



**Appendix M:  
Clean Water Act – Section 404(b)(1) Alternatives  
Analysis Evaluation and LEDPA Identification**



2

# **Section 404(b)(1)**

## **Alternatives Analysis**

Interstate 5 North Coast Corridor Project

San Diego County, California

11-SD-5-KP PM R28.4/R55/4

EA 235800

June 2013





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# Chapter 1

## Introduction

The California Department of Transportation (Caltrans), in coordination with the Federal Highway Administration (FHWA), is proposing improvements to maintain or improve existing and future traffic operations on the existing Interstate 5 (I-5) freeway from La Jolla Village Drive in San Diego to Harbor Drive in Oceanside/Camp Pendleton, extending approximately 27 miles (PM R28.4 to R55.4). The proposed project improvements include construction, operation, and maintenance of two High Occupancy Vehicle/Managed Lanes (HOV/Managed Lanes) in each direction, auxiliary lanes where needed, and one general-purpose lane in each direction (for two of the four build alternatives). All build alternatives developed by the project proponent would have a number of design elements in common. Each build alternative would include the following design elements<sup>1</sup>:

- Eight to 10 general-purpose lanes (lanes available to all users of the facility); the 8 + 4 with Barrier and the 8+4 with Buffer alternatives would not add general purpose lanes, but might add auxiliary lanes and would add HOV/Managed Lanes;
- Two HOV/Managed Lanes (lanes restricted to vehicles, motorcycles, and buses with multiple passengers, or to single passengers paying an access fee) going both north and south;
- Auxiliary lanes (to eliminate weaving) as necessary;
- Permanent barriers or painted buffers between the general-purpose and HOV/Managed Lanes;
- Noise barriers, ramp meters, utility relocations and avoidance, drainage facilities, transit opportunities, and value pricing for single-occupancy vehicle use of HOV/Managed Lanes; and
- Direct access ramps (DARs) that enable grade-separated, direct access from local streets or park-and-ride facilities to HOV/Managed Lanes at Voigt Drive and Manchester Avenue.

## Section 404(b)(1) Regulatory Background

The purpose of Section 404(b)(1) of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of waters of the U.S. through the control of discharges of dredged and fill material (33 United States Code [USC] 1344). To fulfill this purpose, dredged or fill material should not be discharged into the aquatic ecosystem unless it can be demonstrated that such a discharge would not have an unacceptable adverse impact either individually or cumulatively.

More specifically, Section 404 of the Clean Water Act (CWA) authorizes the U.S Army Corps of Engineers (ACOE) to issue permits for the discharge of dredged or fill materials into waters of the United States (waters of the U.S.), including wetlands Waters of the U.S., defined at 33 *Code of Federal Regulations* (CFR). §328, and as clarified by *Rapanos v. United States* (547 U.S. 715 [2006]), *Carabell v.*

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<sup>1</sup> These design elements are general features of the freeway and freeway access design only. A more complete listing and description of features common to all build alternatives is in Chapter 3 under “Features Common to the Build Alternatives.”

*United States* (126 S. Ct. 2208 [2006]), and *Solid Waste Agency of Northern Cook County v. United States* (531 U.S. 159 [2001]) include coastal and inland waters, lakes, rivers, and streams, including adjacent wetlands and tributaries.

The U.S. Environmental Protection Agency (EPA) Section 404(b)(1) Guidelines (40 CFR 230 *et seq.*) are the substantive environmental criteria used by the ACOE to evaluate permit applications involving the discharge of dredged<sup>2</sup> or fill material into waters of the U.S. Under these guidelines, an analysis of practicable alternatives is the primary tool used to determine whether a proposed discharge can be authorized.

The Section 404(b)(1) Guidelines prohibit discharges of dredged or fill material into waters of the U.S. if a practicable alternative to the proposed discharge exists that would have less adverse impacts on the aquatic ecosystem, including wetlands, as long as the alternative does not have other significant adverse environmental impacts (40 CFR § 230[a]). An alternative is considered practicable if it is available and capable of being implemented after considering cost, existing technology, and logistics in light of overall project purpose (40 CFR § 230[a][2]).

The Section 404(b)(1) Guidelines direct a sequential approach to project planning that considers mitigation measures only after the project proponent shows no practicable alternatives are available to achieve the overall project purpose with less environmental impacts. Once it is determined that no practicable alternatives are available, the guidelines then require that appropriate and practicable steps be taken to minimize potential adverse effects on the aquatic ecosystem (40 CFR § 230.10[d]). Such steps may include actions controlling discharge location, material to be discharged, the fate of material after discharge or method of dispersion, and actions related to technology, plant and animal populations, or human use (40 CFR §§ 230.70-230.77).

Beyond the requirement for demonstrating that no practicable less environmentally damaging alternatives to the proposed discharge exist, the Section 404(b)(1) Guidelines also require the ACOE to compile findings related to the environmental impacts of discharges of dredged or fill material into waters of the U.S. The ACOE must make findings concerning the anticipated changes caused by the discharge to the physical and chemical substrate and to the biological and human use characteristics of the discharge site.

These guidelines also indicate that the level of effort associated with the preparation of the alternatives analysis be commensurate with the significance of the impact and/or discharge activity (40 CFR § 230.6(b)). The following Section 404(b)(1) alternatives analysis shows that all of the build alternatives propose discharges into wetlands or other waters of the U.S., and that of the four build alternatives developed by the proponent of the Interstate 5 North Coast Corridor (I-5 NCC) project, the 8 + 4 with Buffer Alternative has been preliminarily determined to be the least environmentally damaging

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<sup>2</sup> In many cases dredging does not generate a Clean Water Act Section 404-regulated discharge; specifically when material generated by dredging would only be considered by the U.S. Army Corps of Engineers to result in “incidental fallback” relative to the dredge location and when disposal of the dredged material would not generate a discharge into waters of the U.S. (e.g., disposal of dredged material at an upland location would not generate return water to a water of the U.S. from the disposal location).

practicable alternative (LEDPA). The No Build Alternative (which is also the No Federal Action Alternative for the purposes of NEPA and Section 404 (b)(1) analysis [40 CFR 230]), would not involve any discharge of dredge or fill material into wetlands and other waters of the U.S., but it would not achieve the overall purpose of the proposed project and therefore is not considered practicable.

## Organization of Report

This Section 404(b)(1) alternatives analysis is based primarily on the findings of the Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIR/DEIS) and a Draft Supplemental Environmental Impact Statement/Draft Environmental Impact Report (SDEIR/SDEIS) for the I-5 NCC Project prepared for Caltrans and ACOE. The impact evaluations herein are summarized from the DEIR/DEIS and the SDEIR/SDEIS for the proposed Project and its alternatives, and the Section 404(b)(1) alternatives analysis is not intended to be a stand-alone document.

The DEIR/DEIS and the SDEIR/SDEIS were prepared by Caltrans and FHWA in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 USC 4341 *et seq.*) and in conformance with the Council for Environmental Quality (CEQ) Guidelines. When adopted and certified, the Final EIR/EIS (including the Final SEIR/SEIS) would also fulfill the requirements of the California Environmental Quality Act (CEQA) (California Public Resources Code [PRC] 21000 *et seq.*) and the Guidelines for Implementation of the California Environmental Quality Act of 1970 (CEQA Guidelines) (14 California Code of Regulations [CCR] 15000 *et seq.*).

This document provides information and analysis that will allow the ACOE to make a determination of the LEDPA. Chapter 1 provides the **Introduction**, including the proposed project background, Section 404(b)(1) regulatory background, and this organization section. Chapter 2 provides the **Basic and Overall Project Purpose**. Chapter 3 discusses the **Proposed Action and Alternatives** including the components of the proposed project and alternatives to the proposed project. Chapter 4 discusses the **Environmental Effects of the Proposed Action and Alternatives**, as set forth in Subparts C through H of the Section 404(b)(1) Guidelines, and concludes with a brief rationale supporting the preliminarily identified LEDPA.

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## **Chapter 2**

### **Purpose and Need**

#### **Project Purpose**

The proposed project purpose frames the scope of the Section 404 (b)(1) alternatives analysis. For CWA Section 404(b)(1) evaluations, project purpose is expressed in terms of “basic purpose” and “overall purpose.” While these terms are not strictly defined in the guidelines, in practical application, they are generally defined as presented in the following sections.

#### **Basic Project Purpose**

The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed project, and is used by the ACOE to determine whether the applicant’s project is water-dependent. The Section 404(b)(1) Guidelines state that if an activity associated with the discharge proposed for a water body does not require access or proximity to, or siting within, water to fulfill its basic purpose, the activity is not water dependent. Non-water-dependent activities that would impact special aquatic sites are subject to a more rigorous level of Section 404(b)(1) alternatives analysis.

The term “special aquatic sites,” as defined by the Section 404(b)(1) Guidelines, includes “geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values.” The Guidelines specifically name sanctuaries and refuges, wetlands, mud flats, vegetated shallows, coral reefs, and riffle and pool complexes as special aquatic sites. Special aquatic sites occur within the ACOE’s geographic jurisdiction at the six lagoon systems and the San Luis Rey River, including wetlands, mud flats, and eelgrass beds (vegetated shallows). Wetlands and mud flats also occur in other creeks and drainages that would be affected along the freeway corridor.

The basic project purpose in this case is “freeway mobility improvements.” Since the basic project purpose presumably could be achieved without affecting the special aquatic sites associated with the coast, consisting of the Los Peñasquitos, San Dieguito, San Elijo, Agua Hedionda, Batiquitos, and Buena Vista lagoon systems, the San Luis Rey River, and a number of smaller drainages (San Clemente Creek tributary, Cottonwood Creek, Encinas Creek, and Loma Alta Creek), the project is not water dependent. Because the activity is not water dependent and proposes to impact special aquatic sites by the Clean Water Act Section 404 discharge of dredged or fill material, the applicant is required to rebut the presumptions that: (1) at least one practicable alternative is available that would not impact special aquatic sites, and (2) an alternative not impacting special aquatic sites would have less impact on the aquatic ecosystem. Rebutting the presumptions requires considering off-site and on-site alternatives in evaluating compliance with the Section 404(b)(1) Guidelines.

## Overall Project Purpose

The overall project purpose serves as the basis for the ACOE's Section 404(b)(1) alternatives analysis and is determined by further defining the basic project purpose in a manner that more specifically describes the applicant's goals and accounts for logistical considerations for the project, and which allows a reasonable range of alternatives to be analyzed. It is critical that the overall project purpose be defined to provide for a meaningful evaluation of alternatives. It should not be so narrowly defined as to give undue deference to the applicant's wishes, thereby unreasonably limiting the consideration of alternatives. Conversely, it should not be so broadly defined as to render the evaluation unreasonable and meaningless (e.g., to make money).

The overall project purpose is to improve existing and future traffic conditions in the I-5 North Coast Corridor and improve the safe and efficient local and regional movement of people and goods. More specifically, the overall project purpose includes the following six elements/objectives:

- Maintain or improve future 2035 traffic levels of service compared to existing levels of service;
- Maintain or improve travel times within the corridor;
- Provide a facility that is compatible with bus rapid transit and other modal options;
- Provide consistency with the San Diego Regional 2050 Transportation Plan where feasible and in compliance with federal and state regulations;
- Maintain the facility as an effective link in the national Strategic Highway Network; and
- Protect and/or enhance the human and natural environment along the I-5 NCC.

In December of 2004, Caltrans formally requested concurrence on the project purpose<sup>3</sup> and need from the U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration (NOAA)/National Marine Fisheries Service (NMFS), the Environmental Protection Agency (EPA), and the U.S. Army Corps of Engineers (ACOE). In December 2004 and January 2005, Caltrans received letters of concurrence from each of these agencies. The years stated in the project objectives have been revised from those with which the agencies concurred to reflect updated construction phasing from 2030 to 2035 and the 2050 Regional Transportation Plan that was adopted in October 2011.

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<sup>3</sup> Per a December 10, 2004 interagency Memorandum of Understanding integrating NEPA and Section 404 of the Clean Water Act in transportation planning, programming, and implementing stages for federal aid surface transportation projects requiring a Section 404 permit, the NEPA project purpose also serves as the overall project purpose for the proposed action.

## **Chapter 3 Proposed Action and Alternatives**

### **Alternatives Development/Background**

#### **Resource Agency Decisions on Alternatives**

On December 10, 2004, Caltrans and Caltrans staff on behalf of FHWA signed an interagency Memorandum of Understanding (MOU) committing to integrate the National Environmental Policy Act (NEPA) and Section 404 of the CWA in transportation planning, programming, and implementing stages for federal aid surface transportation projects that require a permit under Section 404. Under the MOU process, signatory agencies FHWA, USFWS, NOAA, ACOE, and EPA were asked to concur on the following two milestones: (1) purpose and need statement and (2) identification of the range of alternatives and consideration of the criteria used to select and analyze the alternatives to be studied in the DEIR/DEIS and a SDEIR/SDEIS.

On April 24, 2005, Caltrans formally requested concurrence with the screening criteria for alternatives selected for the DEIR/DEIS from USFWS, NOAA, ACOE, and EPA. Letters of concurrence from each of these agencies were received in April, May, and June 2005. On August 1, 2006, Caltrans formally requested concurrence with the range of alternatives selected for the DEIR/DEIS from USFWS, NOAA, ACOE, and EPA. Letters of concurrence from each of these agencies were received in August 2006. Concurrence on the preliminary LEDPA Determination and Conceptual Mitigation Plan will be requested after review by the federal agencies.

Many project alternatives were considered by Caltrans as discussed in the DEIR/DEIS. Of these, four build alternatives and the No Build Alternative were carried forward for detailed study in the DEIR/DEIS. For purposes of the present Section 404(b)(1) analysis, the No Build Alternative is equivalent to the No Federal Action Alternative. The resource agency representatives concurred that these five project alternatives were sufficient for the DEIR/DEIS and could be carried forward for further detailed study. No further alternatives were suggested by the agencies.

#### **Environmental Review**

A DEIR/DEIS was prepared for the I-5 NCC project by Caltrans and FHWA and released for public review on July 9, 2010. In July 2011, Caltrans identified the 8+4 with Buffer Alternative (i.e., the proposed action) described in the DEIR/DEIS as the Locally Preferred Alternative (LPA). To provide additional information, Caltrans and FHWA decided to prepare an SDEIR/SDEIS covering the build alternatives' effects on the six coastal lagoons (Los Peñasquitos, San Dieguito, San Elijo, Agua Hedionda, Batiquitos, and Buena Vista) crossed by the project. Refinement of the LPA project design continued between public review circulation of the DEIR/DEIS and that of the SDEIR/SDEIS. In this document, the 8+4 Buffer Alternative described in the DEIR/DEIS and the revised 8+4 with Buffer Alternative described in the SDEIR/SDEIS are distinguished where relevant to the analysis.

## **Alternatives Considered in Detail in the DEIR/DEIS**

Four build alternatives were described and analyzed co-equally in the DEIR/DEIS. These alternatives proposed the following:

- Eight to 10 general-purpose lanes (lanes available to all users of the facility);
- Two managed lanes (lanes restricted to vehicles, motorcycles, and buses with multiple passengers, or to single passengers paying an access fee) going both north and south;
- Auxiliary lanes (to eliminate weaving) as necessary;
- Use of permanent barriers or painted buffers between the general purpose and HOV/Managed Lanes; and
- DARs that enable grade-separated, direct access from local streets or park and ride facilities to HOV/Managed Lanes at Voigt Drive and Manchester Avenue.

These feasible and practicable alternatives were fully evaluated in the DEIR/DEIS and are described below.

### **10 + 4 with Barrier Alternative**

The 10 + 4 with Barrier Alternative would build one general-purpose lane in each direction on I-5 from south of Del Mar Heights Road in San Diego to State Route 78 (SR-78) in Oceanside. Two HOV/Managed Lanes would be built in each direction from north of the Interstate 805 (I-805)/I-5 freeway-to-freeway connector in San Diego to Harbor Drive/Vandegrift Boulevard in Oceanside. This alternative would separate HOV/Managed Lanes from general-purpose lanes with a concrete barrier for most of its length, and a variable painted buffer in lieu of a barrier from Voigt Drive to Del Mar Heights Road and from SR-78 to Harbor Drive/Vandegrift Boulevard. The projected cost (right-of-way, support, and construction) for this alternative was estimated in the DEIR/DEIS as approximately \$4.3 billion in 2010 dollars.

### **10 + 4 with Buffer Alternative**

The 10 + 4 with Buffer Alternative would add the same number of through lanes (one general-purpose and two HOV/Managed Lanes in each direction) and function similarly to the 10 + 4 with Barrier Alternative, but would use a painted buffer to separate HOV/Managed Lanes from general-purpose lanes for the entire length of the project. The projected cost (right-of-way, support, and construction) for the alternative was estimated in the DEIR/DEIS as approximately \$3.5 billion in 2010 dollars.

### **8 + 4 with Barrier Alternative**

The 8 + 4 with Barrier Alternative would not add any general-purpose lanes to the existing highway. Two HOV/Managed Lanes would be added in each direction, separated from general-purpose lanes by a concrete barrier similar to the one described above for the 10 + 4 with Barrier Alternative. The solid barrier and extra shoulder on either side of the barrier and the weaving necessary for ingress and egress to the HOV/Managed Lanes increases the footprint of the barrier alternatives. The projected cost (right-of-

way, support, and construction) for this alternative was estimated in the DEIR/DEIS as approximately \$4.1 billion in 2010 dollars.

### **8 + 4 with Buffer Alternative (Proposed Project/Proposed Action)**

The 8 + 4 with Buffer Alternative would not add any general-purpose lanes to the existing highway. It would function similarly to the 8 + 4 with Barrier Alternative but would separate HOV/Managed Lanes from general-purpose lanes with a variable painted buffer for the entire length of the project. As noted, Caltrans identified this alternative as the LPA because it best meets the project purpose and need, and because it minimizes potential environmental impacts that would result from construction of the project. The projected cost (right-of-way, support, and construction) for this alternative was estimated in the DEIR/DEIS as approximately \$3.3 billion in 2010 dollars.

### **Features Common to the Build Alternatives**

All four build alternatives would also include natural and human community enhancements, some of which would affect waters of the U.S. These include pedestrian, bicycle, park and ride, gateway, streetscape, and park enhancements. The North Coast Bikeway is a regional enhancement that would complement the Coastal Rail Trail and the El Camino Bicycle Corridor, as well as the California Coastal Trail. Implementation of the community enhancements would depend on reaching a maintenance agreement with the affected city.

Each of the build alternatives would include braided ramps between the Roselle Street and Genesee Avenue bridges, DARs, and auxiliary lanes that have been specifically included in the assessment of project impacts in the DEIS. DARs would allow buses, carpools, and other users of the HOV/Managed Lanes to directly access the HOV/Managed Lanes without moving through general-purpose lanes. Numerous other design elements, including ramp meters, utility relocations, noise barriers, retaining walls, drainage and water treatment features, auxiliary lanes, and signage, would not result in appreciable environmental impacts. All build alternatives would have the following design elements:

- One additional HOV/Managed Lane in each direction from Voigt Drive to just north of Lomas Santa Fe Drive.
- Two HOV/Managed Lanes in each direction from just north of Lomas Santa Fe Drive to Harbor Drive/Vandegrift Boulevard.
- Separation of general-purpose lanes from HOV/Managed Lanes from near La Jolla Village Drive to Del Mar Heights Road, and from SR-78 to near Harbor Boulevard, by a buffer varying in width up to 4 feet.
- Provision of a continuous HOV lane for I-5, with a freeway-to-freeway connector (flyover) crossing over the I-5/I-805 merge and connecting the proposed project HOV/Managed Lanes to existing I-5 HOV lanes just north of that merge.
- DARs for grade-separated interchanges into managed lanes, thereby allowing direct access to the HOV/Managed Lanes without weaving across general-purpose lanes at Voigt Drive and

Manchester Avenue. The DARs would be compatible with carpools, bus transit, and value pricing, and would support HOV/Managed Lanes. (The Manchester Avenue DAR was redesigned to reduce environmental impacts since circulation of the DEIR/DEIS.)

- Intermediate access points (IAPs) located at Carmel Valley Road, Lomas Santa Fe Drive, Birmingham Drive, Poinsettia Lane, Tamarack Drive (southbound only), and SR-78; at-grade access points at the ends of the HOV/Managed Lanes near La Jolla Village Drive and Harbor Drive.
- Intelligent Transportation System (ITS) components, such as toll collection equipment, to allow single-occupancy vehicle users to purchase use of HOV/Managed Lanes. ITS components include overhead suspended scanner devices such as gantries, traffic monitoring stations, ramp meters, closed circuit television to view traffic on the facility and to help manage the traffic, changeable message signs to display the tolls, and loop detectors to measure traffic volume and speed.
- Twelve-foot-wide auxiliary lanes (as needed in 14 locations: five southbound, four northbound, and five both north- and southbound) and 10- to 12-foot-wide shoulders.
- New park and ride facilities at Manchester Avenue and State Route 76 (SR-76), and enhanced park and ride facilities at other locations.
- Reconfiguration of various local interchanges to improve vehicular, pedestrian, and bicycle circulation at northbound ramps for Leucadia Boulevard and La Costa Avenue; at southbound ramps for Roselle Street, Manchester Avenue, Encinitas Boulevard, Palomar Airport Road, and Oceanside Boulevard; and at both north- and southbound ramps at Genesee Avenue, Del Mar Heights Road, Via de la Valle, Birmingham Drive, Santa Fe Drive, Tamarack Drive, Carlsbad Village Drive, Mission Avenue, SR-76, and Harbor Drive.
- Widening or replacement of lagoon bridges at Los Peñasquitos, San Dieguito, San Elijo, Batiquitos, Agua Hedionda, and Buena Vista Lagoons.
- Ramp metering at various on-ramps (with ultimate metering at all 58 on-ramps at buildout), retaining walls (to reduce property acquisition needs, stabilize slopes, minimize impacts, and accommodate engineered structures), barriers, guard rails/end treatments, crash cushions, bridge rails, and signage, installed as appropriate and as needed.
- Project-related drainage abandonment or improvement including extension, replacement, or lining, with new drainage facilities constructed adjacent to cross roads (facility examples include storm drain inlets, storm ditches, rock slope protection, and headwalls).
- Relocation of existing overhead or underground utilities (water, sewer, gas, electricity telephone, and other communications), as needed and within existing utility easements, as possible.
- Proposed sound barriers as described in the DEIR/DEIS with specifics dependent on final design.

- Bioswales and/or detention basins for treatment of storm water runoff with specifics dependent on final design.
- Increasing the lagoon channel cross sections beneath the I-5 bridges at San Elijo, Batiquitos, and Buena Vista Lagoons by abutment fill removal and dredging of the existing channel.

All bridge abutments would be armored with riprap; this is the existing condition. No channel bottom armoring would be employed, and bottom armoring currently present at the Batiquitos Lagoon channel beneath the I-5 bridge would be removed.

At three lagoons, San Elijo, Batiquitos, and Buena Vista, removal of fill (including riprap, concrete, and soil) on existing abutments and non-Section-regulated dredging are proposed to optimize the lagoon tidal channels under the bridges to allow maximum fluvial (flood) and tidal flows for restoration of the lagoons. Anticipated LOSSAN (Los Angeles to San Diego) railroad bridge improvements were taken into account. Caltrans conducted optimization studies of the appropriate channel width and depth to achieve the optimum tidal and fluvial flows. At Batiquitos Lagoon, the proposed channel dimensions and associated bridge lengths are the same for all I-5 NCC build alternatives; only the bridge widths would vary. At Buena Vista Lagoon, the channel modification would be the same at I-5 for a reasonable range of lagoon restoration alternatives. At San Elijo Lagoon, fill removal and dredging would optimize fluvial and tidal flows for each of the proposed restoration alternatives. The I-5 NCC project would allow for lagoon restoration with any of the proposed alternatives, but the choice of restoration alternatives would not be a part of, and would not be influenced by, the I-5 NCC project. Table 1 shows the channel dimensions calculated by the optimization studies. The Locally Preferred Alternative (discussed below) assumes a channel width of 261 feet at San Elijo Lagoon, which would accommodate any of the restoration project alternatives.

**Table 1. Existing and Optimized Channel Dimensions**

Lagoon	Existing		Optimized	
	Channel Bottom Width	Channel Bottom Depth	Channel Bottom Width	Channel Bottom Depth
San Elijo Lagoon	130 feet	0.74 feet	--	--
Restoration Alternative 1A	130 feet	0.74 feet	130 feet	-6.0 feet
Restoration Alternative 1B	130 feet	0.74 feet	261 feet	-6.0 feet
Restoration Alternative 2A	130 feet	0.74 feet	261 feet	-6.5 feet
Batiquitos Lagoon	74 feet	-5.3 feet	134 feet	-7.0 feet
Buena Vista Lagoon*	24 feet	-2.0 feet	105 feet	-6.0 feet

All elevations in North American Vertical Datum of 1988

\* Compatible with all proposed lagoon restoration alternatives.

Table 2 presents the estimates of volume of dredge material that would be removed at each lagoon by build alternative. It is not currently known exactly where the dredged material would be disposed of, but it is not expected to be disposed of in waters of the U.S. or at an upland location in such a manner that it could generate return water to a water of the U.S. (i.e., no Section 404-regulated discharge is anticipated from dredge material storage or disposal).

While a Section 404 discharge is not anticipated from the dredging or disposal activities, dredging would remove the existing substrate and any organisms inhabiting it. The channels are underlain by alluvium, and dredging would not substantially change the physical and chemical character of the substrate. Tidal flushing would reconstitute the substrate by moving sediment into and through the channels, and organisms would be expected to recolonize the channels from adjacent lagoon areas. Riprap currently on the bottom of the Batiquitos channel would be removed and subsequent dredging to remove additional sediment would be completed. Tidal and fluvial flows and sediment movement would allow organisms to recolonize after construction.

**Table 2. Estimated Dredge Spoil Volumes for Project/Build Alternatives (Cubic Feet)**

Dredge Volume	10 + 4 with Barrier	10 + 4 with Buffer	8 + 4 with Barrier	8 + 4 with Buffer
San Elijo (Alternative 2A)	33,759	30,492	31,799	27,878
Batiquitos with HOV Lanes	88,862	81,457	81,457	81,457
Batiquitos without HOV Lanes	88,862	79,976	81,457	77,014
Buena Vista with HOV Lanes	106,286	106,286	106,286	106,286
Buena Vista without HOV Lanes	92,347	92,347	92,347	92,347

### No Build Alternative/No Federal Action Alternative

As with NEPA, the Section 404(b)(1) Guidelines require development and evaluation of a No Action Alternative (i.e., the conditions reasonably anticipated to prevail in the absence of an ACOE permit). Proposed project improvements consisting of the four HOV/Managed Lanes, DARs, IAPs, auxiliary lanes, drainage upgrades, bridge improvements, community enhancements, etc., would not be constructed under the No Build Alternative (which, as noted in Chapter 1, is also the No Federal Action Alternative for the purposes of NEPA and Section 404 (b)(1) analysis [40 CFR 230]). The existing multipurpose lanes (generally four in each direction) and the configuration of most of the intersections along the corridor would remain in their current condition. Routine maintenance would continue. Although proposed project improvements would not be implemented, a number of interchange, operations, and rail projects separately proposed and cleared under other CEQA/NEPA environmental documents potentially would move forward.

As noted above, Caltrans-funded studies show that San Elijo, Batiquitos, and Buena Vista Lagoons would benefit from replacing the existing bridges with longer bridges and from increased channel cross-sections at these locations. These improvements, which would not involve a Section 404-regulated discharge, are proposed for all the build alternatives and would increase tidal flushing and fluvial flows, benefiting water quality, and promote habitat reestablishment efforts in the lagoons. These bridge-related channel improvements would not occur with the No Build Alternative.

Without the proposed additional through lanes on I-5, the anticipated increase in traffic volumes would be expected to result in additional congestion with longer delays. Proposed improvements related to pedestrian and bike paths would not occur. Similarly, improvements to the planned transit system would not be supported without the project DARs and managed lanes. As noted, under this alternative, there

would not be any replacement of/change to the lagoon bridges, so there would be no optimization/increasing of bridge lengths or channel configurations/cross-sections at San Elijo, Batiquitos, or Buena Vista Lagoons, intended to improve tidal and fluvial flows and also to accommodate separately evaluated large restoration projects at these locations. Because there would be no bridge-related improvements, the No Build Alternative would not meet the project's purpose and need and was eliminated from consideration as a feasible alternative in the DEIR/DEIS. Similarly, it is not considered a practicable alternative under the Section 404(b)(1) Guidelines; however, it is carried forward in the Section 404(b)(1) analysis as representing the reasonably anticipated conditions to occur in the area in the absence of Federal action (i.e., it is the federal baseline of comparison in evaluating the alternatives, including the proposed project/Locally Preferred Alternative).

### **Identification of the Locally Preferred Alternative**

As noted above, in July 2011, Caltrans identified the 8 + 4 with Buffer Alternative described in the DEIR/DEIS and refined to further minimize impacts as the LPA, because it meets the minimum design requirements and it fulfills the proposed project's purpose and need. In letters to EPA, USFWS, NOAA, and ACOE dated February 28, 2011, Caltrans asked for concurrence on the selection. The 8 + 4 with Buffer Alternative would require less right-of-way, resulting in the least or lowest impacts of all the build alternatives for the following issue or resource areas:

- Park and recreational facilities
- Farmland
- Floodplain effects related to roadway widening, fill slopes, and bridge column impacts into waterways
- Sensitive species' critical habitat
- Permanent effects to sensitive upland habitats
- Permanent effects to sensitive wetland habitats (as well as eelgrass)
- Permanent effects to jurisdictional waters
- Sensitive individual plants
- Section 4(f) resources
- Residential and business displacement
- Increase in impervious area

The 8 + 4 with Buffer Alternative also allowed for the largest available space for water quality treatment. Costs have been reduced for the 8 + 4 with Buffer Alternative, principally by elimination of two DARs proposed in the DEIR/DEIS. However, projected total costs were increased by optimization of bridge length combined with widening and dredging the channels at San Elijo, Batiquitos, and Buena Vista Lagoons, and the addition of the North Coast Bikeway to the project. The 8 + 4 with Buffer Alternative is currently projected to cost approximately \$3.5 billion (right-of-way, support, and construction in 2010 dollars), compared to the \$3.3 billion cost estimated in the DEIR/DEIS.

In terms of impacts to wetlands and other waters of the U.S., the 8 + 4 with Buffer Alternative described in the DEIR/DEIS would impact the least acreage of the four build alternatives. Refinements in design since the selection of the 8 + 4 with Buffer Alternative as the LPA have further reduced direct and indirect impacts to waters of the U.S. Table 3 compares the acreage of permanent impacts on ACOE jurisdictional wetlands and other waters of the U.S. for the four build alternatives. In the DEIR/DEIS, permanent impact calculations were based on designating the whole bridge footprint as permanent impact. The impacts were later refined and reduced based on more complete design information, including more precise areas of impact rather than the entire bridge footprint. This refined information included column and abutment locations, staging areas, and bridge optimization. The resulting reduction in impacts is shown in Table 3.

**Table 3. Permanent Impacts to Waters of the U.S. (Acres)**

<b>Impacts</b>	<b>10 + 4 with Barrier</b>	<b>10 + 4 with Buffer</b>	<b>8 + 4 with Barrier</b>	<b>8 + 4 with Buffer</b>
<b>DEIR/DEIS</b>	28.86	24.89	26.74	22.97
<b>Recalculated</b>	19.69	16.68	17.95	14.13

Under both the gross and refined calculations, the 8 + 4 with Buffer Alternative would have less acreage of permanent direct impacts (through discharges of fill) on jurisdictional waters of the U.S. than the other build alternatives.

## **Proposed Section 404 Discharges and Section 404 (b)(1) Alternatives Analysis**

### **Proposed Section 404 Discharges Requiring an ACOE Permit**

Implementation of each of the four build alternatives, including the proposed project, would result in CWA Section 404 discharges of fill material into waters of the U.S. (see Table 3). As shown in Table 3, permanent impacts to waters of the U.S. for the 8 + 4 with Buffer Alternative are lower than for the other three build alternatives, with differences of 2.55 acres for the 10 + 4 with Buffer Alternative, 5.56 acres for the 10 + 4 with Barrier Alternative, and 3.82 acres for the 8 + 4 with Barrier Alternative, based on refined calculations incorporating column and abutment fill rather than the entire bridge footprints (i.e., some of the footprint area in each case would only be affected temporarily).

During the NEPA Section 404 meetings with the MOU signatory agencies, ACOE expressed an interest in the amount of proposed impacts to jurisdictional waters of the U.S. in each of the 11 affected watersheds. Aquatic resource loss would result from placement of roadway fill, bridge columns, and bridge abutments in aquatic resources at the locations shown in Table 4. Watersheds, for completing these calculations, are delimited as high point to high point (in elevation) in the project area that drains into a particular water body.

**Table 4. Permanent Impacts to Waters of the U.S. by Watershed (Acres)**

<b>Watershed</b>	<b>Type</b>	<b>10 + 4 with Barrier</b>	<b>10 + 4 with Buffer</b>	<b>8 + 4 with Barrier</b>	<b>8 + 4 with Buffer</b>
<b>San Clemente:</b> Roadway fill in unnamed drainage south of Voigt, east of I-5	Other Waters	0.00	0.00	0.00	0.00
	Wetland	0.01	0.01	0.01	0.01
<b>Los Peñasquitos:</b> Roadway fill in unnamed drainage west of I-5 and south of Genesee Avenue and Los Peñasquitos Creek.	Other Waters	0.11	0.11	0.11	0.11
	Wetland	0.44	0.44	0.44	0.44
<b>San Dieguito River:</b> Roadway fill along drainages north and south of the river along I-5. Piers for widened bridge within the river.	Other Waters	0.03	0.03	0.03	0.03
	Wetland	3.74	2.98	3.54	2.96
<b>San Elijo Lagoon:</b> Roadway fill on either side of I-5. Columns for new bridge.	Other Waters	0.00	0.00	0.00	0.00
	Wetland	1.45	0.68	0.76	0.60
<b>Cottonwood Creek:</b> Roadway fill east of I-5 between Santa Fe and Encinitas Blvd. and west of I-5 north of Encinitas Blvd.	Other Waters	0.08	0.08	0.08	0.05
	Wetland	0.43	0.32	0.38	0.29
<b>Batiquitos Lagoon:</b> Roadway fill on either side of I-5. Columns for new bridge.	Other Waters	0.27	0.27	0.27	0.24
	Wetland	4.93	4.58	4.65	2.89
<b>Encina Creek:</b> Lengthen culvert on either side of I-5 roadway fill. Fill in unnamed drainage immediately adjacent to I-5 and parallel to the freeway; drainage would be put in pipe.	Other Waters	0.14	0.13	0.13	0.12
	Wetland	1.49	1.46	1.47	1.46
<b>Agua Hedionda Lagoon:</b> Roadway fill on either side of I-5. Columns for new bridge.	Other Waters	5.20	4.22	4.71	3.56
	Wetland	0.00	0.00	0.00	0.00
<b>Buena Vista Lagoon:</b> Roadway fill on either side of I-5. Columns for new bridge.	Other Waters	0.00	0.00	0.00	0.00
	Wetland	1.28	1.28	1.28	1.28
<b>Loma Alta Creek:</b> Columns for new bridge.	Other Waters	0.07	0.07	0.07	0.07
	Wetland	0.00	0.00	0.00	0.00
<b>San Luis Rey River :</b> Columns for widened bridge.	Other Waters	0.02	0.02	0.02	0.02
	Wetland	0.00	0.00	0.00	0.00
<b>Totals</b>	Other Waters	5.92	4.93	5.42	4.20
	Wetland	13.77	11.75	12.53	9.93
	<b>All</b>	<b>19.69</b>	<b>16.68</b>	<b>17.95</b>	<b>14.13</b>

As shown in Table 4, the proposed project footprint in waters of the U.S. is the same in the San Clemente, Los Peñasquitos, Loma Alta, Buena Vista, and San Luis Rey watersheds for all alternatives. According to the totals, the 8 + 4 with Buffer Alternative would permanently impact the fewest acres of ACOE jurisdictional waters of the U.S. in the other watersheds. Therefore, as shown in Table 4, the 8 + 4 with Buffer Alternative would have the least permanent impacts on waters of the U.S. in 6 of the 11 watersheds, and the lowest impacts overall on both other waters of the U.S. (4.20 acres) and jurisdictional wetlands (9.93 acres).

It is important to keep in mind that while all the build alternatives include dredging and removal of fill adjacent to the inlet channels under the three bridges at San Elijo, Buena Vista, and Batiquitos Lagoons, as discussed above in “Features Common to the Build Alternatives” and further in Chapter 4 (Subpart G: Evaluation and Testing), neither the proposed dredging nor the associated disposal activity would generate a Section 404-regulated discharge, and they are therefore not evaluated as such in this Section 404(b)(1) analysis of alternatives; they are, however, included and evaluated as reasonably foreseeable activities occurring in the Study Area in the cumulative impact assessment section in Chapter 4.

As noted previously, the No Build Alternative would not result in any aquatic resource loss. It represents the conditions reasonably expected to prevail in the area in the absence of Federal action, and specifically for the Section 404(b)(1) analysis, the issuance of a Corps permit.

### **Section 404(b)(1) Alternatives Analysis**

This alternatives analysis was prepared in accordance with 40 CFR Part 230, Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (the Guidelines). It succinctly states and evaluates information regarding the effects of proposed discharge of dredged or fill material into waters of the U.S., including wetlands. As such, as noted in Chapter 1, it is not meant to stand alone and relies heavily on information provided in the DEIR/DEIS, SDEIR/SDEIS, and Biological Assessment.

As also noted in Chapter 1, pursuant to Section 404(b)(1) of the CWA, the ACOE may only authorize the practicable alternative with the least damage to aquatic resources unless it has other significant adverse environmental consequences; with practicable alternatives being those that are available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose.

As noted in Chapter 2, because the basic purpose of the proposed activity is not water dependent and would discharge dredged or fill material into special aquatic sites, it is necessary to rebut the following presumptions: (1) alternatives for non-water dependent activities that do not involve special aquatic sites are available and (2) alternatives that do not involve special aquatic sites have less impact on the aquatic environment.

### **On-Site and Off-Site Special Aquatic Sites Avoidance Alternatives**

An alternative that would avoid all impacts to special aquatic sites could conceptually involve one of two options. One option would be to increase the length of the bridges that would need to be replaced and widened within the I-5 NCC (i.e., on-site) to completely avoid any direct impacts to special aquatic sites, and to construct those bridges without placing any columns, abutments, or other fill into special aquatic sites. Such an option was not considered practicable, since the costs of alternative means of bridge construction (i.e., bridges using wide spans without in-special aquatic site columns or abutments such as suspension or cantilevered bridges) would be comparatively very much higher (more than 6 times higher just for bridges that would remove all fill and still have columns in wetland (SEIR)). Similarly, it would not be practicable from a cost perspective to avoid all non-special aquatic site waters of the U.S. Thus,

Caltrans decided to pursue a more practicable and less costly design approach that would lengthen the bridges over the most important and extensive special aquatic sites (maximize avoidance), the lagoons and the San Luis Rey River, and to increase their channel cross sections (which, as noted, would not involve a Section 404 discharge), to maintain and improve the aquatic functions of the lagoons and river.

The other avoidance option would be to construct an entire new freeway between the start and end points of the I-5 NCC at a location far enough inland (up to 3 miles from the current I-5 corridor) to avoid the lagoons (i.e., off-site). Even in that location, new bridges would have to span extensive wetlands, other special aquatic sites, and other waters of the U.S.. Similar considerations of costs associated with lengthening bridges in the existing I-5 NCC would apply to this alternative, and costs associated with acquiring rights-of-way and relocating residences and businesses would be extremely high, (several orders of magnitude higher) would have substantial impacts to the social and natural environments aside from special aquatic sites, would require extensive take of private property, and would be incompatible with local and regional planning. A new inland freeway corridor would divide established neighborhoods, disrupt the current local and regional transportation network, and leave the fate of the current I-5 freeway corridor uncertain.

Thus, Caltrans considered both on-site and off-site alternatives for complete avoidance of wetlands and other special aquatic sites, and found them impracticable for reasons of cost, for on-site alternatives, and of cost and other significant adverse environmental impacts, for off-site alternatives. In fact, consultation between Caltrans and the other signatory agencies (USFWS, ACOE, NOAA, and EPA) during the NEPA Section 404 MOU integration process resulted in agreement that there was no practicable alternative that would meet the purpose and need of the proposed project while avoiding all impacts to wetlands and other waters of the U.S., including non-wetland special aquatic sites.

### On-Site Build Alternatives

The Section 404(b)(1) alternatives analysis below compares the impacts of each of the on-site build alternatives and the No Build Alternative and preliminarily identifies the 8 + 4 with Buffer Alternative as the LEDPA. This identification is made on the basis of the relative severity of impacts on various environmental functional components of wetlands and other waters of the U.S., as discussed more fully in Chapter 4, Subparts C through F, and summarized in Table 5.

**Table 5. Summary of Impacts on Waters of the U.S. by Alternatives**

<b>Functional Component</b>	<b>No Federal Action</b>	<b>Preliminary Least Environmentally Damaging Alternative (Build Alternatives)</b>
Waters of the U.S.	No Effect	Impacts proportional to project footprint in waters of U.S.; least damaging: 8 + 4 with Buffer (see a creage comparison in Table 3)
<b>Subpart C: Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem</b>		

Substrate	No Effect	Impacts proportional to project footprint in waters of U.S.; least damaging: 8 + 4 with Buffer (see acreage comparison in Table 3)
Suspended Particulates/ Turbidity	No Effect	Impacts proportional to project footprint in waters of U.S.; least damaging: 8 + 4 with Buffer (see acreage comparison in Table 3)
Contaminants	No Effect	Impacts proportional to project footprint in waters of U.S.; least damaging: 8 + 4 with Buffer (see acreage comparison in Table 3)
Water	No Effect	Impacts proportional to project footprint in waters of U.S.; least damaging: 8 + 4 with Buffer (see acreage comparison in Table 3)
Current Patterns and Water Circulation	No Effect	No discernible difference among build alternatives
Salinity Gradients	No Effect	No discernible difference among build alternatives
<b>Subpart D: Potential Impacts on Biological Characteristics of the Aquatic Ecosystem</b>		
Federally Listed Endangered Species	No Effect	Similar on species and territories; least overall acreage of impacts preferred; least damaging: 8 + 4 with Buffer
Critical Habitat, Overall	No Effect	Least overall acreage of impacts preferred; least damaging: 8 + 4 with Buffer
Coastal California Gnatcatcher	No Effect	Least overall acreage of impacts preferred; least damaging: 8 + 4 with Buffer (31.7 acres)
Southwestern Willow Flycatcher and Least Bell's Vireo	No Effect	Build alternatives equal in impact
Tidewater Goby	No Effect	Build alternatives equal in impact
Fish, Crustaceans, Mollusks, and Other Aquatic Organisms in the Food Web	No Effect	Impacts proportional to project footprint in waters of U.S.; least damaging: 8 + 4 with Buffer (see acreage comparison in Table 3)
Impacts on Eelgrass and Other Essential Fish Habitat	No Effect	Impacts proportional to project footprint in waters of U.S.; least damaging: 8 + 4 with Buffer (see acreage comparison in Table 3)
Eelgrass Beds	No Effect	Slight advantage to lowest acreage of direct impact: 8 + 4 with Barrier and 8 + 4 with Buffer (see Table 10)
Essential Fish Habitat	No Effect	Impacts proportional to project footprint in waters of U.S.; least damaging: 8 + 4 with Buffer (see acreage comparison in Table 3)
Other Wildlife and Wildlife Corridors	No Effect	Incremental difference in bridge width would give advantage to 8 + 4 with Barrier and 8 + 4 with Buffer
<b>Subpart E: Potential Impact on Special Aquatic Sites</b>		
Special Aquatic Sites	No Effect	Impacts proportional to project footprint in special aquatic sites; least damaging: 8 + 4 with Buffer (see acreage comparison in

		Table 3)
<b>Subpart F: Potential Effects on Human Use Characteristics</b>		
Municipal and Private Water Supplies	No Effect	No effect by any build alternatives
Recreational and Commercial Fisheries	No Effect	No discernible difference among build alternatives
Water-Related Recreation	No Effect	No discernible difference among build alternatives
Aesthetics	No Effect	No discernible difference among build alternatives
Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves	No Effect	No discernible difference among build alternatives

According to Table 5 and subsequent sections of this analysis, in the preliminary Subpart C through Subpart F evaluation of build alternatives, the 8 + 4 with Buffer Alternative is either least environmentally damaging of the practicable build alternatives or equal/indistinguishable in environmental effects to the other build alternatives for each factor evaluated. Moreover, review of Table 5-listed components or factors demonstrates that more than half of them would be least damaging under the 8 + 4 with Buffer Alternative, while the effects for the remaining components or factors would be indistinguishable or would be no effects among the build alternatives. This supports the preliminary finding that the 8 + 4 with Buffer Alternative is the LEDPA.

### **Section 404 (b)(1) Guidelines: Requirements, Restrictions, and Factual Determinations**

As noted above, the Section 404(b)(1) Guidelines require the proposed project/discharge to be defined as water dependent or non-water dependent. Under the Guidelines, non-water dependent, practicable alternatives not involving special aquatic sites are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise. Highway and transit projects generally are not water-dependent activities, and many do, as with the proposed project, impact special aquatic sites.

Also as noted above, for a non-water dependent discharge, it is the applicant's responsibility, through the Section 404(b)(1) alternative analysis, to show that alternatives avoiding special aquatic sites are not practicable, are not available, or are not less environmentally damaging (rebutting presumptions). As discussed above, alternatives completely avoiding special aquatic sites or other waters of the U.S. are impracticable onsite in terms of cost, and offsite in terms of cost as well as the greater environmental impacts anticipated from locating this section of freeway at another/inland location. Of the four on-site build alternatives, the 8 +4 with Buffer Alternative would have the least impacts or indistinguishable

impacts for the resource or issue areas evaluated. Furthermore, no discharge would be permitted if it does any of the following (restrictions):

- Violates any applicable state water quality standard,
- Violates any applicable toxic effluent standard or prohibition under Section 307 of the CWA,
- Jeopardizes the continued existence of endangered or threatened species under the Endangered Species Act or results in likely destruction or adverse modification of designated critical habitat, or
- Lacks sufficient information to determine compliance with the Guidelines.

The Guidelines also require the alternatives analysis to make factual determinations regarding the following, which are provided in Chapter 4:

- Physical substrate
- Water circulation
- Suspended particulates/turbidity
- Contaminants
- Aquatic ecosystem and organisms
- Proposed disposal site
- Cumulative effects on the aquatic ecosystem
- Secondary effects on the aquatic ecosystem
- Current patterns and water circulation
- Salinity gradients

A proposed discharge may not be permitted by the ACOE if it would cause or contribute to severe degradation to waters of the U.S., which is based on the factual determinations, evaluations, and tests required by Subparts B and G, after consideration of Subparts C-F. This requires considering individual and collective or cumulative effects. In addition, a discharge may not be permitted by the ACOE unless appropriate and practicable steps have been taken to minimize potential adverse effects of the discharge on the aquatic ecosystem (Subpart H in the Guidelines identifies such possible steps).

# **Chapter 4**

## **Environmental Effects of the Proposed Action and Alternatives**

### **Waters of the U.S. Impacts**

As noted in Chapter 1, the purpose of the Section 404(b)(1) Guidelines is to restore and maintain the chemical, physical, and biological integrity of the waters of the U.S. through the control of discharges of dredged or fill material. Except as provided under CWA Section 404(b)(2), no discharge of dredged or fill material will be permitted if there is a practicable alternative to the proposed discharge that would have a less-adverse impact on the aquatic ecosystem, as long as the alternative does not have other significant adverse environmental consequences. In accordance with the Section 404(b)(1) Guidelines, the potential short-term or long-term effects of a proposed discharge of dredged or fill material on the physical, chemical, and biological components of the aquatic environment must be determined.

The potential for environmental impacts as a result of construction and operation of the 8+4 with Buffer Alternative (proposed action) or an alternative have been analyzed in the DEIS/DEIR and SDEIR/SDEIS for the I-5 NCC project. The following discussion provides the location of the analysis in the document for each of the factors or criteria that must be considered, as set forth in Subparts C through H of the Section 404(b)(1) Guidelines (Subpart I does not apply to this case). In all cases of the analysis for Subparts C through H, the No Build Alternative would have no Section 404-related effects on the resources/issues being evaluated because it does not include any discharges of dredge or fill material into waters of the U.S. As noted previously, it represents the no federal action (i.e., no ACOE permit) or baseline conditions against which other (build) alternatives are compared and evaluated.

### **Subpart C: Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem**

The Study Area for the project extends from I-5/La Jolla Village Drive at the southern end to Vandegrift Boulevard at the northern end, and extends out 500 feet from the edge of pavement on average. Aquatic resources in each of the 11 watersheds in the Study Area (Table 4) would be directly affected by construction, including the effects of cut and fill grading, placement of culverts, and construction of bridges. These drainages would also receive runoff from construction sites and from the completed roadway, bridges, and related features. Table 6 lists the affected watersheds and their characteristics in the Study Area.

**Table 6. Watershed Characteristics**

<b>Watershed</b>	<b>Characteristics</b>
San Clemente Creek	Fed by urban runoff, small and disturbed: limited area of wildlife habitat; some water quality improvement functions.
Los Peñasquitos Lagoon	Fed by a number of creeks containing important wildlife habitat for threatened and endangered species, migratory birds, large mammals, and many different wildlife species; flood relief; water quality improvement.
San Dieguito Lagoon	Important wildlife habitat for threatened and endangered species, migratory birds, large mammals, and many different wildlife species; flood relief; water quality improvement. Restoration project to improve wildlife habitat has been completed.
San Elijo Lagoon	Important wildlife habitat for threatened and endangered species, migratory birds, large mammals, and many different wildlife species; flood relief; water quality improvement. Slopes function as wildlife corridors.
Cottonwood Creek	In culverts and channels near I-5: little flood relief, water quality improvement, or wildlife habitat except in newly established channels in Cottonwood Park west of I-5; Moonlight Creek tributary: some riparian bird species habitat; some water quality improvement and flood relief.
Batiquitos Lagoon	Open water and wetlands: important wildlife habitat for threatened and endangered species, migratory birds, large mammals, and many different wildlife species; flood relief; water quality improvements; slopes function as wildlife corridors.
Encina Creek	Mostly disturbed and channelized; limited wildlife habitat, water quality improvements, and flood relief.
Aqua Hedionda Lagoon	Primarily open water with little wetland: habitat for wildlife, including waterfowl and shorebirds, with eelgrass for fish habitat; water quality improvement; flood relief.
Buena Vista Lagoon	Freshwater lagoon with tidal weir separating from ocean: habitat for wildlife species; water quality improvement; flood relief
Loma Alta Creek	Highly disturbed; minimal water quality improvement and flood relief.
San Luis Rey River	True perennial river with open water, freshwater marsh, arundo scrub, riparian habitat: important wildlife habitat for threatened and endangered species, migratory birds, large mammals, and many different wildlife species; flood relief; water quality improvements; arundo removal project under way upstream.

A total of 30 plant communities, with eight occurring in both disturbed and undisturbed condition, were identified within the Study Area. In addition to the plant communities, several communities with little or no vegetation were identified, including mud flat, salt flat, open water, and unvegetated or other waters of the U.S.

**Substrate**

Aquatic ecosystem substrates underlie open waters of the U.S. and constitute the ground surface in wetlands. Substrates include physical, chemical, and organic materials necessary for the sustenance of the ecosystem. Dredging or deposit of fill can alter or eliminate its functions, and alterations in substrate elevation and composition can result in changes in water circulation, depth, currents, or temperature and can adversely affect benthic conditions and organisms.

The lagoons and the San Luis Rey River in the project area are natural, although channels have been affected by urbanization in the coastal corridor, including construction of I-5, the railroad, and other road crossings west of I-5. Currently, there is riprap armoring of the abutments at all of the lagoon bridges, and at Batiquitos Lagoon, the channel bottom is also armored by riprap. In the lagoons, the alluvial substrate

is characterized by increased sedimentation from upstream urban development. All of the minor drainages are degraded to some extent and characterized by vegetation removal, invasion by nonnative species, and encroachment from nearby urban development. Additional information on the lagoons, the San Luis Rey River, and the minor drainages may be found in Sections 3.9, “Hydrology/Drainage (and Floodplains);” 3.10, “Water Quality and Storm Water Runoff;” and 3.18, “Wetlands and Other Waters” of the DEIR/DEIS and Section 3.1, “Supplemental Information Related to Lagoons,” of the SDEIR/SDEIS.

Permanent impacts would occur to substrates from the placement of road improvements such as structural fill, culverts, and bridge piers and abutments for each of the build alternatives in the acreage shown in Tables 3 and 4. Temporary impacts to substrate would also occur along and adjacent to waters of the U.S. from freeway construction, but these areas would be restored to pre-project grades and revegetated with native plant species following construction activity. Riprap armoring of all bridge abutments would be included in all build alternatives, but under the bridges, no channel bottom armoring would be employed. Construction of any build alternative, due to ground and vegetative cover removal, could result in scour, sedimentation, and increased rates or volumes of runoff that could impact substrates during construction and could adversely alter the substrate downstream from the direct effects of scour or from the precipitation of silt or contaminants.

Construction of the I-5 NCC project would permanently impact waters of the U.S. in the smaller drainages (San Clemente Creek tributary, Cottonwood Creek, Encina Creek, and Loma Alta Creek) (see Table 4). The minor drainages are mostly non-wetland waters with some disturbed wetlands on the fringes. Fill would be placed in Cottonwood Creek and a drainage that flows into Encina Creek, and Encina Creek in the project area would be placed in a pipe. Wetlands and other waters of the U.S. would be reestablished at Old Sorrento Valley Road following replacement of culverts with a long bridge, including removal of fill placed on top of appropriate substrate. Similar reestablishment would be implemented where the substrate would be temporarily disturbed by construction activity to construct abutments and bridge columns in waters of the U.S. at the six lagoons and the San Luis Rey River.

### **Comparison of Substrate Impacts**

Permanent direct impacts to the substrate would result from roadway fill and placement of columns and abutments. Permanent substrate impacts from the 8 + 4 with Buffer Alternative would be lower than from the other three build alternatives (Table 4). Project effects from any of the build alternatives on the channels within the lagoons, and on temporarily disturbed wetland and other water-associated substrate elsewhere, would not adversely affect substrate functions or services after restoration of the areas temporarily impacted under any of the build alternatives.

Indirect or secondary impacts could result from roadway runoff and human activity from increased access to the wetlands and other waters of the U.S. However, in the case of any build alternative, minimization measures would reduce these impacts to the maximum extent practicable. Any build alternative would include fencing to restrict access to wetlands and other waters of the U.S. from the roadway, trails, and use areas, and would employ BMPs to control adverse effects from runoff. Potential effects of the I-5

NCC project related to runoff and BMPs to be employed by the project are discussed in Section 3.10, “Water Quality and Storm Water Runoff,” of the DEIR/DEIS.

All the build alternatives would adversely affect substrate functions and services during construction. The 8 + 4 with Buffer Alternative would permanently affect the least acreage of substrate, compared to the other build alternatives. Temporarily affected areas would be restored to pre-project grades and revegetated with native plant species following construction activity.

### **Suspended Particulates/Turbidity**

Under current conditions, turbidity occurs in water bodies in the I-5 NCC during rain events, usually in the winter season, when most precipitation occurs in the San Diego region. At San Dieguito, San Elijo, and Batiquitos Lagoons, dredging for restoration and maintenance projects has been conducted; such dredging may produce turbidity. Periodically, the ocean inlets at Los Peñasquitos, San Dieguito, Agua Hedionda, and Batiquitos Lagoons are dredged to maintain or increase tidal flushing of the lagoons; since the inlets are downstream, turbidity from dredging of the inlets does not affect the I-5 NCC project area. Both dredging and storm water runoff are periodic events. Most of the time, turbidity is not elevated in the wetlands and other waters of the U.S. in the project area.

With the inclusion of BMPs, the project would not negatively affect water quality in the corridor on a long-term basis. Disturbance of wetlands and other waters of the U.S. during construction might create turbid conditions that could reduce light penetration in affected waters, adversely affecting aquatic organisms by lowering photosynthesis, increasing temperatures, lowering oxygen levels and primary aquatic system productivity, and interfering with feeding activity for sighted organisms. Because of larger areas of disturbance in wetlands and other waters, the alternatives with the widest construction footprints (i.e., 10 + 4 with Barrier and 8 + 4 with Barrier Alternatives) would have a greater potential for these effects. Temporary BMPs (soil stabilization, sediment control, wind erosion control, tracking control, non-storm-water management, and waste management and materials pollution control) would be implemented to contain both storm water and non-storm-water discharges during construction in all areas of construction for all build alternatives.

Upon completion of construction, all temporarily disturbed areas would be stabilized or reestablished under all build alternatives. During the project development process, expected storm water runoff onto the project site was calculated and, where possible, appropriate control measures (such as gravel bag berms to stop concentrated flow and sediment) would be implemented and maintained to convey concentrated flows around or through the site in a manner that would not cause additional erosion. The statewide Storm Water Management Plan (SWMP) describes how Caltrans would comply with the provisions of the National Pollutant Discharge Elimination System (NPDES) Permit (Order 99-06-DWQ).

Preliminary design of the build alternatives has incorporated bioswales adjacent to traffic lanes and in loop ramps for the management of runoff water quality. During the further design phases, as required by the SWMP, treatment BMPs (biofiltration by strips or swales, infiltration devices, detention devices, traction sand traps, media filters, multi-chamber treatment, wet basins, dry weather flow devices, and

gross solid removal devices) would be incorporated into any of the build alternatives as appropriate. Vegetated biofiltration (strips and/or swales) would be incorporated to treat roadway runoff. As design progresses, the BMP locations would be evaluated and refined.

Turbidity and sedimentation are of particular concern in waters of the U.S. associated with the six lagoons, the San Luis Rey River, and smaller drainages containing wetlands and other waters of the U.S. Where areas of active construction for abutments or bridge supports would be located, cofferdams, silt curtains, or other sediment barriers would be employed to avoid the discharge or deposit of excessive sediment or spoils into adjacent waters of the U.S. In the San Luis Rey River and the lagoons, flow channels of dimensions sufficient for continued fish movement would be maintained throughout construction.

### **Comparison of Suspended Particulates/Turbidity Impacts**

Construction activity capable of producing direct impacts related to suspended particulates and turbidity in waters of the U.S. include the placement of fill, channel armoring, and construction of bridge columns and abutments. Indirect impacts could occur if sediment or other suspended material were allowed to reach waters of the U.S. during construction or in runoff from the completed project.

During construction of any of the build alternatives, temporary BMPs (soil stabilization, sediment control, wind erosion control, tracking control, non-storm-water management, and waste management and materials pollution control) would be included and implemented as part of the project for any of the build alternatives to contain both storm water and non-storm-water discharges. All temporarily disturbed areas would be stabilized with reestablished native vegetation upon completion of construction. Maintenance, design pollution prevention, construction, and treatment BMPs to be employed by the build alternatives are described in Section 3.10, “Water Quality and Storm Water Runoff,” of the DEIR/DEIS.

Construction and operational impacts would be adverse, minor, and temporary under ordinary circumstances and would be controlled by BMPs. Unanticipated storms of high intensity could increase the possibility of more severe adverse impacts with respect to suspended particulates/turbidity. In wetlands and waters of the U.S., the intensity of impacts would generally be greater in the build alternatives with larger footprints (i.e., 10 +4 with Barrier and 8 + 4 with Barrier Alternatives). The 8 + 4 with Buffer Alternative, with the smallest footprint, would be expected to have the least impacts. In general, however, the maximum practical means to control particulates and turbidity impacts would be employed for whichever build alternative is chosen.

### **Contaminants**

Section 3.13 of the DEIR/DEIS found the following sources of contaminants occur or have the potential to occur in the I-5 NCC project area:

- Aerially deposited lead
- Petroleum hydrocarbons
- Landfills

- Pesticides and herbicides
- Chemical spills
- Asbestos
- Lead
- Treated wood

Some of these contaminants may occur in or near ACOE jurisdictional areas. For instance, aerially deposited lead may be present in soils adjacent to the freeway; chemical spills from motor vehicles may have occurred at any location along the roadway; and asbestos, lead in paint, and treated wood could be found in bridges, paints, and guardrails.

All build alternatives of the project have the potential to introduce contaminants into waters of the U.S. during construction, operation, and maintenance. Direct impacts would result from contaminant spills or migration into waters of the U.S. during construction or operations. Indirect impacts could result from the transport of contaminants into waters of the U.S. in runoff from existing sources or from the roadway surface. BMPs would be evaluated, implemented, and maintained to address these impacts during the planning and design, construction, and operational phases regardless of the build alternative chosen. Pollutants generated anywhere during any phase of the build alternatives could potentially reach receiving waters of the U.S.

Pollutants that could be generated during construction activities include vehicle fluids, asphaltic emulsions from paving activities, concrete curing compounds, solvents and thinners, paint, sandblasting material, landscaping materials, treated lumber, rubble, contaminated soil or rock, and general litter.

During operation, potential sources of pollutants in highway runoff include sediment from natural erosion; nutrients (nitrogen and phosphorus) from tree leaves, mineralized organic matter in soil, fertilizers, runoff, nitrite from automobile exhausts, atmospheric deposition, emulsifiers, and surfactants; pesticides; and metals (dissolved and particulate) from combustion products of fossil fuels, wear particles from brake pads, and corrosion. These pollutants could be generated by both highway users and Caltrans maintenance activities.

The size of the construction zone and the amount of impervious surface area in the completed project are rough measures of each alternative's potential to generate pollutants in runoff. Alternative 10 + 4 with Barrier would have the largest construction zone and additional impervious area, while the SDEIR/SDEIS LPA 8 + 4 with Buffer would have the area lowest in both categories.

As design of any of the chosen build alternative proceeds, standard technology-based, non-treatment controls selected to reduce pollutant discharges to the maximum extent practicable would be incorporated. The objective of these design pollution prevention BMPs is to prevent downstream erosion, stabilize disturbed soil areas, and maximize vegetated surfaces by preservation or restoration consistent with Caltrans policies. As required by Caltrans' Statewide Storm Water Management Plan, typical design pollution prevention practices include consideration of downstream effects related to increased flow;

preservation of existing vegetation; concentrating flow conveyance systems; use of ditches, berms, dikes and swales as appropriate and practicable; utilizing overside drains, flared culvert end sections, outlet protection/velocity dissipation devices, and slope/surface protection systems; increased vegetated surfaces; and minimizing hard surfaces.

During design, if a build alternative were chosen, Caltrans would examine existing treatment BMPs employed on I-5 in the NCC. As part of the chosen alternative, Caltrans would maximize treatment BMP locations to the maximum extent practicable.

During construction, there is potential for storm water and non-storm-water discharges to occur by any of the four build alternatives. Caltrans would implement various construction site BMPs, as appropriate, during construction to reduce the impacts. These temporary control practices would be consistent with the BMPs and control practices required under the State of California NPDES General Permit for Storm Water Discharges Associated with Construction Activity. The BMPs would be selected from several categories covering temporary soil stabilization, temporary sediment control, wind erosion control, tracking control, non-storm-water management, waste management, and materials pollution control.

Treatment BMPs must be included in any of the build alternatives to prevent or minimize the long-term potential impacts from Caltrans facilities or activities. Approved treatment BMPs that are technically and fiscally feasible for all of the build alternatives include biofiltration systems, multi-chambered treatment drains, infiltration devices, wet basins, detention devices, traction sand traps, dry weather flow diversions, media filters, and gross solid removal devices.

As design proceeds, if a build alternative were chosen, BMPs would be evaluated for effectiveness, applicability, and practicality. Where treatment BMPs cannot be incorporated, preservation or restoration of vegetation would be maximized and every effort would be made to ensure the successful establishment of landscaping and erosion control throughout the project limits. The chosen build alternative would also consider any future treatment BMPs that might be approved by Caltrans from the ongoing research and monitoring program during the design phase.

Most highway maintenance is performed by small crews with minimal soil disturbance. Maintenance BMPs are preventive measures to reduce the amount of pollutants discharged to surface waters through Caltrans storm water drainage systems. Maintenance BMPs would be ongoing for the life of the facility and would conform to Caltrans' "Storm Water Quality Handbook, Maintenance Staff Guide." The Guide provides detailed instructions on how to implement maintenance BMPs to facility operations and highway activities.

### **Comparison of Contaminant Impacts**

All build alternatives of the project have the potential to introduce contaminants into waters of the U.S. during construction, operation, and maintenance. Direct impacts would result from contaminant or polluted material spills or migration into waters of the U.S. during construction or operations. Indirect

impacts could result from the transport of contaminants into waters of the U.S. in runoff, by wind, or by other means from existing sources or from the roadway surface.

Avoidance measures and measures to minimize contaminant impacts are discussed in Section 3.13, “Hazardous Waste/Materials,” of the DEIR/DEIS. BMPs would be evaluated, implemented, and maintained to address these impacts during the planning and design, construction, and operational phases regardless of the build alternative chosen. Pollutants generated anywhere during any phase of the build alternatives could potentially reach receiving waters of the U.S.

Any project build alternative would be required, through permitting requirements and the Caltrans water quality permit, to employ the most effective reasonable and feasible BMPs to reduce contaminant loadings of runoff discharged into the watershed systems in the I-5 NCC corridor. Because the BMPs would be required of all build alternatives, they are included in the project. In general, water quality controls would be required equally of all the build alternatives, but the SDEIR/SDEIS 8 + 4 with Buffer, by virtue of its smaller construction footprint and smaller area of impervious surfaces, would have the least impacts to waters of the U.S.

## Water

Section 3.10, “Water Quality and Storm Water Runoff,” of the DEIR/DEIS discusses water quality of water bodies on the Clean Water Act Section 303(d) List of Water Quality Limited Segments. Caltrans runoff characterization studies identified pollutants that are discharging with a load or a concentration that commonly exceeds allowable standards and which are considered treatable by Caltrans approved treatment BMPs. These pollutants are referred to as Targeted Design Constituents (TDCs), which include sediment, metals (total and dissolved zinc, lead and copper), nitrogen, phosphorus, and general metals. Table 7 lists the 303(d) impaired receiving water bodies in the project area and the TDCs associated with them.

**Table 7. Impaired Water Bodies, Constituents of Concern, and TDCs**

Impaired Water Body	Constituents of Concern	TDCs
Los Peñasquitos Creek	Phosphate, Total Dissolved Solids	Phosphate, Total Dissolved Solids
Los Peñasquitos Lagoon	Sedimentation, Siltation	Sedimentation, Siltation
Soledad Canyon Creek	Sediment, Toxicity	N/A
Pacific Ocean Shoreline/San Dieguito	Indicator Bacteria	N/A
San Elijo Lagoon	Indicator Bacteria, Sedimentation, Siltation, Eutrophic	Sedimentation, Siltation
Agua Hedionda Lagoon	Indicator Bacteria, Sedimentation, Siltation	Sedimentation, Siltation
Buena Vista Lagoon	Indicator Bacteria, Sedimentation, Siltation, Nutrients	Sedimentation, Siltation, Nutrients
Loma Alta Slough	Indicator Bacteria, Eutrophic	N/A
Pacific Ocean Shoreline/San Luis Rey	Indicator Bacteria	N/A
San Luis Rey River	Chloride, Total Dissolved Solids	N/A

Discharge of materials into the aquatic ecosystem could result in loss of functions and values, alter current and flow patterns, change water circulation in the ecosystem, change fluctuation patterns, and, in coastal areas, affect salinity gradients. Design of the build alternatives would not substantially change drainage patterns in any of the aquatic systems. When construction is complete, the pattern of flow would not be changed at San Dieguito and Agua Hedionda Lagoons and the San Luis Rey River. Restrictions to flood flows from the existing culverts on Carmel Creek would be removed and replaced with a bridge at the Los Peñasquitos Lagoon system and allow the streams feeding the lagoon to flow more freely. Although not resulting in a Section 404 discharge, the increased channel cross-sections at San Elijo, Batiquitos, and Buena Vista Lagoons would have a beneficial effect on tidal and fluvial flows.

Where construction impacts waters of the U.S., stream and floodplain characteristics could be affected. These effects would be the same for all build alternatives. Table 8 summarizes floodplain changes the project would cause to all waters of the U.S. affected by any of the four build alternatives. Changes in each of these locations to the floodplain and water elevation would be minimal and would not cause significant adverse effects on waters of the U.S.

**Table 8. Flood Elevation Effects, All Alternatives**

<b>Water of the U.S.</b>	<b>Floodplain Surface Elevation Change</b>	<b>Floodplain Boundary Change</b>	<b>Base Floodplain Change</b>
Soledad Canyon Creek	+0.04 foot	No significant change	No change
Los Peñasquitos Creek	No change	No change	No change
Carmel Valley Creek	No change	No change	-4.4 feet
San Dieguito River	+0.30 foot	Negligible	Negligible
San Elijo Lagoon	+0.30 foot	No change	No change
Cottonwood Creek	No change	No change	No change
Batiquitos Lagoon	No change	No change	-0.70 foot
Encinas Creek	+0.22 foot	Negligible	Negligible
Agua Hedionda Lagoon	+0.10 foot	No change	No change
Loma Alta Creek	+0.04 foot	No change	No change
San Luis Rey River	+0.03 foot	No change	No change

The near-coastal location of the lagoon and San Luis Rey River crossings indicate that the new I-5 structures and channel alterations would be adequate to accommodate a 100-year flood. Caltrans design studies examined the combination of a 100-year flood with the maximum sea level rise prediction of 55 inches (4.5 feet) in 2100 by the state of California and found that tidal and flood flows would not be significantly impeded at the crossing of waters of the U.S. for any of the alternatives. Freeboard (the distance between maximum water surface elevation and lowest part of the bridge deck) would be adequate at all structures except at Carmel Creek, and there would be minimal potential for erosion, storm surge, tidal inundation, or flooding. At Carmel Creek, freeboard would be deficient for a 100-year flood plus a 55-inch sea level rise, but would be improved over existing conditions.

### **Comparison of Water Impacts**

No significant direct or indirect adverse effects would result in waters of the U.S. from changes in structures and crossings of the lagoons and San Luis Rey River under any of the build alternatives. Less

structure width would allow the greatest freeboard, due to deck curvature for drainage, so the 8 + 4 with Buffer alternative would provide the greatest freeboard. Larger build alternatives would have higher indirect impacts from runoff from increased amounts of impervious surfaces. As noted, all build alternatives would improve freeboard at Carmel Creek compared to the No Build Alternative, but it would still be deficient for all the alternatives. Additional information on water related to the effects of the build alternatives may be found in the DEIR/DEIS under Section 3.9, “Hydrology/Drainage (and Floodplains),” and Section 3.10, “Water Quality and Storm Water Runoff,” and in the SDEIR/SDEIS in Section 3.1, “Supplemental Information Related to Lagoons.”

### **Current Patterns and Water Circulation**

Channels under the I-5 bridges currently serve to allow circulation of water between the parts of the lagoons east and west of the freeway. At the San Luis Rey River, the river current flows east to west to allow discharge into the Pacific Ocean. Other structures, such as the railroad and highway bridges, also play a part in determining these current and water circulation patterns.

During widening and construction of the proposed bridges, all build alternatives may temporarily and partially obstruct normal current and circulation patterns by placement of columns and falsework and other construction activity at all bridge locations. Adequate channels would be maintained at all times during construction to allow water level fluctuation, current flow, and circulation within the lagoons to occur under both essentially normal conditions and fluvial (flood) conditions.

After construction is completed, conditions in the channel under the bridges would be restored to preconstruction conditions at all bridge crossings except at San Elijo, Batiquitos, and Buena Vista Lagoons. The project, including increasing the channel cross-sections under the bridges in those three lagoons (which would not result in a Section 404 discharge), would optimize the potential for channel flows under the bridges. The optimized channels proposed at both I-5 and the railroad bridge would enhance tidal and fluvial flows, reduce residence times, and reduce tidal muting.

### **Comparison of Current Patterns and Water Circulation Impacts**

Changes to current patterns and water circulation in wetlands and other waters of the U.S. would be the same for each of the build alternatives and, independent of other future projects that would alter the configuration of the lagoon and stream channels, would not directly or indirectly substantially alter existing current patterns and water circulation. Additional discussion of water circulation may be found in Section 3.9, “Hydrology/Drainage (and Floodplains),” of the DEIR/DEIS and in Section 3.1, “Supplemental Information Related to Lagoons,” in the SDEIR/SDEIS.

### **Salinity Gradients**

All of the lagoons demonstrate some degree of salinity from being open or partially open at times to influx of saltwater from the Pacific Ocean, except Buena Vista Lagoon, which currently is mainly a freshwater system. The San Luis Rey River and Loma Alta Creek are also subject to ocean tidal influences to some extent. Among the lagoons, only Agua Hedionda and Batiquitos have stable inlet structures that are regularly maintained to allow regular saltwater influx into the lagoon from the Pacific Ocean. Salinity

gradients vary with a number of factors, including strength of tides; the amount of freshwater entering the lagoons and other water bodies from freshwater runoff, stream flows, and precipitation; condition of the openings to the sea; evaporation within the water bodies; and other factors.

As explained under “Current Patterns and Water Circulation” above, tidal flushing of the majority of the lagoons will not change as a result of the proposed I-5 NCC project. Batiquitos Lagoon will have enhanced tidal and fluvial circulation as a result of changes to/at the I-5 bridge. Elsewhere, salinity gradients in water bodies crossed by the proposed I-5 NCC project would not permanently change. The effect of any of the build alternatives on salinity gradient in wetlands and other waters of the U.S would be minimal and equal for all build alternatives.

### **Comparison of Salinity Gradients Impacts**

No direct or indirect changes to the connection of wetlands and other waters of the U.S. to openings to the Pacific Ocean are proposed and, independent of other future projects that would alter the configuration of those openings, the I-5 NCC project would not substantially alter salinity gradients in wetlands and waters of the U.S. Any changes, which would be expected to be minimal, would be equal for all build alternatives. Additional discussion related to this issue may be found in Section 3.9, “Hydrology/Drainage (and Floodplains),” of the DEIR/DEIS and in Section 3.1, “Supplemental Information Related to Lagoons,” in the SDEIR/SDEIS.

## **Subpart D: Potential Impacts on Biological Characteristics of the Aquatic Ecosystem**

Surveys for federally listed species were conducted within the Study Area for the DEIR/DEIS and were updated as recently as 2012. One federally endangered plant species and two federally listed bird species, as described below, would be directly impacted by temporary construction activities and permanent habitat impacts. Four additional bird species and two fish species may be indirectly impacted by construction of the project. Critical habitat designated by USFWS for three bird species and one fish species could be affected by the project. The No Build Alternative would not have temporary, permanent, direct, or indirect impacts on federally listed threatened or endangered species, or critical habitats.

Not all the surveys included in the species reported below are recent. USFWS issued a Biological Opinion (BO) (FWS-SDG-08BO 1 00-12F0547) on the 8 + 4 with Buffer Alternative (LPA) on December 31, 2012. Recognizing the extended construction schedule for the proposed work, USFWS will require that surveys for federally listed as threatened and endangered species, their critical habitat, known habitat, and suitable habitat that could be affected by the project be conducted within one year of the start of construction in any location, during construction, and after construction. The USFWS did not make any jeopardy determinations associated with the proposed project/LPA.

### **Direct Impacts on Federally Listed Threatened and Endangered Species**

For all the build alternatives, construction activity within the construction footprint of the project would result in direct, permanent impacts on federally listed species. Noise generated by construction activities

may result in direct, temporary impacts on federally listed species. Species that would experience direct permanent and temporary impacts from the build alternatives are discussed below and impacts are shown in Table 9.

Table 9. Direct Impacts to Threatened and Endangered Species<sup>1</sup>

Species	10+4 with Barrier	10+4 with Buffer	8+4 with Barrier	8+4 with Buffer
Del Mar Manzanita, Permanent <sup>2</sup>	6 plants <sup>3</sup>	6 plants <sup>3</sup>	6 plants <sup>3</sup>	6 plants <sup>3</sup>
Light-footed dapper rail, Permanent	1 pair, Batiquitos; 1 territory, San Elijo	1 pair, Batiquitos	1 pair, Batiquitos; 1 territory, San Elijo	1 pair, Batiquitos
Light-footed dapper rail, Temporary	2 territories, San Elijo; 1 territory, Batiquitos; 1 individual, Buena Vista	2 territories, San Elijo; 1 territory, Batiquitos; 1 individual, Buena Vista	1 territory, San Elijo; 1 territory, Batiquitos; 1 individual, Buena Vista	1 territory, San Elijo; 1 territory, Batiquitos; 1 individual, Buena Vista
Coastal California gnatcatcher, Permanent	1 territory, Genesee; 3-4 territories, San Dieguito; 4-6 territories, San Elijo; 4 territories, Batiquitos			
Tidewater goby	habitat	habitat	habitat	habitat

<sup>1</sup> Impacts to critical habitat are discussed separately below.

<sup>2</sup> Within temporary impact footprint, but would be removed; considered permanent

<sup>3</sup> May be avoidable during construction

### Threatened and Endangered Species Directly Impacted

#### Del Mar Manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*)

Del Mar manzanita is federally listed as endangered. This plant is restricted to San Diego County and northern Baja California. This species is a fire-adapted shrub restricted to sandstone terraces and bluffs, and is associated with a subtype of chaparral known as southern maritime chaparral. About 25 populations exist in San Diego County, including nearby areas at Del Mar and the Torrey Pines State Reserve. Del Mar manzanita is also considered endangered by the California Native Plant Society. In the Study Area, approximately 70 plants were observed at the top of the slopes on both sides of I-5, just north of Del Mar Heights Road to Birmingham Drive.

Six plants are growing along a brow ditch at the northwestern corner of the Del Mar Heights interchange that would probably be replaced during construction. Plants in the construction footprint would be removed and thus are considered permanently impacted, but it may be possible to avoid the plants during construction (Table 9). If impacts to the plants cannot be avoided, seed would be collected and transplanted to suitable habitat. Success in transplanting this species, however, is difficult to achieve.

### Coastal California Gnatcatcher (*Polioptila californica californica*)

Coastal California gnatcatcher is listed as threatened by the USFWS. It is a nonmigratory resident whose range covers the coastal plains of southern California and northern Baja California. In San Diego County, it occurs in coastal lowlands generally below 1,968 feet and is an obligate resident of coastal sage scrub. It may utilize other vegetation types such as chaparral and riparian habitats for portions of its territory. The decline of the coastal California gnatcatcher is attributed to the loss and fragmentation of coastal sage scrub due to urban and agricultural development.

California gnatcatchers were generally found along the fill slopes and a few cut slopes adjacent to the lagoons and in a few adjacent canyons with coastal sage scrub habitat. Multiple protocol surveys in the corridor have been completed during multiple years, including 2003, 2005, 2007, 2008, and 2012. There is critical habitat for the coastal California gnatcatcher surrounding San Elijo Lagoon, just south of Batiquitos Lagoon, and near the San Luis Rey River.

### Light-footed Clapper Rail (*Rallus longirostris levipes*)

Light-footed clapper rail is listed as endangered by USFWS. The species occurred historically along the southern California coast from Santa Barbara County south to San Quintin, Baja California. Populations have declined due to limited distribution, and destruction and degradation of coastal salt marsh habitat. About 253 pairs were reported in 2000; 90 percent of these were reported in just three wetland areas: Anaheim Bay and Newport Bay in Orange County and Tijuana Estuary in San Diego County.

Light-footed clapper rails are typically found in salt marshes dominated by cordgrass (*Spartina foliosa*), but can also be found in habitats dominated by cattail (*Typha* sp.). Focused surveys for the light-footed clapper rail were completed within 500 feet of I-5 along the San Luis Rey River, Buena Vista Lagoon, Batiquitos Lagoon, San Elijo Lagoon, and San Dieguito Lagoon in 2003, and in Los Peñasquitos Lagoon in 2004 (Table 9).

Updated information from surveys done in 2011 at Batiquitos, Agua Hedionda, and Buena Vista Lagoons identified additional light-footed clapper rail at Batiquitos Lagoon. Light-footed clapper rails were observed adjacent to the park and ride at La Costa, next to the freeway slope northeast of the bridge and on the north shore of the east basin. Light-footed clapper rail have moved closer to I-5 within the past 8 years with the increase in cordgrass-dominated low marsh adjacent to the fill slopes. It appears that appropriate habitat is more important than noise levels to the clapper rails. During 2011, the light-footed clapper rail location at the southwestern corner of the I-5/SR-78 Interchange was not detected. The clapper rail locations at Agua Hedionda were more than 3,000 feet from the project area.

Table 9 presents a comparison of impacts on the federally listed species described above.

### **Indirect Impacts on Threatened or Endangered Species**

Indirect impacts to sensitive species can result from increased lighting, increased exposure to invasive species and trash or debris, edge effects, increased potential for pollution from storm water runoff, and long-term increases in noise. I-5 is currently 8 to 10 lanes in width across the lagoons, and is already

causing impacts from increased nighttime lighting, increased access from invasive species, and edge effects where habitats are bisected. Most of the remaining corridor has been developed for urban uses that produce much the same impacts on native habitats. Many of the impacts associated with construction would be temporary, but direct, and those that occur with long-term operation of the freeway would be permanent but indirect.

In the areas where the direct effects on federally listed species would occur, indirect effects would occur to the same species (coastal California gnatcatcher and light-footed clapper rail) occupying the same habitats adjacent to the construction footprint. Generally, this habitat is in the same location but the areas of impact would be somewhat different in some locations depending on a given build alternative's actual footprint: greater where the footprint is larger than where it is smaller.

Additional federally listed species may occupy habitat that is not directly affected by the build alternatives but is near enough to be affected indirectly. Those species and the area of potential effects on their habitat are described below.

#### California Least Tern (*Sterna antillarum browni*)

The California least tern, federally and state listed as endangered, historically nested on coastal beaches from Monterey County to Cabo San Lucas, Baja California. California least terns are migratory and return to San Diego in early April to breed and raise young before leaving in mid-September. The San Dieguito Ecological Reserve has a colony of California least terns managed by the California Department of Fish and Wildlife (CDFW). There are also known nesting areas for California least terns in San Elijo and Batiquitos Lagoons. The breeding areas are outside of the grading limits of any of I-5 NCC build alternatives; however, some foraging habitat may be impacted during construction. The nesting area east of I-5 at Batiquitos is used annually and is in proximity to construction activities. California least terns were observed foraging in San Elijo and Batiquitos Lagoon within the Study Area in 2003.

#### Western Snowy Plover (*Charadrius alexandrinus nivosus*)

The Pacific coast population of the western snowy plover was listed as federally threatened in 1993. Western snowy plovers forage on both the dry sand of the upper beach and along the wet sand at the beach-surf interface. In Orange and San Diego Counties, the western snowy plover is a common winter migrant and winter visitor and a fairly common localized breeding resident. There is western snowy plover nesting habitat at San Dieguito, San Elijo, and Batiquitos Lagoons; however, the nesting habitat is outside of the permanent and temporary impact areas of any of the build alternatives. Some foraging habitat for this species may be impacted by this project's build alternatives at Batiquitos and Agua Hedionda Lagoons.

#### Least Bell's Vireo (*Vireo bellii pusillus*)

The least Bell's vireo was once widespread from Tehama County in northern California to northwestern Baja California. This migratory species nests in willows, also using a variety of other shrub and tree species for nest placement. Two vireo territories were detected in the willow woodland east of I-5 near the San Dieguito River; however, they are outside the Study Area. Protocol surveys for least Bell's vireo

along Moonlight Creek in Encinitas were negative in both 2003 and 2004. Least Bell's vireos were detected during coastal California gnatcatcher protocol surveys near Brooks Street and Lawrence Canyon in Oceanside in small patches of riparian habitat. The vireos were at least 426 feet and 738 feet from I-5, respectively. Surveys in the Study Area for the project at the San Luis Rey River did not detect the species. The closest known location to I-5 is approximately 1,500 feet upstream, and there is designated critical habitat for the least Bell's vireo within the project footprints for all build alternatives.

#### Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

The southwestern willow flycatcher is listed as state and federally endangered. This subspecies is an uncommon spring and fall migrant and a very rare summer resident. It is found among trees or large shrubs throughout San Diego County. Nesting is restricted to willow thickets in riparian woodland; the local breeding population in San Diego County is now extremely small. Surveys for southwestern willow flycatcher were completed in the riparian habitat in the San Luis Rey River after a willow flycatcher was heard vocalizing during a wetland survey in 2004. However, subsequent surveys did not detect southwestern willow flycatcher again; the observation could have been either a migrating willow flycatcher (*Empidonax traillii*) or a southwestern willow flycatcher. No other suitable habitat is present within the Study Area. The San Elijo Lagoon Conservancy has records of migrant southwestern willow flycatchers at San Elijo Lagoon outside the Study Area.

#### Tidewater Goby (*Eucyclobobius newberryi*)

Tidewater goby is listed as endangered by USFWS and is a California Species of Special Concern. This small, nondescript fish is endemic to coastal lagoons and lower stream reaches in brackish to fresh, slow moving to still, but not stagnant, water. In San Diego County, tidewater gobies have historically been recorded from San Mateo, San Onofre, and Las Pulgas Creeks on Marine Corps Base Camp Pendleton, and at Aqua Hedionda and Buena Vista Lagoons. No tidewater gobies were observed during fishery surveys at San Elijo, Batiquitos, or Agua Hedionda Lagoons. Due to these lagoons' large size, depth, and large numbers of predatory fish, tidewater goby are not anticipated within the Study Area at any of the six lagoons.

Tidewater gobies were recently discovered in the San Luis Rey River, where they were presumed extant. In October 2011, USFWS proposed designation of 56 acres of the lower San Luis Rey River as critical habitat for the species. The proposed critical habitat includes the river from the ocean to about 2,000 feet upstream from I-5. Construction of the LPA at the bridge would temporarily impact about 0.2 acre of critical habitat, and permanent footings in the river would permanently impact approximately 500 square feet of critical habitat. Construction of any of the other build alternatives would impact at least as much critical habitat. Any work within the water of San Luis Rey River would be enclosed in coffer dams or other method to minimize sediment discharge within the water column. Protocol surveys for tidewater goby were completed in summer 2012 at Batiquitos and Buena Vista Lagoons at the request of USFWS. There was no suitable habitat for tidewater goby at Batiquitos Lagoon within the Study Area, and no tidewater gobies were identified in protocol surveys at Buena Vista Lagoon.

### Southern Steelhead Trout (*Oncorhynchus mykiss*)

Steelhead trout were historically found from Alaska to Baja California, Mexico; southern steelhead trout used coastal drainages from south of San Francisco Bay to Baja California. Urbanization and alteration of the streams from the headwaters to the coast are the major factors affecting the steelhead populations. NMFS listed the southern steelhead trout within the southern California steelhead evolutionarily significant unit (ESU) as federally endangered in 1997. In 2002, the range of the southern California steelhead ESU was extended to Baja California, Mexico. In May 2007, a steelhead trout was reported by CDFW personnel in the lower San Luis Rey River and the species is presumed extant there. The species is not expected to occur in any other water body affected by any of the build alternatives.

Construction at the San Luis Rey River bridge would be conducted as described above in the tidewater goby discussion. Under the proposed construction conditions, no direct and minimal indirect impacts are anticipated to southern steelhead from construction of I-5 at the San Luis Rey River Bridge.

### **Impacts on Critical Habitat**

The project would affect critical habitat for coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, and tidewater goby. Critical habitat is any geographic location designated by USFWS as critical to the continued existence of a federally listed threatened or endangered species.

### **Coastal California Gnatcatcher**

Critical habitat for coastal California gnatcatcher is present within the Study Area at San Elijo Lagoon, just south of Batiquitos Lagoon, and near the San Luis Rey River. Designated critical habitat for coastal California gnatcatcher includes the freeway, the lagoons, and other habitats that do not exhibit primary constituent elements of gnatcatcher habitat<sup>4</sup>. To determine permanent impacts to critical habitat for the coastal California gnatcatcher, only those upland habitats with the primary constituent elements were counted. Impacts on upland critical habitat with primary constituent elements would be 37.3 acres for the 10 + 4 with Barrier Alternative, 33.5 acres for the 10 + 4 with Buffer Alternative, 34.3 acres for the 8 + 4 with Barrier Alternative, and 31.7 acres for the 8 + 4 with Buffer Alternative.

### **Southwestern Willow Flycatcher and Least Bell's Vireo**

Some designated critical habitat for southwestern willow flycatcher and least Bell's vireo is near the San Luis Rey River. Much of the critical habitat mapped by USFWS is in areas that are currently developed or vegetated with ornamental vegetation such as ice plant, and they do not have the primary constituent elements of critical habitat. Permanent impacts to 0.03 acre of least Bell's vireo and southwestern willow flycatcher critical habitat with primary constituent elements would occur. An additional 0.25 acre of southwestern willow flycatcher and 0.20 acre of least Bell's vireo critical habitat would temporarily be impacted during construction. Impacts from the four build alternatives would be the same in these areas.

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<sup>4</sup> Primary constituent elements are the physical or biological features essential to the conservation of a species, on which its designated or proposed critical habitat is based.

## Tidewater Goby

As stated above, construction of each of the build alternatives at the San Luis Rey River bridge would temporarily impact about 0.2 acre of critical habitat, and permanent footings in the river would permanently impact approximately 500 square feet of critical habitat with primary constituent elements. An additional 1.55 acres of proposed critical habitat that does not have primary constituent elements for goby would also be impacted by all build alternatives.

## Comparison/Summary of Impacts on Federally Listed Threatened and Endangered Species

For a summary of direct impacts of the build alternatives on federally listed threatened and endangered species, see Table 9. Each of the build alternatives would impact the same six Del Mar manzanita plants. For all build alternatives, it may be possible to avoid impacts to the species by refining the design and monitoring during construction to determine where the plants are growing. However, the plants are growing along an existing brow ditch that would likely need to be removed and replaced.

All build alternatives would permanently impact one pair of light-footed clapper rail; the 10 + 4 with Barrier Alternative and 8 + 4 with Barrier Alternative would also permanently impact one additional clapper rail territory. The two barrier alternatives would each affect one clapper rail territory, while neither of the two buffer alternatives would affect a territory. Thus, the 8 + 4 with Buffer and 10 + 4 with Buffer Alternatives would have the least impact on light-footed clapper rail. All build alternatives would affect the same number of territories of coastal California gnatcatcher. However, as the footprints of the alternatives decrease, so does the amount of impact to any one California gnatcatcher territory.

Indirect project impacts would affect federally listed threatened and endangered species habitat in the same general locations for all build alternatives. Direct plus indirect impacts would generally be greater with an increase in the construction footprint, since a larger footprint would extend farther into adjacent habitat. The 10 + 4 with Barrier Alternative would have the largest footprint, and the 8 + 4 with Buffer Alternative would have the least. The same issue of relative footprint size affects impacts on designated or proposed critical habitat for coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, and tidewater goby: the 10 + 4 with Barrier Alternative would have the greatest impact on critical habitat, and the 8 + 4 with Buffer Alternative would have the least.

Overall, the degree of impacts does not vary greatly between the build alternatives, but, as a general rule, the alternative with the smallest construction footprint, the 8 + 4 with Buffer Alternative, would be the least environmentally damaging in terms of impacts to federally listed species and designated critical habitat. USFWS, in the BO for the I-5 NCC 8 + 4 with Buffer Alternative, states:

Based on conservation measures committed to by Caltrans, we concur with your determination that the proposed project is not likely to adversely affect the federally endangered least Bell's vireo (*Vireo bellii pusillus*, vireo), southwestern willow flycatcher (*Empidonax traillii extimus*; flycatcher), and California least tern [*Sternula* (= *Sterna*) *antillarum browni*]; the federally threatened western snowy plover [*Charadrius nivosus*

(= *alexandrinus*) *nivosus*]; designated critical habitat for the vireo and flycatcher; and proposed critical habitat for the flycatcher.

Regarding the Del Mar Manzanita, the BO states, “we do not expect the habitat loss and destruction of plants associated with the project to appreciably reduce the number of individuals, reproduction, or distribution of manzanita in the action area or across its range.”

Additional information regarding the proposed project’s effects on federally listed threatened and endangered species is included in Section 3.9, “Threatened and Endangered Species,” in the DEIR/DEIS and in Section 3.1, “Supplemental Information Related to Lagoons,” in the SDEIR/SDEIS.

### **Fish, Crustaceans, Mollusks, and Other Aquatic Organisms in the Food Web**

The lagoons in the Study Area are home to a large variety and abundance of aquatic organisms. When open to the sea, the coastal lagoons serve as nurseries for many aquatic species. Marine species may be found where lagoon inlets are permanently or sporadically open to the ocean. Fish fauna in San Dieguito Lagoon change seasonally based on river flows, condition of the lagoon mouth, and salinity. Variations in temperature and salinity are due to seasonal freshwater influx and intermittent oceanic tidal influence in San Elijo Lagoon favor hardy estuarine species. Batiquitos Lagoon supports a number of marine fish species, as does Agua Hedionda Lagoon. Buena Vista Lagoon generally lacks oceanic tidal influx, so that few marine fish species are expected there. Epibenthic macroinvertebrates are a common feature in southern California coastal lagoons. These may include various insect larvae, the common crayfish, bay shrimp, gastropods, crustaceans, bivalves, and echinoderms. At times where there is no regular tidal influx, as at San Elijo Lagoon east of I-5, epibenthic macroinvertebrates seem to be sparse; in lagoons where there is tidal influence, such as Batiquitos and Agua Hedionda Lagoons, the population is more varied and numerous.

All of the build alternatives would result in permanent, direct impacts to aquatic species. These impacts would result from the permanent loss of individual organisms and their habitat during and after construction from construction of the roadway and bridges and placement of roadway fill and bridge columns and abutments. Permanent, indirect impacts to aquatic organisms could occur from increased pollution runoff due to additional highway traffic, resulting in potential loss of individual species and increased nonnative species plant intrusion, with potential loss of the habitats necessary to support these species.

Temporary impacts to aquatic organisms in the food web could result from turbidity, sedimentation, pollution, and contamination that could occur during construction and operation of the proposed facility. Such threats to aquatic organisms are discussed above in “Potential Changes on Physical and Chemical Characteristics of the Aquatic Ecosystem.” Where bridges are widened or replaced with wider bridges permanent impacts could result from increased shading of the biological resources located beneath proposed bridges over riparian, wetland, and other aquatic areas. Increased column and abutment surfaces could provide beneficial effects for some organisms by providing new encrusting habitat.

Shading currently occurs at all of the lagoon crossings; however, additional shading and shadows would be cast on eastern and western sides of north/south-oriented bridges and beneath the bridges. Shading from the expanded bridge footprints would have a permanent indirect effect on vegetation and benthic communities, decreasing overall productivity for some. Increased shading could particularly affect organisms with little or low motility. Shading from bridges would reduce and remove established salt marsh/brackish marsh vegetation and alter water temperatures in the channels directly below. Although some direct sunlight would continue to illuminate the edges underneath the widened bridges (early morning on the east side, late afternoon on the west side), the habitat directly underneath the widened bridge is assumed to be indirectly impacted by shading. The additional shading could cause decreases in plant growth and invertebrate abundance in the shaded areas for some species and have a beneficial effect for others, such as providing a lower-light and cooler environment for organisms preferring such conditions, and providing bridge columns and abutment riprap for habitat.

### **Comparison of Impacts on Fish, Crustaceans, Mollusks, and Other Aquatic Organisms in the Food Web**

Indirect effects such as increased light, shading, and pollution associated with the roadway are classified as edge effects. I-5 is currently eight to ten lanes in width across the lagoons and already causes increased nighttime lighting, increased access from invasive species, bisected habitats, and other edge effects. Increased development in much of the rest of the freeway corridor has further encroached on these habitats. The increase in edge effects on waters of the U.S. would vary among the build alternatives, roughly in proportion to the size of the construction footprint of each alternative. Thus the effects would be lowest for the 8 + 4 with Buffer Alternative and highest for the 10 + 4 with Barrier Alternative. Direct effects, such as road fill, columns, and abutments and construction within the aquatic environment, on aquatic organisms would be predominantly in open water and subtidal habitats proportional to the size of the impact of the particular build alternative. Additional analysis on this issue may be found in Section 3.17, “Natural Communities,” and 3.20, “Animal Species,” in the DEIR/DEIS.

### **Impacts on Eelgrass and Other Essential Fish Habitat**

#### **Impacts on Eelgrass (*Zostera marina*) Beds**

Eelgrass beds are recognized by NMFS as important ecological communities in shallow bays and estuaries because of their multiple biological and physical values. As vegetated shallows, eelgrass beds are special aquatic sites pursuant to the Section 404(b)(1) Guidelines. Eelgrass habitat functions as an important structural environment for resident bay and estuarine species. Eelgrass is a nursery area for many finfish and shellfish species, including those that are resident within bays and estuaries, as well as for oceanic species that enter estuaries to breed or spawn. Eelgrass beds are protected by specific regulations concerning impacts and mitigation.

Due to the variability in eelgrass distributions, surveys before and after construction are required by the regulatory agencies to make the final determination of impacts to eelgrass. To establish a baseline for the build alternatives, subtidal portions of the Study Area lagoons were surveyed in 2006 for eelgrass and

possible toxic algae (*Caulerpa taxifolia*) distributions. Regulatory agencies would require updated surveys before construction, as well as during and after construction to determine eelgrass impacts.

Eelgrass was mapped within the Batiquitos Lagoon sampling area in April 2006. Eelgrass does not grow in the channel leading up to, under, or past the bridge due to depth and high current velocities. However, eelgrass beds fringing the shoals adjacent to the deeper channels in the area of the I-5 bridge are extremely dense compared to beds found in most systems of southern California. This high density is believed to be related to ideal light and current environments.

As in Batiquitos Lagoon, eelgrass does not grow in the channel leading up to, under, or past the bridge at Agua Hedionda Lagoon. Agua Hedionda eelgrass was primarily restricted to fringing shoreline beds along the shore of both the east basin and central basin of the lagoon. The eelgrass appeared healthy, of moderate stature, and generally free from epiphytes. The present distribution of eelgrass covered approximately 10 percent of the area that has been known to support eelgrass during surveys conducted in recent years. In September 2003, the area investigated in the present survey supported a total of 8.31 acres of eelgrass. A large-scale dieback of eelgrass occurred in 2005 in Agua Hedionda Lagoon, and the eelgrass has not yet recovered to the distribution of prior years. Therefore, it appears that the recent distribution of eelgrass is considerably more restricted than it would likely be in coming years. In the Study Area, eelgrass beds are near the lagoon shore north of the I-5 bridge. Table 10 lists expected impacts to eelgrass beds by the four build alternatives, based on the most current surveys.

### Comparison of Impacts on Eelgrass Beds

As Table 10 shows, the acreage of eelgrass beds affected would be very close among the build alternatives. As with effects on federally listed threatened and endangered species, the expected impacts would be slightly less for the buffer alternatives, with the 8+4 with Buffer Alternatives having slightly lower anticipated impacts. There are potential indirect impacts from disturbance of the substrate in the areas of bridge construction to adversely affect eelgrass beds due to turbidity, sedimentation and perturbation of currents. These effects are expected to be controlled to a less than significant level by BMPs and conservation measures included in the proposed project and applicable to all build alternatives. Additional discussion of eelgrass may be found in Section 3.17, “Natural Communities,” of the DEIR/DEIS.

**Table 10. Permanent and Temporary Impacts to Eelgrass (Acres)**

Location	10+4 with Barrier	10+4 with Buffer	8+4 with Barrier	8+4 with Buffer
<b>Permanent Impacts</b>				
Agua Hedionda	0.22	0.07	0.20	0.07
Batiquitos	0.02	0.02	0.02	0.01
<b>Total</b>	<b>0.24</b>	<b>0.09</b>	<b>0.22</b>	<b>0.08</b>
<b>Temporary Impacts</b>				
Agua Hedionda	0.15	0.13	0.14	0.13
Batiquitos	0.22	0.20	0.22	0.09
<b>Total</b>	<b>0.37</b>	<b>0.33</b>	<b>0.36</b>	<b>0.22</b>

## Impacts on Essential Fish Habitat

Essential Fish Habitat (EFH) is identified in the Magnuson-Stevens Fishery Conservation and Management Act as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” EFH has been identified for four groups of fish: Pacific salmon, Pacific groundfish, coastal pelagic species, and highly migratory species. The Pacific salmon group does not include steelhead trout, which is protected. The coastal pelagic group is the only EFH group present within the I-5 Study Area. The coastal pelagic species group includes northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), Pacific mackerel (*Scomber japonicus*), and jack mackerel (*Trachurus symmetricus*). Although not captured during eelgrass and fish sampling in the lagoons, northern anchovy, Pacific sardine, and jack mackerel have a potential to occur in San Dieguito, San Elijo, Batiquitos, and Agua Hedionda Lagoons within the Study Area. They are most likely to occur in the open water at Batiquitos and Agua Hedionda Lagoons, since those lagoons are continuously open to the ocean. The open water in all these lagoons and potentially in the San Luis Rey River may provide EFH.

Caltrans is engaged in ongoing consultation with NMFS regarding EFH in the I-5 NCC. Formal agreement has not been reached on EFH as of April 2013, but NMFS has agreed with Caltrans’ assessment of EFH in the corridor and the two agencies have reached agreement on Caltrans proposed conservation measures. The assessment identifies San Dieguito, San Elijo, Batiquitos, and Agua Hedionda Lagoons and the San Luis Rey River as EFH. Smaller drainages in the corridor that flow into the Pacific Ocean (Encina Creek and Loma Alta Creek) do not contain EFH.

Replacement and construction of the longer bridges in the lagoons and river under all build alternatives would adversely affect EFH. Construction of new bridge pilings, fill placed along the abutments, and demolition of the bridges to be replaced could directly impact EFH. Bridge footprints are considered to cause permanent impacts. Shading by the wider bridges may reduce some habitats, such as eelgrass, used by fish; however, structure provided by bridge columns, currents, and temperature changes under the bridges may be favored by some fish species. Increased storm water runoff from the wider roadway could have indirect impacts, such as turbidity, sedimentation, freshwater influx, and possibly pollutants on EFH. BMPs for water quality would be part of the project and would control these indirect runoff impacts under all build alternatives. During construction of the bridges, falsework and some kind of work platform may be used, which could temporarily impact EFH.

## Comparison of Impacts on Essential Fish Habitat

Impacts on EFH are difficult to quantify, since the boundaries of EFH in the waters affected are not clearly defined. Impacts on eelgrass, a particularly important kind of EFH, are quantified in Table 10. However, all of the build alternatives would have an impact on EFH, and it may be assumed that the area or degree of impact would be roughly equal to the impacts on jurisdictional waters of the U.S. As indicated in Table 4, the 8 +4 with Buffer Alternative would impact the smallest acreage (14.13 acres) of wetlands and other waters of the U.S directly affected. The 8 + 4 with Barrier Alternative would impact 17.95 acres, the 10 +4 with Buffer Alternative would impact 16.68 acres, and the 10 + 4 with Barrier Alternative would impact 19.69 acres of wetlands and waters of the U.S. As noted, increased storm water

runoff from the wider roadway, such as turbidity, sedimentation, freshwater influx, and possibly pollutants, could have indirect impacts on EFH as well. BMPs for water quality would be part of the project and would control these indirect runoff impacts under all build alternatives. Additional discussion of EFH may be found in the DEIR/DEIS in Section 3.20, “Animal Species.” Impacts on eelgrass, a particularly important kind of EFH, are discussed in the preceding section, and are referred to again, along with other special aquatic sites, below in Subpart E and in Section 3.17, “Natural Communities,” in the DEIR/DEIS.

### **Other Wildlife and Wildlife Corridors**

The Study Area has a diverse assemblage of wildlife species that use a wide variety of habitats. Many migratory birds use the lagoons as they travel along the Pacific Flyway, as well as resident species such as the light-footed clapper rail and the Belding’s Savannah sparrow. Many species of waterfowl, shorebirds, and marsh species can be found within the lagoon habitats. Some of the more common species observed include great blue heron (*Ardea herodias*), great egret (*Casmerodius albus*), snowy egret (*Egretta thula*), willet (*Catoptrophorus semipalmatus*), red-winged blackbird (*Agelaius phoeniceus*), American coot (*Fulica americana*), northern pintail (*Anas acuta*), American widgeon (*Anas americana*), black-necked stilt (*Himantopus mexicanus*), and many others. Cliff swallows (*Hirundo pyrrhonota*), northern rough-winged swallows (*Stelgidopteryx serripennis*), and white-throated swifts (*Aeronautes saxatalis*) have also been observed nesting within or on several of the bridges, primarily over the lagoons. No sign of bats was observed at any of the lagoon bridges.

Several other bird species were observed around the margins of the lagoons in southern willow scrub, including the yellow warbler (*Dendroica petechia*), Nuttall’s woodpecker (*Picoides nuttallii*), song sparrow (*Melospiza melodia*), common yellowthroat (*Geothlypis trichas*), black-headed grosbeak (*Pheucticus melanocephalus*), and lesser goldfinch (*Carduelis psaltria*). The amount of riparian habitat in and around the lagoons is limited; however, there are several creeks and the San Luis Rey River within the project Study Area that support many of these species.

The coastal sage scrub and other upland habitats particularly around the lagoons also support a diverse group of reptiles, birds, and mammals. Mammals that were commonly detected within the Study Area include striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), California ground squirrel (*Spermophilus beecheyi*), Botta’s pocket gopher (*Thomomys bottae*), desert cottontail (*Sylvilagus audubonii*), and many small rodents. Reptiles observed during field surveys include the western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*), southern Pacific rattlesnake (*Crotalus viridis*), and San Diego horned lizard (*Phrynosoma coronatum blainvillei*). Commonly observed upland bird species include coastal California gnatcatcher, bushtit (*Psaltriparus minimus*), wrentit (*Chamaea fasciata*), house finch (*Carpodacus mexicanus*), mourning dove (*Zenaida macroura*), red-tailed hawk (*Buteo jamaicensis*), white-tailed kite (*Elanus leucurus majusculus*), northern harrier (*Circus cyaneus*), osprey (*Pandion haliaetus*), California towhee (*Pipilo crissalis*), and Anna’s hummingbird (*Calypte anna*).

The coastal lagoons and San Luis Rey River and their associated wildlife habitats are of great importance to the biological value of the I-5 NCC project area. The smaller drainages (San Clemente Creek tributary, Cottonwood Creek, Encina Creek, and Loma Alta Creek) are generally degraded, isolated, and near urban development, which limits their function as wildlife habitat or wildlife corridors. Most of the large areas of open space with natural vegetation in the coastal area are adjacent to or near the lagoons. San Luis Rey River open space extends far inland and serves as a major regional corridor for wildlife movement in northern San Diego County. These waters not only provide biological value as habitat for resident species but also allow for migration, genetic exchange, and general movement of both common and sensitive wildlife. Provision of corridors for wildlife movement greatly increases the biological value of the project area. Such movement ensures the continual sharing of genetic information that helps maintain genetic diversity and reduces the probability of species extinction. Wildlife corridors provide a link between habitat patches, increasing the area available for dispersal, foraging, and breeding. For smaller animals, the corridor itself may provide the habitat needed to sustain viable populations.

The presence of water within the corridors greatly increases the value of the habitat. High-quality native upland habitat, particularly sage scrub that persists within the project area, also contributes to the width and habitat diversity of the corridor. Native trees such as cottonwoods, sycamores, and willows provide shelter, nesting and foraging areas, and perches for songbirds and raptors.

Discharge of fill material associated with all of the build alternatives may eliminate or change breeding and nesting areas, destroy escape cover, alter travel corridors, or remove preferred food sources for resident aquatic species and associated other species. These species may be affected by the factors discussed in “Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem,” above.

Impacts from all build alternatives would result in temporary and permanent impacts to the lagoons and San Luis Rey River regional wildlife corridors; the varied wildlife habitat associated with the lagoons and river; and adjacent, smaller, local wildlife corridors. These impacts (direct and indirect) include the loss of habitats, reduction or fragmentation of habitat connectivity, and increased edge effects within these corridors. The extent to which these impacts affect species or suites of species is variable, due to the varying mobility of species and the varying tolerance for habitat reduction and edge effects.

Impacts to local corridor crossings between the waters, wetlands, and uplands could affect small mammals, reptiles, and amphibians. Bird species movement is not as likely to be adversely affected by movement corridor impacts, as most can fly over the roadway. Overall, I-5 currently separates areas of local habitat throughout the project area and serves as a barrier to east-west wildlife movement. The lagoons, the river, and the creeks are potential corridors for wildlife to cross under the freeway. Widening I-5 would not cut off these corridors and would incorporate new or wider benches that could improve wildlife movement; the bridges over San Elijo, Batiquitos, and Buena Vista Lagoons would be longer, which could slightly benefit such movement.

Studies have found that wildlife, especially large mammals, use wildlife crossings and corridors that are wider in relation to the length of the crossing. Wildlife currently use steep, narrow abutments at most of the lagoon and the San Luis Rey River bridges. Where bridges at the lagoons are being replaced, they would be designed with a bench from 12 to 16 feet wide at one or both abutments to facilitate wildlife movement. In some cases, these benches may also incorporate hiking trails. Although wildlife avoid people, wildlife would generally use the trails under the bridges at night, and the hikers would generally use them during the day. Corridors at locations where bridges would not be replaced—San Dieguito Lagoon and San Luis Rey River—would not be further constrained since large areas are already available for wildlife movement and minimal increases to bridge width are proposed.

The incremental change in the width of the bridges among the four build alternatives would have an incremental effect to wildlife using these bridge locations for crossings. The increase is largest for the 10 + 4 alternatives. The 8 + 4 alternatives would be less environmentally damaging with respect to wildlife movement, and the SDEIR/SDEIS 8 + 4 with Buffer would be least impacting. Wildlife crossings are discussed in Section 3.17, “Natural Communities,” of the DEIR/DEIS.

### Subpart E: Potential Impacts on Special Aquatic Sites

All wetlands, mud flats, and vegetated shallows (eelgrass) associated with the lagoon systems, the San Luis Rey riverine system, and smaller drainages in ACOE jurisdictional areas are considered special aquatic sites. All build alternatives would have permanent and temporary impacts on these sites. Direct, permanent impacts on special aquatic sites would eliminate the biological productivity in these areas and possess the potential to indirectly impact them by introducing contaminants or pollutants and increasing suspended particulates or turbidity. The 8 + 4 with Buffer Alternative would have the lowest impacts of the build alternatives on special aquatic sites while the 10 + 4 with Barrier Alternative would have the most impacts, as shown in Table 11; the 8 + 4 with Barrier and 10 + 4 with Buffer Alternatives would be in-between with respect to impacts, with the former having slightly higher impacts than the latter.

**Table 11. Impacts to Special Aquatic Sites (acres)**

Location	10+4 with Barrier	10+4 with Buffer	8+4 with Barrier	8+4 with Buffer
<b>Permanent Impacts</b>				
Wetlands	13.77	11.75	12.53	9.93
Mudflat	2.68	2.49	2.61	2.32
Eelgrass	0.24	0.09	0.22	0.08
<b>Total Permanent</b>	<b>16.69</b>	<b>14.33</b>	<b>15.36</b>	<b>12.33</b>
<b>Temporary Impacts</b>				
Wetlands	10.96	10.14	10.66	8.51
Mudflat	0.53	0.46	0.49	0.37
Eelgrass	0.37	0.33	0.36	0.22
<b>Total Temporary</b>	<b>11.86</b>	<b>10.93</b>	<b>11.51</b>	<b>9.10</b>

## **Subpart F: Potential Effects on Human Use Characteristics**

### **Municipal and Private Water Supplies**

Surface water in the I-5 NCC project area is not used for municipal or private water supplies. The City of Oceanside operates a well field to extract groundwater from the San Luis Rey River's aquifer, treat it by reverse osmosis, and use it to augment the city's potable water supply. The well field is located well upstream from the I-5 NCC project area. Neither the construction nor operation of any of the proposed build alternatives would affect (directly or indirectly) municipal or private potable water supplies. Hydrology and drainage are discussed in Section 3.9 of the DEIR/DEIS.

### **Recreational and Commercial Fisheries**

No recreational and commercial fishing is allowed in most of the lagoons and the stretch of the San Luis Rey River that would be affected by the build alternatives. No fish are known to inhabit the smaller drainages. In the western basin of Agua Hedionda Lagoon, bound by Pacific Highway to the west and the railroad bridge to the east, there is a commercial shellfish farm, aquaculture, and a marine fish hatchery. Recreational fishing is allowed in the lagoon's eastern basin, east of the I-5 bridge. San Elijo Lagoon is a reserve, with recreational fishing allowed in certain areas. Lagoons with mouths open to the ocean may be important nurseries for spawning and juvenile gamefish and commercially important marine species.

Placement of bridge support columns in any of the lagoons during construction could limit the functions of the lagoons as ancillary support for marine fisheries. With control of sediment release and turbidity by BMPs for water quality control, the commercial fishery enterprises at Agua Hedionda Lagoon would not be adversely affected during construction. None of the build alternatives would permanently affect current recreational or marine fisheries. The temporary impacts would be localized to the vicinity of the bridges (direct and indirect), and due to their limited extent and duration, as well as the BMPs that would be implemented and maintained, would be expected to have less than significant effects on fisheries. Recreational uses in the Study Area for the I-5 NCC project are discussed in Section 3.1, "Land Use," of the DEIR/DEIS and the Supplemental Information Related to Lagoons," in the SDEIR/SDEIS.

### **Water-Related Recreation**

In the middle basin at Agua Hedionda Lagoon, between the railroad bridge and the I-5 bridge, kayaks are used at a YMCA summer camp. A small boat marina is located in the eastern basin where active recreation, such as boating, water skiing and wake boarding, personal watercraft use, sailing, and windsurfing, is allowed. Small recreational vessels are allowed in the Agua Hedionda basins, but no vessels travel between the basins due to historic hydrologic siltation, growth of plant species obstructing passage, and human activity in the area.

Except at Agua Hedionda Lagoon, there is little or no human water-related recreational activity formally practiced at any of the waters in the project area inland from the ocean beaches. None of the lagoons are considered navigable by the U.S. Coast Guard. Predominant water-related recreation is passive, such as photography, hiking, running, and wildlife viewing, and these activities occur at all aquatic locations in the project Study Area.

Personal water craft are not allowed in San Elijo Lagoon. The mouth frequently closes and the channel is narrow and not very deep at low tide. There is no place to launch a motorized vessel. The majority of the lagoon is an ecological reserve and is not open to active recreational use, although small water craft may be used by biologists or other scientists reconnoitering, surveying, or monitoring the lagoon.

Only small watercraft can navigate the San Dieguito River in the project area. Kayaks or canoes can navigate the lagoon channel, but, during resource surveys for the I-5 NCC project, the only vessels observed within the lagoon were platforms used for sampling fish and invertebrates related to the large restoration project that began in 2007.

Buena Vista Lagoon is a reserve and no recreational vessels are allowed to operate in it except for scientific monitoring. Only kayaks and canoes can navigate the lagoon due to thick vegetation, low bridges, and shallow water in some areas.

Batiquitos Lagoon is also an ecological reserve. The only motorized vessels allowed are dredges that remove sediment from the lagoon and small craft for scientific monitoring of the lagoon. Only small personal water craft or small motorized boats can navigate under the lagoon's bridges.

There is currently little or no use of the San Luis Rey River by any vessels. Upstream of the I-5 bridge, vegetation is dense and the river is not navigable except possibly by kayaks or canoes.

In short, none of the build alternatives would have a discernible difference on water-related recreation, and any minor potential effects (direct or indirect) would be temporary and localized to the vicinity of the bridges. Recreational uses in the Study Area for the I-5 NCC project are discussed in Section 3.1, "Land Use," of the DEIR/DEIS.

## **Aesthetics**

Segments of I-5 in the project area offer expansive views of river valleys, coastal lagoons, beaches, and other natural scenic resources unmatched by any other freeway in southern California. In development near the lagoons, large retaining walls and noise walls are mostly absent, except near Lomas Santa Fe Drive where large retaining walls were recently constructed. Throughout most of the corridor, however, both developed and natural landscape features remain in the forefront, opening scenic views from the road and screening views of the freeway from adjacent communities.

The principal ACOE jurisdictional areas are the lagoon systems, with a small amount of active water-related recreation but predominantly passive uses such as hiking and wildlife viewing, largely restricted to pathways and walks. Some pathways and walks are not officially developed and some are formally developed by conservation organizations. The I-5 bridges over all the lagoons are noticeable features of the westward viewscapes almost everywhere east of the railroad bridges in/over the ACOE jurisdictional areas and open water of the lagoons.

New bridges would be built at Los Peñasquitos Creek, and a new bicycle bridge would be constructed at Old Sorrento Valley Road across Carmel Creek to replace the culverts currently there. At Carmel Creek

and San Dieguito, San Elijo, Batiquitos, Agua Hedionda, and Buena Vista Lagoons, the I-5 bridges would be wider than the existing ones by 15 feet (at Carmel Creek) to 196.1 feet. The existing bridges at San Elijo, Batiquitos, Agua Hedionda, and Buena Vista Lagoons would be replaced, and the remaining bridges would be widened. The existing bridges at San Elijo, Batiquitos, and Buena Vista Lagoons would be replaced with longer bridges.

The completed bridges would remain prominent features in westward views from ACOE jurisdictional areas. Since those views are mostly of the sides of the bridges that run north and south, widening would not make the bridges more visually prominent than they are now. Lengthened bridges at three of the lagoons would remove abutments and fill a long or near the water, replacing them with a longer overall span that, for viewers at lagoon or nearby ground level, could open up westerly views under these bridges. Retaining walls would be smaller for the 8 + 4 with Buffer Alternative; larger retaining walls would be needed for the other build alternatives, with the scale mostly determined by the size of the overall alternative footprint.

During construction, views of the bridge sites would include falsework, scaffolding, construction vehicles, workmen, and similar features common at construction sites. These features would be obtrusive in views of the freeway from ACOE jurisdictional areas, but would be temporary, localized to the bridge vicinity, and visible only during construction.

Some visible turbidity may occur near the bridges during construction, but because BMPs to minimize such indirect effects, including coffer dams where advisable, would be employed, sediment plumes visible at significant distances from the construction areas would be avoided. Any such effects would be transient and of limited scale in the vicinity of the bridges, disappearing with the cessation of construction. Excessive turbidity would not be expected from the constructed facility under any build alternative and would be absent in the No Build Alternative. There would not be any long term operational effects from work in and around waters of the U.S., although, as noted for all the build alternatives, the views westerly under the new bridges at San Elijo, Batiquitos, and Buena Vista Lagoons could benefit from the longer bridges at those locations. A full discussion of the visual effects of the I-5 NCC build alternatives is found in Section 3.7, “Visual/Aesthetics,” of the DEIR/DEIS.

### **Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves**

Caltrans on behalf of FHWA has identified and evaluated the I-5-NCC project’s potential effects on parks and recreational facilities in Section 3.1, “Land Use,” in the DEIR/DEIS, including natural preserves and active municipal parks in the corridor and has continued coordination with the officials with jurisdiction for these resources. Six municipalities within the project area contain parklands and recreational facilities. The proposed project would have minor, direct impacts on four of these facilities. Indirect effects, such as noise, glare and lighting would also be minor and would not affect the functions of these areas. The effects of the build alternatives on each of the four facilities are discussed below.

### **San Dieguito River Park**

None of the four build alternatives would impede the ability of the San Dieguito River Park to function as a publicly owned regional open space park. Access to the park would not be impeded temporarily or permanently. The proposed project, when complete, would not interfere with existing trails or planned trails. There may be some temporary, short term interruption of trail use under the I-5 bridge during construction and some impacts would occur to the area on the west side of I-5 just north of the San Dieguito River during construction of the connection of the I-5 North Coast Bike Trail (I-5 NC Bike Trail) to the existing trail. The 8 + 4 with Buffer would not impact the Coast-to Crest trail on the east side along I-5; however, the other build alternatives might have a temporary construction easement to build a retaining wall to ensure the trail is not permanently impacted. The location of the crossing of the park by I-5 would remain the same, and none of the build alternatives would substantially alter views from the river park. Increases in noise levels would not be noticeable to park users. Areas of natural vegetation disturbed during construction (temporary) would be reestablished with native plant species.

### **San Elijo Lagoon Ecological Reserve**

All of the build alternatives would remove up to 0.13 acre of land from the San Elijo Lagoon Ecological Reserve south of the lagoon on the west side for the I-5 NC Bike Trail and for fill at the shoulders of the freeway. None of the effects of the alternatives would impede the ability of the reserve to function ecologically. None of the build alternatives would adversely affect existing trailheads or designated trails at the San Elijo Ecological Reserve; all the build alternatives include enhancement of the reserve's user access and trails. New trails and bridge crossings would be added. An illegal trail under the bridge would be closed during bridge construction, at least temporarily; however, a new legal trail would be constructed on a bench under the bridge as a secondary use of the land. The visual character of the reserve would not be measurably altered by the freeway improvements. A very small quantity of vegetation would be removed, but would be reestablished after completion of construction. Increases in traffic-related noise would not be noticeable to park users and would not impair the wildlife habitat functions of the reserve. It is not expected that the use of up to 0.13 acre of reserve land would impact any of the activities, features, or attributes of the reserve.

### **Paul Ecke Sports Park and YMCA**

Three of the four build alternatives might remove 0.57 acre of the sports park property, none of which is usable for park activities, for freeway shoulders and grading of the slope. The 8+4 with Buffer Alternative avoids any use of the park land. Access to the existing park and its visual character would be unaffected. Increases in traffic-related noise would not be noticeable to park users.

### **Agua Hedionda Lagoon**

Agua Hedionda Lagoon is under private ownership but is leased to the City of Carlsbad for recreational and commercial uses. CDFW and Hubbs/Sea World jointly manage a white seabass research facility in the lagoon, and CDFW also manages a 186-acre ecological reserve at the eastern end of the lagoon. The grading for slope and some fill for the build alternatives would remove up to 2.22 acres of the lagoon property, but would not affect the 186-acre CDFG Ecological Reserve. Public and private access to the

lagoon would be increased along the new trail on the east side of I-5. The proposed project would not interfere with existing trails or planned trails. The visual character of the lagoon would be unchanged; the use of small amounts of City leasehold land would simply extend the Caltrans right-of-way boundary outward slightly and ultimately result in a view of the area adjacent to I-5 very similar to the existing condition. As noted in Section 3.1, “Land Use,” of the DEIR/DEIS, none of the build alternatives would significantly affect any of the lagoon activities, features, or resources, or any public or private access to the lagoon. On completion of construction, visual character of the lagoon would be unchanged from the existing condition.

### **Applicable Regulations**

Caltrans and FHWA have a statutory obligation to conform to the requirements of the California Public Park Preservation Act of 1971 (Public Resources Code § 5400 et seq.), which provides that a public agency that acquires public parkland for non-park use must either pay compensation that is sufficient to acquire substantially equivalent substitute parkland or provide substitute parkland of comparable characteristics.

In addition, Section 4(f) of the Department of Transportation Act of 1966 (49 United States Code 303) states that “it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.” Section 4(f) specifies that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over resource), only if the following occurs:

- there is no prudent and feasible alternative to using that land, and the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use; or
- consideration of any impact avoidance, minimization, and mitigation or enhancement measures, results in a *de minimis* impact on a Section 4(f) property.

In summary, impacts of any of the build alternatives on Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves are either nonexistent or not significant and any approved build alternative would conform to the federal requirements for use of park property.

## **Subpart G: Evaluation and Testing**

### **Evaluation and Testing**

To minimize impacts to special aquatic sites and other waters of the U.S., fill material composed of sand, soil, gravel, or other naturally occurring inert material should be evaluated to ensure that it is free of

chemical, biological, or other contaminants. The extraction site should be examined to assess whether it is sufficiently removed from sources of pollution to provide reasonable assurance that the discharge material is not a carrier of contaminants. If the evaluation described above indicates the material is not a carrier of contaminants, then the required determinations pertaining to the presence or absence of contaminants can be made without testing. Evaluation must be in accordance with the requirements of 40 CFR Section 230.60 and, if testing is required, it must comply with the requirements of 40 CFR Section 230.61.

Evaluation and testing have not been conducted for the proposed project. Caltrans would follow the required procedures to ensure that no adverse impacts related to the deposit of fill material into waters of the U.S. would occur. All fill material deposited into waters of the U.S. would be evaluated for the presence of contaminants, and if the evaluation showed that the material was or could be contaminated, it would be tested for chemical, biological, and other contaminants before deposit. Contaminated material would not be deposited into waters of the U.S.

The I-5 NCC project grading will have surplus cut material than will be used as fill to construct the project, so all suitable cut material would be used on-site for roadway fill, if possible. Widening and deepening of the channels under the bridges at San Elijo, Batiquitos, and Buena Vista Lagoons would involve the removal of sediment by dredging. Dredge material would be removed from the channels with no more than incidental fallback, and would either be placed in upland areas in such a manner that there would be no return flow to waters of the U.S., or disposed of appropriately in an upland landfill with no possibility of return to waters of the U.S. Moreover, any barge, scow, or similar vessel used to temporarily store and/or haul the dredged material would be operated in a manner that precludes the spilling or other release of dredged material or associated water back into waters of the U.S. Therefore, no Section 404 discharge into waters of the U.S. would occur from the dredging or material handling or disposal from any of the build alternatives.

## **Cumulative Impacts Assessment**

The DEIR/DEIS for the project considered 14 other past, present, and reasonably foreseeable projects within the I-5 NCC likely to be affected by the proposed project or other build alternative. The cumulative impacts discussion from the DEIR/DEIS (Section 3.25, pp. 3.25-1 through 3.25-6) is hereby incorporated by reference. Environmental issue areas with a potential for cumulative impacts when considered in conjunction with the I-5 NCC project were identified. The DEIR/DEIS defined a Resource Study Area (RSA) within which impacts on specific resources by the cumulative projects would interact for each cumulative issue. The results for issues relevant to the analysis are presented in Table 11; specifically relevant issues are visual/aesthetics, natural biological communities, water quality, and wetlands/other special aquatic sites. The DEIR/DEIS conclusions regarding the issues of relevance to this analysis are summarized briefly below. The No Build Alternative would not result in a change in physical conditions and would therefore result in no cumulative impacts.

## **Visual/Aesthetic Resources**

Several planned projects in or near the project limits could have visual impacts. The I-5/Genesee Avenue Bridge Widening and Interchange Improvement, I-5/SR-56 Interchange, I-5/SR-78 Interchange, and the recently completed I-5 Lomas Santa Fe Road Interchange projects would all potentially contribute to visual impacts along the I-5 corridor. The LOSSAN project would affect visual quality in the lagoon areas by replacing or modifying railroad bridges near and across the lagoons, depending on design. Other projects that are located within the RSA, but would not contribute to overall visual impacts to ACOE jurisdictional areas, include the Riverview Office Project in Del Mar, the Mixed-Use Solana Beach Train Station, Beacon's Beach Access Project in Encinitas, the construction of the Northern Inlet Jetty in Carlsbad, and the Oceanside Pier Resort. These projects, although located within the RSA, are not located within the viewsheds of ACOE jurisdictional areas and would not contribute to cumulative visual effects associated with the proposed project under any of the build alternatives. Sensitive design of the LOSSAN bridges, combined with the longer-span bridges proposed by the I-5 NCC project, could result in no overall adverse impacts to visual resources in views from ACOE jurisdictional areas for all I-5 NCC build alternatives.

**Table 11. Projects in DEIR/DEIS Cumulative Impacts Analysis**

Project	Location	Proposed Development	Identified Cumulative Impacts	Project Status (January 2013)
<b>City of San Diego</b>				
Scripps Hospital La Jolla Master Plan	Genesee Avenue and I-5	Demolition of existing hospital and construction of three hospital towers, two medical office buildings, outpatient care pavilion and additional parking	Visual Resources – Cumulative impacts related to aesthetics/neighborhood character and lighting/glare identified as less than significant.  Traffic – Less than significant impacts	DEIR Public Review ends January 4, 2013; Initial construction projected for 2015
Flowerhill Mall Expansion Project	Santa Fe Avenue and I-5	Demolition of movie theater, improvements to existing retail center and construction of new grocery store, 400-space parking structure, 28,000-square-foot medical space and 8,000 square feet of retail space	Visual Resources – No cumulative impacts identified for neighborhood character/visual effects.  Traffic – Less than significant impacts	Final Recirculated EIR complete February 2011; Construction completion projected for early 2013
One Paseo Project	Del Mar Heights Road and El Camino Real	Construction of mixed-use, office, and retail uses	Visual Resources – Cumulative impacts related to viewsheds and neighborhood character identified as less than significant.  Traffic – Less than significant impacts	DEIR Public Review ended May 14, 2012; FEIR under preparation as of December 2012 with no projected EIR completion or project construction dates
Via De La Valle Road widening	Via De La Valle from El Camino Real west to San Andreas Drive	Widening of existing two-lane road segment to four lanes	Information to be made available once environmental review document prepared; anticipated that this project will have less than significant impacts for visual and traffic.	Project is in review phase
San Dieguito River Park Nature Center	Via De La Valle and San Andreas Drive	Construction of nature center, parking and educational facilities	Visual Resources – Less than significant impacts  Natural Communities – Less than significant impacts due to graded condition of site  Traffic – Less than significant impacts	Project is in review phase

Project	Location	Proposed Development	Identified Cumulative Impacts	Project Status (January 2013)
<b>City of Del Mar</b>				
Riverview Offices Project	Jimmy Durante Boulevard and San Dieguito Drive	Construction of two multi-level commercial office buildings at the southeast corner of the intersection	Visual Resources – Potential impacts not identified  Natural Communities - Potential impacts mitigated to less than significant  Traffic – Less than significant impacts	DEIR completed in December 2007; site remains undeveloped
22 <sup>nd</sup> District Agricultural Association Fairgrounds and Horsepark Master Plan	Via De La Valle and Jimmy Durante Boulevard and Via De La Valle and El Camino Real	Renovation of existing exhibit halls and barns; construction of office/ticket box space, (potential) hotel, health club, and fire station; restoration of salt marsh habitat; enhanced parking and support for seasonal train platform	Visual Resources – Less than significant impacts to I-5 corridor associated with new construction near freeway. Significant impacts related to new light and glare sources.  Natural Communities – Direct removal of 0.16 acre of native vegetation communities, including Diegan coastal sage scrub, southern coastal salt marsh and riparian habitat. Indirect impacts to riparian habitat in Stevens Creek (0.04 acre).  Wetlands and Other Waters – Temporary and permanent impacts to jurisdictional areas, including up to 0.49 acre of federal and state waters.	Project approved in April 2011; CEQA litigation settled in December 2012
<b>City of Solana Beach</b>				
Solana Beach Gateway Resort Project	Highway 101 and E. Cirde Drive	Construction of 30-unit hotel development with associated clubhouse, outdoor pool, and spa	Wetlands and Other Waters – Substantial loss of wetlands from San Elijo Lagoon.	Project terminated. Site purchased by San Elijo Lagoon Conservancy for dedication as an open space park in December 2011
Mixed-Use Solana Beach Train Station	Lomas Santa Fe Drive and North Cedros Avenue	Parking facility and mixed-use, transit-oriented development	Visual Resources – Substantial visual impact; cumulative impacts to visual/aesthetics associated with proposed building heights which are incongruent with surrounding land uses.	Approved

Project	Location	Proposed Development	Identified Cumulative Impacts	Project Status (January 2013)
U.S. Army Corps of Engineers, Encinitas and Solana Beach Shoreline Protection Project	Up to 8 miles of shoreline in the cities of Encinitas and Solana Beach	Restoration of shoreline to reduce storm-related wave attack and shoreline erosion along the base of the associated bluffs and beaches. Both structural and non-structural approaches to be considered, including off-shore sand dredging local beach replenishment over a 50 year period, and notch infills	Information to be made available once environmental review document prepared	Environmental review phase pending
<b>City of Encinitas</b>				
Hall Property Community Park	Santa Fe Drive and I-5	44 acres of public park, including skate park, dog park, and fields for soccer, softball, baseball and unrestricted play	Visual Resources – Substantial visual impact cumulative impacts to visual/aesthetics associated with light and glare extending to adjacent properties.	Final EIR approved 2008, Coastal Commission approval finalized in 2009, construction began August 2012 and is scheduled for completion by the end of 2013
Coral Cove Residential Project	Ashbury Street and Vulcan Avenue	69 units on a 10-acre project site	Wetlands and Other Waters – Substantial water quality impacts during construction.	Project approved 2006; site graded but remains undeveloped
Scripps Hospital Encinitas Master Plan	Santa Fe Avenue and I-5	Modification and expansion of existing hospital; including two-story facility for emergency department and medical-surgical beds, new central energy plant and various infrastructure improvements	No significant cumulative impacts identified for visual resources, natural communities, or wetlands/other waters	Second phase of construction to be completed by 2014.
North 101 Corridor Streetscape Improvement	Highway 101 from A Street to La Costa Avenue	Landscaping and circulation improvements	Visual Resources – Beneficial effects to aesthetics of road.	Project approved; construction began June 2012
<b>City of Carlsbad</b>				
Northern Inlet Jetty Restoration	Agua Hedionda Lagoon	Reconstruction/seaward extension of existing northern tidal inlet jetty	Visual Resources – Potential impact due to decreased beach width south of northern inlet. Natural Communities – Loss of surfgrass habitat offshore of North Beach. Wetlands and Other Waters – Potential for decreased beach width at Middle Beach and South Beach from deflection.	Project in review phase

Project	Location	Proposed Development	Identified Cumulative Impacts	Project Status (January 2013)
Agua Hedionda Sewer Lift Station and Force Main Replacement	Between Agua Hedionda Lagoon and the Encina Water Pollution Control Facility	Approximately 2.35 linear miles of sewer trunk line, a 50-million gallon per day sewer lift station, a 140-foot sewer support bridge, and associated improvements	No known information available on the status of the CEQA document or related cumulative issues/impacts	Project MND approved by City December 2011
Westfield Carlsbad Project	El Camino Real and Marron Road	Renovation of existing shopping center, including construction of 35,417 square foot expansion	Visual Resources – No impacts to scenic vistas, corridors or resources.  Natural Communities – No impacts to natural communities.  Wetlands or Other Waters – No impacts to jurisdictional areas.	Project in review phase; construction projected for Spring 2013.
Caruso Affiliated Project	Cannon Road and I-5	Retail and possible housing project on site occupied by agricultural fields	N/A	Application not yet submitted for review.
Carlsbad Energy Center Project (CECP)	Cannon Road and I-5	Construction of 558 Megawatt (MW) generating facility on site of existing Encina Power Station, including retirement of boiler units at existing facility	Visual Resources – Significant impacts from construction of new generating facility identified in the California Energy Commission (CEC) final decision document dated June 2012 (CEC-800-2011-004-CMF).	The CEC adopted the final decision for the CECP on May 31, 2012  The CEC will serve as CEQA lead agency during the CECP licensing.
<b>City of Oceanside</b>				
Oceanside Pier Resort	Pacific Street and Pier View Way	Development of 136 timeshare units, 32 hotel units, 4780 square feet of restaurant space, and 7730 square feet of retail space	Visual Resources – Substantial visual impact due to mid-rise towers. Incongruent with current visual character.	Project completed
Mesa Ridge Project	Mesa Drive and Foussat	Development of 70 townhomes on a 23.8-a.c site	Natural Communities – Project results in permanent loss of 12.20 a.c of non-native grassland. Mitigation to occur at a 0.5:1 ratio.	EIR approved 2008; site at northeast corner of Mesa Drive and Foussat Road remains undeveloped
Inns at Buena Vista Creek	Jefferson Avenue and SR-78	Construction of a business hotel, an extended stay hotel, and a family-oriented vacation-type hotel for a total of 426 rooms	N/A	Application under review

Project	Location	Proposed Development	Identified Cumulative Impacts	Project Status (January 2013)
<b>Caltrans Highway Projects</b>				
I-5/Genesee Bridge Widening and Interchange Improvement	City of San Diego at I-5/Genesee Avenue Interchange	Re construction of existing Genesee Avenue Interchange; add southeast and northwest loops; signalize interchange	<p>Visual Resources – Potential impacts due to retaining walls and structures mitigated to less than significant. Cumulative impacts concluded to not be substantial.</p> <p>Natural Communities – Potential impacts to coastal sage scrub, coyote brush scrub, and non-native grassland mitigated to less than significant. Cumulative impacts concluded to not be substantial.</p> <p>Wetlands and Other Waters – Potential impacts to southern willow scrub and non-wetland streambed mitigated to less than significant. Cumulative impacts concluded to not be substantial.</p>	MND/EA approved June 2011; construction is scheduled for Fall 2013
I-5/SR-56 Direct Connectors	City of San Diego I-5/SR-56 Interchange	Construct HOV/Managed Lanes freeway-to-freeway connectors via direct ramps or local street connections	<p>Visual Resources – Potential impacts due to reduction in screen plantings, retaining walls, and soundwalls not mitigated to less than substantial; cumulative impacts would occur</p> <p>Natural Communities - Potential impacts to coastal sage scrub, southern mixed chaparral, and southern maritime chaparral mitigated to less than substantial. The proposed project was concluded to not result in significant adverse cumulative impacts to natural communities.</p>	Draft EIR/EIS completed public review; environmental estimated completion in late 2013
I-5/Lomas Santa Fe Drive Interchange	City of Solana Beach at interchange of I-5 and Lomas Santa Fe Drive	Construct Auxiliary lanes and modify existing interchange	Visual Resources – Overall moderate adverse effect of visual quality of moderate extended duration due to the introduction of new structures and improvement of existing structures.	Project completed

Project	Location	Proposed Development	Identified Cumulative Impacts	Project Status (January 2013)
I-5/SR-78 Interchange	I-5 at SR-78	Direct connectors, potentially by construction of a Managed Lane/HOV Connector, between I-5 and SR-78	Visual Resources – Potential impacts due to Managed Lane/HOV Connector ramps.  Wetlands and Other Waters – Potential impacts to wetlands.	Preliminary design phase; environmental review set to begin in Spring 2013
<b>LOSSAN</b>				
Los Angeles to San Diego (LOSSAN) Rail Improvement, including the projects listed below in the North Coast Corridor*	From Los Angeles to San Diego	Program-level evaluation of double-tracking of railroad tracks and other improvements including bridge and track replacements, new platforms, pedestrian undercrossings, and other safety and operational enhancements	Programmatic document identified cumulative effects for overall project, applicable to all projects listed below.  Community Cohesion – Possible impacts include displacement of commercial and residential properties; community and neighborhood disruption.  Visual Resources – Potentially significant cumulative impacts to visual/aesthetics.  Natural Communities – Potential impacts to several sensitive biological species and habitats.  Wetlands and Other Waters – Potential impacts to several water resources and wetlands.	Environmental completed 2009
Eastbrook to Shell Double Track (San Luis Rey River Bridge)	North Oceanside Double Track ( <i>Eastbrook to Shell</i> )	Add approximately 0.5 mile of second track just south of SR 76 to south of Harbor Drive and replace San Luis Rey River Bridge	Cumulative effects identified in programmatic document as described above	Design completion Fall 2014
San Luis Rey Transit Center	Vandegrift Boulevard and North River Road	New bus transit facility including four covered shelters with seating and restrooms	Cumulative effects identified in programmatic document as described above	Construction began April 2012, estimated completion Spring 2013
Oceanside Through Track	Oceanside Transit Center	Add platform and third track to accommodate COASTER and/or Metrolink trains	Cumulative effects identified in programmatic document as described above	Construction to begin early 2013
Carlsbad Village Double Track	From Carlsbad Village Drive to the north	1.1 miles of double track, including a new rail bridge across the Buena Vista Lagoon	Cumulative effects identified in programmatic document as described above	Design completion late 2014

Project	Location	Proposed Development	Identified Cumulative Impacts	Project Status (January 2013)
Carlsbad Double Track	From Carlsbad Village southward past Cannon Road	1.9-mile second main track and a new rail bridge over the Agua Hedionda Lagoon.	Cumulative effects identified in programmatic document as described above	Construction completed Spring 2012
Poinsettia Station Improvement	Poinsettia Station in Carlsbad	Improve station to include new grade-separated pedestrian crossing and signals	Cumulative effects identified in programmatic document as described above	Construction to begin late 2013
Encinitas Pedestrian Crossing (Santa Fe)	Santa Fe Drive as well as at El Portal Street, Montgomery Avenue, and Hillcrest Drive.	Four grade-separated pedestrian crossings including utility relocation, underpasses, landscape improvements, environmental mitigation, and street crossing improvements on adjacent roadways	Cumulative effects identified in programmatic document as described above	Completion of Santa Fe Drive undercrossing construction in early 2013
San Elijo Lagoon Double Track	Cardiff to Craven	Add 1.5 miles of second track, enhance existing pedestrian crossing at Chesterfield Drive and replace San Elijo Lagoon Bridge	Cumulative effects identified in programmatic document as described above	Construction to begin late 2014
San Dieguito Double Track and Platform	From just south of Dahlia Street in Solana Beach and continuing 1.1 miles south across the San Dieguito Lagoon	Replace 96-year-old San Dieguito Railway River Bridge wooden trestle, add 1.1 mile of second mainline rail track south of Solana Beach, and add a special events platform at the Del Mar Fairgrounds for NCTD COASTER and Amtrak Pacific Surfliner trains.	Cumulative effects identified in programmatic document as described above	Environmental completion early 2014
Del Mar Bluffs Stabilization 3	Between Seagrove Park and Torrey Pines State Beach in the City of Del Mar	Stabilize portions of the 1.6 miles of coastal bluffs with soldier piles and an architecturally enhanced pile cap	Cumulative effects identified in programmatic document as described above	Construction completed Spring 2012
Los Peñasquitos Lagoon Bridges	Los Peñasquitos Lagoon	Replacement of three aging railroad bridges	Cumulative effects identified in programmatic document as described above	Design in process
Sorrento Valley Double Track	From the Sorrento Valley Station to approximately 1.1 miles to the north	Add a second mainline rail track, raise portions of track bed, replace three wooden trestle bridges, install embankment protection system along the western side of the track adjacent to Los Peñasquitos Creek, build retaining walls adjacent to the tracks near the parking lots	Cumulative effects identified in programmatic document as described above	Construction to begin Fall 2013 and completed by mid-2015

Project	Location	Proposed Development	Identified Cumulative Impacts	Project Status (January 2013)
Sorrento to Miramar Phase 1	Between the Sorrento Valley Station and Miramar Road in the City of San Diego in two phases	Add 1.1 miles of second track and replace a wooden trestle bridge south of the Sorrento Valley COASTER station	Cumulative effects identified in programmatic document as described above	Construction completion late 2013
Sorrento to Miramar Phase 2	Between the Sorrento Valley Station and Miramar Road in the City of San Diego in two phases	Add 2.0 miles of passing track to the coastal rail corridor between I-805 and Miramar Road and straighten the sharp curves in this segment	Cumulative effects identified in programmatic document as described above	Design completion early 2015

## Natural Biological Communities

Development over time throughout the coastal region has reduced the amount of native habitat and species in the region and also has limited the ability to expand habitat around the lagoons and large open space areas. These past impacts are considered cumulatively significant. However, there is currently a large effort to reestablish salt marsh habitat around San Dieguito Lagoon, and there are plans to restore San Elijo, Agua Hedionda, and Buena Vista Lagoons. Planned restoration projects for San Elijo and Buena Vista Lagoons propose to reduce tidal muting and increase fluvial and tidal flows and wetland/other special aquatic sites in the lagoons. Projects within the corridor with the potential to directly contribute to incremental cumulative impacts to natural biological communities in ACOE jurisdictional areas include the LOSSAN railroad double-tracking and the construction of the connector ramps at I-5 and SR-78 near Buena Vista Lagoon.

Where the San Elijo, Batiquitos, and Buena Vista Lagoon channels would be dredged and widened to optimize tidal and fluvial flows, many benthic organisms would be impacted by construction but would be expected to recolonize the channel after completion of construction. If projects that would disturb the substrate in the San Elijo, Batiquitos, and Buena Vista Lagoons are constructed at the same time or nearly the same time as the I-5 NCC project, there would likely be cumulative impacts on such organisms. Because the construction schedules for such projects other than the I-5 NCC project are speculative, the occurrence or severity of such cumulative impacts is uncertain, but any such effect would be expected to be temporary.

The LOSSAN project, combined with any of the build alternatives of the I-5 NCC project, has the potential to incrementally impact additional aquatic habitats and sensitive species. The I-5/SR-78 interchange project intends to cross wetland habitat and other special aquatic sites at Buena Vista Lagoon with abutments outside the wetland areas; however, wetlands/other special aquatic sites would still be impacted by bridge columns. Mitigation for the I-5/SR-78 interchange project would occur in advance of that project, combined with mitigation for the I-5 NCC project. The LOSSAN project may build longer railroad bridges and remove some of the fill in the coastal lagoons in the I-5 NCC project area. There is a programmatic environmental document for the LOSSAN project that anticipates significant wetland and other sensitive natural-communities impacts along the corridor. Two smaller foreseeable future projects, the Northern Inlet Jetty Restoration in Carlsbad and the Mesa Ridge Project in Oceanside, would also contribute to loss of habitat in the RSA.

Depending on the alternative, the I-5 NCC project would have an incremental contribution of up to 19.69 acres of wetland loss and 96.79 acres of sensitive upland loss (10 + 4 with Barrier Alternative). The incremental loss contributing to cumulative impacts would be lowest for the SDEIR/SDEIS 8 + 4 with Buffer Alternative, with a loss of 62.57 acres of sensitive upland and 14.13 acres of wetlands and other waters of the U.S. However, the loss of waters of the U.S. associated with each build alternative would be offset by approximately 2.52 acres onsite as a result of the channel inlet widening activities under the San Elijo Lagoon, Batiquitos Lagoon, Buena Vista Lagoon, and Carmel Creek bridges (see Table 12 below for specific acreages by location). For LOSSAN, similar impacts to wetlands and other waters of the U.S.

have been conservatively estimated at 27 acres. The I-5 NCC project would impact territories of coastal California gnatcatcher and light-footed clapper rail; LOSSAN could also contribute to impacts to these species. Within each of the 11 identified watersheds, the impacts are relatively small; however, within the cumulative projects RSA, the contribution of I-5 NCC project impacts to natural communities and sensitive species would be cumulatively considerable.

Construction schedules for both LOSSAN and the I-5 NCC project are long-term estimates and are subject to change due to a number of factors, including funding. LOSSAN would be parallel to the I-5 NCC and its construction would affect the same lagoons, the San Luis Rey River, and some of the smaller drainages, and LOSSAN construction in some of these areas could occur at the same time as construction of the I-5 NCC project. Some of the other future cumulative projects could also be under construction at the same time as either the I-5 NCC or LOSSAN projects or both. While the uncertainty of the schedules for the various projects does not allow for quantitative assessment of impacts, construction impacts of the I-5 NCC project in combination with other projects could be cumulatively considerable.

The BO issued for the 8 + 4 with Buffer Alternative states that USFWS considered the “effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area.” The BO concludes that “Federal actions that are unrelated to the proposed action are not considered...because they require separate consultation pursuant to section 7 of the [ESA]” and that USFWS is “unaware of any future non-Federal actions that are reasonably certain to occur within the action area and may affect gnatcatchers, rails, gobies, manzanita, and critical habitat for the gnatcatcher and goby.”

As discussed in Subpart H below, Caltrans plans for the I-5 NCC project and the LOSSAN project are being coordinated with resource and regulatory agencies planning and executing regional restoration and enhancement work. Nonetheless, without mitigation, the I-5 NCC project, LOSSAN, and other transportation projects in the I-5 NCC would contribute to the loss of natural biological communities in the I-5 corridor in San Diego County. A Resource Enhancement and Mitigation Program (REMP) is being developed collaboratively for the I-5 NCC project, LOSSAN rail project, smaller transportation projects, and the lagoon restoration projects (being separately planned and evaluated), which, if implemented, would be expected to compensate for unavoidable impacts natural biological communities associated with the I-5 NCC project and others in this corridor (See Subpart H, below).

## **Water Quality**

The build alternatives for the I-5 NCC project, as noted earlier in this analysis, would incorporate BMPs and design features to reduce the significance of impacts on water quality. This would include, wherever there is deposit of fill material into waters of the U.S., measures required by conditions of permits from ACOE as well as other agencies such as CCC and RWQCB. Dredging to deepen and widen the lagoon channels below the proposed I-5 bridges at San Elijo, Batiquitos, and Buena Vista Lagoons might not require a Section 404 permit from ACOE if it adheres to conditions to protect water quality discussed in Subpart H (below) of this analysis.

Projects such as LOSSAN and the restoration plans for San Elijo Lagoon and Buena Vista Lagoon would have the potential for the same kind of water quality construction impacts that could occur, absent minimization and avoidance measures, as a result of the I-5 NCC project, as discussed elsewhere in this analysis, if they were to take place in the same or nearly the same time period as the I-5 NCC construction. However, any such project would be subject to the same agency and regulatory oversight as the I-5 NCC project, so that cumulative water quality impacts during construction would be reduced to a less than significant level.

The channel optimization at the I-5 NCC bridge crossings of the San Elijo, Batiquitos, and Buena Vista Lagoons have been designed to complement any version of the known restoration plans for those lagoons, and the LOSSAN project is also committed to complement the restoration plans. In combination with the restoration plans for these three lagoons, the channel optimization proposed by any of the proposed build alternatives of the I-5 NCC project, would increase tidal and fluvial flows within the lagoons and would be expected to result in long-term water quality improvements.

### **Wetlands and Other Waters of the U.S.**

As noted in Natural Biological Communities, development over time throughout the coastal region has reduced the amount of native habitats, including wetlands and other waters of the U.S., in the region and also has limited the ability to expand such habitats around the lagoons and large open space areas. These past impacts are considered cumulatively significant. However, there is currently a large effort to reestablish salt marsh habitat around San Dieguito Lagoon, and there are plans to restore aquatic habitats in the San Elijo, Agua Hedionda, and Buena Vista Lagoons. The San Dieguito Wetlands Restoration Project was constructed at San Dieguito Lagoon in 2008. Planned restoration projects for San Elijo and Buena Vista Lagoons propose to reduce tidal muting and increase fluvial and tidal flows and wetland/other special aquatic sites in the lagoons. As discussed further below, San Diego regional planning entities are discussing a comprehensive study of all lagoons and identification of specific restoration opportunities within each.

Project impacts to wetlands and other waters of the U.S. would occur at the six lagoons, as well as the San Luis Rey River, Loma Alta Creek, Encina Creek, Cottonwood Creek, and other more minor drainages. The majority of project impacts to wetland habitats/other special aquatic sites would be associated with widening of the freeway corridor at the lagoons. Impacts to southern coastal salt marsh, coastal brackish marsh, coastal brackish marsh (disturbed), mud flat, and open water are primarily related to impacts at the lagoons. Overall, the proposed project would permanently impact, depending on the build alternative, 14.13 to 19.69 acres of wetland habitats and other waters of the U.S. (Table 3). The loss of waters of the U.S. associated with each build alternative would be offset by approximately 2.52 acres onsite as a result of the channel widening activities under the San Elijo Lagoon, Batiquitos Lagoon, Buena Vista Lagoon, and Carmel Creek bridges (see Table 12 below for specific acreages by location).

Other transportation projects may contribute to cumulative impacts to lagoon wetlands. The I-5/Genesee Bridge Widening and Interchange Improvements project would contribute to wetland impacts upstream of Los Peñasquitos Lagoon. The LOSSAN project could impact up to 27 acres of wetlands and other waters of the U.S., some of which are within the wetlands and other waters of the U.S that would be affected by the I-5 NCC project.

As discussed in Subpart H below, Caltrans plans for the I-5 NCC project and the LOSSAN project are being coordinated with the resource and regulatory agencies planning and executing regional restoration and enhancement work. Nonetheless, without mitigation, the I-5 NCC project, LOSSAN, and other transportation projects in the I-5 NCC would contribute to the loss of wetlands and other waters of the U.S. in the I-5 corridor in San Diego County. A REMP is being developed collaboratively for the I-5 NCC project, LOSSAN rail project, smaller transportation projects, and the lagoon restoration projects, which, if implemented, would be expected to compensate for the unavoidable impacts to wetlands and other waters of the U.S. (and State) associated with these projects (See Subpart H, below).

## **Subpart H: Actions Taken to Minimize Adverse Effects**

### **Design Iterations and Wetland/Special Aquatic Site/Other Waters Impact Minimization Efforts**

Many impacts of the proposed widening of the I-5 lagoon crossings, with respect to ACOE and state jurisdictional habitats, would be unavoidable because I-5 is an existing north-south transportation corridor that transects the east-west lagoons and other drainages. An effort to minimize impacts was an objective of the design effort for each of the build alternatives in the DEIR/DEIS. The following minimization efforts have been included in the project plans and would apply to each of the four build alternatives:

- To minimize impacts to all sensitive habitats, the freeway slopes were designed at a steeper 2:1 grade versus the standard 4:1 grade.
- To further minimize impacts, retaining walls were also included in the project design on cut slopes, but could not be used on fill slopes. Through analysis of lagoon sediment data from geotechnical borings, it was determined that lagoon soil liquefaction would prevent the use of large retaining walls to minimize the roadbed fill in the lagoon. Soil liquefaction requires that any structures taller than approximately 6 feet have support piles that are driven to bedrock, which is located at a depth of over 100 feet. All pilings for the bridge supports would be driven to this depth, but this would not be practical for retaining walls.
- Riprap is currently used to protect the existing abutments of the I-5 bridges, and would also be used to protect the abutments of the proposed bridges. Due to the depth of bridge pilings, riprap is not required to armor the channel bottoms (the current condition at the Batiquitos Lagoon channel).
- To avoid impacts to wetlands /other aquatic sites from fill associated with creation of 12-foot-wide bike/pedestrian paths, short retaining walls (6 feet or lower in height) would be used. In

addition, bike/pedestrian paths would be attached to the existing I-5 bridge structure where they directly cross over the lagoons, eliminating additional impacts to waters of the U.S.

- Caltrans funded studies to determine the optimum channel dimensions/cross-sections, combined with bridge lengths, to optimize tidal flushing and flood condition flows at the lagoons. At three lagoons, San Elijo, Batiquitos, and Buena Vista, where the results showed longer bridges would be needed, the longer bridges and channel design were integrated into the proposed project.
- Removal of the DAR at Cannon Road reduced the originally contemplated wetland/other special aquatic site impacts at Agua Hedionda Lagoon.
- The proposed project/LPA was designed to Caltrans standards to ensure the smallest-impact footprint. In addition, design exceptions were requested, reducing the footprint even more at spot locations.
- Auxiliary lanes were identified at only the locations where Caltrans standards require them for traffic purposes.
- DARs were designed to have a smaller central structure where vehicles leave and enter I-5 within the centermost lane. For example, instead of having two bridges, one for northbound and one for southbound traffic, these were combined to further reduce the project footprint.
- The DAR at Manchester Avenue was redesigned to be below grade, which shifted the alignment north, away from San Elijo Lagoon. In addition, the park and ride lot was reduced from 470 parking spaces to 150 parking spaces to further reduce the paved footprint.
- Additional funds were obtained to move replacement of the Batiquitos Lagoon Bridge to the first Phase of construction (prior to construction of a proposed HOV lane in the median). This would reduce the overall bridge widths required for staging the bridge replacements, thus reducing wetland/other special aquatic site impacts by more than one acre.

Buena Vista Lagoon was also proposed as a candidate to obtain funds to replace this bridge during the first phase of construction. However, due to funding shortfalls, and the proposed interchange improvements at I-5 and State Route 78, adjacent to the lagoon, a wider bridge may be necessary in the future. Because auxiliary lanes in each direction are proposed at Agua Hedionda Lagoon, resulting in the need for a wider finished bridge, accelerated timing of bridge replacement would not minimize wetland/other special aquatic site impacts at this location. The option to advance Buena Vista Lagoon Bridge is still being pursued, but it depends on finding funding and the I-5/78 interchange project; therefore, the larger footprint (conservative) is used for impact quantification in the current analysis.

## **Conservation Measures**

The following conservation measures would be required for implementation of any of the four build alternatives, as proposed by Caltrans and FHWA.

1. All native habitats outside the permanent and temporary construction limits would be designated as Environmentally Sensitive Areas (ESAs) on project maps. ESAs would be temporarily fenced during construction with orange plastic snow fence. No access would be allowed within the ESAs.
2. Due to the phased nature and duration of the project, preconstruction surveys would be completed to confirm sensitive species locations. This would ensure that the incidental take of species allowed by USFWS (BO) is accurate .
3. All removal of native vegetation or nonnative shrubs and trees within the impact areas would be completed outside of the bird breeding season (February 15 through September 15), if possible, to avoid impacts to nesting birds. Otherwise, a qualified biologist would thoroughly survey all vegetation during preconstruction surveys to ensure no nesting birds are on site. If nesting birds are identified on site, vegetation removal would be delayed until the chicks have fledged or the nest has failed.
4. Exclusion devices would be installed on bridge drain holes and ledges of bridges to be demolished during the nonbreeding season (September 1 through February 15) to prevent swallows, swifts, and any other birds or bats from nesting on or in them.
5. If pile driving is necessary for construction of bridge falsework and/or coffer dams for construction of cast-in-drilled hole bridge pilings, all pile driving near the lagoons would be completed outside the bird breeding season (February 15 through September 15) to minimize construction noise impacts to resident bird species.
6. Noise barriers would be installed at the edge of temporary impact areas near ESAs where feasible, depending on inundation and effective heights required for walls. Noise walls would not be effective where fill slopes are significantly higher than the affected area.
7. A channel large enough for fish movement would be kept open throughout construction at the San Luis Rey River and all of the lagoons.
8. Cofferdams, silt curtains, and/or other barriers would be used around column construction in the river or lagoons to contain sediment and debris.
9. All debris from the replacement of old bridges or construction of new bridges would be contained, so debris does not fall into rivers, streams, and lagoons.
10. During bridge construction activities in water at all lagoons and the San Luis Rey River, bubble curtains or other methods to minimize acoustical impacts to aquatic species would be implemented. These measures would be developed in conjunction with the resource agencies when the project design and construction methodology is further developed.
11. Preconstruction eelgrass surveys would be completed at all lagoons with the exception of Buena Vista Lagoon. In lagoons where eelgrass is identified in proximity to I-5 widening, eelgrass

surveys would continue during and after construction. If eelgrass is identified, mitigation would be implemented in accordance with the Resource Management Enhancement Management Program (REMP).

12. *Caulerpa* surveys would be completed before and after construction at each of the lagoons to ensure there is no infestation within the project limits. If *Caulerpa* is found, measures would be implemented to eradicate it from the area in coordination with the Regional Water Quality Control Board (RWQCB), NMFS, and CDFW.
13. Special care would be taken when transporting, using, and disposing of soils with invasive weed seeds. All heavy equipment would be washed and cleaned of debris before entering a lagoon area to minimize spread of invasive weeds.
14. A qualified biologist would be made available for both the preconstruction and construction phases to review grading plans, address protection of sensitive biological resources, and monitor ongoing work. The biologist shall be familiar with the habitats, plants, and wildlife of the project area, and shall maintain communications with the resident engineer, to ensure that issues relating to biological resources are appropriately and lawfully managed.
15. Bioswale locations have been identified along the freeway lanes and in loop ramps. Detention basins in loop ramps may also be constructed. Construction of these facilities would minimize potential impacts related to highway runoff constituents into wetlands.
16. Appropriate BMPs would be used to control erosion, sedimentation, and debris movement offsite into waters of the U.S. No eroded material, sediment, or debris would be allowed to enter the creeks, rivers, or lagoons.
17. Cut slopes would be revegetated with native upland habitats with composition similar to those habitats within the Study Area. Fill slopes and areas adjacent to wetlands and drainages would be revegetated with appropriate native upland and wetland species, similar to those currently found on site. The revegetated areas would have temporary irrigation and would be planted with native container plants and seeds selected by the qualified restoration biologist. At least 3 years of plant establishment/ maintenance on these slopes would be provided to control invasive weeds. Bioswales and detention basins would be planted with appropriate native species as determined by the qualified restoration biologist and storm water personnel. Slopes adjacent to developed urban areas would be vegetated with native and drought-tolerant noninvasive species selected by the qualified restoration biologist and landscape architect. Interchanges located in urban areas would be landscaped with native or ornamental noninvasive species. More than 86 acres of large slopes near lagoons and other open space would be revegetated with coastal sage scrub.

18. Duff from areas with coastal sage scrub, maritime succulent scrub, and maritime chaparral may be salvaged to the extent practicable to aid in revegetating slopes with native habitats. However, populations of African veldt grass and onion weed are expanding within the corridor, and duff would not be used from areas with infestations of these species, such as the areas between Del Mar Heights and Birmingham Drive.
19. All temporary impact areas would be revegetated with native species and reestablished to preexisting conditions, including return to original grade, as feasible.
20. Fueling of construction equipment would only occur at a designated area greater than 100 feet from drainages, lagoons, and associated plant communities to preclude adverse water quality impacts as required under Caltrans Storm Water Manuals and Specifications.
21. If lighting for construction is used at night, it would be shielded and directed away from ESAs and limited to the minimum amount needed for work.
22. Dust generated by construction operations would be controlled with construction site BMPs.
23. All trails would be fenced and signed to keep pedestrians on the trails and out of adjacent habitats. No night lighting would be used on trails. Some daytime lighting may be used under bridges for safety.
24. In dredging of waters of the U.S., no more than incidental fallback of dredged material would be allowed. Sediment would be placed in a Baker tank to separate sediment from water prior to disposal. Any barge, scow, or similar vessel used to temporarily store and/or haul the dredged material would be operated in a manner that precludes the spilling or other release of dredged material or the associated water back into waters of the U.S. Disposal of sediment either on the project site or offsite would be allowed only at sites with no possibility of return to waters of the U.S.

At San Elijo, Batiquitos, and Buena Vista Lagoons, bridge replacement, including bridge lengthening and channel optimization (wider and deeper), would involve removal of existing bridge abutments and removal of fill material from uplands immediately adjacent to waters of the U.S., which would allow establishment or reestablishment of wetlands and other waters of the U.S. in the removal areas. The new bike bridge proposed as part of this project on Old Sorrento Valley Road at Carmel Creek would replace existing culverts, also allowing reestablishment of wetlands and other waters of the U.S. The acreage suitable for reestablishment would be the same for all build alternatives, as presented in Table 12. These increases in waters of the U.S. would occur immediately in the vicinity where aquatic resource impacts would occur at San Elijo Lagoon, Batiquitos Lagoon, Buena Vista Lagoon, and Carmel Creek.

**Table 12. Wetland Reestablishment Allowed by Replacement of Bridges, All Alternatives**

<b>Location</b>	<b>Wetlands Established</b>
San Elijo Lagoon	1.10 acres
Batiquitos Lagoon	0.54 acre
Buena Vista Lagoon	0.47 acre
Carmel Creek	0.41 acre
<b>Total</b>	<b>2.52 acres</b>

Conservation measures would also be required for the 8+4 with Buffer Alternative by the BO issued by the USFWS (Attachment A).

## **Compensatory Mitigation**

### **Overview**

Caltrans worked collaboratively with various resource and regulatory agencies to develop the North Coast Corridor REMP to mitigate the unavoidable natural resource impacts of the I-5 NCC project, the LOSSAN rail project, and other surface transportation projects in the NCC. The program document describing the full scope of the REMP is attached. This overview describes the overarching concepts guiding the REMP and its implementation.

The 30 miles of coastline and coastal zone where the NCC is located contain unique and significant marine and environmentally sensitive resources. The Public Works Plan/Transportation Resource Enhancement Program (PWP/TREP) being developed under the California Coastal Act will identify and coordinate all of the surface transportation construction projects within the I-5 NCC and implement mitigation for impacts under one umbrella for California Coastal Commission permitting and federal consistency with the Coastal Act. Impacts of both the I-5 NCC project and the LOSSAN double-tracking project, along with some other projects (trails, train stations) would be mitigated through the REMP.

The REMP provides for mitigation planning and implementation through the I-5 NCC PWP/TREP process and the permitting processes of other regulatory and resource agencies to effectively mitigate I-5 NCC project impacts by addressing regionally significant resource establishment, restoration, enhancement, and preservation needs. Six major lagoon systems in the NCC coastal zone represent some of southern California’s most significant remaining natural resource areas. REMP measures include strategically acquiring reestablishment opportunities, preserving existing environmentally sensitive habitat areas, enhancing lagoon system function and values through transportation facility infrastructure improvements, and facilitating restoration plans, all within the I-5 NCC coastal zone area.

Protection of the I-5 NCC’s lagoon systems from potential future degradation and enhancement and expansion of habitat in these systems require comprehensive action, with mitigation efforts focused less on ratio-based mitigation and more on ecosystem-wide enhancements. Given the unique ecological value of the I-5 NCC’s lagoons, the benefits of improving the ecological function of the systems would exceed the benefits of pursuing only ratio-based mitigation efforts on the relatively small, fragmented, and isolated land areas remaining in the I-5 NCC that are suitable for biological establishment or

reestablishment. Using a broader, systemic approach to mitigation planning would also be in keeping with the 2008 Corps/USEPA Mitigation Rule.

REMP measures include strategically acquiring establishment and reestablishment opportunities, preserving existing environmentally sensitive resource areas, and potentially enhancing lagoon system function and values through optimized design of transportation facility infrastructure improvements and facilitation of large-scale restoration plans. The latter includes widening and deepening the inlet channels under the bridges at San Elijo, Batiquitos, and Buena Vista Lagoons to increase tidal and fluvial flows, which would improve hydraulic conditions at and through these locations and would accommodate and support the separate restoration projects being planned for these areas. As part of the REMF, an endowment would be established to increase the capacity for long-term stewardship of I-5 NCC resources for the foreseeable future, as well as funding of a Scientific Advisory Committee to evaluate, prioritize, and oversee implementation of the mitigation program. Given that multiple surface transportation projects (I-5 NCC, LOSSAN, etc.) in the corridor are being considered by the various resource and regulatory agencies in developing the REMF, there are sufficient opportunities identified in the REMF to compensate for all the Section 404-regulated impacts to waters of the U.S. associated with the I-5 NCC project.

## **Funding**

The *TransNet* Extension Ordinance approved by San Diego voters in November 2004 established an Environmental Mitigation Program (EMP) for the advancement of mitigation for resource impacts associated with regional and local transportation projects. The REMF is structured to support the region's efforts to develop a comprehensive regional mitigation strategy using the *TransNet* EMP, to be implemented as an integrated element of the PWP/TREMP Implementation Plan for the I-5 NCC project. The REP prioritizes expenditure of EMP funds on a corridor-wide level, with an emphasis on advanced habitat establishment, restoration, preservation/enhancement, and improving the ecology of sensitive I-5 NCC habitats through funding of system-wide restoration plans, endowments, and a Scientific Advisory Committee. Optimized transportation facility infrastructure specifically designed to enhance lagoon system function and values are also proposed as part of this program to ensure avoidance and minimization of project impacts, but would be funded through capital expenditures.

The PWP/TREP includes formation of a REMF Working Group to serve as an oversight committee that would include resource and regulatory agency personnel. The REMF Working Group would provide oversight and advisory assistance for coordinating and implementing the specific REMF requirements in the I-5 NCC. The REMF Working Group would include staff representatives of federal and state agencies that are directly involved in permitting transportation projects, including USFWS, ACOE, CDFW, the California Wildlife Conservation Board, the Regional Water Quality Control Board, and the California Coastal Commission.

The REMF Working Group would provide REMF project implementation and monitoring oversight, and advise the San Diego Association of Governments (SANDAG) and Caltrans on potential resource benefits of new mitigation or enhancement opportunities that may be determined necessary as

contingency mitigation, and/or those warranting consideration for incorporation into the REMP given their unique value. The REMP Working Group would also prioritize and coordinate disbursement of REMP funds for the San Elijo and Buena Vista Lagoon Restoration Projects, which are going through separate environmental review and planning processes.

A separate endowment may be established through SANDAG's EMP to fund an independent Scientific Advisory Committee to provide for expenses of researchers charged with conducting research, study, and evaluation of the REMP's effectiveness and success.

As detailed in the attached REMP document, the REMP provides the planning and implementation framework to ensure that the most valuable, highest-quality mitigation opportunities in the I-5 NCC are identified, secured, and prioritized for implementation in a cost-effective manner, using available mitigation funding to maximize benefits to the corridor's natural resources.

## **Preliminary LEDPA Identification and Consideration of Other Section 404 Discharge Requirements/Restrictions**

As discussed in Chapters 1-3, four feasible build alternatives were evaluated in the DEIR/DEIS and SEIR/SEIS with the consent of ACOE, USFWS, NOAA, and EPA. These alternatives are also practicable in consideration of the Section 404(b)(1) Guidelines. Since the aquatic resource full avoidance alternatives are not practicable, and because each of the I-5 NCC build alternatives would result in some aquatic resource loss, the practicable alternative with the least damage to aquatic resources must be identified as the LEDPA, unless it has other significant adverse environmental consequences. Because the location of the I-5 NCC is fixed and the use of the areas already developed for the existing freeway would minimize impacts to natural habitats, including wetlands and other waters of the U.S., the DEIR/DEIS build alternatives are the only practicable alternatives (i.e., (1) other locations or corridors would not be practicable to construct and would result in more impacts [building new bridges and roadway at a different location] to the aquatic ecosystem and (2) complete avoidance of wetlands and other waters of the U.S. in the existing I-5 NCC would not be practicable to construct and would be far more costly). As noted, the No Build Alternative would not be practicable in light of the overall project purpose. Based on preliminary analysis and as discussed in detail in Chapter 3, the least environmentally damaging of these build alternatives appears to be the 8 + 4 with Buffer Alternative, especially with the design modifications described in SEIR/SEIS. The 8 + 4 with Buffer Alternative would have the least acreage of impacts on natural resources overall and the least acreage of impacts/Section 404 discharges to wetlands, other special aquatic sites, and overall waters of the U.S. (Tables 3-5). Therefore, the 8 + 4 with Buffer Alternative appears to be the Least Environmentally Damaging Practicable Alternative based on the analysis of alternatives.

It is also expected this alternative would meet the other requirements/restrictions specified in the Section 404(b)(1) Guidelines. Specifically, the issued Biological Opinion supports that the 8 + 4 with Buffer Alternative would not jeopardize the continued existence of any federally listed as endangered or threatened species or adversely modify designated critical habitat of any federally listed species, as

required. It is not expected any marine sanctuaries would be affected by this alternative (or any build alternative). Issuance of a Section 401 Water Quality Certification by the San Diego Regional Water Quality Control Board, which is required before an ACOE permit can be issued, would confirm it would not violate any applicable state water quality standard and would not violate any applicable toxic effluent standard or prohibition under Section 307 of the CWA, although with the various BMPs identified in Subpart C-H determinations, it is not expected a violation of applicable standards would occur. Moreover, considering the factual determinations in Subparts C-H, including the cumulative impact assessment, and the actions to minimize impacts specified in Subpart H, it is expected the 8 + 4 with Buffer Alternative would not result in severe degradation of waters of the U.S., as required by the Section 404(b)(1) Guidelines.

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**Attachment A**  
**Biological Opinion for the**  
**Interstate 5 North Coast Corridor Project**