting sites. Materials used for the surface of the nesting sites are limited to sand-sized particles; therefore, only a portion of the total excavation volume is considered suitable for this purpose. The remaining portion of the dredged materials comprising sand-sized sediments (up to 60,800 cubic yards) could be disposed on the Del Mar beach for purposes of beach nourishment. Finer grained sediments comprising the remaining volume of excavated materials could be disposed using one or more of the disposal options discussed below.

Proposed berms and nesting sites are adjacent to open water areas. Some of the materials placed at these sites likely would spill into the water, resulting in short-term and localized impacts associated with increased turbidity and suspended particle concentrations. These impacts are expected to persist for the duration of the construction activities at these sites, but then disappear rapidly as suspended particles settle out of the water. The spatial extent of impacts would vary somewhat in response to the speed and direction of water flows in the adjacent waterways. These impacts are considered significant, but mitigable (Class II).

UPLAND DISPOSAL

The proposed upland disposal sites (DS32 – DS36) provide sufficient capacity to accept all of the excavated / dredged materials generated by this alternative. Confined disposal areas, which include desilting basins, would be constructed to prevent erosion and control surface runoff during the stockpiling phase. The desilting basins are proposed to collect and temporarily retain the dewatering effluent for a sufficient period of time to allow suspended sediments to settle out of the water. The effluent eventually would be allowed to flow along constructed channels back to the excavated/dredging site. According to Title 27 of the California Code of Regulations, the quality of the effluent must meet receiving water quality criteria. Assuming that the effluent quality meets the applicable criteria, impacts to water quality would consist of localized increases in turbidity. This would be due to residual suspended particles in the effluent as well as erosion of soils from the drainage channels. After the stockpiled materials are graded, covered with suitable topsoil, and revegetated, long-term impacts to water quality due to erosion and transport of soils by rainfall runoff are expected to be negligible. Mitigation measures for erosion control at upland disposal sites are discussed in section 4.3. Thus, impacts associated with this disposal option would be temporary, and are considered significant, but mitigable (Class II).

OVER-EXCAVATION OF AREA W1 (DS44)

As described in section 3.3, layers of fine-grained sands are present below depths of 3 to 7 feet within the lagoon area (W1). One on-site disposal option involves extracting the presently buried, sand-sized materials within area W1 (DS44) for beneficial uses (e.g., beach nourishment), and replacing these with a comparable volume of finer materials excavated from other locations within the project area. This disposal option requires removing and stockpiling surface soil layers; excavating, transporting, and placing sand-sized materials on the beach; and backfilling the excavated area with fine-grained soils. After refilling, the site would be capped with sand-sized sediments so that the final elevation is consistent with the proposed grading plan.

Impacts to water quality would accompany losses of sediments due to spills, erosion, or transport by runoff into adjacent channels. Impacts would consist of temporary and localized increases in turbidity and suspended sediment concentrations. Changes in oxygen demand, dissolved oxygen, or contaminant concentrations are not expected. These impacts are considered significant, but mitigable (Class II).

DIRECT DISPOSAL ON THE BEACH

Disposal of excavated sands on local beaches potentially provides beneficial impacts by augmenting the natural sand supply. However, beach nourishment is only appropriate with sand-sized sediments because finer grained materials are subject to rapid erosion by waves and they are not aesthetically appealing. Consequently, only a small portion of the total volume of dredged materials would be suitable for direct disposal on the beach. Pumping dredged sands onto local beaches would cause discoloration of nearshore zone waters due to runoff of the turbid waters associated with the dredged materials. However, since these effects would be localized and temporary, the impact would be adverse but not significant (Class III). Beach disposal could be limited to winter months to minimize interference with periods of highest beach use.

NEARSHORE DISPOSAL

Nearshore disposal involves discharge of dredged materials into the ocean at locations and water depths in which a portion of the materials would be expected to contribute to the littoral sand supply. Nearshore disposal of dredged materials typically is limited by state and local regulatory guidelines to clean sediments containing approximately 20 to 25 percent or less of fine grained particles. Disposal of sediments containing higher proportions of fine-grained material is undesirable because of potential concerns about changes to the texture and appearance of the beach. Although the effects of nearshore disposal of materials containing higher proportions of fines are poorly known, they are not conceptually different from those associated with natural sediment flux from coastal streams and rivers. Nevertheless, this disposal option offers several potential benefits: (1) supplements beach profiles by adding material to the littoral zone; (2) renourishes beach sands; (3) decreases nearshore wave heights, and thereby reduces potentials for beach erosion; (4) reduces use of limited capacity upland and offshore disposal sites; and (5) decreases disposal costs (Williams and Prickett 1998). Despite these potential benefits, resource agencies may consider this disposal option untenable because the major portion of excavated materials are greater than 20-25 percent fines.

4.2.1.4 Berms and Infrastructure Protection

Hydrology

As indicated in sections 2.3.1.4.3 and 2.3.1.4.4, river berms are used in all of the alternatives except the No Action Alternative. High velocity flood waters are confined within the berms, thereby maintaining sufficient hydraulic conveyance to transport alluvial sediments to the beach. As indicated on Figure 4.2-2, predicted channel velocities associated with the proposed alternative locally approach rates that are twice the channel velocity under existing conditions. Upstream of I-5, and elsewhere where main channel flows adversely affect berm integration, a stone revetment would be incorporated into the berm to control erosion from impinging flows and channel-bed scour in these areas (section 2.3.1). The inclination of the berms and other graded slopes also vary across the site, with the more gently inclined slopes being inherently more stable. Certain steeper slopes are further stabilized by geosynthetic reinforcement (see figures 2.3.1-8, 10, and 11), which increases both stability and plant root tenacity, the latter of which reduces river scour susceptibility.

Potential impacts to existing utilities from increased river scour have also been considered. As addressed in section 4.13, two utilities could be potentially affected by this restoration alternative. These include the Pacific Bell Duct Bank, located parallel to and immediately east of I-5, and the City of Del Mar’s 24-inch-diameter sewer force main where it crosses the river approximately 500 feet easterly of the Railroad Bridge. A complete discussion of potential impacts to these utilities is provided in section 4.13.

Five bridges could be affected, where the embankment constrictions channelize and accelerate flood flows through the bridge opening, scouring the channel bed sediments. According to Chang (1998c), the three downstream bridges (Camino Del Mar, Railroad Trestle, and Jimmy Durante Boulevard) will likely fail during a 100-year design flood, given the existing hydrologic environment (see Table 4.2-4). The proposed project, as designed, would reduce the amount of channel bed scour. However, it is still anticipated that these three bridges would fail during a 100-year design flood. The I-5 and the El Camino Real Bridges have considerably more robust foundations, and would not be impacted by river bed scour. The river bed beneath the El Camino Real Bridge is protected by a rock structure that is about 2 feet below the bed surface, essentially eliminating any channel bed scour in this location. The potential for increased channel bed scour in the vicinity of roadway/railroad embankment abutments and piers have also been considered. Hydraulic and scour information for the four downstream bridges under the existing and proposed conditions for the 100-year design flood is presented in Table 4.2-4 (Chang 1998c). When comparing the maximum scour listed in the table with the scoured channel bed elevation shown on Figure 3.2.1-7, it should be noted that the FLUVIAL-12 model computes only general scour and not local scour. The latter is related to local obstruction to flow, such as a bridge pier or abutment. General scour is caused by an imbalance in sediment transport between adjacent sections of river, a fluvial process modeled in the FLUVIAL-12 model. Local scour resulting from the local obstruction must then be added to channel scour to obtain the total scour reported in Table 4.2-4.

Table 4.2-4. Bridge Hydraulics and Scour Information

Bridge	*Bottom of Footing Elevation feet, MSL*	APPROACH VELOCITY, FPS		MAXIMUM TOTAL SCOUR ELEVATION, FEET	
		Existing Conditions	*Proposed Conditions*	*Existing Conditions*	*Proposed Conditions*
Camino Del Mar	-17	12.6	11.5	-30.1	-26.4
Railroad Trestle	-30±	10.3	10.5	-28.2	-23.3
Jimmy Durante	-35	10.7	10.7	-24.7	-23.4
Interstate 5		17.3	18.4	-6.2	-7.8
El Camino Real	Channel bed protected by a riprap weir section				

An overflow weir would be incorporated into the berm near River Mile 2.09 to provide additional hydraulic capacity when flood flows exceed the 25-year flood. This would limit water-surface elevations to those of the existing conditions along this stretch of river. As indicated in Figure 2.3.1-2, river berm B8 would effectively remove a large section of floodplain from the river's natural hydraulic conveyance in this area. This, when combined with nesting site NS13, would reduce the hydraulic conveyance in this area enough to locally increase the 100-year flood water surface elevation as much as 0.4 foot above that of the existing conditions. Thus, the weir at River Mile 2.09 would be needed to increase the river's hydraulic conveyance and maintain the proposed project 100-year flood levels at or below existing conditions (Chang 1999a). Schematic overflow weir geometry and section properties are shown on Figures 2.3.1-12a and b. One of the design criteria in final design is to ensure no net increase in any backwater, while at the same time maximizing off-channel habitat quality, primarily in Area W16.

Since a portion of the flood flow would be routed through the northerly off-channel tidal basin at flood flows above the 25-year flood, flow velocities were also calculated through the northern tidal basin under the 100-year design flood at 2 feet per second, corresponding to a flood discharge of 4,000 cfs. It can therefore be concluded that the flow through the tidal basin would not cause scour damage. However, the weir structure and its adjacent areas would need to be hardened. The final crest elevation of the weir will be determined in final project design, however it will be well above the adjacent main channel bed elevation. For this reason, bed sediment would not be transported into the tidal basin. However, suspended sediment load and floating debris would be transported into the tidal basin during flood flows in excess of the 25-year storm. Thus, the off-channel habitat in this area, W4 and W16, would experience more rapid degradation than the more protected off-channel habitat south of the river, W1 and W6b. A smaller amount of suspended sediment load and floating debris would be transported into W4 and W16, when compared to existing conditions, and thus the proposed project is still considered beneficial (Class IV).

The entire river channel between the river mouth and Jimmy Durante Boulevard would also be subject to additional scrutiny during the final design of this project. Unprotected portions of the river bank, particularly between the railroad bridge and Jimmy Durante Bridge, may require additional river bank stabilization. The determination of how best to protect those areas that may be subject to erosion as a result of the project would be made during the completion of the final design and construction drawings. These drawings would be submitted to the City of Del Mar for approval at the time that applications for all required permits are submitted.

Consideration of riverbank stabilization includes both an assessment of the existing riverine processes and the effects of the proposed project on these riverine processes. Clearly, the existing conditions have a significant potential for flood-induced scour, and the associated damage to both public and private improvements. Given this level of investigative study, the proposed project as currently configured will not exacerbate riverbank scour downstream of the river bend at River Mile 0.65. Final design would include a more detailed assessment of susceptibility to river bank scour at various locations and possible mitigation measures, including armoring the slopes with riprap or some form of cellular mat, or possibly some form of bioengineered riverbank stabilization, possibly including limited cribbing to help stabilize vegetative growth on the channel banks. In addition to considering possible mitigation measures, the final design work should also address the impact of any proposed additional streambank stabilization, namely increased erosion in areas adjacent to stabilized slopes. If the southerly riverbank were stabilized, river avulsion would be expected to significantly affect the AG District property on the northerly riverbank. Conversely, armoring of the northerly riverbank would have a similar impact on the southerly riverbank. Hardening both riverbanks would likely elevate flood water elevations inundating nearby low-lying lands on both sides of the river. All these considerations must be included in the final design, and these considerations will require at least some level of consensus from the various affected parties.

Coastal Processes

No impacts to coastal processes are anticipated from implementing the proposed berms and infrastructure protection. To the extent that hydrologic changes associated with this alternative would improve the efficiency of sediment transport through the lagoon and to the beach, berm construction represents a potentially beneficial impact (Class IV).

Water Quality

Construction of berms and infrastructure protection along the river channel would cause some short-term and localized impacts to water quality. These impacts would be caused by spills or erosion of sediments into the river channel, resulting in increased suspended particle and turbidity levels. Once constructed, no long-term impacts to water or sediment quality are expected. Therefore, impacts associated with this project component are considered significant, but mitigable (Class II).

4.2.1.5 Nesting Sites

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes are anticipated from the nesting sites because these sites would not interfere with hydrological conditions within the lagoon or ocean.

Water Quality

Similar to berm construction, some impacts to water quality could occur during construction of the nesting sites from spillage or movement of sediments into adjacent open water areas. These construction-related activities could result in short-term and localized increases in suspended sediment and turbidity levels; whereas, no long-term impacts to water quality expected. These impacts are considered significant, but mitigable (Class II).

4.2.1.6 Public Access

Hydrology and Coastal Processes

Public access components include the Coast to Crest Trail, other nature/interpretive trails, staging areas, and a nature/interpretive center. Use of the Coast to Crest Trail for seasonal tram operations is also under consideration. No impacts to hydrology or coastal processes are anticipated from implementing the proposed access/interpretive components because these features would not interfere with hydrological conditions within the lagoon or ocean.

Water Quality

Public access components are not expected to affect water quality directly. However, compared with existing conditions, public access to the project area may result in greater amounts of trash, debris, and wastes from domestic animals (e.g., horses), which are subject to transport by stormwater runoff into adjacent waterways. Increased waste inputs would have adverse impacts to surface water quality. However, a weekly trail maintenance program would minimize the magnitude of potential impacts. The public access components also include a series of wetlands treatment ponds, constructed as part of an interpretive center, which would provide oil/water separation and natural filtering for stormwater runoff from the adjacent drainage areas, including a shopping center and roadways. Operation of this facility is expected to have a beneficial impact to water quality because it would reduce the mass of contaminants that are washed into the lagoon from the surrounding drainage areas. Thus, although some impacts may occur to water quality the net result of the project should be beneficial (Class IV).

4.2.1.7 22nd District Agricultural Association Use of Area U18

Hydrology and Coastal Processes

A portion of the Via de la Valle property, area U18, may be used by the District for temporary (during summer events at the Fairgrounds) parking or 800 to 1000 cars, equestrian activities, and/or demonstration agricultural purposes. No impacts to hydrology or coastal processes are anticipated from use of area U18 because proposed uses would not interfere with hydrological conditions within the lagoon or ocean.

Water Quality

The use of area U18 by the District for a variety of potential uses including equestrian uses and seasonal parking could result in greater amounts of trash, debris, and wastes from domestic animals (e.g., horses) than under existing conditions. Increased waste inputs as a result of runoff into the adjacent wetland area would have adverse impacts to surface water quality. Such impacts are potentially significant, but mitigable (Class II).

4.2.1.8 Mitigation Measures

Overall, impacts to hydrology and water quality associated with this proposed alternative are considered beneficial (Class IV), because the project would provide protection for off-channel habitat and improve circulation and tidal exchange within the lagoon. Additionally, one of the public access components, the wetlands treatment ponds, would provide a mechanism for improving the potential impacts quality of stormwater runoff from adjacent urban areas (e.g., shopping center) that eventually drain into the San Dieguito River. Some construction-related impacts to water quality are considered significant, but mitigable (Class II); these are generally temporary and localized in extent. The following measures would reduce to below a level of significance the adverse impacts to hydrology and water quality that are identified above: These or equivalent measures would be conditions of future required permits, including a Coastal Development Permit, any discretionary permit in the City of Del Mar, and/or a Land Development Permit in the City of San Diego. All measures shall be clearly stated on the project construction plans.

- The contractor shall attend a pre-construction meeting with the JPA's Principal Planner, and other agency representatives as specified by future permits, to review all required environmental mitigation measures prior to the commencement of any construction activity.

- Prior to the utilization of any construction staging areas, temporary berms/cofferdams shall be constructed around the staging areas to prevent the transport of spilled materials into adjacent waterways.

- The contractor shall take all appropriate precautions to avoid spillage or leakage of hazardous materials, such as petroleum products, all fueling and maintenance of construction vehicles shall occur either off-site or be limited to the designated staging areas. The contractor shall be responsible for removing and properly disposing of any hazardous materials that are brought onto the construction site as a result of construction activity and/or removing and properly disposing of any soils that become contaminated during the construction process through example spillage or leakage. All such contaminated areas shall be cleaned up prior to preparing the construction site and temporary construction staging areas for revegetation. The contractor shall prepare, submit to the JPA and any other designated agencies for review and approval, and follow the recommendation of a spill prevention and contingency plan.

- The contractor shall construct additional temporary berms around fuel storage areas that are maintained for the full time during which construction is occurring and construction equipment is present on the site, and all fuel storage areas shall be confined to designated construction staging areas.

- The contractor shall construct berms or erect silt curtains around areas being excavated/graded to reduce soil losses to waterways.

- The contractor shall control fugitive dust emissions through watering or other accepted standard methods of control.

- Water quality monitoring shall be implemented for the following:

  - Monitor the dewatering effluent to demonstrate that the effluent quality has achieved the appropriate receiving water criteria. Construction may be halted if effluent levels are not within established criteria.
  - Conduct water quality monitoring during dredging/construction activities; if monitoring results indicate excessive impacts (e.g., depressed dissolved oxygen concentrations), modifications to construction or sediment disposal methods to lessen the magnitude of the impacts shall be developed and implemented in consultation with the appropriate permitting agencies. All designated fill slopes shall be hydroseeded and landscaped within 30 days of completion of grading activities.

- Temporary sedimentation and desilting basins, to be located between graded areas and adjoining wetlands shall be constructed and maintained <u>until the potential for erosion of graded areas has been minimized through the successful establishment of erosion control landscaping.</u>

For impacts related to public access/interpretation, the following mitigation measures shall be made conditions of future park proposals within the project area, as well as conditions of any future required permits, such as a Coastal Development Permit:

- The JPA shall agree to expand its current trail maintenance program to cover the trails located within the current project area. This maintenance program shall include the requirement to perform regular trail maintenance, including manure and trash removal from and around the trail. Trail tread maintenance intended to avoid erosion problems on natural soil surfaced trails shall occur on as-needed basis. The maintenance program shall include a monitoring component that will determine when and how often trail cleanup should occur. This could result in more frequent maintenance, but under no circumstances shall trail cleanup occur less than once ever two weeks. If seasonal tram use is permitted on the Coast to Crest, then trail cleanup should occur daily during the period in which trams are using the trail.

For impacts related to the 22nd District Agricultural Association's use of Area U18, the following mitigation measures shall be made conditions of any future lease or other agreement between the JPA and the 22nd District:

- The 22nd District Agricultural Association shall agree to implement a routine maintenance program for the area that would include regular trash and debris cleanup, routine removal of manure from the site, protection of slope vegetation to ensure adequate erosion control on adjoining slopes, routine dust control, and proper drainage of the site that is directed away from the adjoining wetlands.

4.2.2 Maximum Tidal Basin Alternative

The Maximum Tidal Basin Alternative includes both tidal wetland and non-tidal (e.g., upland, riparian, and freshwater) habitat. This alternative maximizes the amount of open water within the project area and would generate slightly greater excavation volumes (<u>2.35</u> million cubic yards) compared to the Mixed Habitat Alternative (see Section 2.3.2). Proposed grading west of I-5 (Figure 2.3.2-1) would be similar to the Mixed Habitat Alternative. However, on the east side of I-5, excavation of Areas W4, W6 and W16 would be greater to expand the overall tidal prism of the lagoon. As described for the Mixed Habitat Alternative, and as illustrated on the Maximum Tidal Basin Alternative plan view (Figure 2.3.2-1), this alternative maintains the same water and sediment conveyance system as that of the Mixed Habitat Alternative within the confines of the berm-controlled main channel. Thus, the main channel system hydraulics (i.e., the portion of the project designed to carry flood flows) would remain and perform the same as the Mixed Habitat Alternative. Although there is flow exchange between the river channel and the off-channel basins during floods, the volume of flow exchange is significantly smaller than the on-channel flood flows. Thus, variation of the tidal prism among these alternatives has essentially no effect on flood flows passing through the main channel. The main channel berm would remain the same for the Maximum Tidal Basin Alternative, with the off-channel habitat modified to maximize the amount of tidally-driven open water within the proposed wetland restoration area. Although the Maximum Tidal Basin Alternative alters the available tidal prism and, hence, the tidal dynamics within the restoration project (Jenkins 1999), it would not alter the hydraulic conveyance of the main channel and its ability to carry the more infrequent flood flows and riverine sediments to the beach. For this reason, the Maximum Tidal Basin Alternative would not change the potential scour of infrastructure and it would maintain the present sediment delivery to the beach and nearshore zone.

This alternative exhibits the same on-channel hydraulic characteristics as the Mixed Habitat Alternative, and the hydraulic issues would be the same as those described in section 4.2.1. As described in section 4.2.1, the various hydrology impacts would be less than significant. Similar to the Mixed Habitat Alternative, several project components associated with the Maximum Tidal Basin Alternative are expected to affect sediment and water quality (section 4.2.1).

4.2.2.1 Construction Staging and Access Areas

Hydrology and Coastal Processes

Impacts to hydrology and coastal processes from the proposed construction staging and access areas for the Maximum Tidal Basin Alternative would be the same as described for the Mixed Habitat Alternative. These impacts are considered adverse but not significant (Class III).

Water Quality

Activities and related impacts associated with construction staging and access areas for the Maximum Tidal Basin Alternative would be the same as described for the Mixed Habitat Alternative. These impacts are considered significant, but mitigable (Class II).

4.2.2.2 Excavation and Dredging

Hydrology and Coastal Processes

Impacts associated with excavation and dredging for the Maximum Tidal Basin Alternative would be the same as described for the Mixed Habitat Alternative. Although certain hydraulic and coastal impacts are considered adverse, but not significant (Class III), the proposed improvements would provide long-term beneficial impacts to river hydrology (Class IV).

Water Quality

Similar to the Mixed Habitat Alternative, excavation and dredging operations associated with the Maximum Tidal Basin Alternative are expected to have short-term adverse impacts associated with localized increases in turbidity and suspended particle levels. However, improved circulation resulting from initial and maintenance dredging is expected to provide beneficial long-term impacts to water and sediment quality (Class IV).

4.2.2.3 Disposal Sites

Hydrology and Coastal Processes

No significant impacts to hydrology or coastal processes would result from utilization of the proposed disposal sites because the sites would not interfere with hydrological conditions within the lagoon or ocean (Class III).

Water Quality

Options for disposal of excavated / dredged materials, and expected impacts to water and sediment quality, would be the same as described for the Mixed Habitat Alternative. The primary difference is the relatively greater volume of materials generated for the Maximum Tidal Basin Alternative. Regardless, the capacity of upland disposal sites is considered adequate for onsite disposal of all excavated materials associated with this alternative. Impacts to water and sediment quality are expected to be significant, but mitigable (Class II).

4.2.2.4 Berms and Infrastructure Protection

Hydrology and Coastal Processes

Impacts associated with river hydrology for the Maximum Tidal Basin Alternative would be the same as described for the Mixed Habitat Alternative. No impacts to coastal processes are anticipated resulting from the proposed berms and infrastructure protection.

Water Quality

Impacts associated with berm construction and infrastructure protection for the Maximum Tidal Basin Alternative would be the same as described for the Mixed Habitat Alternative. Short-term and localized increases in turbidity and suspended particle levels would accompany any spills or releases of construction materials into adjacent waterways. These impacts are considered significant, but mitigable (Class II). No long-term impacts to water or sediment quality from berms and infrastructure protection are expected.

4.2.2.5 Nesting Sites

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes are anticipated from the nesting sites because these sites would not interfere with hydrological conditions within the lagoon or ocean.

Water Quality

Impacts associated with construction of nesting sites for the Maximum Tidal Basin Alternative would be the same as described for the Mixed Habitat Alternative. These impacts are considered significant, but mitigable (Class II). No long-term impacts to water or sediment quality from the nesting sites are expected.

4.2.2.6 Public Access

Hydrology and Coastal Processes

No significant impacts to hydrology or coastal processes are anticipated from the proposed public access components because these features would not interfere with hydrological conditions within the lagoon or ocean.

Water Quality

Impacts associated with public access for the Maximum Tidal Basin Alternative would be the same as described for the Mixed Habitat Alternative. These impacts are considered significant, but mitigable (Class II), whereas construction of wetlands treatment ponds would provide potential beneficial effects by removing contaminants from urban runoff.

4.2.2.7 22nd District Agricultural Association Use of Area U18

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes are anticipated from use of area U18 because proposed uses would not interfere with hydrological conditions within the lagoon or ocean.

Water Quality

Impacts associated with the proposed use of area U18 by the District would be the same under this alternative as described for the Mixed Habitat Alternative. These impacts are considered significant, but mitigable (Class II).

4.2.2.8 Mitigation Measures

Overall impacts to hydrology and water quality associated with the Maximum Tidal Basin Alternative are considered beneficial (Class IV) because the project would provide protection for off-channel habitat and improve circulation and tidal exchange within the lagoon. Additionally, the wetland treatment ponds would provide a mechanism for improving the quality of urban runoff that eventually drains into the San Dieguito River. Some construction-related impacts to water quality are considered significant, but mitigable (Class II); these are generally temporary and localized in extent.

Mitigation measures associated with this alternative would be the same as those described for the Mixed Habitat Alternative in section 4.2.1.8.

4.2.3 Maximum Intertidal Alternative

The Maximum Intertidal Alternative includes both tidal wetland and non-tidal (e.g., upland, riparian, and freshwater) habitat. This alternative reduces the extent of open water habitat but increases the area of salt marsh habitat. Under this alternative, the final elevation of Area W1 west of I-5 would be higher than proposed for the previous two alternatives (Figure 2.4.2-1). This would reduce the amount of open water by increasing the total amount of intertidal mudflats within the system. Areas W4 and W6 would be excavated to a lower elevation than proposed for the Mixed Habitat Alternative. Grading for this alternative would generate <u>1.76</u> million cubic yards of cut (section 2.3.3). Exchange between the river channel and tidal basins during floods would be reduced in comparison to the Maximum Tidal Basin and Mixed Habitat Alternatives. However, the flow exchange would still be very small in comparison to the 100-year flood, in both volume and discharge. For this reason, the hydraulics of flow and its associated sediment transport within the main channel would be the same as the previous two alternatives. This alternative maintains the same water and sediment conveyance system as the Mixed Habitat Alternative. The conveyance system maintains sand flow through the river reach to avoid potential scour impacts. Thus, the project would not change the potential scour and would maintain the present sediment delivery to the beach and nearshore zone.

This alternative exhibits the same on-channel hydraulic characteristics as the Mixed Habitat Alternative, and the hydraulic issues would be the same as those described in section 4.2.1. The various hydrology impacts would be less than significant. Similar to the Mixed Habitat Alternative, several project components associated with the Maximum Intertidal Alternative are expected to affect sediment and water quality.

4.2.3.1 Construction Staging and Access Area

Hydrology and Coastal Processes

Impacts to hydrology and coastal processes from the proposed construction staging and access areas for the Maximum Tidal Basin Alternative would be the same as described for the Mixed Habitat Alternative. These impacts are considered adverse but not significant (Class III).

Water Quality

Activities and related impacts associated with construction staging and access areas for the Maximum Intertidal Alternative would be the same as described for the Mixed Habitat Alternative. These impacts are considered significant, but mitigable (Class II).

4.2.3.2 Excavation and Dredging

Hydrology and Coastal Processes

Impacts associated with excavation and dredging for the Maximum Intertidal Alternative would be the same as described for the Mixed Habitat Alternative. Although certain hydraulic impacts are considered adverse, but not significant (Class III), the proposed improvements would provide beneficial long-term impacts to river hydrology (Class IV).

Water Quality

Similar to the Mixed Habitat Alternative, excavation and dredging operations associated with the Maximum Tidal Basin Alternative are expected to have short-term adverse impacts associated with localized increases in turbidity and suspended particle levels. However, improved circulation resulting from initial and maintenance dredging is expected to provide beneficial long-term impacts to water and sediment quality (Class IV).

4.2.3.3 Disposal Sites

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes are expected from utilization of the proposed disposal sites because the sites would not interfere with hydrological conditions within the lagoon or ocean (Class III).

Water Quality

Options for disposal of excavated / dredged materials, and expected impacts to water and sediment quality would be the same as described for the Mixed Habitat Alternative. The primary difference is that a relatively smaller volume of excavated materials would be generated by this alternative. The upland disposal sites provide adequate capacity for on-site disposal of all excavated materials associated with this alternative. Impacts to water and sediment quality are expected to be significant, but mitigable (Class II).

4.2.3.4 Berms and Infrastructure Protection

Hydrology and Coastal Processes

Impacts associated with river hydrology for the Maximum Intertidal Alternative would be the same as described for the Mixed Habitat Alternative. No impacts to coastal processes are anticipated from the proposed berms and infrastructure protection.

Water Quality

Impacts associated with berm construction for the Maximum Intertidal Alternative would be the same as described for the Mixed Habitat Alternative. Short-term and localized increases in turbidity and suspended particle levels would accompany any spills or releases of construction materials into adjacent waterways. These impacts are considered significant, but mitigable (Class II). No long-term impacts to water or sediment quality from berms and infrastructure protection are expected.

4.2.3.5 Nesting Sites

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes are anticipated from the nesting sites because these sites would not interfere with hydrological conditions within the lagoon or ocean.

Water Quality

Impacts associated with construction of nesting sites for the Maximum Intertidal Alternative are identical to those described for the Mixed Habitat Alternative. These impacts are considered significant, but mitigable (Class II). No long-term impacts to water or sediment quality from the nesting sites are expected.

4.2.3.6 Public Access

Hydrology and Coastal Processes

No significant impacts to hydrology or coastal processes are anticipated from the proposed public access components because these features would not interfere with hydrological conditions within the lagoon or ocean (Class III).

Water Quality

Activities and related impacts associated with public access for the Maximum Tidal Basin Alternative would be the same as described for the Mixed Habitat Alternative. These impacts are considered significant, but mitigable (Class II).

4.2.3.7 22nd District Agricultural Association Use of Area U18

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes are anticipated from use of area U18 as proposed uses would not interfere with hydrological conditions within the lagoon or ocean (Class III).

Water Quality

Impacts associated with the proposed use of area U18 by the District would be the same under this alternative as described for the Mixed Habitat Alternative. These impacts are considered significant, but mitigable (Class II).

4.2.3.8 Mitigation Measures

Overall, the impacts to hydrology and water quality associated with the Maximum Intertidal Alternative are considered beneficial (Class IV) because the project would provide protection for off-channel habitat and improve circulation and tidal exchange within the lagoon. Additionally, the wetland treatment ponds would provide a mechanism for improving the quality of urban runoff that eventually drains into the San Dieguito River. Some construction-related impacts to water quality are considered significant, but mitigable (Class II) because these are generally temporary and localized in extent.

Mitigation measures associated with this alternative would be the same as those described for the Mixed Habitat Alternative in section 4.2.1.8.

4.2.4 Hybrid Alternative

The Hybrid Alternative includes both tidal wetland and non-tidal (e.g., upland, riparian, and freshwater) habitat. This alternative combines the design features of the Maximum Tidal Basin Alternative west (downstream) of I-5 and the Maximum Intertidal Alternative east (upstream) of I-5 (Figure 2.3.4-1). This maximizes the amount of open water available to the off-channel habitat downstream of I-5, with the same hydraulic performance and tidal exchange as that of the Maximum Tidal Basin Alternative. On the east side of I-5, the amount of salt marsh habitat is maximized, again with Areas W4 and W6 excavated to a lower elevation than for the Mixed Habitat Alternative. This would increase the amount of low and middle salt marsh habitat. Similar to the Maximum Tidal Basin and Maximum Intertidal Alternatives, the on-channel habitat for this alternative is essentially identical to that of the Mixed Habitat Alternative. The Hybrid Alternative would generate 2.07 million cubic yards of cut (section 2.3.4). All the berms would be constructed within the main channel to confine the 100-year flood within a well-defined, relatively narrow, on-channel corridor that can efficiently transport sediments through the system and onto the beach. Similarly, the on-channel seasonal marsh and salt marsh west of I-5 would likely be damaged (eroded) during flood flows, enabling efficient conveyance of riverine sediments to the beach. As indicated previously under both the Maximum Tidal Basin and Maximum Intertidal Alternatives, the off-channel habitat is protected from infrequent flood flows due to the directional control afforded by the berms. However, tidal exchange to the off-channel habitat is unaffected.

This alternative exhibits the same on-channel hydraulic characteristics as the Mixed Habitat Alternative, and the hydraulic issues would be the same as described in section 4.2.1. The various hydrology impacts would be less than significant. Similar to the Mixed Habitat Alternative, several project components associated with the Hybrid Alternative are expected to affect sediment and water quality.

4.2.4.1 Construction Staging and Access Area

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes from the proposed construction staging and access areas are anticipated.

Water Quality

Activities and related impacts associated with construction staging and access areas for the Hybrid Alternative would be the same as described for the Mixed Habitat Alternative. These impacts are considered significant, but mitigable (Class II).

4.2.4.2 Excavation and Dredging

Hydrology and Coastal Processes

Impacts associated with excavation and dredging for the Hybrid Alternative would be the same as described for the Mixed Habitat Alternative. Although certain hydraulic impacts are considered adverse but not significant (Class III), the proposed improvements provide beneficial long-term impacts to river hydrology (Class IV).

Water Quality

Similar to the Mixed Habitat Alternative, excavation and dredging operations associated with the Hybrid Alternative are expected to have short-term adverse impacts associated with localized increases in turbidity and suspended particle levels. However, improved circulation resulting from initial and maintenance dredging is expected to provide beneficial long-term impacts to water and sediment quality (Class IV).

4.2.4.3 Disposal Sites

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes are expected from utilization of the proposed disposal sites because the sites would not interfere with hydrological conditions within the lagoon or ocean (Class III).

Water Quality

Options for disposal of excavated / dredged materials, and expected impacts to water and sediment quality would be the same as described for the Mixed Habitat Alternative. The primary difference would be a slightly smaller volume of excavated / dredged material generated by the Hybrid Alternative. Regardless, the upland disposal sites would provide adequate capacity for onsite disposal of all excavated materials associated with this alternative. Impacts to water and sediment quality are expected to be significant, but mitigable (Class II).

4.2.4.4 Berms and Infrastructure Protection

Hydrology and Coastal Processes

Impacts associated with river hydrology for the Hybrid Alternative would be the same as described for the Mixed Habitat Alternative. No impacts to coastal processes are anticipated from the proposed berms and infrastructure protection.

Water Quality

Impacts associated with berm construction for the Hybrid Alternative would be the same as described for the Mixed Habitat Alternative. These are considered significant, but mitigable (Class II). No long-term impacts to water or sediment quality from berms and infrastructure protection are expected.

4.2.4.5 Nesting Sites

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes are anticipated from the nesting sites because these sites would not interfere with hydrological conditions within the lagoon or ocean (Class III).

Water Quality

Impacts associated with construction of nesting sites for the Hybrid Alternative would be the same as described for the Mixed Habitat Alternative. These impacts are considered significant, but mitigable (Class II). No long-term impacts to water or sediment quality from the nesting sites are expected.

4.2.4.6 Public Access

Hydrology and Coastal Processes

No significant impacts to hydrology or coastal processes are anticipated from the proposed public access components because these features would not interfere with hydrological conditions within the lagoon or ocean (Class III).

Water Quality

Activities and related impacts associated with public access for the Hybrid Alternative would be the same as described for the Mixed Habitat alternative. These impacts are considered significant, but mitigable (Class II).

4.2.4.7 22nd District Agricultural Association Use of Area U18

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes are anticipated from use of area U18 as proposed uses would not interfere with hydrological conditions within the lagoon or ocean (Class III).

Water Quality

Impacts associated with the proposed use of area U18 by the District would be the same under this alternative as described for the Mixed Habitat Alternative. These impacts are considered significant, but mitigable (Class II).

4.2.4.8 Mitigation Measures

Overall impacts to hydrology and water quality associated with the Hybrid Alternative are considered beneficial (Class IV) because the project would provide protection for off-channel habitat and improve circulation and tidal exchange within the lagoon. Additionally, construction and operation of wetland treatment ponds would improve the quality of urban runoff from adjacent areas that eventually drains into the San Dieguito River. Some construction-related impacts to water quality are considered significant, but mitigable (Class II), although these are generally temporary and localized in extent.

Mitigation measures associated with this alternative would be the same as those described for the Mixed Habitat Alternative in section 4.2.1.8.

4.2.5 Reduced Berm Alternative

The Reduced Berm Alternative includes both tidal wetland and non-tidal (e.g., upland, riparian, and freshwater) habitat. This alternative reduces the amount of excavation/grading that would occur within the project area, and would generate an estimated 1.2 million cubic yards of cut (Section 2.3.5). This material would be moved from Area W1, eliminating the need for a berm in the area to the west of I-5. Grading in Areas W4 and W6 would also be reduced. However, two berms would still be required to maintain sand flow within the main channel during storm events. The location of the berms would be different under this alternative, and the total length of the berms would be reduced. As indicated in the Reduced Berm Alternative grading plan (Figure 2.3.5-2), when compared to the other alternatives, only minor grading is proposed so that the existing patterns of flood and sand flow would not be altered significantly from the existing conditions. In order to minimize any adverse impacts on river channel scour, the approach for this alternative would be to maintain the existing physical conditions within the effective flow area without the use of berms. Environmental enhancement would rely mainly on improvements in the ineffective flow areas. As indicated on Figure 2.3.5-2, the inlet channel would be dredged from the river mouth up to approximate River Mile 0.50, consistent with the previous alternatives to maintain a constant tidal exchange within the lower reaches of the lagoon. Similarly, the dredged sand from the inlet channel would be placed on the beach. As this alternative maintains the existing physical conditions within the effective flow area by limiting grading, the conveyance system for this alternative, although significantly different from the previous alternatives, essentially maintains the same flood flow and riverine sediment capacity as that of the existing conditions. It should be noted, however, that all previous alternatives provide for a more efficient system for sediment delivery to the beach than under existing conditions (or the Reduced Berm Alternative). Other alternatives also provide a substantially improved off-channel habitat, eliminating the undesirable effects of siltation and habitat degradation that would be experienced with both the Reduced Berm and No Action Alternatives.

This alternative maintains the existing physical conditions within the effective flow area so hydrology impacts would be less than significant (Class III). Similar to the Mixed Habitat alternative, several project components associated with the Reduced Berm Alternative are expected to affect sediment and water quality.

4.2.5.1 Construction Staging and Access Area

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes from the proposed construction staging and access areas are anticipated.

Water Quality

Impacts associated with construction staging and access areas for the Reduced Berm Alternative would be slightly less than described for the other action alternatives. These impacts would be significant, but mitigable (Class II).

4.2.5.2 Excavation and Dredging

Hydrology and Coastal Processes

Impacts associated with excavation and dredging for the Reduced Berm Alternative would be the same as described for the Mixed Habitat Alternative. Although certain hydraulic impacts are considered adverse but not significant (Class III), the proposed improvements provide beneficial long-term impacts to river hydrology (Class IV).

Water Quality

Similar to the other action alternatives, excavation and dredging operations associated with the Reduced Berm Alternative are expected to have short-term adverse impacts associated with localized increases in turbidity and suspended particle levels. However, because the scope of the excavation operations is reduced, the spatial extent of impacts is proportionately smaller. Excavation and dredging would have significant, but mitigable impacts on water and sediment quality (Class II).

4.2.5.3 Disposal Sites

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes are expected from utilization of the proposed disposal sites because the sites would not interfere with hydrological conditions within the lagoon or ocean (Class III).

Water Quality

Options for disposal of excavated / dredged materials, and expected impacts to water and sediment quality would be slightly less than described for the other action alternatives. The primary difference is the smaller volume of material generated by this alternative. The upland disposal sites would provide adequate capacity for onsite disposal of all excavated materials. Impacts to water and sediment quality are expected to be significant, but mitigable (Class II).

4.2.5.4 Berms and Infrastructure Protection

Hydrology and Coastal Processes

Impacts associated with river hydrology for the Reduced Berm Alternative would be similar to those described for the Mixed Habitat Alternative. No impacts to coastal processes are anticipated from the proposed berms and infrastructure protection (Class III).

Water Quality

Impacts associated with berm construction for the Reduced Berm Alternative would be slightly less than described for the other action alternatives, since the spatial extent of potential impacts is reduced in proportion to the smaller area covered by berms. Impacts from localized increases in turbidity and suspended particle concentrations are considered significant, but mitigable (Class II). No long-term impacts to water or sediment quality from berms and infrastructure protection are expected.

4.2.5.5 Nesting Sites

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes are anticipated from the nesting sites because these sites would not interfere with hydrological conditions within the lagoon or ocean (Class III).

Water Quality

Impacts associated with construction of nesting sites for the Reduced Berm Alternative would be slightly less than described for the other action alternatives. These impacts are considered significant, but mitigable (Class II). No long-term impacts to water or sediment quality from the nesting sites are expected.

4.2.5.6 Public Access

Hydrology and Coastal Processes

No significant impacts to hydrology or coastal processes are anticipated from the proposed public access components because these features would not interfere with hydrological conditions within the lagoon or ocean (Class III).

Water Quality

Activities and related impacts associated with public access for Reduced Berm Alternative would similar to those described for the Mixed Habitat Alternative, except that plans for the Interpretive Overlook Trail would be eliminated, thereby reducing potentials for associated increases in trash, debris, and domestic animal wastes. These impacts are considered significant, but mitigable (Class II).

4.2.5.7 22nd District Agricultural Association Use of Area U18

Hydrology and Coastal Processes

No impacts to hydrology or coastal processes are anticipated from use of area U18 because proposed uses would not interfere with hydrological conditions within the lagoon or ocean (Class III).

Water Quality

Impacts associated with the proposed use of Area U18 by the District would be the same under this alternative as described for the Mixed Habitat Alternative. These impacts are considered significant, but mitigable (Class II).

4.2.5.8 Mitigation Measures

Overall, the impacts to water quality associated with this alternative would be considered beneficial (Class IV) because the project would improve circulation and tidal exchange within the lagoon. Additionally, construction and operation of wetland treatment ponds would improve the quality of stormwater runoff from adjacent areas that eventually drains into the San Dieguito

River. Some construction-related impacts to water quality are considered significant, but mitigable (Class II); these are generally temporary and localized in extent.

Mitigation measures associated with this alternative would be the same as those described for the Mixed Habitat Alternative in section 4.2.1.8.

4.2.6 No Action Alternative

The No Action Alternative would not alter existing water and sediment quality conditions. Thus, these conditions would continue to reflect the effects of limited circulation within the lagoon, urban runoff, and other watershed influences, including inputs and accumulation of sediments, nutrients, and contaminants. Potential benefits detailed for the action alternatives would not be realized under this alternative.

4.3 GEOLOGY/SOILS

Significance Criteria

Impacts of the proposed project on the geologic environment would be considered significant if:

- Unique geologic features of unusual scientific value, for study or interpretation, would be adversely affected.
- Substantial slope instability, landslides, or erosion would be triggered or accelerated.

Impacts would be considered significant if a project design were more susceptible to geohazards that caused a substantial increase in potential for:

- Seismically induced ground shaking causing liquefaction, settlement, ground rupture, or lateral spreading and damage to slopes or adjoining roadway embankments and bridge abutments.
- Slope failure on hillsides, fill slopes, or roadway embankments.
- Post-construction subsidence/consolidation.
- Increase in river flow velocities resulting in scour that causes instability of slopes, river control berms, adjoining roadway embankments, and bridge abutments.

4.3.1 Mixed Habitat Alternative

4.3.1.1 Construction Staging and Access Areas

Construction staging areas would consist of cleared, unpaved areas used for storage and maintenance of equipment. Temporary unpaved ramps would be constructed to access some of these construction areas and temporary haul roads would be used to complete construction. Construction of these staging and access roads would involve clearing of vegetation, grading, and placement of gravel fill. Removal of vegetation and placement of fill would result in slight alteration of the topography, temporary soil disturbance, and potential short-term increases in wind and water erosion. This temporary increase in erosion potential could in turn result in adverse water quality impacts to the lagoon and air quality impacts associated with dust accumulations. However, standard erosion control measures have been included in the project design to reduce potentially significant impacts to a level of insignificance. Erosion control measures (wind and water) included in the project include the following:

- Placement of silt fences and straw bales in drainage areas to trap sediments and filter runoff.
- Placement of silt fences and straw bales between construction staging/access areas and sensitive habitat, including wetland and riparian areas.
- Placement of straw bales across unpaved access roads during rainfall events to filter runoff.

- Stockpiling of emergency erosion control materials, including 200 straw bales, 50 five-foot steel posts, 100 sandbags, 500 feet of silt fencing, and 2,500 square feet of jute-netting.

- Grading of new access roads in a curvilinear manner that follows the natural contours of the site and would not exceed a 10 percent slope. The roadbeds would have a slight outslope to allow sheetflow across the road instead of down the center of the road. The roads would be subject to routine maintenance in order to reduce the possibility of rutting and off-site erosion.

- Watering of dirt access roads and disturbed areas to prevent dust accumulations and to create a crust that would help prevent soil erosion as a result of wind.

- Applying specified native plant hydroseed mixes on prepared slopes. The hydroseed slurry would include soil binding tackifier and site-specific plant mixes as determined by the permitting agencies. A polymer soil sealant may also be applied as a tackifier on steeper slopes for additional erosion protection.

Erosion-related impacts are potentially significant but would be mitigated to below a level of significance through the implementation of the measures outlined above (Class II).

4.3.1.2 Excavation and Dredging

No unique geologic features of unusual scientific value are present at the site (section 3.3). Therefore, no impacts are anticipated to these types of features due to excavation and dredging (Class III). No active faults traverse the site (section 3.3). Therefore, no impacts are anticipated with respect to surface fault rupture and resultant surface displacement of soils at the site. The most significant seismic event likely to occur at the site would be a magnitude 6.5 earthquake on the nearby Rose Canyon fault zone. A maximum peak horizontal ground acceleration of 0.48g could occur at the site in association with this type of earthquake, resulting in severe ground shaking and potential slope failure.

Wind waves and increased tidal velocities in the river channel could potentially result in localized scour of the adjoining riverbank slopes. Most of the silts and silty sands throughout the lagoon area are fine-grained and easily erodible, even from relatively gentle slopes. Consequently, localized erosion would occur at fairly low stream velocities. Scour in project channels may be anticipated to result in local steepening of channel side slopes, reducing the factor of safety for slope stability.

Geotechnical investigation reports completed by M&T Agra (1993) and Ninyo & Moore (1999) recommend that final cut slope gradients for the site (which would be completed due to excavations below the water surface) should not be constructed in excess of 4:1 (horizontal:vertical) to prevent deep-seated failure during earthquakes and/or river scour. With the exception of areas excavated at the base of several proposed berms, which would be stabilized with rock armor (see section 4.3.1.4), no proposed excavation slopes would be constructed in excess of 4:1. Therefore, no impacts are anticipated with respect to stability of proposed final cut slopes.

Seismically induced shaking could result in liquefaction of the upper 25 feet of sediments, which in turn could cause differential settlement of the ground surface up to seven inches. In addition, lateral spreading could occur up to one foot in the wetland area and up to 2 1/2 to 3 feet on the I-5 freeway embankments adjacent to areas W-1, W-6a, and W-6b, partially due to excavations for the project. These are considered potentially significant impacts which can be reduced to less than significant through proper mitigation (Class II).

4.3.1.3 Disposal Sites

No unique geologic features of unusual scientific value are present at the site. Therefore, no impacts are anticipated to these types of features due to disposal of dredged material (Class III).

Grading of the disposal sites would consist of removal of vegetation, if any, and placement of fill, which would result in temporary soil disturbance and potential short-term increases in wind and water erosion. In addition, fill slopes constructed during grading of disposal sites would be subject to erosion. Both temporary and long-term soil disturbance and erosion could in turn result in adverse water quality impacts to the lagoon and air quality impacts associated with dust accumulations. However, measures have been incorporated into the scope of the project to minimize the potential for erosion. Standard temporary erosion control measures (outlined in section 4.3.1.1) have been included in the project design to reduce potential impacts associated with water and air quality degradation to less than significant (Class II). In addition, long-term erosion control measures have been incorporated into the project design, including use of geotextiles and vegetation, to stabilize soil materials, and construction of positive drainage away from slope faces. The erosion control measures are based on the City of San Diego's Erosion Control Guidelines contained in the City's Landscape Technical Manual (City of San Diego 1989), as well as the Best Management Practices Manual (BMP 1993). Adherence to these erosion control measures are sufficient for minimization of erosion of proposed fill slopes at the project site. Therefore, potential short-term impacts associated with grading and potential long-term impacts associated with construction of fill slopes are considered significant but mitigable (Class II).

As discussed in section 4.3.1.2, the most significant seismic event likely to occur at the site would be a magnitude 6.5 earthquake on the nearby Rose Canyon fault zone. A maximum peak horizontal ground acceleration of 0.48g could occur at the site in association with this type of earthquake, resulting in severe ground shaking and potential ground failure. Ninyo & Moore (1999) "recommend that site specific geotechnical evaluations be performed in areas planned to receive fill soils when development schemes are known." Because development schemes may or may not be initiated for one or more of the potential disposal sites, no site-specific geotechnical evaluations have been completed to date. These evaluations would only be required if development were to be proposed on a filled disposal site. If a development proposal were to be initiated, then the requirement for a site-specific geotechnical evaluation would be made a condition of the necessary development permit. Those disposal sites that could be subject to future development include the Via de la Valle property (DS32), the City of San Diego's 105 acres (DS33, DS34, and DS35), the Ranches property (DS36), and Surf and Turf (DS38). Ground shaking and accelerations such as this are considered potentially significant (Class II) but can be reduced to less than significant by construction of fill slopes in accordance with recommendations of a licensed geotechnical engineer.

Deep overexcavation of fine-grained sands beneath sub-tidal area W-1 (one of the disposal site options being evaluated in this document) would result in temporary steep cut slopes immediately adjacent to the I-5 freeway embankment. In the absence of proper engineering, excavations in this area could result in slope instability of the adjoining freeway embankment. This is considered a potentially significant impact (Class II) that can be reduced to less than significant with proper engineering mitigation. Materials placed as structural or compacted fills would likely shrink 15 percent or more. Materials placed as non-structural fill would likely be placed at a density similar to existing material densities. Therefore, subsequent to placement and drainage, materials would likely only shrink approximately 5 percent. Shrinkage of materials subsequent to construction of structures in disposal areas could lead to differential settlement and resultant distress of structure foundations. These are potentially significant impacts that can be reduced to less than significant (Class II) by construction in accordance with recommendations by a licensed geotechnical engineer.

On-site soils are considered extremely corrosive to ferrous metals. Corrosion of future structures on disposal sites would be a potentially significant impact (Class II), which can be mitigated to less than significant levels through appropriate mitigation.

4.3.1.4 Berms and Infrastructure Protection

No unique geologic features of unusual scientific value are present at the site. Therefore, no impacts are anticipated to these types of features due to construction of berms and infrastructure protection (Class III). Potential erosional impacts associated with construction of the berms would be similar to those described in section 4.3.1.3. In addition, portions of slopes constructed along the San Dieguito River that are anticipated to incur maximum river scour would be constructed with a rock armor, consisting of stone revetment and articulated block mat. Armored slope protection included in the project design would reduce potential impacts associated with river scour-induced erosion to less than significant(Class III).

As discussed in section 4.3.1.2, the most significant seismic event likely to occur at the site would be a magnitude 6.5 earthquake on the nearby Rose Canyon fault zone. A maximum peak horizontal ground acceleration of 0.48g could occur at the site in association with this type of earthquake, resulting in severe ground shaking and potential slope failure of berms and associated infrastructure protection. Ninyo & Moore (1999) “recommend that site specific geotechnical evaluations be performed in areas planned to receive fill soils when development schemes are known.” Site-specific geotechnical evaluations would be conducted for the berms following completion of the final grading plans and prior to the issuance of a Land Development Permit from the City of San Diego and a grading permit from the City of Del Mar. Impacts related to severe ground shaking are considered a potentially significant but mitigable (Class II).

Potentially significant impacts associated with liquefaction and lateral spreading are similar to those described in section 4.3.1.2.

Potentially significant impacts associated with consolidation of materials would be similar to those described in section 4.3.1.3.

Laboratory testing of on-site soils indicated a high level of chloride within the soil. Therefore, the soils are considered extremely corrosive to ferrous metals, such as steel drainage pipes and culverts. This soil characteristic is considered a potentially significant impact (Class II) which can be mitigated to less than significant levels through appropriate measures.

4.3.1.5 Nesting Sites

No unique geologic features of unusual scientific value are present at the site. Therefore, no impacts are anticipated to these types of features due to disposal of dredged material at proposed nesting sites (Class III). Potentially significant impacts associated with erosion, seismicity, and consolidation are similar to those described in section 4.3.1.4.

4.3.1.6 Public Access/Interpretation

Public access areas would consist of the construction of paved and unpaved trails, a nature/interpretive center, and parking areas. Construction would involve clearing of vegetation and grading. Trails would be constructed in accordance with the trail standards developed by the California Department of Parks and Recreation, with the intent of minimizing erosion and long-term maintenance of unpaved and paved trails. The nature/interpretive center would be developed on approximately 6 acres of the Via de la Valle site, which would result in slight alteration of the topography, temporary soil disturbance, and potential short-term increases in wind and water erosion. This temporary increase in erosion potential could in turn result in adverse water quality impacts to the lagoon and air quality impacts associated with dust accumulations. Standard erosion control measures (outlined in section 4.3.1.1) have been incorporated into the Master Park Plan as design guidelines and development standards. These measures would be included in the future project design for the center in order to reduce potentially significant impacts to a level of insignificance. Therefore, impacts are considered significant, but mitigable (Class II).

Potentially significant impacts associated with seismicity, slope stability, and consolidation are similar to those described in section 4.3.1.4.

As stated previously, on-site soils are considered extremely corrosive to ferrous metals. In addition, the soluble sulfate content of the soil is considered to represent a negligible to moderate sulfate exposure for concrete. These corrosion characteristics represent a potentially significant, but mitigable impact to the future nature/interpretive center (Class II).

4.3.1.7 Mitigation Measures

To reduce impacts related to geology and soils, the following measures shall be implemented:

1. Prior to the approval of a Land Development Permit from the City of San Diego and a Grading Permit from the City of Del Mar:

    - Site-specific geotechnical investigations shall be completed in areas proposed to receive fills (e.g., berm areas, disposal areas, nesting sites, and public access areas).

    - A geotechnical consultant shall be retained to evaluate appropriate measures for mitigating lateral spreading of the I-5 embankments located adjacent to restoration areas W1, W6a, and W6b. Such measures could include densifying soils located adjacent to the existing I-5 embankment by dynamic compaction or constructing stone columns near the I-5 embankment to stabilize these soils during a seismic event. Other mitigation methods are available and could be evaluated. The specific measure to be implemented shall be reviewed and approved by the City Engineer as well as Caltrans, District 11. The approved measures shall then be made conditions of the Land Development Permit and shall be noted on the construction plans.

- In the event that the overexcavation disposal option is selected for area W-1, a geotechnical investigation shall be completed to determine appropriate slope stability measures to be implemented adjacent to the I-5 freeway during excavation. These measures would be similar to those described above and shall be approved by the City Engineer as well as Caltrans District 11. The approved measures shall then be made conditions of the Land Development Permit and shall be noted on the construction plans.

2. The following measures shall be made conditions of the Land Development Permit from the City of San Diego and the Grading Permit from the City of Del Mar and all conditions shall be listed on the construction plans and reviewed with the contractor at the preconstruction meeting:

- Vegetation, debris, and areas of soft, saturated, or otherwise unsuitable subgrade soils shall be removed until competent materials are encountered prior to placing fill. Compaction testing (to 90 percent relative compaction) shall be completed in areas of compacted fill (e.g., berm areas).

- Materials used for compacted fill shall be drained to achieve a moisture content where 90 percent relative compaction can be achieved. Draining shall also be completed prior to sediment placement to allow shrinkage of material.

- Import material to be used as structural fill shall be evaluated by a geotechnical consultant prior to importation to the site.

- Surface drainage shall be provided to direct water away from proposed fill areas (e.g., berms).

- Only the use of heavy gauge, corrosion-protected, underground steel drainage pipe or culverts or plastic pipe shall be permitted for use in the berms. A corrosion specialist shall be consulted prior to construction to determine which type of material would be bested suited for use in this tidally influenced environment.

- Where development is proposed on excavated materials from the project site, such as the proposed nature/interpretive center, Type II cement shall be used for foundation construction due to the sulfate content of the soil.

4.3.2 Maximum Tidal Basin Alternative

Geologic impacts associated with this alternative would be similar to those described in section 4.3.1.

Mitigation Measures

Mitigation measures would be the same as those described in section 4.3.1.

4.3.3 Maximum Intertidal Alternative

Geologic impacts associated with this alternative would be similar to those described in section 4.3.1.

Mitigation Measures

Mitigation measures would be the same as those described in section 4.3.1.

4.3.4 Hybrid Alternative

Geologic impacts associated with this alternative would be similar to those described in section 4.3.1.

Mitigation Measures

Mitigation measures would be the same as those described in section 4.3.1.

4.3.5 Reduced Berm Alternative

Geologic impacts associated with this alternative would be similar to those described in section 4.3.1.

Mitigation Measures

Mitigation measures would be the same as those described in section 4.3.1.

4.3.6 No Action Alternative

Without the proposed project, the geologic environment at the site would remain essentially in its present condition, resulting in impacts similar to those currently experienced, including potentially severe ground shaking due to earthquakes and associated affects such as liquefaction, settlement, and lateral spreading.

4.4 BIOLOGICAL RESOURCES

Significance Criteria

Impacts are classified as discussed at the beginning of Chapter 4. Impacts to biological resources from the proposed project would be considered significant if:

- Substantial adverse effects would occur to individuals or the habitat of a rare, threatened, endangered species, or other special status species.
- Substantial adverse effects would occur to a species, natural community, or habitat or that is specifically recognized as biologically significant in local, state, or federal policies, statutes, or regulations.
- Substantial adverse effects would occur to the migration of fish or wildlife populations.
- Substantial adverse modification would occur to species diversity or ecosystem functions and values beyond the immediate vicinity of the project site.
- Substantial conflict would occur with local, state, or federal policies designed to protect biological resources.

The analysis also gives appropriate consideration to beneficial impacts, which include increases in the acreage or functions and values of biologically significant habitats.

4.4.1 Vegetation, Wildlife, and Aquatic Biota

4.4.1.1 Impacts Common to All Action Alternatives

Appendix C-5 provides acreage calculations of habitat gains and losses, by habitat type and area. These calculations are based on the overlay of current restoration plan alternatives on the baseline habitat map (Figure 3.4-1), and provide the basis for much of the following discussion.

Within the areas that would be graded to restore tidal circulation, the relationship between elevation and habitat type is as described in section 3.4 and Chapter 2. This analysis assumes an upper limit of +4.5 feet NGVD for the high marsh habitat, which is also considered to be the upper boundary of the restored tidal wetlands for this project. This upper boundary is conservative, being at the lower end of the range that most ecologists and regulatory agencies, including the California Coastal Commission (CCC), define for tidal wetlands (Josselyn and Welchel 1999; CCC 1999). Hydraulic modeling of the restored system indicates the likelihood that high tides would reach this elevation throughout the restored system several times a year, which would be consistent with the establishment of high marsh vegetation and habitat values (Jenkins and Wasyl 1998, 1999a-d; Jenkins et al. 1999; Josselyn and Welchel 1999). For the purposes of project design and this analysis, this upper boundary has been considered to be independent of changes in tidal hydrology that would be induced by the different alternatives (see below).

Also as described in section 3.4 and Chapter 2, a zone of transitional wetland habitat is defined as lying between +4.5 feet NGVD and the extreme high water levels predicted by the hydroperiod functions for each alternative (Jenkins and Wasyl 1999d). This zone would be influenced by both infrequent tidal flooding and seasonal rainfall. The upper limit of this zone is at +5.0 to +5.1 feet NGVD, differing slightly between alternatives as discussed below. This zone would be subject to tidal inundation only by extreme high tides, approximately on an annual basis, but more frequent high tides would saturate the underlying soils, favoring the development of salt marsh vegetation (Josselyn and Welchel 1999).

4.4.1.1.1 Long-Term Effects of Habitat Conversion

IMPACTS ON ACREAGE OF TIDAL HABITATS

All of the action alternatives would greatly increase the acreage of tidal habitats in the project area, resulting in beneficial impacts (Class IV). All project alternatives involve the loss of relatively small areas (4-5 acres) of existing tidal habitats that would be converted to other types of habitat as part of the restoration. However, there would be no net loss of acreage of any tidal habitat. Figure 4.4-1 illustrates how the mix of net habitat gains among open water, intertidal mudflats, and low, mid, and high salt marsh, differs between alternatives.

The overall net gain in acreage of tidal wetlands is substantially smaller under the Reduced Berm Alternative than for the other alternatives, which in turn differ in the mix of habitat gains provided (details discussed below). Newly created tidal habitats would be expected to undergo colonization by both passive and active dispersal within the first year following their creation. The establishment of plant and animal communities typical of these habitats (e.g., Zedler 1982, 1996) would take several years, with the longest time required for the upper intertidal levels.

As Figure 4.4-1 shows, there is a net loss of seasonal and transitional wetland habitat acreage associated with each of the restoration alternatives. The net loss ranges from one acre for the Maximum Intertidal Alternative to 15 acres for the Reduced Berm Alternative. This is discussed in more detail under "Non-Tidal Habitats" below.

QUALITY OF EXISTING TIDAL HABITATS

Long-term maintenance of the inlet, coupled with the increased tidal prism of the lagoon and wetlands, would result in improved tidal circulation, eliminating the prolonged closures of the lagoon and accompanying episodes of poor water quality (section 3.2) — and consequent death or injury to marine plants and animals — that have occurred in recent history (MEC 1993). As a result, any of the action alternatives would have a beneficial impact on tidal habitats and the organisms they support (Class IV). Among the alternatives, there are differences in tidal flushing or hydraulic efficiency, as reflected in differing equilibrium sill depths (a measure of the tendency of the inlet to remain open) and the degree to which tidal amplitudes in the restored system match those of the open coast (Jenkins et al. 1999). In this respect, the alternatives can be ranked from most-to-least efficient as follows: Maximum Tidal Basin > Hybrid > Mixed Habitat > Maximum Intertidal > Reduced Berm.

Improved drainage from the lagoon during low tides would likely cause some areas that have been subtidal or non-tidal (ponded during episodes of inlet closure) to become “frequently flooded mudflats,” i.e. occasionally exposed by low tides. The affected areas include existing channel margins and portions of the DFG lagoon that lie between approximately 0.0 foot NGVD (the sill elevation under existing conditions) and the new equilibrium sill depth associated with each alternative. The predicted sill depths (all elevations in feet NGVD, from Jenkins and Wasyl 1999d),

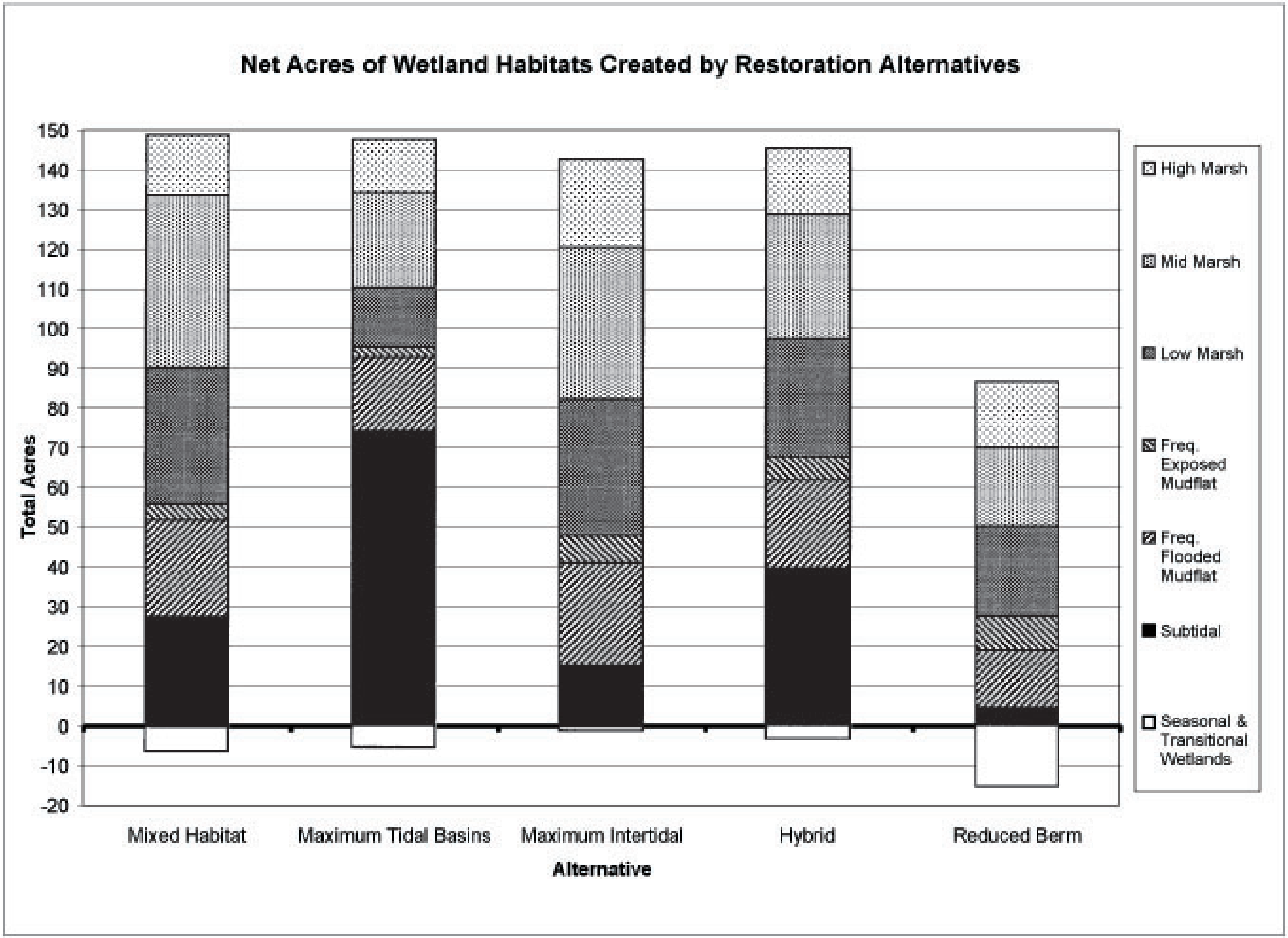


Figure 4.4-1. Net Acres of Tidal Habitats Created by Restoration Alternatives

and the relative magnitudes of habitat conversion from subtidal to intertidal are as follows: Maximum Tidal Basin (-2.0) . > Hybrid Alternative (-1.3) > Mixed Habitat (see discussion that follows) > Maximum Intertidal (-0.9) > Reduced Berm (-0.5). In calculating the predicted sill depths for each alternative, Jenkins and Wasyl considered an optimized condition for the Mixed Habitat Alternative, which resulted in a sill depth of –1.6 feet NGVD. If their modeling had considered the same factors for the Mixed Habitat Alternative that were used in predicting the sill depth for the other alternatives, the sill depth for the Mixed Habitat Alternative would have been in the range of –1.2 to –0.8 feet NGVD.

Evaluation of the overall productivity of the ecosystem indicates that the impact of converting this zone of shallow subtidal to occasionally exposed intertidal flat should be beneficial (Class IV) due to improved circulation of nutrients. Improved tidal flushing (section 3.2) and a greater acreage of intertidal flat in locations protected from strong waves and currents may facilitate the establishment of eelgrass beds in the lagoon and cordgrass in the low marsh.

Organisms more tolerant of exposure to low tides would be expected to increase in abundance, and foraging habitat for shorebirds would be increased immediately. In contrast, the availability of habitat for certain fishes, waterbirds, and mobile invertebrates (e.g., swimming crabs) that require open water or subtidal areas would become more variable spatially and temporally. These effects would range from adverse but not significant for species intolerant of tidal exposure (Class III) to beneficial for others (Class IV).

As described in section 3.4.2, numerous aquatic organisms utilize the salt marsh and mudflats for a variety of activities, including feeding, reproduction (nursery grounds), and protection against predation (Zedler 1982). The lower salt marsh communities in these habitats are dominated by macroinvertebrates such as polychaetes, snails, and crabs. Intertidal salt marsh areas are used by similar invertebrates during both high and low tides to filter food from the circulating water and search for other prey items. At high tide, several fish species occupy the lower mud flats, including California killifish, bay goby, striped bass, and topsmelt. With the exception of the bay gobies which hide in their burrows on the mud flats between tides, most of the above fish species move out of the mud flats into deeper channel waters at low tide. <u>As discussed in Appendix C-7, there would be no impacts to Essential Fish Habitat (EFH) from any of the alternatives.</u>

Modeling by Jenkins and Wasyl (1999d) also suggests that existing tidal salt marsh habitats at a given elevation on the shore would experience increased frequencies of tidal inundation due to the improved hydraulic efficiency of the restored system. In theory this could allow low, mid, and high salt marsh communities, and the boundaries between them, to extend slightly higher on the shore relative to existing conditions. The tendency for this to occur would be greater for the more hydraulically efficient alternatives, i.e., Maximum Tidal Basin > Hybrid > Mixed Habitat > Maximum Intertidal > Reduced Berm. (The hydraulic efficiency of any of these alternatives could be improved further by grading the restoration areas to a slightly greater depth, as demonstrated by Jenkins and Wasyl (1999d) in their analysis of the Mixed Habitat Alternative.) Given the broad elevational ranges and salinity tolerances of the constituent plant species in the mid- and high marsh (MEC 1993), such changes would likely occur very gradually and be reflected in changing relative abundances of species with respect to elevations rather than losses or replacements. The impact on overall marsh productivity and diversity is likely to be positive because of the expanded area and greater predictability of tidal influence (Class IV).

NON-TIDAL HABITATS (UPLAND, TRANSITION, AND WETLAND)

All of the restoration alternatives would replace areas of seasonal or brackish marsh, uplands, and associated transitional areas with tidal wetlands or other habitat features (nesting islands, berms) that are part of the restoration project (section 2.3.1). With the exception of the Reduced Berm Alternative, all of the action alternatives have a restoration area footprint of approximately 205 acres. The Reduced Berm Alternative has a footprint of 120 acres. Within these footprints, extensive areas of upland ruderal-successional or agricultural habitat, generally dominated by non-native grasses and forbs but locally including native species such as coast goldenbush, would be excavated and converted to tidal habitats. These areas have been disturbed by agriculture and other previous uses of the land, notably the airport and wastewater lagoon west of I-5. Similar areas are regionally common and are generally of limited value in terms of native plant and wildlife populations. No coastal sage scrub or other special-status upland habitats would be adversely affected by habitat conversion.

Although the conversion of these upland areas to wetlands involves a loss of habitat for certain non-wetland plants and wildlife, the converted area would remain as undeveloped open space, and the level of disturbance due to disking and agricultural disturbance east of I-5 would diminish (section 4.1). Corridors for the dispersal of upland wildlife across converted areas would remain along berm slopes. As a result, the conversion of non-tidal uplands to tidal wetlands is considered adverse but less than significant in terms of upland habitat loss (Class III), but remains beneficial overall (Class IV) in that more productive and generally scarcer salt marsh habitat would be created in its place.

Although some areas of seasonal salt marsh would be eliminated (see below), all of the restoration alternatives would result in a substantial increase in tidal and overall wetland acreage, including varying amounts of low, mid, and high marsh habitat. Additional areas of transitional wetland habitat at the upper edges of tidal inundation (+4.5 to approximately +5.0 feet NGVD) would be created in differing amounts by the different alternatives. These transitional wetland areas would be continuous with the adjacent tidal high marsh zone and are expected to provide functions and values similar to those of the impacted areas of seasonal salt marsh. With the creation of significantly more tidal and transitional marsh and mudflat habitat, recolonization and immigration into the new areas would begin within a short time frame (< 1 year) and the area as a whole would ultimately support more diverse communities, although this process would occur more slowly in the upper intertidal and transition areas. Therefore, there would be a significant positive effect on salt marsh biota from any of the action alternatives (Class IV).

Because of their functional similarity, seasonal and transitional wetland habitat types have been combined in Figure 4.4-1 to illustrate that there would be a net reduction in acreage of these non-tidal wetland habitats. From least reduction to greatest reduction, the restoration alternatives can be ranked as follows: Maximum Intertidal < Hybrid < Maximum Tidal Basin < Mixed Habitat < Reduced Berm. As discussed further below, net gains in tidal high marsh generally provide sufficient acreage and habitat functions and values to offset these losses, although just barely for the Reduced Berm Alternative. Seasonal or transitional wetlands could be created or restored to provide additional acreage of these habitats in areas W30, M35, and M38 through M45, as shown on the plan view maps. These areas collectively amount to about 19 acres, and all occur in non-wetland areas. If implemented, wetland creation or restoration on these sites would add to the project's overall beneficial impacts on wetlands (Class IV).

Within the restoration area footprint, certain non-tidal areas supporting seasonal marsh (including seasonal salt marsh and related transition habitats) would be excavated and converted to tidal wetlands (refer to "W" areas in Plan View maps, Chapter 2). The impacted acreage of seasonal marsh is 20 acres for all restoration alternatives other than the Reduced Berm Alternative, which has an impact of 18 acres. The restoration alternatives would convert these habitats to a variety of tidal and non-tidal habitats, which over time are expected to adequately replace the functions and values currently provided by seasonal marsh. Additional discussion is provided below.

Major areas of impact are as follow:

- Excavation of the west basin and adjacent areas to create tidal wetlands west of I-5 (W1, W2A, W2B, and W3 in the Chapter 2 Plan View maps) would eliminate approximately 5 acres of seasonal marsh. If restoration is successful in these areas, however, they would provide many times the acreage of tidal habitats, plus additional areas of transitional wetland and upland habitats, in the impacted areas (Appendix C-5).
- Tidal wetland restoration in the northeast basin (areas W4 and W16 in Plan View maps) would eliminate about 6 acres of seasonal marsh (slightly less under the Reduced Berm Alternative, which does not include area W16). Again, the acreage of tidal habitats provided is many times that of the impacted acreage, with additional transitional wetland and upland habitats (Appendix C-5).
- Tidal wetland restoration would eliminate about 4 acres of seasonal marsh that adjoins the river east of I-5 in areas W5 and W10, and replace this with an equivalent acreage of tidal marsh (Appendix C-5).
- Tidal wetland restoration in the southeast basin (area 6B) would eliminate about 3 acres of seasonal marsh while providing several times as much tidal habitat, plus additional upland and transitional wetland acreage (Appendix C-5).
- Nest site 11 would eliminate 1.05 acre of seasonal marsh to provide about 3 acres of nesting habitat for least terns and snowy plovers. Other water-associated birds would be expected to use this area for loafing as well.

The loss of seasonal marsh if it occurred without replacement would be a significant impact because of the special status and sensitivity of this coastal wetland habitat. The California Coastal Commission and City of San Diego have both accepted in principle that successful creation of tidal wetlands can mitigate the conversion of non-tidal wetlands on a 1:1 acreage basis. It is nevertheless important to evaluate the degree to which functions and values associated with tidal wetlands and other habitats created as a result of the restoration would replace those of existing non-tidal wetlands on the site. In that respect, all alternatives can, if successful, result in substantial increases in high tidal marsh and transitional wetland habitat that would support much the same vegetation, and provide many of the same functions and values for wildlife that are supported by seasonal wetlands in the project area.

The restoration project would include provisions for salvaging seasonal marsh vegetation from impacted areas, and using this material to speed the establishment of high marsh. If successful, the action alternatives would result in net gains of high marsh habitat ranging from 13 acres (Maximum Tidal Basin) to 22 acres (Maximum Intertidal) (Figure 4.4-1). The additional acreage of contiguous transitional habitat (Figure 4.4-1) would increase the value of the high marsh habitat for species that inhabit seasonal marsh but may be sensitive to tidal flooding. Other functions and values associated with shallow ponded and mudflat habitats that are part of the impacted seasonal wetlands would be replaced by the abundant open water and mudflat habitats that are part of the restoration. As a result, all of the action alternatives would show net gains of wetland habitat that would provide functionally in-kind mitigation for seasonal wetland losses at ratios well in excess of 1:1.

The acreage of tidal, transitional wetland, and other habitats provided by restoration is sufficiently large to "absorb" a reasonable amount of variation with respect to the hydroperiod functions (Jenkins and Wasyl 1999d) that are obtained in the restored system without risking a net loss of seasonal wetland functions and values. A reasonable worst case resulting from lower than normal sea levels and diminished tidal amplitudes could shift habitat distributions downward by several tenths of a foot (Jenkins and Wasyl 1999d). This would result in an expanded transition zone that would be drier at the upper end, and remaining habitats would be somewhat compressed relative to current predictions. The acreage of high marsh and other habitats created would still be several times as large as the impacted acreage.

The retention of large areas of existing seasonal marsh as part of the restoration alternatives should be noted. Out of the 68 acres currently existing (Figure 3.4-1), 48-50 acres are retained by restoration alternatives. These areas at present are to a large extent surrounded by disturbed upland habitats. All of the restoration alternatives establish tidal wetland, transitional and upland habitats (nest sites, berms) in proximity to these existing seasonal wetlands. The variety of habitats should ultimately enhance the functions and values of these habitats relative to existing conditions, a beneficial impact (Class IV).

Finally, low-lying but non-tidal areas around the west basin (area W1) where seasonal salt marsh is established would be exposed to occasional inundation by high tides as a result of the restoration. Modeling results (Jenkins and Wasyl 1999d) suggest that in the range of +4.5 to +5.0 NGVD where these communities occur, the restored system would experience tidal inundation more frequently than at present, although this would still occur on only one to several days out of the year. The restoration alternatives differ with respect to the likelihood that this would occur. Specifically, those alternatives with greater hydraulic efficiency would be likely to experience more frequent tidal inundation than those alternatives with less hydraulic efficiency. In the case of the diked basin surrounding NS11 (refer to Plan View maps in Chapter 2), the excavation of new tidal habitats would also reestablish a direct tidal connection to the area. Since these areas already support high marsh plant species such as glasswort, alkali heath, and saltgrass, the "conversion" of these areas to high salt marsh would be accomplished without adversely affecting these desirable components of the vegetation, while weedy species such as tamarisk and non-native annual grasses that do not survive periodic tidal inundation should diminish. Rare tidal inundation would not be expected to adversely affect resident wildlife, which obviously tolerate the extreme conditions associated with seasonal flooding and desiccation that exist at present. The overall impact would be beneficial (Class IV).

All project action alternatives involve plans for future enhancement and/or restoration of native grassland, coastal sage scrub, and chaparral vegetation on uplands currently supporting mostly ruderal/successional vegetation or agriculture (section 2.3.1). These areas (refer to Plan View maps in Chapter 2) amount to 187 acres. Approximately 18 acres of freshwater wetlands and riparian habitats would also be enhanced and restored. Agricultural disturbance of these areas would cease (section 4.1), and they would likely undergo succession, resulting in increased cover of grasses, and, ultimately shrubs. These areas would have increased functions and values as habitat for native plants and wildlife, including special-status species, relative to existing conditions. This would result in a beneficial impact (Class IV).

4.4.1.1.2 Impacts of Construction

Apart from long-term conversion, the residual short-term adverse impact associated with the time lag between the impact on existing seasonal wetlands and the creation of new habitats that provide equivalent functions and values is considered less than significant (Class III).

Achieving the intended mix of habitats requires grading to target elevations within a narrow zone of tolerance. For example, studies by Jenkins and Wasyl (1998, 1999a-d) reveal sharp declines in the frequency of tidal inundation as elevations rise above a mean higher high water level of about +2.5 NGVD, to high water levels in the range of +4.0 to +5.0 NGVD, indicating the sensitivity of the upper elevation habitats to slight changes in elevation (see also Jenkins and Wasyl 1999d). Accordingly, project construction plans should include precise elevation controls to ensure that habitats perform as intended and successfully avoid significant adverse impacts as discussed previously (Class II).

CONSTRUCTION STAGING AND ACCESS AREAS

Construction staging and access areas are the same for all action alternatives. An estimate of potential impacts on different habitat types has been made by overlaying the staging area "polygons" as shown on Figure 2.3.1-13 on the baseline vegetation map. The results are shown in the following table.

Table 4.4-1. Potential Impacts of Staging Areas on Various Habitats

Habitat Type	*Acres Affected*	*Source/Location of Impact (see Figure 2.3.1-13)*
Southern Coastal Foredunes, Southern Coastal Bluff Scrub Intertidal Flat	0.41 0.01 3.13	SA1 at river mouth
Open Water	0.37	SA1 at river mouth , SA2 along river
Sandy Beach (Non-tidal Estuarine Flat)	1.33	SA1 at river mouth SA3 on east edge of CDFG lagoon
Seasonal Marsh	4.27	SA3 on east edge of CDFG lagoon SA4 on north side of restoration area
Freshwater or Brackish Marsh	0.04	SA4 on north side of restoration area
Ruderal / Successional	3.40	Parts of SA3 and SA4
Other urban or unvegetated areas	2.84	SA1

As described in section 2.3.1, staging areas would be restored to pre-construction conditions following use, with the possible exception of SA3 (see below). As with all project impacts on wetlands, it is assumed that a final wetland delineation for impacted areas would be verified by the U.S. Army Corps of Engineers and incorporated into the Section 404 permit process. Discussion of the major areas of potential impact by habitat type and location is provided below. Since there are several common themes associated with all of the impacts, the following summarizes the impacts and identifies the need for mitigation.

Open Water and Estuarine (Tidal and Non-Tidal) Flats. The use of staging area SA1 (Figure 2.3.1-13) for inlet maintenance and dredged material stockpiling and disposal would intermittently disturb the adjacent tidal open water and mudflat habitats, as well as requiring a portion of the sand beach (non-tidal estuarine flat) during construction. This activity would have short-term, small-scale effects on marine plankton, invertebrates, and fishes, and may cause shore- and waterbirds to temporarily avoid a potentially valuable feeding and resting area.

The use of staging area SA2 as a launch site for floating dredge equipment would cause minor, intermittent disturbance (wave action, noise) of tidal habitats along the river. Any shoreline construction required for this facility would also cause minor disturbance of mudflat and open water areas. Since this area of the shoreline is largely developed, tidal saltmarsh habitat is not present.

Staging area SA3 and the access road to it overlap a fairly large area of non-tidal estuarine flat adjacent to the CDFG lagoon. This area (NS 15 on plan view maps) provides a potential resting or nesting site for shore- and waterbirds that forage in the lagoon. Given the creation of greater acreages of functionally equivalent areas on nesting islands NS11 and NS12 in the same area, and the fact that this area has not supported any nesting in recent years, the impact in terms of habitat disturbance is expected to be less than significant (Class III). However, if least terns, snowy plovers, or other water birds were to nest on the site in the future, use of the access road and staging area could affect their reproductive success and risk injury to the birds, an impact that would be significant (Class II).

Salt Marsh. An access route under I-5 along the south side of the river is planned to enable project traffic to go between the eastern and western parts of the restoration area (section 2.3.1). This access route as presently designed would require bridging a small tidal channel with associated tidal marsh on its banks. The channel is small, only about 4 to 6 feet deep and extends a few hundred feet south of the river, but it is the largest side channel remaining along the river east of I-5. The area of potential fill required to bridge this area is estimated as roughly 0.02 acre (50 feet x 20 feet). The area occupied by the channel would ultimately be incorporated into a larger tidal channel connecting the river to restoration area 6A. The water control structure and associated haul route across the river to disposal site DS38 are considered under "Disposal Sites" below.

Seasonal Marsh, Fresh and Brackish Water Marsh. Staging areas SA3 and SA4 combined may impact 4.27 acres of seasonal marsh. SA4 impacts an additional area (0.04 acre) of brackish marsh. SA3 consists of salt marsh vegetation. The impacts would presumably include vegetation removal, minor grading or filling, and drainage controls to avoid constraints on use during the rainy season and at other times when the water table is high.

Coastal Foredunes and Coastal Bluff Scrub. Staging area SA1 impinges on coastal foredunes at the river mouth. Its use may require the removal of native dune vegetation, and result in foot traffic being directed around the area into coastal bluff vegetation, resulting in impacts to this habitat.

Ruderal/Successional, Agricultural, and Developed Areas. All staging areas combined would impact 6.24 acres of these types of habitats.

All Locations and Habitat Types. At all staging area locations, there is a risk of spills of fuel, lubricants, or coolants from vehicles and construction equipment. Such spills could contaminate soils on a small scale, and, if not contained, have toxic effects on plants and animals in surrounding wetland and aquatic habitats.

Conclusion. The use of staging areas may adversely affect habitats that are protected as wetlands or otherwise recognized as sensitive (coastal foredunes, coastal bluff scrub). Potential impacts include the removal of existing vegetation, disruption of wildlife use--including possible nesting on NS15, alteration of soil and drainage characteristics, and construction-related spills. Although the project commits to restoration of these areas, plans to accomplish this are only generally developed. Final details should be addressed during permitting for the project. Impacts are considered potentially significant but mitigable (Class II) by confining ground disturbance, parking, and maintenance/ refueling activities to areas that are of lowest value to wildlife and can most easily be restored following construction, and by avoiding the use of areas where sensitive bird species are nesting.

EXCAVATION AND DREDGING

This section primarily addresses the short-term consequences of excavation and dredging, whereas long-term effects of habitat conversion caused by excavation and dredging were addressed above. The impacts of excavating non-tidal upland and wetland habitats that would be converted to tidal habitats are negligible in comparison to the conversion impacts discussed previously, so the following discussion is focused on dredging impacts to the aquatic environment.

Plankton. As described in section 3.4.1.1, plankton communities vary considerably from season to season due to changing conditions of temperature and salinity and prevailing currents. As a result of the proposed dredging and excavation operations, temporary increases in suspended particles would occur in the project area. Associated effects would include somewhat reduced light penetration and dissolved oxygen concentrations in the water column from suspended sediments. As a result of reduced light in the water column, potential impacts to plankton communities may include a localized decrease in primary productivity due to reduced photosynthesis and clogging of gills and feeding appendages of zooplankton, possibly reducing survival, growth, and biomass. However, increased turbidity conditions would be temporary, localized, and short term, occurring only during dredging. Further, most plankton would be transported past the project area by tidal currents so their residence and exposure time to any impacts would be temporary. In addition, planktonic forms of many other marine organisms would allow for larval settlement and subsequent repopulation in the effected areas. Therefore, impacts to the plankton community would be adverse but less than significant (Class III).

Benthic Invertebrates. Dredging and excavation activities under any of the action alternatives would temporarily impact benthic community resources by disturbing and removing some species. However, recolonization would occur by larval recruitment or immigration of organisms from nearby unaffected areas, although this latter contribution would likely be minimal. Recolonization of the invertebrate community is expected to be relatively rapid (within a year) following completion of dredging and excavation, depending on the season and amount of planktonic larvae. Because benthic invertebrates in most areas of San Dieguito Lagoon are typically found in other southern California wetlands, removal of some individuals during dredging and excavation activities is considered less than significant. Therefore, impacts to benthic invertebrates would be short term and less than significant (Class III).

In addition to direct removal or burial of organisms in the dredge area, the increased suspended solids resulting from dredging activities may affect benthic organisms in the vicinity of the dredge site, particularly filter or suspension feeding organisms. The suspended solids could clog gills and feeding appendages, reducing the organisms ability to feed, and consequently reducing the survival, growth, and biomass of the organisms. However, the impacts would be temporary and localized. Therefore, impacts on the benthic invertebrates associated with increased suspended solids in the open water channels would be less than significant (Class III).

Fishes. Dredging and excavation activities for this alternative would temporarily impact juvenile and adult fishes. Types of effects noted by other studies can range from decreased visibility for foraging activities to impaired oxygen exchange due to clogged gills (EPA 1993). Impacts would be greatest on fish eggs, larvae, and juveniles (USACE 1992) and also on primarily burrowing species such as gobies. Other schooling fishes that are typically transient in the project area may be affected by increases in suspended sediments. However, most fish, particularly highly mobile, pelagic schooling species, would be able to avoid the area during dredging periods. Therefore, these species would not be significantly affected by dredging activities (Class III). As discussed in Appendix C-7, there would be no impacts to Essential Fish Habitat (EFH) from any of the alternatives.

With the exception of gobies, which burrow in the soft sediments, other demersal fishes such as diamond turbot and California killifish would be able to move out of the project area and therefore avoid areas impacted by dredging and excavation activities. Although most fishes would be able to avoid the area of disturbance during operations, some mortality could potentially occur if caught in dredging equipment. However, these impacts would be temporary and localized and therefore insignificant (Class III). Short-term positive benefits could occur as a result of increased prey availability (e.g., polychaete worms) in material that is resuspended during dredging activities (Class IV).

Birds. Dredging would temporarily affect foraging conditions for waterbirds (e.g., pelicans, terns, gulls), by increasing suspended sediment concentrations and reducing visibility. This would be an adverse but insignificant impact (Class III), because it would be localized and temporary, affecting only a small number of birds for a short time. Other feeding areas within the project boundaries would be available for use. There could be a beneficial (Class IV) impact to dredging due to the dislodging of certain prey by the dredging actions, which would make these prey items more available to birds.

DISPOSAL SITES

Beach and Ocean Disposal. Similar to dredging impacts, impacts of beach and ocean disposal would be localized, temporary, and, with one exception (see below) less than significant (Class III). Potential impacts would include localized burial of invertebrate communities, increased turbidity due to sediment resuspension, and local increases in prey that are dispersed along with dredged sediments. Impacts to fishes would be from burial and only affect burrowing species such as gobies and possibly slower moving demersal species such as killifish. However, species such as gobies would probably be able to reconstruct their burrows.

Beach disposal could adversely impact grunion spawning or the survival of eggs and larvae from previous spawns. This impact is potentially significant but mitigable through the avoidance of disposal during spawning and hatching periods (Class II).

Upland Sites. Disposal sites are located in unvegetated, developed, or ruderal-agricultural areas. The use of these areas as proposed, followed by revegetation as described in section 2.3.1, is generally an adverse but insignificant impact on the upland habitats that are directly affected (Class III). Disposal would not directly affect tidal and non-tidal wetland habitats. Disposal site DS32 abuts wetland restoration area W16 and may impact a local population of the southern tarplant, a sensitive species. This impact is considered in section 4.4.2. Potential indirect effects resulting from runoff from disposal sites into the aquatic environment are addressed in section 4.2.

Twenty-Second District Agricultural Association Sites. Disposal site option DS37 is the site of a paved parking lot, therefore, no biological resources occur on the site. Disposal site option DS38 includes a dirt parking lot and golf driving range facility. Portions of this site have been delineated by the USACE as jurisdictional wetlands. The placement of fill in these areas would therefore result in the conversion of wetlands to non-wetland areas, which is considered a significant, but mitigable impact (Class II). The exact number of acres impact would require review by the USACE during the 404 permit processing in order to resolve differences between the original delineation conducted by the USACE (identifying approximately 19.5 acres of wetland) and a more recent delineation prepared for the District (identifying approximately 7.8 acres of wetland).

Access to disposal site DS38 involves the construction of water control structure and bridge across the San Dieguito River. As described in section 2.3.1, this structure would be removed in advance of significant flood episodes and subsequently reconstructed. This structure would temporarily disrupt tidal flows and constrict the area of passage for aquatic organisms. Frequent use of the structure by trucks hauling sediment to DS38 would also disturb fish and wildlife in the vicinity. These impacts would be significant but mitigable (Class II) through proper design of the structure in conjunction with the Section 404 permit for the project.

BERMS AND INFRASTRUCTURE PROTECTION

Impacts associated with the construction of berms and infrastructure protection are the same for all action alternatives except the Reduced Berm Alternative. For action alternatives except the Reduced Berm Alternative, 14.08 acres of new berms would be constructed, whereas the Reduced Berm Alternative involves construction of 5.45 acres of new berms.

The areas affected by berms and the associated weir for berm B8 (Figure 2.3.1-1), are nearly all ruderal/successional or agricultural land. Thus, the conversion of this land to berms would be inconsequential given the replacement of upland habitat on the berm slopes. The current configuration of the berms in relation to baseline habitats suggests that only a small area (0.64 acre) of seasonal marsh would be covered by berm B7 west of I-5 (Figure 2.3.1-1). Berm B8 east of I-5 would cover 0.49 acre of existing open water (subtidal) habitat along the river, about 0.04 acre of freshwater marsh in a drainage ditch north of the river, and an additional 0.01 acre of seasonal marsh. The Reduced Berm Alternative would eliminate 0.08 acre of seasonal marsh in the same area, but does not include any berm west of I-5.

All permanent conversion of wetland to non-wetland habitats would require mitigation. Generally, CCC and City of San Diego policies require a mitigation ratio of 4:1 for losses of coastal wetlands. As noted above, a total of 1.14 acres of wetlands would be eliminated by the berms for each of the full-scale restoration alternatives, requiring 4.56 acres to mitigate at a 4:1 ratio. With "full project" implementation, all action alternatives provide a more than adequate surplus of wetland acreage to offset the relatively small losses of wetlands that would occur as a result of project implementation (e.g., Table 2.3.1-1a). Impacts associated with berm construction are thus considered adverse but less than significant (Class III). The long-term effects of the berms on restored habitats are considered in section 4.4.1.1.3.

For "SCE Project Implementation" (e.g., Table 2.3.1-1b), for the full-scale restoration alternatives to meet the requirement for 115 acres of restored tidal wetlands while also meeting the 4:1 mitigation requirement for conversion of wetlands to uplands requires additional acreage that would be provided by the mitigation sites. The Reduced Berm Alternative does not meet the 115-acre requirement and so is not discussed further. Specifically, if the 4:1 mitigation requirement is applied to column b in the acreage tables in Chapter 2 (Tables 2.3.1-1b, 2.3.2-1b, 2.3.3-1b, and 2.3.4-1b), the total net acreages of wetlands for each of the full-scale restoration alternatives are each slightly (0.1 to 0.2 acre) less than 110 acres. Since each full-scale alternative already provides at least 115 acres of restored tidal wetlands, each requires slightly more than 5 acres of additional wetland mitigation acreage, which could be tidal or non-tidal. This acreage can readily be provided through SCE's implementation of a subset of the mitigation sites.

Slope protection would be constructed at two locations along the river and one along the east slope of I-5 (Figure 2.3.1-2). Installation of the river side features would require deep excavation that would eliminate the existing banks. These banks support narrow zones of mudflat, tidal marsh, and upland-transitional vegetation. Because the existing banks are steep and, where unarmored, are prone to erosion, the placement of artificial bank stabilization in these areas does not represent a significant loss of habitat (Class III). Temporary increases in suspended sediments would occur during construction, but these would be temporary and localized, rapidly dispersed by tidal action, and hence, less than significant (Class III).

NESTING AREAS

Impacts associated with the construction of nesting islands are the same for all action alternatives. Despite these impacts, the creation of nesting areas for ground nesting birds such as least terns, snowy plovers, and other waterbirds represents a beneficial impact. As a result of increased development along the coast and high use activity along much of the southern California beaches, ground nesting birds such as the endangered California least tern and western snowy plover have lost most of their historic nesting grounds. These historic nesting areas consisted of open, unvegetated, and generally inaccessible (to terrestrial predators and people) areas within and adjacent to coastal wetland ecosystems. The nesting areas proposed as a part of this restoration project represent a significant component of coastal restoration. In determining the optimal location and size for these areas, every effort was made to minimize impacts to existing wetland habitat. However, complete avoidance was not possible due to the need for these nesting areas to be located near coastal wetlands in order to be successful. The creation of these nesting areas would increase the utilization of the restored wetlands by least terns, snowy plovers, and other waterbirds that nest or loaf on open, elevated sites. Therefore, the re-creation of such areas contributes to the restoration of ecosystem functions and values throughout the system (Class IV).

Nest site NS15 is an existing nest site and hence does not involve new construction. Based on the layout of nest sites in relation to existing habitats, the construction of NS11 would eliminate 1.05 acres of seasonal marsh, while NS12 would eliminate 1.7 acres of existing high marsh (Appendix C-5). Nest sites NS13 and NS14 would cause no impacts to existing tidal or non-tidal wetland habitats.

Because of their contribution to wetland functions and values, the argument can be made that the construction of nesting sites should not require mitigation at the same ratio required for the berms. In any case, all of the action alternatives provide more than sufficient acreage of new wetland habitat to offset losses of wetlands associated with the nesting islands, even if a 4:1 ratio were considered appropriate. This can be seen by noting that the *total* project impact on seasonal and high marsh habitats amounts to about 23 acres (Appendix C-5), of which about 4 acres represents permanent loss due to berms or nesting islands. To mitigate the 4-acre loss at a 4:1 ratio, while providing 19 acres as 1:1 replacement for the remaining impacted wetlands requires a total of 35 acres. If considered without reference to SCE's SONGS mitigation requirements, all of the alternatives would provide salt marsh well in excess of this amount (Figure 4.4-1), with additional transitional, mudflat, and subtidal habitats that provide complementary values. In the sense that habitat values within the immediate footprint of nesting islands would be lost, there is an adverse impact, but it is considered less than significant in relation to the longer term increase of habitat acreages in the immediate vicinity (Class III). No additional mitigation would be needed.

The provision of nest sites within the SCE project could result in the need for additional mitigation due to construction-related impacts to wetlands (Table 4.4-2). The inclusion of nest sites with a 4:1 mitigation ratio would reduce SCE's "credit" by about 11 acres, resulting in a shortfall of slightly more than 16 acres (versus about 5 acres for the currently proposed SCE project) which would have to be made up through additional wetland restoration, for each full-scale alternative. Given the need for mitigation acreage within the project site for trail and berm impacts, providing an additional 11 acres for the nesting sites is problematic.

Table 4.4-2. Summary of Acres Credit for Tidal, Non-tidal, and Total Wetland for SCE's Portion of Various Alternative Plans Excluding and Including Least Tern Nesting Islands

	ACRES CREDIT*					
	SCE PORTION OF PLAN EXCLUDING LEAST TERN ISLANDS			SCE PORTION OF PLAN INCLUDING LEAST TERN ISLANDS		
Alternative	*Tidal*	*Non-Tidal*	*Total*	*Tidal*	*Non-Tidal*	*Total*
Mixed	118.20	-8.26	109.94	110.88	-12.06	98.82
Maximum Intertidal	112.98	-3.15	109.83	105.66	-6.95	98.71
Maximum Tidal Basins	116.53	-6.59	109.94	109.21	-10.39	98.82
Hybrid	115.45	-5.53	109.92	108.13	-9.33	98.80

* Acres Credit = Acres Created – Acres Converted – 4 X Acres Eliminated.

PUBLIC ACCESS

As presently designed, construction of public access trails would primarily affect upland ruderal/successional, agricultural, and unvegetated or developed areas. Impacts in these areas would be adverse but less than significant because of the small scale of the impacts (Class III).

It is estimated that about 0.14 acre of existing tidal marsh and 0.52 acre of seasonal marsh could be impacted along the trail corridor, including both the trail and marginal "buffer" area. This acreage could prove smaller, since it includes portions of the Coast to Crest Trail east of I-5, north of the river where the trail is located on an existing dirt and gravel utility road that was constructed on wetlands in the past. Development of a trail on this road would not result in any impacts to wetlands that would not have otherwise occurred as a result of continued use of this road for periodic utility maintenance. Based on current use, this area may no longer qualify as jurisdictional wetland, however, this would be determined by the USACE during the processing of the 404 permit. Because portions of the trail would occur in areas previously delineated as jurisdictional wetlands, it is assumed that at least a portion of the trail alignment (up to two acres) would require the conversion of wetlands to non-wetland trail use. This represents a significant, but mitigable impact (Class II). An additional impact to .03 acres of tidal wetlands would occur if tram use were permitted on the trail. This results from the need to widen the trail under I-5 in order to accommodate the tram use.

4.4.1.1.3 Impacts of Operations and Maintenance

This section considers both long-term operations and maintenance and the performance of the restoration design as it affects ecosystem functions and values. Impacts are considered habitat-by-habitat. A concluding subsection addresses potential impacts related to the public's use of trails.

TIDAL HABITATS

The attainment of project benefits depends on long-term maintenance of the inlet in an open condition to allow unobstructed tidal flows throughout the restored system. Closure of the inlet due to natural causes, if combined with a lapse in maintenance, would adversely affect the progress of restoration. More importantly, populations of tidal marsh plants, invertebrates, fish, and wildlife that become established in the restored, fully tidal system would be adversely affected by inlet closure and the resulting deterioration of water quality. This impact is considered significant but mitigable (Class II). This impact would apply to all tidal habitats. The following discussions assume that this impact would be mitigated and that inlet maintenance would be conducted in perpetuity.

Open Water. Open water areas near the river mouth would be subject to occasional disturbance from dredging as areas of sediment accumulation would be removed to retain the desired channel and inlet configuration. The resulting noise, activity, and increased suspended sediment concentrations would cause temporary adverse effects on marine plankton, invertebrates, fishes, and birds. However, the overall effect of channel maintenance would be beneficial due to improved water quality and the greater acreage of open water habitat in the restored wetland habitats (Class IV).

Intertidal Flats. Similar to open water habitats, channel maintenance would occasionally disturb the intertidal mudflats near the river mouth, but the overall effect would be to maintain regular tidal flushing of these habitats throughout the restored system. This would be beneficial both in terms of water quality and in terms of providing a greatly expanded acreage of productive habitat for benthic invertebrates, fishes, and birds (Class IV).

Tidal Salt Marsh. Maintenance of an open tidal system would have beneficial effects on the existing tidal marsh habitats as well as newly created areas of low, mid, and high marsh. The benefit to marsh vegetation and overall productivity would result from tidal flooding over a wider elevational range and surface area than occurs at present and improved drainage of the system at low tide, in addition to a substantially expanded acreage due to restoration. Improved habitat quality and increased habitat area should over time result in an increased diversity of tidal marsh species in the expanded lagoon system (Class IV).

The frequency of tidal inundation expected at the upper edges of restored tidal basins, i.e. in the range of +4.0 to +5.0 NGVD, diminishes rapidly with increasing elevation. In addition, the maximum heights reached by the tides are subject to variability depending on near-term sea level changes driven by El Niño-Southern Oscillation phenomena and on the ability of the restored system to transmit high tide flows (Jenkins and Wasyl 1998, 1999a-d). This makes the outcome of restoration and the attainment of functions and values associated with tidal wetlands less certain at the higher elevations, although the impact is still beneficial relative to existing conditions.

Areas of existing and restored high marsh situated between the south bank of the river and the foot of berm B7 and nest site NS11 (west of I-5) may also be vulnerable to degradation through scour during flood episodes (section 4.2). Again, this introduces uncertainty into the outcome of restoration, but the overall impact is still beneficial in terms of providing new wetland habitat.

Sandy Beach. The sandy beach at the river mouth would be intermittently disturbed by inlet maintenance activities. Effects on sand beach infauna and shorebirds would generally be temporary and adverse but less than significant (Class III).

NON-TIDAL HABITATS (UPLAND, TRANSITION, AND WETLAND)

Non-Tidal Estuarine Flat. Construction staging area SA3 and the associated haul road overlap a potential nesting and resting area (NS15) for least terns and other water birds. This area has not been used for nesting in recent years, but it could be in the future, in which case maintenance activities could affect the birds' reproductive success or risk injury to them. This impact would be significant but mitigable by avoiding use when and where the site is being used for nesting (Class II).

Seasonal Marsh. Operations and maintenance activities are not expected to directly or indirectly impact seasonal marsh. Apart from the effects of habitat conversion, the long-term impacts of the restoration project on remaining seasonal marsh habitats would be beneficial, due to the cessation of disking and agricultural activities in surrounding areas (Class IV).

*Fresh and Brackish Water Marsh, Riparian Woodlands and Scrub***.** These habitats would be enhanced according to current River Park plans and would not be affected otherwise by operations and maintenance, or the development of restored tidal habitats. For seasonal, marsh, these areas should also benefit from the cessation of disking and agricultural activities in surrounding areas (Class IV).

Ruderal/Successional and Agricultural. These areas would benefit from the cessation of land-disturbing activities. Habitat values would be enhanced as these areas are planted and managed to provide native grassland, coastal scrub, and chaparral habitats (Class IV).

Coastal Foredunes, and Coastal Bluff Scrub. Areas near the river mouth would be disturbed during wetland construction and subjected intermittently to disturbance in conjunction with inlet maintenance. Disturbance would include both the direct effects of equipment operation and the indirect effects of redirected foot traffic. Impacts on these sensitive habitats are potentially significant but mitigable by confining activities to areas of lowest biological value and providing public access along pre-existing trails where native vegetation would not be impacted (Class II).

USE OF PUBLIC TRAILS

Public use of trails that are constructed as part of the project design could adversely affect adjacent habitats through the trampling of vegetation or disturbance of sensitive wildlife by anthropogenic noise and human activity. These types of impacts would be exacerbated if dogs are not closely controlled. Free-running dogs would be incompatible with habitat for sensitive wildlife, particularly nesting birds, and areas within the 100-foot buffer zone of restored wetlands would be especially vulnerable. However, with the measures that are incorporated into the project (section 2.3.1.8), these potential impacts would be minimized such that dogs would be controlled where necessary and public access would not compromise the desired habitat functions and values.

The Coast-to-Crest Trail on the north side of the river is close to developed areas and roadways (most notably I-5) (Figure 2.3.1-15). A tram could be used to transport people along this trail to and from the fairgrounds during June and July. Noise levels that would be associated with the tram (discussed in section 4.14.1.7) are expected to be similar to that of ongoing traffic in these areas, to which wildlife would be continuously exposed. As proposed (section 2.3.1.8), the planting and maintenance of coastal sage scrub/wetland transition vegetation in the buffer zone between the trail and the upper limit of restored wetlands would further lessen the noise and visual intrusion associated with tram operation. As such, the seasonal operation of the tram is not expected to significantly disturb wildlife in areas adjacent to the trail, including the restored wetlands.

4.4.1.2 Impacts Unique to Different Alternatives

Appendix C-5 provides a breakdown of acreage impacts by habitat type and project component for each of the action alternatives. In most respects, impacts differ quantitatively, but not qualitatively between action alternatives. As discussed in the preceding section, the action alternatives have similar impacts on existing resources, but provide a different mix of beneficial impacts. The following discussions emphasize the unique aspects of each alternative and differences most relevant to a choice between them.

An important consideration is whether certain habitats should be valued more highly than others. It is often argued that restoration should strive to replace the habitats that have been historically lost or degraded to the greatest degree. This argument would suggest that in Southern California, priority should be given to the restoration of tidal salt marsh and mudflat over deeper subtidal habitats (Zedler 1996). Alternatively, different habitats can be valued according to the resources they provide, e.g., endangered species or fisheries habitat, and a choice made on the basis of a desirable mix of habitats or the needs of a particular resource. All else being equal, habitats that can be restored with a high probability of success and minimal maintenance requirements will generally be preferable. Finally, value may be attached to diversity in terms of spreading restoration benefits among multiple resources.

An additional means of comparing the restoration alternatives is in terms of tidal hydraulic efficiency or ability to transmit high and low water levels through the restored system (Jenkins and Wasyl 1998, 1999a-d). As discussed earlier, the alternatives can be ranked from most to least efficient as Maximum Tidal Basin > Hybrid > Mixed Habitat > Maximum Intertidal > Reduced

Berm. More efficient designs are likely to require less frequent maintenance of an open inlet, and to provide a greater frequency of tidal inundation at the upper elevations, which should facilitate the establishment of native salt marsh communities.

4.4.1.2.1 Mixed Habitat Alternative

For the Mixed Habitat Alternative (refer to Appendix C-5) all 29 acres of the subtidal open water habitat created would be within the west basin (W1 on Plan View maps), whereas most of the restored tidal marsh and mudflat habitat, 95 out of 128 acres, would be created east of I-5 (W4, W5, W6a-b, W10, and W16 on Plan View maps). Modeling of the hydraulic performance of this alternative (Jenkins and Wasyl 1998, 1999a) indicates that intertidal areas east of I-5 would drain during low tides on a daily basis, resulting in no subtidal open water habitat east of I-5, although it is reasonable to expect that a low-flow channel would persist in the river.

As shown in the Plan View map (Figure 2.3.1.1), much of the existing subtidal habitat in the DFG lagoon would drain and become exposed mudflat during low tides as a result of improved tidal drainage. The extent of open water versus exposed mudflat habitat would vary with the tides. Figure 2.3.1.1 depicts what is estimated to be the minimum extent of open water, i.e. the area that would never be exposed. At most times, the area of "frequently flooded mudflat" would be flooded by shallow water, and during high tides the basin would flood to an equal or greater extent than occurs at present. At the upper edges, frequently exposed mudflats would be regularly exposed by low tides for several hours. For a few hours during the lowest low tides, most of the lagoon would be exposed. This would occur during early morning in spring and summer months, and during late afternoon to early evening in fall to winter months.

As mentioned previously, intertidal mudflats provide productive foraging habitats for fishes when submerged, and for shorebirds when exposed. Resting and alternative foraging areas for shorebirds would be abundant in surrounding areas when the tide is high, and the adjacent "West Basin" (area W1 in the plan view maps) would provide alternative open water areas for birds that rest or forage in open water, including the least tern. Given the maintenance of good tidal circulation and the proximity of this area to subtidal habitats, it is expected that the more mobile fish and invertebrate species would be able to move freely into and out of this area with the tides, whereas intertidal species would retreat into burrows during brief periods of exposure. DFG has indicated to the USFWS that it does not consider the project's restoration of tidal hydrology to this basin a significant impact (personal communication, Tim Dillingham). Overall the impact on habitat functions and values in conjunction with other restored habitats is considered beneficial (Class IV).

As can be seen in Figure 4.4-1, this alternative is generally similar to the Maximum Intertidal Alternative, although the latter creates larger areas of high marsh and transition habitat and smaller areas of open water.

4.4.1.2.2 Maximum Tidal Basin Alternative

The Maximum Tidal Basin Alternative has the same overall footprint and is identical to the Mixed Habitat Alternative west of I-5, but east of I-5 it provides extensive areas of shallow subtidal habitat. This alternative provides an approximately equal mix of intertidal and subtidal habitat, east and west of I-5 (Figure 4.4-1; Appendix C-5). As noted above, this design is the most hydraulically efficient and provides the greatest frequency of tidal inundation at the upper levels.

As indicated in the plan view maps, the excavated basins east of I-5 would not drain completely during typical low tides, although there would still be daily tidal exchange.

Finally, note in the Plan View maps (Figure 2.3.2.1) that this alternative, because of the lower sill depth, is expected to result in the maximum amount of mudflat exposure in the DFG lagoon. Relative to the other alternatives, this alternative would also result in lesser areas of intertidal mudflat elsewhere, and, as a result, the greatest extent of intertidal mudflat habitat in the restored system as a whole would be within the DFG lagoon. Other considerations are similar to those discussed above for the Mixed Habitat Alternative, and the overall impact on habitat functions and values in conjunction with other restored habitats is considered beneficial (Class IV).

4.4.1.2.3 Maximum Intertidal Alternative

The Maximum Intertidal Alternative provides the largest total areas of tidal marsh and mudflat, and the smallest total area of subtidal open water (Figure 4.4-1). This alternative does, however, provide subtidal habitat both east and west of I-5 (plan view maps). This alternative provides the largest areas of high salt marsh and transition habitat. As noted above, this alternative ranks relatively low in terms of tidal hydraulics.

Among the full-scale restoration alternatives, this alternative would result in the largest area of permanent subtidal habitat within the DFG lagoon (see Figure 2.3.3.1). The area of intertidal mudflat would still be expanded relative to existing conditions however. Other considerations are similar to those discussed above for the Mixed Habitat Alternative, and the overall impact on habitat functions and values in conjunction with other restored habitats is considered beneficial (Class IV).

4.4.1.2.4 Hybrid Alternative

This alternative provides the same design as the Mixed Habitat and Maximum Tidal Basin alternatives west of I-5, while providing the same design as the Maximum Intertidal Alternative east of I-5. This alternative provides nearly equal amounts of subtidal, mudflat, low, mid, and high marsh (Figure 4.4-1), and in that sense provides the greatest habitat diversity. This alternative ranks <u>second out of five</u> in terms of tidal hydraulics. Relative to the other full scale alternatives, this alternative would result in an intermediate amount of subtidal and intertidal mudflat habitat within the DFG lagoon (Figure 2.3.4.1). Other considerations are similar to those discussed above for the Mixed Habitat Alternative, and the overall impact on habitat functions and values in conjunction with other restored habitats is considered beneficial (Class IV).

4.4.1.2.5 Reduced Berm Alternative

This alternative provides the smallest acreage of restored tidal habitat both east and west of I-5. It provides the smallest total as well as proportionate acreage of subtidal habitat. This alternative ranks lowest in terms of tidal hydraulics. Among all the alternatives, this one would result in the least change relative to existing tidal hydraulics, and have the smallest effect on the DFG lagoon, although the area of intertidal mudflat would still be increased relative to existing conditions (Figure 2.3.5.1), and the overall impact on habitat functions and values is still considered beneficial (Class IV).

4.4.1.2.6 Impacts of the No Action Alternative

With the No Action Alternative, it is assumed that in the immediate future, tidal restoration would not take place, and that current land use practices surrounding the project area would continue. An open inlet would not be maintained. Failure to provide the beneficial impacts of wetland restoration would not be considered an impact in itself, but it should be recognized that recurring land disturbance and inlet closures in the future would result in a continued degradation of the wetland and upland habitat values relative to existing conditions. The DFG lagoon would continue to provide mainly subtidal habitat, with a relatively narrow zone of fringing mudflat, and would be subject to episodes of declining water quality and habitat values for fishes, birds, and marine invertebrates during periods when the inlet is closed.

4.4.1.3 Mitigation Measures for Vegetation, Wildlife, and Aquatic Biota

4.4.1.3.1 Mitigation for Construction Impacts

CONSTRUCTION STAGING AND ACCESS AREAS

The following measures would mitigate to below a level of significance impacts related to the use of construction staging areas and haul roads during construction:

The Coastal Development Permit and/or any required grading or land development permits shall include the following conditions:

1. Proposed construction staging areas and haul routes shall be located within the footprint of marsh restoration and the overlap of existing wetlands minimized wherever possible. To achieve this the following modifications to proposed staging areas and haul routes shall be incorporated into the final grading plans:

   - The haul route that passes east-west under I-5 shall be located as far to the south as possible to avoid the population of Coulter's goldfields on the west side of the bridge and the existing tidal channel east of the bridge. The haul route on the southwest side of I-5 shall be placed in ruderal habitat on the berm west of the bridge.

   - Staging Area SA3 shall be reconfigured as close as possible to the toe of the I-5 embankment to avoid existing seasonal wetlands.

   - Staging Area SA4 shall be relocated, either into the DS32 area, or into the W4 wetland restoration footprint and adjacent ruderal habitat, avoiding areas of seasonal wetlands to the west.

2. Prior to construction, the boundaries of staging areas and haul routes shall be flagged by a qualified biologist. In addition, a biological monitor shall be present during the pre-construction meeting and during initial grading of these areas to ensure that no construction activity occurs outside of the designated construction boundaries.

3. All sensitive biological areas within the project site but outside the restoration footprint shall be delineated on construction plans and flagged in the field in order to avoid any impacts to special status plants or habitats.

4. Prior to any construction-related disturbances, all construction personnel shall attend an environmental training session which shall discuss the sensitive resources in the project area and the mitigation measures designed to protect them.

5. All haul roads and <u>portions of</u> construction staging areas <u>that are no longer required for the construction and maintenance of the restoration project and have not been converted to another use in support of the project</u> shall be restored to pre-disturbance conditions.

6. Prior to use of SA3 during the March through September period, a qualified biologist shall confirm the absence of nesting by least terns, snowy plovers, or other sensitive bird species, within <u>100</u> feet <u>(or as otherwise determined by the USFWS)</u> of the staging area and associated haul route.

7. No excavation shall occur at the river mouth (SA1) until a fenced access way has been installed to direct beach users around the construction and down to the beach. This fencing would ensure that vegetated foredunes and coastal bluff scrub would not be impacted by beach users looking for an alternate route to the beach.

8. All vehicles and construction equipment shall be parked, and equipment refueling and maintenance shall take place only in designated areas where potential spills of fuel, lubricants, or coolants can be contained and cleaned up without impacts on adjacent wetland and aquatic habitats.

9. The proposed bridge and temporary water control structure needed to accommodate the haul road proposed to cross I-5 shall incorporate gates or culverts that can be opened and closed temporarily, enabling tidal and river flows to pass through the structure during periods when water control is not needed but the bridge must be left in place for use as a haul route.

EXCAVATION AND DREDGING

The following measure would mitigate to below a level of significance impacts related to construction:

> As a condition of the Coastal Development Permit and/or any required grading or land development permits, survey benchmarks shall be established prior to construction and surveyed during construction to ensure that elevations are achieved within a tolerance of not less than +/- 0.25 ft.

DISPOSAL SITES

The following measure would mitigate to below a level of significance impacts related to grunion:

> Beach disposal shall not occur during the high tide spawning and hatching periods of the California grunion, as predicted by the DFG.

No mitigation is proposed for potential wetland impacts related to disposing of fill on disposal site option DS38, therefore, impacts to wetlands would remain significant and unmitigated.

PUBLIC ACCESS

Prior to the issuance of a Coastal Development Permit and/or any grading or other discretionary permits, the JPA will work with the USACE to determine the exact acreage of wetland habitat that would be impacted by the construction of the Coast to Crest Trail. Impacts to freshwater marsh (up to 0.28 acre) would be mitigated at a 1:1ratio; impacts to seasonal salt marsh (up to 1.18 acres) would be mitigated at a 4:1 ratio; and impacts to tidal wetlands (up to 0.5 acre) would be mitigated at a 4:1 ratio. To mitigate for these impacts, creation of up to 0.28 acres of freshwater marsh, up to 4.7 acres of seasonal salt marsh, and up to 2 acres of tidal wetlands are proposed. An additional 0.12 acre of wetland mitigation would be required if the Coast to Crest Trail were to accommodate the tram. Sites that could provide the necessary mitigation acreage include the W16 restoration area – if it is not implemented by SCE as part of their project, and mitigation sites M32, M33, M34 and M37. These sites are shown in Figures 2.3.1-1, 2.3.2-1, 2.3.3-1, 2.3.4-1 and 2.3.5-1. Collectively they provide well in excess of the maximum acreage likely to be required. Area W16 would create 15.8 acres of tidal wetlands (the exact mix of habitat types would depend on which design alternative is selected) and 5.5 acres of transitional wetlands, while impacting 2.3 acres of seasonal salt marsh. Area M32 represents the creation of up to 2.31 acres of high salt marsh, M33 represents the creation of up to 1.15 acres of seasonal salt marsh, M34 represents the creation of up to 0.30 acres of freshwater marsh, and M37 represents the creation of up to 4.75 acres of salt marsh transition habitat. The exact amount of mitigation acreage required for the Coast to Crest Trail, and the combination of sites that would provide the acreage, shall be determined during the permit application process.

4.4.1.3.2 Mitigation for Operations and Maintenance Impacts

The following mitigation measures are proposed for significant impacts related to long-term operations and maintenance.

Prior to the approval of the San Dieguito Wetland Restoration project by the JPA, the JPA shall enter into an agreement with SCE that would provide the legal and financial guarantees necessary to ensure that the inlet will be maintained in an open condition in perpetuity and the restored wetland will continue to attain the biological benefits described in this section.

Prior to use of SA3 during the mid-March through September period, a qualified biologist shall confirm the absence of nesting by least terns, snowy plovers, or other sensitive bird species, within 100 feet (or as otherwise determined by the USFWS) of the staging area and associated haul route.

The following measures, which have been incorporated in the scope of the project, as described in the Draft Park Master Plan and section 2.3.1.8 of the Draft EIR/EIS, would minimize potential direct and indirect impacts to wetlands:

a) Fencing is proposed along the edge of the trail to prevent off-trail activity.

b) Dog owners would be required to keep their dogs leashed while on the trail, and to clean up after their pets. “Doggy bags” and waste disposal cans would be provided at the trailhead to make this easier.

c) It is recommended that the JPA work with the City of Del Mar to establish and enforce an ordinance in support of these measures.

d) Other measures incorporated into the project to minimize off-trail activity include signage and expansion of the River Park's existing volunteer trail patrol.

e) To provide cover for wildlife and lessen the intrusive effects of people on the trail, coastal sage scrub transitional vegetation (see Table 2.3.1-11 for species composition) would be established and maintained (through supplemental planting and irrigation as necessary) in the buffer zone between the trail and the upper edge of the restored wetland.

f) To rapidly detect and limit any impacts related to unauthorized access into the restored wetland areas, the trail and contiguous areas of the buffer zone would be systematically monitored for signs of damage or encroachment beyond the fence. Any signs of damage or encroachment would be remedied through a combination of signage, public education, more frequent patrolling (through expansion of the River Park's existing volunteer patrols), limitations on access (e.g., daylight hours only) and, if necessary, more restrictive fencing.

The implementation of these measures would insure that the buffer although less than 100 feet wide in places, should still function as intended, thereby mitigating potential impacts to below a level of significance.

4.4.2 Rare, Threatened, or Endangered Species

4.4.2.1 Impacts on State and Federally Listed Endangered or Threatened Species

This section addresses species-specific impacts from the proposed habitat conversion, followed by discussion of potential impacts associated with construction, operations and maintenance of the project, and differences among alternatives. This section is followed by recommended species conservation, impact avoidance and mitigation measures provided in section 4.4.2.2.

Pacific Little Pocket Mouse

Creation of coastal sage scrub habitat at the southern end of the project area (U24-U26) could result in a beneficial impact (Class IV) for Pacific little pocket mouse. If this mouse does establish on site in the future, it would likely only be found in the coastal sage scrub habitat that would be created by the project and would not be substantially affected by project related activities. The amounts of coastal sage scrub habitat created would be the same for all action alternatives so this beneficial impact would apply equally. No significant adverse impacts to Pacific little pocket mouse from the project are anticipated from any of the action alternatives because it is unlikely that this species currently occurs in the project area. As described in section 3.4.8, focused trapping efforts failed to capture any individuals of this species in the project area. For the no action alternative, the beneficial impacts (Class IV) would not occur because there would be no creation of coastal sage scrub habitat and the project site would not necessarily be preserved as open space.

No species-specific conservation or impact avoidance ("mitigation") measures are identified for this species since there would be no significant impacts.

California Brown Pelican

No impacts are anticipated for brown pelicans as a result of any of the action alternatives. This is because pelicans do not nest in the area and this species typically forages in the open ocean (section 3.4). Therefore, breeding and foraging activity would not be affected by the project. No day or night roosting locations would be created or lost if the project or any of its alternatives were implemented. It is possible that pelicans could benefit from an increase in open water areas, as they use this habitat to bathe and perform feather maintenance.

California brown pelicans are not expected in the main channel and areas of major construction activity so no significant impacts on the species are expected. Use of staging area SA1 and beach disposal could cause a short-term displacement of pelicans if they were using those areas to rest during the day. However, because of the presence of similar or better resting areas nearby and the small numbers of pelicans expected to use these sites, this would be a possibly adverse but insignificant impact (Class III).

For the no action alternative, the project-associated water quality benefits of increased tidal flushing would not occur and the project site would not necessarily be preserved as open space.

No species-specific conservation or impact avoidance ("mitigation") measures are identified for this species since there would be no significant impacts.

California Least Tern

The creation of additional open water habitats would increase the amount of protected foraging habitat for least terns in close proximity to potential nesting areas. This would be a beneficial impact (Class IV), especially for the Mixed Habitat, Maximum Tidal Basin, and Hybrid Alternatives. The establishment of nest sites, if successful, may also have a beneficial effect on the species (see below). The beneficial effect of increased foraging habitat would occur under all alternatives except the Reduced Berm and Maximum Intertidal Alternatives.

The noise and activity associated with construction activities including excavation and dredging could disturb least terns if these actions occurred during the period of time least terns may be either foraging or breeding on site (early April through mid-September). A significant increase in the turbidity of the water associated with construction may temporarily reduce foraging success of terns using the lagoon area during the construction period. The disruption of least tern foraging or breeding activities would be a significant impact that could be mitigated by the avoidance of construction activities within 100 feet (or as otherwise determined by the USFWS) of nesting birds, and the installation of sediment fencing around work areas and other erosion control measures (described under the water quality mitigation section) to control erosion and limit turbidity (Class II). Dredging along the river channel would be a less-than-significant impact given the lack of disturbance in the other shallow-water habitats--the DFG lagoon and ponds areas east of I-5--where least terns forage (Class III). Otherwise the overall impact of any of the restoration alternatives on least terns would be beneficial (Class IV).

The creation of four new nesting areas, and the rehabilitation of an previously created nesting area, is intended to be a significant beneficial impact (Class IV) for California least terns. Whether terns would use the created nesting habitat, however, is not known. Nesting habitat was created for terns here in 1996, but it has not been used successfully. There have been no nesting attempts in the project area since 1992, and the 12 to 13 attempted nestings between 1979 and 1992 produced only one fledged young (section 3.4.8). Created nesting habitat at nearby Batiquitos Lagoon has been very successful, however, for both California least terns and western snowy plovers.

The created nesting sites may be affected by the proximity of some berms proposed for all action alternatives (section 2.3.1), the potential presence of the public in some nearby areas, including proposed trails. Dogs would be allowed only if on a leash, and only along designated trails. No dogs would be allowed on Mesa Loop Trail. However, although California least terns are sensitive to activity near their nest sites and may abandon nest sites if frequently disturbed, public access is not expected to affect nesting terns because trails open to the public do not closely approach the nesting sites.

Other impacts could be influenced by the fencing proposed to keep mammalian predators out of the nesting sites. This fencing may facilitate increased predation by avian predators, such as gulls, raptors, and corvids that may use the fences as a perch from which they can watch for unattended nests. A report on snowy plovers at Vandenberg Air Force Base (Page and Persons 1995) states: "Fencing has been used at some locations to limit access of mammalian predators and humans from nesting habitat of Least Terns and Snowy Plovers." This method has several potential drawbacks. It is ineffective against avian predators, which may even benefit from the perching opportunities provided by the fencing. Researchers used 2" by 2" mesh to fence off an important Snowy plover nesting area at Coos Bay, Oregon. While the fencing prevented striped skunks from taking substantial numbers of plover eggs, clutch predation by common ravens within the fenced area was so high that the researchers resorted to protecting individual nests with small exclosures to thwart the ravens." They also discuss constant attempts by coyotes to breach the fence. Seeing birds perched on the fence may actually discourage terns from starting a nest. Mammal-proof fencing is proposed to be installed at the base of the elevated nesting habitat (eastern sites) or at the entry points into the restoration area surrounding the western sites. For the eastern sites, the top of the fence would be lower than the elevated nesting habitat, which would therefore eliminate vantage sites for avian predators. The fencing surrounding the western sites would not be installed immediately adjacent to the breeding habitat, which would also reduce the threat of avian predation on tern nests.

The 27-acre increase in open water habitat for the Mixed Habitat Alternative would increase the foraging area available to the species near nest sites and would be a beneficial (Class IV) impact for least terns. The 74-acre and 39-acre increases in open water habitat for the Maximum Tidal Basin and Hybrid Alternatives, respectively, would produce similar beneficial impacts (Class IV).

Impacts for the Maximum Intertidal and Reduced Berm Alternatives would be similar to the other action alternatives, except that there would be less new open water habitat (15 and 4 acres, respectively), so the benefits would be substantially less but still positive (Class IV). However, for the Reduced Berm Alternative, only one created nesting site might be adversely impacted by close proximity to a berm

No impacts are anticipated for the No Action Alternative.

Light-footed Clapper Rail

Light-footed clapper rails do not breed at San Dieguito lagoon, and occur here irregularly and in very small numbers (section 3.4). Their preferred habitat zone (low marsh dominated by cordgrass) is nearly lacking at the site. If implementation of the project results in the creation of additional cordgrass habitat, it is possible that clapper rails could breed here, as they do at nearby San Elijo Lagoon. If project implementation results in a significant increase in cordgrass habitat and increased use of the site by clapper rails this would constitute a beneficial (Class IV) impact.

Due to their sporadic occurrence and small numbers in the area, it is expected that this species would experience insignificant adverse impacts (Class III) from each of the action alternatives.

The potential for beneficial impacts on this species would vary with the potential for creation of low marsh habitat that could possibly be used for nesting by this species. Thus, the greatest potential benefit would be for the Mixed Habitat and Maximum Intertidal Alternatives (35 acres), followed in order by the Hybrid (30 acres), Reduced Berm (23 acres), and Maximum Tidal Basin (15 acres). No adverse or beneficial impacts on the species are expected to result from the no action alternative.

No species-specific conservation or impact avoidance (“mitigation”) measures are identified for this species since there would be no significant impacts.

Western Snowy Plover

Implementation of all action alternatives would result in the creation of additional foraging habitat and nesting habitat for western snowy plovers. These would be beneficial impacts (Class IV).

Construction activity, including staging, access, excavation, dredging, and disposal site use would cause a short-term adverse impacts on snowy plovers, which may avoid areas of heavy activity and, especially during nesting, have some vulnerability to being inadvertently killed by vehicles as a result of their habit of “freezing,” when approached. This impact would be significant but mitigable (Class II). Recommended species conservation and impact avoidance (“mitigation”) measures would be as described above for California least tern. The breeding season for western snowy plovers extends from approximately mid-March into September. Although western snowy plovers are present during the winter months, suitable foraging habitat is prevalent outside the disturbance area and therefore, no impacts to this species is expected during the non-breeding season.

Beneficial (Class IV) impacts to western snowy plovers could result from the creation of new nesting areas. Although snowy plover nesting habitat includes habitat similar to the nest sites proposed for the project these sites would not be considered optimal habitat for snowy plovers. The same measures to limit predation on eggs and chicks identified above for California least terns would also apply to the western snowy plover.

Western snowy plovers are sensitive to activity near their nest sites and may abandon nest sites if frequently disturbed, however, public access is not expected to affect nesting plovers because trails open to the public do not closely approach the nesting sites.

Compared to the existing setting there would be no significant impacts from the No Action Alternative, although potential beneficial impacts from the action alternatives would not be realized.

California Gnatcatcher

The creation of coastal sage scrub habitat on both sides of I-5 at the southern end of the project area under all action alternatives (section 2.3.1) would be a potential beneficial impact (Class IV) for California gnatcatchers. Known gnatcatcher populations off-site to the south would be expected to expand into this new habitat.

Implementation of the project (or any of the action alternatives) is not expected to have any adverse effects on California gnatcatchers because there are no resident gnatcatchers on-site at this time due to lack of appropriate habitat. The chance of a California gnatcatcher (such as a dispersing juvenile) traversing the site during construction and being harmed is remote and insignificant (Class III).

No species-specific conservation or impact avoidance ("mitigation") measures are identified for this species since there would be no significant adverse impacts.

Least Bell's Vireo

Creation of additional riparian (willow) habitat surrounding and extending away from the teardrop shaped pond (FW31 area on Figure 2.3.1-1) would be a beneficial impact (Class IV) for least Bell's vireo for all action alternatives.

None of the project components is likely to impact least Bell's vireo, since at the present time the only potential habitat for this species is the small patch of willow riparian at the southeastern end of the project area (section 3.4). Breeding is not known to occur on site, and at most the site would support one or two birds (a single singing male was found in 1998). Therefore the chance of a significant impact to this species would be remote unless a pair was nesting on site at the time of construction. This would be a potentially significant impact (Class II). Surveys conducted in the appropriate season would determine the presence of this species and the need for construction setbacks from breeding habitat.

Belding's Savannah Sparrow

Creation of additional salt marsh habitat would be a significant beneficial impact (Class IV) for Belding's savannah sparrow. The breeding population of Belding's savannah sparrows is now relatively large and healthy in the project area (section 3.4). Creation of new habitat would allow this population to expand significantly under all action alternatives. This potential benefit would be greatest for the Maximum Intertidal Alternative and least for the Maximum Tidal Basin Alternative, but would be a significant beneficial impact under all action alternatives.

Because Belding's savannah sparrows are widespread on the project site, are year-round residents, and occur in areas where much of the construction, excavation, and dredging would occur, it is likely they would be adversely impacted during project construction. These anticipated adverse effects (Class II) would be short-term and would be compensated for by the long-term beneficial impacts associated with additional *Salicornia* habitat creation and improved tidal flushing (sections 4.4.1 and 4.2).

The potential for beneficial impacts on this species would vary with the potential for creation of *Salicornia* habitat most often occupied by this species. Thus, the greatest potential benefit would be for the Maximum Intertidal Alternative, followed in order by Hybrid, Reduced Berm, Mixed Habitat, and Maximum Tidal Basin. No adverse or beneficial impacts on the species are expected to result from the No Action Alternative.

Surveys for Belding's savannah sparrows during the spring will determine breeding habitat for the species and the need for construction setbacks to avoid impacts to individual breeding birds. Scheduling construction activities that occur within 100 feet of known Belding's savannah sparrow breeding habitat to occur outside the breeding season for this species (March 1 to August 1) would reduce any Class II impacts to Class III (less than significant), although the overall benefit of the action alternatives would be Class IV. If nesting sites are located within proximity to construction areas that cannot be moved (e.g. construction staging areas, access roads, or disposal sites), DFG would be contacted to discuss alternative actions to minimize impacts to Belding's savannah sparrow populations. If necessary, DFG could be requested to issue an appropriate incidental take permit, which would avoid adverse impacts on the species (Class II).

Southwestern Willow Flycatcher

Proposed creation of additional riparian habitat in the southeastern part of the project area could result in a beneficial impact (Class IV) for this species. These flycatchers migrate through the project area during spring and fall. The created habitat would be in the area surrounding and extending away from the teardrop shaped pond (FW 31 area on Figure 2.3.1-1) and is proposed for all action alternatives.

There would be no adverse impacts on this species anticipated during construction. This is because the trees and large shrubs used by the species would not be directly affected by the project, and migrating birds would be expected to avoid the activity (Class III). Critical habitat for the species has been designated for the species along the San Dieguito River between the northbound side of I-5 upstream to I-15, near Lake Hodges. The critical habitat includes areas within the 100-year floodplain where thickets of riparian trees and shrubs occur or may become established as a result of natural floodplain processes or rehabilitation (USFWS 1997). Restoration activities in the vicinity of the river (e.g., construction of berms) would modify the habitat. However, this may not constitute an adverse modification of the habitat under the Endangered Species Act. This is because riparian habitat suitable for use by this species would not be expected to develop along this segment of the river, given the presence of the freeway, the tidal influence, and upstream activities that affect stream flows. Habitat along this stretch of river is dominated by species tolerant of brackish or saline conditions. Willows and other riparian trees and shrubs that form habitat used by willow flycatcher would not be expected to develop into dense thickets along this river segment (although they do occur farther upstream) because they are intolerant of salinity in the root zone.

Riparian habitat elsewhere on the project site, predominately south of the river and east of I-5, would be preserved and augmented by restoration activities under all action alternatives, representing a beneficial modification of the habitat (Class IV).

American Peregrine Falcon

American peregrine falcons do not currently reside in the project vicinity (section 3.4). However, the proposed restoration activities, including creation of additional open water and salt marsh habitat along with improved tidal flushing, is expected to create improved conditions for waterfowl and shorebirds upon which peregrine falcons typically prey. The increase in suitable foraging habitat and improved prey base for peregrine falcons would be beneficial impacts of all action alternatives (Class IV).

Nonetheless, if this species is present neither construction activities nor operations and maintenance of the project would be likely to cause significant adverse impacts (Class III).

No species-specific conservation or impact avoidance measures are proposed since there are no significant adverse impacts identified.

Other Listed Species

The following state or federally proposed and listed endangered or threatened species do not occur in the project impact area and would not be adversely impacted by project implementation: tidewater goby, southwestern arroyo toad, black rail, salt marsh bird's beak, and Orcutt's spineflower. Summaries of the status and distribution of these species are provided in the environmental setting (see Table 3.4-3).

4.4.2.2 Impacts on Other Sensitive Species

Species by species discussions of impacts on other sensitive species known or expected to occur on the project site are provided in Table 4.4-3. Additional information on these species is provided in Table 3.4-3 (above). Species-specific conservation or impact avoidance measures are discussed below in section 4.4.2.3.

Mitigation for Impacts to Rare, Threatened, or Endangered Species

Implementation of the following mitigation measures for impacts to state and federally listed endangered or threatened species would reduce such impacts to below a level of significance.

1. All construction activities within 100 feet (or as otherwise determined by the USFWS) of any California least tern or western snowy plover breeding habitat shall not resume or begin until a qualified, USFWS approved biologist determines that breeding is not taking place.

   If California least terns or western snowy plovers are breeding, all construction activities within 100 feet (or as otherwise determined by the USFWS) of the active breeding sites shall be postponed until breeding activities have finished (approximately September 15 or as otherwise determined by surveys and the USFWS).

2. California least tern and western snowy plover breeding habitat created onsite shall include the following characteristics:

   - Large shrubs or man-made structures that could be used as perches by predators shall not be allowed on the berms near the nest sites.

   - Fencing shall not be installed initially around the nesting sites west of the highway, and shall be based on monitoring studies on the incidence of predators following construction.

   - The nesting sites shall be monitored to address fencing and potential predation issues. If least terns begin using the nesting sites, the nesting attempts shall be monitored to determine if predation is a problem, and if so, whether it is mammalian or avian in origin, and appropriate measures shall be taken to eliminate any future predation.

- If the use of fencing is unavoidable (to exclude mammalian predators), the following measures shall be required as part of the fence installation: fencing shall be installed at the base of elevated breeding habitat or if there is no elevation difference, at a distance to eliminate vantage sites for avian predators; materials that are mechanical deterrents to perching shall be installed on top of the fence. If these measures do not solve the problem, additional measures shall be used, such as protection of individual nests, and trapping and relocation of problem predator birds.

- Public access points (trails or lookouts) shall not be constructed within 100 feet of any tern nest site. Trails or access points shall be temporarily closed if terns nest within that distance.

3. Least Bell's vireo presence/absence surveys shall be conducted in the spring by a qualified, USFWS approved biologist. Surveys shall take place in the riparian habitat in the southeastern part of the property prior to the commencement of any activities within 500 feet of that area. If this species is present during its breeding season, grading and other intense activity associated with habitat restoration within 200 feet, or as otherwise determined by the USFWS, of the breeding habitat shall be scheduled to occur outside the least Bell's vireo breeding season (approximately March 15 through September).

4. Belding's savannah sparrow presence/absence surveys shall be conducted in the spring by a qualified, USFWS approved biologist in all suitable habitat within the project area. Construction staging, excavation, dredging, disposal sites use, and berm creation shall be scheduled to occur outside the breeding season for Belding's savannah sparrow (March 1 to August 1) for all activities that would occur in or within 100 feet of habitat known to support Belding's savannah sparrow breeding, unless permission is granted from DFG under appropriate permits to allow construction to proceed.

Implementation of the following mitigation measures for impacts to non-listed sensitive species would reduce such impacts to below a level of significance.

1. Non-listed, sensitive plant species shall be avoided to the maximum extent possible. Where impacts cannot be avoided, seed shall be salvaged from impacted plants and an attempt shall be made to reestablish populations in suitable habitat. Restoration efforts onsite shall use seed collected from the site, where feasible.

2. A habitat restoration and monitoring plan, including success criteria that recognize the experimental nature of such transplantation, shall be prepared for any reestablishment effort. This plan shall include the following details for sensitive plant species:

   - Restoration efforts shall plan to establish the Southern tarplant populations on spoil disposal areas, as this species appears tolerant of saline compacted soils. The species shall be included in the proposed seed and plant mix for use in freshwater marsh transitional vegetation. In order to obtain viable seed, the plants shall not be impacted until the seed has been allowed to mature.

- Restoration efforts shall plan to establish the Coulter's Goldfields populations in areas of salt marsh playas and fringing areas that receive seasonal rainwater flushing that reduces soil salinity. The species shall be included in the proposed seed and plant mix for use in upland restoration of the site. In order to obtain viable seed, the plants shall not be impacted until the seed has been allowed to mature.

- Impacts to the red sand-verbena colony onsite would be considered locally significant and therefore, the area occupied by the red sand-verbena shall be fenced to prevent inadvertent impacts to these plants and their habitat.

- If individual Lewis's evening primrose plants are impacted, this species shall be included in the proposed seed and plant mix for use in similar habitat on conserved lands; seed shall be collected from Penasquitos Lagoon, which supports the only large population in the County.

- If individual Del Mar Mesa sand aster plants are impacted, this species shall be included in the proposed seed and plant mix to reestablish the plant on a nearby site on suitable habitat containing sandstone. Seed collection from existing plants on site shall occur to support the inclusion of local genotypes of this species in the revegetation seed and plant mix for coastal sage scrub and chaparral.

- Where larger populations of woolly seablite (Suaeda) cannot be avoided, plants shall be salvaged for propagation or transplanted into a suitable protected location.

3. To avoid impacts to sensitive bird species that potentially nest in the upland habitat within the project boundaries (including California Species of Special Concern species such as loggerhead shrike, burrowing owl, and northern harrier), surveys shall be conducted by a qualified biologist during the appropriate breeding season for each species. Survey results will determine the need for construction set-backs from nests to reduce impacts to breeding success.

4. If burrowing owl burrows are disturbed during construction activities suitable (burrow) habitat shall be created. Any impact to occupied burrowing owl burrows would be considered locally significant and shall require the creation of artificial burrows in suitable habitat that is destined for long-term preservation. Burrowing owls shall either be passively relocated or captured and released at the preserved site. Relocation shall occur in the non-breeding season to avoid impacts to eggs, nestlings, or dependent juveniles.

5. To avoid impacts to sensitive bird species that potentially nest within or near the project boundaries (including California Species of Special Concern species such as yellow-breasted chat, Cooper's hawk, and tricolored blackbird and Fully Protected species such as the white-tailed kite), surveys shall be conducted by a qualified biologist during the appropriate breeding season for each species. All initial disturbances to riparian or wetland vegetation within 250 feet of known breeding sites for these species shall occur prior to February 15 or after July 15.

6. All wildlife in harm's way during construction, including individual southwestern pond turtles, shall be collected and relocated to suitable habitat by a biological monitor.

4.4.3 Summary of Impacts on Sensitive Habitats

The preceding sections describe the impacts of various project components on sensitive habitats and the differences between project alternatives. As indicated above, all of the restoration alternatives would result in substantial net gains in the acreage and quality of tidal wetlands (Figure 4.4-1). With restoration, there would be some net loss of seasonal and transitional wetland habitat, which would be largely offset in terms of functions and values by a net increase in high marsh habitat. Additional areas of non-wetland habitat that could be used for seasonal salt marsh restoration/creation within the restoration area have been identified and, if used for this purpose, would add to the overall project benefits.

The impacts of a new trail system on wetlands could be mitigated by additional wetland restoration/creation that has been designed to complement the overall restoration project and add to existing seasonal salt marsh, fresh-brackish marsh, and riparian wetlands. Potential impacts of disposal sites, haul roads, and staging areas on existing wetlands would be minimized to the extent feasible by measures identified above.

Appendix G provides a draft 404(b)(1) comparison of alternatives with respect to their effects on the aquatic ecosystem. This evaluation is needed in support of the project's Section 404 permit from the U.S. Army Corps of Engineers.

Impacts on sensitive coastal foredunes due to project activities at the mouth of the river would be mitigated by protective fencing and controlling access through this area.

The project would not adversely affect wildlife corridors or, given mitigation measures to protect sensitive species, conflict with the goals of the MSCP (section 3.4).

4.4.4 Wetland Impact Permitting Requirements

The specific permits for implementation of the San Dieguito Lagoon Enhancement Project have not, as yet, been applied for. However, all of the permits identified above are anticipated to be required. Permitting under section 404 of the CWA may be suited to the use of a national general permit specifically addressing wetland restoration projects.

At the time of publication of the Draft EIR/EIS the Corps of Engineers was contemplating modifications to its nationwide general permit Nationwide Permit (NWP) 27 for stream and wetland restoration activities. The prior NWP 27 would not have been applicable to the restoration efforts at San Dieguito Lagoon since use of this permit was precluded in tidal water bodies. However, as contemplated in the Draft EIR/EIS, the reissued NWP 27 does apply to tidal waters as well as non-tidal water bodies and would authorize activities associated with the restoration and enhancement of degraded tidal and non-tidal systems such as San Dieguito Lagoon. It is unknown at this time whether or not NWP 27 would be supported as the permit form of choice by the Corps of Engineers in authorizing the restoration of the lagoon. The Corps may find that elements of the work are not permittable under this NWP or a , even where a nationwide permit is fully applicable, if the Corps deems that the activities being contemplated warrant individual public review under sections 404 and the 404(b)(1) EPA guidelines. The draft 404(b)(1) guidelines submitted as Appendix G to the Draft EIR/EIS are proposed to address concerns regarding the availability of less damaging practicable alternatives and findings of effect of discharge on the aquatic environment as required under the EPA guidelines. If the Corps opts to require an individual permit for the proposed action, then a public notice will be circulated requesting comments on the proposed issuance of a permit. The applicant will then be required to respond to these comments or may seek to resolve issues with commentors prior to the Corps making a decision as to whether or not a permit should be issued and how such a permit should be conditioned. If NWP 27 is selected as the permitting avenue by the Corps, then state and federal responsible agencies will be notified of the intent to issue a permit for the work and provided an opportunity to comment, but no additional public notice period would be provided.

A public notice period will accompany any processing of a Coastal Development Permit. No additional public notice period is provided for by the California Department of Fish and Game streambed alteration agreement process, nor is a public review process provided for on RWQCB certifications under section 401 of the CWA.

Table 4.4-3. Impacts on Other Sensitive Plant and Animal Species

Common Name, Scientific Name	*Current Listing*	*Discussion of Impacts*	*Impact Summary*
CNPS List 1B Plants (Rare and Endangered in California and Elsewhere)			
Southern Tarplant *(Hemizonia parryi* ssp. *australis)*	Federal: none State: none CNPS List 1B	EXPECTED IMPACTS: Southern tarplant occurs at scattered locations on the east side of I-5. On-site populations are considered locally significant, and the plants should be avoided to the maximum extent possible. Specifically, staging area SA4 and disposal site DS32 would impact populations. Where impacts cannot be avoided, seed should be salvaged from impacted plants and an attempt should be made to reestablish populations in suitable habitat, which includes high marsh and fringing areas. It may be possible to establish populations on spoils disposal areas, as this species appears tolerant of somewhat saline compacted soils. The species is included in the proposed plant palette for use in freshwater marsh transitional vegetation (Table 2.3.1-10). Seed for this use should be obtained from the site, ideally from populations that would be impacted. In order to obtain viable seed, the plants should not be impacted until the seed has been allowed to mature. A monitoring plan, including success criteria, should be prepared for any reestablishment effort. All of the action alternatives would have similar impacts. POST PROJECT: Following project implementation, and mitigation if necessary, there should not be a reduction in the numbers of individuals of this species and there may be an overall increase in potentially suitable habitat. If reestablishment of this species in suitable habitat is successful, it may result in a net increase of individuals, which could be considered a beneficial impact.	Class II Class IV (?)
Coulter's Goldfields *(Lasthenia glabrata* ssp. *coulteri)*	Federal: none State: none CNPS List 1B	EXPECTED IMPACTS: Impacts to either of the two populations of Coulter's goldfields would be considered locally significant, and should therefore be avoided if at all possible. One population would be impacted by construction of a haul road. The other population, reported in 1991, is in an area that would not be disturbed by the project. Reestablishment of this plant species is experimental and the long-term success of reestablished populations of this and other rare plant species is unknown. Reestablishment is only recommended if impacts cannot be avoided. It should consist of seed collection and planting in areas of salt marsh playas and fringing areas that receive seasonal rainwater flushing that reduces soil salinity. The species is included in proposed plant palettes for use in upland restoration of the site. Seed for this use should be obtained from the site, ideally from populations that would be impacted. A monitoring plan, including success criteria, should be prepared for any reestablishment effort. All of the action alternatives would have similar impacts POST PROJECT: Project implementation could result in a locally significant loss of a colony of this species if impacts cannot be avoided, and if attempted reseeding does not establish plants in a new location. Habitat suitable for this species would be present on site following implementation of all action alternatives. If reestablishment of this species in suitable habitat is successful, it may result in a net increase of individuals, which could be considered a beneficial impact.	Class II Class IV (?)
Nuttall's Lotus *(Lotus nuttallianus)*	Federal: none State: none CNPS List 1B	EXPECTED IMPACTS: No impact is anticipated to this species as it has not been identified in the study area. POST PROJECT: No change is anticipated to the status of this species following implementation of any of the considered alternatives. If sand dune restoration is performed following project construction, this species should be included in the plant palette to provide a net benefit.	None
California Wildlife Species of Special Concern			
Mammals			
San Diego Black-tailed Jackrabbit (*Lepus californicus bennettii*)	Federal: none State: SSC	EXPECTED IMPACTS: The present status of this species in the study area is not known; however, it is absent from or not abundant on the project site. The temporary and possibly permanent loss of habitat associated with the proposed project and action alternatives would be considered an adverse, but not significant impact. The No Action Alternative would not affect the existing uplands potentially used by this species. POST PROJECT: It is not known to what extent this species would use upland habitat restored as part of the proposed project (and alternatives).	Class III Class III
Northwestern San Diego Pocket Mouse (*Chaetodipus fallax fallax*)	Federal: none State: SSC	EXPECTED IMPACTS: This is a common species in the region and loss of upland habitat associated with the proposed project or action alternatives is not considered a significant impact on the species. The No Action Alternative would not affect the existing uplands potentially used by the San Diego pocket mouse. POST PROJECT: It is not known to what extent this species would use upland habitat restored as part of the proposed project (and alternatives).	Class III Class III

Table 4.4-3. Impacts on Other Sensitive Plant and Animal Species

Common Name, Scientific Name	*Current Listing*	*Discussion of Impacts*	*Impact Summary*
California Wildlife Species of Special Concern			
Mammals			
San Diego Desert Woodrat (*Neotoma lepida intermedia*)	Federal: none State: SSC	EXPECTED IMPACTS: This woodrat was not found on-site, but it is a common species in the region. Loss of potential upland habitat for the species is not considered a significant impact. The No Action Alternative would not affect the existing uplands potentially used by the used by the San Diego desert woodrat.	Class III
		POST PROJECT: It is not known to what extent this species would use upland habitat restored as part of the proposed project (and alternatives).	Class III
Birds			
Reddish Egret (*Egretta rufescens*)	Federal: none State: SSC	EXPECTED IMPACTS: Construction impacts are expected to create short-term and localized conditions unfavorable for foraging by this species. The impact would be temporary and is not considered significant.	Class III
		This species forages along open shorelines as well as defined salt marsh channels, and is therefore judged to receive greatest benefit by alternatives supplying both subtidal and low marsh habitats. Combining the estimated acreages of creation of these two habitats, the order of preference for the six alternatives is: Maximum Tidal Basin (89 acres combined), Hybrid (69 acres), Mixed Habitat (62 acres), Maximum Salt Marsh (50 acres), Reduced Berm (27 acres), and No Project.	
		POST PROJECT: All action alternatives would result in long-term beneficial impacts for this species by creating additional habitat and improving water quality.	Class IV
White-faced Ibis (*Plegadis chihi*)	Federal: none State: SSC	EXPECTED IMPACTS: The only recent sighting of white-faced ibis (1999) occurred in a brackish pond located toward the south end of the study area, just east of I-5. Although not subject to direct impact, this area would receive at least indirect disturbance during excavation and disposal phases of construction. This temporary impact is not considered significant.	Class III
		None of the action alternatives directly affect the habitat where this bird was observed and would be expected. The No Action Alternative would also not affect this habitat.	
		POST PROJECT: Increasing tidal influence by maintaining an open mouth to the lagoon could decrease habitat suitability along the San Dieguito River; however, this impact is not considered significant as such areas have not been demonstrated to receive use by this species. Because the white-faced ibis is reported to favor freshwater ponds, irrigated fields, and brackish lagoons, while occurring only rarely in salt marshes (Unitt 1984), this species is not expected to benefit significantly from implementation of the proposed alternatives.	Class III
Osprey (*Pandion haliaetus*)	Federal: none State: SSC	EXPECTED IMPACTS: Construction impacts are expected to create short-term and localized conditions unfavorable for foraging by this species. The impact would be temporary and is not considered significant.	Class III
		All of the proposed restoration alternatives offer an increase in subtidal habitat, which would be suitable foraging habitat for the osprey. Of the alternatives considered, the Maximum Tidal Basin Alternative would create the greatest amount of foraging habitat (74 acres). The remaining alternatives are rated in order of the amount of subtidal habitat created: Hybrid (39 acres), Mixed Habitat (27 acres), Maximum Salt Marsh (15 acres), Reduced Berm (4 acres), and No Project (0 acres).	
		POST PROJECT: All of the action alternatives would be expected to have a beneficial effect on osprey by increasing foraging habitat and tidal flushing.	Class IV

Table 4.4-3. Impacts on Other Sensitive Plant and Animal Species

Common Name, Scientific Name	*Current Listing*	*Discussion of Impacts*	*Impact Summary*
California Wildlife Species of Special Concern			
Birds			
Northern Harrier (*Circus cyaneus*)	Federal: none State: SSC	EXPECTED IMPACTS: A pair of northern harriers is believed to breed in the study area, and it is suspected but not confirmed that the nest site lies west of I-5 in the large ruderal area which would be excavated for either subtidal or salt marsh habitat. Thus, all plans except the No Project Alternative would potentially result in the loss of this nest site. An impact to an active nest would be considered a locally significant impact. Surveys conducted in early spring will determine the presence of nesting harriers and the need for construction setbacks to avoid impacts to nesting activities. Vegetation clearing of ruderal areas during the non-breeding season (fall and winter) will discourage future breeding for this species. Other potential nesting habitat would remain west of I-5 (south of the study area) and east of I-5 in areas proposed for conversion to grassland or coastal sage scrub, as well as other areas farther east. Thus, as ample foraging habitat would remain or be created, the overall area is believed capable of continuing to support a resident pair of harriers. For this reason, the possible impact to a nesting territory is not considered to be significant. Temporary impacts to harrier foraging habitat are also anticipated during periods of construction (excavation, staging, and disposal). This is considered to be an adverse but insignificant impact. In terms of loss or conversion of harrier foraging habitat, project alternatives which favor the creation of a mosaic of habitat types (i.e., high and mid marsh, as well as uplands) may provide moderately better quality foraging habitat compared to the existing ruderal fields. However, this assessment is speculative, and for the purposes of this analysis, the increase is not considered to be a significant improvement compared to existing conditions. The No Action Alternative would not directly impact nesting northern harriers or their habitat. POST PROJECT: It is not known whether the increased high and mid marsh habitat associated with the action alternatives, coupled with the restoration of grassland and coastal scrub habitat would result in improved conditions for this species.	Class II
Sharp-shinned Hawk (*Accipiter striatus*)	Federal: none State: SSC	EXPECTED IMPACTS: Sharp-shinned hawks are expected to forage on the site in low numbers during the winter months. Under all restoration alternatives, they would be subject to a temporary loss of foraging habitat during periods of construction (excavation, staging, and disposal), and a permanent reduction in potential foraging habitat west of I-5 by the conversion of upland to subtidal or marsh habitat. The net loss of upland habitat under any of the proposed alternatives is viewed as an adverse, but not significant, potential impact to the sharp-shinned hawk. The No Action Alternative would not affect existing habitats used by this species. The Reduced Berm and Maximum Salt marsh alternatives offer limited increases in the amount of subtidal habitat, while emphasizing creation of mid and high marsh habitat; these alternatives rate a tie for second choice with respect to this species. The Mixed Habitat and Hybrid alternatives, with each creating sizeable tracts of mid and high marsh, are the fourth and fifth choices, respectively, due to their relative increase in unsuitable subtidal habitat. The Maximum Tidal Basin, creating 74 acres of subtidal habitat, is the least preferred alternative with respect to the sharp-shinned hawk. POST PROJECT: Sharp-shinned hawks forage for small birds in a variety of open and wooded habitats, including salt marsh. It is not known whether the increased high and mid marsh habitat associated with the action alternatives, coupled with the restoration of grassland and coastal scrub habitat would result in improved conditions for this species.	Class III Class III

Table 4.4-3. Impacts on Other Sensitive Plant and Animal Species

Common Name, Scientific Name	*Current Listing*	*Discussion of Impacts*	*Impact Summary*
California Wildlife Species of Special Concern			
Birds			
Cooper's Hawk (*Accipiter cooperii*)	Federal: none State: SSC	EXPECTED IMPACTS: Cooper's Hawks nest in the mature willow woodland east of I-5, and no direct impacts to this area are proposed under any of the alternatives. The net loss of upland habitat under any of the proposed alternatives is viewed as an adverse, but not significant impact to the Cooper's Hawk, as it is not expected to abandon its use of the site under any of the proposed alternatives. Cooper's hawks also forage in riparian woodlands which would be increased under all action alternatives. The proposed conversion of grassland and coastal sage scrub from ruderal uplands (all restoration alternatives) would provide comparable foraging habitat for this species. Expected temporary impacts include the loss of foraging areas during excavation and transport of spoil materials. The No Action Alternative would not affect existing habitats used by this species. Alternatives favoring marsh over open water may be slightly more favorable for Cooper's Hawk than the Maximum Tidal Basin alternative, as described above. POST PROJECT: Although typically associated with wooded habitats, Cooper's Hawks forage for small birds in a variety of open and wooded habitats, including salt marsh. It is not known whether the increased high and mid marsh habitat associated with the action alternatives, coupled with the restoration of grassland and coastal scrub habitat would result in improved conditions for this species. Maintaining a large open space relatively free of human influence would be beneficial for this species and most other raptors.	Class III Class III
Merlin (*Falco columbarius*)	Federal: none State: SSC	EXPECTED IMPACTS: Merlins are expected to forage on the site in low numbers during the fall/winter months. Under all restoration alternatives, they would be subject to a temporary loss of foraging habitat during periods of construction (excavation, staging, and disposal). The impact is not considered significant to this species. The conversion of weedy uplands to intertidal/marsh areas is expected to support higher numbers of small shorebird prey and provide a more open foraging environment favored by this species. Therefore, all restoration alternatives would clearly improve conditions compared to the No Project Alternative. A ranking (high to low) of the alternatives based upon the number of acres of intertidal flats and salt marsh created follows: Max. Salt Marsh, Mixed Habitat, Hybrid, Reduced Berm, and Max. Tidal Basin. POST PROJECT: Merlins forage over open habitats, especially salt marshes and seashores, for small birds, especially shorebirds. By creating additional marsh and mudflat habitat and conditions that favor increased shorebird populations, all restoration alternatives would be expected to result in clearly improved conditions for merlin.	Class III Class IV
Prairie Falcon (*Falco mexicanus*)	Federal: none State: SSC	EXPECTED IMPACTS: Prairie falcons are expected to forage on the site in low numbers during the fall/winter months. Under all restoration alternatives, they would be subject to a temporary loss of foraging habitat during periods of construction (excavation, staging, and disposal). The impact is not considered significant to this species. The conversion of weedy uplands to intertidal/marsh areas is expected to support higher numbers of shorebird prey and provide a more open foraging environment favored by this species. Therefore, all restoration alternatives would improve conditions compared to the No Action Alternative. As described for merlin, alternatives creating more intertidal flats and saltmarsh would probably be most favorable for this species. POST PROJECT: Prairie falcons forage over open habitats, including salt marshes, for small to medium-sized birds, including shorebirds. By creating additional marsh and mudflat habitat and conditions that favor increased shorebird and waterfowl populations, all restoration alternatives would be expected to result in clearly improved conditions for prairie falcons.	Class III Class IV

Table 4.4-3. Impacts on Other Sensitive Plant and Animal Species

Common Name, Scientific Name	*Current Listing*	*Discussion of Impacts*	*Impact Summary*
California Wildlife Species of Special Concern			
Birds			
Long-billed Curlew (*Numenius americanus*)	Federal: none State: SSC	EXPECTED IMPACTS: Construction impacts are expected to create localized conditions unfavorable for foraging by this species. The impact to this species would be temporary and is not considered biologically significant. Restoration plans providing greatest benefit to the long-billed curlew, as well as many other non-sensitive shorebirds, would emphasize creation of frequently flooded to frequently exposed intertidal flats as well as low and mid-marsh habitats. Combining these habitats, the preferred alternatives for this species are the Maximum Salt Marsh and Mixed Habitat (106 total acres created), followed by the Hybrid (90 acres), Reduced Berm (65 acres), Maximum Tidal Basin (61 acres), and No Project (0 acre) alternatives POST PROJECT: All of the restoration alternatives are expected to result in improved habitat conditions for this species, in quantity and quality, clearly a beneficial impact.	Class III Class IV
Black Skimmer (*Rynchops niger*)	Federal: none State: SSC	EXPECTED IMPACTS: Impacts to this species would occur during the excavation, dredging, disposal, and use of access routes during the construction phase of the project. Potential resting sites as well as foraging areas would be made temporarily unsuitable, and there could be avoidance of the site during especially intensive periods of construction. These temporary impacts are not considered biologically significant, and are not expected to affect nesting success as black skimmers are not known to breed at San Dieguito Lagoon. The open water and intertidal flats are the habitats most likely to be used by black skimmers, for foraging and resting, respectively. The Maximum Tidal Basin alternative is likely to provide the greatest benefit to this species, followed by the Hybrid, Mixed Habitat, Maximum Salt Marsh, Reduced Berm, and No Project alternatives. POST PROJECT: The black skimmer forages by skimming just above the water surface with its beak open and its elongated lower mandible in the water. Its beak snaps shut when a small fish is encountered. Black skimmers rest in flocks with other terns and shorebirds along shorelines. All action alternatives expand open water and shoreline habitat compared to the existing conditions and all would be expected to result in improved conditions for small fish that swim near the water surface.	Class II Class IV
Western Burrowing Owl (*Speotyto cunicularia hypugaea*)	Federal: none State: SSC	EXPECTED IMPACTS: Burrowing owls have not been identified in the study area and habitat is generally unsuitable for this species. However, they at times occupy berms and disturbed areas, and could potentially occupy the study area at some point in the future. Any impact to an occupied owl burrow would be considered locally significant. Required mitigation for disturbances to active nests would consist of creation of artificial burrows in suitable habitat that is destined for long-term preservation. Once suitable (burrow) habitat is provided, the owls can either be passively relocated or captured and released at the preserved site. Relocation should occur in the non-breeding season to avoid impacts to eggs, nestlings, or dependent juveniles. Under the No Action alternative, burrowing owl habitat would not be directly affected, however gradual vegetation change to less open conditions unfavorable to burrowing owls could be expected in portions of the areas currently identified as ruderal/agricultural. Burrowing owls are known to prey upon tern chicks and are therefore probably not a desired species under the restoration alternatives. These alternatives propose establishment of tern and plover nesting sites, thus if burrowing owls were to subsequently occupy the area and prey on tern or plover chicks, they would probably need to be relocated. POST PROJECT: Burrowing owls prefer flat or rolling upland terrain with relatively open vegetation. It is expected that the restoration alternatives would result in an insignificant reduction in potentially suitable habitat for the species.	Class III or possibly Class II Class III

Table 4.4-3. Impacts on Other Sensitive Plant and Animal Species

Common Name, Scientific Name	*Current Listing*	*Discussion of Impacts*	*Impact Summary*
California Wildlife Species of Special Concern			
Birds			
California Horned Lark (*Eremophilia alpestris actia*)	Federal: none State: SSC	EXPECTED IMPACTS: The California horned lark is a common, resident species in San Diego County and direct or indirect impacts of the restoration alternatives to on-site populations would not be considered significant. Under the No Action alternative habitat used by horned larks would not be directly affected, however, gradual vegetation change to less open conditions unfavorable to horned larks could be expected in portions of the areas currently identified as ruderal/agricultural. POST PROJECT: Horned larks use open upland habitat with sparse grassy or weedy vegetation, including roadsides and recently disturbed areas. Suitable habitat for this species would be expected to diminish under both the wetland and upland components of the restoration alternatives, representing an insignificant adverse impact.	Class III Class III
Cactus Wren (*Campylorhynchus brunneicapillus*)	Federal: none State: SSC	EXPECTED IMPACTS: No impact on this species is expected from any of the restoration alternatives. Suitable habitat is extremely limited or absent within the study area. POST PROJECT: The proposed revegetation of coastal sage scrub in areas of existing ruderal field would provide a potential benefit to this species if a substantial cholla or prickly-pear cactus component were successfully incorporated into the revegetation plan. This would also potentially benefit the San Diego desert woodrat.	None Potential Class IV
Loggerhead Shrike (*Lanius ludovicianus*)	Federal: none State: SSC	EXPECTED IMPACTS: Temporary displacement or disturbance of foraging habitat caused by construction would have insignificant adverse effects on shrikes, owing to the relatively low sensitivity of this species. Surveys conducted in early spring will determine the presence of nesting shrikes and the need for construction setbacks (approximately 200 feet or as otherwise determined by CDFG) to avoid impacts to nesting activities. Loss of upland habitat is the principal concern for the loggerhead shrike; although this species will sometimes forage in unvegetated intertidal areas during low tide (personal observation, M. Booker, M&A). The loss of habitat is considered adverse but non-significant. The No Action Alternative would not affect the upland habitat favored by this species. Of the restoration alternatives, the Reduced Berm Alternative would have the least direct impact on uplands and smallest conversion to open water, intertidal, and low marsh habitats. POST PROJECT: Conditions in the remaining upland habitat, including upland restoration areas, are expected to remain suitable for use by this species.	Class III Class III
Yellow Warbler (*Dendroica petechia*)	Federal: none State: SSC	EXPECTED IMPACTS: No direct adverse impacts are expected on this riparian-dependent songbird, and indirect impacts would not be considered significant. POST PROJECT: Preservation and expansion of willow riparian habitat on site would be beneficial to this species	None or Class III Class IV
Yellow-breasted Chat (*Icteria virens*)	Federal: none State: SSC	EXPECTED IMPACTS: Potential impacts to the chat may occur to individuals using weedy upland areas both east and west of I-5. Breeding is not confirmed in these areas, but is assumed in the high quality willow woodland off-site to the south (east of I-5). Neither direct or indirect impacts would not be considered significant; however, it is recommended that any vegetation clearing occur in the non-breeding season. In order to avoid impacts to nesting chats, brush clearing should be performed prior to February 15 or after July 15. Under the No Action Alternative there would be no direct impacts on yellow-breasted chat and their foraging and possibly nesting areas. No distinction is made between the other alternatives, which require excavation and dredging west of I-5. POST PROJECT: Preservation and expansion of willow riparian habitat on site would be beneficial to this species.	Class III Class IV
Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*)	Federal: none State: SSC	EXPECTED IMPACTS: This regionally common upland songbird species would not be significantly impacted by the restoration alternatives compared to no project. POST PROJECT: Some benefit may be derived by conversion of upland areas to coastal sage scrub as proposed with all action alternatives.	Class III Class IV

Table 4.4-3. Impacts on Other Sensitive Plant and Animal Species

Common Name, Scientific Name	*Current Listing*	*Discussion of Impacts*	*Impact Summary*
California Wildlife Species of Special Concern			
Birds			
Bell's Sage Sparrow (*Amphispiza belli belli*)	Federal: none State: SSC	EXPECTED IMPACTS: If present, Bell's sage sparrow is not expected to be significantly impacted by the restoration activities compared to no action. POST PROJECT: Some benefit may be derived by conversion of upland areas to coastal sage scrub as proposed with all action alternatives.	Class III Class IV
Large-billed Savannah Sparrow (*Passerculus sandwichensis rostratus*)	Federal: none State: SSC	EXPECTED IMPACTS: If present, impacts to this species would occur during the excavation, dredging, disposal, and use of access routes during the construction phase of the project. Potential foraging areas would be made temporarily unsuitable, and there could be avoidance of the site during especially intensive periods of construction. This is considered an adverse but not significant short-term impact to this wintering salt marsh species. Restoration alternatives that favor the Belding's savannah sparrow would presumably favor this species. Thus, the preferred plan for this species is the Maximum Salt marsh Alternative, followed by the Mixed Habitat, Hybrid, Reduced Berm, Maximum Tidal Basin, and No Action alternatives. POST PROJECT: All of the restoration alternatives have the potential to benefit this species because they involve expansion of pickleweed salt marsh habitat.	Class III Class IV
Tricolored Blackbird (*Agelaius tricolor*)	Federal: none State: SSC	EXPECTED IMPACTS: If present, impacts to this species would occur during the excavation, dredging, disposal, and use of access routes during the construction phase of the project. On-site nesting is not expected, but if subsequently detected, nesting areas should not be impacted during the breeding season (February 15 through July 15). If the species is present on-site, impacts are more likely to occur to foraging activities because this species is rather nomadic during the non-breeding season. Such impacts would be considered temporary and not significant. Potential nesting habitat (freshwater marsh) would not be directly affected by the project. Under the No Action Alternative neither the ruderal fields that offer suitable foraging habitat, nor the fresh and brackish water marshes which would offer limited nesting or overnight roosting habitat, would be impacted. POST PROJECT: Under the restoration alternatives, the ruderal fields would be converted to denser more permanent grassland or scrub vegetation, less suitable for foraging by the species, an insignificant adverse impact. The fresh and brackish water marshes on site would be retained.	Class III Class III
Reptiles			
Southwestern Pond Turtle (*Clemmys marmorata pallida*)	Federal: none State: SSC, FP	EXPECTED IMPACTS: The southwestern pond turtle, if present, is not expected to be present on site in significant numbers due to lack of appropriate water quality and habitat structure. Substantial populations exist upstream in suitable habitat, and individuals could be washed downstream into the project area during a flood. This species would not be significantly impacted by the project. Should any individuals be encountered in trenches or otherwise in harm's way during construction, they should be collected and relocated upstream by a biological monitor. Under the No Action Alternative conditions are expected to remain similar to the current condition, which is marginally suitable to the species. POST PROJECT: The restoration alternatives would not be expected to improve habitat conditions for the species. However, none of the proposed restoration alternatives are expected to significantly impact this native pond turtle.	Class III Class III

Table 4.4-3. Impacts on Other Sensitive Plant and Animal Species

Common Name, Scientific Name	*Current Listing*	*Discussion of Impacts*	*Impact Summary*
California Wildlife Species of Special Concern			
Reptiles			
San Diego Horned Lizard (*Phrynosoma coronatum blainvillii*)	Federal: none State: SSC, FP	EXPECTED IMPACTS: Horned lizards are not expected to be significantly affected by project construction, especially disposal of excavated soils and/or upland habitat conversion. Only a very small on-site population is expected, and this is not considered significant to the species in light of known populations elsewhere in San Diego County. Impacts to this species are considered adverse but not biologically significant. No mitigation measures are identified. The No Action Alternative, followed by the reduced berm alternative would have the least impact to habitat potentially occupied by the species. POST PROJECT: The impact to suitable upland habitat may be partially off-set by the restoration of coastal sage scrub at disposal sites, which is anticipated to be more suitable than the mostly disturbed uplands presently occurring in the study area. The potential benefit is also not considered significant for this species.	Class III Class III
Coronado Skink (*Eumeces skiltonianus interparietalis*)	Federal: none State: SSC	EXPECTED IMPACTS: Only a small on-site population is expected, and this is not considered significant to the species in light of known populations elsewhere in San Diego County. Potential impacts to this species are considered adverse but not biologically significant. No mitigation measures are identified. The No Action Alternative, followed by the Reduced Berm alternative would have the least impact to habitat potentially occupied by the species. POST PROJECT: The impact to suitable upland habitat may be partially off-set by the restoration of coastal sage scrub at disposal sites, which is anticipated to be more suitable than the mostly disturbed uplands presently occurring in the study area. The potential benefit is also not considered significant for this species.	Class III Class III
Orangethroat Whiptail (*Cnemidophorus hyperythrus beldingi*)	Federal: none State: SSC	EXPECTED IMPACTS: Only a small on-site population is expected, and this is not considered significant to the species in light of known populations elsewhere in San Diego County. Potential impacts to this species are considered adverse but not biologically significant. No mitigation measures are identified. The No Action Alternative, followed by the Reduced Berm alternative would have the least impact to habitat potentially occupied by the species. POST PROJECT: The impact to suitable upland habitat may be partially off-set by the restoration of coastal sage scrub at disposal sites, which is anticipated to be more suitable than the mostly disturbed uplands presently occurring in the study area. The potential benefit is also not considered significant for this species.	Class III Class III
Silvery Legless Lizard (*Anniella nigra argentea*)	Federal: none State: SSC	EXPECTED IMPACTS: If present, only a small on-site population would be expected, and this is not considered significant to the species in light of known populations elsewhere in San Diego County. Potential impacts to this species are considered adverse but not biologically significant. No mitigation measures are identified. The No Action Alternative, followed by the Reduced Berm alternative would have the least impact to habitat potentially occupied by the species. POST PROJECT: The impact to suitable upland habitat may be partially off-set by the restoration of coastal sage scrub at disposal sites, which is anticipated to be more suitable than the mostly disturbed uplands presently occurring in the study area. The potential benefit is also not considered significant for this species.	Class III Class III
Amphibians			
Western Spadefoot (*Scaphiopus hammondi*)	Federal: none State: SSC	EXPECTED IMPACTS: Impacts to this species are considered adverse but not significant; a significant on-site population is not expected due to the disturbed history of the site and the lack of suitable breeding sites. POST PROJECT: Implementation of any of the considered alternatives is not expected to result in a significant benefit or impact to the species.	Class III Class III

Table 4.4-3. Impacts on Other Sensitive Plant and Animal Species

Common Name, Scientific Name	*Current Listing*	*Discussion of Impacts*	*Impact Summary*
Other Sensitive Plant Species			
Red Sand-Verbena *(Abronia maritima)*	Federal: none State: none CNPS List 4	EXPECTED IMPACTS: Approximately 200 red sand verbena occur on the sandy bench just east of Camino del Mar on the north side of the river. There are no construction plans for the site and no impacts are expected from the project as planned. Because of the relatively level terrain, sparse vegetation, and proximity to the river, however, this colony could easily be impacted by unforeseen activities, such as the need for a convenient lay down area. This potential impact would be considered locally significant. Because of the sizeable area of sand in the vicinity, it may be possible to fence off the portion of the area occupied by the red sand verbena and thereby prevent inadvertent impacts to these plants and their habitat. This would be preferable to restoration of the population after impact follow-up monitoring, because of uncertainties and costs in coastal dune habitat restoration. POST PROJECT: Because sand dune restoration is not an element of the any of the proposed project alternatives, this species is not expected to experience an increase or decrease in suitable habitat following construction and revegetation.	Class II Class III
Lewis's Evening Primrose *(Camissonia lewisii)*	Federal: none State: none CNPS List 3	EXPECTED IMPACTS: Although not directly impacted by the proposed project footprint (all action alternatives), there is concern for this species which was found approximately 30 feet up from the base of the bluff (facing southeast) on the north side of the entrance to the lagoon. Due to the potential restriction or alteration of public access to the nearby beach area, there is potential for impacts due to foot-traffic, if fencing were to alter existing pedestrian use. A narrow foot-trail already passes near these plants. Any impact to these plants would be considered locally significant. If impacted, mitigation would require the planting of seed in similar habitat on conserved lands; seed would most likely have to be collected from Penasquitos Lagoon, which supports the only large population in the County. Avoidance of the impact is possible by allowing convenient beach access from the north side of the river. Under the No Action Alternative, the existing vulnerability of this small population to impacts from foot traffic would continue. POST PROJECT: With proper precautions and monitoring, there should be no difference in the existing population from that which would occur following project implementation.	Class II Class III
Sea Dahlia *(Coreopsis maritima)*	Federal: none State: none CNPS List 2	EXPECTED IMPACTS: This species is not believed to be present on site. If it were present, impacts to small numbers of individuals would not constitute a significant impact. POST PROJECT: No change to this species is anticipated following implementation of any of the considered alternatives.	Class III Class III
Del Mar Mesa Sand Aster *(Corethrogyne filaginifolia* var. *linifolia)*	Federal: none State: none CNPS List 1B	EXPECTED IMPACTS: Small numbers of Del Mar sand aster were found on the low bluffs overlooking the ponds and seasonal salt marsh east of I-5 and south of the San Dieguito River. These appear to be a remnant of a more widespread population nearly extirpated at that site by cultivation. All of the restoration alternatives show these areas to be adjacent to proposed upland restoration of coastal sage scrub, near disposal site DS35. Therefore these plants would potentially be impacted under all of the alternatives (except for the No Action alternative). The potential impact to these plants is considered locally significant and should be avoided. If impacts cannot be avoided, mitigation would be recommended to reestablish the plant on a secure nearby site on sandstone, and/or active propagation to support the inclusion of local genotypes of this species in the revegetation plant palette for coastal sage scrub and chaparral. Related species reproduce readily from seed, which may be the case with this species if the appropriate conditions for establishment are provided. Under the No Action Alternative it is possible that on-site occurrence of this species would be eventually lost owing to its very small and localized population surrounded by vigorous ruderal species that likely would interfere with its reproduction. POST PROJECT: Assuming some active propagation and establishment measures, there could be a net gain of this species on site.	Class II Class IV
San Diego Marsh-Elder *(Iva hayesiana)*	Federal: none State: none CNPS List 2	EXPECTED IMPACTS: A very small number of San Diego marsh-elder were found in freshwater marsh habitat on the east side of I-5. Any impacts to these few plants would not be considered biologically significant. The species is included in the plant palette for restoration of southern willow scrub. POST PROJECT: Successful establishment of this plant in suitable habitat may provide a potential net benefit to this species.	Class III Class IV

Table 4.4-3. Impacts on Other Sensitive Plant and Animal Species

Common Name, Scientific Name	*Current Listing*	*Discussion of Impacts*	*Impact Summary*
Other Sensitive Plant Species			
Southwestern Spiny Rush *(Juncus acutus* ssp. *leopoldii)*	Federal: none State: none CNPS List 4	EXPECTED IMPACTS: Scattered individuals of this species are present in the project area, generally in high marsh and brackish marsh habitats, including open, somewhat salt-affected riparian areas. Construction activities would cause loss of individuals and temporary loss of habitat. In the long term it is expected that there would be a net increase in habitat. Impacts on the species (loss of individuals) would not be significant *per se*, because the species is relatively common and widespread. However, it has ecological importance as a large, relatively long-lived species offering structure and cover to the habitat. It is included in the plant palette for freshwater marsh transitional habitat restoration. POST PROJECT: Assuming successful implementation of habitat restoration measures, there could be a net benefit to this species under any of the restoration alternatives because more potentially suitable habitat would be available to this species than at present.	Class III Class IV
Estuary Seablite *(Suaeda esteroa)*	Federal: none State: none CNPS List 4	EXPECTED IMPACTS: This species was not identified during surveys for this project and is not expected to be present. POST PROJECT: Restoration of tidal flushing could be beneficial to this upper intertidal species if it is present.	Class III Possible Class IV
Woolly Seablite *(Suaeda taxifolia)*	Federal: none State: none CNPS List 4	EXPECTED IMPACTS: Construction activities around upper marsh areas, seasonal marsh and nearby saline habitats could impact local populations of this species. Impacts on the species (loss of individuals) would not be significant *per se*, because the species is relatively common and widespread. However, where practicable, impacts to this species should be avoided because it exists in conditions difficult for vegetation establishment. Where larger concentrations cannot be avoided, plants should be salvaged for propagation or transplanted into a suitable protected location. This measure would apply to any species of Suaeda encountered on site. Under the No Action Alternative, this species would not be affected. POST PROJECT: Following project implementation and mitigation it is expected that more habitat would be available for this species than is currently present. Active restoration measures may be required to ensure its establishment in the expanded habitat.	Class III Class IV

Table 4.4-3. Impacts on Other Sensitive Plant and Animal Species

Common Name, Scientific Name	*Current Listing*	*Discussion of Impacts*	*Impact Summary*
Wildlife Species of Local Concern			
Birds			
Canada Goose (*Branta canadensis*)	Federal: none State: none MSCP	EXPECTED IMPACTS: Studies of the Canada Goose at San Dieguito Lagoon and nearby areas of the river valley indicate that substantial foraging occurs by this species in the seasonal salt marsh and agricultural field (when fallow) habitats (Manning 1994). When not actively foraging, approximately ¼ of the time these geese were seen day-resting; however, at sunset this species always returned to San Elijo Lagoon for overnight resting (Manning 1994). No overnight resting was noted at either San Dieguito Lagoon or at nearby Fairbanks Ranch, another popular foraging and day-resting locality. Observed use of San Dieguito Lagoon was restricted to areas east of Interstate 5 (Manning 1994). Construction activities (spoil disposal, access, general construction noise/activity) are expected to produce adverse impacts to the Canada goose due to the temporary loss of food resources and a general avoidance of active areas. The proposed conversion of ruderal fields to coastal sage scrub (all alternatives) would also result in the permanent loss of foraging habitat. Due to the relatively higher amounts of salt marsh habitat which would be created, the order of preference of the various alternatives is as follows: Maximum Salt Marsh (most preferred), Mixed Habitat, Hybrid, Reduced Berm, Maximum Tidal Basin, and No Project (least preferred). POST PROJECT: The restoration of grassland and salt marsh habitats (all alternatives) are expected to provide a net benefit to this species. Such restoration efforts are consistent with recommendations offered in Manning (1994). Furthermore, all of the restoration alternatives provide in excess of the recommended minimum of 72.5 acres of enhanced/restored lagoon habitats to support a minimum wintering population of 443 geese (Manning 1994).	Class III Class IV
White-tailed Kite (*Elanus leucurus*)	Federal: none State: SA, P	EXPECTED IMPACTS: The conversion of upland habitat west of I-5 would likely result in the loss of a foraging/breeding territory of the white-tailed kite. The territory located east of I-5 would not be directly lost, but could suffer from temporary impacts during construction and restoration activities. The expected impact to this species is not considered to be biologically significant; however, the construction schedule should take into account the season of vegetation clearing to avoid any direct impacts to nesting kites. Under the No Action Alternative, upland areas used by foraging kites on the west side of I-5 would not be converted to wetlands. Among the action alternatives, the Reduced Berm Alternative has the least impact on existing habitat used by kites. The other action alternatives are more or less equivalent with respect to this species POST PROJECT: Restored grassland habitat would continue to be suitable foraging area for this species, however, there would be a net loss of foraging habitat under all restoration alternatives.	Class III Class III
Reptiles			
Two-striped Garter Snake (*Thamnophis hammondi*)	Federal: none State: SA	EXPECTED IMPACTS: Two-striped garter snakes are expected to be adversely affected by project construction including opening of the lagoon to more regular tidal influence. The impact is considered to be adverse but not biologically significant for this relatively common species (Class III). The restoration alternatives would be roughly equivalent with regard to this species. POST PROJECT: All of the proposed restoration alternatives are expected to reduce suitable habitat for this garter snake; but would preserve other wetland habitat on site.	Class III Class III

Table 4.4-3. Impacts on Other Sensitive Plant and Animal Species

Common Name, Scientific Name	*Current Listing*	*Discussion of Impacts*	*Impact Summary*
Wildlife Species of Local Concern			
Invertebrates			
Salt Marsh Skipper (*Panoquina errans*)	Federal: none State: SA	EXPECTED IMPACTS: Direct and indirect impacts to nectar sources and the larval host plant (salt grass) are expected to occur during the construction phase of this project. While adverse, the impact is not considered significant and would be offset by the restoration and net creation of suitable salt marsh vegetation in high marsh and transition zones. POST PROJECT: Following project implementation, there is expected to be an increase in suitable habitat and host plant for this species, resulting in a net benefit for the salt marsh skipper. Greatest benefit would be achieved through the Maximum Salt Marsh Alternative as it especially favors creation of high marsh and transition habitat (42 acres), followed by Hybrid (34 acres), Mixed Habitat (30 acres), Maximum Tidal Basin (29 acres), and Reduced Berm (19 acres),. The No Action Alternative is least preferred for this species.	Class III Class IV

Key: FE = Federal Endangered
FT = Federal Threatened
SE = State Endangered
ST = State Threatened
FP = Fully Protected (State)
SP = Specially Protected (State
SA = Special Animal (State)
SSC = Species of Special Concern
CS = Covered Species of the MSCP Program

4.5 NATURAL RESOURCES

4.5.1 Mineral Resources

Significance Criteria

Impacts would be significant if:

- Mineral or aggregate resources that were of regional significance were removed or rendered inaccessible by the project.

4.5.1.1 Mixed Habitat Alternative

No mineral or aggregate resources are present at the site; therefore, no impacts would result from implementation of this alternative. No mitigation measures are required.

4.5.1.2 Maximum Tidal Basin Alternative

Impacts would be the same as those described in section 4.5.1.1. No mitigation measures are required.

4.5.1.3 Maximum Intertidal Alternative

Impacts would be the same as those described in section 4.5.1.1. No mitigation measures are required.

4.5.1.4 Hybrid Alternative

Impacts would be the same as those described in section 4.5.1.1. No mitigation measures are required.

4.5.1.5 Reduced Berm Alternative

Impacts would be the same as those described in section 4.5.1.1. No mitigation measures are required.

4.5.1.6 No-Action Alternative

No mineral or aggregate resources are present at the site; therefore, no mining would occur if the proposed project were not implemented. The site would therefore remain in its current condition, resulting in no impacts with respect to mineral or aggregate resources.

4.5.2 Agricultural Resources

Significance Criteria

In accordance with CEQA Guidelines, a significant impact would occur if:

- The project would convert Prime Farmland, Unique Farmland, or Farmland of State-wide Importance to non-agricultural use;

- Impair agricultural productivity (whether prime or non-prime); or
- Conflict with agricultural preserve programs or existing agricultural zoning. (Issues associated with the project's zoning are addressed in Chapter 5; the project site contains no areas identified as agricultural preserves.)

4.5.2.1 Mixed Habitat Alternative

Under this alternative, approximately 38 acres of land planted in tomatoes just south of Via de la Valle between San Andres Drive and Horsepark would be displaced by the proposed restoration plan. This area would serve as disposal site DS32 and ultimately would be restored as re-seeded coastal sage scrub / native grassland (Area U18). A 6-acre portion of this area would be the site of the nature / interpretive center. Restoration of this general area would result in the loss of 43 acres of Prime Farmland, as shown on Figure 3.5-2. This would be considered a significant unavoidable impact (Class I).

The proposed trail segments 10, 11, and 12, which extend toward El Camino Real south of Horsepark, would cross land that is actively cultivated and classified as Farmland of Local Importance. However, the trails would be located along existing agricultural roads and would not displace cultivated land. Use of disposal sites DS33, DS34, and DS35 just west of El Camino Real and creation of the 25-car parking lot would impact about 45 acres of land that is under cultivation and about 34 acres of land classified as Farmland of Statewide Importance. This would be considered a significant unavoidable impact (Class I). The use of offsite disposal area DS36 would displace 24 acres of land that are under cultivation and 26 acres that are classified as Farmland of Statewide Importance. This would be a significant unavoidable impact (Class I).

Development of Area U19 as grassland would convert about 3 acres of Farmland of Local Importance. This would be considered an adverse but not significant impact (Class III). This would not affect agricultural practices on the adjacent land.

Mitigation Measures

There are no mitigation measures available to reduce the impacts related to the permanent loss of important farmland that would occur if Areas DS32, DS33, DS34, DS35, and DS36 were used as disposal sites. It is only through the selection of an array of disposal site options that do not include these areas that the impacts to important farmland at these sites would be avoided.

4.5.2.2 Maximum Tidal Basin Alternative

Impacts would be as described in section 4.5.2.1.

4.5.2.3 Maximum Intertidal Alternative

Impacts would be as described in section 4.5.2.1.

4.5.2.4 Hybrid Alternative

Impacts would be as described in section 4.5.2.1.

4.5.2.5 Reduced Berm Alternative

Impacts would be as described in section 4.5.2.1. The Via de la Valle property would still be used as a fill site and the proposed revegetation of upland habitat areas would still be proposed. The use of DS36 would not be required, thus avoiding impacts to agriculture in this area.

4.5.2.6 No-Action Alternative

Under this alternative, agricultural lands on the Via de la Valle property (Area U18) would potentially be developed for residential uses. Other project impacts related to agriculture would not occur.

4.6 LANDFORMS/VISUAL QUALITY

Significance Criteria

CEQA Guidelines (Appendix G) state that "A project will normally have a significant effect on the environment if it will . . . have a substantial, demonstrable, negative aesthetic effect." CEQA defines "significant effect on the environment" as "a substantial, or potentially substantial, adverse change in the environment." Neither CEQA nor the Guidelines offer any elaboration on the concept of a "substantial, demonstrable negative aesthetic effect."

Determination of visual quality is highly subjective. The context or environment setting is the key to determining significance. The following guidelines establish a procedure for determining when development projects may cross this threshold of significance.

1. Projects that would block *public* views from designated open space, roads, or parks to significant visual landmarks or scenic vistas (e.g., Pacific Ocean, downtown skyline, mountains, waterways). To meet this significance threshold, one or more of the following conditions must apply:

   a) The project would substantially block a view through a designated public view corridor as shown in an adopted community plan, the General Plan, or a Local Coastal Program. Minor view blockages would not be considered to meet this condition.

   b) The project would cause substantial view blockage of a public resource (such as the ocean) that is considered significant by the applicable community plan.

   c) The project exceeds the allowed height or bulk regulations, and this excess causes unnecessary view blockage.

2. The City of San Diego has developed significance criteria to determine if a project would significantly alter the natural (or naturalized) landform. To meet this significance threshold, typically, the following conditions must apply:

   a) The project would alter more than 2,000 cubic yards of earth per graded acre by either excavation or fill. Grading of a smaller amount may still be considered significant in highly scenic or environmentally sensitive areas. In addition, one or more of the following conditions must apply to meet this significance threshold.

   b) The project would disturb steep (25 percent gradient or steeper) sensitive slopes in excess of the encroachment allowances of the Resource Protection Ordinance or the Coastal Hillside Review zone.

   c) The project would create manufactured slopes higher than 10 feet or steeper than 2:1 (50 percent).

   d) The project would result in a change in elevation of steep natural slopes (25 percent gradient or steeper) from existing grade to the proposed grade of more than 5 feet by either excavation or fill, unless the area over which excavation of fill would exceed 5 feet is only at isolated points on the site.

The above conditions a-d may not be considered significant if one or more of the following apply:

- The proposed grading plans clearly demonstrate, with both spot elevations and contours, that the proposed landforms will very closely imitate the existing on-site landform and/or that of the undisturbed, pre-existing surrounding neighborhood landforms. This may be achieved through "naturalized" variable slopes.

- The proposed grading plans clearly demonstrate, with both spot elevations and contours, that the proposed slopes follow the natural existing landform and at no point vary more than 1.5 feet from the natural landform elevations.

- The proposed excavation or fill is necessary to permit installation of alternative design features such as small retaining walls.

3. Projects that have a negative visual appearance. To meet this significance threshold, one or more of the following conditions must apply (note that only one condition is considered relevant to the proposed project; thus, the others are omitted):

   - The project includes a shoreline protection device in a scenic, high public use area, unless the adjacent bluff areas are similarly protected.

4.6.1 Mixed Habitat Alternative

The discussion that follows analyzes the potential impacts of implementing the overall restoration project in accordance with the Mixed Habitat Alternative. SCE, in order to meet its CCC permit requirements and the conditions of its Earth Island agreement, would implement most, but not all of the tidal wetland components of this alternative, including tidal restoration, inlet excavation and maintenance, and berm and revetment construction. At present, SCE is not proposing to restore Area W6b. In addition, SCE proposes to implement the nesting sites only if an agreement can be reached with the 22nd District Agricultural Association regarding the opening and long term maintenance of the river mouth. The JPA would be responsible for the implementation of the public access/interpretive aspects of the project, as well as for overseeing the restoration of the upland and freshwater habitats.

4.6.1.1 Construction Staging and Access Areas

Potential haul roads, construction access areas, and staging areas are shown on Figure 2.2.1-13. Two primary staging area sites are proposed, one on either side of I-5. Two additional areas could be used to access channel dredging operations. Staging Area SA1, which would be located on the beach at the mouth of the river, would be used to store equipment as well as to stockpile dredged material. This area would be temporarily fenced. Staging Area SA2 would be located on the river side of San Dieguito Drive. It would be used for equipment storage, as well as the temporary storage of rock materials. Staging Area SA3 would be located along the west side of I-5 and south of the river. It would be used to store equipment and materials and would likely be fenced. It is also proposed as a temporary field office location. If dredging equipment is used, this area may be modified into a launch facility. This site would likely be left in place as part of the project for future maintenance access. Staging Area SA4 would be located in an open area just beyond the terminus of San Andres Drive. It would be used to store equipment and materials during construction and could be used as a temporary field office location. This site would be temporarily fenced. Following construction, the staging areas would generally be returned to their previous condition. Construction would occur in three phases: phases I and II, which would focus on the areas west of I-5 and east of I-5, respectively, are anticipated to last for one to two years. Phase III, which would focus on the area north of the river and east of I-5 would occur during year 2.

Staging Area SA1 would be highly visible from Camino Del Mar, from the bluff overlooking the beach, and from the beach itself. It would at least partially restrict views of the beach from the portion of Camino Del Mar that is immediately adjacent to the staging area. This impact would be short-term (approximately one to two months for initial channel dredging and 6 to 8 months if the overdredge disposal option is implemented). While the staging area would have an adverse impact on the aesthetic quality of the area, it would only restrict views from a small portion of the adjacent roadway. This impact would be considered adverse, but not significant (Class III).

Staging Area SA2 would likely be visible from the Grand Avenue Bridge and the area to the east, but public use of this area is not authorized, and this is not considered a sensitive viewpoint. It is possible that views of the staging area may be possible from Jimmy Durante Boulevard or Bridge, but these views would be brief and not significant. Staging Area SA3 would be visible from I-5, particularly from the southbound lane, but the duration of the impact would be brief (travelers would be adjacent to the site for only about 15 seconds). Distant views of the site would also be available from San Dieguito Drive; however, no views of sensitive areas would be blocked. Therefore, visual impacts from this site would be adverse, but not significant (Class III). Staging Area SA4 could be seen from the end of San Andres Drive and the northbound lanes of I-5, but this is an area of commercial development and not a particularly sensitive viewpoint. It also could be viewed from the overlook park located on the bluffs above the site in Carmel Valley, but the impact would be minimal given the distance involved and the site's proximity to existing commercial development.

Existing paved and dirt roads would be used to the extent feasible, although several temporary construction access roads would have to be constructed. Most of the access routes would be restored with appropriate vegetation at the end of construction. One of the new access routes would be constructed near Racetrack View Drive along the perimeter of the CDFG property. The route would extend from San Dieguito Drive northeast to the western edge of I-5 freeway embankment. This access route would be maintained for the life of the project for use during periodic project maintenance. Creating this road would have an adverse but not significant impact on local views (Class III). Development of the other temporary access routes would have a short-term adverse but not significant impact (Class III).

4.6.1.2 Inlet Dredging

Dredging equipment would be used for initial and maintenance dredging. Dredging equipment would cause short-term visual impacts, but these would not be significant (Class III). Dredging equipment has been used in the inlet area in the past and would only be present at this location for one to two months initially and for only a few weeks during routine maintenance. Dredging would result in the river mouth being opened substantially more often than it has been in the past, but this change would not be considered adverse and could be perceived by some as a beneficial visual impact.

4.6.1.3 Disposal Sites

Various sites in the project vicinity are proposed as potential sites for disposal of project-generated excavated/dredged material. Disposal sites are shown on Figure 2.3.1-13. Some suitable material could be disposed of on the beach or in the nearshore area. Impacts associated with these methods would be short-term and not significant (Class III). Material disposed of on the beach would cause temporary discoloration of nearshore waters due to runoff or the turbid waters associated with the excavated/dredged material and would temporarily alter the appearance of the beach. However, the beach and nearshore areas would be restored to a more typical appearance within a short time frame (hours to days after disposal ceases depending on weather and sea conditions.) Material disposed of in the nearshore area would cause a temporary plume, similar to that which occurs in the ocean near the mouth of a river after a major storm. This plume would dissipate quickly (hours to days).

Other material would be disposed of on sites to be developed as part of the restoration project. These include DS32 through DS35. Certain disposal/desilting sites, however, are located outside the boundaries of the restoration project. These areas are DS36, DS37, and DS38. Details regarding the size, capacity, elevation, and slope of these sites are provided in Table 2.3.1-7. Grading plans for these sites are shown on figures 2.3.1-14a through 2.3.1-14f. Landform and visual quality impacts of maximum disposal at each of the disposal sites would be as follows:

- DS32, a 32.5-acre site located adjacent to Via de la Valle, is proposed to accommodate up to 917,600 cubic yards of excavated/dredge material from the restoration site. The placement of this material on the site would raise the northern two-thirds of the site to an elevation similar to that of the adjoining roadway. The existing gently sloping hillside would be converted to a more manufactured appearance, with a relatively flat graded area created to the south of Via de la Valle and a fill slope constructed at a slope gradient of 4:1 extending along the entire southern edge of the site. The highest section of this slope would be 35 feet high, extending for a distance of approximately 1,000 feet. A 100-foot-wide area located immediately to the south of Via de la Valle would be retained at its present elevation. The proposed filling would raise the elevation of a substantial area south of the road by as much as 35 feet (refer to Figure 2.3.1-14a). In accordance with significance criterion 2, the proposed filling would result in a significant impact to a natural landform that could only be avoided by substantially reducing the amount of material disposed of on this site or by eliminating this site as a disposal option (Class I). The grading associated with this disposal option would probably not be readily noticeable from Via de la Valle immediately adjacent to the site, however, distant views from I-5, particularly from the northbound lanes, and from the overlook park in Carmel Valley would perceive the change in appearance of the site. The change would become less evident once the site is vegetated. The proposed grading would not create any obstruction to views of the river valley, nor would it block view of the bluffs to the north of the site. A map showing the viewpoints from which the photographs were taken is included as Figure 4.6-1. Existing and projected views of this area from Via de la Valle adjacent to the site are shown in figures 4.6-2 and 4.6-3 and views of the site from the overlook park in Carmel Valley are shown in figures 4.6-9 through 14. Based on the results of the visual simulations, it appears that although the use of DS32 as a disposal site could result in significant short-term visual impacts; once the site is vegetated as proposed by the project, the visual impacts of grading would be adverse, but less than significant (Class III).

- DS33, consisting of 13.7 acres located immediately west of El Camino Real, could accommodate up to 89,000 cubic yards of fill. This grading would alter existing contours, but not significantly since its elevation would be raised an average of five feet above the existing terrain. Impacts to landforms would be significant (Class I) in accordance with criterion 2. Visual impacts are considered adverse, but less than significant (Class III). Views of this area both with and without the project are shown in Figures 4.6-2 through 4.6-11.

- DS34, which would adjoin DS33 on the south, proposes to accommodate up to 172,500 cubic yards of fill over 11 acres. This grading would roughly approximate the existing contours near El Camino Real, but would increase the elevation of the area on the western side by up to about 20 feet. Impacts to landforms would be significant (Class I) in accordance with criterion 2. The visual effect of this grading would be most noticeable when viewed from the west, where a 45-foot high manufactured fill slope would be created at a slope ratio of 4:1. Views of DS34 are shown on the same figures described for DS33. Based on the results of these visual simulations, it appears that although this grading could result in significant short-term visual impacts, once the site is vegetated as proposed by the project, the visual impacts would be adverse, but less than significant (Class III).

- DS35 is 3.8 acres in size and could accommodate up to 55,400 cubic yards of material. Use of this site would raise the existing elevation by more than 10 feet, which would be a significant (Class I) impact to landforms in accordance with criterion 2. Only minor fill slopes would be created in this location and these slopes would be blended into the adjoining natural slopes, therefore, no visual impacts are anticipated from grading proposed at DS35. Views of this site before and after grading are shown on the same figures as those provided for DS33.

- DS36 consists of 42.5 acres of previously disturbed property and the proposed grading plan for this site is designed to accommodate up to 749,800 cubic yards of excavated material. This proposal would alter substantially more than 2,000 cubic yards of earth per graded acre, therefore, the proposed grading would represent a significant landform impact in accordance with significance criterion 2 (Class I). The grading plan for this disposal site option was redesigned prior to public review in order to more closely approximate the site's existing contours. The revised design's relatively gradual slope and undulating contours would give the site a generally natural appearance, therefore, visual impacts would be significant in the short-term, however, once the site is revegetated, the visual impact would be adverse, but not significant. DS36 is shown on the same figures provided for DS33.

- DS37 lies immediately west of Jimmy Durante Boulevard and consists of approximately 22 acres. This area is relatively level and consists of a paved parking lot. Approximately 62,900 cubic yards of material could be accommodated at this location, which would raise the site by approximately 1 to 2 feet. The District has stated that if this area were to be used as a disposal site, it would implement a landscape program for the parking lot in

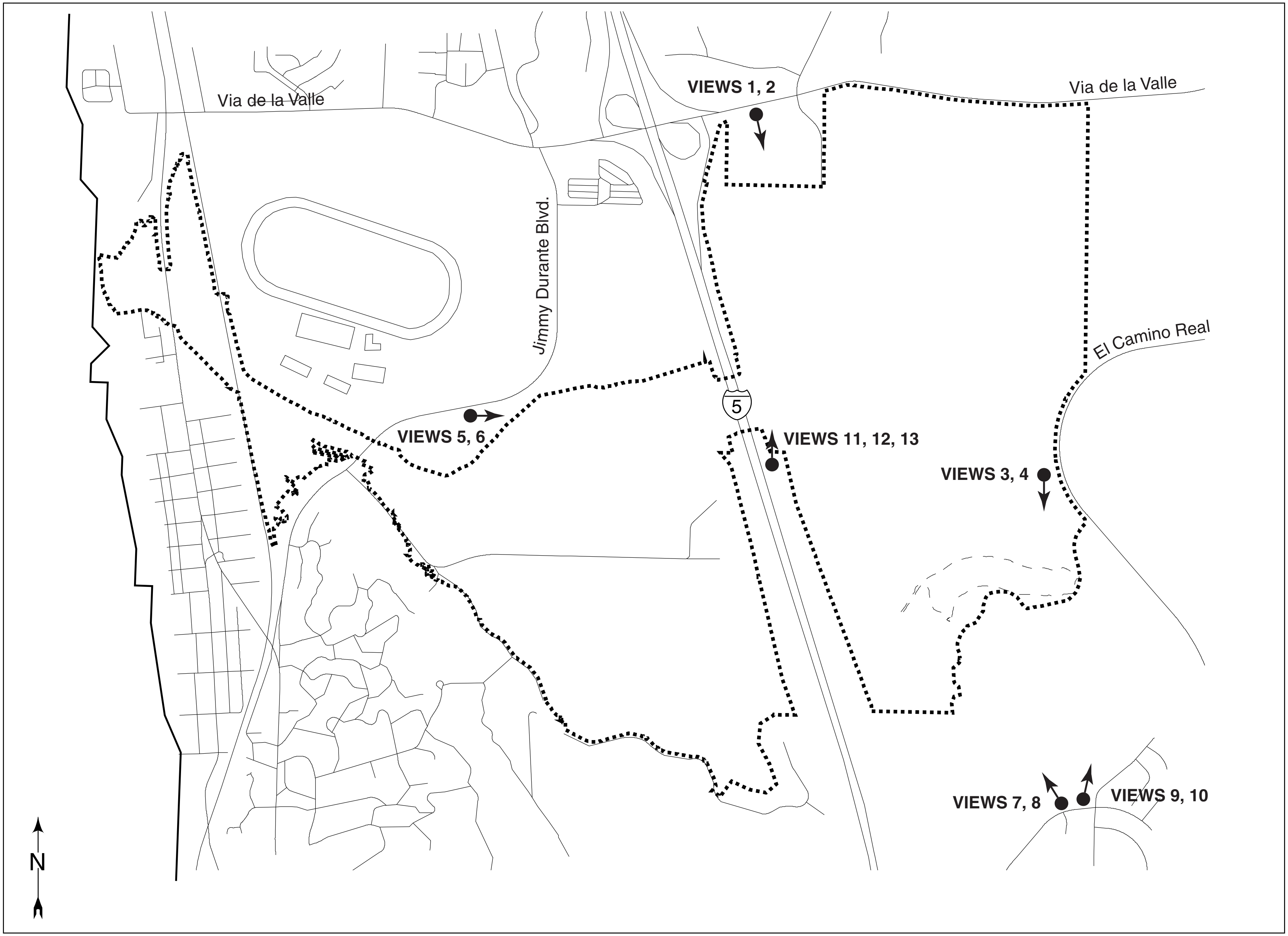
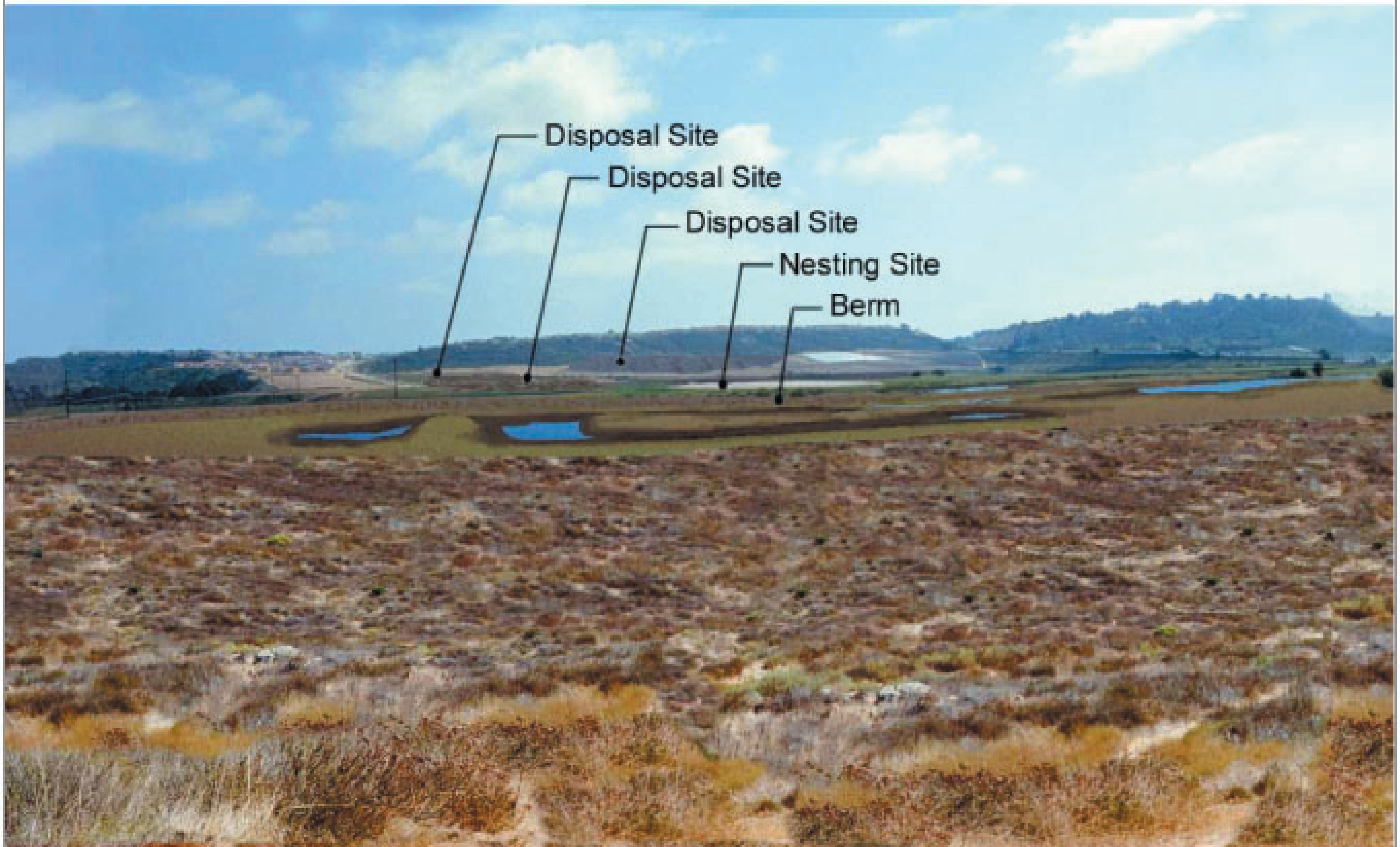


Figure 4.6-1. Viewpoints for Site Photographs and Simulations

Source: Estrada Land Planning 1999

Figure 4.6-2. View 1: Existing View from Via de la Valle Looking South

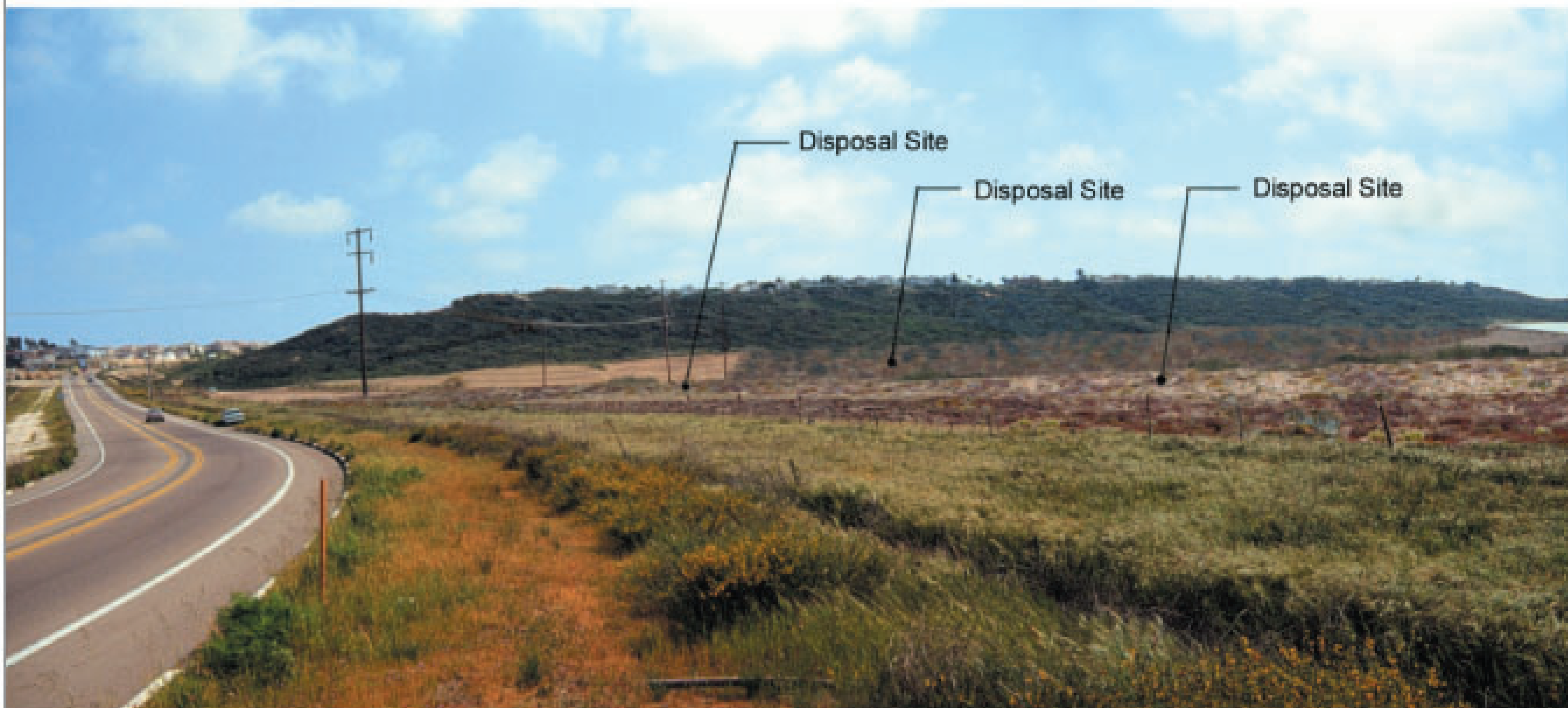


Source: Estrada Land Planning 1999

Figure 4.6-3. View 2: Simulated View from Via de la Valle Looking South

Source: Estrada Land Planning 1999

Figure 4.6-4. View 3: Existing View from El Camino Real Looking South

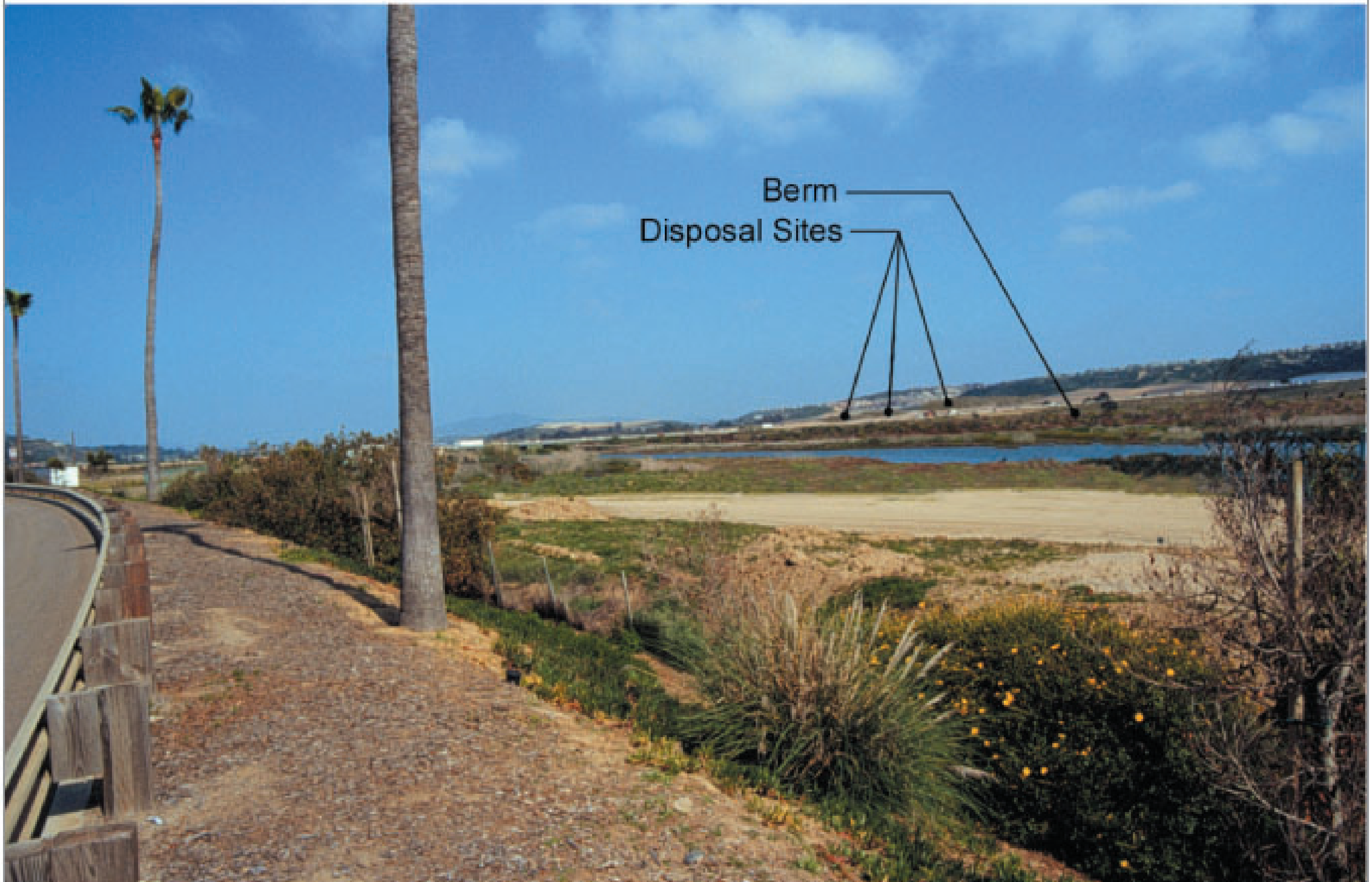


Source: Estrada Land Planning 1999

Figure 4.6-5. View 4: Simulated View from El Camino Real Looking South

Source: Estrada Land Planning 1999

Figure 4.6-6. View 5: Existing View from Jimmy Durante Boulevard Looking Southeast

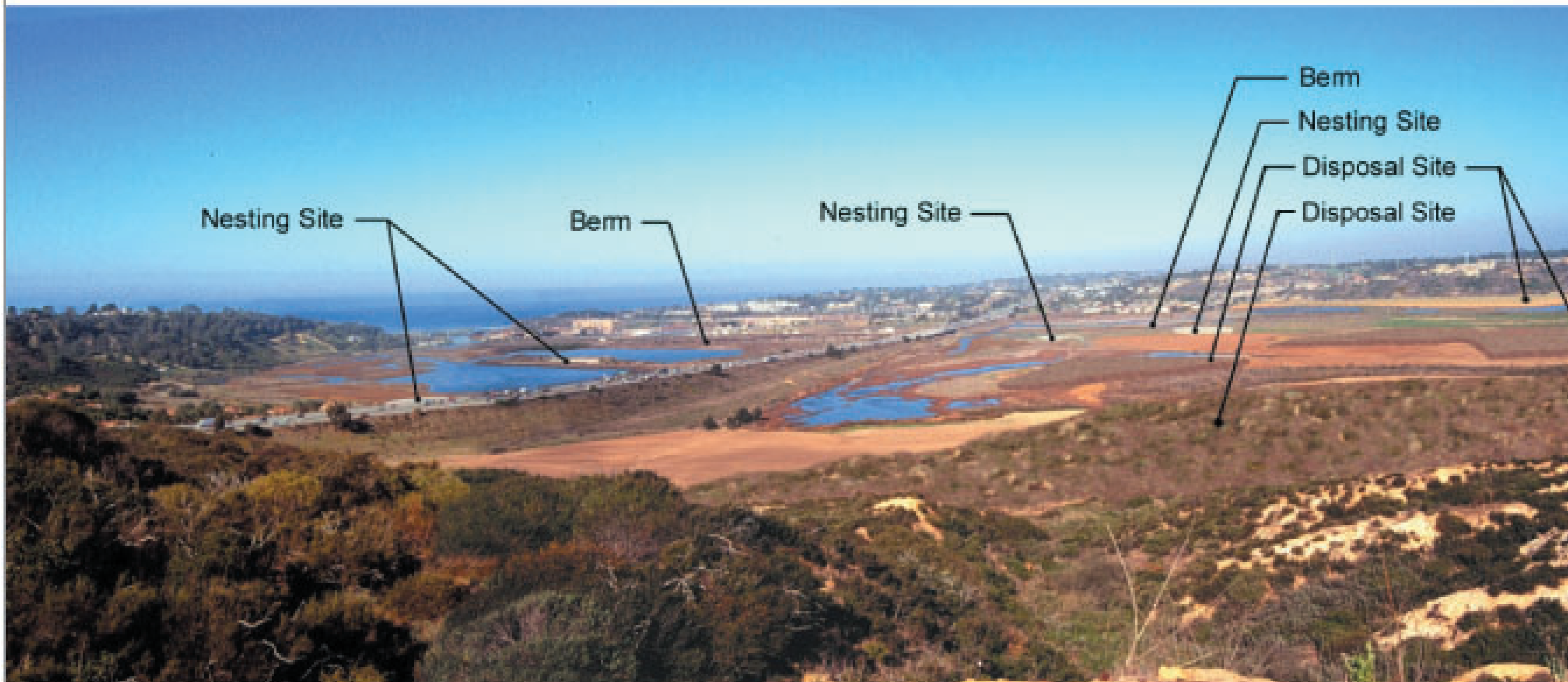


Source: Estrada Land Planning 1999

Figure 4.6-7. View 6: Simulated View from Jimmy Durante Boulevard Looking Southeast

Source: Estrada Land Planning 1999

Figure 4.6-8. View 7: Existing View from Overlook Park Looking Northwest

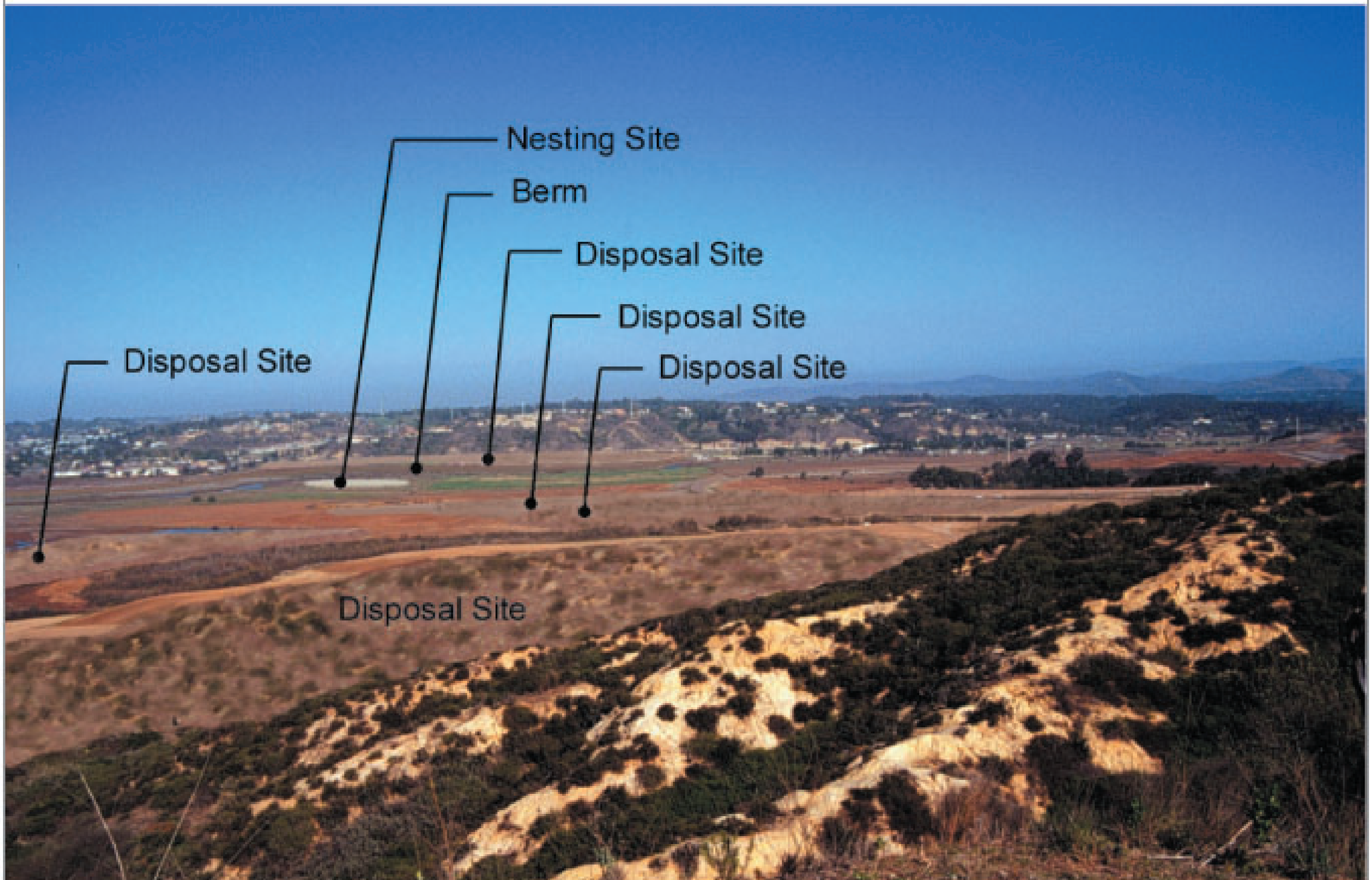


Source: Estrada Land Planning 1999

Figure 4.6-9. View 8: Simulated View from Overlook Park Looking Northwest

Source: Estrada Land Planning 1999

Figure 4.6-10. View 9: Existing View from Overlook Park Looking Northeast

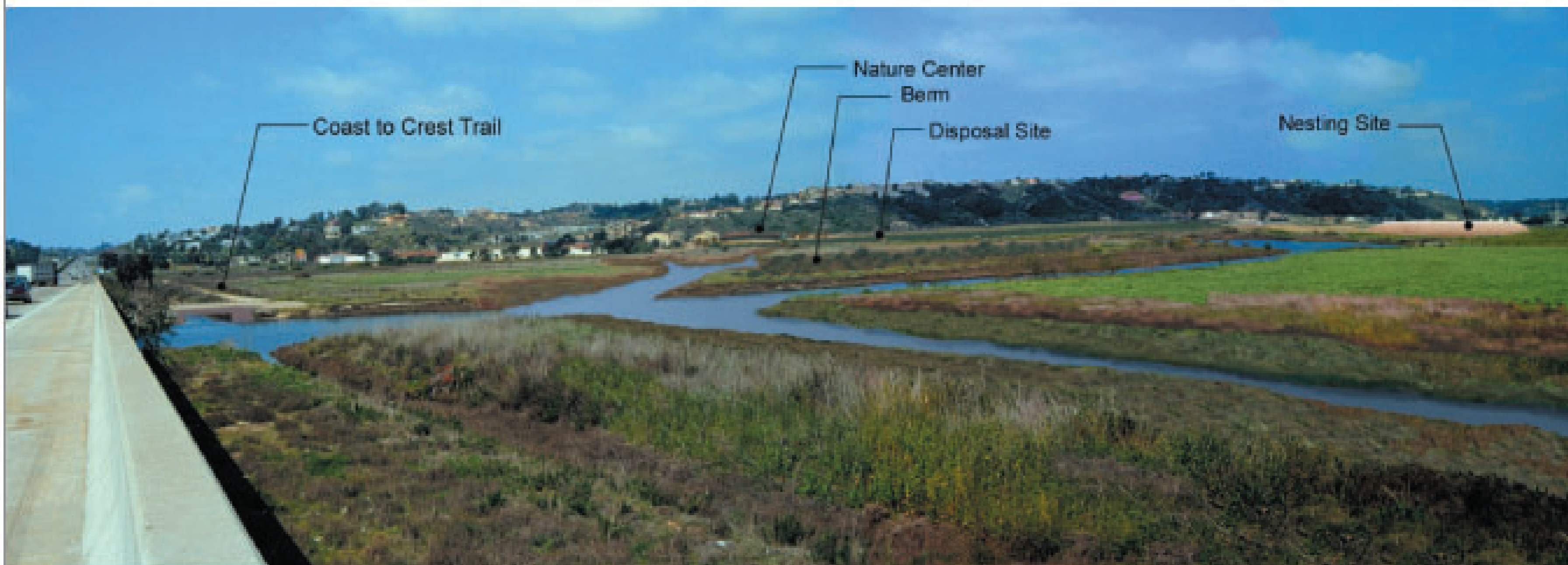


Source: Estrada Land Planning 1999

Figure 4.6-11. View 10: Simulated View from Overlook Park Looking Northeast

Source: Estrada Land Planning 1999

Figure 4.6-12. View 11: Existing View from I-5 Northbound Looking Northeast



Source: Estrada Land Planning 1999

Figure 4.6-13. View 12: Simulated View from I-5 Northbound Looking Northeast - Mixed Habitat Wilderness

conjunction with the resurfacing of the lot following disposal. If the area were to be landscaped, the visual quality of the site would be significantly improved over existing conditions. Following disposal, the expanse of asphalt that would be used to resurface the site would be more noticeable from the roadway than that which currently exists. Therefore, if the parking lot were not landscaped in association with resurfacing, than this disposal option would result in a significant, but mitigable impact (Class II). Although grading would exceed 2,000 cubic yards per acre, the change in the site's existing and nondescript landform characteristics would not be visibly altered as a result of filling, neither would the site be raised out of the 100-year flood plain. Therefore, the grading proposed would not constitute a significant landform impact. Views of this disposal site were not simulated.

- DS38 consists of the 22nd District Agricultural Association's Surf and Turf driving range property and an adjoining dirt parking lot, a total of 28 acres. Use of this area as a disposal site could accommodate up to 289,600 cubic yards of material and would raise the existing elevation to 15 feet above MSL, increasing the elevation across the site from 4 to 9 feet. The grading would also create an approximately 1,500-foot long fill slope that would vary from 5 feet in height near Jimmy Durante Boulevard to 9 feet in height along much of the eastern half of the disposal site. This option would require the disposal of over 10,000 cubic yards of material per acre of land, well over the 2,000 cubic yards per acre described in significance criterion 2, therefore, this option would result in a significant landform impact (Class I). With the exception of the fill slope that would be created at the southern end of the option site, the property would continue to look like a dirt parking lot even after grading. Therefore, no new visual impacts would be anticipated as a result of this proposal. Any new development that might be accommodate by this grading would require subsequent environmental review at which time the visual impacts, if any, of the proposed development would be fully considered.

None of these disposal sites would block sensitive views of the San Dieguito River Valley. No views of the ocean are available from DS32 or DS33. The ocean can be viewed from the vicinity of DS34 and DS35, but no views would be restricted by disposal at this site under the proposed grading plan, nor would any public views be blocked by increasing the elevation of DS37 or DS38. Ocean views from El Camino Real northbound from the southern portion of DS36 are blocked by intervening topography. Some views from El Camino Real northbound are possible from the vicinity of the northern portion of the site, but these would be very brief (a matter of several seconds) and would be available only by looking at a perpendicular angle to the road. These views would be restricted by the increased elevation of the land required by disposal of the dredged material at this site, but given the brief duration of the view and the location of the view in relation to the viewer, this impact would be considered adverse, but not significant (Class III). No ocean views would be blocked or obscured from the southbound lanes of El Camino Real.

Another disposal option being considered is the over excavation of Area W1. Under this option, sand located below the surface would be excavated from this area and disposed of on the beach. The remaining hole would be filled with excavated/dredged material from elsewhere in the project. This option has a maximum capacity of 1,683,000 cubic yards. Implementation of this option would result in the need to stockpile large amounts of material within the project site until the pit were excavated to the desired depth. This would result in short term adverse visual impacts, however, the long term effect would be to reduce the amount of material that would have to be permanently disposed of on the other proposed sites.

In summary, DS33, DS34, DS35 and DS36 would be visible from I-5, Via de la Valle, El Camino Real, and the Overlook Park south of DS36. These sites are located in areas that are currently undeveloped or are being actively farmed. In all cases except DS36, the side slopes would be more constant than those that occur in nature, giving the sites an artificial appearance. In addition, the tops of the sites (except for DS36) would be more level than the surrounding topography, which would also distinguish them visually. The visual impacts of these disposal sites would be minimized by revegetating them with native plants, as described in section 2.3.1.7.3. While this would improve the overall appearance of the sites, they still would generally retain a somewhat unnatural appearance with the exception of DS36. Vegetation would be established within one to two years. (Note that the length of time it takes vegetation to become sufficiently established to present a natural appearance and minimize visual impacts may be less than the length of time required for vegetation to become fully established in biological terms.) Visual impacts are considered adverse but not significant (Class III).

4.6.1.4 Berms and Infrastructure Protection

Berms

Three berms would be constructed along the river channel in order to maintain flow velocity and river sediment flow, as shown on Figure 2.3.1-1. A typical cross-section of the berms is shown in Figure 2.3.1-8. The base of each berm would vary depending on the post-construction ground elevation on either side of the berm. The top of the berms would be approximately 20 feet wide, and the sides of the berms would vary from a 2:1 slope to a 4:1 slope. The berms would be planted with wetland species near their base and transition zone vegetation consisting of native grasses and coastal sage scrub species on the slopes. Photographic simulations show views of the berms from Jimmy Durante Boulevard (Figure 4.6-7), Via de la Valle (Figure 4.6-3), Overlook Park (figures 4.6-9 and 4.6-11), and northbound I-5 (Figure 4.6-13).

The westernmost berm (Area B7) would be located west of I-5 and south of the San Dieguito River. It would run in a slightly southwesterly direction from I-5 for approximately 1,825 feet. The top of the berm would vary in elevation from +16.5 feet NGVD to +17.5 feet NGVD, with a footprint of about <u>4.2</u> acres. The berm would be about 11.5 feet above the finish ground level on the north side and about 13.5 feet above the finish ground level on the south side, although as shown on Figure 2.3.1.5, Section D, the ground would taper off to an even lower elevation on the south side.

The second berm (Area B8), would be located east of I-5 on the north side of the San Dieguito River. This would be the longest of the berms, extending for approximately 4,250 feet from about I-5 east to the end of the Via de la Valle property (Area U18). The top of this berm would range from elevation +18 feet NGVD to +20.5 feet NGVD, or about 16 feet above the finish ground level on the north side and between about 7 and 17 feet above ground level on the south side (see Figure 2.3.1.5, sections E, F, and G). This berm would have a footprint of 7.<u>8</u> acres. A weir would be incorporated into the eastern end of this berm. Slope protection would be provided for much of the river side of the northeastern berm (Area B8), as shown on Figure 2.3.1-2. Stone revetment would be installed along the toe of the berm to elevation +5 NGVD, articulated concrete block mat would be installed to elevation +10 feet NGVD, and geotextile with erosion control landscaping would be installed on the remaining portion of the slope. A typical cross-section of the slope protection proposed for this berm is presented in Figure 2.3.1-10. After the stone revetment is installed, it would be backfilled to the elevation of the existing ground level. In some areas, the stone revetment would be completely below the natural grade and thus not visible. In other areas, the stone could extend several feet above the ground level. Depending upon the amount of rock that was exposed, this impact would be potentially significant but mitigable (Class II). Articulated concrete block (ACB) mats would be installed above the stone revetment, as shown on Figure 2.3.1-11. These mats would extend about 5 feet above the stone revetment and would consist of open cell blocks with up to 20 percent open area to allow the growth of vegetation. Initially, these mats would result in potentially significant, but mitigable impacts. Through proper landscaping and maintenance, these impacts would be mitigated to below a level of significance (Class II). Other details regarding slope protection are included in section 2.3.1.4.4.

The third berm (Area B9), located east of I-5 and south of the San Dieguito River, would consist of an eastern and a western portion. The western portion, which would be constructed in an east/west orientation, would be 875 feet in length. The eastern berm, which would run northwest to southeast, would be approximately 625 feet in length. The elevation at the top of the berms would range from +18 feet NGVD to +20 feet NGVD, or from about 2 to 11 feet above the finish ground level on the north side and about 14 feet above the finish ground level on the south side. The combined footprint of these two portions would be about 2.1 acres.

None of the berms would block public views of sensitive areas, such as the ocean and river. Until native vegetation was established (one to two years), the berms would appear as earthen mounds and would have an unnatural appearance, but the overall visual impact of the berms would be greatly reduced by vegetating them with native species (Class III). (Impacts of the stone revetment required for Area B8 are described above.) The berms would, however, require more than 2,000 cubic yards of fill per acre (refer to Table 2.3.1-7 for the total acreage of each of the berms and the quantity of fill material that would be deposited) and would be higher than 10 feet above the finish grade. Thus, each of berms, when taken as a separate element of the project, would create a significant unavoidable (Class I) impact to natural landforms in accordance with significance criterion 2 above.

Other Stone Revetments

Slope protection is proposed for two other areas of the proposed plan as shown on Figure 2.3.1-2. The westernmost area (Stone Revetment #1) would be located along a portion of the San Dieguito River bank that is located approximately 300 feet east of the Jimmy Durante Bridge. Filter fabric would be installed along the 500-foot-long section to prevent the loss of sediments from behind the revetment. A layer of quarry run stone would be placed on top of the filter fabric and extend below the expected depth of scour. A layer of armor stone would be placed over the quarry stone to form a 4:1 slope. The armor stone would be visible, as would about 4 feet of ACB mats, which would be vegetated and placed above the rock slope protection, as described for Revetment #3. Figure 2.3.1-10 shows a typical section of slope protection at this location. Another stone revetment is proposed along the eastern freeway slope (Stone Revetment #2) just to the north of the San Dieguito River. This 300-foot long section would be constructed as described above.

These revetments would be considered shoreline protection devices as referred to under significance criterion 3 above and would have a negative visual appearance. Although these areas would not currently be visible from scenic, high public use areas, they would be visible from future public trails or viewing areas to be developed in accordance with the Park Master Plan. Specifically, Stone Revetment #1 would be visible from the viewing platform at the end of the

Grand Avenue Bridge, and Stone Revetment #2 would be visible from the some of the trails that are proposed for the east side of I-5. These impacts would be significant but mitigable (Class II).

4.6.1.5 Nesting Sites

Five nesting sites for least terns, snowy plovers, and other waterbirds are included in the project design. The location of each of these sites, identified as areas NS11 through NS15, are shown in Figure 2.3.1-1. A total of 21.5 acres would be used for the creation of four of these sites and the rehabilitation of a fifth site. Of the four new sites, two would be constructed on the west side of I-5 and two would be on the east side of I-5. The site to be rehabilitated is west of I-5 on CDFG-owned property. The nesting sites would be higher than the surrounding wetlands, with a plateau located on top of a gentle slope. The plateaus would range in size from 1.2 acres (NS12) to 5.1 acres (NS13). The height of the nesting plateaus would be approximately +10 feet NGVD, although they would be at various heights above the finished ground elevation (see Figure 2.3.1-5). The nesting sites would be capped with sand containing scattered shell fragments. The side slopes would be graded at a 1:10 ratio starting at the edge of the nesting site plateaus. The slopes of the nesting sites would be vegetated with native plants as discussed in section 2.3.1.7.3. A black vinyl chain link fence would be located around the base of nesting sites NS13 and NS14 to reduce or eliminate the potential for predation. Nesting site NS15 already has been fenced. Use of fencing to protect other nesting areas may be considered at key access points some distance from the nesting sites.

Views of the nesting sites from Via de la Valle, Overlook Park, and I-5 are included in Figures 4.6-3, 4.6-9, 4.6-11, and 4.6-13. The nesting sites would not block any views of sensitive resources. As shown on Table 2.3.1-2, however, they would require more than 2,000 cubic yards of earth and sand per acre, and nesting sites NS11, NS12, and NS14 would have an elevation more than 10 feet above the finished grade. Thus, this would represent a significant landform impact under criterion 2. The top of NS13 would be less than 10 feet above the surrounding ground; therefore, landform impacts associated with this site would be adverse but not significant (Class III). NS15 is an existing nesting site and its rehabilitation would not have an adverse visual or landform impact. Visual impacts of the new nesting sites would be minimized by revegetating the slopes, but the light-colored plateaus would contrast noticeably with the surrounding area, particularly when seen from higher elevations. Visual impacts of this individual project element would be unmitigable (Class I) for these sites.

4.6.1.6 Excavation and Restoration

Approximately 147 acres of existing topography, which is generally flat with gentle slope gradients, would be altered to restore coastal wetlands at San Dieguito. Project construction would last one to two years, during which time considerable earthmoving and construction activity would take place. Up to 1.99 million cubic yards of cut, which allows for up to 0.5 feet of overdredge (104,750 cubic yards), would be generated in order to implement the Mixed Habitat Alternative (of this, about 1.82 million cubic yards would be generated by the SCE components of the project). About 196,800 cubic yards of this material could be used for features within the project, including 125,600 cubic yards for berm construction and 71,200 cubic yards for creating the bases of the four new nesting sites. Large areas of exposed dirt and considerable construction activity would be visible during this time, primarily from I-5, Via de la Valle, El Camino Real, Jimmy Durante Boulevard, Overlook Park, the paved walkway between Highway 101 and the railroad bridge, and the Grand Avenue Bridge (although the latter would be under construction during a portion of the project and/or actively used by construction vehicles and would not be available for public viewing).

Major project components include the creation of a new subtidal basin on the old airfield property, which currently contains artificial fill material (Area W1), the conversion of the City of San Diego's old sewage treatment pond site (Areas W2a and W2b) to a combination of coastal salt marsh and transitional wetlands, and the restoration of the area immediately to the west of the City property (W3) to similar coastal wetland habitat. On the east side of I-5, some new areas of coastal salt marsh habitat would be created on the north and south sides of the river (Areas W4, W5, W6a, W6b, W10, and W16). The net increase in coastal wetlands that would be realized under this alternative would result in a visual change in vegetation type over a portion of the project site, resulting primarily from the conversion of ruderal vegetation and agricultural fields to open water, tidally influenced salt marsh, intertidal mudflat, and transitional wetlands. In addition, some seasonal wetlands would be converted to tidal wetlands, although this would not substantially change the visual appearance of the areas affected. Other areas of ruderal or agricultural fields would be restored to appropriate nontidal or upland habitat. These areas are identified as U18, U19, FW20, FW21, U22 to U29, and FW31.

In areas proposed as subtidal, intertidal, seasonal salt marsh, and transitional wetland habitats, up to 247 acres of tidal and upland areas would be excavated. To ensure that all areas proposed for tidal coastal wetland restoration would be subject to tidal influence, the grading plan for this alternative (Figure 2.3.1-2) proposes an elevational range of between –6 feet and +4.5 feet NGVD to restore habitats that range from subtidal to tidal high marsh, with a surrounding zone of transitional wetlands to approximately 5.0 feet NGVD. Existing elevations in these areas range from +3 feet to +12 feet NGVD. Additional details regarding excavation and grading are included in section 2.3.1.4.

The upland areas located along the edges of the proposed tidal wetlands, along with significant areas of upland habitat in the area to the east of I-5, are proposed for restoration to one of several native upland habitats believed to have been found there prior to human disturbance. These habitats include coastal sage scrub, chaparral, and native grasslands (shown on Figure 2.3.1-1 as areas U19 and U22 to U29).

In addition, about 13.8 acres of transitional habitat would be established on berm slopes and on the slopes adjacent to W16. This habitat would consist of coastal wetland/upland species near the base of the slopes and a mixture of native grasses and coastal sage scrub species (refer to section 2.3.1.2.2)

Although creating the areas of tidal habitat would require considerable excavation and would in some areas lower the finish grade to well below the existing ground level, this difference would not be perceptible once the project was completed (views of the restoration area are shown in all visual simulations). Grading would be designed so that individual restoration areas blend in with the surrounding areas (with the exception of some disposal sites that are also to be restored), and most of the project (with the exception of the berms, some disposal areas, stone revetments, tern nesting sites, nature/interpretive center, parking lots, and trails) would have a natural appearance. These areas would comprise a relatively small portion of the approximately 440-acre site. Although substantive changes to landforms would occur, the overall impact to landforms would be beneficial (Class IV) since the proposed design topography for the restoration area would restore topographic conditions similar to those present prior to filling and alteration of the lagoon during the last century.

The type of vegetation that would be planted on the site would differ in appearance from that which currently exists. Areas that are now used for agricultural purposes (see Figure 3.1-2) and currently are subject to cycles of plowing, planting, growing, and harvesting, would be revegetated with native species that would not undergo the same types of seasonal changes. Other areas that now contain weedy seasonal vegetation would be planted with species that are green for a longer period of time. A mix of habitats would be created, adding more visual variety than that which currently exists.

Within the proposed tidal wetland area, a variety of habitat types would be created including open water, intertidal mudflats, salt marsh, and transitional wetlands. The plan view for this alternative, presented in Figure 2.3.1-1, illustrates the variety of habitat types that would be visible within the restored wetland. The proposed restoration would also change to some extent the current appearance of the CDFG tidal basin, located in the southwestern portion of project area. Much of the existing open water in the CDFG basin would drain and become exposed mudflat during low tides, however the appearance of the basin would change throughout the day with the amount of open water versus exposed mudflat habitat varying with the tides. This change from an appearance of primarily open water to an appearance that changes throughout the day from open water to exposed mudflats would be view by some as an adverse visual impact. However, because this condition is consistent with naturally functioning coastal wetlands, it is not considered a significant impact (Class III).

Degraded areas within the project site would be restored with native vegetation. Precisely what the new vegetation would look like would depend upon the details of the planting plan. The newly planted vegetation would take between one and two years to become sufficiently established to minimize visual impacts. Impacts from the one to two year construction period would therefore last between 2 and 4 years until the vegetation is established. This impact would be short-term but significant and unavoidable (Class I). After the vegetation is established, however, the project would have an overall beneficial visual impact (Class IV) since the site would have a more natural and varied appearance, and degraded and disturbed areas would be restored.

The Biological Resources (section 4.4) of this EIR/EIS contains mitigation measures that would help to ensure the success of the coastal wetland restoration effort, and the project would be monitored in accordance with the CCC permit conditions to further ensure the ultimate success of the project.

4.6.1.7 Public Access

Public access elements of the proposed project would include construction of the western segment of the Coast to Crest Trail, as well as two nature/interpretive trails. Staging areas, viewpoints, parking lots, and a nature/interpretive would be part of the project, as well. These elements are shown on Figure 2.3.1-15. The Coast to Crest Trail would consist of two trail types located in parallel alignments. One trail type would accommodate hikers and equestrians and would consist of a 4-foot wide, native soil or decomposed granite trail tread. The other trail type would be for bicycles and other users who require a hardened surface. This trail would have an 8-foot-wide hardened surface consisting of decomposed granite hardened with a polymer binder. The JPA's preferred alternative routing for the trail, shown on Figure 2.3.1-15, is described in detail in section 2.3.1.8.2, along with alternative alignments.

The Mesa Loop Trail, one of the two nature/interpretive trails, would be about 4 feet wide with a native soil or decomposed granite surface. The Interpretive Overlook Trail would be 8 feet wide with a hardened surface.

These trail proposals would have a minimal visual impact to public views of the project area and would not be substantially different in appearance than the dirt roads that currently run through much of the site. Use of the Coast to Crest Trail to transport people to the Del Mar Fairgrounds via tram would also have a negligible visual impact.

The 6,000-square foot Nature/Interpretive Center would be visually compatible with the adjacent commercial development, but would restrict views of the river valley from a portion of Via de la Valle. Specifically, the center would be constructed approximately five feet below the current grade of Via de la Valle in the northwestern corner of the Via de la Valle property, therefore, current views along an approximately 200-foot stretch of Via de la Valle could be blocked by the structure depending upon its ultimate design. This would be a significant but mitigable impact (Class II).

4.6.1.8 22nd District Agricultural Association Use of Area U18

As described in section 2.3.1.8.3, a possible land exchange is under consideration for area U18 that could result in the development of one or more of the following uses on up to a 15 to 20-acre portion of this property: a thoroughbred training track, uncovered show rings, cross-country course, demonstration agricultural uses for youth in conjunction with the Fair, relocation of the existing show barns currently located in the southeast portion of Horsepark, staging trailers during the Fair, and overflow parking during the Fair and special Horsepark events. In order for this exchange to occur, it is assumed that area U18 would be approved as a disposal site for the restoration project. Therefore, any future uses would be constructed on an area that had been filled to approximately the same elevation as Via de la Valle. Adding one or more of these uses could require some modification to the way in which the fill is placed on the site, as shown in Figure 2.3.1-21. The grading changes illustrated in this figure would be minimal as compared to the grading proposed for disposal. No impacts related to landform alteration beyond those already discussed would occur as long as grading would not exceed that which is shown on Figure 2.3.1-21.

Use of the site for overflow parking and storage of truck trailers would make revegetation of the site difficult. While the site is used for parking, the visual appearance of the area as viewed from elsewhere in the area would be considerably different from that of agricultural fields or restored habitat. Depending upon the configuration of the parking layout and the location of truck trailer storage, some or all of the views of the river valley from Via de la Valle could be blocked. Therefore, the use of area U18 for temporary parking and truck trailer storage is potentially significant, but mitigable (Class II). Construction of show barns on area U18 could block sensitive views of the San Dieguito River Valley from Via de la Valle, which would represent a significant but mitigable impact (Class II). Construction of a practice track and/or uncovered show rings could potentially restrict views depending upon their final design and if there are any plans for bleachers or fencing. This represents a potentially significant but mitigable impact (Class II). The development of a cross-country course with no permanent facilities could create a temporary adverse but not significant impact (Class III). All of these uses would be less desirable from a visual standpoint than the open space that would result from the restoration project, but would be visually compatible with the existing development on the adjacent Horsepark property.

4.6.1.9 Mitigation Measures

The following measure is proposed to mitigate potential visual impacts associated with the construction of stone revetments within the project site:

- As a condition of the Coastal Development Permit and/or any other discretionary permits that may be required, the construction plans shall state that those rocks that would be exposed and visible to the public in Stone Revetments 1, 2, and 3 shall be of a color that would blend in with the natural color of the soils in the area.

This mitigation measure would be adequate to reduce visual quality impacts of these project elements to a less than significant level.

The ACB mats above the stone revetment for berm B8 would cause an adverse visual impact, but this would be mitigated to a less than significant level by revegetating the mats and the surrounding area as described in section 2.3.1.4.4. Revegetation would be monitored by the CCC in accordance with permit conditions to ensure the success of the project.

To mitigate the visual impact of DS37 to a less than significant level, the Coastal Development Permit shall include a condition that if the existing District parking lot is used as a disposal site, the area shall be landscaped in accordance with a landscape plan, approved by the CCC. This landscaping plan shall be implemented in association with the resurfacing of the parking area.

The following Design and Construction criteria have been established in the Park Master Plan for the Nature/Interpretive Center and other park amenities within the project area (these criteria are applicable to potential District development on the Via de la Valle property, area U18, as well):

- The form, mass, and profile of all structures and architectural features shall be designed to blend with the surrounding terrain.
- Materials, finishes, and colors of the main building, accessory structures, and any walls or fences shall be compatible with the intent of minimizing the visibility of the project. Colors shall be limited to subtle earthtone hues, with style and texture that reflects traditional/rural character of the river valley. All glass shall be non-reflective.
- Grading associated with the construction of the Nature Center shall be designed so as to reduce the need for manufactured slopes visible from open space areas.
- Parking areas shall be sited and/or landscaped to minimize visibility from major roadways and sensitive viewsheds.
- Native species shall be the predominant plant material used in and around park facilities.
- Night lighting shall be minimized to that required for security/safety purposes.

- Structures shall be oriented on the site in a manner that minimizes the blockage of views from adjoining public areas.

These measures shall be incorporated into the future design plans for the nature/interpretive center and any other required permits for public access/interpretive elements of the project. The incorporation of these measures into the final project design would mitigate visual impacts to below a level of significance.

To mitigate visual impacts from potential use of area U18 by the District, the District shall prepare a site design for the specific use(s) proposed on the site. The site design shall incorporate the above outlined measures. In addition, if the site is to be used for seasonal parking, the District shall prepare a landscape plan that addresses the visual appearance of the parking area during the rest of the season. The land exchange agreement between the District and the JPA, if prepared, shall limit any future use of the property to the specific use(s) stated in the agreement. The specific site design shall be evaluated to fully assess potential visual impacts as part of the subsequent environmental review process that is required to address potential traffic impacts from such uses. The determination of whether or not potential impacts to visual quality from the specific proposal are mitigated to below a level of significance would occur as part of subsequent environmental review.

Impacts associated with landform alteration are only mitigable through a redesign of the project to reduce the amount of fill relocated to any one spot within the project boundaries or by eliminating one or more of the disposal sites from the list of potential options. Unless redesigned or eliminated, the grading proposed at disposal sites DS32, DS33, DS34, DS35, DS36 and DS38 would be considered significant and unmitigated (Class I).

It is not feasible from a hydrologic perspective to reduce the amount of grading required to construct the proposed berms, therefore, the landform impacts related to berm construction could only be avoided through the implementation of the No Action Alternative. The Reduced Berm Alternative would reduce these landform impacts, but not to below a level of significance. Therefore, the landform impacts related to the proposed berms are considered significant and unmitigated (Class I).

4.6.2 Maximum Tidal Basin Alternative

The Maximum Tidal Basin Alternative would maximize the amount of open water available within the project area. Excavation of Area W1 would be similar to the Mixed Habitat Alternative; however, on the east side of I-5, excavation of Areas W4, W6a and W6b, and W16 would increase from a maximum depth of +1 foot NGVD for the Mixed Habitat Alternative to -4 feet NGVD in order to create large tidal basins. The various habitat types that would be visible from the surrounding areas are illustrated in Figure 2.3.2-1.

The tidal wetland restoration component of the Maximum Tidal Basin Alternative would have the same footprint as the Mixed Habitat Alternative, impacting 247 acres of tidal and upland property. Excavation, however, would be most extensive of any of the alternatives. Proposed grading would result in approximately 2,676,850 cubic yards of cut, which allows for up to 1/2 foot of overdredge (104,750 cubic yards). Of that, 196,800 cubic yards could be used to construct the proposed berms and nesting sites. Implementation of the SCE project, which excludes Area W6b, would generate approximately 2.19 million cubic yards of excavated material. All other aspects of this alternative are identical to the Mixed Habitat Alternative.

Impacts of the Maximum Tidal Basin Alternative would generally be as described in section 4.6.1, particularly during high tides. For all project alternatives, both upland and marsh vegetation would be sufficiently established within one to two years to minimize visual impacts. The primary difference would be the amount of open water and mudflats in the project area. Although the new basins proposed in this alternative would have significantly more open water habitat than the other alternatives, because of the lower sill depth, this alternative is expected to result in the maximum amount of mudflat exposure in the CDFG lagoon. Relative to the other alternatives, this alternative would also result in lesser areas of intertidal mudflat elsewhere, and, as a result, the greatest extent of intertidal mudflat habitat in the restored system as a whole would be within the CDFG lagoon. Views of water are generally considered to be positive by the public, so overall this alternative might be considered more desirable from a visual standpoint than other project alternatives, although those residents with views of the CDFG lagoon may find this alternative to be less desirable. Also to be considered is that a larger area would be excavated than under the other alternatives, thus requiring the disposal of more material. Therefore, the overall visual impact of this alternative is considered adverse, but not significant (Class III).

Impacts and mitigation would be the same as those provided for the Mixed Habitat Alternative.

4.6.3 Maximum Intertidal Alternative

The Maximum Intertidal Alternative would create more intertidal mudflats within the restoration area than the Mixed Habitat Alternative. Under this alternative, the western tidal basin proposed for the Mixed Habitat Alternative would be replaced with a combination of low, mid, and high marsh and intertidal mudflats. Open water areas would be reduced in favor of increasing the total amount of mudflats and coastal salt marsh throughout the system. The array of habitats created by this alternative is illustrated in Figure 2.3.3-1. Among the full-scale restoration alternatives, this alternative would result in the largest area of permanent open water habitat within the CDFG lagoon, however, the area of intertidal mudflat within the lagoon would still be expanded relative to existing conditions.

The tidal wetland restoration component of the Maximum Intertidal Alternative would have the same footprint as the Mixed Habitat Alternative, impacting 247 acres of tidal and upland property. However, under this alternative, considerably less excavation/dredge material would be generated. Proposed grading would result in approximately 1.76 million cubic yards of cut, which allows for up to 0.5 feet of overdredge (104,750 cubic yards). Of that, 196,800 cubic yards could be used for project features including berm construction and creation of nesting sites. The SCE project, which excludes Area W6b, would generate approximately 1.59 million cubic yards of excavated material.

Stone revetment #1 would not be required, which would slightly lessen the adverse visual impact identified under the Mixed Habitat Alternative. All other aspects of this alternative are identical to the Mixed Habitat Alternative.

A different mix of vegetation would be planted under this alternative, but overall, project impacts would be comparable to those described in section 4.6.1. Mitigation would be the same as that provided for the Mixed Habitat Alternative.

4.6.4 Hybrid Alternative

The Hybrid Alternative includes a combination of elements provided in the Mixed Habitat Alternative and the Maximum Intertidal Alternative. Specifically, this alternative combines the western tidal basin proposal (Area W1) of the Mixed Habitat Alternative with the lower intertidal mudflats proposal included in the Maximum Intertidal Alternative for Areas W4 and W16. The habitats that would be visible from the surrounding areas under this alternative are illustrated in Figure 2.3.4-1. Relative to the other full-scale alternatives, this alternative would result in an intermediate amount of subtidal and intertidal mudflat habitat within the CDFG lagoon.

The tidal wetland restoration component of the Hybrid Alternative would have the same footprint as the Mixed Habitat Alternative, impacting 247 acres of tidal and upland property. Excavation to implement this alternative would generate approximately 2.07 million cubic yards of cut, which allows for up to 0.5 feet of overdredge (104,750 cubic yards). Of that, 196,800 cubic yards could be used to construct the proposed berms and nesting sites. Implementation of the SCE project, which excludes Area W6b, would generate approximately 1.90 million cubic yards of excavated material. All other aspects of this alternative are identical to the Mixed Habitat Alternative.

Although a different mix of vegetation would be provided under this alternative, the overall impacts would be similar to those described for the Mixed Habitat Alternative. Mitigation would be the same as that provided for the Mixed Habitat Alternative.

4.6.5 Reduced Berm Alternative

The overall area to be restored would be reduced in order to reduce the number and extent of berms required for the project. Under this alternative, restoration of the old sewage pond area located immediately to the south of the river and west of I-5 would be eliminated, thereby eliminating the need for a berm in this location. In addition, only minimal restoration would occur east of I-5 and north of the river. Under this alternative, the berm identified as Area B8 would be reduced to a length of 1,200 feet, 3,050 feet shorter than that proposed under the other restoration alternatives. To the southeast of I-5, the berm would be reconfigured to hug the edge of a reduced restoration area rather than extend east/west from the restored area to nesting site NS14.

As indicated in the grading plan (Figure 2.3.5-2) for this alternative, Area W1, located to the west of I-5, would generally be excavated to the elevations proposed for the Maximum Intertidal Alternative. No restoration would occur in the area to the north between Area W1 and the river. Areas W4, W6a, and W6b, located to the east of I-5, would be excavated to a maximum depth of +1 feet NGVD. No tidal restoration would occur east of San Andres Drive.

Excavation for coastal wetland restoration would impact 153 acres of the overall project site, a smaller construction footprint than the other alternatives. Excavation in accordance with the grading plan would generate approximately 776,750 cubic yards of cut, which allows for up to 0.5 feet of overdredge (59,500 cubic yards). Of that, 73,200 cubic yards could be used to construct the proposed berms and an additional 71,200 cubic yards could be used to construct the bases of the nesting sites. Implementation of the SCE project, which excludes Area W6b, would generate approximately 655,250 cubic yards of excavated material.

The habitat types to be created are illustrated in Figure 2.3.5-1. A much larger percentage of the project site would be left in its present condition under this alternative, therefore, the visual change in the area would not be as evident. Among all the alternatives, this one would have the smallest effect on the CDFG lagoon, although the area of intertidal mudflat would still be increased relative to existing conditions.

Under this alternative, stone revetment would be used along the I-5 slope, as described in section 2.3.1.4.4. However, stone revetments #1 and #3 would not be necessary, thus avoiding a localized adverse impact of the Mixed Habitat and other alternative. Also under this alternative, the Interpretive Overlook Trail would be eliminated, which would be considered a very minor visual improvement over the Mixed Habitat and other alternatives. All other aspects of this alternative are identical to the Mixed Habitat Alternative.

This alternative would have the least visual impact, although less area would be restored and therefore visual benefits would be reduced.

4.6.6 No Action Alternative

No change in visual or landform conditions would result from this alternative. None of the benefits associated with the project would occur, nor would any of the adverse impacts.

4.7 TRAFFIC

The construction/restoration activities associated with the various project alternatives would result in an increase in automobile and truck volumes on the roadways in the project area for a period of one to two years. After completion of these activities, the public access element would continue to generate traffic since people would be attracted to the proposed trails and nature/interpretive center. The estimated levels of traffic that would be generated by these activities and the anticipated impacts on traffic conditions are presented below.

Significance Criteria

Thresholds have been established as criteria for determining if the project would have a significant traffic impact. Impacts from project-related traffic would be significant if:

1. Project-related traffic exceeded the values shown in Table 5 of the "Traffic Impact Study Manual" (August 1993), developed by the City of San Diego Engineering and Development Department, which identifies significance criteria at varying levels of service. These are as follows:

Level of Service with Project	*Allowable Increase in Roadway V/C Ratios due to Project Impacts*
A	0.10
B	0.06
C	0.04
D	0.02
E	0.02
F	0.02

2. Road capacities were exceeded, as defined in the "Street Design Manual" (San Diego City Council Policy 600-4).

3. Sight distance provided at ingress/egress points is inadequate.

4. Road alignment and/or design is inconsistent with the General Plan and/or community plan for the area.

5. There is a substantial conflict with or restricted access to publicly or privately owned land.

4.7.1 Mixed Habitat Alternative

The traffic analysis focuses on the effects of the project on public roadways, which are external to the project site. It does not address the impacts of vehicular or equipment movements within the project boundaries since these internal transport activities would not directly affect traffic conditions on the public street and highway network. The impact analyses for most of the environmental resources are organized according to physical locations and use categories within the project site. However, the traffic analysis focuses on the impacts that would occur as a result of the overall level of traffic that would be generated by the site. The traffic evaluation is broken down, therefore, into (1) impacts associated with construction/restoration activities, (2) impacts associated with public access to the trails and nature/interpretive center, and (3) mitigation measures.

4.7.1.1 Construction/Restoration

The construction and restoration activities would result in a short-term increase in truck and automobile traffic on the roadways that provide access to the project site. At the beginning of the project, trucks and construction equipment required for the excavation/dredging activities, the movement of materials within the site, and the construction of the various project components would be transported to the site. These items would remain at the site until the construction/restoration activities were completed, at which time they would be removed from the site.

Depending on the construction/restoration phase, materials such as stone revetment and ACB mats for slope protection, material for the construction of culverts and weirs, materials for the construction of trails and the nature/interpretive center, and vegetation to be planted within the site, would be transported to the site. Similarly, waste material and by-products from the construction/restoration process, such as clearing and grubbing material, and fragments of the demolished Grand Avenue bridge, would be transported away from the site. These transport activities would result in an increased level of truck traffic on the study area streets and highways.

The construction activities also would result in an increase in the number of automobiles and light-duty vehicles on the roadways in the project area, since construction/restoration workers commute to and from the site on a daily basis.

The estimated levels of truck and automobile traffic that would be generated by the construction/restoration activities are presented in Table 4.7-1. The traffic estimates are shown separately for the start up period, Phase I, Phase II, and Phase III. The start up period traffic volumes would occur only for several days. The Phase I traffic levels would occur for approximately one year, and Phases II and III would last for about one year. There may be some overlap between Phases I and II. The traffic volumes shown represent one-way trips; that is, when a single vehicle travels to the site and then leaves, it is entered as two trips. The employee traffic estimates are based on an employment level of 250 workers for Phase I and 160 workers for Phases II and III.

Table 4.7-1. Generated Traffic from Construction/Restoration Activities

	DAILY TRAFFIC VOLUMES			
Phase	*Trucks/ Equipment*	*Employee's Automobiles*	*Miscellaneous Trips*	*Total Traffic*
Start Up	220	500	50	770
Phase I	100	500	50	650
Phase II	50	320	30	400
Phase III	50	320	30	400

For the traffic impact analysis, the project-generated traffic was added to the baseline traffic volumes and a before-and-after evaluation of traffic conditions was conducted to quantify the impacts. The without project baseline traffic volumes were projected by assuming the existing traffic volumes will have increased by 5 percent to account for the cumulative impacts of general area-wide growth and other development projects in the area. The projected traffic volumes with and without the project are shown on Table 4.7-2. The project traffic level represents the highest volume of site-generated traffic projected on each street segment, whether it would occur during Phase I, II, or III. The traffic impacts during start-up were not evaluated because they would only occur for a few days. The table also shows the level of service, the volume to capacity (V/C) ratio, and the increase in the V/C ratio for each roadway segment. Based on the significance criteria cited earlier, the table indicates that the project would not result in a significant impact at any of the study area roadway links. The impacts would be adverse but not significant (Class III).

Table 4.7-2 indicates that the streets affected most heavily by the project-related construction traffic would be Via de la Valle, Jimmy Durante Boulevard, San Andres Drive, San Dieguito Drive, and Grand Avenue. Via de la Valle would experience construction-related traffic increases of up to 460 vehicle trips per day. Jimmy Durante Boulevard would carry up to 440 trips per day. San Andres Drive south of Via de la Valle would carry an estimated 400 trips per day. San Dieguito Drive would carry an estimated 550 trips per day and Grand Avenue east of San Dieguito Drive would carry 350 trips per day. Camino Del Mar (Route 101) is projected to carry up to 130 vehicles per day. Although these projected traffic increases would be noticeable to the public, they would not constitute a significant traffic impact according to the criteria.

It is likely that there would be some localized short-term traffic impacts at the primary truck access points during times of heavy inbound or outbound truck movements (i.e., at project start-up and during periods of particularly heavy material import or export). Short-term truck traffic could also occur if some portion of the project's excavated material is transported off-site to a location or locations where an approved project and its certified environmental document have identified the need to import soil as a part of project implementation. Such concentrated truck activity could potentially result in congestion on Via de la Valle, San Dieguito Drive, Jimmy Durante Boulevard, and/or Camino Del Mar. These impacts would not constitute a significant impact according to the criteria. However, there is a potential for added traffic congestion in the area, if these activities were to occur during periods of seasonal traffic congestion (i.e., during the Del Mar Fair, thoroughbred racing season, or high summer beach use periods). Under these circumstances, construction traffic would result in a significant, but mitigable impact (Class II). No construction related traffic impacts are anticipated outside of the above-described periods of seasonal traffic congestion. It is, however, suggested that a traffic control plan be developed to accommodate the movement of trucks to and from the project site during periods of intense truck activity. The traffic control plan should include such features as using flaggers and installing advance warning signs to notify motorists of the presence of truck activity. The traffic control plan would be submitted to the cities of Del Mar and San Diego prior to issuance of permits for the project.

4.7.1.2 Public Access

The operational impacts of the project associated with visitor activity at the trails and the nature/interpretative center were determined by estimating the levels of traffic that would be generated by the facilities, adding this traffic to the baseline conditions, then conducting a before-and-after analysis of traffic conditions. The estimated level of site-generated traffic is shown on Table 4.7-3. The daily traffic volumes were estimated by assuming that each parking space in each area of the lot would be used by two vehicles per day and that each patron vehicle results in two trips (one while driving to the site and the other while driving away from the site).

Table 4.7-2. Traffic Impacts during Construction/Restoration

	DAILY TRAFFIC VOLUME			V/C RATIO & LOS		
Roadway/Segment	*Without Project*	*Project Traffic*	*With Project*	*Without Project*	*With Project*	*Change in V/C Ratio*
Interstate 5						
N of Via de la Valle	221,000	200	221,200	1.473 F	1.475 F	0.002
Via de la Valle to Del Mar Hts	233,000	200	233,200	1.553 F	1.555 F	0.002
S of Del Mar Heights Rd	235,000	260	235,260	1.566 F	1.568 F	0.002
Via de la Valle						
E of Camino Del Mar	19,600	130	19,730	1.307 F	1.315 F	0.008
Jimmy Durante Blvd to I-5	45,500	460	45,960	1.137 F	1.149 E	0.012
I-5 to San Andres Drive	35,000	300	35,300	0.875 D	0.883 E	0.008
San Andres to El Camino Real	22,700	80	22,780	1.513 F	1.519 F	0.006
E of El Camino Real	19,300	60	19,060	1.287 F	1.291 F	0.004
Del Mar Heights Road						
Camino Del Mar to I-5	37,000	70	37,070	0.617 C	0.618 C	0.001
I-5 to El Camino Real	39,500	20	39,520	0.658 C	0.659 C	0.001
E of El Camino Real	27,300	10	27,310	0.455 A	0.455 A	0.000
El Camino Real						
S of Via de la Valle	17,100	40	17,140	1.140 F	1.143 F	0.003
N of Del Mar Heights Rd	16,100	40	16,140	0.402 A	0.403 A	0.001
Camino Del Mar						
S of Via de la Valle	15,300	80	15,380	0.383 A	0.385 A	0.002
S of Jimmy Durante Blvd	24,000	130	24,130	0.600 C	0.603 C	0.003
Jimmy Durante Boulevard						
S of Via de la Valle	12,200	440	12,640	0.305 A	0.316 A	0.011
N of Camino Del Mar	12,200	110	12,310	0.813 D	0.821 C	0.008
San Andres Drive						
N of Via de la Valle	5,500	20	5,520	0.550 B	0.552 B	0.002
S of Via de la Valle	4,700	400	5,100	0.470 B	0.510 B	0.040
San Dieguito Drive						
S of Jimmy Durante Blvd	3,200	550	3,750	0.320 A	0.375 A	0.069
Grand Avenue						
E of San Dieguito Drive	0	350	350	0.000 A	0.044 A	0.044
Racetrack View Drive						
E of San Dieguito Drive	520	100	620	0.065 A	0.078 A	0.013

Table 4.7-3. Generated Traffic from Public Access

Facility/Location	*Number of Parking Spaces*	*Level of Daily Traffic*
Nature/Interpretive Center	75	300
Mesa Loop Trail	40	160
Grand Avenue Bridge	5	20
Overflow Lot at Jimmy Durante Blvd.	20	80
TOTAL	140	560

Four public access proposals are included within the project description. The first is the Coast to Crest Trail, which would be accessible from either of two potential trailheads. One of the potential trailheads is at the proposed visitor/interpretive center and the other, which could be available when the 22nd District does not need the area, is off of Jimmy Durante Drive within the fairground's south overflow parking lot. The latter staging area is being provided primarily for hikers who wish to focus their attention on the portion of the trail located to the west of I-5. Staging for equestrians and bicyclists would be provided at the visitor center staging area. Vehicular access to the visitor center would be via San Andres Drive, which terminates just to the south of the future visitor center driveway. The Interpretive Overlook Trail would also be accessible from the visitor center.

A third public access proposal would include a viewpoint from a modified Grand Avenue Bridge, located off of San Dieguito Drive. Approximately five parking spaces would be provided at this location. Finally, the Mesa Loop Trail is proposed for an area west of El Camino Real, where a 25-car staging area would be provided. (It should be noted that the Mesa Loop Trail staging area was originally designed to accommodate 40 parking spaces, and it is based on this design that the traffic analysis was prepared. The staging area was subsequently reduced in size to accommodate a maximum of 25 cars, which would reduce the overall trip generation from the various public access proposals by approximately 60 trips.) Access to the Mesa Loop Trail staging area, which would be off of El Camino Real, would require a curb cut to be installed on El Camino Real just opposite the approved entrance for the Villas project. Access into the staging area would be limited to right turns in and out only, unless a signalized intersection is installed at some future date. The projected impacts on the study area roadways from these public access proposals are shown on Table 4.7-4. Based on the significance criteria cited earlier, the table indicates that the project would not result in a significant impact at any of the study area roadway links. The impacts would be adverse, but not significant because no significance thresholds would be exceeded (Class III). The number of parking spaces to be provided at the main staging areas (the visitor center and the Mesa Loop Trail) have been determined based on current use patterns at the River Park's Sunset Drive staging area. As a result, the parking being provided at the main staging areas to serve future trail users, as well as future visitors to the visitor/interpretive center, are considered adequate. No impacts to on street parking as a result of this project are therefore anticipated.

Some loss of parking on the fairgrounds property could occur as a result of the construction of the Coast to Crest Trail from I-5 west to Jimmy Durante Boulevard. The trail would require approximately 16 feet of right-of-way along the southern most edge of much of the dirt parking lot located south and east of Jimmy Durante Boulevard. Within the area known as the southern overflow parking lot (the western most portion of the dirt lot), only pedestrian access is proposed, thus requiring a maximum 10-foot right-of-way in this area.

Based on a review of several aerial photographs of the southern unpaved parking areas taken during large events at the fairgrounds, it appears that under the parking lot's current design as many as 150 parking spaces could be permanently displaced as a result of trail construction. It should be noted that this is a conservative estimate; the actual number of spaces lost could be reduced by minor reconfiguration of the trail alignment, parking lot access road, or parking layout. The spaces to be affected would be the first one or two rows of cars located closest to the river bank. In the vicinity of the Surf and Turf Driving Range, the spaces to be lost would be along a narrow strip between an existing access road and the adjoining river bank. In this area the cars are required to be parallel parked. It should also be noted that in reviewing the photographs, one taken during the Del Mar Fair (7-4-93) and one taken during the Pacific Classic Race (8-9-97), there were more than 600 unoccupied spaces available for use in the general vicinity of the Surf and Turf property; therefore, even without the 150 spaces that could be removed along the southern edge of the property, there would have been more than adequate parking to accommodate users during both of these events. Although the loss of 150 parking spaces may not represent a significant impact during most events at the Fairgrounds, on exceptionally high volume fair days the loss of these spaces would represent a significant loss of available on-site parking. Therefore, the loss of these parking spaces is considered potentially significant, but mitigable (Class II). Trip generation from San Dieguito River Park proposals, such as the proposed visitors center and interpretive trail segments also were addressed in the San Dieguito River Park Concept Plan Program EIR (JPA 1993a). This Program EIR concluded that park-related trips occurring in the western portion of the parkway area would not be significant since most trips would occur during non-peak hours.

4.7.1.3 District Use of Area U18

In addition to the visitor activities described above, there is a possibility that area U18 would be used for equestrian-related recreational activities and/or seasonal parking related to the Del Mar Fair. Since the specific level and type of use is not yet known, the actual volume of traffic that would be generated cannot accurately be predicted. It is known however that any trips that would be generated by the District's use of U18 would enter through the Horsepark property, with all trips exiting onto El Camino Real and the majority, if not all of the trips, entering from El Camino Real. The District does utilize a driveway off of Via de la Valle during the fair; however, it is not known if this access would be affected by any future use of the area U18. Segments of El Camino Real, Via de la Valle, and San Dieguito Road that are located within the jurisdictional boundaries of the City of San Diego currently operate at level of service F (City of San Diego 1999). The City of San Diego regards a 2 percent increase in the V/C ratio of roadway segments currently operating at unacceptable levels of service as a significant impact (refer to significance criterion 1). Mitigation measures for such impacts have included the provision of an irrevocable offer to dedicate necessary right-of-way for the future planned improvements to the impacted roadway segment(s) and participation in the funding of off-site transportation improvements. These measures were considered partial mitigation for identified impacts. The impacts would not be

Table 4.7-4. Traffic Impacts Associated With Public Access

	DAILY TRAFFIC VOLUME			V / C RATIO & LOS		
Roadway/Segment	*Without Project*	*Project Traffic*	*With Project*	*Without Project*	*With Project*	*Change in V/C Ratio*
Interstate 5						
N of Via de la Valle	221,0000	170	221,170	1.473 F	1.474 F	0.001
Via de la Valle to Del Mar Heights	233,000	140	233,140	1.553 F	1.554 F	0.001
S of Del Mar Heights Rd	235,000	230	235,230	1.566 F	1.568 F	0.002
Via de la Valle						
E of Camino Del Mar	19,600	40	19,640	1.307 F	1.309 F	0.002
Jimmy Durante Blvd to I-5	45,500	110	45,610	1.137 F	1.140 F	0.003
I-5 to San Andres Drive	35,000	300	35,300	0.875 D	0.883 E	0.008
San Andres to El Camino Real	22,700	140	22,840	1.513 F	1.523 F	0.010
E of El Camino Real	19,300	60	19,360	1.287 F	1.291 F	0.004
Del Mar Heights Road						
Camino Del Mar to I-5	37,000	20	37,020	0.617 C	0.617 C	0.000
I-5 to El Camino Real	39,50027,	100	39,600	0.658 C	0.660 C	0.002
E of El Camino Real	300	10	27,310	0.455 B	0.455 B	0.000
El Camino Real						
S of Via de la Valle	17,9100	110	17,210	1.140 F	1.147 F	0.007
N of Del Mar Heights Rd	16,100	130	16,230	0.403 A	0.406 A	0.003
Camino Del Mar						
S of Via de la Valle	15,300	10	15,310	0.383 B	0.383 B	0.000
S of Jimmy Durante Blvd	24,000	40	24,040	0.600 C	0.601 C	0.001
Jimmy Durante Boulevard						
S of Via de la Valle	12,200	100	12,300	0.305 A	0.308 A	0.003
N of Camino Del Mar	12,200	40	12,240	0.813 D	0.816 D	0.003
San Andres Drive						
N of Via de la Valle	5,500	30	5,530	0.550 B	0.553 C	0.003
S of Via de la Valle	4,700	300	5,000	0.470 B	0.500 B	0.030
San Dieguito Drive						
S of Jimmy Durante Blvd	3,200	20	3,220	0.320 A	0.322 A	0.002
Grand Avenue						
E of San Dieguito Drive	0	0	0	0.000 A	0.000 A	0.000
Racetrack View Drive						
E of San Dieguito Drive	520	0	520	0.065 A	0.065 A	0.000

considered fully mitigated until a mechanism is established to fund the ultimate road improvements in this area (City of San Diego 1999).

It is estimated that facilities such as show barns, cross-country course, and thoroughbred training track would generate less than 1,000 vehicle trips per day. However, in order to evaluate the traffic impacts associated with the possible future use of area U18, a project-specific traffic study must be completed in the future should a specific use for the site be proposed by the District. Until specific uses are described and the full extent of the traffic impacts are known, any use of area U18 for purposes other than open space and the extension of the Coast to Crest Trail would be considered potentially significant (Class II).

4.7.1.4 Mitigation Measure

Construction/Restoration

To avoid impacts related to increased traffic congestion in the vicinity of the restoration site, a traffic management plan shall be prepared and implemented as part of the overall construction phasing plan. The traffic control plan shall be submitted to the cities of Del Mar and San Diego prior to issuance of permits for the project. This plan shall include seasonal restrictions related to when project mobilization and demobilization would be prohibited. The plan shall also minimize truck trips on surface streets during the Del Mar Fair, thoroughbred racing season, and/or high beach use periods. A traffic management plan shall be prepared and approved to the satisfaction of the permitting agencies prior to the issuance of a City of San Diego Land Development Permit and a City of Del Mar Grading Permit. The implementation of this measure would mitigate potential impacts related to the project-generated construction traffic to below a level of significance.

Although the mitigation measure outlined above would mitigate traffic congestion impacts to below a level of significance, it is also recommended that a traffic control plan for construction be developed to accommodate the movement of trucks to and from the project site during periods of intense truck activity. The traffic control plan should include such features as using flaggers and installing advance warning signs to notify motorists of the presence of truck activity.

Public Access

To reduce impacts related to the displacement of parking spaces on the District's property, the Plan Implementation section of the Master Park Plan for the lagoon area shall include the requirements:

The JPA shall work with the District to refine the current alignment for the Coast to Crest Trail in the area west of I-5 in order to minimize the loss of parking spaces along the southern edge of the parking lot. Further, the JPA shall work with the District to develop a contingency parking plan for days of very high attendance that could involve permitting parking on the trail, where feasible, and use of the sixty space parking lot at the proposed visitor/interpretive center. The combination of these measures would reduce parking impacts to below a level of significance.

District Use of Area U18

In order to ensure the adequate review of potential traffic impacts related to the use of area U18 for purposes other than open space and trails, the Master Park Plan for the lagoon area shall include in the Plan Implementation section the following condition:

Prior to JPA Board approval of the lease or sale of area U18 (the Via de la Valle property), subsequent environmental analysis shall be conducted to consider any project specific proposals for area U18. Environmental review shall include but need not be limited to traffic impact analysis.

4.7.2 Maximum Tidal Basin Alternative

Although this alternative would require more excavation and would take somewhat longer to complete, the majority of the truck trips associated with the alternative would be internal to the project; therefore, the traffic impacts associated with construction/restoration activities for this alternative would be essentially the same as those described for the Mixed Habitat Alternative. Traffic impacts associated with public access and District use of area U18 would also be comparable; therefore, the mitigation measures presented for the Mixed Habitat Alternative would be the same under this alternative.

4.7.3 Maximum Intertidal Alternative

The traffic impacts associated with construction/restoration activities for this alternative would be essentially the same as those described for the Mixed Habitat Alternative since the traffic volumes used for the analysis represent a day of peak construction activity. The primary difference would be that the total volume of traffic throughout the construction/restoration period and the duration of the impacts would be less because of the reduced levels of earthwork activity. Other traffic impacts and mitigation would remain the same.

4.7.4 Hybrid Alternative

The traffic impacts associated with construction/restoration activities for this alternative would be essentially the same as those described for the Mixed Habitat Alternative since daily traffic would not increase; other traffic impacts and mitigation would also be comparable.

4.7.5 Reduced Berm Alternative

The traffic impacts associated with construction/restoration activities for this alternative would be essentially the same as those described for the Mixed Habitat Alternative since the traffic volumes used for the analysis represent a day of peak construction activity. The primary difference would be that the total volume of traffic throughout the construction/restoration period and the duration of the impacts would be less because of the reduced levels of earthwork activity. Other traffic impacts and mitigation would be comparable.

4.7.6 No Action Alternative

No traffic impacts would be associated with the No Action Alternative.

4.8 AIR QUALITY

Significance Criteria

Criteria to determine the significance of air quality impacts are based on federal, state, and local air pollution standards and regulations. The SDCAPCD has not established criteria for assessing the significance of air quality impacts for CEQA purposes. However, SDCAPCD Rules and Regulations define a stationary source as "major" if annual emissions exceed 100 tons of CO, sulfur oxides (SO_x), or PM_{10} or 50 tons of VOCs or NO_x. For purposes of this air quality analysis, project emissions would be potentially significant if they exceed these thresholds. This is a conservative approach, as project emission sources are mobile in nature and they would be expected to produce smaller impacts then an equal amount of emissions generated by stationary sources. Impacts would also be potentially significant if project emissions of toxic air contaminants (TACs) increase the risk of cancer by greater than one chance per million or exceed the chronic or acute hazard index of 1.0, as identified in SDCAPCD Rule 1200.

In performing this impact analysis, if emissions to be generated during the implementation of the various alternatives were determined to exceed a threshold described above, further analysis of project emissions was performed to assess whether there would be a significant air quality impact. Analyses ranged from a more detailed examination of source emission rates to dispersion modeling or health risk assessment procedures. If project emissions were determined to increase ambient pollutant levels from below to above an ambient air quality standard or the SDCAPCD Rule 1200 thresholds, these emissions would be considered significant.

4.8.1 Mixed Habitat Alternative

Air quality impacts from the Mixed Habitat Alternative would mainly occur during the construction phase of this alternative. The main source of emissions would be mobile earthmoving and construction equipment that would produce both combustive and fugitive dust (PM_{10}) emissions. Implementation of the proposed fugitive dust control measures identified in section 2.3.1.7.4 would ensure that PM_{10} emissions remain less than significant during all construction activities. Minor amounts of emissions would occur during periodic maintenance excavation of the ocean inlet. Projected equipment usage associated with this alternative is listed in Table 2.3.1-6. Since annual emission thresholds define the significance of air quality impacts, the analysis considered the project site as a whole, rather than as individual locations within the project site.

4.8.1.1 Construction Impacts

Emissions estimates during the construction phase are based on total excavation/fill volumes of <u>2,287,950/274,100</u> cubic yards (cy). Excavation of the channels would occur with the use of hydraulic backhoes. Construction of Phases 1 and 2 of the alternative would be completed in about one year and Phase 3 would be completed in the second year. Equipment usage for construction of the entire alternative was factored by excavation/fill volumes for each project phase to calculate emissions for comparison with annual emissions thresholds. The analysis assumes that all sediment excavated from the project site would be disposed of onsite or at the proposed beach site. Appendix B-3 presents emission calculations for the development of the Mixed Habitat Alternative.

The results of the analysis determined that annual emissions associated with construction of Phases 1 and 2 would be 6.3 tons of VOC, 24.9 tons of CO, 52.2 tons of NO_x, and 18.1 tons of PM_{10}. Annual emissions from Phase 3 would be 5.2 tons of VOC, 18.2 tons of CO, 43.4 tons of NO_x, and 17.3 tons of PM_{10}. Since emissions from Phase 1 and 2 would exceed the NO_x significance threshold of 50 tons per year, air quality impacts from this portion of the alternative would be potentially significant. However, Section 4.8.1.3 identifies measures that would reduce NO_x emissions from the alternative to insignificant levels (Class II). Air quality impacts from all other pollutants would be insignificant (Class III).

Emissions of TACs would occur from the combustion of diesel and gasoline fuels by the proposed construction equipment. Since these equipment would be mobile in nature and spread out over a large area, the impact of TACs emissions to the public would not be large enough in a locality to exceed the SDCAPCD health risk thresholds. The impact of TACs emissions from the alternative would therefore be less than significant (Class III).

Additional development of the area U18 site, according to the potential uses identified in section 2.3.1.8.3, would require grading and construction activities in excess of the development associated with the proposed nature center. This additional development would increase short-term emissions of fugitive dust and combustive emissions from what was analyzed for the Mixed Habitat Alternative during Phase 3. However, construction emissions associated with this additional development would not be expected to contribute to an exceedance of any emission significance threshold during Phase 3. Air quality impacts associated with this additional development would therefore be less than significant (Class III).

Over-Excavate Disposal Option

The over-excavate disposal option would use the W1 area as a disposal site for materials excavated from the alternative, as opposed to the disposal of these materials at upland sites. Similar to the proposed alternative, this option would excavate non-sand sediments down to roughly the neat cut line in W1 with the use of conventional equipment. These sediments would be stockpiled adjacent to W1. An electric dredge would then excavate up to 1,683,000 cy of sand from the area. The dredge and an electric booster pump would transport most of this sand by pipeline to the beach, adjacent to the mouth of the San Dieguito River. A portion of this sand would be stored adjacent to W1 to cap the sediments placed within this site. The electric dredge and bulldozers would place all sediments and the sand cap back into W1. Combustive sources associated with this portion of the disposal option would be limited to diesel-powered bulldozers. All other activities associated with the disposal option would be similar to those identified for the proposed alternative. It would take three years (three phases) to complete this disposal option, since a larger volume of sediments would be handled, compared to the proposed disposal option. As a result, total emissions from this disposal option would exceed those estimated for the proposed disposal option.

Peak annual emissions associated with the over-excavate disposal option for most pollutants would occur during Phase 2: 5.6 tons of VOC, 26.7 tons of CO, and 19.9 tons of PM_{10}. Peak annual emissions of NO_x would amount to 43.9 tons during Phase 1, compared to 42.8 tons during Phase 2. This distribution of emissions is a result of the higher use of gasoline-powered, versus diesel-powered equipment and more fugitive dust-generating activities during Phase 2. Since annual emissions from the option would not exceed any significance threshold, air quality impacts associated with the action would be insignificant (Class III).

4.8.1.2 Operational Impacts

Operational emissions from this alternative would occur from (1) periodic maintenance opening of the ocean inlet using a dragline crane, (2) on-road vehicles used by the public to access the proposed trails and interpretive facilities, and (3) mobile sources associated with the District's use of the Via de la Valle property, should those uses be approved. Maintenance dredging would produce about 0.1 ton of NO_x and smaller amounts of other combustive emissions. Emissions from on-road vehicles used by the public to access the proposed trails and interpretive facilities and the possible the use of mobile sources on the Via de la Valle property would be minor and generally spread throughout the project region. Emissions from these sources would not be expected to exceed any emission threshold. Therefore, operation of the alternative would produce insignificant impacts to air quality (Class III).

Additional development associated with the area U18 site could increase combustive emissions due to the operation of trams, shuttle buses, or commuter vehicles. However, the level of vehicular activity associated with this development would be minimal and would not exceed any emission significance threshold. Air quality impacts associated with the operation of this additional development on area U18, should it be approved, would therefore be less than significant (Class III).

4.8.1.3 Mitigation Measures

Since NO_x emissions from the Phases 1 and 2 construction activities would exceed the 50 tons per year significance threshold, measures were considered that would reduce NO_x emissions to below this level. The overwhelming majority of construction equipment proposed for the development of the alternative would be diesel-powered. The most feasible measure to reduce NO_x emissions from these types of equipment would be to retard injection timing by two degrees. This measure would reduce NO_x emissions by about 15 percent. Retarding injection timing by more than two degrees would further reduce NO_x emissions. However, this level of control would be deemed infeasible, since it would adversely decrease fuel efficiency. Implementation of two-degree injection timing retard would reduce annual NO_x emissions from Phases 1 and 2 to 44.3 tons. As a result, this measure would reduce peak annual NO_x emissions from the development of the alternative Maximum Tidal Basin Alternative to insignificance (Class II).

The following measure shall be made a condition of the Coastal Development Permit and/or future permits issued by either the City of Del Mar or the City of San Diego: All diesel-powered construction equipment used on the project site shall have their injection timing retarded by two degrees. The primary contractor shall be responsible for monitoring the injection timing on all diesel-powered equipment. Monitoring shall occur at the time that the equipment is initially brought onto the site and every three months thereafter until the project is completed. This measure shall be clearly stated on all construction plans for the project.

4.8.2 Maximum Tidal Basin Alternative

The Maximum Tidal Basin Alternative would excavate/dredge about 16 percent more material compared to the Mixed Habitat Alternative. The increase in excavated volumes between these alternatives for Phases 1/2 and 3 would be about minus 1 and plus 39 percent, respectively. Using this as a rough indicator of emission increases, unmitigated annual NO_x emissions from these two portions of the Maximum Tidal Basin Alternative would be about 51.6 and 60.3 tons, respectively. As a result, these emissions would exceed the 50 tons per year NO_x emission threshold and would be potentially significant. Air quality impacts from all other pollutants would be insignificant (Class III).

Mitigation Measures

Implementation of two degree injection timing retard on diesel-powered equipment, as described in section 4.8.1.3, would reduce annual NOx emissions from the Phases 1/2 and 3 construction activities to 43.9 and 51.3 tons, respectively. As a result, this measure would mitigate annual NO_x emissions from the development of Phases 1/2 to insignificance, but Phase 3 NO_x emissions would remain significant. However, if about one percent of the Phase 3 development were shifted to a third project year, Phase 3 equipment usage would be reduced to the point that its annual NO_x emissions would not exceed the 50 tons per year threshold. Through the implementation of these measures, NO_x emissions from construction of the Maximum Tidal Basin Alternative would be mitigated to insignificance (Class II).

4.8.3 Maximum Intertidal Alternative

The Maximum Intertidal Alternative would excavate about 10 percent less material compared to the Mixed Habitat Alternative. The change in excavated volumes between these alternatives for Phases 1/2 and 3 would be about minus 31 and plus 11 percent, respectively. As a result, unmitigated annual NO_x emissions from these phases of the Maximum Intertidal Alternative would be about 36.0 and 48.2 tons, respectively. Annual emissions from each construction phase would not exceed any emissions threshold and would be insignificant (Class III). All other impacts associated with construction and operation of the Maximum Intertidal Alternative would be similar to those described for the Mixed Habitat Alternative. These impacts would be adverse but insignificant (Class III).

Mitigation Measures

Since development of the alternative would not exceed any emissions threshold, the alternative would not require any mitigation measures to reduce air quality impacts.

4.8.4 Hybrid Alternative

The Hybrid Alternative would excavate about four percent more material compared to the Mixed Habitat Alternative. The change in excavated volumes for Phases 1/2 and 3 between these alternatives would be about 2 and plus 11 percent, respectively. As a result, unmitigated annual NO_x emissions from these portions of the alternative would be about 51.1 and 48.2 tons, respectively. NO_x emissions during Phases 1/2 would exceed the 50 tons per year NO_x emission threshold and would be potentially significant. _Air quality impacts from all other pollutants would be insignificant (Class III).

Mitigation Measures

Implementation of two degree injection timing retard on diesel powered equipment, as described in section 4.8.1.3, would reduce annual NO_x emissions from Phases 1/2 construction activities to 43.5 tons. As a result, this measure would mitigate annual NO_x emissions from the development of the Hybrid Alternative to insignificance (Class II).

4.8.5 Reduced Berm Alternative

The Reduced Berm Alternative would excavate about 56 percent less material compared to the Mixed Habitat Alternative. As a result, unmitigated annual emissions from the Reduced Berm Alternative would not exceed any emission threshold and would be adverse but insignificant (Class III). All other impacts associated with construction and operation of this alternative would be less than significant, as described for the Mixed Habitat Alternative (Class III).

Mitigation Measures

No mitigation measures would be required since no emissions thresholds would be exceeded.

4.8.6 No Action Alternative

Under the No Action Alternative, the San Dieguito Wetland Restoration Project would not be developed and no air quality impacts would occur from the alternative.

4.9 VECTORS AND ODORS

4.9.1 Vectors

This section discusses the expected prevalence and distribution of vector populations under each of the project alternatives. The term “vector” is used to denote a carrier of disease organisms. Nuisance organisms also are addressed with the understanding that they are not generally considered disease carriers but do present potential nuisance effects to human and domestic animal populations.

Significance Criteria

Impacts from the project would be considered significant if:

- There was a substantially increased population of disease or nuisance vectors.

4.9.1.1 Mixed Habitat Alternative

For the most part, the Mixed Habitat Alternative would cause no significant changes to the freshwater and brackish water marshes currently in existence under both mean sea level and lagoon mean high water conditions. Consequently, the two most important mosquito species of potential concern in the project area (*Culex tarsalis* for humans and *Aedes squamanger* for horses) would continue to breed in these locations. The project will result in the creation of transitional seasonal salt marsh areas (areas M33 and M37) that may support additional breeding of these two species. These transitional areas would be located on the eastern boundary of the project area north of El Camino Real (Figure 2.3.1-1). The pond or marsh located east of the shopping center on the east side of I-5 would be transformed into tidal lagoon area, thereby eliminating a current breeding location. A nesting area (NS11) would be located in the middle of another seasonal salt marsh currently in existence. This may result in a slight reduction of breeding potential compared to current conditions. Overall, the project will result in the addition of one breeding area, the elimination of another, and the reduction of a third.

Other mosquitoes are present in the project area but are not suspected as disease vectors, only as human and animal nuisances (section 3.9). These include *Aedes taeniorhynchus* (prevalent in salt marsh areas especially the one immediately west of the fairgrounds); *Aedes dorsalis* (has not been a major problem in recent years but has, in the past, experienced population explosions in the seasonal marsh areas, especially the area just south of the shopping center located at the southeast corner of I-5 and Via de la Valle); and *Culex erythrothorax* (occurs in densely vegetated freshwater marshes and particularly predominant along the river both east and west of El Camino Real and largely outside the project area). The current breeding areas of these species will be unaffected by the project and significant new breeding areas will not be introduced. Therefore, present levels of breeding are expected to continue for these three species, and no significant impacts would occur.

The seasonal freshwater ponds located near W36 and FW31 (see Figure 2.3.1-1) would be largely unaffected by the alternative. This is a major breeding area for the chironomid midge, which does not bite but is a nuisance. Breeding levels are not likely to be significantly affected by the project. The County is anticipated to continue its aggressive abatement program for midges, including introducing mosquitofish (*Gambusia affinis*) into the ponds. This fish eats the larvae of mosquitoes and midges as they hatch from eggs.

The distribution and abundance of squirrels and harvest mice, representing other potential disease vectors (see section 3.9) is not likely to change significantly as a result of the project, so no significant impacts would be expected.

Mitigation Measures

No significant impacts are expected from the project, so no project-related mitigation is required. It is anticipated that the County will continue its aggressive abatement program in the lower San Dieguito River Valley, including the area of the new transitional seasonal salt marsh located on the east boundary of the project. The project must be designed and constructed in such a way that vector control staff from the County are not prevented from accessing any of the potential breeding areas to continue the abatement program. Also, this conclusion assumes that the lagoon areas, and the low, mid, and high marsh areas surrounding the lagoon's area, would remain under complete tidal influence with no substantial pooling of water beyond direct and constant tidal influence. Assurance that tidal influence would be maintained in perpetuity is addressed in section 4.4.1.3.

4.9.1.2 Maximum Tidal Basin Alternative

The impact on the distribution and occurrence of vectors associated with the alternative are identical to those for the Mixed Habitat Alternative.

4.9.1.3 Maximum Intertidal Alternative

The impact on the distribution and occurrence of vectors associated with the alternative are identical to those for the Mixed Habitat Alternative.

4.9.1.4 Hybrid Alternative

The impact on the distribution and occurrence of vectors associated with the alternative are identical to those for the Mixed Habitat Alternative.

4.9.1.5 Reduced Berm Alternative

The impact on the distribution and occurrence of vectors associated with the alternative would be similar to that of the Mixed Habitat Alternative except that the pond or marsh area east of the shopping center on the east side of I-5 (see Figure 2.3.5-1), would not be modified into a lagoon area. It would remain as a seasonal marsh or pond with the associated potential for mosquito breeding. Therefore, this alternative would result in the addition of one potential breeding area (area M33 and M37) and reduction of another (NS11). Impacts associated with County access to breeding areas would be as described in section 4.9.1.1.

4.9.1.6 No-Action Alternative

The No-Action Alternative would have no impact on the distribution and occurrence of vectors in the project area.

4.9.2 Odors

Significance Criteria

Impacts from the project would be considered significant if:

- There was a substantial long-term increase in odors related to the project.

4.9.2.1 Mixed Habitat Alternative

Some potential for odors exists from decomposition of organic material contained in excavated soil and dredged material from the project, although it is not possible to quantify the probability based on existing data and wide variability in the sensitivity of receptors. If noticeable at all by human receptors, the most likely location would be downwind from the dredging/excavation and disposal sites, which represent the main project activities that are to produce odors. Principal wind directions are west (sea breeze) and east (nighttime land breeze). As a result, the highest potential for odor sensitivity and complaints is directly east and west of these sites, and includes the following receptors:

West of Sites

- Del Mar Fairgrounds
- Various local businesses
- Residences located southwest of disposal site DS44 (between Jimmy Durante Boulevard and San Dieguito Road)

East of Sites

- Various local businesses
- Residences located southeast of disposal sites DS33, DS34, DS35, and DS36 (on either side of El Camino Real)

Potential odor generation would be highest during warm weather conditions, such as 20°C (68°F) and higher, typically corresponding to late spring through early fall. Potential odor impacts would be primarily associated with the excavation, dredging, and disposal phases and likely would be adverse (annoying to some human receptors), but not significant (Class III).

Mitigation

No mitigation measures are required, but in the event of unexpected odor problems associated with the restoration project, the following procedures should be implemented:

- Perform an analysis on the soil/sediment in areas yet to be excavated or dredged to determine the odor causing potential.
- If the potential for an ongoing problem is identified, maximize excavation/dredging and disposal phases during cooler temperature periods.

- Perform odor sampling to monitor odors. Odor sampling could include the use of Draeger tubes to sample for ammonia and a Jerome meter to sample for hydrogen sulfide, or use of a scentometer to collect samples for analysis by an odor panel.

4.9.2.2 Maximum Tidal Basin Alternative

Potential impacts from this alternative would be the same as described in section 4.9.2.1 due to similarities in construction methods and disposal sites.

4.9.2.3 Maximum Intertidal Alternative

Potential impacts from this alternative would be the same as described in section 4.9.2.1 due to similarities in construction methods and disposal sites.

4.9.2.4 Hybrid Alternative

Potential impacts from this alternative would be the same as described in section 4.9.2.1 due to similarities in construction methods and disposal sites.

4.9.2.5 Reduced Berm Alternative

This alternative would generate less excavated and dredged material, therefore representing a lower odor potential than the previous alternatives, but overall, impacts would be as described in section 4.9.2.1.

4.9.2.6 No Action Alternative

No construction and disposal-related odors would be generated under this alternative, although wetland and lagoon systems including San Dieguito have the potential to generate significant odors under natural conditions, as noted in section 3.9.2.

4.10 PUBLIC HEALTH/PUBLIC SAFETY

This section discusses San Dieguito River characteristics as they relate to human activity in and around the river inlet, flood hazards, the existence of hazardous materials, degraded water quality, and wildlife in the project area and their potential to affect public safety under each of the project alternatives.

Significance Criteria

Impacts from the project would be significant if:

- There was a substantially increased hazard for people surfing, swimming, or walking in and around the river inlet.
- There was a substantial increased probability of flooding from the San Dieguito River to homes and property.
- Management or disposal of dredge material created a substantial public health hazard.

4.10.1 Mixed Habitat Alternative

4.10.1.1 San Dieguito Inlet Public Safety

The beach area around the San Dieguito River Inlet (the area immediately east and west of the Camino Del Mar Bridge) is a popular aquatic recreational location. The Mixed Habitat Alternative is not expected to significantly change the level or type of human activity already associated with the river inlet area. The beach area north and south of the inlet would continue to attract approximately the same number of bathers, surfers, and walkers, both during summer and winter seasons. Dogs would be allowed at Dog Beach subject to the restrictions currently in force. Recreational activities east and west of the Camino Del Mar Bridge, such as volleyball, would not be affected by this alternative. Infrequent transit up the San Dieguito River by kayaks or other types of small boat may still occur, even though this activity is illegal.

The size and depth of the inlet channel west of the Camino Del Mar Bridge would be less variable than at present due to the periodic maintenance dredging scheduled to take place. Details of inlet initial and maintenance excavation are presented in section 2.3.1. The average inlet width would be approximately 100 feet, west of the Camino Del Mar Bridge (Coastal Environments 1994). The width would be less during low tides and wider during high tides due to the natural changes in tidal height. The design inlet channel depth east of the inlet sill would be about 3.3 feet below MSL (about -3 feet NGVD) across most of the inlet width. This is equivalent to water column depths ranging from about 1.4 to 3 feet under MSL conditions. Extreme maximum high tides (e.g., those that occur perhaps once in 10 years) could result in even deeper water (e.g., as high as 8 feet) in the inlet for short periods of time. This does not represent an overall significant increase in depth compared to the natural range of depths under present conditions (section 3.2.3) and under the No Action Alternative, except potentially when extreme high tides occur. However, a greater percentage of the inlet area would be fixed at this depth (-3 feet NGVD) than presently exists. Actual inlet depths will vary depending on various inlet characteristics and the frequency of inlet maintenance. The depth of the inlet channel immediately west of the Camino Del Mar Bridge may be slightly deeper (e.g., to –4 feet NGVD) as a result of scour due to the increased current velocities through this area. This would occur as a result of more water in the expanded tidal area upstream that would move through the constricted portion of the inlet channel around the bridge. The episodic convergence of extreme conditions such as inflowing spring tides and strong river flow may result in deeper water column depths (e.g., a few to several feet) due to localized scour in the inlet area. Water depths at the inlet mouth (the location of the inlet sill) will vary from about 0 feet (low tides) to about 6.5 feet under extreme maximum high tides. According to a trafficability analysis performed for the project (see additional details provided in the response to comment O4-2 in Volume 1), the amount of time the inlet mouth might be difficult to cross (based on a conservative assumption of one foot depths) would be 81.1%, representing an increase of 32.1% compared to existing conditions. This may result in additional hazards for swimmers and waders crossing the channel. Similar to natural conditions (section 3.2.3), the inlet location may meander west of the Camino Del Mar Bridge. If this occurs, the inlet width could vary considerably depending on the extent of inlet movement. However, the overall horizontal (generally north/south) extent would still be limited by the existing rock revetment on the south side and the bluff headland on the north side of the inlet. The meandering of the river would be less variable as it gets closer to the Camino Del Mar Bridge. The pattern and direction of river flow east of this bridge would remain generally fixed in the present configuration, subject to change only during natural episodic extreme river flows. The channel design depths east of the Camino Del Mar bridge would vary, depending on location, between 2.2 and 4.2 feet below MSL (-2and –4 feet NGVD), which is equivalent to water column depths as high as 8 feet under mean higher high conditions and even higher during rare extremely high tides. Actual depths in this area will vary due to channel characteristics and frequency of maintenance.

Under typical seasonal conditions the average tidal inlet currents would increase approximately 40-70% above present average velocities to approximately 1.4 feet/sec. (0.8 knots) (Jenkins and Wasyl 1998), and are comparable to wave induced currents found in the adjacent surf zone under normal conditions. The maximum spring tidal inlet current for the project would be as high as about 3.5 feet/sec (2 knots). During atypical seasons (e.g., El Nino conditions) the average tidal inlet currents would increase approximately 70 percent above present average velocities under these conditions to approximately 1.5 feet/sec (0.9 knots). The maximum tidal currents could reach as high as 4.6 feet/sec (2.7 knots). The average current velocity projected for the areas near the Camino Del Mar Bridge where channel constriction occurs during typical seasons will also result in an approximate 110 percent increase to an average of 3 to 4 feet/sec (1.8 to 2.4 knots). Maximum velocities could be much higher. As noted in section 4.2, the changes in the average tidal inlet currents do not represent a significant increase in current velocity beyond what occurs at times under present conditions. However, these increased average velocities would be more common and regular under the conditions introduced by the project. The project associated maximum velocities will exceed maximum velocities associated with the existing conditions. River flow velocities will be much higher during, for example, flood conditions, but would not be affected by the project (section 4.2.1). The maximum inlet velocities, when they occur (1 time in 10 years for atypical conditions and 7 times per year for typical conditions) typically would last no more than about 20 to 30 minutes for each tide cycle. Since the increase in the average tidal currents is significant, the project could result in a noticeable increase in surfzone currents.

The maximum water elevation (resulting in the deepest water column depth) for any particular tide cycle will not occur at the same time as the maximum current velocity. Maximum depth will occur at the end of tidal flooding (water flowing into the lagoon from the ocean). At the beginning of tidal flooding, current velocities will gradually increase and peak at a maximum value. This maximum value will occur during the middle of tidal flooding. As tidal flooding continues, the current velocity will gradually decrease until tidal flooding is complete, at which time the current velocity is negligible. During tidal ebb (flow back to the ocean), the process repeats.

The inlet depths and average currents resulting from the project would fall within the range that presently occurs. However, the inlet channel as it crosses the beach would be wider than at present (most of the time) and more of the channel would be at a constant depth. A significant increase in tidal inlet current resulting from the project would occur more regularly than at present. The effect on public safety due to these two conditions may be a noticeable increase of aquatic mishaps. The project would not necessarily create new rescue scenarios beyond those discussed in section 3.10.1, but the number of rescues under one or more of these three scenarios may increase. The overall potential impacts to public safety at the inlet would be significant but mitigable to less than significant (Class II).

Mitigation Measures

The possible increase in the number of aquatic mishaps in the inlet area would be mitigated by staffing the temporary lifeguard tower at the inlet area on a more regular basisand providing an alternate public access route around the inlet via the pedestrian pathway along the Camino Del Mar Bridge. In addition, the wood pilings located just west of the Camino Del Mar Bridge will be removed by the applicant. This will eliminate a secondary hazard source for swimmers and waders caught in strong currents. To ensure appropriate lifeguard staffing, the applicant shall provide to the City of Del Mar as a condition of the Coastal Development Permit and required permits from the City of Del Mar, the funds necessary to staff two additional seasonal lifeguards for the initial two years following project completion. In addition, the applicant would be required to post a bond (the amount to be determined by the City of Del Mar) to cover additional staffing in future years. The exact level of staffing required to address long-term project-related mishaps in the inlet area would be determined as a result of the monitoring program described below. The issue of an alternate public access route is addressed in section 4.1 of this document.

In this report, current estimates are based on modeling results, which have inherent levels of error, and the inlet channel depth estimate (-2 NGVD) is based on design inputs. The actual currents introduced by this project may be somewhat less or greater than these estimates. As stated above, actual channel depths may vary considerably over time depending on various channel characteristics and the frequency of maintenance. A prudent measure would be to implement a monitoring program after project implementation to gain greater confidence in both current and depth estimates. If the actual values are demonstrated to be significantly different, the risk to public health may also be significantly different. To address this issue, the following measures shall be made conditions of the Coastal Development Permit and future permits required from the City of Del Mar: a program to monitor changes at the inlet channel during the initial two years following project completion shall be developed by the applicant in association with the City of Del Mar and conducted by the project applicant. The results of this monitoring program shall then be provided to the CCC and the City of Del Mar for review on a yearly basis. If the initial results indicate a significantly higher risk to public health, as determined by the CCC and City of Del Mar, then funding for additional lifeguard patrols in this area shall be provided by the project applicant to the City of Del Mar, which is responsible for lifeguard activities in this area. This measure would mitigate the potential impact to a less than significant level (Class II). To ensure that this measure is implemented, SCE shall post a bond with the City of Del Mar to cover the cost of additional lifeguard patrols during peak use periods (the actual amount of the bond would be worked out between the City of Del Mar and the applicant during the processing of required permits from the City of Del Mar). If during the two -year monitoring program, it is concluded that there is a significantly higher risk to public health that originally estimated, the funds set aside by the applicant would be used to increase lifeguard patrols. If, however, the monitoring program indicates no significant change over the original estimates, the bond would be refunded to the applicant following review and approval of the two-year monitoring report.

4.10.1.2 Flood Hazards

Section 4.2 indicates that under this project the flooding potential from wave overtopping or runup along the southern boundary of the inlet or the portion of the revetment facing seaward (the Sandy Lane Seawall) would not increase above present levels. Also, the project would have no affect on the FEMA 100- and 500-year inundation limits for the overall project area, including the Del Mar Fairgrounds. Thus, potential impacts from the project would be less than significant (Class III) and no mitigation measures are needed.

4.10.1.3 Sediments and Water

As discussed in section 4.3, the surface and sub-surface soil concentrations of chemical constituents in the areas scheduled for excavation are relatively low and below EPA risk-based values. As part of this project, the soil in this area would be removed and re-deposited at disposal sites located within the project area (Figure 2.3.1-13) in accordance with applicable regulations (section 1.9). During excavation, county air pollution ordinances would require dust suppression measures to reduce the nuisance potential and the possibility of public contact. Once the soil is in place, it would be seeded or planted with natural vegetation to avoid any future effects from blowing dust and soil from the project sites. Since soil contaminant concentrations are low, and the excavated soil would be deposited in such a way to eliminate direct contact by the public, no adverse public health effects are expected (Class III).

Based on historical uses of the project area (sections 3.2 and 3.10), some potential exists for uncovering hazardous wastes and/or munitions during excavation within the proposed project area, which could cause a significant but mitigable impact to public safety (Class II)

4.10.1.4 Wildlife

The San Dieguito River Valley has a substantial population of rattlesnakes (section 3.10.4). Once the project is complete, most of the areas west of I-5 where rattlesnakes are prevalent would be inundated with water. This is expected to reduce the rattlesnake population significantly in these areas. The number of rattlesnakes in areas of the project not subject to inundation would probably not change significantly. No other wildlife in the project area would pose a significant threat to humans so there would be no project-related impacts. Therefore, no significant adverse impacts to public health and safety from wildlife would be caused by the project (Class III).

Overall impacts are less than significant so no mitigation measures are needed.

4.10.1.5 Other Public Health and Safety Issues

Once the project is complete, the remnants of the ordnance storage bunkers west of the I-5 (section 3.10) would be removed, thereby eliminating the potential for accidents or injuries associated with the concrete debris.

During construction, heavy equipment and vehicles would be present in the project area. Most of this equipment requires a number of petroleum products such as fuel, hydraulic fluids, and lubricants for effective operation. Fuel replenishment would be required daily for most of the heavy equipment. Lubricant and hydraulic fluid changes and replenishment would be required less frequently. Typically, service trucks would deliver these types of fluids onsite and perform the necessary fuel and oil transfers. The risk of small fuel or oil spills is considered likely but would have a negligible impact on public health. Any spills would be cleaned up in accordance with permit conditions.

The fuel tanks on board some of this equipment can contain fuel volumes ranging from 100 to 500 gallons. Accidental ignition could result in a fire, which, depending on the location, could spread. All such equipment is required to have fire suppression equipment on board or at the work site. Emergency fire services are located nearby. The associated risk of a vehicle fire is considered unlikely with a negligible to minor potential impact on public health (Class III).

During off working hours, heavy equipment and vehicles in areas that could be accessed by the public would be secured in a general contractor's staging area that would not pose a safety hazard.

Overall impacts to public health and safety resulting from heavy equipment operations and fueling would be less than significant (Class III).

Mitigation Measures

<u>To address the potential impact from uncovering hazardous wastes and/or munitions during excavation, a monitoring, emergency response, and reporting plan shall be prepared and implemented prior to the start of any on-site dredging or excavation. The plan shall address procedures for protecting worker safety and public health in the event that event of hazardous wastes or munitions are encountered. The construction contractor shall be responsible for implementing this mitigation, with oversight by SCE or JPA.</u>

No significant impacts from construction equipment or existing debris in the project area are expected, so no mitigation measures are needed. However, a number of measures can be exercised to ensure impacts to public health remain negligible. All construction areas should be appropriately fenced and signs posted to control access to the site. Construction contractors should require all heavy equipment operators to be trained in appropriate responses to accidental fires and spills. Appropriate absorbents should be available on site to contain spills if needed. Emergency communication equipment should also be available to site personnel. Standard requirements and safety procedures for fueling, lubricant, and hydraulic oil removal should be implemented.

4.10.2 Maximum Tidal Basin Alternative

General impacts to public safety under this alternative would be similar to the Mixed Habitat Alternative. However, the tidal prism would be somewhat larger for the Maximum Tidal Basin alternative (section 4.2.1). This means that the exchange of water between the ocean and lagoon would also be larger, thereby resulting in slightly higher currents. Average current velocities, during typical seasons, will approximate 1.5 feet/sec (0.9 knots), representing an increase of approximately 130% compared to existing conditions (Jenkins and Wasyl 1999). The maximum velocities could reach as high as 4 feet/sec (2.4 knots). Average velocities during atypical seasons (e.g., El Nino conditions) will be about 1.8 feet/sec (1 knot) which is approximately 100% more than existing average velocities under similar extreme conditions. Maximum velocities could reach as 4.8 feet/sec (2.8 knots). The average current velocity projected for the areas near the Camino Del Mar Bridge (where channel constriction occurs during typical seasons) will also result in an approximate 130 percent increase to an average of 3.5 to 4.5 feet/sec (2 to 2.7 knots). Maximum velocities in this area could be much higher. This alternative would result in the deepest water column depths near the inlet mouth, compared to the other action alternatives. Water depths at the sill would range from about 0 to 7 feet. The amount of time the sill area might be difficult to cross (based on a conservative assumption of one foot depths) would be 85%, representing an increase of 36.1% compared to existing conditions. East of the sill, water depths would be the same as for the Mixed Habitat Alternative.

The slightly higher currents could result in slightly higher aquatic mishaps in the inlet area compared to the Mixed Habitat Alternative, but the overall impact to public safety would be mitigable to less than significant (Class II), using the same mitigation measures described for the Mixed Habitat Alternative.

All other impacts are as described in section 4.10.1.

4.10.3 Maximum Intertidal Alternative

General aquatic impacts to public safety are expected to be the lowest under this alternative compared to the other action alternatives. Nevertheless, the currents are expected to increase significantly over those seen under existing conditions. Average current velocities during typical seasons will approximate 0.9 feet/sec (0.5 knots), representing an increase of approximately 50% compared to existing conditions (Jenkins and Wasyl 1999). The maximum velocities could reach as high as 2.4 feet/sec (1.4 knots). Average velocities during atypical seasons (e.g., El Nino conditions) will be about 1.3 feet/sec (0.8 knot), representing an approximate 50% increase compared to existing average velocities under similar extreme conditions. Maximum velocities could reach as high as 4 feet/sec (2.4 knots). The average current velocity projected for the areas near the Camino Del Mar Bridge (where channel constriction occurs during typical seasons) will also result in an approximate 50 % increase to an average of 2.3 to 3 feet/sec (1.4 to 1.8 knots). Maximum velocities in this area could be much higher. The amount of time the sill area might be difficult to cross (based on a conservative assumption of one foot depths) would be 70.4%, representing an increase of 21.4% compared to existing conditions. East of the sill, water depths would be the same as for the Mixed Habitat Alternative.

The lower currents could result in slightly lower aquatic mishaps in the inlet area compared to the Mixed Habitat Alternative. However, aquatic mishaps are still likely to increase over existing conditions. Nevertheless, the overall impact to public safety would be mitigable to less than significant (Class II), using the same mitigation measures described for the Mixed Habitat Alternative. All other impacts are as described in section 4.10.1.

4.10.4 Hybrid Alternative

General impacts to public safety under this alternative would be very similar to the Mixed Habitat Alternative. Average current velocities, during typical seasons, will approximate 1.3 feet/sec (0.8 knots), representing an increase of approximately 100% compared to existing conditions (Jenkins and Wasyl 1999). The maximum velocities could reach as high as 3.2 feet/sec (1.9 knots). Average velocities during atypical seasons (e.g., El Nino conditions) will be about 1.5 feet/sec (0.9 knots), representing an approximate 70% increase compared to existing average velocities under similar extreme conditions. Maximum velocities could reach as 4.6 feet/sec (2.7 knots). The average current velocity projected for the areas near the Camino Del Mar Bridge (where channel constriction occurs during typical seasons) will also result in an approximate 100 percent increase to an average of 3 to 4 feet/sec (1.8 to 2.4 knots). Maximum velocities in this area could be much higher. The amount of time the sill area might be difficult to cross (based on a conservative assumption of one foot depths) would be 77.5%, representing an increase of 28.5% compared to existing conditions. East of the sill, water depths would be the same as for the Mixed Habitat Alternative.

Since tidal currents are very similar to those under the Mixed Habitat Alternative, the occurrence of aquatic mishaps in the inlet area are also expected to be very similar. The overall impact to public safety would be mitigable to less than significant (Class II), using the same mitigation measures described for the Mixed Habitat Alternative.

All other impacts are as described in section 4.10.1.

4.10.5 Reduced Berm Alternative

General aquatic impacts to public safety are expected to be similar to those under the Maximum Intertidal Alternative. Nevertheless, the currents are expected to increase significantly over those seen under existing conditions. Average current velocities during typical seasons will approximate 1.1 feet/sec (0.7 knots), representing an approximate increase of 90% compared to existing conditions (Jenkins and Wasyl 1999). The maximum velocities could reach as high as 3.1 feet/sec (1.8 knots). Average velocities during atypical seasons (e.g., El Nino conditions) will be about 1.4 feet/sec (0.8 knots), representing an approximate increase of 60% compared to existing average velocities under similar extreme conditions. Maximum velocities could reach as 4.1 feet/sec (2.4 knots). The average current velocity projected for the areas near the Camino Del Mar Bridge (where channel constriction occurs during typical seasons) will also result in an approximate 90 percent increase to an average of 3 to 4 feet/sec (1.8 to 2.4 knots). Maximum velocities in this area could be much higher. The amount of time the sill area might be difficult to cross (based on a conservative assumption of one foot depths) would be 60.6%, representing an increase of 11.6% compared to existing conditions. East of the sill, water depths would be the same as for the Mixed Habitat Alternative.

The lower currents could result in slightly lower aquatic mishaps in the inlet area compared to the Mixed Habitat Alternative. However, aquatic mishaps are still likely to increase over existing conditions. The overall impact to public safety would be mitigable to less than significant (Class II), using the same mitigation measures described for the Mixed Habitat Alternative.

All other impacts are as described in section 4.10.1.

4.10.6 No Action Alternative

No changes to public health and safety would result from the No Action Alternative.

4.11 CULTURAL RESOURCES

Significance Criteria

An impact on cultural resources would be considered significant if it adversely affects a resource listed in or eligible for listing in the National Register of Historic Places (NRHP), the California Register of Historical Resources, or is otherwise considered a unique or important archaeological resource under CEQA or the City of San Diego Significance Determination Guidelines. In general, a project may have an adverse effect on a cultural resource if the resource would be physically damaged or altered, would be isolated from the context considered significant, or would be affected by project elements that would be out of character with the significant property or its setting.

Federal Criteria

Title 36 CFR Part 800 defines effects and adverse effects on historic resources as follows:

> Section 800.9(a) Criterion of Effect: An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify it for inclusion in the National Register. For the purpose of determining effect, alteration to features of a property's location, setting, or use may be relevant depending on a property's significant characteristics and should be considered.

> Section 800.9(b) Criteria of Adverse Effect: An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:

- Physical destruction, damage, or alteration of all or part of the property;
- Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
- Neglect of a property resulting in its deterioration or destruction; and
- Transfer, lease, or sale of the property without adequate provisions to protect historic integrity.

The American Indian Religious Freedom Act of 1978 requires federal agencies to allow access to federal lands and objects used in the practice of traditional Native American religious ceremonies. Title 36 CFR Part 900 addresses the consideration of Native Americans and other interested parties in the process of evaluating impacts on cultural resources. Any action that could directly or indirectly affect properties including archaeological sites, biological habitats, or topographic features associated with Native American religious practices would be considered significant under these statutes.

State Criteria

CEQA Guidelines Appendix K (Archaeological Impacts) has been replaced by new Section 15064.5 (CEQA Guidelines, revised October 26, 1998), with reference to section 21083.2 and section 21084.1 of the Public Resource Code. The revised Guidelines indicate a project may have a significant environmental effect if it causes "substantial adverse change" in the significance of an "historical resource" or a "unique archaeological resource," as defined or referenced in CEQA Guidelines Section 15064.5[b, c] (1998) and P.R.C. section 21083.2 and P.R.C. section 21084.1. Such changes include "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired" (CEQA Guidelines 1998 Section 15064.5 [b]).

Local Criteria

The City of San Diego's Significance Determination Guidelines (revised January 1994: 20-21) indicate a project would have a significant effect on the environment if it "will damage, alter, or otherwise impact a significant cultural resource", as defined in Appendix K of the CEQA Guidelines. The City's Significance Determinations also reference CEQA Guidelines Appendix G (Significant Effects) and indicate that a project may have a significant impact to the environment if it will "Disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group" or "Conflict with established recreational, educational, religious, or scientific uses of the area" (City of San Diego Significance Determinations 1994: 21).

For the purposes of this EIR/EIS, it is assumed that local criteria are consistent with new CEQA Guidelines (see above) that replaced CEQA Appendix K.

4.11.1 Mixed Habitat Alternative

4.11.1.1 Construction Staging and Access Areas

No known archaeological or historical resources occur within the areas proposed for construction staging or as access routes. Although some minor grading would be required to prepare the proposed construction staging areas and construction access roads for use during project implementation, these activities would result in limited disturbance to subsurface soils, therefore, no impacts to unrecorded buried cultural resources are anticipated (Class IV).

4.11.1.2 Excavation and Dredging

Excavation and dredging for tidal restoration under this alternative would not adversely affect known archaeological or historical resources that are considered significant in terms of federal, state, or local guidelines. Historic site SDI-15,065, the former U.S. Naval Auxiliary Air Facility, and the recorded locations of archaeological sites SDI-5957, SDI-7291, and SDI-7292 could be excavated or graded during construction. However, these sites have either been destroyed as a result of ongoing agriculture and/or have been determined through previous testing efforts to retain no meaningful scientific or historical value. These sites are neither listed in nor considered eligible for listing in the National Register of Historic Places and the California Register of Historical Resources, and they are not considered unique or important archaeological resources under CEQA or the City of San Diego Significance Determination Guidelines. Impacts to these sites are considered adverse but not significant (Class III).

In addition, all but the first pier of the Grand Avenue Bridge would be removed to create a viewing platform. However, the bridge is not considered significant by federal, state or local criteria; therefore, the impact to this resource also is considered adverse but not significant (Class III).

Subsurface corings in the San Dieguito River Valley (see section 3.11) have demonstrated a lack of buried cultural resources. However, there is a low possibility that untested areas along the floodplain margins could contain buried A horizons that represent formerly dry lands around the ancestral slough/lagoon. Such surfaces have a potential to contain prehistoric archaeological materials that could be disturbed by project grading. Thus, there is a low potential to encounter previously unknown cultural resources buried beneath valley alluvium. This represents a potentially significant but mitigable impact (Class II).

4.11.1.3 Disposal Sites

With the exception of the disposal site option that would involve overdredging of the airfield property (DS44), none of the disposal site options would require disturbance of the native soils. Use of the various disposal site options would however result in the covering of part of the recorded location of site SDI-5957, which appears to have been destroyed by agricultural activities, and insignificant sites SDI-7287, SDI-7288, SDI-7289, SDI-10,118, 10,535, and SDI-7300. This activity would result in an adverse but not significant impact (Class III).

The overdredge option at DS44 would involve increasing the depth of excavation in this area over that proposed in the grading plan for this alternative. The greater depth associated with overdredging will not increase impacts to cultural resources when compared to the proposed grading. Both the proposed grading and the overdredging option will destroy the U.S. Naval Auxiliary Air Facility, an insignificant resource located on and slightly below the current ground surface. While overdredging will affect deeper soils, this will not result in an increase in impacts because excavation of 10 subsurface cores in this area yielded no evidence of archaeological materials or ancient landscape surfaces (A horizons). Neither the proposed grading nor the overdredging is expected to affect cultural resources.

4.11.1.4 Berms/Infrastructure Protection/Nesting Sites

Construction of nesting site NS14 and berm B9 would occur in the vicinity of the recorded locations of insignificant sites SDI-7293 and SDI-7290. The impact to these resources is considered adverse but not significant (Class III).

Only minor grading would be required to prepare for the construction of the other berm and nesting site proposals, as well as for installation of infrastructure protection. Therefore, these activities would result in limited disturbance to subsurface soils. As a result, no impacts to previously unrecorded cultural sites are anticipated.

4.11.1.5 Public Access/Interpretation

Implementation of the public access/interpretation component of the project would result in grading to prepare the site for the construction of the Coast to Crest Trail. The only site recorded within the proposed alignments for the Coast to Crest Trail is the recorded location of SDI-5957. This site appears to have been destroyed by agricultural activities, therefore impacts to this site location would be adverse, but not significant (Class III). Grading for the trail would result in only limited disturbance to the native soils, therefore, no impacts to unrecorded cultural resources would be anticipated.

The Interpretive Overlook Trail would be constructed entirely on fill, therefore, no impacts to cultural resources would occur as a result of this element of the public access plan. The Mesa Loop Trail is proposed for an area being considered for use as a disposal site for materials excavated from future tidal areas. If these disposal sites (DS33, DS34, and DS35) are used for disposal, the trail and parking area would be constructed on fill and no impacts to cultural resources would be anticipated. If however one or more of these disposal site options were not utilized for disposal, trail construction would occur on the native soils and would be located in the vicinity of the recorded locations for insignificant sites SDI-10,535, SDI-10,118, SDI-7293, and SDI-7300. Construction of the trail over these sites would represent an adverse, but insignificant impact (Class III).

The proposed nature/interpretive center would also be constructed in the vicinity of the recorded location of insignificant site SDI-5957, a site that appears to have been destroyed by agricultural activities. This location of the future center is being considered as a possible disposal site (DS32). If this area is used as a disposal site, the nature/interpretive center and associated parking area would be constructed on fill and the site location would be permanently covered. If the area is not used as a disposal site, then the area would be graded prior to construction of the center. Either construction method would result in adverse, but not significant impacts to SDI-5957 (Class III).

Although several sites have been recorded in the vicinity of area U18, the Via de la Valle property, these sites have been tested and determined to be insignificant. Further, the uses currently being evaluated for Area U18 would only occur if the area is approved and used as a disposal site for the tidal restoration component of the project. Therefore, no impacts to cultural resources are anticipated.

Mitigation Measures

To ensure that unanticipated finds are fully recorded, evaluated, and treated (mitigated) in accordance with all applicable federal, state, and local requirements, the following measures shall be made conditions of permits required for the tidal restoration component of the project in order to ensure implementation:

1. Prior to the issuance of a grading permit from the City of Del Mar and/or a Land Development Permit from the City of San Diego, verification that a qualified archaeologist and/or archaeological monitor have been retained to implement an archaeological monitoring program shall be submitted in the form of a letter from the project applicant to the Principal Planner of the JPA and the Environmental Review Manager/Planner at the City of Del Mar and/or San Diego. The verification letter shall also indicate the dates of all pre-construction meetings, as well as the anticipated start and end dates of construction. All persons involved

in the archaeological monitoring of this project shall be approved by the appropriate permitting agencies at least 30 days prior to the pre-construction meeting.

2. The qualified archaeologist shall attend any pre-construction meetings to make comments and/or suggestions concerning the monitoring program and to discuss excavation plans with the excavation contractor. The requirements for archaeological monitoring shall be noted on the construction plans. The archaeologist's duties shall include monitoring, evaluation and data recovery (if necessary), analysis of collected materials, and preparation of a monitoring results report and other technical reports as needed in conformance with the City of San Diego's Guidelines for the Determination of the Significance of Archaeological Sites. These duties are defined as follows:

   a. *Monitoring.* The qualified archaeologist or archaeological monitor shall continuously monitor initial project excavations and grading within 50 meters of the recorded locations of sites SDI-5957, SDI-7287, SDI-7288, SDI-7290, SDI-7291, and SDI-7292. Initial ground disturbance associated with creation of disposal sites and other areas of fill shall be periodically monitored within 50 meters of the recorded locations of SDI-7287, SDI-SDI-7288, SDI-10,118, 10,535, and SDI-7300. Periodic monitoring of construction excavations in other portions of the valley should be conducted, but monitoring may be modified to a continuous basis if potentially intact A horizons or cultural materials are encountered. The frequency of inspections will be at the discretion of the archaeologist in consultation with the appropriate permitting agencies and will depend on the rate of excavation and the materials and soils encountered.

      In the event that unanticipated cultural resources are discovered during monitoring, the City of San Diego Land Development Review staff shall be notified immediately through the Mitigation Monitoring Coordinator and the resident engineer.

   b. *Evaluation and Data Recovery*. In the event that cultural resources are discovered, the archaeologist shall have the authority to divert or temporarily halt ground disturbance operations in the area of discovery to allow evaluation of potentially significant cultural resources. The JPA and other affected permitting agencies shall be contacted by the archaeologist at the time of discovery**.** The significance of the discovered resource(s) shall be determined by the archaeologist, in consultation with the appropriate agencies and the Native American community. The agencies must concur with the evaluation procedures to be performed before construction activities are allowed to resume.

      For significant cultural resources, a Research Design and Data Recovery Program shall be prepared and carried out to mitigate impacts before grading activities in the area of discovery is allowed to resume. In the event of discovery of graves or funerary materials, the program would specify procedures for notifying the appropriate agencies, the coroner, the Native American Heritage Commission, and appropriate Native Americans. The program would also identify procedures for preparing and distributing technical reports and other documentation. Any human bones of Native American origin shall be turned over to the appropriate Native American group for reburial.

   c. *Analysis.* All cultural materials collected shall be cleaned, cataloged and permanently curated with an appropriate institution. All artifacts shall be analyzed to identify function and chronology as they relate to the history of the area and relevant research questions and problem domains. Faunal material shall be identified as to species, and specialty studies shall be completed as appropriate. Significant archaeological materials and associated technical reports and associated documentation shall be curated at a facility that meets 36 CFR 79 standards.

d. *Report Preparation*. Within three months following the termination of the archaeological monitoring program, a monitoring results report and/or evaluation report, if appropriate, which describes the results, analysis, and conclusions of the entire archaeological monitoring program (with appropriate graphics and photodocumentation) shall be submitted to and approved by the appropriate agencies. For significant cultural resources, a Research Design and Data Recovery Program shall be included as part of the evaluation report. Within approximately six months following completion of any data recovery fieldwork, a draft data recovery technical report shall be submitted to the agencies for review. Any agency comments shall be incorporated into a final report.

Additionally, any sites and/or features encountered during the monitoring program shall be recorded and submitted to the South Coastal Information Center at San Diego State University and the San Diego Museum of Man with the final monitoring results report.

Implementation of the above measures will reduce impacts to cultural resources resulting from construction of this project to below a level of significance

4.11.2 Maximum Tidal Basin Alternative

Impacts and mitigation would be as described in section 4.11.1.

4.11.3 Maximum Intertidal Alternative

Impacts and mitigation would be as described in section 4.11.1.

4.11.4 Hybrid Alternative

Impacts and mitigation would be as described in section 4.11.1.

4.11.5 Reduced Berm Alternative

Impacts and mitigation would be as described in section 4.11.1, with the exception that the Reduced Berm Alternative would not affect the recorded locations of insignificant sites SDI-5957 and SDI-7290.

4.11.6 No-Action Alternative

Under the No-Action Alternative, current agricultural uses would continue to disturb the recorded locations of archaeological sites in the area. Under the No-Action Alternative, there would be no archaeological monitoring to identify and mitigate potential impacts to subsurface remains that may occur.

4.12 PALEONTOLOGICAL RESOURCES

Significance Criteria

Direct impacts to paleontological resources can occur when earthwork activities, such as mass grading operations, cut into the geologic deposits/formations within which fossils are buried. These direct impacts are in the form of physical destruction of fossil remains. Since fossils are the remains of prehistoric animal and plant life, they are considered to be nonrenewable. Impacts to paleontological resources are rated from high to low depending on the resource sensitivity of impacted formations.

- High significance — Impacts to high sensitivity formations (i.e., the Bay Point Formation)
- Moderate significance — Impacts to moderate sensitivity formations
- Low significance — Impacts to low sensitivity formations (Quaternary Alluvium)
- No significance — Impacts to zero sensitivity formations and artificial fill materials

4.12.1 Mixed Habitat Alternative

4.12.1.1 Construction Staging and Access Areas

Although some minor grading would be required to prepare the proposed construction staging areas and construction access roads for use during project implementation, these activities would result in limited disturbance to subsurface soils. Therefore, no impacts to paleontological resources would be anticipated.

4.12.1.2 Excavation and Dredging

Excavation and dredging proposed to implement tidal restoration under this project alternative would not adversely affect known paleontological resources. In addition, this activity would occur within Quaternary alluvium deposits, which are considered of low significance and unlikely to contain important fossil remains. Impacts to the fossiliferous Bay Point Formation are not expected because they are slightly outside the area of direct disturbance. However, if unanticipated paleontological remains are encountered during construction this would represent a potentially significant, but mitigable impact (Class II).

4.12.1.3 Disposal Sites

With the exception of the disposal site option that would involve overdredging of the airfield property (DS44), none of the disposal site options would require disturbance of the native soils; therefore, no impacts to paleontological resources would be anticipated. The overdredge option at DS 44 would however involve excavation of Quaternary alluvium deposits. These deposits are considered of low significance and unlikely to contain important fossil remains. However, because unanticipated paleontological remains could be encountered during construction, implementation of this disposal option would represent a potentially significant, but mitigable impact (Class II).

4.12.1.4 Berms/Infrastructure Protection/Nesting Sites

Minor grading would be required to prepare for berm and nesting site construction, as well as for installation of infrastructure protection. Because these activities would result in limited disturbance to subsurface soils, no impacts to paleontological resources would be anticipated.

4.12.1.5 Public Access/Interpretation

Implementation of the public access/interpretation component of the project would result in grading to prepare the site for the construction of the Coast to Crest Trail. This grading would occur in areas underlain by Quaternary alluvium deposits, which are considered of low significance and unlikely to contain important fossil remains. In addition, because this grading would result in only limited disturbance to the native soils, no impacts to paleontological resources would be anticipated.

The Interpretive Overlook Trail would be constructed entirely on fill. Therefore, no impacts to paleontological resources would occur as a result of this element of the public access plan. The Mesa Loop Trail is proposed for an area underlain by the Bay Point Formation, which is considered of locally high significance and is likely to contain important fossil remains. This area is also being considered for use as a disposal site for materials excavated from future tidal areas. If these disposal sites (DS33, DS34, and DS35) are used for disposal, the trail and parking area would be constructed on fill and no impacts to paleontological resources would be anticipated. If however, one or more of these disposal site options were not utilized for disposal, trail construction would occur on the native soils. However, because the depth of grading and the total amount of soil to be excavated in order to create the trail and parking area would be minimal, no impacts to paleontological resources would be anticipated.

The proposed nature/interpretive center would also be constructed in an area being considered as a possible disposal site (DS32). If this area is used as a disposal site, the nature/interpretive center and associated parking area would be constructed on fill and no impacts to paleontological resources would be anticipated.

If disposal site DS32 is not selected as a disposal site for the tidal restoration component of the project, the center would be constructed on an area underlain by Quaternary alluvium deposits, which are considered of low significance and unlikely to contain important fossil remains. However, because unanticipated paleontological remains could be encountered under this scenario during site preparation, any excavation in excess of 2 feet in depth into the underlying Quaternary alluvium deposits would represent a potentially significant, but mitigable impact (Class II).

None of the uses currently being evaluated for Area U18 are anticipated to result in impacts to paleontological resources, because these uses, if approved, would occur on fill material. Use of the area by the 22nd District Agricultural Association would only be considered if the area is approved and used as a disposal site for the tidal restoration component of the project.

Mitigation Measures

To ensure that unanticipated finds are fully recorded, evaluated and treated (mitigated) in accordance with all applicable federal, state and local requirements, the following measures shall be made conditions of required permits for the tidal restoration and nature/interpretive center components of the overall project in order to ensure implementation.

1. Prior to the issuance of a grading permit from the City of Del Mar and/or a Land Development Permit from the City of San Diego, verification that a qualified paleontologist and/or paleontological monitor has been retained to implement the paleontological monitoring program shall be submitted in the form of a letter from the project applicant to the Principal Planner of the JPA and the Environmental Review Manager/Planner at the City of Del Mar and/or San Diego. The verification letter shall also indicate the dates of all pre-construction meetings, as well as the anticipated start and end dates of construction.

   A qualified paleontologist is defined as an individual with a Ph.D. or MS degree in paleontology or geology who is a recognized expert in the application of paleontological procedures and techniques such as screen washing of materials and identification of fossil deposits, and who has field experience in Southern California.

   A paleontological monitor may be retained to perform on-site monitoring in place of a qualified paleontologist. A paleontological monitor is defined as an individual who has experience in the collection and salvage of fossil material and who is working under the supervision of a qualified paleontologist. All persons involved in the paleontological monitoring of this project shall be approved by the appropriate permitting agencies at least 30 days prior to the pre-construction meeting.

2. The qualified paleontologist shall attend the pre-construction meeting to consult with grading and excavation contractors and to make comments and/or suggestions concerning the monitoring program. The paleontologist's duties shall include monitoring, salvaging preparation of materials for storage at a scientific institution that houses paleontological collections and the preparation of a monitoring report. These duties are defined as follows:

   a. Monitoring

      The paleontologist or paleontological monitor shall be on-site during initial grading and excavations. The frequency of inspections will depend on the rate of excavation, materials excavated, and the paleontologist's field assessment of the potential for uncovering significant fossil remains. Decisions regarding the extent of monitoring required will be at the discretion of the paleontologist in consultation with the appropriate permitting agencies.

      <u>In the event that unanticipated paleontological resources are discovered during monitoring, the City of San Diego Land Development Review staff shall be notified immediately through the Mitigation Monitoring Coordinator and the Resident Engineer.</u>

   b. Salvaging

      In the event that fossils are encountered, the paleontologist shall have the authority to divert, direct, or temporarily halt construction activity in the area of discovery to allow recovery of fossil remains in a timely fashion. Because the potential for recovery of small fossil remains, it may be necessary to set up a screen-washing operation on-site.

The paleontologist shall notify the appropriate permitting agencies at the time of discovery to confer on appropriate salvaging procedures to be followed before construction activities are allowed to resume at the location of the find.

3. Fossil remains collected during a salvaged program shall be cleaned, sorted, catalogued and then stored in a local scientific institution that houses paleontological collections. The qualified paleontologist shall be responsible for preparation of fossils to a point of identification and submittal of a letter of acceptance from a local qualified curation facility. A qualified curation facility is defined as a research institution with a permanent commitment to long-term care of paleontological collections. Such an institution shall have a professional curatorial staff.

   If the fossil collection is not accepted by a local qualified facility for reasons other than inadequate preparation of specimens, the project paleontologist shall contact the permitting agencies to suggest an alternative disposition of the collection.

   At the completion of monitoring, a monitoring results report with appropriate graphics that summarizes the results (even if negative), analysis, and conclusions of the above monitoring program shall be prepared by the paleontologist and submitted to the appropriate agencies within three months following the termination of the paleontological monitoring program. Any discovered fossil sites shall be recorded at the San Diego Natural History Museum.

Implementation of the above measures would reduce impacts to paleontological resources resulting from project excavations to below a level of significance.

4.12.2 Maximum Tidal Basin Alternative

Tidal restoration under this alternative would result in deeper excavation than that proposed for the Mixed Habitat Alternative, but the area or footprint of the tidal restoration would remain the same and only Quaternary alluvium deposits would be impacted. Therefore, the potential for impacts to paleontological resources and required mitigation under this alternative would be as described in section 4.12.1.

4.12.3 Maximum Intertidal Alternative

The total amount of excavation would be less under this alternative than under the Mixed Habitat, Maximum Tidal Basin, or Hybrid Alternatives, but the potential for impacts to paleontological resources would remain the same. The required mitigation for potential impacts would be as described in section 4.12.1.

4.12.4 Hybrid Alternative

Impacts and required mitigation would be as described in section 4.12.1.

4.12.5 Reduced Berm Alternative

Under this alternative, the amount of excavation would be reduced considerably from that required for all but the No-Action Alternative. As a result, the potential for impacts to paleontological resources would be reduced. Nevertheless, the potential for unanticipated paleontological resources to be encountered would remain. Therefore impacts and required mitigation would be as described in section 4.12.1.

4.12.6 No-Action Alternative

Under the No-Action Alternative no excavation of the floodplain would occur; thus no unanticipated impacts to paleontological resources within Quaternary alluvium deposits would occur. However, under this alternative, the Via de la Valle property, which is underlain in part by the Bay Point Formation, could become available for future development in accordance with the adopted North City Future Urbanizing Framework Plan. There is a potential for impacts to resources within this formation should such future development be permitted. The significance of this impact would be determined if and when future development were to be proposed for the site.

4.13 UTILITIES/PUBLIC FACILITIES

Significance Criteria

Impacts to utilities / public facilities would be considered significant if one or more of the following would occur as a result of excavation / dredging, other construction activities, or final project design:

- Substantial damage to utilities, utility service, or public facilities within the project area.
- Need to relocate or otherwise protect the utilities, utility service, or public facilities.
- Substantial disruption in utility service or access to public facilities.

4.13.1 Mixed Habitat Alternative

Project construction would avoid cable television lines, gasoline and oil pipelines, gas lines, water lines, and storm drains. A 12-inch, high-pressure gas line crosses the San Dieguito River attached to the side of the Camino Del Mar Bridge. Since this line is attached to the bridge, it would not be affected by the dredging that would occur in this area. As described in section 2.3.1.4.6, the bridge foundations would be staked prior to excavation to prevent damage or undermining during construction. However, the long-term stability of the bridge would not be protected by this project. The project has been designed to avoid exacerbating existing scour conditions within the river channel, but the bridge and the gas line could be lost in a severe storm event. This possibility exists, however, whether or not this project is implemented. The September 1998 report, *Tidal Effects on Flood Hydraulics and Channel Erosion Effects of Sediment Size Variations Impacts Due to Flood Greater than The 100-year Flood* (Chang 1998) indicates, "The general and local scour depths are somewhat less under the proposed project than under the existing conditions." Refer to the impact analysis provided in the Hydrology section (section 4.2.1.4) for more detailed information about the project's potential effect on bridges.

Electric

Project Routing Analysis

A project routing analysis, summarized below, was performed by SCE in order to determine the most suitable routes and construction approaches to the proposed relocation of existing 69-kV Circuit 667 and the associated underbuilt 12-kV Circuit 511. The purpose of the evaluation was to select a preferred route for the proposed relocation of the existing 69-kV and 12-kV overhead lines.

The need for the proposed relocation is to accommodate the development of the San Dieguito Wetland Restoration Project, while retaining the continued operation and reliability of SDG&E's existing electrical transmission and distribution delivery system.

The objective of evaluating alternative routing and construction approaches was to identify a preferred routing option that would:

- Limit to the greatest extent practical, potential short-term electrical system construction and long-term electrical system maintenance effects on the proposed wetland habitat and its immediate surroundings.

- Retain 69-kV and 12-kV electrical system operations and enhance the reliability of SDG&E's electric energy delivery system.

- Provide an economically feasible route in terms of construction and long-term maintenance requirements.

SYSTEM ROUTING ALTERNATIVES

In identifying a preferred route, SDG&E Transmission Engineering looked at five possible routing approaches:

1. Retaining the current alignment and overhead construction of the existing 69-kV and 12-kV circuits.

2. Retaining the current alignment of the existing 69-kV and 12-kV circuits but converting those circuits to underground construction.

3. Relocating the existing 69-kV and 12-kV lines overhead 1,000 feet to the north along San Andres Drive, then 2,700 feet east along Via de la Valle and then turning south for 3,000 feet to meet the existing alignment of Circuit 667 at El Camino Real.

4. Relocating the lines as noted in item 3 above, but constructing it entirely underground.

5. Relocating the lines as noted in item 3, above, constructing only the 2,700-foot long segment along Via de la Valle underground with the remaining sections of the line constructed overhead.

ALTERNATIVE 1. RETAINING THE CURRENT OVERHEAD ALIGNMENT

This alternative would leave 69-kV Circuit 667 and 12-kV underbuild Circuit 511 in its current overhead alignment. The current alignment crosses the proposed wetland area from west to east a distance of approximately 1,400 feet, turns a ninety-degree right angle and travels south approximately 2,200 feet, and then turns another ninety degree right angle and travels approximately 1,400 feet east to El Camino Real.

If the existing 69-kV and 12-kV lines remained in their current overhead alignment, they could remain on existing wood poles, or be re-built with steel rather than wood poles to increase wire spans between poles and reduce the number of poles which would be placed in the wetland. However, a 12- foot wide paved or dirt access road would need to be provided to each pole site allowing for continued maintenance, repair, and upgrades in support of system reliability. Retaining the current overhead lines within the wetland could, however, increase the potential for predator (raptor) perching or nesting on lines and poles and displace wetland and grassland vegetation with access roads. Also, current wetland and species regulations would preclude access to pole sites during species nesting and foraging seasons. The restrictions on line access would unfavorably influence electrical transmission and distribution reliability by inhibiting response to system emergencies, outages, upgrades, repairs and routine maintenance.

ALTERNATIVE 2. RETAINING THE CURRENT ALIGNMENT WITH UNDERGROUND CONSTRUCTION

This alternative would retain the current alignment of 69-kV Circuit 667 and 12-kV Circuit 511 within the proposed wetland, as discussed in the overhead alternative above, but would install the 69-kV and 12-kV lines underground rather than overhead.

This underground alternative would not have a visual impact and would decrease the opportunity for any predator (raptor) perching or nesting on lines and poles in the wetland. However, the underground alternative would have an increased need for access roads. Although the overhead alternative discussed above would require access to pole sites, providing adequate access to the underground route would require continuous 12-foot wide paved or dirt access roads along the entire length of the underground line. Providing the continuous access roads would displace wetland vegetation, however. The line would be constructed entirely within the roadbed, providing unobstructed access for repairs, upgrades, and routine maintenance, and for enhancing response during system emergencies and outages.

Where road construction is infeasible, such as in areas of open water or marshland, the underground line would be directly buried in the wetland. Construction, maintenance, or emergency work for underground lines in wetland areas (and not within access roads) would create additional impacts to wetland habitats and species. The same regulatory restrictions on access during species foraging and nesting seasons, mentioned for the overhead alternative (Alternative 1) discussed above, would also apply to the underground alternative. The restrictions on line access would unfavorably influence electrical transmission and distribution reliability by inhibiting response to system emergencies, outages, upgrades, repairs, and routine maintenance.

ALTERNATIVE 3. RELOCATING THE LINE WITH OVERHEAD CONSTRUCTION

This alternative proposes an overhead relocation of existing 69-kV Circuit 667 and 12-kV Circuit 511. The relocation would run 1,000 feet north from San Andres Drive to Via de la Valle, then 2,700 feet east along Via de la Valle, and then turning south for 3,000 feet to meet the existing alignment of Circuit 667 at El Camino Real. The proposed relocation would run along the perimeter of the proposed wetland and not within interior portions of the wetland. The total length of the proposed relocation would be approximately 6,700 lineal feet.

This alternative would be built using 70 to 80-foot high pole structures. The pole type selected (steel or wood) would depend upon the wire spans, wire sizes and final design criteria developed by SDG&E for the relocation. With the exception of a 3,000 foot long segment of the relocation running along the eastern boundary of the proposed wetland restoration plan, this alternative would remove the existing 69-kV and 12-kV lines from the proposed wetland areas. If the sections of the line along San Andres Drive and Via de la Valle were constructed in an easement position adjacent to the Via de la Valle right-of-way, this would eliminate the need for additional access roads along these segments of the line. Relocating the lines around the perimeter of the wetland also reduces the potential for predator (raptor) perching or nesting on lines and poles within the interior of the wetland. Because there are existing overhead electrical lines to the north and south of Via de la Valle, constructing an overhead line in an easement position adjacent to the Via de la

Valle right-of-way for this alternative would have an insignificant incremental affect on visual quality compared to existing visual conditions.

A 12-foot-wide paved or dirt access road would be required along the relocated lines on the eastern boundary of the proposed wetland. However, approximately 50 percent of the length of the access road would be in grassland and not wetland habitat. If effective vegetative buffers were incorporated along the eastern boundary of the wetland plan, use of the access road and routine maintenance of the line should not affect seasonal nesting and foraging of wetland species. Placing segments of the relocated lines along San Andres Drive and Via de la Valle in easement positions directly adjacent to street rights-of-way would eliminate seasonal restrictions to access along these line segments, and have a positive influence on system reliability.

If the lines are relocated in easements south of Via de la Valle, and adjacent to re-seeded Coastal Sage Scrub (CSS) areas, there could be seasonal access restrictions, if the re-seeded areas become occupied by species such as the Coastal California Gnatcatcher (CCG). These potential seasonal restrictions could affect system reliability by limiting access to the lines for routine maintenance, repair, and emergency response.

ALTERNATIVE 4. RELOCATING THE LINE WITH UNDERGROUND CONSTRUCTION

This alternative follows the same route alignment as the overhead relocation discussed above. Like the overhead relocation, the underground relocation is also approximately 6,700 feet long.

The underground alternative would have the same advantages for unrestricted access as the overhead relocation. If located in an easement south of Via de la Valle, the same concern about restricted access in re-seeded Coastal Sage Scrub (CSS) areas would apply. The segment of the underground line along the eastern boundary of the wetland would require a 12-foot-wide paved or dirt access road. As for the overhead relocation (Alternative 3), restricted seasonal access along the eastern boundary should not be a problem for the underground line if the wetland plan employs an effective vegetative buffer adjacent to the access road. The underground relocation alternative would not have any visual impact and would decrease the opportunity for any predator (raptor) perching or nesting on lines and poles in the wetland. However, potential costs for system maintenance, repair, upgrade and emergency response would be higher, and system reliability would be reduced for the underground relocation when compared to the overhead relocation (Alternative 3). The potential increased costs and reduced reliability are due to the need to either work from underground vaults or perform roadbed excavations to inspect and repair underground lines. If these underground locations are within sensitive wetland habitats, existing habitats can be disturbed and often require costly re-vegetation efforts.

ALTERNATIVE 5. RELOCATING THE LINE WITH PARTIAL UNDERGROUND CONSTRUCTION

This alternative follows the same route alignment as the overhead and underground relocations (Alternatives 3 and 4) previously described. Like those two relocations, the relocation with partial underground construction is also approximately 6,700 feet long.

This alternative is similar to the overhead relocation (Alternative 3), with the exception that the 69-kV and 12-kV lines are placed underground for a distance of approximately 2,700 feet along Via de la Valle. The partial underground alternative would have the same advantages for unrestricted access as the overhead and underground relocations (Alternatives 3 and 4) if constructed in franchise (street right-of-way) position. However, if the partial underground section is located south of Via de la Valle, the same concern about restricted access in re-seeded Coastal Sage Scrub (CSS) areas would apply. This alternative would have an insignificant incremental affect on visual quality along Via de la Valle, as there are existing overhead electrical lines to the north and south of Via de la Valle.

Placing the line underground along Via de la Valle would incrementally, but not totally, reduce the visual appearance of existing overhead electrical lines along the viewshed of the roadway. However, potential costs for system maintenance, repair, upgrade and emergency response would be higher, and system reliability would be reduced for the underground relocation segment along Via de la Valle, when compared to an overhead relocation (Alternative 3). The potential increased costs and reduced reliability are due to the need to either work from underground vaults or perform roadbed excavations to inspect and repair underground lines. As noted above, if the underground segment is located within sensitive habitats, such as the re-seeded Coastal Sage Scrub area south of Via de la Valle, and these habitats are disturbed by either line construction or maintenance activities, they often require costly re-vegetation efforts.

PREFERRED ROUTING ALTERNATIVE

The five potential routing alternatives were evaluated in terms of their ability to meet the project objectives:

Retain Operations and Enhance Reliability

Although all of the alternatives have the potential to retain SDG&E's existing 69-kV and 12-kV electrical system operations, the overhead relocation alternative (Alternative 3) has the highest potential for enhancing system reliability. It is the alternative that would be least affected by access restrictions, habitat or species constraints, and conditions that would require working in underground vaults or excavations.

Limit Construction and Maintenance Affects on Wetland Habitats

Retaining routes either overhead (Alternative 1) or underground (Alternative 2) through the wetlands has the highest potential for creating wetland and upland impacts during both construction and long-term maintenance. Relocating the lines underground (Alternative 4) has the next highest potential for impacts along the eastern boundary of the wetland plan, and in re-seeded Coastal Sage Scrub south of Via de la Valle. Relocating the line with partial underground construction (Alternative 5) along Via de la Valle has a slightly higher impact than the overhead relocation (Alternative 3), based on increased costs and reduced reliability if the underground is located along Via de la Valle. The overhead relocation (Alternative 3) had the least potential to affect the wetland project, both in terms of initial construction and long-term maintenance.

Provide an Economically Feasible Route

All underground and partially underground routes (Alternatives 2, 4, and 5), whether in the current alignment through the proposed wetland or along the proposed relocation alignment, have higher potential construction and long-term maintenance costs. This is attributable to the increased costs associated with construction excavations, higher costs to install and insulate underground lines, and increased costs to excavate and repair underground lines as a part of long term maintenance.

Retaining an existing overhead route within the wetland (Alternative 1) has the lowest potential construction cost than all other alternatives, especially if the existing poles can remain in their current locations. However, it is likely that the requirements for wetland grading and hydraulics will require adjusting current pole locations and access roads. If wetland habitats were disturbed as a result of pole and access road adjustments, additional construction costs would be incurred. However, due to seasonal access constraints and potential costs for restoring wetland habitats disturbed by long term maintenance, retaining the existing overhead route (Alternative 1) was not considered as economically feasible, in the long term, as an overhead relocation of the line (Alternative 3).

The overhead relocation of the line (Alternative 3) has a lower potential construction than the underground or partial underground alternatives. Though its initial construction cost could be higher than retaining the existing overhead route (Alternative 1), its long term maintenance and reliability would not be significantly affected by seasonal access constraints or potential costs for restoration of wetland habitats resulting from routine maintenance, system repairs, system upgrades, or emergency response.

Preferred Route

Based on the ability to meet project objectives, limit short-term and long-term affects on wetland environments, and provide an economically feasible route to construct and maintain, the overhead relocation of 69-kV Circuit 667 and 12-kV underbuild Circuit 511 (Alternative 3) was determine to be the preferred route for the project. The ability of the overhead relocation (Alternative 3) to avoid sensitive habitats is further enhanced when the line is placed in an easement position along Via de La Valle.

Environmental Impacts of the Preferred Route

Several electrical transmission lines within the project area would have to be relocated as a result of project implementation. These include several of the 69-kV transmission lines located to the east of I-5 and south of Via de la Valle within the existing floodplain. The proposed realignment would start at the end of San Andres Drive and end where the power lines intersect El Camino Real. Utility poles would be placed along the eastern side of San Andres Drive, and both the 69-kV and 12-kV lines would run north to Via de la Valle on the new poles. New 70-foot tall poles would be erected along Via de la Valle approximately 75 feet south of the southern edge of the existing roadway alignment. The realigned 69-kV, realigned 12-kV, and three existing Telco lines would be placed on these new poles, which would run east along Via de la Valle to the existing SDG&E utility easement (see Figure 4.13-1). The existing utility poles that run along the southern side of Via de la Valle also would be replaced by the new poles and the lines currently located along Via de la Valle would be relocated to the new poles as part of the project. The realigned 69-kV and 12-kV lines would run (on new 40-foot poles) straight south from this point to El Camino Real where the lines would connect with existing utility poles. The need to relocate lines is considered a significant impact, but one that is mitigated by measures already incorporated as part of the project description (Class II).

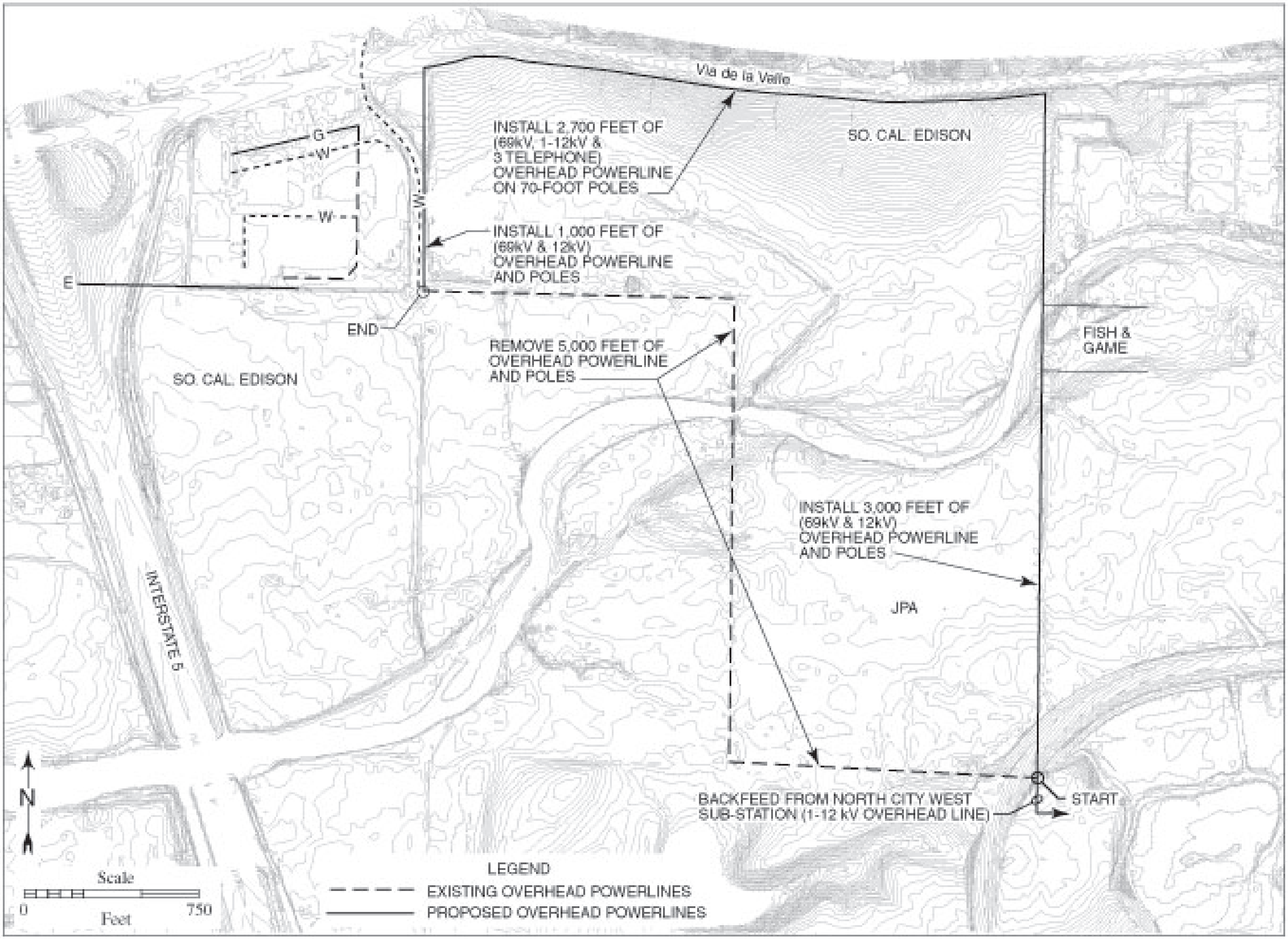


Figure 4.13-1. Proposed Powerline Relocation

Telephone

A Pacific Bell duct bank containing phone cables and fiber optics is located along the eastern edge of the I-5 right-of-way, running under the San Dieguito River in the vicinity of the I-5 bridge. The duct bank casing is buried with the top at about –1 foot MSL. As addressed in section 4.2, implementation of the eastern portion of the Mixed Habitat Alternative, including the construction of the proposed berms, would improve hydrologic conveyance within the San Dieguito River floodway. With improved hydrologic conveyance, there would be an increase in channel velocity in the vicinity of the I-5 bridge; therefore, during a flood event, modeling results indicate that there would be an increase in scour of the river bottom, compared to existing conditions, in the vicinity of I-5 (refer to section 4.2). As a result, in the event of a major flood event, the duct bank casing could be damaged or destroyed. Increased channel velocity near the I-5 bridge as a result of the project implementation would represent a potentially significant but mitigable impact (Class II). The excavation of area W6a, which may be implemented as part of a future restoration effort rather than as part of SCE restoration proposal, could exacerbate this problem by increasing localized scour near the W6a channel inlet. This too represents a potentially significant, but mitigable impact (Class II).

Sanitary Sewer Lines

A sewer force main that serves the Del Mar Fairgrounds is located to the west of the Jimmy Durante Boulevard Bridge. Specific details regarding the location of this main are not available from either the 22nd District Agricultural Association or the City of Del Mar. It is, however, assumed by these agencies that the main is currently located in proximity to or on the existing river bed. Limited, if any, scour protection is currently provided for the main. The initial inlet dredging proposal for the portion of the channel in which this main is located would involve lowering the channel to elevation –3 feet NGVD (see Figure 2.3.2-2). In April 1999 the channel bed was measured at –3 feet NGVD; therefore, under such conditions, no project dredging would be required in the vicinity of the main. If, however, this condition changed and the channel bed elevation raised to above –3 feet NGVD, then dredging in the vicinity of the sewer main would be required. The proposed construction activity, which would be required only if the bottom of the channel is higher than –3 feet NGVD, would not impact the existing sewer line which is located at –5 feet NGVD. To ensure that any accidental disturbance of the pipe during construction would be avoided, specific mitigation measures have been identified below (Class II).

In addition to the potential for direct construction impacts, implementation of the restoration project could result in potentially significant indirect impacts to the main as a result of increased scour. Proposed improvements to hydrologic conveyance within the system are estimated to increase the maximum 100-year flood-induced scour from the existing condition estimate of –8 feet NGVD to a proposed condition of –9 feet NGVD (Chang 1997). Incremental increases in scour over existing conditions could also be expected under lesser storm events. Although the sewer main may be in jeopardy under existing conditions, the proposed project could exacerbate the existing situation. This represents a potentially significant but mitigable impact (Class II).

Storm Drains

The project would not result in any impacts to the existing storm drain systems in the project area (e.g., backing up of storm drains) because the computed water-surface elevations created by the proposed project would be less than or equal to the elevations experienced during a 100-year flood under existing conditions. Refer to section 4.2.1.2 in the Hydrology section for a more detailed discussion of water surface elevations.

Bridges

Non-structural bridge protection measures are proposed during construction for the five bridges in the project area as part of the project. For the Camino Del Mar Bridge and NCTD Railroad Bridge, these measures include staking the bridge foundations prior to excavation to prevent contact with construction equipment or undermining the foundations. In addition, the project proposes to prevent increased scour of foundations of the five major bridges by maintaining passage of current volumes of river sediments past these bridges. The latter measure would be accomplished through construction of the river berms discussed in section 2.3.1.4.3.

This project would not preclude future proposals to widen or rebuild any of the bridges in the project area, such as the Camino Del Mar (Highway 101) Bridge, the NCTD Railroad Bridge, the Jimmy Durante Boulevard Bridge, the Grand Avenue Bridge, and the I-5 Bridge (see figures 2.3.1-1 and 2.3.1-2).

Mitigation Measures

Electric

As described above, the project would require the relocation of existing electric lines. SCE should coordinate with SDG&E to ensure that these actions are undertaken in an appropriate manner. Provisions should be made to ensure that service disruptions are avoided or minimized. If some disruption of service is necessary, notification should be made in advance to all affected parties, and service should be restored at the end of each working day.

Telephone

Mitigation for potential impacts to the Pacific Bell duct bank could involve one of the following options:

Lower the existing concrete vault to avoid impacts from increased scour; or

Modify the currently proposed channel configuration in the area immediately east of the I-5 Bridge to reduce anticipated channel velocity during a flood event. This would involve moving the western end of Berm B8 slightly to the north in order to reduce flow constriction in this area; or

Construct a grade control structure downstream of the duct bank. Two methods are available, including (1) driving a steel sheet pile wall parallel to and some distance downstream of the duct bank at or slightly below the existing channel bed elevation, or (2) installing a cellular concrete mat, such as armorflex, over the existing duct bank.

The implementation of any one of these methods would reduce impacts to the Pacific Bell duct bank to below a level of significance. To ensure that one of these methods will be implemented, prior to the issuance of a City of San Diego Land Development Permit for the project, the applicant shall submit to the City Engineer for review and approval the proposed mitigation method. As a condition of the Land Development Permit, the mitigation shall be implemented prior to the excavation of those restoration areas located east of I-5.

The following measures would be required to mitigate any additional impacts associated with the implementation of area W6a, which may be occur some time after the initial SCE project is completed.

Prior to the issuance of a City of San Diego Land Development Permit, a detailed scour analysis of the feeder channel area (W6a) shall be prepared for review and approval by the City Engineer. If, based on the scour analysis, impacts related to localized scour are identified, one of the following measures shall be included as a condition of the Land Development Permit:

- Relocation of the inlet channel to area W6a east, up to a distance of 500 feet, to avoid potential scour impacts to the cable vault, or
- Construction of cable vault protection that would extend south beyond the limits of any proposed grading activities.
- The implementation of either of these measures would reduce potential impacts to the duct bank resulting of the excavation of area W6a to below a level of significance.

Sanitary Sewer Lines

To mitigate potential direct impacts to the sewer main, the following measures shall be implemented:

Prior to the issuance of any discretionary permit from the City of Del Mar for the restoration project, the location of the sewer main shall be depicted on all construction plans for this portion of the project. As a permit condition, the supervising contractor shall review the location of the main with all appropriate parties and the permit shall outline appropriate measures to be implemented to protect the main from inadvertent damage during project construction. If grading is not required in the vicinity of the sewer main, then no mitigation beyond locating and mapping the main on the construction plans would be required to mitigate potential direct impacts to the sewer facility.

Mitigation measures for indirect impacts to the sewer main include the following:

Prior to the issuance of any discretionary permit from the City of Del Mar, hydrologic modeling shall be conducted by the project applicant for the final restoration grading plan in order to establish the full extent of the scour potential in the vicinity of the sewer main. Based on this analysis, the applicant shall provide to the satisfaction of the Del Mar City Manager specific measures for protecting the main from future project-related scour impacts, should the analysis identify an increased scour potential. These measures may include but are not limited to contributing all or part of the funds needed to relocate the main to the Jimmy Durante Boulevard Bridge or protecting the main in place.

The implementation of these measures would reduce potential direct and indirect impacts to the sewer main to below a level of significance.

Bridges

The measures already incorporated into the project description would reduce the potential for significant impact to bridges to below a level of significance (Class III).

4.13.2 Maximum Tidal Basin Alternative

Impacts and mitigation measures would be as described in section 4.13.1.

4.13.3 Maximum Intertidal Alternative

Impacts and mitigation measures would be as described in section 4.13.1.

4.13.4 Hybrid Alternative

Impacts and mitigation measures would be as described in section 4.13.1.

4.13.5 Reduced Berm Alternative

Impacts and mitigation measures would be as described in section 4.13.1.

4.13.6 No-Action Alternative

No impacts to utilities would result from this alternative.

4.14 NOISE

Significance Criteria

The following criteria apply to noise impacts to receptors within the City of San Diego and City of Del Mar boundaries. They are based on the City of San Diego's significance determination guidelines and are consistent with the City of Del Mar's noise regulations. They also are consistent with federal guidelines.

- Impacts from temporary construction noise would be significant if noise exceeded 75 dBA L_{eq} at a sensitive receptor or if it would interfere substantially with normal business communication or affect sensitive receptors, such as daycare facilities, hospitals, or schools.

- Long-term impacts would be significant if project-generated traffic resulted in noise levels exceeding 65 dBA CNEL (or L_{dn}) at exterior usable areas of residences or other noise sensitive land uses, or if interior noise levels of detached single-family residences reached 45 dBA. (If the noise level at a sensitive receptor is currently at or exceeds the significance threshold for noise described above and the project would result in noise levels increasing by less than 3 dBA, then the impact is not considered significant.)

- Long-term impacts would be insignificant if project-generated traffic resulted in a substantial increase in noise levels at exterior usable areas of residences or other noise sensitive land uses. A 3 dBA increase in the CNEL (or L_{dn}) would be substantial, considering existing ambient noise levels at sensitive receptors in the area.

4.14.1 Mixed Habitat Alternative

4.14.1.1 Construction Staging and Access Areas

Construction staging areas would be used for staging of equipment and supplies. Noise generation at a staging area would begin with commencement of restoration activities, including project mobilization, grubbing and clearing, grading, and site preparation. The primary source of this noise would be from the operation of a variety of construction equipment including backhoes, graders, loaders, and construction trucks. During busy activity periods at the staging areas, noise levels could reach an hourly average (L_{eq}) of about 80 dBA at an equivalent distance of 50 feet from the center of the activity. Noise levels would fluctuate down from this level to the ambient, depending upon the level of activity. The locations of the proposed construction staging areas and construction access routes are illustrated on Figure 2.3.1-13.

Construction staging area SA1, located on the beach near the river mouth, would facilitate excavation of the inlet channel and also be used to stockpile and distribute material onto the adjacent beaches. Noise-sensitive receptors in the vicinity of SA1 include adjacent residences to the south and a residence to the north on top of the bluff. Noise levels at sensitive receptors to the south of the river outlet near the staging area could be exposed to noise levels exceeding an hourly average of 75 dBA if the use of mobile equipment occurs within about 100 feet of the residences. At the sensitive receptor located on the bluff to the north, noise levels generated by activities in the staging area would not be elevated above ambient levels due to attenuation of the noise from distance and the topography. Potential impacts to residents to the south of staging area SA1 would be considered significant but mitigable to less than significant (Class II).

Construction staging area SA2 would be located on the east side of San Dieguito Drive and would be needed to provide access for a backhoe or a bucket and crane to mechanically excavate the channel. If a dredge is used as part of the excavation process, this staging area would be utilized as a dredge launch site. This area would also be used as an access point for the construction of stone revetment No. 1 and for temporary storage of equipment and rock materials. Noise generation from this staging area is expected to be similar to SA1. The nearest sensitive receptors are located to the southwest on a hill overlooking the staging area, at a distance of more than 300 feet from the proposed staging area. Projected hourly average noise levels would be less than 70 dBA, substantially below the significance threshold (Class III).

Construction staging areas SA3 and SA4 would be located on the west and east side of I-5, respectively. SA3 is located about 1,000 feet north of the terminus of Racetrack View Drive, where approximately four residences are located around the cul-de-sac. This staging area would be used to store equipment and materials during construction and may be used as the site for a temporary field office. This area could also be used as a temporary launch facility if dredging rather than conventional grading is employed for construction Area W1. Finally, this site may be left in-place following the completion of project construction and used periodically as a staging area for future wetland maintenance activities. Noise from these activities would be well under the significance threshold (Class III) at the nearest residential areas.

SA4 is located to the east of I-5 immediately behind a community commercial center. There are no noise sensitive receptors in the general area. Noise-generating activities at this staging area would not affect ambient noise levels at sensitive receptors, therefore, no noise impacts are anticipated from the use of SA4 (Class III).

Construction access routes would be used to access the various excavation / dredging and disposal areas. Temporary noise would be caused by the equipment used to construct the routes and by worker traffic that would travel on these routes.

The only access road that would potentially affect sensitive receptors is the route to staging area SA3. This access route would include travel along San Dieguito Drive to Racetrack View Drive, and then along a new dirt access road that would be constructed adjacent to the existing fence that borders the eastern boundary of the Department of Fish and Game's property. The access road would follow this fence that heads north toward the lagoon and then east toward the freeway right-of-way, as shown in Figure 2.3.1-13. This access route would be below sensitive receptors overlooking San Dieguito Drive, and just to the north of the homes located at the end of Racetrack View Drive. Ambient noise levels in this location are somewhat elevated due to vehicular traffic on I-5 (see section 3.14). While it is not expected that construction truck traffic would generate hourly average noise levels approaching the 75 dBA L_{eq} threshold, the maximum level resulting from individual truck passages would be in the range of 80-85 dBA at a distance of 50 feet. Existing ambient L_{max} levels during the daytime, when construction would occur, are typically between 65-70 dBA. Noise levels drop off with distance. Maximum noise levels reduce at the rate of about 6 dBA with each doubling of the distance from the source. At a distance of 250 feet, maximum noise levels from individual truck passages would be in the range of existing maximum noise levels at the residences near the end of Racetrack View Drive. Project-related construction traffic along portions of this access road where it coincides with San Dieguito Drive and the beginning of Racetrack View Drive would not be expected to cause a 3 dBA or greater increase in hourly average noise levels or approach the 75 dBA L_{eq} hour construction noise threshold at sensitive receptors in the vicinity. The noise impacts from this construction access road to homes at the end of Racetrack View Drive would be adverse but not significant (Class III). Measures that would reduce impacts from single event noise are discussed in section 4.14.1.7.

4.14.1.2 Excavation and Dredging

The restoration component of the Mixed Habitat Alternative would involve the excavation of approximately 247 acres of tidal and upland property within the project. Additional excavation or dredging would also occur at the river mouth and within the inlet channel. Construction equipment expected to be used during excavation of the channel between the Jimmy Durante bridge and the ocean inlet includes backhoes and dump trucks (section 2.3.1). Such equipment generates an hourly average noise level of about 85 dBA, at an equivalent distance of 50 feet during busy activity periods. The excavation of Area W17, located in the channel between the Jimmy Durante bridge and the lagoon (section 2.3.1, would require the use of a front end loader, a crane with bucket, and additional trucks. This equipment is expected to generate a noise level of about 90 dBA at 50 feet. The use of an electric dredge in this area <u>or other equipment that reduces the decibel level below criteria thresholds</u> would reduce the anticipated noise levels over those generated by conventional grading equipment. The precise type of <u>equipment</u> that would be used is not known; however, it is likely that noise levels would be comparable to <u>or less than</u> the electrified hydraulic dredge that is used to dredge the navigation channels in the Port of Los Angeles. This dredge generates L_{eq} 71.5 dBA at 50 feet (Parsons Engineering Science, Inc. 1996). It is not yet known whether a dredge or conventional equipment would be used in this area, therefore, this analysis considers the use of one or both of these types of equipment.

Excavation and/or dredging between the beach and the railroad bridge, and within a distance of about 1,000 feet to the east of the Jimmy Durante bridge are the most sensitive areas with respect to potential noise impacts to residential receptors in the area. Dredging of the river would have to occur immediately adjacent to residences located just to the south of the river where it crosses under Camino Del Mar. Hourly average construction noise levels would exceed the 75 dBA L_{eq}-hour significance threshold unless an electric dredge <u>or other equipment that reduces the decibel level below criteria thresholds</u> were used in place of conventional construction equipment. This impact would occur only during initial dredging and maintenance dredging (the latter would be required approximately every <u>8 months</u> thereafter). Noise impacts would be short term, lasting about a few days to a month during each dredging episode, but would be significant during this time; this impact could be mitigated by use of an electric dredge <u>or other equipment as noted above</u> (Class II). Some of the material from initial grading would be placed on the beach, as would the sand excavated during routine maintenance. Impacts from this type of activity are addressed below in section 4.14.1.3. Noise resulting from the balance of the excavation and/or dredging activities would be below the 75 dBA threshold at sensitive receptors along San Dieguito Drive because there is sufficient distance to act as a buffer between these activities and the nearest neighbors. Other sensitive receptors in the area, including the residences north of Via de la Valle and residences to the southeast of the project area would be at sufficient distances such that noise levels would not approach the significance threshold of 75 dBA L_{eq} or be expected to substantially increase ambient noise levels.

4.14.1.3 Disposal Sites

The disposal sites that would be nearest to noise sensitive receptors would be the beach sites on either side of the river outlet. The proposed disposal sites for excavated / dredged sand are located approximately 1,000 feet north and south of the river mouth on the open beach. This material would most likely be transported to construction staging area SA1 using trucks, but it could also be pumped from the channel to the beach without the need for trucks. Under the scenario that the material would be trucked, it is assumed that the material would be delivered to the staging area at which point it would be taken by a bulldozer to a point on the beach where it would be dumped and then spread across the beach. The bulldozer would generate hourly average noise levels of less than 75 dBA at a distance of 50 feet from any sensitive receptor. It would, however, be clearly audible at residences to the south of the river mouth that adjoins the beach. This activity is proposed to occur during one shift per day. The residence to the north is shielded by the bluff and set back substantially such that the combination of distance, acoustical shielding, and ambient noise would reduce the potentially intrusive noise of the bulldozer to a less than significant level. The noise impact that would result from bulldozer activity on the beach is considered to be adverse, but not significant (Class III). Alternatively, the sand might be piped as a slurry from the dredge to the beach. A booster pump would be required and would be located on land owned by the 22nd District Agricultural Association, approximately equidistant from the railroad bridge and Jimmy Durante bridge just north of the river. The pump would be electric and would be fully enclosed within an approximately 12-foot square structure. The pump would be a minimum of 700 feet from the nearest residences, and it is unlikely that noise from the pump would be perceptible at this distance. One of two pieces of heavy equipment, such as a bulldozer or heavy forklift, would be used to position the pipeline, as well as to move the sand once it was deposited on the beach. Impacts from the use of this equipment would be similar to those described immediately above.

Use of alternative disposal sites would not cause significant noise impacts to sensitive receptors. DS36 is about 700 feet from the nearest residences, and noise would be partially reduced by the intervening topography (the site is downslope from the residences, which are set back from the edge of the hillside). Noise impacts from disposal activities would be adverse but not significant (Class III). DS32 is about 200 from the nearest residences, which are located uphill from the site. Average noise levels at this site are expected to be about 60 to 65 dBA, which is considered an adverse but not significant impact (Class III). No other disposal sites are near sensitive receptors.

4.14.1.4 Berms and Infrastructure Protection

Three berms are proposed along the river channel (Figure 2.3.1-1). The westernmost berm would be located west of I-5 and south of the San Dieguito River. A second berm would be located east on I-5 on the north side of the river. The third berm, located east of I-5 and south of the river, would consist of an eastern and a western portion. The berms would be located generally within the center of the restoration area and would not be near sensitive receptors. Equipment necessary to construct the berms would include loaders, trucks, a crane, off road haulers, backhoes, and scrapers. This equipment would generate an hourly average noise level of about 95 dBA at a distance of 50 feet. The hourly average noise level would be below 75 dBA at a distance of about 500 feet from the berm construction area. Berms are all located more than 1,000 feet from any sensitive residential receptors. Noise resulting from berm construction would, therefore, be adverse but not significant (Class III).

A weir is proposed near the upstream end of the northeastern berm (Berm B8). Construction of the weir would involve the use of a crane, a vibratory hammer, and a backhoe. The vibratory hammer would generate a noise level of about 100 dBA at a distance of 50 feet, and an hourly average construction noise level exceeding 75 dBA would occur within 1,000 feet. The nearest sensitive receptors are residences north of Via de la Valle, which are about 1,400 feet from the site. This impact would be adverse but not significant (Class III).

No other construction or operational activities associated with berms and infrastructure protection would generate significant noise levels at sensitive receptors.

4.14.1.5 Nesting Sites

Five nesting sites for least terns and snowy plovers are included in this alternative. The nesting sites are generally located within the central portion of the project area, and are not near any residential or other noise sensitive receptors, with the exception of NS15, which is about 600 feet north of residences along Racetrack View Drive. Construction activities associated with the nesting sites would be similar to those discussed as a part of the berm construction. The hourly average noise level would be below 75 dBA at a distance of about 500 feet from the nesting site construction area. Thus, impacts at the residences would be adverse but not significant (Class III). Potential long-term noise effects on the nesting sites are discussed in section 4.4.

4.14.1.6 Public Access

The public access element of the park master plan addresses the proposal to construct the western segment of the Coast to Crest Trail, as well as proposals for two nature/interpretive trails. The element includes the design and location of parking facilities required to enable public access, such as staging areas, viewpoints, and a nature/interpretive center (section 2.3.1). The main trail would not pass near any noise sensitive receptors. Minimal construction activities would be required for the trail construction. Therefore, no significant noise impacts on existing sensitive receptors would result from the construction or operation of the trails (Class III).

The public would access the parking areas via the existing street network. The predicted increase in traffic noise on the street network resulting from people accessing the site was calculated by comparing traffic volumes with the project to baseline traffic volumes. The predicted increase in noise levels would be less than 1 dBA CNEL (or L_{dn}) along any of the existing roads. Thus, there would be no significant noise impact resulting from vehicular traffic associated with public access (Class III).

The noise level throughout the proposed project area, except adjacent to I-5, is less than 65 dB CNEL (or L_{dn}). The impact of ambient noise is adverse but not significant (Class III).

4.14.1.7 District Use of Area U18

Seasonal operation of a tram is being considered on the Coast to Crest Trail to transport people who park on the Horsepark Property to and from the Del Mar Fairgrounds. Tram use would occur during the Del Mar Fair, a 20-day period between late June and early July. The proposal also envisions tram use on the trail during opening day of the races, a one-day period in July. If permitted to use the trail, the trams are proposed to operate during the hours of 7:00 A.M. to midnight. At this time, it is estimated that two trams would be dedicated to use on the trail and would operate on a potentially continuous basis during the permitted use periods.

Noise measurements of two different trams were made at a distance of 50 feet from the trams when they were test driven in their parking area at the Fairgrounds. The results of these measurements are shown in Table 4.14-1. The trams generated noise levels comparable to a small van or small bus with noise levels typically ranging from about 70-75 dBA at a distance of 50 feet for the gasoline-powered, twin trailer Harlan tram, and 67-68 dBA for the Specialty Vehicles propane-powered single trailer tram. The trams would pass closest to residences when they are near the proposed nature/interpretive center. The residences are those located to the north and above Via de la Valle. The greatest potential for disturbance from the trams would be during the later evening hours. Hourly average noise levels at these residences were measured and found to be between 55-60 dBA during the daytime and evening. Assuming two tram pass-bys per hour, the trams would generate an hourly average noise level at these residences that would be insignificant and substantially below existing ambient noise. The maximum noise level of the trams as they pass the residences is estimated to be about 45 dBA. This would be 10 dBA below the background noise level. The trams are, therefore, predicted to be inaudible at these residences (Class III).

Table 4.14-1. Tram Noise Levels

TRAM NOISE LEVELS AT 50 FEET FOR TRAIN D GASOLINE POWERED TWIN TRAILER HARLAN TUG & TRAIN			
Single Event Level (dBa)	*Leq (dBA)*	*Lmax (dBA)*	*Time (sec.)*
81	67	70	28
80	66	70	25
82	66	75	19
NOISE LEVELS AT 50 FEET FOR SPECIALTY VEHICLES TRAIN F PROPANE POWERED SINGLE TRAILER			
80	66	68	25
78	65	67	19

Potential effects of noise on wildlife are discussed in section 4.4, Biological Resources.

Other uses considered for Area U18, the Via de la Valle site, include overflow parking and storage of truck trailers during the Del Mar Fair and some Horsepark activities. The precise number of vehicles that would be added to local roads as a result of this action is not known, but their presence would be short term and they are not likely to result in a significant increase in noise. Additionally, development of one or more of the following uses could occur: a year-round thoroughbred training track, uncovered show rings, cross-country course, and agricultural uses for youth in conjunction with the Fair. As discussed in section 4.1, if these uses required a public address system, this could result in a significant impact to nearby residents, located north of the site, but this impact is mitigable through use restrictions consistent with the San Diego Noise Ordinance (Class II).

Mitigation Measures

To mitigate noise impacts associated with the use of construction staging area SA1 to residences located near the mouth of the river, the following measure shall be made a condition of the future permits issued for this project:

- The boundaries of construction staging area SA1 shall be kept at least 100 feet from residences located adjacent to the south, although as needed construction work may temporarily occur within 100 feet. All internal combustion engine-driven equipment shall be properly muffled. The use of construction equipment in this area shall be limited to daytime weekdays, 7:00 A.M. to 7:00 P.M. and Saturdays from 9 A.M. to 7 P.M. No construction shall be allowed on Sundays or City of Del Mar holidays These measures shall be noted on the construction plans and reviewed with the contractor at the preconstruction meeting.

The implementation of these measures would reduce noise impacts from staging area SA1 to a less than significant level.

To mitigate noise impacts from dredging/excavation activities at the river mouth and in the inlet channel, the following measure shall be made a condition of the future permits issued for this project:

- When excavation and dredging (including maintenance dredging) are required between the beach and the railroad bridge and within a distance of about 1,000 feet to the east of the Jimmy Durante bridge, an electrified dredge or other equipment that reduces the decibel level to 75 dBA or less shall be used in place of conventional construction equipment. Maintenance dredging shall occur during daylight hours only.

The implementation of this measure would reduce this noise impact to a less than significant level. Impacts to residences near the Via de la Valle site (Area U18) from the potential use of public address systems would be minimized to a less than significant level by the following measure:

- Use of public address systems shall be conducted in accordance with the provisions of the City of San Diego Noise Ordinance (which are summarized in Table 3.14-3 of this EIR/EIS). To ensure compliance, this measure would be made a condition of any future Coastal Development Permit, as well as any future lease or other agreement between the 22nd District Agricultural Association and the JPA.

Adverse but not significant impacts to residences near the end of Racetrack View Drive from use of the access road leading to construction staging area SA3 would be minimized by the following measure, which shall be made a condition of future permits for this project:

- The use of construction equipment in this area shall be limited to daytime weekdays, 7:00 AM to 7:00 PM and Saturdays from 9:00 AM to 7:00 PM, unless the permitting agency (or agencies) determine, following notification of the surrounding property owners, that extending these hours would not significantly impact the adjoining residents. In addition, the use of this access route by daily construction site workers shall be prohibited. These conditions shall be listed on the construction plans and discussed with the contractor at the preconstruction meeting.

4.14.2 Maximum Tidal Basin Alternative

Although this alternative would require more excavation than the other alternatives, therefore requiring longer to complete, no changes in the anticipated noise impacts and required mitigation measures described in section 4.14.1 for the Mixed Habitat Alternative would occur under this alternative.

4.14.3 Maximum Intertidal Alternative

This alternative would require less excavation than the Mixed Habitat Alternative, although the location of the proposed grading and associated construction staging areas and access routes would remain the same. Therefore, the impacts and mitigation measures described in section 4.14.1 would be the same under this alternative.

4.14.4 Hybrid Alternative

Impacts and mitigation measures would be as described in section 4.14.1.

4.14.5 Reduced Berm Alternative

The initial excavation required under this alternative would be substantially less than any of the other alternatives, so project completion would occur sooner. Construction staging area SA3 would still be required as would the associated access route. Therefore, those impacts related to the use of this staging area and access route, as described in section 4.14.1, would remain the same and the required mitigation measure would be identical. No grading would occur on the Via de la Valle property under this alternative, therefore, no noise impacts related to the use of this property by the 22nd District Agricultural Association would occur.

Under this alternative, it may be necessary to carry out maintenance dredging in the channel and at the inlet more frequently than under the other alternatives due to the smaller tidal prism that would be created. As a result, excavation/dredging activity in the channel and at the inlet, and disposal activities on the beach could be more frequent. This increase in periodic maintenance would not, however, result in increased noise levels over those described in section 4.14.1. Rather, the noise levels would be generated more often. The mitigation measure described in section 4.14.1 for noise impacts to residents located to the south of the river would also be required for this alternative.

4.14.6 No Action Alternative

No noise impacts would result from the No Action Alternative.

4.15 SOCIOECONOMICS

Significance Criteria

Economic or social changes resulting from a project are considered to produce significant impacts if they result in a substantial adverse physical change in the environment (e.g., urban blight).

For the impact analysis below, it is assumed that the footprint of the action alternatives is essentially the same. The major differences between the alternatives are in the amount of dredged material to be excavated/dredged and disposed and the type and relative amounts of various habitats that would be created/restored. Some of the public access components of the project have alternative configurations, for example alternative trail alignments, most of which could be accommodated by any of the action alternatives.

4.15.1 Mixed Habitat Alternative

4.15.1.1 Population

Under the Mixed Habitat alternative, changes in population in the project area would be minimal. The project does not include a housing component and long-term changes in employment associated with the project would be minor, such as the periodic maintenance dredging and staffing of the on-site nature/interpretive center. It is expected that workers already residing in the San Diego area could fill project-related jobs.

4.15.1.2 Employment

Employment associated with the construction phase of the project is expected to last 1 to 2 years. Employment would vary depending upon the construction activity being performed (e.g., site clearing, utility replacement and relocation, revegetation, or site access construction). The estimated labor force associated with each construction activity varies from five workers per day of production (i.e., one operator and four members of a survey crew to spread dumped beach fill material on adjacent beach areas) to 64 workers per day (i.e., two shifts per day of 12 operators, 10 laborers, six teamsters, and four survey crew members to excavate lagoon and marsh areas, construct the river berm and nesting site cores, and install culverts and rock slope protection).

Operations employment associated with the project is expected to be minor and would be associated with the on-site nature/interpretive center, other site management activities, and periodic maintenance dredging. Seasonal operation (during the 20-day Del Mar Fair) of two trams on the Coast to Crest Trail to transport people between Horsepark and the Fairgrounds, if approved, could also provide temporary employment on an annual basis. The public access components of the project, such as the nature/interpretive center, trails, and overlook areas would provide an additional recreation attraction, which could increase sales by local businesses if additional visitors are attracted to the area. There would be a minor beneficial impact on employment (Class IV).

4.15.1.3 Housing

No housing would be located on the site. Development rights associated with the Horseworld property and portions of the property identified as the Via de la Valle parcel, both owned by SCE, are to be transferred to the nearby Villas at Stallions II residential project pending final Coastal Commission action. Potential impacts on housing would be negligible.

4.15.1.4 Agriculture

Portions of the project site are planted in tomatoes. The project would result in conversion of approximately 107 acres from tomato production, which would reduce agricultural income in San Diego County by approximately $609,900 in 1997 dollars. Tomato crops comprised 4,887 acres in San Diego County in 1997 and had a production value of approximately $5,700 per acre. Total county-wide tomato crop income would therefore potentially be reduced by 2 percent. Potential impacts on agricultural income are considered to be adverse but not significant (Class III).

Use of 15 to 20 acres in area U18 (the Via de la Valle property) by the 22nd District Agricultural Association could, if approved, result in a variety of possible uses such as a thoroughbred training track, uncovered show rings, cross-country course, demonstration agricultural uses for youth in conjunction with the Fair, relocation of existing show barns from the southeast portion of Horsepark, staging trailers during the Fair, and overflow parking during the Fair and special Horsepark events. Some of these uses would require increased grading of the site beyond what is otherwise proposed for U18. The District uses would occur adjacent to the proposed Nature Center. These activities would potentially increase equestrian-related and Fair revenues to the District and other operators, and provide additional staging and parking areas that would support operation of the Fair and other events. Proposed District operation of a tram on the Coast to Crest Trail would also support Fair and racing operations and visitation, although it may decrease use of the trail for other types of users. Use of Agricultural District property (the main parking lot and the driving range) as a disposal site for the project could have indirect benefits from increased District revenues if the site, once raised out of the floodplain, is developed. However, related environmental effects such as traffic and potential flooding in other areas, could also occur. District uses of U18, the proposed tram, and use of District property as a disposal site and the subsequent development potential, would potentially have beneficial socioeconomic effects resulting from increased operating revenues to the District.

4.15.1.5 Other Effects

The project would potentially reduce beach access both during initial inlet dredging and on a long-term basis (i.e., lateral access associated with crossing of the river mouth), and could, in turn, potentially reduce parking meter and parking enforcement revenues to the City of Del Mar from beach users who currently park along the west side of Camino del Mar in the vicinity of the San Dieguito River mouth. Parking and enforcement revenues associated with the beach are estimated at about $14,500 per month during the winter months and $17,170 per month in the summer**)**. The extent to which use of the existing metered spaces might change as a result of the project is unknown. To reduce the effect of the project on parking revenues, inlet dredging could be scheduled for the winter months when there is a significant reduction in use of paid parking spaces. It should be noted that parking revenue impacts would not be considered significant impacts under CEQA since they would not result in physical impacts on the environment. Impacts to beach users as a result of the project are described in section 4.1.

4.15.1.6 Mitigation Measures

Because no significant impacts related to socioeconomics would occur as a result of this alternative, no mitigation is required for the Mixed Habitat Alternative.

4.15.2 Maximum Tidal Basin Alternative

More grading would be associated with the Maximum Tidal Basin Alternative. The amount of excavation is 2.979 million cubic yards, compared to 2.537 for the Mixed Habitat Alternative, or 17 percent higher. This could increase construction employment. Other impacts would be similar to those discussed above for the Mixed Habitat Alternative. No mitigation would be required.

4.15.3 Maximum Intertidal Alternative

Less grading would be associated with the Maximum .Intertidal Alternative. The amount of excavation is 2.293 million cubic yards, compared to 2.537 for the Mixed Habitat Alternative, or 10 percent less. This could decrease construction employment. Other impacts would be similar to those discussed above for the Mixed Habitat Alternative. No mitigation would be required.

4.15.4 Hybrid Alternative

Slightly more grading would be associated with the Hybrid Alternative. The amount of excavation is 2.614 million cubic yards, compared to 2.537 for the Mixed Habitat Alternative, or 3 percent higher. This could result in a minor increase in construction employment. Other impacts would be similar to those discussed above for the Mixed Habitat Alternative. No mitigation would be required.

4.15.5 Reduced Berm Alternative

Construction employment associated with the Reduced Berm Alternative may be less than the other alternatives since this alternative has the smallest amount of excavation, 1.304 million cubic yards. Less disposal area would be required, thus preserving some agricultural land and associated revenues on DS36. Other impacts would be similar to those discussed above for the Mixed Habitat Alternative.

4.15.6 No-Action Alternative

Under the No-Action Alternative, no restoration of tidal, freshwater, or upland areas would occur and the public access, interpretive, and the other related proposals would not occur.

Population conditions in the City of San Diego and the City of Del Mar would be as discussed in the description of baseline conditions in section 3.15. Construction and operations employment described for restoration alternatives would not occur under the No-Action Alternative. If the project does not occur, the Via de la Valle property would revert back to developable land and could be developed in accordance with the City of San Diego's North City Future Urbanizing Area Framework Plan. As a result, there would be the potential for development of on-site housing on this parcel. Because these development rights are currently transferred to a nearby property, no net change in the potential number of housing units is expected. The reduction in agricultural income due to conversion of acreage in tomato crops would not occur and Agricultural District use of U18 would not be considered, reducing the possibility of any associated District revenues.

4.16 ENVIRONMENTAL JUSTICE

Significance Criteria

Impacts to environmental justice would be significant if:

- The proposed project resulted in disproportionate adverse impacts to low-income or minority populations.

4.16.1 Mixed Habitat Alternative

As indicated in section 3.16, the project area is not composed of a predominantly minority or low-income population; therefore, no disproportional impacts associated with environmental justice would occur. Members of the public who are minorities and/or low income have had and will continue to have input into the environmental review process. A scoping hearing was held in the Solana Beach City Council Chambers on Monday, June 15, 1998 at 7:00 P.M. to solicit public comment on the proposed action and alternatives. The comments received during this hearing have been considered in this EIR/EIS. The Draft EIR/EIS was circulated for public review and comment, a Public Hearing was held on August 25, 1999 at the Solana Beach City Hall at 7:00 P.M., and all comments were addressed in the Final EIR/EIS, which also will be circulated for comment among interested parties.

Mitigation Measures

Because no significant impacts related to environmental justice would occur as a result of project implementation under this alternative, no mitigation is required.

4.16.2 Maximum Tidal Basin Alternative

Impacts and mitigation would be as described in section 4.16.1.

4.16.3 Maximum Intertidal Alternative

Impacts and mitigation would be as described in section 4.16.1.

4.16.4 Hybrid Alternative

Impacts and mitigation would be as described in section 4.16.1.

4.16.5 Reduced Berm Alternative

Impacts and mitigation would be as described in section 4.16.1.

4.16.6 No-Action Alternative

No impacts to environmental justice would be associated with the No-Action Alternative.

5. CONSISTENCY WITH ADOPTED PLANS, POLICIES, AND LEGISLATION

5.1 ADOPTED PLANS AND POLICIES AFFECTING THE PROJECT AREA

The restoration planning area is included within the jurisdictional boundaries of the City of San Diego and the City of Del Mar, and in proximity to properties within the City of Solana Beach and an unincorporated portion of the County of San Diego. In addition, the entire planning area is located within the boundaries of the California Coastal Zone and the Focused Planning Area of the San Dieguito River Park. Each of these agencies has adopted land use plans and policies that are intended to guide or regulate the types of uses permitted within each respective planning area. Some of these plans and policies also address issues such as site planning, grading, and habitat preservation. The specific plans, policies and regulations that are applicable to the proposed project are summarized below.

5.1.1 City of Del Mar

The western third of the restoration planning area is located within the jurisdictional boundaries of the City of Del Mar. The planning goals and policies for the City of Del Mar are presented in the City of Del Mar Community Plan (City of Del Mar 1976) and the City of Del Mar Local Coastal Program Land Use Plan (City of Del Mar 1993). The goals and policies of the City of Del Mar that are relevant to this project are outlined below.

Del Mar Community Plan

Overall Goal: Preserve and enhance the special character of Del Mar, the elements which are a village-like community of substantially single family residential character, a picturesque and rugged site, and a beautiful beach.

Environmental Management Element

Goal 1: Establish without delay a comprehensive program to preserve and acquire permanent open space sufficient to meet the long-range needs of the community, preserve and enhance natural and man-made resources, and protect areas susceptible to seismic and flooding hazards.

> Objective A. Secure sufficient land as permanent open space to preserve intact the locally and regionally significant natural environmental characteristics of Del Mar: bluffs, beach, canyons, outstanding geological formations, and the San Dieguito Lagoon.

> Objective B. Secure open space necessary to identify Del Mar as a distinct and separate community, and to protect scenic vistas of community-wide importance.

> Objective D. Insure that all future development be such as to preserve an atmosphere of openness, to preserve scenic vistas and access to public open spaces, including the bluffs and beach.

> Objective E. Protect specific open space areas as shown on the Del Mar Environmental Management Plan.

Preserve, as open space, areas such as the 100-year floodway and beach bluffs west of the railroad tracks.

Preserve and where necessary acquire easements for the protection of access to the beach and other public open space.

Objective G. Cooperate with other jurisdictions to coordinate open space acquisition and preservation.

Objective H. Conserve the natural character of land, water, vegetative and wildlife resources within the community.

Objective I. Retain and enhance natural resources within the San Dieguito River floodway and lagoon habitat.

Objective J. Restore environmentally degraded areas to the high quality standards implied in the objectives above.

Objective P. Insure public safety within the San Dieguito River floodplain.

Prohibit structures in the floodway

Locate proposed development so as to eliminate the need for protective construction such as seawalls, retaining walls, or flood control devices.

Discourage landfill, land removal, and structures within the floodplain that would limit water holding capacity or impede water movement so as to adversely affect other property.

Transportation Element

Goal 2: Minimize the impact of the automobile on the character of Del Mar and emphasize a more pedestrian oriented environment, safer sidewalks, landscaped buffer zones, and alternative means of transportation.

Objective A. Encourage a pedestrian-oriented, non-motorized community by developing a system of bicycle rights-of-way and pedestrian paths, and discouraging high speed traffic along city streets.

Preserve and improve pedestrian access to and along beaches and sea cliffs by use of all public right-of-way and prescriptive public easements.

Objective B. Facilitate the movement of traffic in a safe and uncongested manner . . .

Community Development Element

The Community Development Element of the Del Mar Community Plan identifies goals that are intended to protect and enhance environmental qualities, and other aspects of Del Mar's unique quality. This element divides the city into various districts. The restoration project area is located within the Valley District. The goals within this element relate primarily to preserving and/or improving the quality of the existing developed areas of the City. This element describes as the critical proposal for the Valley District the need to conform to the criteria established in the Environmental Management Section of the Plan. It further recommends that existing and potential vehicular parking areas owned and operated by the 22nd District Agricultural Association be landscaped and not built upon in the future.

This element also recommends a number of specific plans that are intended to assist in the implementation of the stated policies and objectives of the Community Plan. The one relevant to the restoration project is the San Dieguito Lagoon Specific Plan. The purpose and intent of this specific plan is to develop a comprehensive plan for the preservation and enhancement of the San Dieguito Lagoon. The San Dieguito Lagoon Resource Enhancement Program, adopted by the City of Del Mar and the California Coastal Commission in 1979 constitutes the City's San Dieguito Lagoon Specific Plan. The element acknowledges that amendments to the plan may be required from time to time, to keep the plan up to date and to assure consistency with other City and State development programs. The element goes on to state that such amendments to the Enhancement Program are subject to CEQA review, public hearings and approval by the City of Del Mar, the State Coastal Conservancy, and the California Coastal Commission.

Local Coastal Program, Land Use Plan

The goals and policies of the City of Del Mar's Local Coastal Program (LCP) Land Use Plan, adopted in March 1993, are similar to those of the Community Plan and are intended to ensure that all land use and development activities within the City of Del Mar will be in conformance with the policies of the California Coastal Act of 1976, as amended. Within Del Mar's jurisdictional boundaries, the designated land use and zoning for the majority of the restoration area is floodway. <u>Implementing ordinances for the LCP were certified by the CCC with suggested modifications in November 1999. Required follow-up action by the City Council and CCC has not yet occurred, however. Therefore, coastal development permit authority for the portions of the proposed project within Del Mar remains with the CCC at this time. There is, however, a possibility that the City of Del Mar could be issuing its own coastal development permits by the time the project applicant is ready to submit permit applications. In this event, it appears likely that Del Mar would first need to amend its LCP to incorporate revisions to the San Dieguito Lagoon Resource Enhancement Program (SDLREP) since that document is a component of the certified land use plan.</u>

With respect to recreational opportunities, the Land Use Plan states that the City of Del Mar shall cooperate with other jurisdictions in the acquisition and preservation of open space and recreation lands. The Land Use Plan encourages continued cooperation with other local, State and Federal agencies to implement the San Dieguito Resource Enhancement Program and to improve the lagoon and the San Dieguito River Valley for use as a wildlife preserve. In addition, the plan recommends cooperation in the planning and implementation of the San Dieguito River Valley Regional Open Space Park.

San Dieguito Lagoon Resource Enhancement Program

The San Dieguito Lagoon Resource Enhancement Program (State Coastal Conservancy 1979) was developed through a joint effort of the California State Coastal Conservancy and the City of Del Mar to restore and enhance the San Dieguito Lagoon. The boundaries of this project were generally I-5 on the east, Via de la Valle on the north, the Pacific Ocean on the west, and the northfacing slopes above San Dieguito Drive to the south. The program was adopted by the Coastal Conservancy, the City of Del Mar, and the California Coastal Commission in 1979, and partially implemented during the early 1980's. The primary objectives of the plan are to protect and enhance the aesthetic and ecological values of the lagoon and to provide opportunities for public access, recreation, and education consistent with protection of natural and scenic resources.

Several design guidelines are included in the plan to guide the enhancement work, these include:

- Disturb as little as possible the integrity of existing functioning natural systems.
- Expand the water surface to improve the tidal prism and increase aquatic habitat.
- Create a pattern of water circulation and flushing that will reduce mosquito breeding, stagnation, and pollutant buildup.
- Locate land alterations in a manner that will reduce their risk of being destroyed by floods.
- Isolate endangered bird species from human and animal intrusion; and protect their habitat from any adverse impacts of site alteration.
- Increase the diversity of habitat types and develop ecotones (transition zones between different habitat types).
- Site recreational access for educational viewing to minimize adverse impacts to wildlife.
- Locate and design any physical structure, roadway improvements, etc. to protect wetlands, scenic values, and wildlife habitat.

The plan proposes a number of site improvements, which are outlined below:

- Construction of tidal basins
- Enlargement of channels
- Creation of a freshwater marsh
- Establishment of a least tern preserve
- Enhancement of several wildlife habitat areas
- A general cleanup of the lagoon
- Improvement of pedestrian trails and viewing points (with educational signs)
- Construction of a permanent entrance to the reserve.

Under the San Dieguito Lagoon Enhancement Plan, three tidal basins are proposed in order to increase the lagoon's tidal prism. The three basins include the railroad triangle, a 3.5-acre parcel owned by NCTD and located immediately to the east of the railroad and south of the river, the western half of the JPA's airfield property (referred to in the plan as the northern basin), and the southern basin, located on the western half of the DFG property, where a variation of this proposed tidal basin was constructed in 1983. The plan also proposes the widening of river channel east of the railroad, as well as south of the Fairgrounds. The intent of these widening proposals, as well as the construction of the three basins, was to sufficiently increase the tidal basin to maintain the lagoon mouth in an open configuration. The plan does state that if the tidal prism proves to be insufficient to keep the mouth open, then the mouth of the lagoon should be mechanically opened at regular intervals. With respect to upland habitat, the plan proposes that all upland areas be cleared of rubble and weeds and revegetated with native species.

The plan also includes a phasing plan and proposals for plan implementation. A portion of the plan was implemented in 1983 in cooperation with the Coastal Conservancy, the City of Del Mar, and the California Department of Fish and Game. This restored area is located to the south of the airfield property and the north of San Dieguito Drive, in the southwest quadrant of the lagoon.

Conceptual Plan for the Expanded San Dieguito Lagoon Resource Enhancement Program

Subsequent to the adoption of the San Dieguito Lagoon Resource Enhancement Program (City of Del Mar 1989), the City of Del Mar approved additional planning work to define the park planning concept for the lower San Dieguito River Valley. This study, which was approved by the City of Del Mar in 1989, focuses on the continued restoration of the San Dieguito Lagoon ecosystem. The area covered by the plan is however much larger than the previous enhancement program and includes properties located to the east of I-5, extending well into Gonzales Canyon. The final plan, prepared by the San Dieguito Lagoon and River Valley Committee, the Spurlock Office and James Massey Enterprises, addresses the biological, aesthetic, and future use goals for the planning area and provides planning concepts addressing conservation and management, public use, interpretive programs, and regional circulation and access. Unlike the original Enhancement Program, this expanded program was not incorporated in the City's Community Plan.

Relevant Ordinances of the City of Del Mar

The City of Del Mar regulates uses within sensitive areas through the application of several overlay zones. These zones are described below.

Beach Overlay Zone: The Beach Overlay Zone was created by initiative to regulate the uses of the Del Mar beach area. The regulations of this overlay zone are intended to protect public access to and along the shoreline, while promoting public safety, health and welfare, and providing for the protection of private property. The primary purpose of this ordinance is to regulate the placement of protective structures on the beach.

Floodplain Overlay Zone: The purpose of the Floodplain Overlay Zone is to ensure that the development of real property which is subject to floodwaters will not obstruct flood flow; will not create a hazard to life, health, safety, or the general welfare; will reduce the need for the construction of flood control facilities that would be required if unregulated development occurs; and will minimize the cost of flood insurance to Del Mar residents. The City's flood hazard regulations prohibit uses in the floodway, which would constitute an unreasonable, unnecessary, or dangerous impediment to the flow of floodwaters.

Floodway Zone: The Floodway Zone includes areas subject to relatively deep and high velocity floodwater. The zone prohibits uses that would impede the flow of floodwaters, requires Conditional Use Permits for any uses, and prohibits the construction of any permanent structures.

Restoration and public access proposals within the City of Del Mar could require one or more of the following discretionary actions: a Conditional Use Permit, a Land Conservation Permit for earth movement that involves more than 25 cubic yards but less than 200 cubic yards of cut and/or fill, and/or a Grading Permit for earth movement in excess of 200 cubic yards.

5.1.2 City of San Diego

The eastern two-thirds of the restoration planning area are located within the jurisdictional boundaries of the City of San Diego. Land use proposals within this area are subject to the planning goals, policies and land use regulations adopted by the San Diego City Council including: the goals and objectives of the Progress Guide and General Plan, North City Future Urbanizing Framework Plan, Torrey Pines Community Plan, and North City Local Coastal Program. The project is also subject to the regulations of the San Diego Municipal Code which addresses permitted uses, grading and resource protection.

Progress Guide and General Plan

The City of San Diego Progress Guide and General Plan (City of San Diego 1989) has a number of environmental goals that are pertinent to the present proposal. These include the following:

Basic Goal of the Progress Guide and General Plan

> Fostering of a physical environment in San Diego that will be most congenial to healthy human development.

Major Subgoals of the General Plan

> Fostering of a physical environment that is responsive to the individual's psychological, aesthetic, and physical needs.

> Conservation of an urban environment that is in harmony with nature and retains strong linkages with it.

General Plan Guidelines for Future Development

> Preservation of environmental quality by conservation of agricultural lands; management of natural resources - floodplains, vegetation aquifers, slopes, hillsides, canyons, coastal and waterfront areas; preservation of open space and vistas; and reduction of air, noise, and water pollution.

Public Facilities, Services and Safety Element

> Preserve as much as possible the natural attributes of both the floodplain and floodway without endangering loss of life and property.

Open Space Element

Establish an open space system which provides for the preservation of natural resources, the managed production of resources, the provision of outdoor recreation, the protection of health and safety, and the utilization of the varied terrain and natural drainage systems of the San Diego community to guide the form of urban development.

Recreation Element

Provide a range of opportunities for active and passive recreation, educational activities, and neighborhood identification, in all parts of the City, adapted to the needs and desires of each neighborhood and community.

Enhance the urban scene by development of an extensive and varied system of open space and recreation facilities.

Acquire and preserve all beaches for public uses.

Conservation Element

Wise management and utilization of the City's remaining land resources, and preservation of its unique landforms, and the character they impart to San Diego.

Accessibility and availability of all beaches and shoreline for public use.

Conservation of beaches and shoreline to maintain and enhance their benefits for present and future San Diego residents and visitors.

Retention of premium agriculturally productive lands in agricultural usage.

Achievement and maintenance of a high level of water quality in all water bodies under City jurisdiction.

Preservation of local commercial and sport fishing industries.

Protection of major mineral deposits against encroachment by land uses which would make their extraction undesirable or impossible.

Protection of all wildlife and vegetation that does not constitute a clear and direct danger to man.

Cultural Resources Management Element

Preservation of San Diego's rich and historical and prehistoric tradition so that it may become part of the consciousness of the present and future generations.

Conserve in their entirety the largest and most unique prehistoric sites found within the City to be held for investigation with more sophisticated techniques developed at some future time.

Preservation of historic resources in number and type so as to successfully evoke the distinctive character of all significant stages of San Diego's history.

Urban Design Element

Development of a comprehensive concern for the visual and other sensory relationships between people and their environment.

Recognize and protect major views in the City with particular attention to those of open space and water.

Recognize the relationship of land to structure and the nature and importance of the natural landforms and the natural environment.

Preserve the natural base of the city; the valleys, canyons, hillsides and shoreline by encouraging development to respect a vanishing resource.

The City of San Diego Progress Guide and General Plan divides the City into three planning areas that are related to the overall growth recommendations for the City. These areas include Urbanized, Planned Urbanizing and Future Urbanizing. The area of the project that is located west of I-5 and within the limits of the City of San Diego is included in the planned urbanizing area of the City, while the area from I-5 east to El Camino Real is located within the boundaries of the Future Urbanizing Area. Specific land use policies for existing and future uses in the Planned Urbanizing areas are outlined in adopted community plans. For this project, the applicable community plan would be the Torrey Pines Community Plan. Properties designated as Future Urbanizing are subject to the recommendations of the General Plan, as well as the proposals included in the North City Future Urbanizing Area Framework Plan adopted in October 1992.

Torrey Pines Community Plan

The portion of the project area located to the east of Del Mar and the west of I-5 is included within the boundaries of the Torrey Pines Community planning area and is subject to the goals, policies, and recommendations of the Torrey Pines Community Plan and Local Coastal Program (City of San Diego 1996). Those goals, recommendations and policies of the Torrey Pines Community Plan and Local Coastal Plan that are applicable to the current project are outlined below.

Resource Management & Open Space Element

Goals -

Ensure long term sustainability of the unique ecosystems in the Torrey Pines Community, including all soil, water, air, and biological components which interact to form healthy functioning ecosystems.

Conserve, restore, and enhance plant communities and wildlife habitat, especially habitat for rare, threatened, and endangered species.

Retain viable, connected systems of wildlife habitat, and maintain these areas in their natural state.

> Identify, inventory and preserve the unique paleontological, archaeological, Native American, and historic resources of Torrey Pines for their educational, cultural, and scientific values.

> Preserve, enhance and restore all natural open space and sensitive resource areas, including . . . San Dieguito Lagoon and River Valley . . . and all selected corridors providing linkage between these areas.

> Policies -

> Land uses adjacent to environmentally sensitive habitats shall not negatively impact those areas.

> Development impacts to rare, threatened, endangered, or candidate species shall be minimized or eliminated.

> No filling, clearing, grubbing, or other disturbance of biologically sensitive habitats shall be permitted without approved mitigation plans.

> Coastal lagoons and estuaries that are designated and zoned open space shall remain undeveloped.

> Public access in areas of environmentally sensitive habitats shall be limited to low-intensity recreational, scientific, or educational use. Access shall be controlled or confined to designated trails or paths, and no access shall be approved which results in disruption of habitat.

> Preserve and enhance all open space and wildlife corridors.

> Provide pedestrian/bicycle linkages so that all open space areas will be connected.

The plan also includes several proposals related specifically to protecting and enhancing the San Dieguito Lagoon. These include:

> The lagoon should be enlarged to enhance plant and animal habitats, and to create a sufficient tidal prism to ensure adequate water circulation and to keep the mouth of the river open.

> The existing fairgrounds and parking shall be enhanced with landscaping, and the sensitive habitat areas shall be buffered from fairgrounds activity. Activities of the 22nd Agricultural District shall not encroach into open space areas.

> Development adjacent to the lagoon should be designed to avoid sedimentation, erosion, and other potential impacts which degrade the quality of water resources, and should preserve existing public views.

> Within the 100-year floodplain fringe of the San Dieguito River, fill for roads and other public improvements and/or permanent structures will be allowed only if such development is consistent with uses allowed pursuant to the A-1-10 zone and other existing

zoning, is capable of withstanding periodic flooding, and does not require the construction of offsite flood protective works.

Protect, preserve, and enhance the variety of natural features within the San Dieguito River Valley including the floodplain, the open waters of the lagoon and river, wetlands, marshlands, and uplands.

Maintain and enhance the experience of nature within the lagoon, by screening present conflicting uses, prohibiting future conflicting uses, retaining natural areas and promoting an expanded water body within the lagoon.

Transportation Element

Provide a system of bikeways and pedestrian facilities that will encourage bicycling and walking as means of transportation.

Public Facilities Element

Ensure that new facilities are designed to minimize or preclude adverse impacts to environmentally sensitive resource areas.

Permit only those recreational activities which do not negatively impact environmentally sensitive areas.

Local Coastal Program Policies

This section of the Torrey Pines Community Plan outlines specific policies for development within the Coastal Zone. These policies relate to grading on hillsides with slopes of 25 percent grade and over; procedures for runoff and erosion control in order to protect water quality; diking, filling or dredging of open coastal waters, estuaries, and lakes; developing in floodplain areas or areas of sensitive vegetation; and protection of visual resources.

North City Local Coastal Program

The North City Local Coastal Program Land Use Plan (City of San Diego 1981) was initially approved by the City of San Diego in March 1981. It was amended in 1985 and again in 1988. Portions of the document have been superseded by the approval of subsequent LCPs, such as is the case for the Torrey Pines planning area. That portion of the North City LCP that applies to the proposed project site is included in the North City segment. Although the map in the plan implies that the plan covers those portions of the project site that extends from I-5 east to El Camino Real, the text refers primarily to the southern slopes of the San Dieguito River Valley. The CCC has not certified an LCP for this area; therefore it is an area of deferred certification with the CCC retaining the final permitting authority over any discretionary projects proposed in the area. The CCC does, however, refer to the North City Local Coastal Program, as well as the North City Future Urbanizing Area Framework Plan, when reviewing land use issues in this area.

Specific language included in the 1988 amendments to this LCP that pertain to the restoration project are as follows:

Channelization or other substantial alteration of rivers or streams shall be limited to (1) necessary water supply projects, (2) flood control projects where no other feasible method for protecting existing public or private structures exists and where such protection is necessary for public safety or to protect existing development, or (3) other development, a primary element of which is the improvement of fish and wildlife habitat.

Where grading occurs (near the south slopes of the San Dieguito River Valley) a sculptured technique should be used to blend fill and cut slopes with natural land contours. Any fill slopes should be stabilized with appropriate native plant materials to help reestablish the natural biotic systems of flora and fauna.

North City Future Urbanizing Area Framework Plan

The project area between I-5 and El Camino Real is included within the boundaries of the North City Future Urbanizing Area (NCFUA) Framework Plan (City of San Diego 1992). The relevant policies, referred to as Guiding Principles, included in the Framework Plan are outlined below.

Guiding Principles: Land Use

Incorporate into the NCFUA a permanent Environmental Tier of open space lands with high natural resource value that function as natural habitat, form connections to surrounding open spaces, and give shape and definition to surrounding built areas. Use natural resources as a foundation for designing the area's land use plan.

Implementing Principles: Development Adjacent to Significant Natural Areas

Protect existing drainageways from encroachment that might affect drainage patterns or water quality through the use of setbacks/buffers.

Development in hillside areas should conform to the unique natural setting of each area and site, retaining the character of existing landforms and preserving significant native vegetation.

Development should not obstruct public views.

In conjunction with project proposals, disturbed areas on a site which are to be retained as open space shall be contoured to blend in with natural slopes and shall be revegetated with native plants.

Development adjacent to ridges and bluffs shall minimize visual impacts to these topographic features through setbacks and landscaping, especially near major canyons or valleys.

Guiding Principles: Open Space

Create the Environmental Tier, an interconnected, viable system of natural open space that serves to protect and conserve cultural resources, flora and fauna that occur in the NCFUA.

Preserve floodplains and significant topographic features such as canyons, ridges, and hillsides.

San Dieguito River Regional Plan

In October 1984, the San Diego City Council adopted the San Dieguito River Regional Plan (City of San Diego 1984). This plan, which covers the portion of the San Dieguito River Park Focused Planning Area that extends from the Pacific Ocean to just east of Lake Sutherland, is intended to provide a planning framework for the western San Dieguito River basin. This plan consists of four major elements: a Land Use Element, Water Element, Recreation/Open Space Element, and Transportation Element. These elements contain generalized goals and recommendations for the planning area. In addition, the planning area has been divided into six subareas. Recommendations designed to guide future planning efforts and individual development projects within each of these subareas are also included in the document.

Goals of the San Dieguito River Regional Plan

To preserve the function of the San Dieguito River basin as an open space corridor through the protection of the contiguous nature of the existing dominant landscape features.

To protect and preserve significant natural, cultural, and aesthetic resources, including the visual integrity of the river basin.

To ensure compatibility between various land uses.

To preserve water quality and quantity.

General Recommendations of the Plan

Preservation of the San Dieguito River basin's recreation/open space potential should be the highest priority in considering the land use issues.

Establishment of a recreation/open space corridor through the river basin.

Promotion of alternate modes of transportation within the recreation corridor to minimize vehicular impacts upon the recreational potential.

Land Use Element

Ensure the appropriate location, siting, design, and intensity of development in terms of the compatibility between uses and the relationship of such uses to natural landscape and open space areas.

Minimize the alteration of landforms and drainage patterns with special attention to floodplains, canyons and steep slopes.

Enhance agricultural production.

Preserve significant biological and cultural resources.

Preserve the character and visual integrity of the open space corridor.

Establish an open space/recreation corridor throughout the length of the river valley.

Water Use Element

Preserve water quality and quantity through water conservation, water reclamation, erosion control, and pollution control.

Encourage visual and physical access to water resources where consistent with recreational goals, public health requirements and resource protection.

Recreation/Open Space Element

Protect and preserve significant resources and the visual integrity of the San Dieguito River basin as an essentially passive rural area.

Preserve sensitive species and habitats and limit human disturbance.

Establish an open space/recreation corridor throughout the length of the river valley with direct connections to open space and recreation areas to the north and south.

Preserve and enhance the recreational potential of the San Dieguito River basin.

Implement existing plans for City and County bicycle, hiking and equestrian trail systems.

Recommendations by Subarea

The restoration project site is located within Subarea I of the regional plan. Recommendations for this subarea include:

Develop a "gateway plan" at the I-5 entrance into the City of San Diego.

Allow no infilling and encroachment in the floodplain which results in a net loss of the flood volume.

Continue City support of the San Dieguito Lagoon Enhancement Program where consistent with other City policies.

Establish trail systems which could connect the beach, fairgrounds, lagoon, and interpretive sites to Del Dios Gorge.

Multiple Species Conservation Program, MSCP Plan

The Multiple Species Conservation Program (MSCP) (City of San Diego 1998) is a comprehensive habitat conservation planning program that addresses multiple species habitat needs and the preservation of native vegetation communities for a 900-square-mile area in southwestern San Diego County. The MSCP allows local jurisdictions to maintain land use control and development flexibility by planning a regional preserve system that can meet future public and private project mitigation needs. The MSCP was developed to conserve both the diversity and function of this ecosystem through the preservation and adaptive management of large blocks of interconnected habitat and smaller areas that support rare vegetation communities. Maintaining ecosystem functions and persistence of extant populations of covered species is the biological goal of the MSCP. The San Dieguito Wetland Restoration project site is located within the boundaries of the

MSCP, and is one of sixteen core biological resource areas identified within the MSCP study area. Core areas are defined as areas generally supporting a high concentration of sensitive biological resources, which, if lost or fragmented, could not be replaced or mitigated elsewhere.

The Conservation Plan of the MSCP includes the following goal, which is relevant to the current project:

> Preserve as much of the core biological resource areas and linkages as possible.

City of San Diego MSCP Subarea Plan

The City's MSCP Subarea Plan (City of San Diego 1997) is consistent with the MSCP Plan and qualifies as a stand alone document to implement the City's portion of the MSCP Preserve. This plan establishes the Multi-Habitat Planning Area (MHPA), which delineates core biological resource areas and corridors targeted for conservation. The project site is located within the Northern Area of the Subarea Plan. The Subarea Plan includes a number of general planning policies and design guidelines, which relate primarily to development projects proposed within or adjacent to the MHPA. The plan's land use considerations also address issues such as flood control, drainage, lighting, noise, and grading. The topics of restoration and public access are addressed under the plan's General Management Directives. With respect to restoration, the plan states that restoration undertaken in the MHPA "shall be performed in a manner acceptable to the City." One of the plan directives is to include in the plan the reintroduction and/or increase in population of species covered by the MSCP. The directives related to public access include locating trails, view overlooks, and staging areas in the least sensitive areas of the MHPA; in general, avoid paving trails unless management and monitoring evidence shows otherwise; minimize trail widths to reduce impacts to critical resources; limit the extent and location of equestrian trails to the less sensitive areas of the MHPA; and maintain equestrian trails on a regular basis to remove manure from the trails and preserve system.

The Subarea Plan specifically addresses the San Dieguito Wetland Restoration project under Overall Management Policies and Directives, as follows: "Management of the lagoon and river will be performed according to the Concept Plan and any management plan specifically prepared for Southern California Edison's mitigation area and the overall lagoon enhancement project. It is not anticipated that conflicts will occur with the MSCP implementation due to the sensitivity of the concept plan to the natural habitats and character of the entire river valley" (page 79).

Relevant Ordinances of the City of San Diego

Implementation of the various project components will require City of San Diego approval of one or more of the following permits: Site Development Permit, Right of Entry Permit, and/or Conditional Use Permit. Existing zoning for those portions of the project study area within the City of San Diego is primarily agricultural (previously referred to as A-1-10). The updated Land Development Code now splits the agricultural base zones into the agricultural – general zones and the agricultural – residential zones. The purpose of the agricultural zones is to provide for areas that are rural in character or areas where agricultural uses are currently desirable. The agricultural zones are intended to accommodate agriculture, as well as single dwelling units. In the past, the agricultural A-1-10 zone was often applied to properties as a holding zone, which limited development to one unit per 10 acres, or in this area to one unit per 4 acres when clustered in a Planned Residential Development.

The Sensitive Coastal Resource Overlay Zone has also been applied to the project site. The purpose and intent of this zone (Section 132.0601) is to protect and enhance the quality of sensitive coastal bluffs, coastal beaches, and wetlands. Permitted uses for wetland areas include aquaculture, nature study projects or similar resource dependent uses, wetland restoration projects, and incidental public service projects, where there is no feasible, less environmentally damaging alternative. Uses permitted in wetland buffer areas include access paths, fences, and other improvements necessary to protect wetlands.

The Floodway and Floodplain Fringe Zones have also been applied to the project site. These zones regulate and control development in delineated floodways of the floodplain and that portion of the delineated floodplain lying between the floodway and the outermost boundaries of the floodplain, respectively. As described in section 1.4, SCE's portion of the project also would be required to meet the standards and objectives of the SONGS permit conditions outlined in Table 1-1.

5.1.3 California Coastal Act

The entire project site is located within the boundaries of the California Coastal Zone and is therefore subject to the requirements of the California Coastal Act of 1976 (California Public Resources Code Sections 30000 – 30900). The only portion of the project area that is located within an adopted LCP is that portion that occurs within the Torrey Pines Community planning area. The CCC retains permitting authority over the remainder of the project site; therefore, the CCC will have final permitting authority for all but the portion of the project that is located within the boundaries of the Torrey Pines Community planning area.

The basic goals of the state for the coastal zone, as described in Section 30001.5 of the Act, are to:

- Protect, maintain, and, where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources.
- Assure orderly, balanced utilization and conservation of coastal zone resources taking into account the social and economic needs of the people of the state.
- Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resource conservation principles and constitutionally protected rights of private property owners.
- Assure priority for coastal-dependent and coastal-related development over other development on the coast.
- Encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

Applicable sections of the Act include the following:

Section 30210. In carrying out the requirements of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect the public rights, right of private property owners, and natural resource areas from overuse.

Section 30211. Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

Section 30212. (a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where:

(1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources;

(2) adequate access exists nearby . . .

Section 30213. Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.

Section 30214. (a) The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on facts and circumstances in each case including, but not limited, to the following:

(1) Topographic and geologic site characteristics.

(2) The capacity of the site to sustain use and at what level of intensity.

(3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area . . .

Section 30230. Marine resources shall be maintained, enhanced, and, where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30231. The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30233. (a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(7) restoration purposes,

(8) nature study, aquaculture, or similar resource-dependent activities.

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable longshore current systems.

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in it report entitled, "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, . . .

Section 30236. Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the floodplain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.

Section 30240. (a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Section 30241. The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the areas' agricultural economy . . .

Section 30242. All other lands suitable for agricultural use shall not be converted to nonagricultural uses unless (1) continued or renewed agricultural use is not feasible . . .

Section 30244. Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

Section 30251. The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms, to be visually compatible with the character of surrounding areas, and where feasible, to restore and enhance visual quality in visually degraded areas.

Section 30253. New development shall: (1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard . . .

5.1.4 San Dieguito River Park Joint Powers Authority

The San Dieguito River Park Joint Powers Authority is a single-purpose public agency formed in 1989 by its member agencies the Cities of Del Mar, Solana Beach, San Diego, Escondido, and Poway and the County of San Diego to preserve and restore land within the Focused Planning Area of the San Dieguito River Park as a regional open space greenway and park system that protects the natural waterways and the natural and cultural resources and sensitive lands and provides compatible recreational uses that do not damage sensitive lands. The San Dieguito River Park's Focused Planning Area (FPA) extends for 55 miles following the river's path from Volcan Mountain west to the ocean at Del Mar. The restoration site is located entirely within the boundaries of the San Dieguito River Park's Focused Planning Area.

San Dieguito River Park Concept Plan

In 1994, the JPA adopted a concept plan for the San Dieguito River Park that formally established the vision and goals for the future use of the San Dieguito River Valley. The intent of these goals is to ensure the preservation and protection of the sensitive resources within the FPA. The Concept Plan, in addition to outlining the Park goals and objectives, describes 14 planning units within the FPA, referred to as "landscape units." It is the intent that detailed master plans be prepared for each of these 14 planning units. The Concept Plan includes general goals for the overall planning area, with more specific goals presented for each landscape unit. The various goals and objectives are presented below.

Park Vision: To create an open space park within the San Dieguito River Valley that will protect its unique resources, while providing compatible recreational opportunities for the San Diego region.

Overall Goal Statement: Preserve land within the Focused Planning Area of the San Dieguito River Park as a regional open space greenway and park system that protects the natural waterways and the natural and cultural resources; provides compatible recreational opportunities that do not damage sensitive lands; and provides a continuous and coordinated system of preserved lands with a connecting corridor of walking, equestrian, and bicycle trails encompassing the San Dieguito River Valley from the ocean to the river's source and beyond.

Park Objectives

- Preservation of Open Space — Establish a continuous open space corridor throughout the length of the Focused Planning Area that preserves natural habitats, protects linkages for wildlife movement and provides compatible areas for recreation opportunities.

- Conservation of Sensitive Resources — Preserve the existing natural character and visual quality, and sensitive resources of the open space corridor, including the preservation, enhancement, and protection of sensitive coastal wetlands, hillsides, riparian and other freshwater habitat, native vegetation and historical and cultural resources.

- Protection of Water Resources — Optimize the water quality and quantity of all groundwater resources and surface water bodies within the planning area through water conservation, erosion control, pollution control and restoration.

- Preservation of the Natural Floodplain — Maintain the 100-year floodplain and sheetflow areas within the planning area in an open configuration with a natural channel and provide adequate area for the normal stream waters to meander through the floodplain. The 100-year floodplain and sheetflow areas will be preserved for open space uses such as recreation, wildlife habitat or agriculture.

- Retention of Agricultural Uses — Retain and encourage responsible agriculture in appropriate areas.

- Creation of Recreational and Educational Opportunities — Create a scenic trail and interpretive system and establish recreation areas including water related uses, which are compatible with the natural values of the river system.

- Establishment of Design Guidelines — Establish and seek to have enforced design and development standards for future development within the Focused Planning Area that would ensure the retention of the largely rural character of the planning area and would limit the visual and physical encroachment of development into the Focused Planning Area.

The restoration site is located within Landscape Unit A, Del Mar Coastal Lagoon. The Concept Plan identifies this landscape unit as "the western gateway to the river valley" and presents the following special design recommendations that should be considered when reviewing proposals within this portion of the FPA:

The sweeping open space views within this landscape should be protected.

Future development should be compatible with the open space character of the lagoon area in terms of both visual compatibility and intensity of use.

View opportunities of the lagoon and ocean from trails and existing circulation routes should be preserved and, where appropriate, enhanced.

All uses adjacent to the San Dieguito Lagoon, including uses on Fairgrounds property and the City of Del Mar maintenance yard, should be screened from view through the installation of landscaping, and an adequate buffer, including fencing if necessary, should be provided between development and sensitive resources in order to reduce adverse impacts associated with noise, lighting, stray pets, and intensive human activity.

The plan also identifies concepts that may be desirable within this landscape unit. These include:

Implement a lagoon enhancement and restoration program for the San Dieguito Lagoon both east and west of I-5.

Develop a park headquarters/visitor center in Landscape Unit A or B.

Develop a scenic view park overlooking the restored wetlands that will also provide parking, a picnic area and access to a perimeter trail, as well as to the Coast to Crest Trail.

5.1.5 22nd District Agricultural Association

Del Mar Fairgrounds Master Plan

Located at the northwestern end of the Park's planning boundary are the Del Mar Fairgrounds and Thoroughbred Racetrack Facilities. These properties are owned and operated by the 22nd District Agricultural Association, a California state agency. Current and future development at the fairgrounds and racetrack is guided by the Del Mar Fairgrounds Master Plan that was updated and adopted in 1985.

The purpose of the master plan is to identify needs associated with existing programs and estimated growth. It is based on this plan that the 22nd District Agricultural Association regulates land use and development on the property. As the property is also located within the California Coastal Zone, the District must also comply with the provisions of the California Coastal Act.

The master plan includes design criteria for District projects, a discussion of the principal projects and auxiliary improvements to be implemented, landscape guidelines, circulation and parking proposals, and environmental mitigation measures.

5.2 CONSISTENCY DETERMINATION

The San Dieguito Wetland Restoration project consists of various components that would result in an overall restoration, public access, and interpretive plan for the westernmost portion of the San Dieguito River Valley. Each of these components, including coastal wetland restoration, upland and nontidal restoration, trail construction and interpretation, and potential uses on Area U18, has been reviewed for consistency with the adopted plans, policies, and legislation that is in place to guide and/or regulate activities in this area.

5.2.1 Coastal Wetland Restoration

City of Del Mar

Those aspects of the project that relate to the restoration of historic coastal wetlands, including required excavation, inlet excavation and long-term maintenance, and restoration itself, are generally consistent with the plans and policies adopted by the City of Del Mar. An objective of the Del Mar Community Plan's Environmental Management Element is to restore and enhance the resources within the San Dieguito River floodway and lagoon habitat, and the San Dieguito Lagoon Resource Enhancement Program includes numerous design guidelines to guide restoration of the lagoon.

There are, however, several components of this restoration proposal that are not consistent with adopted City of Del Mar plans and programs. The San Dieguito Lagoon Resource Enhancement Plan not only encourages restoration of the lagoon, it also includes specific restoration proposals that are different from any of the current restoration alternatives being considered for San Dieguito. Because this enhancement plan was adopted as a specific plan and incorporated as such into the Del Mar Community Plan, any changes to the plan require approval by the City of Del Mar and such changes could trigger the need for an amendment to the Community Plan. The current project alternatives also differ from the restoration plan presented in the Conceptual Plan for the Expanded San Dieguito Lagoon Resource Enhancement Program, however, this plan was not incorporated into the City's Community Plan.

The construction of the proposed berms would be consistent with some of the Community Plan's objectives and in conflict with others. Specifically, the plan states that structures are prohibited in the floodway, but also seeks to insure public safety within the floodplain. The Resource Enhancement Program also recommends that any physical structures be located and designed to protect wetlands, scenic values, and wildlife. As stated in the project description, the river berms would be provided to ensure that the existing sand flow patterns in the floodway be maintained, thereby not exacerbating existing storm-related impacts to existing public facilities or to proposed restored areas.

With respect to the disposal options, the proposal to dispose of excavated material on the Fairgrounds would be inconsistent with the Community Plan's objective to discourage landfill, land removal, and structures within the floodplain that would limit water holding capacity or impede water movement so as to adversely affect other property.

City of San Diego

Restoration of the San Dieguito lagoon is consistent with plans and policies of the City of San Diego, including the Torrey Pines Community Plan, which has as one of its goals to preserve, enhance, and restore all natural open space and sensitive resources including the San Dieguito Lagoon and river valley.

The NCFUA Plan states that development on hillside areas should conform to the unique natural setting of each area and site, retaining the character of the existing landform. The use of some of these hillside areas as disposal sites would not be fully consistent with this goal. Although efforts would be made to blend the manufactured slopes into the existing topography, grading on some of these disposal sites would appear manufactured, particularly until the native vegetation has been established. With respect to the disposal sites on the Fairgrounds property, the Torrey Pines Community Plan states that within the 100-year floodplain of the river, fill for roads and other public improvements and/or permanent structures will be allowed only if such development is consistent with uses allowed pursuant to the A-1-10 zone and other existing zoning, is capable of withstanding periodic flooding, and does not require the construction of offsite flood protective works. It is unknown at this time what type of development might be proposed on the Fairgrounds property if it were to be approved as a disposal site for the project. Therefore, the matter of whether or not these disposal options are consistent with the Torrey Pines Community Plan cannot yet be determined.

California Coastal Act

The proposal to restore coastal wetlands is consistent with the basic goals for the coastal zone, which, as described by the Act, are to protect, maintain, and, where feasible, enhance and restore the overall quality of the coastal zone environment. The proposed river berms would be consistent with Section 30233, as are the beach, near shore, and upland disposal options. Use of the river berms within the project would also be consistent with Section 30236, which states that channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to, among other things, developments where the primary function is the improvement of fish and wildlife habitat. The disposal of fill material on

DS37 and DS38, two disposal sites located within the floodplain, would not be consistent with section 30236.

An important component of the proposed restoration project is the maintenance of the inlet channel in an open configuration in perpetuity. This would result in the conversion of up to 1.8 acres of sandy beach area located between the inlet sill and the railroad bridge to open water. Because this area is available for public use only when the inlet channel is closed and the inlet channel has historically been closed about 68 percent of the time, this loss in beach area is not considered significant (refer to section 4.1 for more information). Despite this loss of up to 1.8 acres of beach area, significant portions of the beach would remain available for public use following restoration. One of the goals of the Coastal Act (Section 30001.5) calls for maximizing public access and public recreational opportunities. However, two other goals relevant to this project state that 1) protection, maintenance, and where feasible, enhancement and restoration of the natural resources of the coast should be provided; and 2) orderly, balanced utilization and conservation of coastal zone resources should occur. This project would, therefore, be consistent with the Coastal Act as it would balance the need for restoring important coastal resources with the desire to maximize recreational opportunities on the beach.

The options on the Fairgrounds property, however, are located within the floodplain and would involve areas delineated as jurisdictional wetlands. Disposal on these sites would not be consistent with a number of sections of the Coastal Act including Section 30233, which only permits filling of wetlands where there is no feasible less environmentally damaging alternative; Section 30236, which states that substantial alteration of rivers and streams shall incorporate the best mitigation measures feasible (no mitigation is proposed for impacts to wetlands related to disposal on DS38); and Section 30240, which states that environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only resources dependent on those resources shall be allowed.

Construction of the proposed nesting sites would result in impacts to seasonal salt marsh, however, to be successful, these nesting sites must be located adjacent to coastal wetlands. The nesting sites are, therefore, considered to be a use that is dependent on the coastal wetlands and would not have the same value if constructed outside the existing wetland area.

San Dieguito River Park Joint Powers Authority

The proposal to restore the San Dieguito Lagoon is consistent with the goals and objectives of the San Dieguito River Park Concept Plan. However, incorporation of the berms is not entirely consistent with the plan statement that the river be maintained in an open configuration with a natural channel and provide adequate area for the normal stream waters to meander through the floodplain. The Plan does not address exceptions, therefore, the JPA Board would have the final determination as to whether or not the proposal for river berms meets the intent of the plan, which does support the restoration of the lagoon on both the east and west sides of I-5.

Use of the uplands surrounding the restoration project as disposal sites would not obstruct the views across the valley, which is consistent with the plan's recommendations for the western river valley. The slopes would, however, have an unnatural appearance until such time as the proposed landscaping is established. Disposal on the Fairgrounds would not be consistent with Plan's goal to protect the natural floodplain.

Del Mar Fairgrounds Master Plan

This plan does not include goals or policies for projects located outside the boundaries of the District's property. Disposal of excavated fill on the Fairgrounds would not be inconsistent with the intent of the Master Plan.

5.2.2 Upland and Non-tidal Habitat Restoration

City of Del Mar

The plans and policies adopted by the City of Del Mar support the restoration of environmentally degraded areas, therefore, the proposals to restore the uplands and non-tidal wetland habitats surrounding the coastal wetland restoration would be consistent with these plans and policies.

City of San Diego

The plans and policies adopted by the City of San Diego, including the Torrey Pines Community Plan, the NCFUA Framework Plan, MSCP, and the San Dieguito River Regional Plan, all support the restoration of environmentally degraded areas. Therefore, the proposals to restore the uplands and non-tidal wetland habitats surrounding the coastal wetland restoration would be consistent with those portions of the plans and policies that address restoration of habitat. The conversion of agriculture to native habitat, as well as the use of this area as disposal sites, would, however, be in conflict with the General Plan goal of retaining premium agriculturally productive lands in agricultural usage.

California Coastal Act

Numerous sections of the Coastal Act support the restoration and enhancement of coastal habitat including coastal upland areas, therefore, this project would be consistent with those aspects of the Act. The Act also states in Section 30241 that the maximum amount of prime agricultural land be maintained in agricultural production to assure the protection of the area's agricultural economy. Therefore, the loss of agricultural land to habitat restoration (and possible disposal sites) is not consistent with this aspect of the Act.

San Dieguito River Park Joint Powers Authority

Just as described for the City of San Diego and the Coastal Act, the Park Concept Plan supports both habitat restoration and the preservation of existing agricultural uses.

Del Mar Fairgrounds Master Plan

No upland or non-tidal habitat restoration is proposed on District property.

5.2.3 Trail Construction and Interpretation

City of Del Mar

The Del Mar Community Plan includes objectives related to pedestrian-oriented non-motorized access, but does not specifically address trails. The San Dieguito Lagoon Resource Enhancement Program does include as a proposal to improve pedestrian trails and viewing points (with educational signs), therefore, a public access/interpretive component of the restoration project would be consistent with the intent of these plans.

City of San Diego

The San Dieguito River Regional Plan, Torrey Pines Community Plan, and the MSCP Subarea Plan all address the issue of trails and public access. The overall intent is basically the same in all documents: that trails, view overlooks, and staging areas be located in the least sensitive areas. In addition, the Torrey Pines Community Plan states that public access in area of environmentally sensitive habitats shall be limited to low-intensity recreational, scientific, and educational use. A goal of the San Dieguito River Regional Plan is to promote alternate modes of transportation within the recreation corridor to minimize vehicular impacts on the recreational potential. The Coast to Crest Trail has been aligned to utilize, to the extent feasible, existing utility easements and the edge of the District's parking lot. This effort to minimize impacts to sensitive resources is consistent with the goals and policies of these plans.

The use of trams on the trail would not be consistent with the intent of permitting only low-intensity uses on the trails.

California Coastal Act

The provision of public access to and along the coast is the basic goal of the California Coastal Act. The Act states that public recreational opportunities should be maximized consistent with sound resource conservation principles. The public access and interpretive plan for this project would be consistent with the Act's goal of providing public access, however, there are other aspects of the Act (including Sections 30112, 30233, and 30240) for which the public access proposal could be found to be inconsistent. These relate to construction of the Coast to Crest Trail on areas, that although they have been degraded to accommodate parking and a utility road, are classified as jurisdictional wetlands. This conflict will be addressed by the CCC as part of the Coastal Development Permit process.

The proposed wetland treatment area would also be consistent with Section 30231, which encourages the protection of coastal wetlands through improvements to water quality. This element of the plan would improve the quality of runoff that currently enters the lagoon from San Andres Drive.

San Dieguito River Park Joint Powers Authority

The provision of public access and interpretation is consistent with the Concept Plan goal of creating recreational and educational opportunities. The selection of the least damaging alignment for the trail is also consistent with the plan.

Use of the tram on the trail would not be consistent with the Plan's intent for the Coast to Crest Trial to be limited to non-motorized uses.

Del Mar Fairgrounds Master Plan

The addition of a tram to meet the District's parking needs would be consistent with the purpose of the master plan.

5.2.4 Potential Uses on Area U18

City of Del Mar

Area U18 is not located within the jurisdictional boundaries of the City of Del Mar, therefore, none of the plans or policies for Del Mar would apply.

City of San Diego

The property referred to as Area U18 was the subject of a density transfer and Coastal Development Permit in August 1999. As a result of that action, all development rights were transferred off of this site. Therefore, the only use proposed by the District for this site that would be consistent with this prior action would be an equestrian cross-country course.

California Coastal Act

As stated above, Area U18 was the subject of a Coastal Development Permit in August 1999. The approved permit applied an open space deed restriction on the parcel which states that no development, as defined by Section 30106 of the Coastal Act, shall occur on this entire parcel except for: agriculture on those areas of the site that have been historically farmed; and, if approved by the CCC as an amendment to the permit or through a separate Coastal Development Permit:

- An interpretive center, including parking, public access trails, and signage on the northwestern six acres of the site;
- Restoration/enhancement of the wetland and floodplain areas of the site;
- Deposition of graded spoils on the upland portions of the site, outside all wetland and floodplain areas;
- Non-structural improvements associated with an equestrian cross-country course, such as hurdles, jumps, and course markers;
- Construction of public access trails; and
- Installation/maintenance of any drainage facilities required in future permits.

San Dieguito River Park Joint Powers Authority

Although only one of the uses proposed for Area U18 could be developed under the approved Coastal Development Permit, for purposes of this analysis, the other uses have been reviewed for consistency with the Concept Plan. Of the various uses that the District requested be considered for Area U18, only an equestrian cross-country course and pastureland would be consistent with the goals and objectives of the Concept Plan. Depending on the final site plan and interim maintenance plan for the property, seasonal parking of automobiles could have also been found consistent with the Plan. The relocation of show barns, construction of a practice track with six to eight-foot fences, or the parking of truck trailers would most likely conflict with the Plan's goal of preserving sweeping views of the valley from Via de la Valle. Under the terms of the open space easement, however, only a cross-country course would be permitted on this parcel.

Del Mar Fairgrounds Master Plan

Any of the uses considered appropriate by the District for Area U18 would meet the purpose of the master plan as all of these uses would meet the needs of existing programs and estimated growth.

6. CUMULATIVE IMPACTS

In this chapter, the proposed project, as described in Chapter 2, is analyzed in relation to other major projects in the region. In accordance with the CEQA Guidelines, Section 15130, a list of past, present, and-probable future projects producing related or cumulative impacts, were incorporated into the Cumulative Impacts analysis for this project. The projects listed include those in the immediate project area and generally within the watershed of the western San Dieguito River Valley that are under construction, have been approved but are not yet under construction, have applications pending, or were known to be considering applications for future development.

Cumulative impacts to environmental resources can result from the incremental effects of a project when added to other past, present, and reasonably foreseeable future projects in the area. Cumulative impacts can result from individually minor but collectively significant actions over a period of time. To ensure a comprehensive impact analysis, this section considers the region of influence for each environmental resource area for which cumulative impacts are evaluated, and the time frame during which reasonably foreseeable projects would occur.

6.1 PROJECTS CONSIDERED IN THE CUMULATIVE IMPACTS ANALYSIS

Projects considered in this evaluation are summarized below and in Table 6.1-1. General locations of the projects are shown in Figure 6.1-1.

Multiple Species Conservation Program (City of San Diego)

In 1993, the City of San Diego and other land use jurisdictions in southwestern San Diego County initiated development of the Multiple Species Conservation Program (MSCP). The MSCP focuses on comprehensive planning to reconcile conflicts between biological resources and development in the region. The goal is to conserve and protect regional biological diversity, particularly related to endangered, threatened, and sensitive species, while allowing for reasonable development. Within the City of San Diego a Multi-Habitat Planning Area (MHPA) has been developed in cooperation with affected stakeholders. The MHPA identifies core biological resource areas and corridors targeted for conservation. The proposed project lies within the northern portions of the City of San Diego Subarea Plan and most of the project area is within the boundaries of the MHPA. As the MSCP is implemented, isolated sensitive biological resources could be lost to development, but this impact is more than compensated for by the preservation of large tracts of connected open space. Beneficial impacts from the MSCP include species and habitat preservation, restoration of degraded habitats within the preserve areas, and protection of open space linkages. Each the projects proposed within the MSCP are still subject to separate environmental review and approval, therefore, the full impacts and/or benefits of implementing the MSCP cannot be addressed in this chapter because the analysis would be speculative.

Surf and Turf Property – 22nd District Agricultural Association

Until recently, the 22nd District Agricultural Association was considering redevelopment of about 14 acres of District-owned property (referred to as Surf and Turf) located between I-5 and Jimmy Durante Boulevard to the east of the main fairgrounds (Figure 6.1-1) for mixed commercial development. A key assumption of the feasibility study for this redevelopment proposal was to raise the elevation of the Surf and Turf site and adjacent parcels to the west and south, also owed

Table 6.1-1. Projects Included in Cumulative Impact Evaluation

Project	*Location*	*Schedule*	*Status*
MSCP	Coastal wetland restoration area within City of San Diego limits, Gonzalez Canyon, Crest Canyon, and northern slopes of Carmel Valley Planning Area	Currently being implemented	Approved
Surf and Turf	Del Mar Fairgrounds	Possibly late 2000, early 2001	Planning
Rancho Valley Farms (Boudreau Property)	North and South of El Camino Real, south of Via de la Valle	Initiate late 2000 to 2001	Planning
Rancho Santa Fe Driving Range and Park	South side Via de la Valle, east of El Camino Real	Initiate 2000	In review
Villas at Stallions Crossing II	East side El Camino Real, between San Dieguito Road and Derby Downs Road	Early 2000	Approved
Ranches at Stallions Crossing	West of El Camino Real, south of river	None	Withdrawn
El Camino Real Road/Bridge Widening	El Camino Real from Via de la Valle to San Dieguito Road	Initiate 2002	Planning
Verde Del Mar	North side Via de la Valle, west of San Andres	Complete in 2000	Final stages
Rhodes Vesting – Venezia Del Mar	East of El Camino Real	Completed	Completed
NCFUA-Subarea 3 – Del Mar Highlands	East of El Camino Real, south of San Dieguito Road	Uncertain	Grading
Residential Parcels – Racetrack View Drive	West of I-5, south of Racetrack View Drive	Uncertain	Approved
Beach Sand Nourishment	Beach locations in Del Mar and Solana Beach	Spring 2000 +	Planning
NCTD Double Tracking	Bridge over river, east of Camino del Mar	Late 2000 +	Planning
Active Care at Fairbanks	East of El Camino Real	Mid to late 2000	Planning

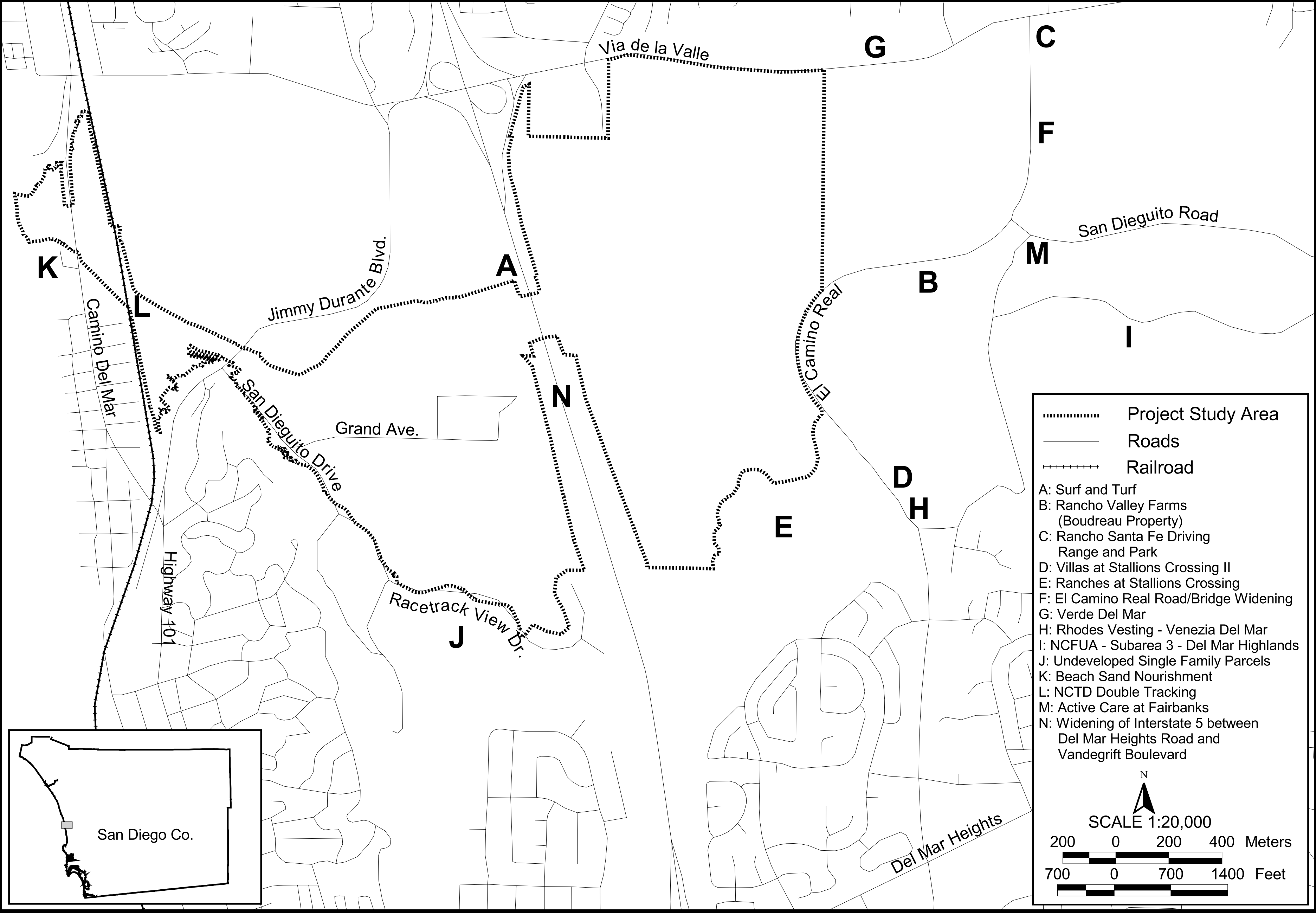


Figure 6.1-1. General Location of Projects in Cumulative Impact Evaluation

by the District, in order to accommodate future development on a total of approximately 28 acres. The adjacent parcels are presently used as a golf driving range and parking area for Fairground events. Use of this area as a possible disposal site (DS 38) for the wetland restoration project is still included as a possible option in the project description. Although the proposal for development of a mixed commercial development has been set aside, the District has began a community involvement program to obtain input from the surrounding communities as to what types of uses might be found appropriate for development on this site. Future development proposals could include some form of mixed-use project or one or more types of commercial/recreation facilities. If permitted, some form of redevelopment could occur by late 2000 or early 2001.

Significant issues requiring mitigation and/or project design considerations could include encroachment into and filling of the 100-year floodplain; filling of jurisdictional wetlands; indirect impacts to functional coastal wetlands related to degradation of water quality due to increases in siltation and urban runoff and increases in noise and lighting as a result of increased human activity in proximity to wetlands; and increased traffic congestion on surrounding roadways and at key intersections including Jimmy Durante Boulevard and Via de la Valle. The latter effects would be caused by the additional vehicular traffic that would access the area for public use of the new facilities.

Rancho Valley Farms (Boudreau Trust)

Plans are currently under review at the City of San Diego for a specific plan that would include development of 140 acres owned by the Boudreau Trust. The project area, which part of Subarea II of the North City Future Urbanizing Area, includes property within the San Dieguito River Valley, and is located south of the San Dieguito River and to the west, north and south of El Camino Real (Figure 6.1-1). Current development proposals include single-family residential, special care residential, active recreational and open space uses. If permitted, construction may be feasible by late 2000 to early 2001.

Environmental issues associated with the project include potential impacts to sensitive habitats and species within the MHPA, landform alteration/visual quality, traffic circulation, and water quality due to increases in siltation and urban runoff.

Rancho Santa Fe Driving Range and Park (Rancho Santa Fe Driving Range, Inc.)

It should be noted that subsequent to public review of the Draft EIR/EIS, this project was denied by the City of San Diego. No new applications for this property are currently under consideration.

The proposed project would be located on about 24 acres of an almost 27 acre site on the south side of Via de la Valle, just east of El Camino Real (Figure 6.1-1). This area is within Subarea II of the North City Future Urbanizing Area. The majority of the site is currently graded and vacant. The project would involve the construction and operation of an interim recreational facility including a golf practice range with a pavilion/clubhouse, and a roller hockey facility with two open-air arenas. Accessory uses would include food and equipment concessions, maintenance buildings, and 366 parking spaces. An open, 600,000 gallon storage pond would be used for irrigation purposes. The facility would operate seven days per week from 7 A.M. to 10 P.M., except that the golf driving range would not be permitted to have its lights on past 8 P.M. during non-daylight savings time. If permitted, the project could be initiated in 2000.

Potentially significant impacts include loss of wetlands, degradation of water quality due to irrigation and urban runoff, changes in community character, increases in night lighting, and increases in traffic congestion.

Villas at Stallions Crossing II (San Dieguito Partnership)

The project would involve subdivision of an almost 30-acre site owned by the San Dieguito Partnership on the east side of El Camino Real between San Dieguito Road and Derby Downs Road in Subarea II of the North City Future Urbanizing Area (Figure 6.1-1). The site is presently in active agriculture. The project would include 60 lots for development of 47 single-family residences on about 13 acres. The remaining acres would be used for private driveways, brush management areas, a private passive park, landscaping/signage, open space and a detention basin. Site access would be from El Camino Real using a private road. Grading at the site would include 21,000 cubic yards over about 11 acres. The density of dwelling units exceeds the underlying zone, but a key assumption of the project is that the excess units could be approved by transferring the development potential of other "donor" sites, including properties owned by the San Dieguito Partnership, SCE and the City of San Diego. The project recently received a Coastal Development Permit, therefore, the project could be initiated in early 2000.

Environmental issues associated with the project include encroachment into biological resource areas (coastal sage habitat, endangered California gnatcatcher habitat, and about one-fourth acre of disturbed non-grassland representing habitat for the orange-throated whiptail and loggerhead shrike); steep slopes; and a cultural resource site (22 percent encroachment into site CA-SDi-687). Other potential impacts would be related to traffic circulation, soil erosion, landform alteration, and water quality.

Ranches at Stallions Crossing (San Dieguito Partnership)

As a result of the recent actions of the California Coastal Commission with respect to the Villas II project, the ownership of the Ranches property will be transferred to the City of San Diego and the previously proposed residential development withdrawn.

El Camino Real Road/Bridge Widening Program (City of San Diego)

The project would encompass about 16 acres along an approximately 0.5 mile stretch of El Camino Real from San Dieguito Road to Vial de la Valle (Figure 6.1-1). The San Dieguito River crosses under El Camino Real about 1,500 feet south of Via de la Valle. The river is about 250 feet wide at this point. Most of project area is within the 100-year floodplain. The principal current use is existing roadway within the City of San Diego. The project would involve modification of the present road and bridge to create a four-lane major road. The design would include a curb, sidewalk, bike lane, equestrian trail and crossing, median with turn lanes, and traffic signals at intersections. Design goals focus on avoiding impacts to upstream or downstream scour and water elevation (flooding). If permitted, project construction could be initiated during 2002.

Most of the project area is considered poor quality wildlife habitat, although there is the potential for the direct loss of wetland habitat. Other potential impacts include temporary increases in traffic congestion, downstream siltation, aesthetics/visual quality, and changes in hydrology. Expansion of the river channel for a distance of 1,000 feet west of the existing bridge may be required to mitigate upstream flooding impacts.

Verde Del Mar (Del Mar Development)

This project is currently in the final construction stages on about 9 acres owned by Del Mar Development on the north side of Via de la Valle between San Andres Drive and Via Del Cannon Road in the City of San Diego (Figure 6.1-1). The development includes 19 single-family residences, private streets, and two open-space lots.

Environmental issues addressed in an approved Mitigated Negative Declaration include biological resources, erosion / sedimentation, and traffic flow / circulation.

Rhodes Vesting Tentative Map — Venezia del Mar (Barrett Homes)

The project, which was recently completed, is located on 10.2 acres east of El Camino Real (Figure 6.1-1). The development consists of 43 single-family residential lots.

The Final EIR for the project identified environmental issues associated with biological resources (e.g., loss of coastal sage scrub, including endangered gnatcatcher habitat), landform alteration / visual quality, traffic, and hydrology / water quality.

North City Future Urbanizing Area Framework Plan – Subarea III – Del Mar Highlands Estates

The Subarea III Plan estimates land uses over 2,640 acres ranging from residential (about 1,176 acres), mixed-use core (46 acres), community park (35 acres), school (90 acres), and open space (1,300 acres). Approved projects within Subarea III include Del Mar Highlands Estates, representing about 172 homes on 389 acres (Figure 6.1-1). Del Mar Highlands Estates, located east of El Camino Real and south of San Dieguito Road is presently undergoing project grading.

Environmental issues addressed in the EIR for the project include: impacts to biological resources (e.g., loss of almost 34 acres of coastal sage scrub, including gnatcatcher habitat); siltation and erosion control; cultural resources; paleontology resources; traffic circulation; public facilities and services; and landform alteration / visual quality.

Residential Parcels - Racetrack View Drive (Various Owners)

Four residential parcels have been created west of I-5 and south of Racetrack View Drive (Figure 6.1-1). Although the subdivision was approved some time ago, no development of the parcels has occurred to date. Potential environmental impacts include landform alteration / visual quality and siltation / erosion control.

Beach Sand Nourishment (San Diego Association of Governments)

The first large-scale beach nourishment project is the San Diego Association of Governments' project scheduled for the spring of 2000. The project will place about 2,670,000 cubic yards of sand on the beaches within the Oceanside Littoral Cell. Specifically, about 270,000 cubic yards will be placed just south of the lagoon entrance in Del Mar and about 210,000 cubic yards of sand will be placed at Fletcher Cove to the north of the lagoon entrance in Solana Beach. There is currently state legislation pending (AB 64) which will provide funding for future beach nourishment projects. The impact to the lagoon inlet may be substantial depending upon the quantity of sand placed and the location of the site relative to the lagoon inlet. The introduction of nourishment sand may temporarily increase the longshore transport rate in the vicinity of the inlet. The increase in the availability of sand at the inlet may result in more frequent closure and necessity for maintenance dredging. Potential impacts include temporary disruption of beach activities and public access, noise, visual quality, and water quality in the ocean and nearshore zone.

Railroad Double Tracking – North County Transit District (NCTD)

The NCTD is considering maintenance and repair and/or replacement of Bridge 243.0, the railroad bridge spanning the San Dieguito River, east of the Camino del Mar bridge and west of the Jimmy Durante Boulevard bridge (Figure 6.1-1). Replacement of the existing tracks could include double tracking. Project needs are related to future increased rail activity and improving bridge safety during major flood events. If approved, the project would require several years to complete, beginning in late 2000 or later.

Detailed environmental studies would need to be conducted prior to construction approvals. Potential impacts include direct and indirect impacts to biological resources including sensitive coastal wetlands, degradation of water quality related to dewatering and siltation, interruption of existing transportation service, temporary traffic impacts due to construction, increased noise levels, and changes in community character and visual quality.

Active Care at Fairbanks

The project is being considered for a 5.6-acre parcel on the east side of El Camino Real (Figure 6.1-1). The site is in Subarea II of the North City Future Urbanizing Area. The plan, if processed, would include a residential care facility. Although a determination of required environmental documentation has not yet been made, and processing procedures are presently pending, a preliminary review of the proposal suggests potential impacts related to visual quality/landform alteration, community character, historic resources, traffic circulation, and water quality/erosion control.

Widening of Interstate 5 between Del Mar Heights Road and Vandegrift Boulevard

In January 2000, Caltrans, District 11 issued a Project Study Report for the widening of I-5. This widening project involves the entire length of I-5 that passes through the western San Dieguito River Valley and beyond. The project involves adding two general purpose lanes, a High Occupancy Vehicle lane, and auxiliary lanes in each direction through the project area. All construction is expected to occur within the existing freeway right-of-way. The primary issues of concern associated with this project include natural resources and wetlands, cultural resources, noise, visual resources, community impacts, Section 4(f) resources, air quality, hydrology/water quality, farmlands, and paleontology.

6.2 CUMULATIVE IMPACT ANALYSIS

6.2.1 Land Use

Projects identified for cumulative impact analysis include mixed-use development, biological resource conservation, beach nourishment, residential and supporting uses, commercial recreation, road/bridge widening, area planning, railroad double tracking, and residential care facilities. Several of the proposed and recently approved projects will result in changes to the existing character of the area that individually may or may not be significant but cumulatively they represent a significant change in the open, semi-rural character of the western river valley. These include the Rancho Santa Fe Driving Range, Rancho Valley Farms, El Camino Real bridge widening, Verde Del Mar, Del Mar Highlands Estates, and Active Care at Fairbanks Ranch. Construction of the visitor center on currently open, agricultural land would contribute to this cumulative change in character, as would the use of the Via de la Valle property (U18) for seasonal parking, trailer storage, and relocation of show barns. <u>The incremental effect of this project on land use in combination with the other projects addressed above is deemed cumulatively considerable, as defined by CEQA, representing a Class 1 impact.</u>

Three of the projects, the Villas II, Rancho Valley Farms, Active Care at Fairbanks are located on properties currently supporting agricultural uses. The latter project, although not in active crop production, is currently the site of an active equestrian facility. The subject project would therefore contribute to the cumulative conversion of agricultural lands that is already occurring in San Diego County (see section 6.2.5 Natural Resources). Therefore, the cumulative impact would be significant (Class I).

6.2.2 Hydrology/Water Quality

Hydrology

Ten of the 14 projects evaluated in the cumulative impact analysis include development within or in proximity to the floodplain, including at least limited filling within the floodplain. Most of these projects are confined to the ineffective flow areas and as such, these cumulative projects may have potentially adverse, but not significant impact (Class III) on river hydraulics. Two of the projects, the El Camino Real Road/Bridge Widening Program and the Railroad Double-Tracking Project, could result in improved river hydraulics through the San Dieguito Lagoon and are therefore viewed as potentially beneficial impacts (Class IV).

Short term impacts to the restored inlet and coastal processes could occur as a result of artificially introduced beach sands from beach nourishment projects (section 6.1). In addition, the overdredge disposal option could result in similar impacts. Potential impacts to the lagoon inlet may be substantial depending on the quantity of sand placed and the location of the site relative to the inlet. The subject project and the Beach Sand Nourishment project could therefore result in a cumulatively significant but temporary increase in the longshore transport rate in the vicinity of the inlet. The increase in the availability of sand at the inlet may result in more frequent closure and necessity for increased maintenance dredging.

Water Quality

All of the development projects evaluated for the cumulative impact analysis are expected to affect water and sediment quality within the San Dieguito wetland restoration project area. Impacts associated with one of the planned projects, sand nourishment of Del Mar and Solana Beaches, are expected to be beneficial, whereas potential impacts to water and sediment quality in San Dieguito Lagoon associated with the development projects would be adverse but mitigable to less than significant with planned management (Class II). The magnitude and significance of potential cumulative impacts to water and sediment quality will be determined by the effectiveness of efforts to control soil erosion during grading/excavation and project design features to control stormwater runoff and transport of sediments, excess nutrients, and chemical and bacterial pollutants into the San Dieguito River. All new development upstream of the lagoon, as well as the current project, are subject to stringent water quality regulations that are aimed at reducing downstream water quality impacts associated with non-point source pollution. The implementation of best management practices, including the construction of detention basins, the use of grease traps, and other methods, would minimize new water quality impacts and could result in some overall improvement in water quality over time. These projects are also expected to require some excavation and/or soil transport operations. Soils eroded or spilled at construction sites can be transported by runoff and deposited in the marsh portions of the lagoon. If river/tidal flows are not sufficiently strong, sediments can accumulate and, eventually, alter circulation patterns and promote stagnation. Restoration of San Dieguito wetlands will improve the existing circulation and efficiency of sediment transport through the river to the ocean and, thus, is a beneficial impact. However, soil erosion from the development projects, as well as from the subject project's proposed disposal sites, could reduce the effectiveness of the wetland restoration efforts. Therefore, impacts related to soil erosion from the development projects and the subject project would be considered cumulatively significant (or cumulatively considerable as defined by CEQA) but mitigable to less than significant (Class II) through the proper implementation of best management practices. Mitigation measures could include requirements for installation of temporary berms around all construction sites, restricting excavation/grading to dry periods of the year, or requirements for incorporation of sedimentation/desilting basins and other runoff control features into the project designs.

The development projects will also result in increased coverage by impervious surfaces within the watershed. This in turn will decrease the amount of rainfall that percolates naturally into the ground and increase runoff volumes. At the same time, development projects also represent potential sources of pollutants. For example, landscaping within residential and commercial developments represents sources for nutrients from fertilizers and herbicides/pesticides. Cars and parking lots are sources for metals and combusted and non-combusted petroleum hydrocarbons. Consequently, urban runoff represents a potentially significant source for watershed inputs of contaminants and excess sediments and nutrients to the San Dieguito lagoon and wetlands. This can cause progressive impairment to water and sediment quality within the restoration area. Although some impervious surfaces are proposed by the San Dieguito restoration project (i.e. trail staging areas and hardened trail surfaces), the project is expected to produce net beneficial impacts to water and sediment quality (Class IV). In contrast, impacts from the other planned projects are potentially significant but mitigable to levels of insignificance (Class II) by requirements for pollution prevention plans, best management practices, herbicide/pesticide and fertilizer use restrictions, effective hazardous waste collection and recycling programs, and frequent street and parking lot cleaning. The project's incremental contribution to these water quality impacts are therefore defined as *de minimis* under CEQA.

6.2.3 Geology/Soils

Construction of the San Dieguito Restoration project may occur simultaneous with construction and grading of other nearby cumulative projects, including Surf and Turf, Rancho Valley Farms, Villas at Stallions Crossing II, and El Camino Real Road/Bridge Widening. However, potential erosion associated with the proposed project will likely not contribute to cumulative erosion impacts due to implementation of standard erosion control measures (Class II).

The wetland restoration project and related cumulative projects would result in a small incremental increase of property exposed to earthquake-related hazards. However, the project design should incorporate recommendations provided in site-specific geotechnical investigations to reduce potential earthquake-related hazards to a level of insignificance. Therefore, no significant cumulative impacts would exist with respect to seismicity (Class III).

6.2.4 Biological Resources

Apart from the proposed project, cumulative projects in the lower San Dieguito River Valley generally involve the residential or commercial development of much of the remaining undeveloped land. The areas to be developed are mostly ruderal/agricultural lands, but development footprints may also overlap small areas of non-tidal wetlands (freshwater or seasonal marsh and riparian scrub habitats) in the valley, and coastal sage scrub or chaparral on the surrounding slopes. The MSCP is intended to lessen the cumulative effects of these projects by confining development to limited areas and minimizing any losses of coastal sage scrub and wetlands, while providing for the preservation of large undeveloped areas. Nevertheless, cumulative habitat losses combined with increasing disturbance due to noise, traffic, runoff, and human activity in the area would have adverse cumulative effects on biological resources in the valley.

The effects of the proposed restoration project, however, are in contrast with, and in most respects tend to lessen, the adverse effects of cumulative development. Overall, the project would preserve and restore or enhance biologically significant areas. There are however certain aspects of the project that would impact wetlands, including construction of berms and nesting site, trail construction, and possible disposal of excavated materials. Most of these impacts would be mitigated to ensure no net loss of wetlands, however, should material be disposed of on the Surf and Turf property, no mitigation is proposed for the filling of jurisdictional wetlands. Therefore, although the project's overall effect is to provide additional areas of habitat that should help to "buffer" native plant and animal populations, especially those associated with coastal salt marshes, against the loss and degradation of habitats elsewhere. The potential loss of jurisdictional wetlands on the Surf and Turf property would contribute cumulatively to the overall loss of native habitats within the project vicinity (Class I). Therefore, if DS 38 is included as an approved mitigation site, the project’s impacts to wetlands would be cumulatively considerable.

6.2.5 Natural Resources

No cumulative impacts associated with mineral resources would occur since the proposed project site contains no such resources. Three of the projects on projects list (Table 6.1-1) would result in the loss of agricultural land. The proposed project would also result in the loss of agricultural land and would further exacerbate the loss of this type of land that has occurred within San Diego County over the past decade. Therefore, the cumulative impacts would be significant (Class I).

6.2.6 Landform Alteration/Visual Quality

The five major residential development projects (Rancho Valley Farms, Villas II, Rhodes Vesting, Del Mar Highlands Estates, and Verde del Mar) included in the cumulative impact evaluation and the proposed widening of I-5 involve substantial quantities of earth movement and/or grading on hillsides, representing a significant cumulative change in the natural landform. A number of the disposal options proposed in association with the restoration project would contribute to this significant cumulative effect (Class 1), and the impacts would be defined as cumulatively considerable. This grading also translates into a significant cumulative visual impact that can be mitigated through landscaping and appropriate design (Class II). The change in community character from this development is addressed in section 6.2.1 above.

6.2.7 Traffic Circulation

The region of influence relative to traffic impacts for the action alternatives consist of the local street network in the project vicinity as well as I-5 (section 3.7). The cumulative traffic analysis of these facilities uses 2000/2001 as the time frame for the construction/restoration activities and year 2002 as the initial year for the public access element. The proposed project would result in site-generated traffic volumes ranging from 400 to 650 vehicle trips per day during the construction/restoration activities and an estimated 560 trips per day for the public access element. The traffic analysis indicates that these additional traffic volumes would not result in a significant traffic impact.

The approach for the traffic analysis was to forecast the future baseline traffic volumes by applying a 5 percent growth factor to the existing traffic volumes on the study area roadways, then adding the project traffic to the future baseline scenario. The growth factor accounts for the cumulative increase in traffic volumes that would occur as a result of general regional growth as well as other development projects that may be implemented in the project area. Thus, the restoration aspects of this project would not contribute cumulatively to localized or regional traffic impacts (Class III). Depending upon which, if any, uses are permitted on the Via de la Valle property (U18), this aspect of the project could generate traffic volumes on El Camino Real and Via de la Valle, as well as at various intersections along El Camino Real, that would represent a significant direct and/or cumulative impact. In order to fully evaluate the extent of the impact from future use of U18, subsequent environmental review is required once specific project details are available.

6.2.8 Air Quality

Impacts from construction or operation of the project alternatives, in combination with any reasonably foreseeable future emission source, would not differ substantially from those identified for the project specific impacts in section 4.8. The I-5 freeway is the largest source of air emissions in proximity to the project site. Mitigated cumulative project emissions would produce insignificant ambient impacts to all pollutants, except O_3. The project region is not expected to attain the state O_3 standard for several years in the future. Therefore, due to the magnitude of proposed NO_x emissions, the project would produce significant cumulative impacts to regional O_3 levels during construction activities.

6.2.9 Vectors/Odors

The only project that may incrementally increase impacts on vector populations in the project region is the Rancho Santa Fe Driving Range. This project would include the construction of an open, 600,000-gallon storage pond for irrigation purposes. Depending on design and operational characteristics, the pond could develop into a breeding area for some species of mosquitoes. However, appropriate mitigation measures should reduce or eliminate the vector breeding potential associated with this project and the subject project. Based on currently available information, no other projects will likely impact the project region, so there would be no significant cumulative impacts from implementation of the wetland restoration project (Class III).

6.2.10 Public Health/Public Safety

Based on currently available information, the Beach Sand Nourishment project is the only project that could potentially effect current flows into and out of the channel inlet and, thereby, cause potential cumulative impacts to public safety. This project could substantially affect flows into the inlet depending upon the quantity of sand placed and the location of the inlet. An increased amount of sand at the inlet could result in more frequent lagoon closures. However, it is assumed that periodic maintenance dredging will restore design flows in and out of the lagoon. Therefore, the effect of this project on current flows in the inlet should not result in long term changes in current flow characteristics. Overall, the Beach Sand Nourishment and inlet maintenance for the restoration project should not cause significant cumulative impacts to public health and safety in the inlet area (Class III).

6.2.11 Cultural Resources

A complete cultural resource inventory of the project area has not identified significant archaeological or historical resources that would be affected by the action alternatives (section 3.11). Moreover, archaeological monitoring of subsurface corings excavated throughout much of the project area failed to identify any evidence of buried archaeological resources or sensitive landforms, although construction monitoring will be conducted as a precaution. Based on all available evidence, the project is not expected to have an effect on significant cultural resources. Therefore, significant cumulative impacts also are not expected and would meet CEQA's definition of a de minimis impact.

6.2.12 Paleontological Resources

A paleontological resource inventory of the project area has not identified significant paleontological resources that would be affected by the action alternatives (section 3.12). Moreover, monitoring of subsurface corings excavated throughout much of the project area failed to identify any evidence of buried fossils, although construction monitoring will be conducted as a precaution. Based on all available evidence, the project is not expected to have an effect on significant paleontological resources. Therefore, significant cumulative impacts also are not expected and would meet CEQA's definition of a de minimis impact.

6.2.13 Public Utilities/Public Facilities

Impacts associated with the restoration project are short term and specific to a particular location and time. They would neither contribute to nor cause a significant cumulative impact since it is unlikely that other projects would impact the same utilities and facilities at the same time.

6.2.14 Noise

Noise impacts from the proposed project would be short-term and highly localized. Noise impacts from other projects considered in the cumulative analysis also would have localized noise impacts with the exception of those related to traffic increases. A cumulative noise impact only would occur if noise sources from two projects occurred at the same time in the same general area, and this would not necessarily be a significant impact. No cumulative noise impacts would result from implementation of the proposed project.

6.2.15 Socioeconomics

The project would potentially contribute to the cumulative reduction in agricultural income in San Diego County due to conversion of agricultural lands, however, this socioeconomic impact is not considered to be significant. Cumulative impacts in the areas of population, employment, and housing also would not be significant. Therefore, net impacts would be less than significant (Class III).

6.2.16 Environmental Justice

As described in section 3.16, the project area, including the general region in which the cumulative projects are located, is neither characterized by predominantly low-income nor minority populations. Therefore, no cumulative impacts to environmental justice would occur (Class III).

7. GROWTH-INDUCING IMPACTS

Section 15126(g) of the CEQA Guidelines and the Council on Environmental Quality NEPA Regulations (42 CFR 1508.8) require a discussion of potential growth-inducing impacts of the proposed action and alternatives. A project may be growth inducing if it directly or indirectly fosters economic growth, population growth, or additional housing, removes obstacles to growth, taxes community services facilities, or encourages other activities that could affect the environment. The wetland restoration aspects of the project would not be considered growth inducing. The proposed action also includes the development of trails, staging areas, interpretive facilities, and a Nature Center. The provision of these facilities could indirectly foster economic growth by contributing to the overall tourism industry within the region. It is not anticipated, however, that these proposed facilities would attract sufficient numbers of tourists to induce the expansion of existing tourist-related commercial uses. In addition, the limited extent of these facilities is not expected to tax any existing or proposed community service facilities. Although implementation of the upland portion of the proposed action would indirectly foster economic growth, and therefore be considered growth inducing, no significant environmental effects are anticipated as a result of this growth.

Use of Disposal Site 38, which covers a portion of Surf and Turf, would be considered growth inducing since it would elevate this site out of the floodplain and allow future development of the site with other uses.

Use of Area U18, the Via de la Valle site, for overflow parking and staging trailers for the Del Mar Fair and some Horsepark activities would not be growth inducing since these would be temporary (the fair only lasts 20 days) and sporadic events. Development of one or more of the following uses could occur, as well: a year-round thoroughbred training track, uncovered show rings, cross-country course, and/or agricultural uses for youth in conjunction with the fair. These uses could lead to economic growth within the region, although it is not anticipated that this growth would be sufficient to affect community services or otherwise trigger substantive environmental impacts. Relocation of existing show barns to this site would not be growth inducing since the use would simply be transferred from another site, although it is possible that other development could occur on the Horsepark property once the barns were relocated. In order to fully evaluate the impacts related to the use of Area U18 by the District, subsequent environmental review is required prior to any project specific approval for District use of this property.

8. RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Implementation of any of the action alternatives would result in both short- and long-term impacts.

Short-term impacts would occur to land use, water quality, geology, biological resources, landforms/visual quality, traffic, air quality, public utilities, and noise, although most of these impacts would be reduced to a less than significant level by mitigation. Long-term impacts would occur to land use, hydrology, geology, biological resources, natural resources, landforms/visual quality, traffic, noise, and public safety. No significant impacts to vectors and odors, cultural and paleontological resources, socioeconomics, or environmental justice would occur. As discussed below there would be a substantial net increase in long-term productivity due to the project as compared to short-term uses and impacts.

8.1 SHORT-TERM IMPACTS

Short-term land use impacts would include restricted public access to the river inlet/beach area; incompatibilities with general construction activities, the use of construction staging areas and access roads with nearby residential areas; and conflicts between disposal activities and District use of DS37 and DS38 during peak use times (section 4.1). All of these impacts are mitigable to a less than significant level and would cease once constructed was completed.

Significant impacts during the construction period would occur to some biological resources in the wetland and upland restoration and disposal areas. These impacts would include alteration of existing habitats and displacement or inadvertent extirpation of some organisms, particularly bottom- and soil-dwelling invertebrates and plants (section 4.4) in the immediate project region. These impacts are generally less than significant or avoidable by mitigation measures identified in section 4.4.

Excavation, dredging, and disposal of soils and sediments would increase air pollution emissions and noise in the immediate vicinity of the project site during the approximately two-year construction period. The air quality impacts would be significant for the Mixed Habitat, Maximum Tidal Basin, and Hybrid alternatives, but would be adverse and less than significant for the Reduced Berm and Maximum Intertidal alternatives. Impacts from construction of the three alternatives with significant impacts would require mitigation (section 4.8) to reduce emissions below criteria levels. Noise impacts during the construction period and during periodic (e.g., once per year or two years) maintenance excavation of the river inlet area would be significant but mitigable to a less than significant level (section 4.14).

Construction-related increases in traffic due to short-term movement of large trucks and excavation/grading equipment into project staging and work areas, and work-day use of public streets during worker commutes to the site could be significant during periods of seasonal congestion, but would be mitigable to a less than significant level (section 4.7).

Several short-term impacts to utilities would occur. A few electrical transmission lines would have to be relocated; the Pacific Bell telephone duct bank located to the east of the I-5 right-of-way could experience exposure due to scour at the opening to the southern basin on the south side of the San Dieguito River; and an 8-inch sewer force main that crosses the San Dieguito River between the Jimmy Durante Boulevard Bridge and the NCTD Railroad Bridge could be disturbed by dredging equipment and project-induced scour. These impacts are all mitigable to a less than significant level, and no long-term impacts would occur.

Short-term water quality impacts include potential spills or leaks of oils or fluids onto ground and into aquifers or wetlands and increased turbidity during dredging, berm and nesting site construction and upland disposal (section 4.2).

8.2 LONG-TERM IMPACTS

Excavation/dredging and filling of project sites for restoration of wetland and upland habitats and the creation of public access/interpretive areas would permanently, for practical purposes, modify some resources in the project region.

The hydrology changes would involve (1) berm construction to maintain existing river flow conditions while protecting restored wetland areas; (2) excavation and dredging of the river inlet area to enhance tidal exchanges to the restored wetland areas; and (3) deepening and channel creation to create wetlands in many off-river areas that vary among the action alternatives (section 4.2). These changes would not cause adverse changes in flooding potential, scour, or sediment (sand) delivery to beaches and are essential to allow the creation of wetland habitats and the enhancement of long-term productivity of biological resources in the project region.

Impacts associated with geologic resources include adverse impacts to berms, nesting sites, freeway embankments, and disposal sites from seismically induced ground shaking; slope instability, soil shrinkage, and corrosion of ferrous metal structures. All of these impacts are mitigable through standard construction practices.

The project would greatly increase the acreage and quality of coastal wetland habitats in the San Dieguito River Valley with benefits to several endangered species. The substantial project-related increases in biological productivity would represent a long-term benefit for these resources, as well as for public access/education and visual resources.

The loss of some agricultural lands as a result of upland disposal and habitat restoration in the project area would be an essentially permanent unmitigated loss of these resources. However, this conversion would be balanced by the restoration of more natural conditions on these lands, consistent with overall goals of the River Park Master Plan.

Landforms/visual quality in the project area would be permanently altered by the restoration of wetland and upland habitats and public access/education areas (including trails, access parking, and an interpretive center) and disposal site use and grading. However, the alterations would be consistent with all applicable ordinances and produce a substantial overall increase in the occurrence of natural viewsheds that existed historically in the river valley.

Some increases in potential concerns for public safety may result from deepening of the inlet channel and increases in currents due to inlet excavation and maintenance (section 4.10). The principal concern would be for swimmers and waders that may try to cross the inlet channel during high water conditions that can result from combinations of natural increases in tide heights and/or river flows. Hazardous conditions presently occur under similar episodic conditions, however, the frequency of deeper water and slightly increased currents would likely increase under the project alternatives. Mitigation measures (increased lifeguard presence during periods of potentially hazardous conditions that correspond with high public use days) are addressed in section 4.10.

Potentially significant noise impacts to nearby residences could result from use of a public address system at Area U18, but this would be mitigable.

8.3 BALANCE OF SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The project would result in a permanent loss of important agricultural lands and some long-term visual impacts. It also would result in more frequent difficulties in crossing the mouth of the San Dieguito River. On the whole, however, the project would create a net benefit to many resources, as summarized below:

- Helping to restore aquatic functions by opening the tidal channel and maintaining tidal exchange between the ocean and lagoon/wetlands, thereby improving water quality and health of wetland habitat.
- Restoring habitat and improving existing habitat values, thereby benefiting threatened and endangered species (least tern, snowy plover, and Belding's savannah sparrow).
- Increasing acreage of all tidal habitats with beneficial impacts on associated species.
- Improving functions and values of existing tidal habitats with beneficial impacts on associated species.
- Enhancing functions and values of seasonal wetlands with beneficial impacts on associated species.
- Restoring native uplands with beneficial impacts on associated species.
- Enhancing fresh and brackish water marsh, riparian woodland and scrub habitats.
- Creation of nest sites would benefit least tern and snowy plover and other waterbirds that may use these sites and would contribute to the restoration of ecosystem functions and values.
- Preserving the site in open space and restoring a number of filled and otherwise degraded areas with native vegetation, thereby improving the overall aesthetic qualities of the site.
- Providing additional recreational opportunities in areas currently closed to public use through the design and implementation of a regional trail, nature trails, a nature/interpretive center, trail staging areas, and an interpretive program.

9. UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts were identified for the following resources.

9.1 LAND USE

As described in section 4.10, it is expected that crossing of the river mouth on foot would become relatively more difficult most of the time and prevented at some periods, particularly during high tides. Beach access and use would still be possible in areas north and south of the river inlet and crossing of the inlet would be possible at some times, but at other times use of the bridge at Camino Del Mar would be necessary. Prior study of beach use conducted in association with the Human Use Inventory (KTU+A 1994) recommended that an improved connection between the lower beach areas and the bridge at Camino Del Mar be implemented as a part of the restoration project. This would provide both a better alternative for pedestrians when the river mouth cannot be crossed by foot and improve lateral beach access at all times. This feature is not presently included in the project plans. Based on the above information, the project has the potential to substantially alter present conditions for beach users by reducing the ability for pedestrians to cross at the river inlet. Although such conditions would be present during certain times of the year under current conditions, the proposed project would make crossing the river more difficult most of the time; therefore, this represents a significant change in current use patterns. Without mitigation, this impact is considered significant and unmitigated (Class I); however, it appears at the present time that construction of a pedestrian pathway along the south side of the inlet channel to Camino Del Mar is technically feasible. The applicant has agreed to design a pedestrian pathway, for the City of Del Mar's review and approval, that is consistent with the City's development standards. In addition, the applicant would construct the pathway prior to the project's opening of the inlet channel. Such a proposal would mitigate the above-identified land use impact to below a level of significance. If, however, as a result of the findings of the engineering and design studies or the inability to receive the required permits for construction, the pathway cannot be constructed, the impacts would remain significant and unavoidable.

The proposed seasonal use of a tram would supplement the use of buses to transport visitors from parking areas on the Horsepark property to the Del Mar Fairgrounds, which would benefit visitors to the Fair and provide an alternative to bus use of public streets for some riders. The tram would use the bicycle portion of the proposed Coast to Crest Trail, an 8-foot-wide hard-surfaced trail designed to Caltrans Class 1 bicycle standards. During use of the tram, which would occur for 21 days in June and July during the Fair and on the first day of racing, it would be necessary for bicyclists and other users of the hard-surfaced trail to share the trail with the tram. The tram would operate at speeds of 10–15 miles per hour and could cause conflicts with bike and other users on the hard surfaced trail as these users would find it necessary to get off the trail in order to permit the tram to pass. The hard-surfaced trail is aligned side-by-side with the 4-foot-wide compacted soil hiking/equestrian trail. The presence of a large, motorized vehicle on the paved trail could also conflict with equestrians and hikers using the adjoining trail. These conflicts relate to disruption in the overall recreational experience, as well as to the effects that the presence of the tram could have on a horse's behavior. Trams would also increase noise levels (about 70 to 75 dBA at 50 feet) along the trail, which could affect non-motorized users of both trails (see section 4.14, Noise). In addition, effects of noise from the tram on wildlife may be a concern (see section 4.4 Biological Resources). Use of the tram is considered to be a beneficial impact on Fair operations since it would provide a convenience for visitors. However, the addition of a motorized use on this portion of the Coast to Crest Trail could result in significant user conflicts due to the physical intrusion on the trail, which would be exacerbated by increased noise levels and visual intrusion. This is of particular concern with respect to equestrians, who may encounter the tram under the I-5 bridge, where the trail would be widened by 2 feet for the tram, and to disabled users, who may have to leave the paved trail in order to permit the tram to pass. Although temporary in nature (approximately one month out of the year) these impacts are considered potentially significant and unmitigable (Class I). Widening portions of the trail may partially reduce these conflicts but they would still remain potentially significant, and closure of the trail to recreation users during tram use to avoid these conflicts is not considered a feasible measure due to the loss of recreation use.

9.2 NATURAL RESOURCES

Under this alternative, approximately 38 acres of land planted in tomatoes just south of Via de la Valle between San Andres Drive and Horsepark would be displaced by the proposed restoration plan. This area would serve as disposal site DS32 and ultimately would be restored as re-seeded coastal sage scrub/native grassland (Area U18). A 6-acre portion of this area would be the site of the nature/interpretive center. Restoration of this general area would result in the loss of 43 acres of Prime Farmland, as shown on Figure 3.5-2. This would be considered a significant unavoidable impact (Class I).

Development of the coastal sage scrub area (Area U24) just west of El Camino Real and the 40-car parking lot would impact about 45 acres of land that is under cultivation and about 34 acres of land classified as Farmland of Statewide Importance. This would be considered a significant unavoidable impact (Class I). The use of offsite disposal area DS36 would displace 24 acres of land that are under cultivation and 26 acres that are classified as Farmland of Statewide Importance. This would be a significant unavoidable impact (Class I).

9.3 LANDFORMS/VISUAL QUALITY

Constructing the three berms would require more than 2,000 cubic yards of fill per acre and would be higher than 10 feet above the finish grade. Thus, each of berms, when taken as a separate element of the project, would create a significant unavoidable (Class I) impact to natural landforms.

The filling of DS32, DS33, DS34, DS35, DS36, and DS38 would result in a significant impact to natural landforms, which is only mitigable through a redesign of the project to reduce the amount of fill relocated to any one spot within the project boundaries or by eliminating one or more of the disposal sites from the list of potential options. Unless redesigned or eliminated, the grading proposed at disposal sites DS32, DS33, DS34, DS35, DS36 and DS38 would be considered significant and unmitigated (Class I).

The proposed nesting sites would require more than 2,000 cubic yards of earth and sand per acre, and nesting sites NS11, NS12, and NS14 would have an elevation more than 10 feet above the finished grade. Thus, this would represent a significant landform impact. Visual impacts of the new nesting sites would be minimized by revegetating the slopes, but the light-colored plateaus would contrast noticeably with the surrounding area, particularly when seen from higher elevations. Visual impacts of this individual project element would be unmitigable (Class I) for these sites.

Construction would require considerable amounts of earth-moving, which would create an adverse appearance. The newly planted vegetation would take between 1 and 2 years to become sufficiently established to minimize visual impacts. Impacts from the 1 to 2-year construction period would therefore last between two and four years until the vegetation is established. This impact would be short-term but significant and unavoidable (Class I).

10. IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

Resources that are committed irreversibly or irretrievably are those that cannot be recovered if the action alternatives are implemented. The action alternatives would involve two types of resources: (1) general industrial resources, including capital, labor, fuels, and construction materials; and (2) project-specific resources, such as biological resources, water and soil/sediment resources, land uses, and landforms and visual qualities at the affected sites. The industrial resources would not be retrievable if the restoration and disposal alternatives are implemented.

Generally irreversible environmental changes would occur both at the excavation and dredging areas and the disposal sites. Many soil and aquatic bottom-dwelling organisms (e.g., plants and invertebrates) living in the project area would be destroyed by the construction activities. Although substantial evidence (see section 4.4) indicates that recolonization and recovery of biological communities would occur in these areas, the length of time can be variable (e.g., 1 to 2 years), and the species occurring would be determined by the type of habitat created. Replanting of upland sites following grading and disposal (Chapter 2 and section 4.4) is an example of human-influenced changes in species composition, while recovery of wetland areas would rely more on natural processes, such as immigration and tidal dispersal of plant and animal propagules. However, the overall project would create a net gain in more biologically productive wetland and upland habitats than presently exist in the project area (section 4.4).

Similar disturbance of bottom communities as noted above for the wetland restoration areas would also occur at the river inlet and channel area during initial excavation and maintenance excavation (Chapter 2 and section 4.4). However, the inlet area has been excavated historically and recently (e.g., June 1999) on an episodic basis when the river mouth closes. The frequency and intensity of disturbance would determine the type and abundance of biological organisms occurring in the area. However, this habitat is in a naturally dynamic setting influenced strongly by tidal and riverine processes, so overall impacts due to the project would be less than significant.

No loss of water resources would result from the project, and sand supplies to the beach and nearshore area would not be decreased compared to present conditions based on the berm designs utilized for the action alternatives (section 4.2). If the overexcavation alternative is selected, up to 1.68 million cubic yards of sand could be relocated from the river valley to shoreline or nearshore areas. This would constitute an irretrievable loss of this resource from the immediate project area, but would represent a substantial beneficial use of this material in the general project region.

Approximately 38 acres of land planted in tomatoes just south of Via de la Valle between San Andres Drive and Horsepark would be displaced by the proposed restoration plan. This area would serve as disposal site DS32 and ultimately would be restored as re-seeded coastal sage scrub/native grassland (Area U18). A 6-acre portion of this area would be the site of the nature/interpretive center. Restoration of this general area would result in the loss of 43 acres of Prime Farmland. Development of the coastal sage scrub area (Area U24) just west of El Camino Real and the 40-car parking lot would impact about 45 acres of land that is under cultivation and about 34 acres of land classified as Farmland of Statewide Importance. The use of offsite disposal area DS36 would displace 24 acres of land that are under cultivation and 26 acres that are classified as Farmland of Statewide Importance. Development of Area U19 as grassland would convert about 3 acres of Farmland of Local Importance. These losses would result from the use of these areas as disposal sites; however, the restoration of this land to more natural, historical conditions would represent a substantial improvement in habitat value.

Excavation, dredging, disposal, and grading activities for the action alternatives would result in generally irreversible changes to existing landforms and visual resources. It is technically feasible to “reverse” these alterations using similar construction methods, but this would be at substantial cost and effort and, therefore, would be practically unfeasible.

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14. GLOSSARY OF TERMS

100-Year Flood: Refers to the discharge of a statistical flood estimated to occur on an average of once in 100 years (1 percent probability of occurrence each year).

Anthropogenic: Scientific study of the origin of man.

Bathymetry: The measurement of depths of water in oceans, seas, and lakes; also information derived from such measurements.

Bed Load: Refers to the coarser sediment moving on or near the bed of the channel, with the motion of entrained particles consisting of rolling, sliding, or sometimes jumping (saltating) in response to the shear stress from water flowing over the channel bed.

Benthic invertebrates: Consist of infauna (organisms living in the sediments) and epifauna (organisms living on the sediments).

Fluvial-12: The computer model (Version No. 12), developed by Dr. Howard Chang in San Diego, California, that simulates the combined effects of flow hydraulics, sediment transport, and river channel changes for a given flow period. These interrelated changes are coupled in the model for each time step, simulating channel bed scour and fill, taking into account physical constraints such as bank protection, grade control structures, and bedrock outcroppings. The model also addresses the impacts of general scour at bridge crossings, response to sand and gravel mining, and channelization.

Fluvial Processes: The processes describing the actions, mechanisms, and effects of flowing rivers.

HEC-2: The water surface profile computer program developed by the U.S. Army Corps of Engineers' Hydraulic Engineering Center in Davis, California.

Littoral Cell: A littoral cell is a coastal compartment that contains a complete cycle of littoral (beach) sedimentation, including sources, transport pathways, and sediment sinks. The Oceanside Littoral Cell extends for approximately 57 miles from Dana Point to Point La Jolla.

Littoral Zone: In beach terminology, an indefinite zone extending seaward from the shoreline to just beyond the breaker zone.

Mean Higher High Water (MHHW): The average height of the higher high waters over a 19-year period. For shorter periods of observation, corrections are applied to eliminate known variations and reduce the result to the equivalent of a mean 19-year value.

Mean Lower Low Water (MLLW): The average height of the lower low waters over a 19-year period. For shorter periods of observations, corrections are applied to eliminate known variations and reduce the results to the equivalent of a mean 19-year value. Frequently abbreviated to Lower Low Water.

Mean Sea Level: The average height of the surface of the sea for all stages of the tide over a 19-year period, usually determined from hourly height readings.

NGVD: National Geodetic Vertical Datum of 1929 was formerly called “Sea Level Datum of 1929” or “mean sea level.” The datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific coasts, although it does not necessarily represent local mean sea level at any particular place. As sea level continues to change due to global warming or cooling (melting or adding to the polar ice caps), the mean sea level tidal datum is revised by determining the arithmetic mean of hourly sea level heights observed over the 19-year national tidal datum epoch. Since global sea levels are continuing to rise, the current mean sea level datum (MSL) is presently 0.19 foot above the NGVD datum.

Sediment Load (or Total Load): Refers to the sediment that is in motion in a stream, and consists of both bed load and wash load.

Seismicity: Used to describe the geography of earthquakes, particularly their distribution, frequency, and energy relationships to surface features.

Seismicity: The term seismicity is typically used to describe the relationship of earthquakes to the characteristics of tectonic and structural features such as fault-systems, and to the “stiffness” (or resistance to deformation by seismic waves) of the subsurface materials of the earth’s crust and mantle.

Semidiurnal Daily Tides: A tide with two high and two low waters in a tidal day with comparatively little diurnal inequality.

Tidal Prism: The total amount of water that flows into a harbor or estuary or out again with movement of the tide, excluding any freshwater flow.

Wash Load: Refers to the finest portion of sediment, generally silt and clay, that is washed through the channel, with an insignificant amount of it being found in the bed. This finer fraction is transported entirely within the water column.

15. ACRONYMS

AC	asphaltic concrete
ACB	Articulated concrete block
ACOE	Army Corps of Engineers
ADA	Americans with Disabilities Act
ADT	Average daily traffic
AOU	American Ornithologist's Union
ARB	California Air Resources Board
ATC	Authority to Construct
BACT	best available control technology
BMP	Best Management Practices
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CCC	California Coastal Commission
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CSC	California Species of Concern
CWA	Clean Water Act
DB	Detention Basin
dB	decibel
DFG	Department of Fish and Game
EFH	Essential Fish Habitat
EIR/EIS	Environmental Impact Report/ Environmental Impact Statement
ESA	Environmental Site Assessment
FSC	Federal Species of Concern
HEC	Hydraulic Engineering Center
FAC	facultative plants
FACW	facultative wetland plants
FEMA	Federal Emergency Management Agency
FESWNS	a two-dimensional hydrodynamic model
FHBM	Flood Hazard Boundary Maps
FPA	Focused Planning Area (San Diego River Park)
Hs	significant wave height
JPA	Joint Powers Authority
kV	kilovolt
Ldn	Day/Night Average Sound Level
LTA	lighter than air
$\mu g/m^3$	micrograms per cubic meter
MHHW	mean higher high water
MHPA	Multi-Habitat Planning Area
MHW	mean high water
MHHW	mean higher high water
MLLW	mean lower low water
MLW	mean low water
MMRP	Mitigation Monitoring & Reporting Plan
MRZ	mineral resource zone
MSCP	Multiple Species Conservation Program
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NAVD	North American Vertical Datum
NWP	Nationwide Permit
NCFUA	North County Future Urbanizing Area
NCTD	North County Transit District
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NOP	Notice of Preparation
NOx	nitrogen oxides
NRHP	National Register of Historic Places
NPDES	National Pollutant Discharge Elimination System
O3	ozone
OBL	obligate wetland plants
OLC	Oceanside Littoral Cell
OHWM	ordinary high water mark
OSHA	Occupational Safety and Health Administration
PAH	polychlorinated aromatic hydrocarbons
PCB	polychlorinated biphenyls
PCC	Portland cement concrete
PM10	particulate matter less than 10 microns in diameter
ppm	parts per million
PSR	Project Study Report
PTO	Permit to Operate
RAQS	Regional Air Quality Strategy
ROI	region of influence
RWQCB	Regional Water Quality Control Board
SANDAG	San Diego Association of Governments
SCE	Southern California Edison

16. INDEX