

**Appendix R:
Public Works Plan / Transportation and Resource
Enhancement Program
for the I-5 North Coast Corridor Project
San Diego, California**

October 2013

The PWP/TREP, as amended, is available on the following website:

http://www.dot.ca.gov/dist11/Env_docs/I-5PWP/

Printed versions of the *I-5 NCC Project Final EIR/EIS* contain the October 2013 PWP/TREP.



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North Coast Corridor

PUBLIC WORKS PLAN/TRANSPORTATION AND RESOURCE ENHANCEMENT PROGRAM

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1.0 INTRODUCTION

The San Diego County coastal area contains some of the most heavily used beaches on the California coastline and offers varying coastline experiences enjoyed by the public year-round. These include sandy beaches, offshore reefs, rocky headlands, several harbors with marinas, and a number of other recreational facilities that support sport fishing, picnicking, boating, kayaking, paddle boarding, swimming, and natural resource and lagoon education centers. Northern San Diego County alone contains 30 miles of coastline and includes some of the largest remaining coastal wetlands in California. These coastal lagoons also provide exceptional recreational opportunities. Some have accessible sandy beaches at the shoreline; most have accessible trail systems in the upland areas surrounding the lagoons. The 1999 California Coastal Commission (Coastal Commission) Public Access Action Plan reports that 63% of the San Diego County coastal area is accessible to the public. This percentage has likely increased since 1999 given the ongoing efforts of the Coastal Commission and local governments to implement their respective coastal access programs intended to meet demand for recreational support facilities and access to these resources. However, the Coastal Commission Public Access Action Plan recognizes roadway congestion as one of the greatest impediments to public access in coastal areas and specifically notes that, among other things, traffic congestion and poor traffic circulation are significant problems where residents and visitors compete to use the same transportation system. In addition, there are limited transit and freeway options that provide access to the local transportation system used to access the beach and upland coastal recreation areas. As a result, maintaining acceptable transportation services and developing and using alternative transportation modes is critical for ensuring public access to recreational opportunities along the San Diego County coastline for both residents and visitors.

1.1 PURPOSE OF PUBLIC WORKS PLAN/TRANSPORTATION AND RESOURCE ENHANCEMENT PROGRAM

The San Diego Association of Governments (SANDAG) and California Department of Transportation (Caltrans) have prepared this North Coast Corridor (NCC) Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP) to:

- Plan for and implement a series of rail, highway, transit, bicycle, pedestrian, and community enhancement projects to improve and maintain mobility and access to coastal recreational resources in the NCC.
- Plan for and implement a comprehensive program to protect, restore, and enhance sensitive coastal resources in the NCC and mitigate potential resource impacts caused by implementation of the transportation and community enhancement projects.
- Meet the various requirements for approval of the transportation, community and resource enhancement projects included in the PWP in accordance with Senate Bill 468 (Kehoe), local coastal programs (LCP), and Chapter 3 of the California Coastal Act, as applicable.
- Provide a coordinated TREP to function as a master federal consistency certification document for the transportation, community and resource enhancement projects included in the PWP/TREP consistent with California's Coastal Management Program (CCMP)/Chapter 3 policies of the Coastal Act.

1.2 COASTAL ZONE MANAGEMENT ACT AND THE CALIFORNIA COASTAL ACT

In 1972, the United States Congress passed the Coastal Zone Management Act (CZMA) with the overall goal to “preserve, protect, develop, and where possible, restore or enhance the resources of the nation’s coastal zone.” The CZMA is a federal and state partnership that manages coastal resources and encourages states to develop coastal management programs to implement the federal CZMA.

In 1976, the California State Legislature adopted the California Coastal Act (the Coastal Act) to implement the CZMA. The Coastal Act is the foundation of the CCMP, which includes the basic policies for managing and balancing the use of resources for state and national interests in California’s Coastal Zone. The enforceable policies of the CCMP are the Chapter 3 policies of the Coastal Act. These policies address critical coastal resource issues, including public coastline access, coastal and inland recreation, low-cost visitor activities, protection and enhancement of sensitive habitat and species, water quality, and agricultural and visual resources.

Development activities requiring coastal development permits in the Coastal Zone are regulated by the Coastal Commission and local governments through their respective coastal development permit processes. Coastal Act Chapter 3 policy mandates and coastal development permit requirements are implemented by local governments (cities and counties) pursuant to a certified LCP. Upon certification of an LCP by the Coastal Commission, local governments assume coastal development permit responsibility for most new development within their jurisdictions.

A PWP is an alternate vehicle for obtaining approval of large or phased public works projects and remains under the authority of the Coastal Commission irrespective of coastal permit jurisdictional boundaries. A PWP is an alternative to project-by-project review for public works (which could require multiple coastal development permits for different components of a public works project). A PWP must be sufficiently detailed regarding the size, kind, intensity, and location of development to allow the Coastal Commission to determine its consistency with the policies in Chapter 3 of the Coastal Act (pre-LCP certification) or the certified LCP (post-LCP certification). Once the Coastal Commission approves a PWP, no coastal development permit is required if the development is consistent with the PWP. Instead, the permittee provides a Notice of Impending Development (NOID) to the Coastal Commission and other interested persons, organizations, and government agencies. The Coastal Commission then reviews the NOID for consistency with the approved PWP; if the Coastal Commission determines that the NOID is consistent with the PWP, the development may proceed.¹ In these cases, however, the Coastal Commission may still apply conditions to that specific project to ensure consistency with the PWP.

The majority of the NCC’s transportation, community and resource enhancement improvements would be located within the Northern San Diego County Coastal Zone; therefore, these improvements would be subject to the coastal resource protection policies of the Coastal Act or the certified LCP, as applicable. This PWP/TREP evaluates the NCC project for consistency with the Coastal Act and, as applicable, certified LCPs to ensure that program components are implemented to provide for maximum protection and enhancement of public access, recreation, and sensitive coastal resources.

¹ The Coastal Commission PWP review and approval process is not intended to supplant the review processes required by the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA) or other regulatory schemes; compliance with the CEQA, NEPA and/or other regulatory schemes are addressed at the project level, such as the LOSSAN Tier I Environmental Impact Statement and the I-5 Highway Improvements Environmental Impact Statement/Environmental Impact Report. Refer to Section 1.4.8 for additional discussion regarding the relationship between the Coastal Commission PWP review and approval process and applicable environmental review.

Increased population and travel demand coupled with limited highway and rail capacities have led to congestion in the NCC and constraints on regional mobility. In addition to addressing travel modes as an integrated system, this PWP/TREP provides an opportunity to plan for and implement a comprehensive program to protect, restore, and enhance sensitive coastal resources in the NCC as well as for mitigation for potential resource impacts caused by implementation of the PWP/TREP improvements. For issues such as water quality, marine resources, and sensitive habitats associated with coastal lagoons, this PWP/TREP also provides a unique opportunity to restore and enhance resources degraded by previous transportation infrastructure development at specific lagoon areas. This PWP/TREP is intended to *exceed* traditional development impact-mitigation requirements by restoring corridor resources consistent with long-term resource protection and enhancement goals.

1.3 SANDAG AND CALTRANS AS APPLICANTS

SANDAG is a regional planning agency governed by a board of directors comprising 19 city and county governments and a number of advisory representatives. SANDAG provides a forum for regional decision-making; builds consensus; makes strategic plans; obtains and allocates resources; plans, engineers, and builds public transportation; and provides information on a broad range of topics pertinent to the region's quality of life. In addition, SANDAG programs local, state, and federal transportation funds and provides a forum for addressing regional and multi-jurisdictional growth issues.

Caltrans serves as an advisory representative to SANDAG and is responsible for building and managing state highway and freeway projects, providing intercity rail services such as Amtrak, permitting public-use airports and special-use hospital heliports, and working with local agencies to improve mobility. Caltrans carries out its mission of improving mobility through a number of programs that address highway transportation, mass transit, transportation planning, aeronautics, rail, and administration. Caltrans' strategic goals focus on providing a safe transportation system for users and workers by maximizing transportation system performance and accessibility, efficiently delivering quality transportation projects and services, preserving and enhancing California's resources and assets, and promoting quality service. SANDAG and Caltrans' roles in transportation projects, as well as those for other agencies and operators, are outlined in Table 1-1.

Together, SANDAG and Caltrans prepared this PWP/TREP to plan for and implement a series of projects in a comprehensive and coordinated manner to meet a mobility vision as defined in the 2050 Regional Transportation Plan (2050 RTP), and consistent with the multimodal and natural resource protection requirements of Senate Bill 468 (Kehoe). This corridorwide vision provides for an efficient and integrated system of transit, local roadways, highways, pedestrian, and bicycle facilities that facilitate the movement of people, goods, and services within the NCC. As an alternative to maintaining and improving transportation facilities and addressing coastal resource impacts on a project-by-project basis, this PWP/TREP provides a planning, analytical, and implementation mechanism to address improvements throughout the NCC on a comprehensive, systemwide basis (consistent with Coastal Act mandates), which focus on protecting, enhancing, and maintaining coastal resource values, and maximizing public access to coastal resources and recreational facilities.

TABLE 1-1: TYPICAL AGENCY ROLES FOR TRANSPORTATION PROJECTS ^(a)

	SANDAG	Caltrans	NCTD ^(b)	FHWA	FTA	FRA	Amtrak	BNSF
System Planning and Prioritization for Highway Projects	P	S						
System Planning and Prioritization for Transit Projects	P		S					
System Planning and Prioritization for Rail Projects	P	P ^(c)	S					
Lead National Environmental Policy Act (NEPA) Agency for Highway Projects		S ^(d)		P				
Lead NEPA Agency for Transit Projects	S ^(d)				P			
Lead NEPA Agency for Rail Projects	S ^(d)	S				P		
Lead California Environmental Quality Act (CEQA) Agency for Highway Projects		P						
Lead CEQA Agency for Transit Projects	P							
Lead CEQA Agency for Rail Projects	P	P ^(c)						
Funding	P	P ^(e)		S	S	S		
Project Development Highway	S	P						
Project Development Transit	P		S					
Project Development Rail	P	P ^(c)	S					
State Highway Owner/Operator		P						
Rail and Transit Owner/Operator			P				P	P

P = Primary Responsibility (Lead); S = Secondary Responsibility (Support/Input)

NCTD = North County Transit District; FHWA = Federal Highway Administration; FTA = Federal Transit Administration; FRA = Federal Railroad Administration; BNSF = Burlington Northern Santa Fe Railway

Notes:

- (a) Roles and responsibilities related to maintenance and rehabilitation will differ.
- (b) San Diego Metropolitan Transit System (MTS) owns the rail corridor from Downtown San Diego to the southern edge of Del Mar but does not operate any rail services within the NCC; however, the NCTD operates COASTER service on the MTS right-of-way as well as on the NCTD right-of-way. Additionally, the MTS is responsible for planning and prioritizing transit services in the southern area of the project corridor.
- (c) Caltrans has a primary role related to the intercity rail program.
- (d) SANDAG and Caltrans are responsible for preparing the environmental documents. Effective July 1, 2007, Caltrans has been assigned environmental review and consultation responsibilities under National Environmental Policy Act (NEPA) pursuant to Section 6005 of the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (23 U.S.C. 327). The assignment applies to all projects on the State Highway System (SHS) and all Local Assistance projects off the SHS, with the exception of responsibilities assigned for certain Categorical Exclusions under the June 7, 2007, Memorandum of Understanding (MOU) with the FHWA, projects excluded by definition, and specific project exclusions. On projects for which Caltrans has assumed NEPA responsibilities, Caltrans has also assumed responsibility for environmental review and consultation under other federal environmental laws. The I-5 NCC project is excluded from the NEPA Pilot Program assignment under MOU 3.3.2.
- (e) Caltrans programming responsibilities are limited to programs such as Proposition 1B intercity rail funds, Amtrak and Statewide Transportation Improvement Program Interregional Improvement Program.

1.4 PWP/TREP PROCEDURAL BACKGROUND

1.4.1 Senate Bill 468 (Kehoe)

On September 9, 2011, the California State Legislature approved Senate Bill 468 (SB 468)—introduced by Senator Christine Kehoe (San Diego)—which details certain requirements of the NCC PWP. SB 468 is the result of a collaborative effort—involving representatives of SANDAG, Caltrans, and the California Coastal Commission—to ensure project design and mitigation measures are included in the NCC PWP to address (among other things) coastal public access, habitat restoration projects, environmental mitigation measures, and community enhancements. The bill requires consultation with the Coastal Commission and other stakeholders on the PWP, stipulates PWP procedures for addressing improvements within areas of the Coastal Commission’s retained permit jurisdiction as part of PWP implementation, and authorizes the Coastal Commission to use Section 30515 of the Public Resources Code as it relates to filing a third-party initiated LCP amendment with the Coastal Commission for the NCC PWP. In addition, several elements of the PWP/TREP have been shaped by the specific requirements of SB 468 for the NCC, including the following:

- A key provision of SB 468 requires SANDAG to recommend that Caltrans select the 8+4 Buffer Alternative as the preferred alternative for I-5, and that the determination of the preferred alternative be documented in the update to the Regional Transportation Plan (RTP) and the I-5 EIR/EIS. In October 2011, SANDAG adopted the 2050 RTP confirming that the 8+4 Buffer Alternative would be expected to address transportation planning for I-5 through the close of the current RTP planning period, and Caltrans released the *I-5 NCC Project Supplemental Draft EIR/EIS* in August 2012, documenting and analyzing the 8+4 Buffer Alternative as the Locally Preferred Alternative for the NCC project.
- As part of the PWP process, SB 468 requires SANDAG to establish a safe routes to transit program to integrate the adopted regional bike plan with transit services. Accordingly, SANDAG and Caltrans undertook a Safe Access to Transit and Coastal Resources (SATCR) study, included as Appendix A of the PWP/TREP, to identify various gaps or barriers within the regional and local bicycle and pedestrian networks that limit bicycle and pedestrian access to transit services and coastal resources in the NCC. A major focus of the PWP is closing those gaps through completing and enhancing bicycle and trail connections that will increase the safety and accessibility of non-motorized travel in the NCC.
- SB 468 prescribes phasing requirements for multimodal transportation improvements and mitigation projects for the NCC to achieve a balance of transit, rail, highway, and environmental improvements in the corridor. Chapter 6 of the PWP/TREP provides the Implementation Framework and Phasing Plan for the NCC’s rail, highway, community, and resource enhancement improvements to ensure that a balanced, multimodal solution for the corridor’s transportation needs is implemented in conjunction with community enhancement and natural resource restoration plans. The PWP/TREP Implementation Framework and Phasing Plan was prepared in close coordination with representatives of the Coastal Commission, local governments, resource agencies and lagoon foundations to identify the appropriate suite of projects to include in the NCC PWP/TREP, and to phase implementation of the specified rail, highway, community and resource enhancement projects to ensure highway projects do not outpace other multimodal transportation improvements for the corridor, and that proposed transportation projects do not outpace natural resources restoration and enhancement projects.
- SB 468 requires SANDAG to dedicate a portion of the *TransNet* Regional Habitat Conservation Fund for regional habitat acquisition, management, and monitoring activities for the NCC

PWP/TREP and requires mitigation for transportation project impacts to be described in sufficient detail. The PWP/TREP's Resource Enhancement and Mitigation Program (REMP) has been prepared in close coordination with representatives of the Coastal Commission, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, Regional Water Quality Control Board, and other resource and regulatory agencies, and identifies a package of natural resource establishment, restoration, and preservation/enhancement opportunities to mitigate potential resource impacts caused by implementation of the NCC mobility and community enhancement projects. Pursuant to the REMP, funding is directed to those resource enhancements identified as addressing the most critical ecological needs in the NCC while respecting the phasing of project development and mitigation needs identified in the PWP/TREP and the voter-adopted *TransNet* Expenditure Plan's Environmental Mitigation Program (EMP) budget for the NCC. In addition, the REMP provides for allocating EMP funds to regionally significant lagoon restoration opportunities, endowments for long-term resource maintenance needs, formation of a Scientific Advisory Committee, and long-term monitoring of REMP implementation and success.

- SB 468 includes provisions to reduce environmental impacts to the NCC's coastal lagoons by constructing LOSSAN rail and I-5 highway bridges over lagoons concurrently, unless it is determined that phased construction of lagoon bridges would be an environmentally superior alternative. In response, SANDAG and Caltrans have planned the I-5 and LOSSAN bridge optimization projects in the first phase of the PWP/TREP Phasing Plan to ensure concurrent implementation with the San Elijo Lagoon Restoration Plan. In addition, the region funded planning and design to advance the Batiquitos Lagoon I-5 bridge optimization into the first phase of the PWP/TREP Phasing Plan, and has funded the Batiquitos Lagoon LOSSAN bridge optimization (through environmental) with the goal of constructing these bridges in Batiquitos Lagoon concurrently (subject to available revenue). Additional REMP opportunities for Buena Vista Lagoon involve advancing funds to replace these lagoon bridges in the first phase of the PWP/TREP Phasing Plan, which would reduce the overall bridge widths required for staging the bridge replacements, thus reducing wetland impacts within the lagoon.
- SB 468 authorizes SANDAG to conduct, administer, and operate a value-pricing high-occupancy toll (HOT) lane program on I-5. The revenues from this program would be used to offset the costs of the HOT lane program, to improve transit services, and to create high-occupancy vehicle facilities. The PWP/TREP I-5 Express Lanes, accommodated entirely within the smallest 8+4 Buffer Alternative, will provide a revenue-generating source for transit and transportation improvements, while facilitating a shift from SOV drivers to carpools and transit with the incentive of free-flow travel on the Express Lanes.
- SB 468 further directs SANDAG/Caltrans, in consultation with local jurisdictions, to evaluate the traffic impacts of the highway project on streets and roads within the Coastal Zone. As discussed in Section 5.3 of the PWP, Caltrans conducted such an evaluation during the environmental review process for the I-5 project, with the following results projected between the No Build and Build scenarios:
 - Coast Highway and El Camino Real, the two primary north-south alternatives to I-5, were projected to experience reductions in vehicle miles traveled of 17% and 10%, respectively, between the 2030 No-Build and 2030 Build scenarios.²
 - Coast Highway and El Camino Real were projected to experience overall reductions in Average Daily Traffic (ADT) of 12% and 3%, respectively, between the 2035 No-Build and 2035 Build scenarios.³

² I-5 NCC Corridor System Management Plan (Chapter 8), August 2010.

- In an analysis of 131 roadway segments—including key arterials and intersections selected jointly by Caltrans and corridor cities—the proposed highway improvements were shown to have negligible impacts on local traffic, with 68 of the 131 segments (52%) experiencing either decreases or no change in 2030 ADT between the No Build and Build scenarios. An additional 51 segments (39%) were projected to experience ADT increases of less than 10%. Only 12 (9%) of the local NCC roadways would experience increases in ADT of over 10%.⁵
- Even with increases in ADT on some roadways, only 3 segments (2%) that were under capacity in the 2030 No Build scenario were projected to exceed capacity in the 2030 Build scenario. Eighty-five segments that were under capacity in the 2030 No Build scenario remained under capacity in the 2030 Build scenario and five segments that were over capacity in the 2030 No Build scenario are projected to be under capacity in the 2030 Build scenario.⁶
- A study of traffic level of service at 75 key intersections near freeway access points showed either improvement or no change at 73 intersections (97%) in the morning peak period and 68 intersections (91%) in the evening peak period, when comparing the 2030 No Build and 2030 Build scenarios.⁷

Taken together, these data indicate that the capacity improvements on I-5—by providing a better option for north-south travel than local roads—actually will help to relieve traffic congestion in the NCC's communities.

1.4.2 Public Works Projects

Section 30114 of the Coastal Act defines public works, in part, as:

(b) All public transportation facilities, including streets, roads, highways, public parking lots and structures, ports, harbors, airports, railroads, and mass transit facilities and stations, bridges, trolley wires, and other related facilities. For purposes of this division, neither the Ports of Hueneme, Long Beach, Los Angeles, nor San Diego Unified Port District nor any of the developments within these ports shall be considered public works.

(c) All publicly financed recreational facilities, all projects of the State Coastal Conservancy, and any development by a special district.

Section 30605 of the Coastal Act states, in part:

To promote greater efficiency for the planning of any public works or state university or college or private university development projects and as an alternative to project-by-project review, plans for public works or state university or college or private university long-range land use development plans may be submitted to the commission for review in the same manner prescribed for the review of local coastal programs set forth in Chapter 6 (commencing with Section 30500).

The PWP/TREP proposes to improve and maintain existing public transportation facilities of regional, state, and national significance, including transit, local roadways, highways, pedestrian, and bicycle facilities. The PWP/TREP also includes projects and measures to enhance and restore regionally significant coastal resources. All PWP/TREP program improvements would use public funds for

³ Caltrans/SANDAG Series 12 Model, November 2011.

⁵ *I-5 NCC Technical Report #5: Traffic Demand Forecasting Report* (Section 3.3), August 2007. Conducted in support of I-5 NCC Project Draft EIR/EIS.

⁶ *I-5 NCC Technical Report #6: Freeway Interchange Operations Report* (Section 3.6), August 2007. Conducted in support of I-5 NCC Project Draft EIR/EIS.

⁷ *Ibid*, Section 3.4.

implementation. Therefore, all of the program components and individual projects of the PWP/TREP meet the definition of a public works project.

1.4.3 Federal Consistency Review

Section 307 of the CZMA details the types of activities that require federal consistency review. These include:

307(c)(3) (A) After final approval by the Secretary of a state's management program, any applicant for a required Federal license or permit to conduct an activity, in or outside of the coastal zone, affecting any land or water use or natural resource of the coastal zone of that state shall provide in the application to the licensing or permitting agency a certification that the proposed activity complies with the enforceable policies of the state's approved program and that such activity will be conducted in a manner consistent with the program. At the same time, the applicant shall furnish to the state or its designated agency a copy of the certification, with all necessary information and data. Each coastal state shall establish procedures for public notice in the case of all such certifications and, to the extent it deems appropriate, procedures for public hearings in connection therewith. At the earliest practicable time, the state or its designated agency shall notify the Federal agency concerned that the state concurs with or objects to the applicant's certification. If the state or its designated agency fails to furnish the required notification within six months after receipt of its copy of the applicant's certification, the state's concurrence with the certification shall be conclusively presumed. No license or permit shall be granted by the Federal agency until the state or its designated agency has concurred with the applicant's certification or until, by the state's failure to act, the concurrence is conclusively presumed, unless the Secretary, on his own initiative or upon appeal by the applicant, finds, after providing a reasonable opportunity for detailed comments from the Federal agency involved and from the state, that the activity is consistent with the objectives of this chapter or is otherwise necessary in the interest of national security.

307(d) Application of local governments for Federal assistance; relationship of activities with approved management programs State and local governments submitting applications for Federal assistance under other Federal programs, in or outside of the coastal zone, affecting any land or water use of natural resource of the coastal zone shall indicate the views of the appropriate state or local agency as to the relationship of such activities to the approved management program for the coastal zone. Such applications shall be submitted and coordinated in accordance with the provisions of *section 6506 of Title 31*. Federal agencies shall not approve proposed projects that are inconsistent with the enforceable policies of a coastal state's management program, except upon a finding by the Secretary that such project is consistent with the purposes of this chapter or necessary in the interest of national security.

A federal consistency certification is required for the proposed PWP/TREP as SANDAG and Caltrans, the agencies initiating PWP/TREP projects, are non-federal agencies and the PWP/TREP program improvements require a number of federal permits, federal authorization, and/or federal funding. In addition, Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), Federal Transit Administration (FTA), U.S. Army Corps of Engineers (USACE) and other federal agencies' procedures require the Coastal Commission's concurrence with the consistency certification prior to issuing licenses, permits or conducting an activity affecting the coastal zone.

1.4.4 Local Coastal Programs and Amendments

Section 30605 of the Coastal Act states in pertinent part:

If any plan for public works or state university or college development project is submitted prior to certification of the local coastal programs for the jurisdictions affected by the proposed public

works, the commission shall certify whether the proposed plan is consistent with Chapter 3 (commencing with Section 30200)... If any such plan for public works is submitted after the certification of local coastal programs, any such plan shall be approved by the commission only if it finds, after full consultation with the affected local governments, that the proposed plan for public works is in conformity with certified local coastal programs in jurisdictions affected by the proposed public works.

Section 30605 of the Coastal Act and Title 14, Section 13356 of California Code of Regulations provide that where a PWP is submitted prior to certification of the LCP for the jurisdiction affected by the PWP, the standard of review for certification of the PWP is the Chapter 3 policies of the Coastal Act. Section 30605 and Section 13357 of the Code of Regulations also state that where a PWP is submitted after the certification of an LCP for the jurisdiction affected by the PWP, the PWP shall be approved by the Coastal Commission only if it finds, after full consultation with the affected local government(s), that it is in conformity with the certified LCP. Within the corridor, there are five cities with fully certified LCPs that would be affected by proposed PWP improvements: San Diego, Del Mar, Encinitas, Carlsbad, and Oceanside (the City of Solana Beach has a certified Land Use Plan (LUP) but does not currently have a certified Local Implementation Plan, and as such does not yet have a fully certified LCP). Therefore, pursuant to Section 30605 of the Coastal Act, the standard of review for portions of the NCC PWP/TREP improvements occurring in these cities, excluding rail projects subject to federal consistency review only and projects located in the Coastal Commission's permit jurisdiction, is that the proposed PWP is in conformance with the certified LCP of each respective city.

In cases where PWP improvements are inconsistent with an applicable LCP, the Coastal Act allows agencies authorized to undertake a public works project to request an LCP amendment to ensure consistency. Section 30515 of the Coastal Act provides:

Any person authorized to undertake a public works project or proposing an energy facility development may request any local government to amend its certified local coastal program, if the purpose of the proposed amendment is to meet public needs of an area greater than that included within such certified local coastal program that had not been anticipated by the person making the request at the time the local coastal program was before the commission for certification. If, after review, the local government determines that the amendment requested would be in conformity with the policies of this division, it may amend its certified local coastal program as provided in Section 30514.

If the local government does not amend its local coastal program, such person may file with the commission a request for amendment which shall set forth the reasons why the proposed amendment is necessary and how such amendment is in conformity with the policies of this division. The local government shall be provided an opportunity to set forth the reasons for its action. The commission may, after public hearing, approve and certify the proposed amendment if it finds, after a careful balancing of social, economic, and environmental effects, that to do otherwise would adversely affect the public welfare, that a public need of an area greater than that included within the certified local coastal program would be met, that there is no feasible, less environmentally damaging alternative way to meet such need, and that the proposed amendment is in conformity with the policies of this division.

Pursuant to SB 468 and Section 30515 of the Coastal Act—as implemented by Section 13666 of the Code of Regulations and with a concurring preliminary determination of the executive director of the Coastal Commission—SANDAG and Caltrans have the option to file an LCP amendment with the Coastal Commission for the NCC PWP. Where the NCC PWP projects necessitate an amendment to a certified LCP to incorporate map changes or revisions to land use policies and development standards, the standard of review is the Chapter 3 policies of the Coastal Act. The review standard for proposed changes to the implementation plan of a certified LCP (i.e., zoning map, zoning designation, and

development standard amendments) is that the proposed amendment conforms with and is adequate to implement provisions of the LUP element of the LCP.

1.4.5 Coastal Development Permits

NCC PWP projects located within city areas where an LCP has yet to be certified (often referred to as areas of “deferred certification” or “white holes”), and all projects located within Solana Beach are subject to the jurisdiction of the Coastal Commission with respect to the coastal development permit-review process unless they are authorized in the PWP and through a NOID approved by the Coastal Commission. Similarly, a number of the proposed PWP improvements would span the lagoons in the corridor and are therefore within areas where the Coastal Commission has retained permit jurisdiction as defined by lagoon tidelands and areas subject to the public trust. In these areas, NCC PWP projects are subject to separate coastal development permit requirements administered by the Coastal Commission, for which the standard of review is the Chapter 3 policies of the Coastal Act with the PWP/TREP providing guidance for that review.

1.4.6 Public Works Plan (PWP) Process

Section 30605 of the Coastal Act states in pertinent part:

...Where a plan for a public works...has been certified by the Commission, any subsequent review by the Commission of a specific project contained in the certified plan shall be limited to imposing conditions consistent with Section 30607 and 30607.1...

Section 30607 further provides:

Any permit that is issued or any development or action approved on appeal, pursuant to this chapter, shall be subject to reasonable terms and conditions in order to ensure that such development or action will be in accordance with the provisions of this division.

Sections 30605 and 30607 of the Coastal Act establish that the standard of review for specific public works projects approved by the Coastal Commission as part of a PWP is that such projects are consistent with the approved PWP. Sections 30605 and 30607 also provide that the Coastal Commission’s subsequent review of projects submitted pursuant to a certified PWP is limited to imposing conditions intended to ensure the projects are carried out consistent with the certified PWP; such projects do not require coastal development permits.

Consistency determinations are made by the Coastal Commission and are subject to public review and comment. Sections 30605 and 30606 of the Coastal Act and Title 14, Section 13359 of the California Code of Regulations govern the Coastal Commission’s review process for development proposed pursuant to a certified PWP. Section 30606 of the Coastal Act requires the public agency proposing the public works project to provide a NOID to the Coastal Commission (and other interested parties, organizations, and governmental agencies) and data demonstrating the project is consistent with the certified PWP. Once a NOID is deemed complete, it is scheduled for a public hearing and the Coastal Commission determines whether the project is included in the certified PWP and whether conditions are required to bring the project into conformance with the approved PWP. No construction is permitted until the Coastal Commission finds the proposed project is consistent with the certified PWP. Chapter 6 of this PWP/TREP describes in more detail the NOID and PWP amendment process, including submittal requirements, regulatory thresholds, and review procedures.

This NCC PWP/TREP also incorporates an administrative process for operational projects and/or activities that do not require a NOID or PWP/TREP amendment but which constitute development under the Coastal Act. The administrative process is intended to facilitate the approval of projects and/or activities that are minor in nature and required for ongoing repair and maintenance of facilities. Chapter 6 addresses the types of activities covered by this administrative process and describes those activities that must include notice and opportunity to comment by the Coastal Commission, as well as those that require notice only and may be implemented without discretionary Coastal Commission review.

1.4.7 Public Review and Comment

The PWP/TREP is the result of more than 10 years of collaboration and public input about how to comprehensively improve the NCC. The Preliminary Draft PWP/TREP, first released to the public in June 2010, was been updated to reflect input from the public, local cities, resource agencies and the Coastal Commission. Release of the PWP/TREP in March 2013 initiates the public review and comment period on the PWP/TREP, which will continue throughout the Coastal Commission review process. The draft document is being distributed for initial public review and comment for 60 days, during which time it will be presented at two public workshops to solicit feedback and to answer questions. The PWP/TREP may be revised based on comments received during the comment period prior to finalizing the document for submittal to the California Coastal Commission, at which point the Coastal Commission will consider the document and conduct additional environmental analysis pursuant to its certified regulatory program under the CEQA. Members of the public are invited to review and provide comments on how the NCC PWP/TREP affects coastal access and other coastal resources in the corridor, which will be considered by the California Coastal Commission for consistency with applicable Local Coastal Programs and the California Coastal Act.

1.4.8 Environmental Review

Section 30605 of the Coastal Act allows PWPs to be submitted to the Coastal Commission for review in the same manner prescribed for the review of LCPs as set forth in Chapter 6 (commencing with Section 30500 of the Coastal Act). Section 21080.5 of the California Environmental Quality Act (CEQA) exempts local governments from requiring preparation of an Environmental Impact Report (EIR) in connection with preparing LCPs. Rather, CEQA compliance responsibilities are assigned to the Coastal Commission's LCP review and approval process, which has been found by the Secretary of the Resources Agency to be functionally equivalent to the EIR process.

As an agency with a certified regulatory program under CEQA Section 21080.5, the Coastal Commission must consider alternatives and mitigation measures that would substantially lessen any significant adverse environmental effects that a proposed project under their jurisdiction would have on the environment. Sections 13371 and 13356(b)(2) of California Code of Regulations Title 14 require that the Coastal Commission not approve or adopt a PWP unless it finds that there are no feasible alternatives or feasible mitigation measures available that would substantially lessen significant adverse impact that the development may have on the environment.

Section 21080.5(a) of CEQA, Section 30605 of the Coastal Act and Title 14, and Section 13355 of the Coastal Commission Regulations require PWPs to include environmental information sufficient in detail to enable the Coastal Commission to determine the consistency of the plan with the policies of the Coastal Act or LCP, as applicable. Consistent with these requirements, Caltrans and the FHWA have prepared the *Interstate 5 North Coast Corridor Project Draft Environmental Impact Report/Environmental Impact Statement* (I-5 NCC Project EIR/EIS) (June 2010) to examine the

potential environmental impacts of the highway alternatives being considered. Caltrans and FHWA have also prepared an *Interstate 5 North Coast Corridor Project Supplement Draft Environmental Impact Report/Environmental Impact Study* (August 2012).

In addition, the FRA and Caltrans (as federal and state lead agencies) prepared the *Los Angeles to San Diego (LOSSAN) Final Program EIR/EIS* (September 2007) for the proposed rail corridor improvements. This document analyzes and discloses potential environmental effects and benefits of the proposed rail program and its alternatives. Given the level of analysis in the Program EIR/EIS for the LOSSAN Improvement Project, decisions to advance and construct the proposed rail improvements may require additional environmental review under NEPA and additional, phased federal consistency review under the CZMA.

Finally, SANDAG has prepared a Program EIR to evaluate the potential environmental effects associated with SANDAG's adoption and implementation of the 2050 RTP and its Sustainable Communities Strategy (SCS). The 2050 RTP/SCS outlines projects for rail and bus services, highways, local streets, bicycling, and walking, as well as systems and demand management for the region. In addition, the SCS, adopted as part of its RTP, serves to align regional transportation, housing, and land use planning to reduce the amount of vehicle miles traveled to attain the regional greenhouse gas reduction target. The 2050 RTP follows the previously adopted 2030 RTP which addressed much of the same analysis as the 2050 RTP, with the exception of the SCS element which was not a requirement at the time it was adopted.

On December 20, 2012, the San Diego Superior Court entered a judgment finding that the EIR for the 2050 RTP is legally inadequate in certain limited respects. SANDAG has appealed the judgment to the Court of Appeal. While the applicants respectfully disagree that there are any inadequacies in the EIR for the 2050 RTP and anticipate that the judgment may be overturned on appeal, this PWP/TREP has been drafted to avoid the narrow alleged deficiencies the Court found in the EIR for the 2050 RTP.

The Coastal Commission's environmental analysis for the PWP/TREP may draw on facts from the EIR for the 2050 RTP and on facts from the draft EIR for the I-5 North Coast Corridor Project. However, the Coastal Commission's analysis does not tier from these EIRs, or rely on the EIRs' certification. The NCC PWP/TREP project includes a subset of the projects included in the 2050 RTP and, pursuant to the requirements of SB 468 and the Coastal Act, includes a number of expanded and enhanced non-vehicular transportation improvements specifically designed and located to meet the multi-modal needs of the NCC while minimizing vehicle miles traveled. The Coastal Commission will conduct its own independent CEQA review under its certified regulatory program before considering whether to approve the PWP/TREP pursuant to the Coastal Act. The Coastal Commission's environmental analysis will focus on the project proposed in the PWP/TREP and its reasonably foreseeable consequences.

The EIR for the 2050 RTP was invalidated mainly because it allegedly (1) failed to adequately analyze greenhouse gas emissions against Executive Order S-03-05's requirement to reduce greenhouse gases 80 percent below 1990 levels by 2050; and (2) failed to identify sufficient legally enforceable mitigation measures for greenhouse gas emissions.

In analyzing a project under its CEQA certified regulatory program, the Coastal Commission assesses a project's consistency with the policies of the Coastal Act and certified LCPs. Therefore, the policies of the Coastal Act are used as significance criteria. While there is no Coastal Act policy that specifically discusses greenhouse gas emissions, those that would implicate greenhouse gas emissions are the following:

New development shall do all of the following:

- (c) Be consistent with requirements imposed by an air pollution control district or the State Air Resources Board as to each particular development.
 - (d) Minimize energy consumption and vehicle miles traveled.
- (Coastal Act section 30253.)

In addition, SB 468 requires the PWP/TREP to “be consistent with the countywide goals and objectives in the adopted Sustainable Communities Strategy for San Diego County and the greenhouse gas reduction targets established by the State Air Resources Board for San Diego, consistent with Senate Bill 375 (Ch. 728, Stats. 2008), as well as other regional, statewide, and national transportation and environmental quality goals.”

Section 5.1, Energy Conservation and Emissions Reduction, of the PWP/TREP includes an analysis of consistency with Coastal Act Section 30253, the Sustainable Communities Strategy, and SB375. In addition, the PWP/TREP includes an analysis of vehicle miles traveled and greenhouse gas emissions that are expected to occur under the plan through 2050 and a discussion and analysis of Executive Order S-03-05. As noted previously, the PWP/TREP includes a smaller set of projects than those included in the 2050 RTP, and includes a number of expanded and enhanced non-vehicular transportation improvements specifically designed and located in the corridor to meet the multi-modal needs of the NCC while minimizing vehicle miles traveled and corresponding energy consumption and air emissions. Furthermore, the PWP/TREP includes specific, enforceable mitigation measures for greenhouse gas emissions for projects included in the PWP/TREP.

The Coastal Commission will use this information, and other information it obtains, and the analysis it conducts through its CEQA certified regulatory program, to evaluate the PWP/TREP’s consistency with the Coastal Act and with SB 468.

1.5 PWP/TREP SCOPE AND STRUCTURE

The NCC PWP/TREP is a single, integrated document prepared to accomplish the common goal of establishing a framework for comprehensive planning, review and coastal permitting of the NCC’s transportation, community and resource enhancement projects. Other than differences in procedural language contained in Chapter 1 and Chapters 4 through 6 regarding how the document will be utilized via either federal consistency review, the PWP approval process, or the coastal development permit process, the language within the document is identical among PWP or TREP sections. This redundancy is especially important to emphasize for the Phasing and Implementation portions of the PWP/TREP.

The TREP section of the document provides the mechanism for federal consistency review and conflict resolution to ensure the overall NCC project is consistent with applicable CCMP/Coastal Act policies. Chapter 3 policies of the Coastal Act provide the standard of review for the federal consistency certification.

The PWP section of the document provides the mechanism for coastal development permitting and conflict resolution to ensure the NCC project is consistent with applicable Coastal Act policies and certified LCPs, as applicable. Certified LCPs (and for projects within the City of Solana Beach, the Chapter 3 policies of the Coastal Act) provide the standard of review for the PWP. Following approval of the PWP, the PWP with subsequent NOIDs will provide the standard of review and coastal permitting mechanism for all NCC PWP projects (i.e., projects that are both subject to coastal development permit requirements and located outside areas of the Coastal Commission’s retained jurisdiction).

1.5.1 Integrated PWP/TREP Process

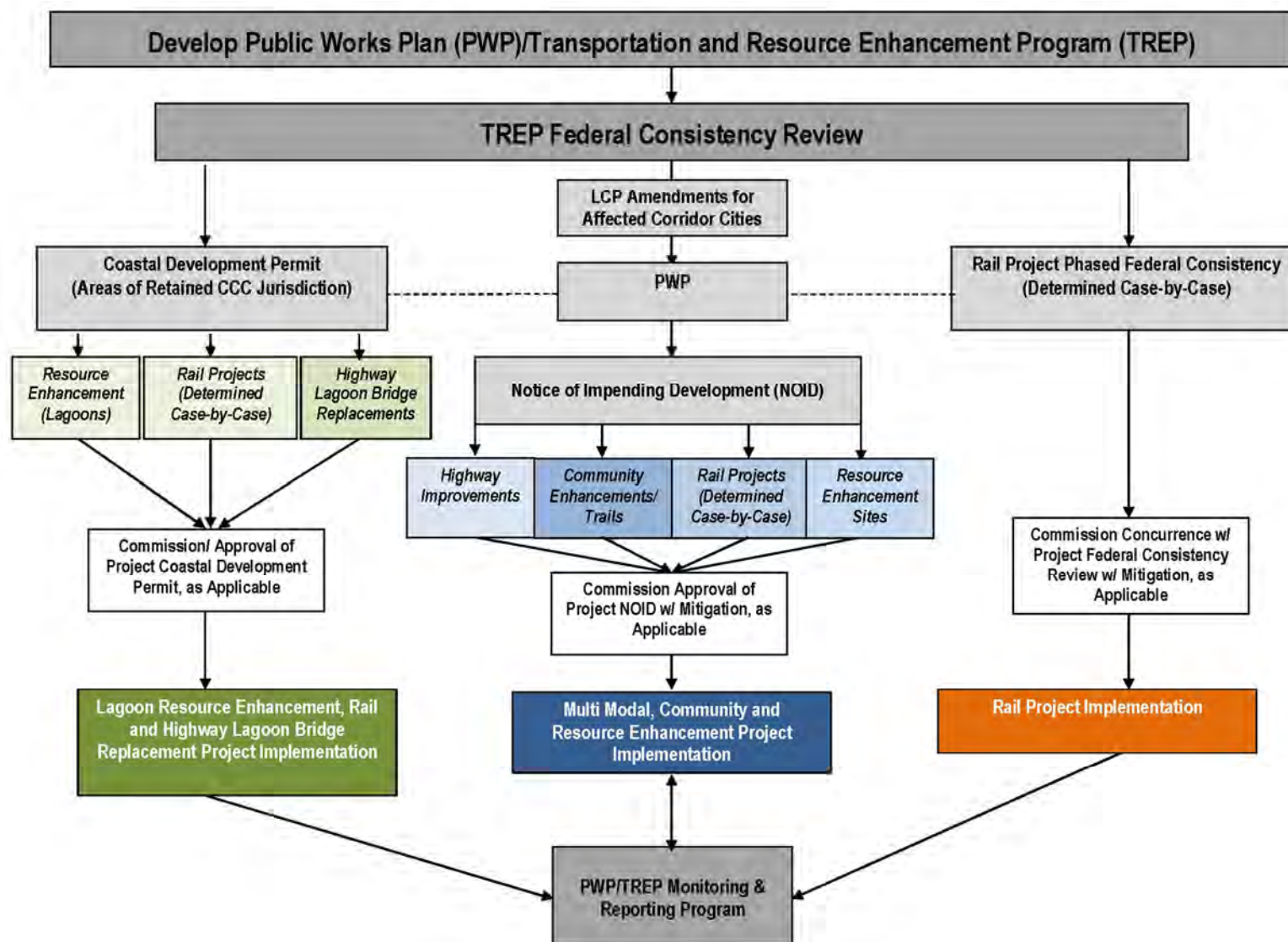
Consistent with SB 468, the PWP/TREP includes all NCC projects to provide an overview and linkages to the entire NCC program to ensure that rail, highway, community enhancement and required mitigation projects are appropriately linked, phased and implemented. The overall NCC project-approval process is illustrated in Figure 1-1. As illustrated in Figure 1-1, the PWP/TREP specifies that 1) rail projects, as evaluated and determined on a case-by-case basis, will be subjected to review by the Coastal Commission through the federal consistency review process only; 2) all projects located in areas of the Coastal Commission's retained permit jurisdiction are subject to review by the Coastal Commission through the coastal development permit review process or federal consistency review process, as applicable; and 3) all other NCC projects are subject to review by the Coastal Commission through the PWP review process. The PWP/TREP phasing plan and PWP/NOID requirements serve to plan, track, and report to the Coastal Commission the progress of rail, highway, community enhancement and resource enhancement projects, though it is not anticipated to be an entirely static document, and each of those elements may change as more detail emerges as to funding, the detail of the projects or new or modified projects are added.

The PWP/TREP includes adequate information about all components of the NCC project/plan, including rail, highway, transit, bicycle, pedestrian, community and resource enhancement projects; project phasing; impacts; and mitigation for conflict resolution. However, an adequate level of project detail to conduct project-specific federal consistency review for the PWP/TREP is not available for some of the components of the NCC project at this time. Given the program level of detail available for rail projects that the PWP/TREP indicates will be handled solely through federal consistency review, it is expected that federal consistency review for such rail improvements will be conducted in a phased manner. Similarly, rail projects that may be processed through the PWP (and conceptual highway, bike and pedestrian enhancement components of the PWP) may be subject to future PWP amendment and concurrent/subsequent NOIDs to ensure consistency with the approved PWP; SANDAG/Caltrans may choose (in consultation with the Coastal Commission) to submit a coastal development permit application to the appropriate permitting agency. All projects (regardless of approval process) are included in the PWP/TREP for implementation, phasing, and monitoring purposes.

As discussed in the PWP/TREP procedural background discussion and illustrated in Figure 1-1, approval and implementation of the NCC improvements will require multiple and sequential approvals by the Coastal Commission. The Coastal Commission will first review the NCC PWP/TREP federal consistency certification (TREP), followed by any necessary LCP amendments and then the proposed PWP. Individual coastal development permits will also require review and approval by the Coastal Commission for NCC lagoon bridges, community enhancement, and restoration projects located in the Coastal Commission's area of retained jurisdiction.

Chapter 6 of the PWP/TREP includes an implementation framework that identifies NCC projects within the Coastal Commission's area of retained jurisdiction as well as a guidance process for obtaining coastal development permits for these projects, as applicable. In addition, Chapter 6 of the PWP/TREP includes an implementation framework that identifies the type and location of rail projects that, as evaluated and determined on a case-by-case basis, will be subject to review by the Coastal Commission through the federal consistency review process only, and includes a guidance process for obtaining federal consistency review for these identified rail projects, as applicable. Chapter 6 of the PWP/TREP also establishes the process by which the Coastal Commission's requirements and findings regarding project design and mitigation measures included in the PWP/TREP may be applied to subsequent coastal development permit approvals and/or federal consistency review for NCC projects and measures, as applicable.

FIGURE 1-1: TREP, PWP/NOID, AND CDP COASTAL COMMISSION APPROVAL PROCESS



1.5.2 Local Coastal Program Amendments

Where PWP projects that are subject to review pursuant to certified LCPs are determined to result in potential inconsistencies with the corridor cities' certified LCPs, LCP amendments are proposed concurrent with the PWP review process.

The PWP/TREP serves two primary functions in relation to the NCC's certified LCPs. First, it provides both an overview and sufficient detail of the entire NCC project/plan and sufficient detail regarding that project/plan to allow the Coastal Commission to consider whether applying Coastal Act policies to an application for approval of the PWP/TREP would result in conflicts between one or more Chapter 3 policies of the Coastal Act. The PWP/TREP provides a specific, factual scenario that can be incorporated by reference into the various individual LCP amendments so that the Coastal Commission can consider whether conflicts among Coastal Act policies would necessitate approval of the proposed, new LCP policies, resolving such conflicts in a manner that on balance—in relation to the specific program of projects across the various jurisdictions at issue—is most protective of significant coastal resources. Second, this PWP/TREP constitutes the proposed PWP itself. As such, amendment of the LCPs will allow the PWP/TREP to serve as Caltrans' and SANDAG's application for approval of a PWP pursuant to those new LCP policies.

As detailed throughout Chapter 5, given the potential LCP policy conflicts resulting from PWP projects, LCP amendments are proposed to resolve conflicts associated with “unpermitted use” project impacts and setback requirements for wetlands and Environmentally Sensitive Habitat Areas as well as other potential areas of conflict associated with coastal resource protection policies of the various certified LCPs. As such, Chapter 3 policies of the Coastal Act provide the standard of review for the LCP amendments, and conflict resolution among Chapter 3 policies are represented within the LCP amendments and the PWP. LCP amendments for the NCC project include the cities of Oceanside, Carlsbad, Encinitas, Del Mar, and San Diego. The city of Solana Beach does not have a certified LCP; as such, the standard of review for PWP projects in Solana Beach is the Chapter 3 policies of the Coastal Act.

The NCC PWP includes public works projects that will meet the public needs of an area greater than that included in any local permitting agency's certified local coastal program, and the project needs were not anticipated when the LCPs were certified by the California Coastal Commission. As such (and as is recognized by SB 468), California Streets and Highways Code section 103(d)(1), Caltrans, SANDAG, and the California Coastal Commission are authorized to utilize Section 30515 of the Public Resources Code for LCP amendments associated with the NCC project PWP, and the process referenced in that section may be streamlined pursuant to agreement between the California Coastal Commission and those jurisdictions with an approved LCP.

2.0 CONTEXT

To evaluate the transportation and environmental needs of the North Coast Corridor (NCC), it is important to understand the corridor's existing conditions by identifying the corridor's many cities, land uses, transportation facilities, and natural resources—all of which are presented in Section 2.1. It is also essential to consider the regional planning and policy context into which the NCC fits. The corridor is only one part of the larger San Diego region, and the scarcity of funding for both transportation and environmental projects requires planners to balance the needs, opportunities, and constraints of the region's many communities. Regional and state requirements to reduce energy consumption and air emissions also influence the planning decisions of local leaders. These regional planning processes, as well as their associated policies, are discussed in Section 2.2.

2.1 PHYSICAL CONTEXT: LAND USE, TRANSPORTATION, AND COASTAL AND NATURAL RESOURCES

This section includes descriptions of the cities located within the NCC, including development trends and the status of the cities' Local Coastal Programs (LCP). This section is followed by an overview of the existing transportation infrastructure and significant coastal and natural resources in the corridor.

The NCC is approximately 30 miles long by 6 miles wide, consists of approximately 111,215 gross acres, and is home to over 525,000 people. Containing both the Los Angeles–San Diego–San Luis Obispo (LOSSAN) rail corridor and I-5 highway corridor, the NCC also is a multimodal “travel shed.” This term is used to define a corridor where trips tend to cluster in a linear pattern, with feeder routes (such as local streets or transit services) linking to major trunk routes (such as the I-5 highway or LOSSAN rail corridor) that carry longer-distance trips. While this PWP/TREP addresses only the portion of the NCC travel shed located in the Coastal Zone (approximately 11,066 gross acres), much of the travel shed's primary transportation facilities—namely the I-5 highway and LOSSAN rail corridors—are located almost entirely in the Coastal Zone and are critical to maintaining access to not only the corridor's coastal areas but also the regional, interregional, and international transportation systems. In 2010, the NCC accommodated over 1.4 million daily vehicle trips just on I-5 (or approximately 13% of the 11.5 million daily vehicle trips that occurred within San Diego County). By 2040, the NCC segment of I-5 is projected to accommodate nearly 1.8 million daily vehicle trips (an increase of more than 26% over existing conditions).¹

2.1.1 Existing Land Use and Development

Six San Diego County cities lie entirely or partially within the NCC: San Diego, Solana Beach, Del Mar, Encinitas, Carlsbad, and Oceanside. In addition, six coastal lagoons and five creeks and rivers as well as associated open space and habitat preservation areas are located within the corridor and are discussed further in Section 2.1.5. Figure 2-1 provides a regional and corridor overview and Figure 2-2 illustrates city and Coastal Zone boundaries and significant lagoon resource areas within the NCC.

Historic development trends in the corridor generally have not supported transit use as the majority of land in the NCC was developed when local land use decisions encouraged low-density, single-use development. This land use configuration required an extensive highway and arterial network to connect origins and destinations. However, passenger rail service in the corridor has experienced significant investment and growth over the last few decades. In 1971, Amtrak first introduced its coastal rail service, formerly called the San Diegan. In 1995 and 2008, the COASTER and SPRINTER rail

¹ SANDAG/Caltrans Series 12 Model, November 2011.

transit services were added, respectively. Considering the limited amount of remaining undeveloped land in the corridor, local jurisdictions and the San Diego Association of Governments (SANDAG) are re-examining existing land use policies and development patterns. They have developed policies to introduce Smart Growth development clusters into the corridor to accommodate future growth with higher-density, mixed-use development serviced by transit; however, most land uses in the NCC are still auto-dependent and will remain so in the coming decades.

Within the corridor, existing land uses vary. The majority of land located directly adjacent to the coastline—including the LOSSAN rail and I-5 highway rights-of-way—has been developed for residential, light industrial, and commercial use, and much of the corridor's population density occurs along these transportation facilities; however, many significant coastal open space and natural resource areas also occur along the I-5 highway and LOSSAN rail rights-of-way, particularly where these facilities cross Los Peñasquitos Creek, Carmel Creek, the San Luis Rey River, and the Los Peñasquitos, San Dieguito, San Elijo, Batiquitos, Agua Hedionda, and Buena Vista Lagoons. Figure 2-3 illustrates existing population density distribution and land preservation areas in the corridor.

Travel demand in the project area has increased and has generally been influenced by population and employment growth in the region (Table 2-1). From 1970 to 2010, the San Diego County population grew by 137%.² During that time, most of the coastal communities, with the exceptions of Solana Beach (132%) and Del Mar (13%), grew even more rapidly, with Carlsbad growing more than 500%. In 2010, there were approximately 525,000 people residing within the NCC (16% of the regional population). An additional 122,000 people are anticipated to live in the corridor by the year 2040 (an increase of 23%), but this is a significantly reduced growth rate than that experienced in the corridor between 1970 and 2010 (397%). Figure 2-4 illustrates future population density distribution in the corridor.

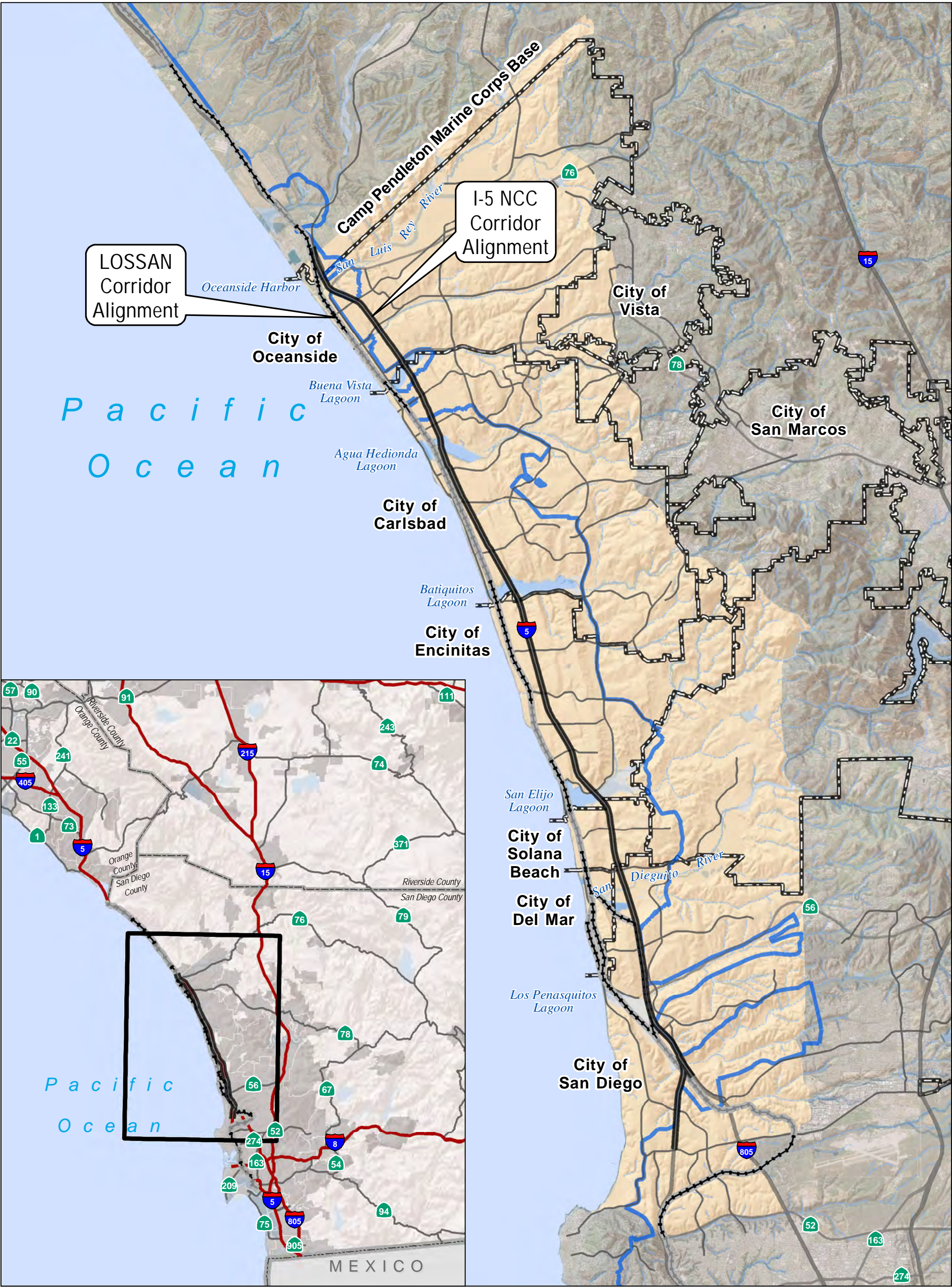
TABLE 2-1: POPULATION AND EMPLOYMENT (NORTH COAST CORRIDOR)

	Population			Employment		
	1970	2010	2040	1970	2010	2040
Oceanside	40,494	179,105	214,530	12,040	41,620	60,377
Carlsbad	14,944	103,491	127,434	1,779	59,274	83,538
Encinitas	17,210	64,599	75,446	3,151	25,633	31,080
Solana Beach	5,744	13,338	15,619	1,050	7,099	8,671
Del Mar	3,956	4,455	5,059	1,004	4,627	4,690
San Diego (NCC Only)	23,315	160,290	209,744	2,832	140,763	170,209
North Coast Corridor	105,663	525,278	647,832	21,856	278,284	358,565
San Diego Region	1,357,854	3,224,432	4,163,688	566,900	1,401,100	1,877,668

Source: SANDAG/Caltrans Series 12 Model, November 2011.

Note: Existing (2010) populations are from the SANDAG/Caltrans Series 12 Model, and differ slightly from the final figures published in the 2010 U.S. Census.

² The San Diego region, as defined by SANDAG and used throughout this document, consists entirely of San Diego County.



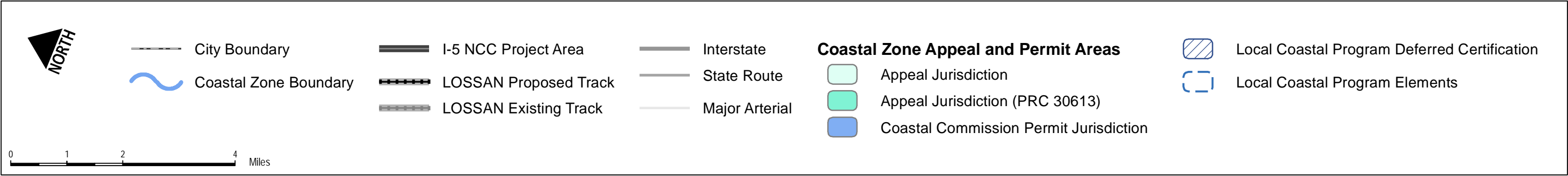
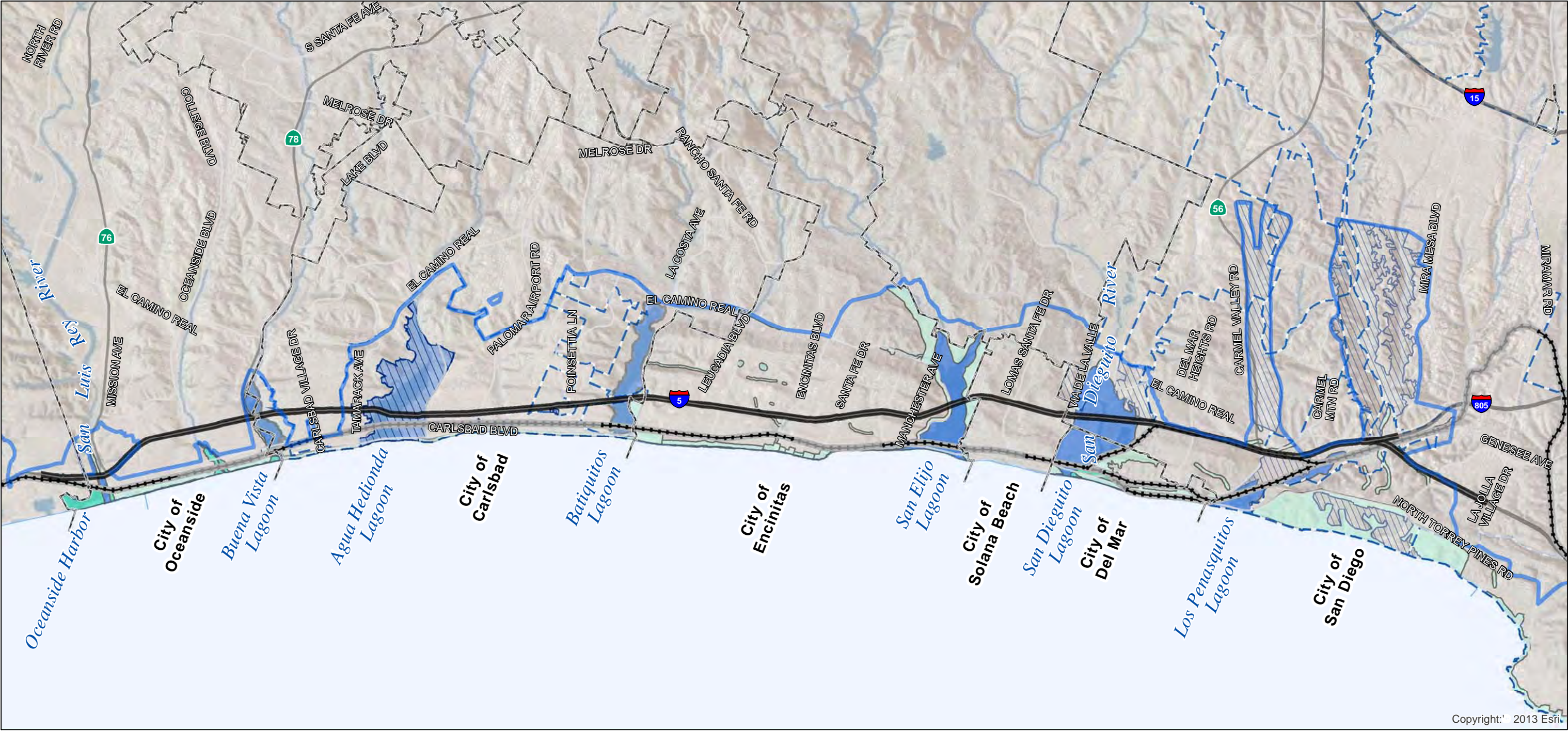
DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD Flowlines, Imagery: DigitalGlobe March 2008.

The Coastal Zone boundary jurisdiction and Local Coastal Program data in this map are for planning and engineering study purposes only. Data are derived from multiple sources. The digital Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map have not been adopted by the Coastal Commission, and do not supersede the official versions certified by the Coastal Commission as may be amended from time to time.

Disclaimer: The State of California makes no representations or warranties regarding the accuracy or completeness of the files or the data from which they were derived. The State shall not be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of these Coastal Zone boundary, jurisdiction and Local Coastal Program files or the data from which they were derived. Because the Coastal Zone boundary, jurisdiction and Local Coastal Program data files are merely representational, they and the data from which they were derived are not binding and may be revised at any time.

FIGURE 2-1
Regional and Corridor Map

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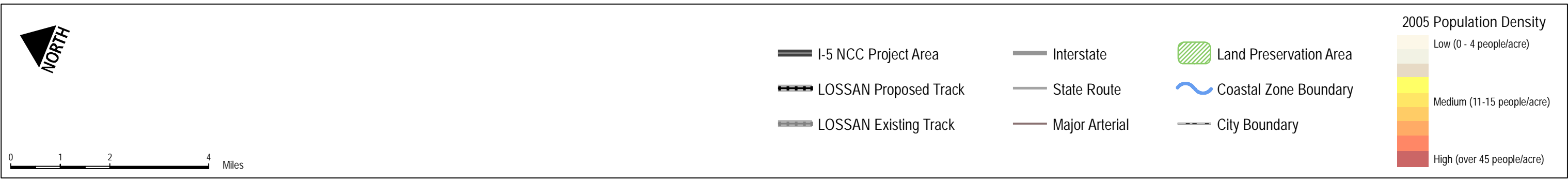
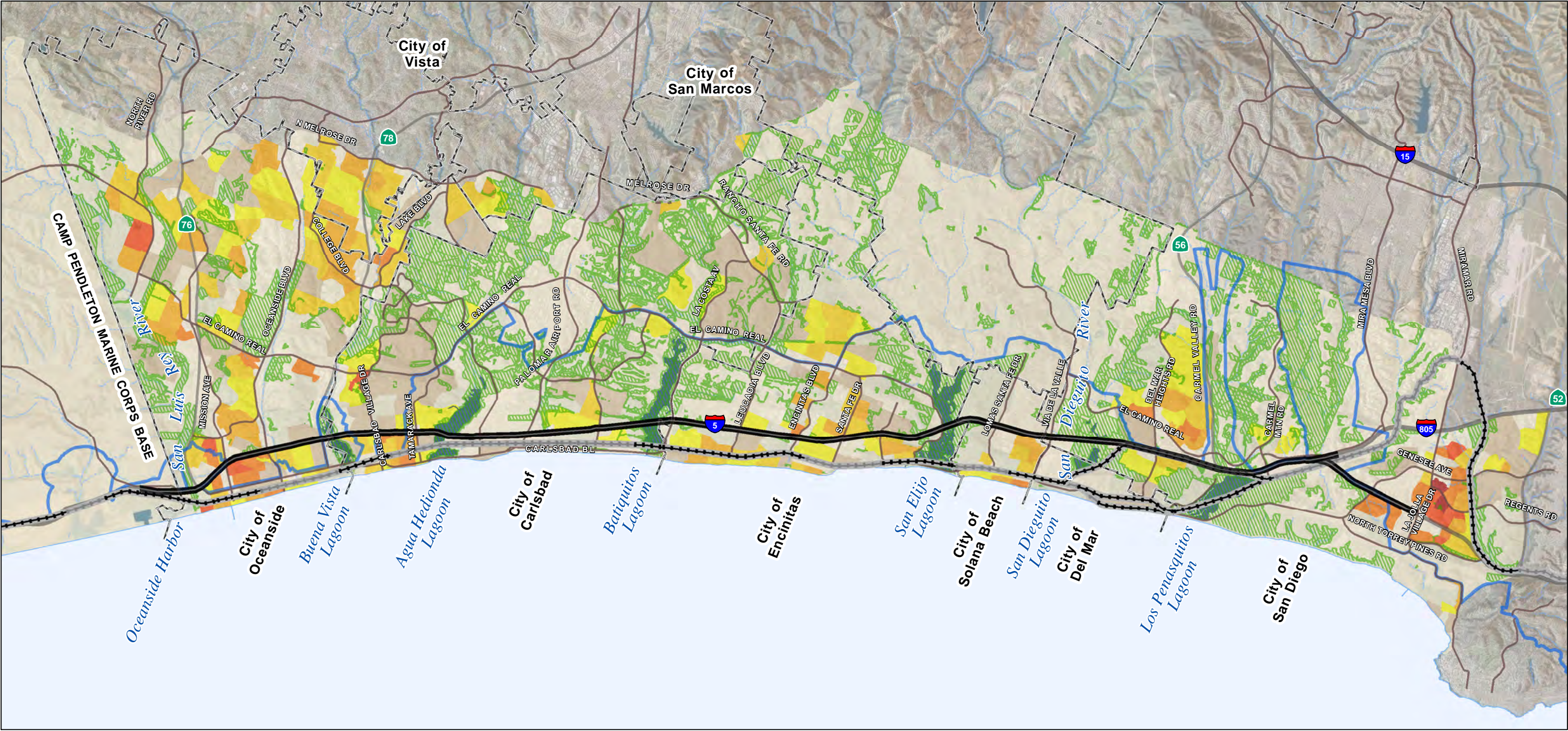
DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD Flowlines, Imagery: DigitalGlobe March 2008

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FIGURE 2-2

Coastal Zone Jurisdiction Overview

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

The Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map are for planning and engineering study purposes only. Data are derived from multiple sources. The digital Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map have not been adopted by the Coastal Commission, and do not supersede the official versions certified by the Coastal Commission as may be amended from time to time.

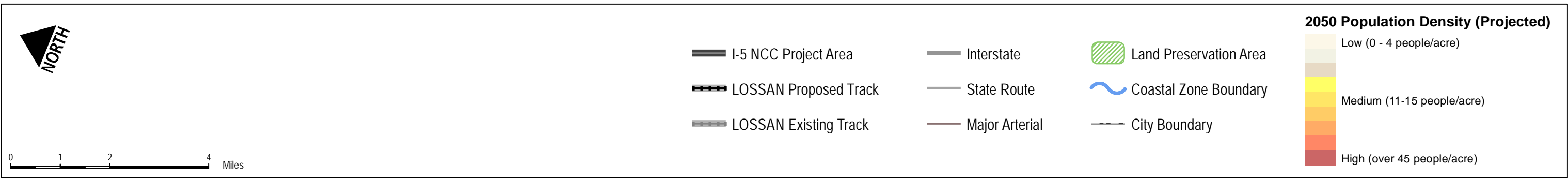
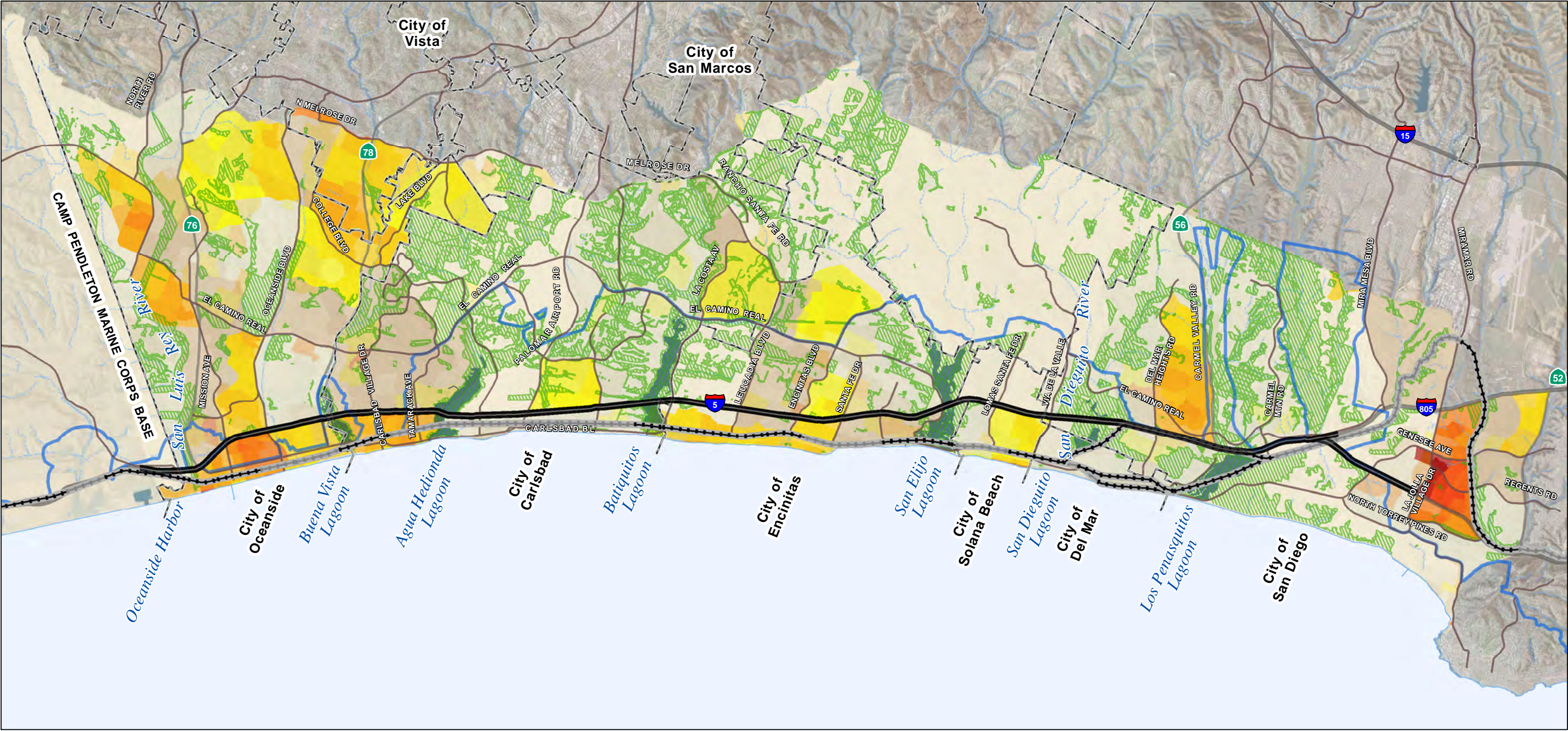
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FIGURE 2-3

Population Density (2005) and Land Preservation Areas

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

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FIGURE 2-4

Population Density (2050 Projected) and Land Preservation Areas

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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In 2010, there were approximately 210,000 housing units in the corridor (18% of the regional housing stock). Nearly 32,000 additional housing units are anticipated to be constructed within the corridor by 2040 (a 15% increase over current conditions). In 2010, corridor employment was approximately 278,000 (slightly less than 20% of the region's total employment). By 2040, corridor employment is expected to increase to 358,000. Employment within the corridor is primarily located along established transportation routes or concentrated into large activity/employment centers. The majority of jobs in the corridor are located in the City of San Diego, particularly within the Sorrento Valley, Sorrento Mesa, University City/Golden Triangle areas, and at the University of California, San Diego (UCSD). Future employment in the corridor is expected to continue to grow within the established employment centers, along with expanding employment centers in the eastern portions of Carlsbad and Oceanside.

Population growth in neighboring regions, which often exceeds that of the corridor because of the availability of affordable housing and developable land, also affects travel demand in the corridor by generating pass-through traffic to and from the borders with Mexico and the counties of Riverside, Imperial, Orange and Los Angeles. While the 2040 population of San Diego County is expected to increase by 29% from its 2010 level, in this same timeframe the neighboring Imperial County, Riverside County, and Baja California, Mexico, are projected to experience population growth rates of 94%, 87%, and 65%, respectively.³ Travel between San Diego and these regions is expected to lead to additional increases in trips (and therefore additional congestion) in the NCC.

2.1.1.1 City of San Diego⁴

Existing Land Use

San Diego is the most populous city in the county. San Diego had a 2010 population of over 1.3 million people and has an overall land area of 342.5 square miles.⁵ The city comprises 52 communities, five of which are located within the NCC: La Jolla, University City, Torrey Pines, Torrey Hills, and Carmel Valley. These communities are located in the northwestern area of the city.

Within these communities, primary land uses include parks/open spaces; residential, commercial, light industrial; and UCSD. Residential land uses are generally located in Carmel Valley, Torrey Pines, and Torrey Hills and in the communities surrounding UCSD (University City and La Jolla). Parks and open spaces, which include Torrey Pines State Reserve and Los Peñasquitos Canyon Preserve, are prominent in the areas surrounding the I-5/I-805 junction (University City and Torrey Pines). In the northernmost area of the city (south of Solana Beach), a large open-space corridor, consisting of land mostly restricted from development, has been established within San Dieguito River Valley. Commercial land uses are generally located along major transportation corridors (including I-5, Del Mar Heights Road, La Jolla Village Drive) and surrounding UCSD. Industrial/employment land uses are concentrated in areas surrounding the I-5/I-805 junction (University City and Torrey Pines) and include high concentrations of employment in Sorrento Valley and North University City. UCSD—with a 2011 campus enrollment of 29,300 students and a 1,200-acre campus—is located in the La Jolla area of San Diego, which is south of the corridor.⁶ A portion of Del Mar Fairgrounds and Racetrack is located in the northernmost area of the city (south of Solana Beach), with the remainder of the property located in Del Mar. UCSD, Sorrento Valley, North University City, and Del Mar Fairgrounds and Racetrack are large trip generators in the corridor, though trips generated by Del Mar Fairgrounds and Racetrack are

³ SANDAG/Caltrans Series 12 Model, November 2011; California Department of Finance; United Nations Department of Economic and Social Affairs; Mexico Consejo Nacional de Población (CONAPO).

⁴ I-5 NCC Project Draft EIR/EIS (Section 3-1), June 2010.

⁵ SANDAG Profile Warehouse, March 2012.

⁶ Total Campus Enrollment, UC San Diego Student Affairs, Fall 2011. <http://studentresearch.ucsd.edu/sriweb/enroll/total.pdf>. Accessed May 2, 2012.

seasonal, occurring in the summer months. Figure 2-5 illustrates the portion of San Diego in the Coastal Zone and coastal permit jurisdiction boundaries.

Development Trends

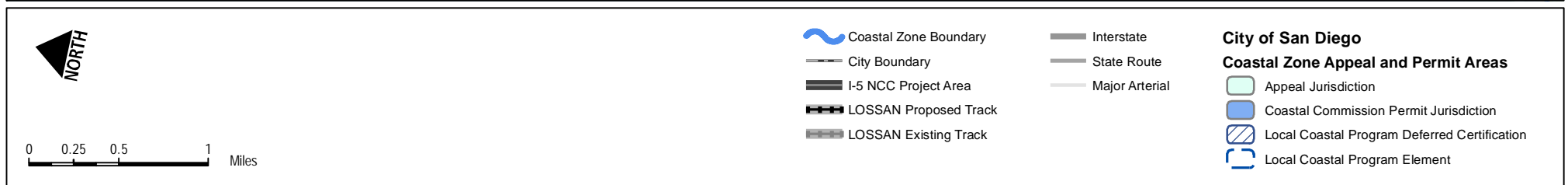
For the past 40 years, the City of San Diego, like other California cities, has experienced rapid population growth and urbanization. Because the majority of land within the city has been developed, the city is planning for more infill development in the future. The City of San Diego General Plan (adopted in 2008) shifts the focus from how to develop vacant land to how to reinvest in existing communities. The plan focuses growth into mixed-use activity centers that are pedestrian-friendly and that are linked to an improved regional transit system. The intent of the strategy is to preserve established residential neighborhoods and open spaces while managing the city's long-term growth.

Local Coastal Program

San Diego has a fully certified LCP and issues coastal development permits throughout most of its Coastal Zone area. The City of San Diego LCP consists of 12 segments. One segment is the North City LCP, which is divided into individual communities, each with its own community plan or coastal land use plan. The City also prepared a Multiple Species Conservation Program Subarea Plan for the region's Natural Community Conservation Plan, which is a certified element of the LCP. Although the LCP land use plan is segmented and, in the case of the North City segment, subdivided into individual community plans, the local implementation plan consists of a single element. Not all areas included in the North City LCP have been fully certified; thus, the Coastal Commission has jurisdiction to issue coastal development permits in the uncertified areas based on consistency with the California Coastal Act. The areas of deferred certification relative to the PWP corridor are as follows:

- **Via de la Valle Specific Plan** includes approximately 100 acres east of I-5 and north of Via de la Valle.
- **South Slopes** includes a number of small, unplanned areas on the south slopes of the San Dieguito River Valley, east of I-5 and on properties outside the 100-year floodplain.
- **Carmel Valley** includes approximately 400 acres along Carmel Creek, east of I-5 at Carmel Valley Road and situated within the Neighborhood #8 Precise Plan area (a certified area). This area includes portions of the valley located within the City's Urban Reserve (and outside of North City West area) further east.
- **Los Peñasquitos Regional Park** includes approximately 600 acres in Los Peñasquitos and Lopez Canyons, at the easterly end of Sorrento Valley Boulevard.
- **Torrey Pines State Natural Reserve** is a 75-acre area that includes a mesatop and steep coastal bluffs.
- **Cal Sorrento Property** includes approximately 25 acres located just east of I-805 and north of Los Peñasquitos Creek.

The areas of deferred certification are shown on Figure 2-5. The PWP improvements planned in San Diego would be located entirely in the North City LCP area and occur within University City, Torrey Pines, Torrey Hills, and the North City Future Urbanizing Area. Within San Diego, the proposed PWP/TREP improvements span areas both within and outside the Coastal Zone, and would be located in areas subject to the City's certified LCP as well as areas of deferred certification.



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

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FIGURE 2-5

Jurisdiction Map (City of San Diego)

2.1.1.2 City of Del Mar⁷

Existing Land Use

Del Mar is the smallest city in the NCC. The 2010 population was approximately 4,500 people⁸ and the overall land area is 1.79 square miles. It is a narrow, north-south oriented municipality bordered by Solana Beach to the north, San Diego to the east and the south, and the Pacific Ocean to the west. The city is located west of I-5. The LOSSAN rail corridor travels through Del Mar along the coast and bluffs at the south end of the city, and then turns inland at the north end where it runs between Camino del Mar (Coast Highway) to the west and Del Mar Fairgrounds and Racetrack to the east.

Because of its small size and desirable location, Del Mar is urbanized and consists primarily of residential land uses. The 1993 City of Del Mar Local Coastal Plan divides the city into 10 districts, with allowable residential densities ranging from 1 to 17.5 dwelling units per acre (du/ac) specified for each district. The city also has interspersed commercial land uses along Camino del Mar, a major transportation corridor, within an area known as “Village Center.” This area serves as the city’s principal commercial, tourism, and professional area. Del Mar Fairgrounds and Racetrack, a regional sporting and entertainment venue, is located in the northernmost area of the city, extending slightly into the City of San Diego. San Dieguito Lagoon separates Del Mar Fairgrounds and Racetrack from residential uses to the south. The Del Mar portion of the Coastal Zone and coastal permit jurisdiction boundaries are shown in Figure 2-6.

Development Trends

Del Mar is almost entirely developed. Compared to the San Diego region, Del Mar has experienced, and will likely continue to experience, low population growth. The city is mostly built out, has low housing vacancy rates, few multi-family developments, and high housing costs. Future development in the city will most likely consist of infill development and redevelopment on existing lots.

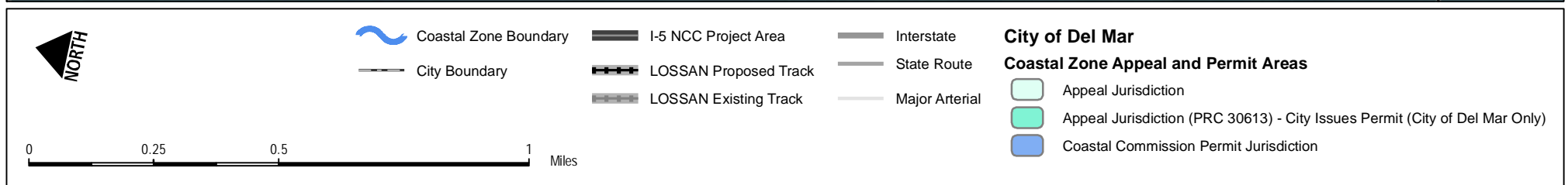
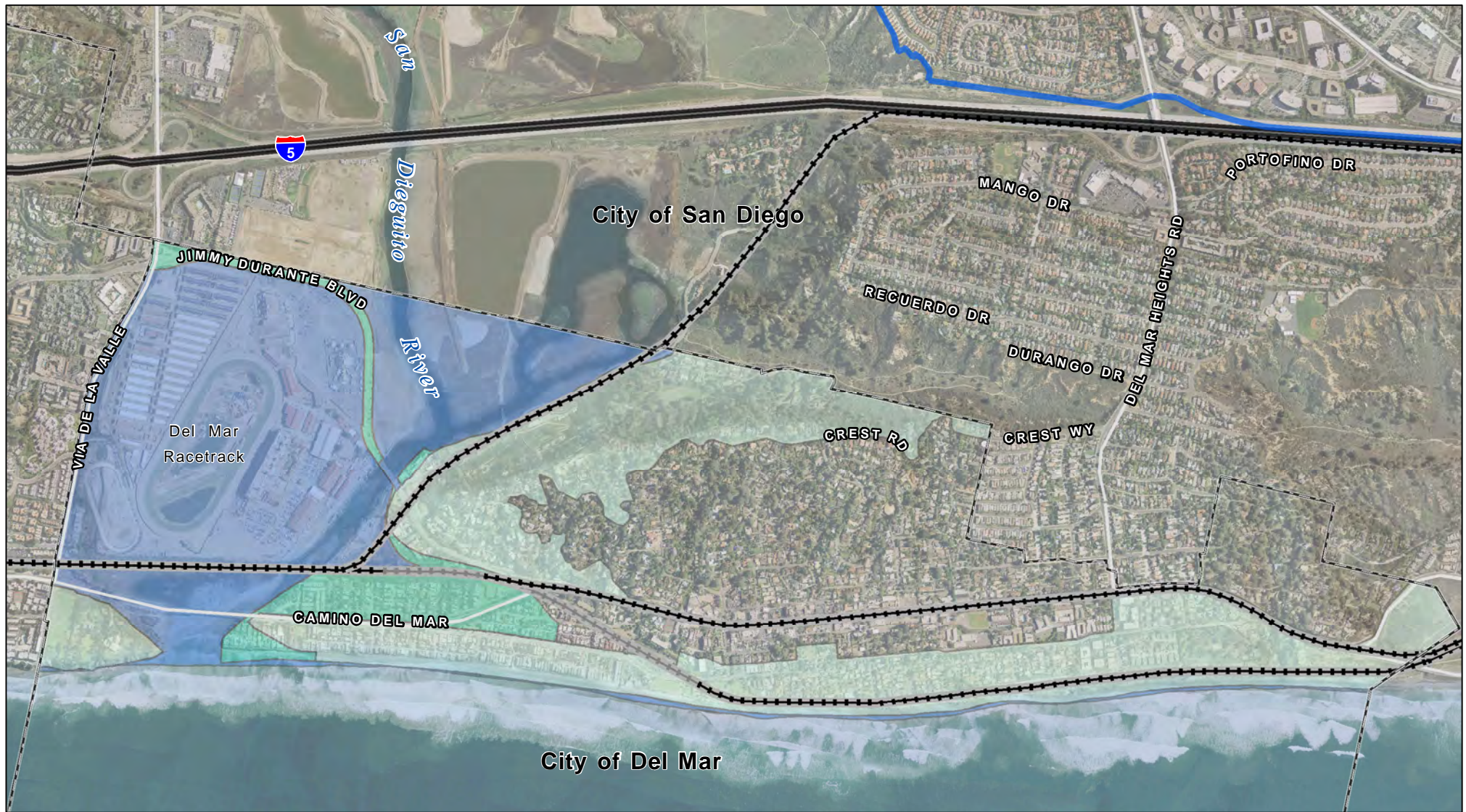
Development plans also exist for Del Mar Fairgrounds and Racetrack, which is managed by the 22nd District Agricultural Association, an independent agency of the State of California. The 2008 Del Mar Fairgrounds and Horsepark Master Plan proposes immediate near-term and conceptual long-term projects to be developed over the next 15 years. The near-term projects are intended to maintain and improve existing facilities, while the conceptual longer-term projects, which require additional planning and regulatory approval, consist primarily of maintaining existing facilities and constructing a new hotel, sports complex, other structures, and trails. Included in the long-term projects is a special-event train platform adjacent to the existing LOSSAN tracks.

Local Coastal Program

Del Mar has a certified LCP and issues coastal development permits throughout most of its Coastal Zone area. Del Mar’s LCP is certified as a single element and includes the city’s Multiple Species Conservation Plan Subarea Plan. The 22nd District Agricultural Association lands located within the Del Mar LCP are in a deferred certification area. The Coastal Commission retains jurisdiction in this area and issues coastal development permits based in part on project consistency with the Coastal Act. PWP/TREP improvements within Del Mar are limited to rail line improvements and associated facilities including a proposed passenger platform. Within Del Mar, the proposed PWP/TREP improvements would be located in areas subject to the City’s certified LCP as well as areas of deferred certification.

⁷ I-5 NCC Project Draft EIR/EIS (Section 3-1), June 2010.

⁸ SANDAG/Caltrans Series 12 Model, November 2011.



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

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FIGURE 2-6

Jurisdiction Map (City of Del Mar)

2.1.1.3 City of Solana Beach⁹

Existing Land Use

North of Del Mar, Solana Beach is the second least-populous city in the corridor after Del Mar. Solana Beach had a 2010 population of approximately 13,300 people and has an overall land area of 3.42 square miles.¹⁰ Solana Beach is bordered by Encinitas to the north, unincorporated San Diego County to the east, Del Mar and San Diego to the south, and the Pacific Ocean to the west. The city is bisected by I-5. The LOSSAN rail corridor runs through Solana Beach parallel to, and east of, Coast Highway.

Due to its size and desirable location, Solana Beach is almost entirely developed. The majority of land consists of residential land uses, with densities ranging from 0.16 to 20 du/ac. Commercial land uses, including some mixed-use development, are located along transportation corridors, including Coast Highway, Cedros Avenue, and Stevens Avenue, and are in proximity to the Lomas Santa Fe Drive/I-5 interchange. Immediately west of I-5, south of Lomas Santa Fe Drive, commercial, public services, and industrial land uses are grouped into one area. East of I-5, there is a regional retail center and a golf course that weaves through residential developments. Immediately north of the city, partially within the city boundary, is San Elijo Lagoon. The LOSSAN rail corridor passes through a generally commercial area with some higher-density residential and mixed uses. The Solana Beach portion of the Coastal Zone and coastal permit jurisdiction boundaries are shown in Figure 2-7.

Development Trends

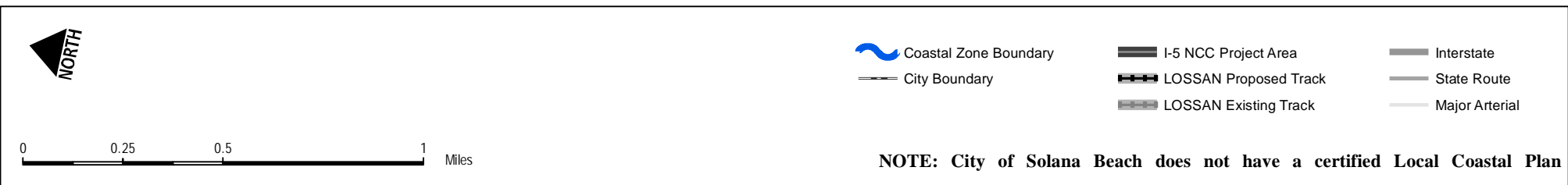
In 1986, when Solana Beach was incorporated, the population was estimated to be about 15,000 people. Since then, population estimates have decreased due to increased vacancy rates, a decrease in the average household size, and an increase in the number of housing units being purchased as second homes. Future development in the city will most likely consist of infill development and redevelopment in areas west of I-5, along Coast Highway, Cedros Avenue, and Lomas Santa Fe Drive, where scattered vacant sites are either designated or considered suitable for residential use. The city encourages the expansion of housing development opportunities through mixed-use development. Adopted amendments to the City of Solana Beach General Plan facilitate this growth stating the following: "In order to implement the city's redevelopment plan, mixed-use concepts of the Highway 101 Corridor Specific Plan, and the Housing Element, residential uses are allowed as a secondary use in conjunction with permitted commercial uses."

Local Coastal Program

Solana Beach is located entirely in the Coastal Zone; however, it is the only city in the corridor that does not yet have a fully certified LCP. The City's LCP land use plan component was approved with conditions by the Coastal Commission in March 2012; it is currently pending final approval by the City. The Coastal Commission will continue to have jurisdiction to issue coastal development permits within the city until approval of the City's LCP implementation plan component, which is under preparation.

⁹ I-5 NCC Project Draft EIR/EIS (Section 3-1), June 2010.

¹⁰ SANDAG/Caltrans Series 12 Model, November 2011.



2.1.1.4 City of Encinitas¹¹

Existing Land Use

Encinitas is the fourth-most populous city in the NCC, with a 2010 population of approximately 64,600 people and an overall land area of 19.4 square miles.¹² Encinitas is bordered by Carlsbad to the north, unincorporated San Diego County to the east, Solana Beach to the south, and the Pacific Ocean to the west. The I-5 corridor is located in the western area of the city. The LOSSAN rail corridor, located west of I-5, travels through the city, generally paralleling the east side of Coast Highway.

Encinitas is largely urbanized and consists of a mixture of residential, commercial, open space, and agricultural land uses. Residential land uses are the most prominent with densities ranging from 0.25 to 25 du/ac. Commercial land uses are generally located along major transportation corridors, including Coast Highway, Encinitas Boulevard, and El Camino Real. Agricultural land uses exist throughout the city, with larger areas located east of I-5 near Encinitas Ranch Golf Course. Open spaces are also located east of I-5 near Batiquitos Lagoon, which is located at the northern city boundary; San Elijo Lagoon, which is located at the southern city boundary; and Encinitas Ranch Golf Course. Undeveloped land is located east of I-5 near Batiquitos Lagoon, west of I-5 at Santa Fe Drive, and east of South El Camino Real near Manchester Avenue. The Encinitas portion of the Coastal Zone and coastal permit jurisdiction boundaries are shown in Figure 2-8.

Development Trends

Like the majority of coastal cities in southern California, Encinitas has grown at a relatively rapid pace over the last several decades. As such, the City of Encinitas General Plan addresses growth-management and states policies and guidelines to facilitate development in a slower, more orderly way, in accordance with a long-term plan, to protect and enhance community values. Policy 2.3 states, “growth will be managed in a manner that does not exceed the ability of the City, special districts and utilities to provide a desirable level of facilities and services.”

Much of the remaining undeveloped land within the city is constrained by environmental factors. However, there is potential to add infill housing units in mixed-use developments in downtown Encinitas and along Coast Highway.

Local Coastal Program

Encinitas has a fully certified LCP and issues coastal development permits throughout its Coastal Zone area. The City of Encinitas LCP is certified as a single element and includes the City's Multiple Habitat Conservation Program. There are no areas of deferred certification in Encinitas.

¹¹ I-5 NCC Project Draft EIR/EIS (Section 3-1), June 2010.

¹² SANDAG/Caltrans Series 12 Model, November 2011.



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0 0.25 0.5 1 Miles

City Boundary

Coastal Zone Boundary

I-5 NCC Project Area

LOSSAN Proposed Track

LOSSAN Existing Track

Interstate

State Route

Major Arterial

City of Encinitas

Coastal Zone Appeal and Permit Areas

Appeal Jurisdiction

Coastal Commission Permit Jurisdiction

DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

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FIGURE 2-8

Jurisdiction Map (City of Encinitas)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

2.1.1.5 City of Carlsbad¹³

Existing Land Use

Carlsbad is the third-most populous city in the NCC, with a 2010 population of approximately 103,500 people and an overall land area of 42.2 square miles.¹⁴ Carlsbad is bordered by Oceanside to the north, the cities of Vista and San Marcos to the east, Encinitas to the south, and the Pacific Ocean to the west. I-5 travels through the western area of the city. The LOSSAN rail corridor runs parallel to, and west of I-5 and east of Carlsbad Boulevard (Coast Highway).

Carlsbad is an urbanized municipality with a mix of land uses. Residential uses are predominant and concentrated in the northern and southern areas of the city. McClellan-Palomar Airport is located south of the Agua Hedionda Lagoon valley and north of Palomar Airport Road in the geographic center of the city. Because of health, safety and noise impacts associated with airport operations, residential and institutional uses are excluded from large areas around the airport. These areas have instead been developed into industrial and commercial uses or retained as open space. Thus, central Carlsbad has become a regional employment center. Commercial land uses are located along major thoroughfares including Carlsbad Village Drive and State Route 78 (SR 78), and east of I-5 (between Cannon Road and Palomar Airport Road). Vacant land is generally in areas surrounding the airport and industrial center. The city also has interspersed golf course, public service, and public utility lands. The Buena Vista, Agua Hedionda, and Batiquitos Lagoons are located in Carlsbad. Carlsbad also has several large tourist attractions, including Legoland, “The Flower Fields,” Westfield Shoppingtown Plaza El Camino Real, and the Carlsbad Company stores. The Carlsbad portion of the Coastal Zone and coastal permit jurisdiction boundaries are shown in Figure 2-9.

Development Trends

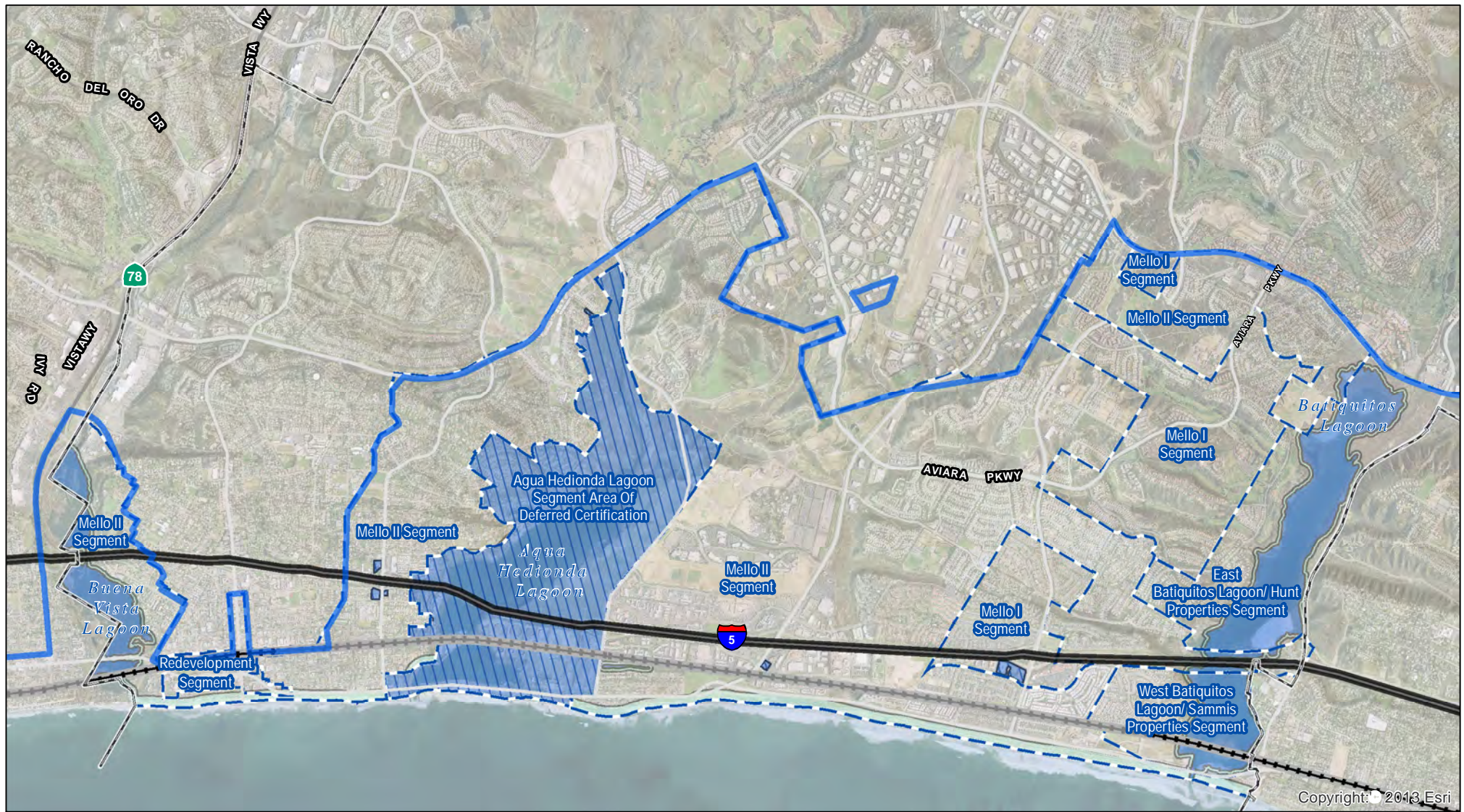
Since 1986, Carlsbad has been a “growth management” city, where major public facilities have been carefully planned and financed with defined capacities to best serve a targeted build-out population and number of household units. Future development patterns will be influenced by the city’s unique landforms, nonresidential central area, the airport, and the regional employment center surrounding the airport.

To help preserve quality of life for its residents, the city has developed the Carlsbad Growth Management Plan, which was ratified by voters in 1986, and is included in the 1994 Carlsbad General Plan. The Growth Management Plan ensures that adequate public facilities and services accompany new development. Additionally, the Citywide Facilities and Improvement Plan and the Local Facilities Management Plan have been established to provide a more orderly and systematic set of development guidelines. As of 2012, only 6% of Carlsbad’s total land area is considered remaining developable land, with over half of that planned for residential development.¹⁵

¹³ I-5 NCC Project Draft EIR/EIS (Section 3-1), June 2010.

¹⁴ SANDAG/Caltrans Series 12 Model, November 2011.

¹⁵ SANDAG, July 2012.



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0 0.25 0.5 1 Miles

- City Boundary
- Coastal Zone Boundary
- I-5 NCC Project Area
- LOSSAN Proposed Track
- LOSSAN Existing Track
- Interstate
- State Route
- Major Arterial

City of Carlsbad

Coastal Zone Appeal and Permit Areas

- Appeal Jurisdiction
- Coastal Commission Permit Jurisdiction
- Local Coastal Program Deferred Certification
- Local Coastal Program Element

DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

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FIGURE 2-9

Jurisdiction Map (City of Carlsbad)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

Local Coastal Program

Carlsbad has a certified LCP and issues coastal development permits throughout most of its Coastal Zone area. The City of Carlsbad LCP consists of six segments: the Agua Hedionda Lagoon land use plan (which is not fully certified by the Coastal Commission); Mello I; Mello II; West Batiquitos Lagoon/Sammis Properties; East Batiquitos Lagoon/Hunt Properties; and the Carlsbad Village Redevelopment Area. In addition, Carlsbad completed a Multiple Habitat Conservation Program Subarea Plan, which has been incorporated into the Mello I, Mello II, West Batiquitos Lagoon/Sammis Properties, and East Batiquitos Lagoon/Hunt Properties segments of the City's certified LCP. Not all properties included in the City of Carlsbad LCP have been fully certified; thus, the Coastal Commission retains jurisdiction to issue coastal development permits in these areas. The areas of deferred certification consist of the following:

- **Tamarack Street 1** includes two properties located at the northwest corner of I-5 and Tamarack Street.
- **Tamarack Street 2** includes one property located at the southwest corner of I-5 and Tamarack Street.
- **Tamarack Street 3** includes two properties located at the northeast corner of I-5 and Tamarack Street.
- **Palomar Airport Road/Avenida Encinas** includes one property located at the southeast corner of Avenida Encinas and Palomar Airport Road.
- **I-5/Poinsettia Lane** includes properties described as Lots 2–7 of Specific Plan SP-186 located at the northwest corner of I-5/Poinsettia Lane.
- **Agua Hedionda Lagoon** includes the lagoon area and adjacent upland areas. A coastal land use plan is certified for this segment; however, the segment will continue to be an area of deferred certification until an implementation plan for the segment is certified.

Areas of deferred certification within Carlsbad are shown in Figure 2-9. Within Carlsbad, the proposed PWP/TREP improvements would be located in areas subject to the City's certified LCP as well as areas of deferred certification.

2.1.1.6 City of Oceanside¹⁶

Existing Land Use

Oceanside is the second-most populous city in the NCC, with a 2010 population of just over 179,000 people and an overall land area of 42.16 square miles.¹⁷ Oceanside is bordered by Camp Pendleton to the north, the city of Vista and unincorporated San Diego County to the east, Carlsbad to the south, and the Pacific Ocean to the west. I-5 travels through the western area of the city. Just south of the city limits, the LOSSAN rail corridor crosses to the west of Coast Highway and continues parallel to the ocean.

West of I-5, Oceanside is highly urbanized. Residential land uses are predominant, with densities ranging from 0.9 to 43.0 du/ac. This includes transit-oriented development at the Oceanside Transit Center (COASTER/SPRINTER/Amtrak/bus) station. The eastern areas of the city are generally more rural in character, with a greater amount of open space, agricultural, and low-density residential lands. Oceanside has a well-defined commercial downtown extending north and south along both sides of Coast Highway. In addition to the downtown area, commercial land uses are also generally located along major transportation corridors including Mission Avenue, SR 76, and Oceanside Boulevard. Industrial land uses are concentrated east of I-5 and north of Oceanside Boulevard, in the Rancho Del Oro planning area. Vacant/undeveloped land uses generally surround existing industrial areas. The city also has interspersed public service, park, golf course, and agricultural lands. An open-space corridor of mainly undevelopable land associated with San Luis Rey River is located along the northern edge of the city. The Oceanside portion of the Coastal Zone and coastal permit jurisdiction boundaries are shown in Figure 2-10.

Development Trends

Since 1970, Oceanside's population growth has occurred at a higher rate than the overall San Diego region. During the 1970s and 1980s, the population grew by 82% and 67%, respectively. By 1995, approximately 75% of the land was developed. Approximately 10% of the remaining land is undevelopable.

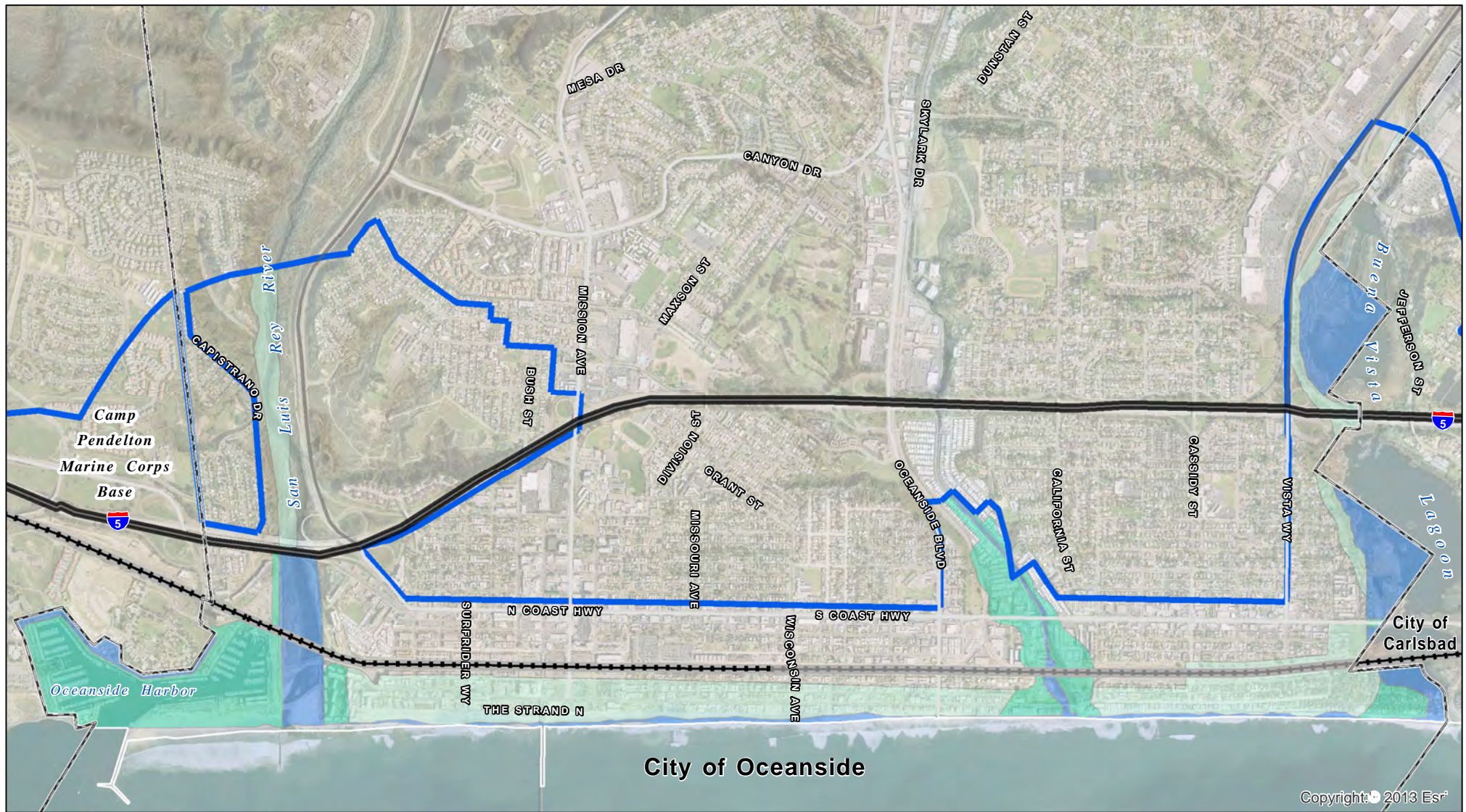
The City of Oceanside General Plan identifies a broad range of residential land use categories, housing types, and densities. The city does not currently implement any growth-management activities to constrain residential development.

Local Coastal Program

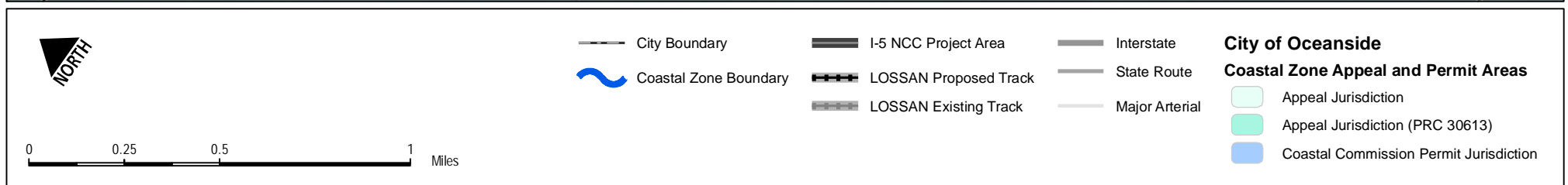
Oceanside has a fully certified LCP and issues coastal development permits throughout its Coastal Zone area. The City of Oceanside LCP is certified as a single element. There are no areas of deferred certification in Oceanside. Within Oceanside, the proposed PWP/TREP improvements span areas both within and outside of the Coastal Zone boundary.

¹⁶ I-5 NCC Project Draft EIR/EIS (Section 3-1), June 2010.

¹⁷ SANDAG/Caltrans Series 12 Model, November 2011.



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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

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FIGURE 2-10

Jurisdiction Map (City of Oceanside)

2.1.2 Existing Rail and Transit Facilities

The NCC features two rail corridors that transport passengers and freight, local bus services that are provided by two transit agencies, and vanpool and carpool services that are offered by both public and private entities.

2.1.2.1 LOSSAN Rail Corridor: Amtrak, COASTER, Metrolink, and Freight Rail

The LOSSAN rail corridor connects the major metropolitan areas of Southern California and the Central Coast, serves some of the most populous areas of the state, and runs roughly north-south through six counties: San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, and San Diego. It is the second-busiest intercity passenger rail corridor in the nation. Within the NCC, Amtrak's Pacific Surfliner intercity rail, COASTER and Metrolink commuter rail, and BNSF Railway and Pacific Sun Railroad freight services all operate along parts of the corridor. Figure 2-11 illustrates the LOSSAN rail corridor as well as the other transit facilities in the NCC.

The LOSSAN rail corridor segment within the NCC was initially constructed by Santa Fe Rail Lines between 1881 and 1918. In 1992, the North County Transit District (NCTD) and the San Diego Metropolitan Transit System (MTS) acquired this segment of the rail corridor from the Atchison, Topeka & Santa Fe Railroad Company. Within the NCC, NCTD owns the northern portion of the LOSSAN rail tracks (from Oceanside to Del Mar), while MTS owns the portion located in the city of San Diego. In 1995, NCTD began operating the COASTER commuter rail service in the corridor from Oceanside to downtown San Diego. As rail use has increased, the rail corridor has approached design capacity, which has spurred regional interest in improving corridor infrastructure to increase capacity and operating performance to support existing and proposed levels of rail service. Just over 46% of the line is single-tracked, lacking the passing tracks that would allow trains to travel in opposite directions simultaneously.¹⁸ Thus, multiple operators are required to share one track for both directions of travel, which often results in long waits while one train is waiting for another to pass.

A study by the California High-Speed Rail Authority in 1998-1999 determined that the corridor was not appropriate for dedicated high-speed rail service because of the highly constrained corridor and much larger footprint required for high-speed rail; however, conventional rail improvements in the corridor merited further study. Amtrak's California Passenger Rail System 20-Year Improvement Plan (2001) and the California State Rail Plan (2002) addressed proposed capital improvements and performance goals for the statewide rail system, including the LOSSAN rail corridor. These studies began to define alternatives for the corridor and outline a program-level approach for environmental review of LOSSAN rail corridor projects. Caltrans began a program-level environmental review of proposed LOSSAN rail corridor improvement alternatives from Los Angeles to San Diego in 2002 and released a Notice of Preparation, published a Notice of Intent, and conducted scoping activities. The following year, the LOSSAN Corridor Strategic Plan reviewed the corridorwide alternatives. A Draft LOSSAN Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) was released in August 2004. A Final Program EIR/EIS was released in September 2007 by Caltrans and its federal partner, the Federal Railroad Administration. The program-level environmental document allowed lead agencies to consider a future program of long-term improvements to the LOSSAN rail corridor. Project-level environmental review will be conducted for site-specific decisions.

The LOSSAN Board of Directors and member agencies are a Joint Powers Authority (JPA) formed to oversee efforts to improve the rail corridor. The LOSSAN Corridorwide Strategic Business Plan was released in 2007 to provide a framework for future improvements for the entire 351-mile corridor. An

¹⁸ SANDAG, May 2012.

updated study commissioned by the LOSSAN JPA Board of Directors, the Corridorwide Strategic Implementation Plan, was released in 2012.

The COASTER commuter rail service, operated by NCTD, serves eight stations: Oceanside Transit Center, Carlsbad Village, Carlsbad Poinsettia, Encinitas, Solana Beach, Sorrento Valley, Old Town (San Diego), and Santa Fe Depot (downtown San Diego). With the exception of the two southernmost stations, all COASTER stations are located within the NCC. There are 22 to 26 COASTER train trips on weekdays, each with five-car trains operating under approximately 30-minute headways during the morning and evening peak periods, and less frequently during the off-peak. The average travel time between the Oceanside Transit Center and Santa Fe Depot is 57 minutes. There is service on Saturdays and Sundays as well (although with less frequency), plus special service during major sporting events. COASTER ridership has almost tripled since opening in 1995. The COASTER serves approximately 5,500 passengers each weekday and over 1.6 million passengers per year, with the majority of those customers beginning or ending their trips in the NCC.¹⁹

Metrolink commuter rail service is operated by the Southern California Regional Rail Authority and connects the Oceanside Transit Center with Orange, Los Angeles, Riverside, and San Bernardino Counties. Metrolink trains only serve the Oceanside Transit Center, the northernmost station in the NCC, providing a total of 16 trips (arrivals or departures) each weekday. On weekends, Metrolink runs a “Beach Train” (three times a day in each direction) that provides access from San Bernardino and Riverside to beaches in Orange County and Oceanside. In fiscal year 2012, approximately 575 passengers boarded Metrolink each weekday at the Oceanside Transit Center, for a total of over 150,000 passengers annually.²⁰

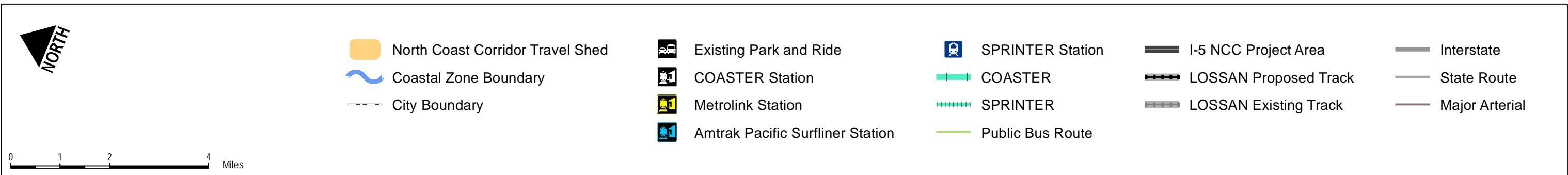
The Amtrak Pacific Surfliner provides intercity passenger rail service from downtown San Diego to Los Angeles Union Station and on to Santa Barbara and San Luis Obispo. Passengers can connect to Amtrak’s interstate passenger rail services at Union Station. The San Diego-to-Los Angeles route is the second-busiest intercity passenger rail route in the nation, with over 2.6 million passengers annually. There are 22 Pacific Surfliner trips on weekdays with frequencies of 60 to 90 minutes, and a total travel time to Los Angeles of approximately 2 hours and 45 minutes. Trains stop at the Oceanside Transit Center, Solana Beach, Old Town, and Santa Fe Depot stations in San Diego County. During fiscal year 2012, approximately 766,000 passengers boarded the Pacific Surfliner at stations within the NCC, with approximately 422,000 boardings at Solana Beach and 344,000 at Oceanside.²¹

A new ride-sharing agreement between NCTD and Amtrak extends COASTER service to select Pacific Surfliner trains. Begun in October 2013, the program requires 6 Pacific Surfliner trains per day (3 in each direction) to stop at all COASTER stations in the NCC, rather than just at Oceanside and Solana Beach. Any passenger with a paid COASTER fare can ride these Amtrak trains at no extra cost. This effectively increases the frequency of COASTER service, providing better access to and from the NCC and further maximizing the capacity of the LOSSAN rail corridor.

¹⁹ SANDAG, January 2013.

²⁰ Ibid.

²¹ Ibid.



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD Flowline, Imagery: DigitalGlobe March 2008

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FIGURE 2-12
Rail and Transit Facilities (Existing)

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Freight rail in the corridor services the movement of regional, interregional, interstate, and international goods. All freight services in the corridor are operated by BNSF Railway, which provides off-peak service from the Port of San Diego marine terminals to the Los Angeles area via four to eight daily trains, as well as short-haul services within the region operated by BNSF contractor Pacific Sun Railroad. The shared use agreement between BNSF, Southern California Regional Rail Authority, and NCTD prioritizes passenger trains over freight trains. This agreement also dictates a “restricted freight period” during which freight movements are strictly limited. Future demand is dependent on market forces and may lead to increases in the number of trains or to increases in train length.

2.1.2.2 SPRINTER Light Rail Transit

The east-west rail line in the NCC generally runs parallel to the SR 78 corridor. The SPRINTER light rail service operates approximately 18 hours per day and serves 15 stations on the 22-mile route between the Oceanside Transit Center and the Escondido Transit Center. Service is provided every 30 minutes in both directions. SPRINTER passenger service was initiated in March 2008 and now attracts over 2 million passengers annually, or approximately 7,000 passengers each weekday.²² The 2050 Regional Transportation Plan (RTP) contains plans to double-track the SPRINTER corridor by 2030, which will allow for increased frequencies as well as express service.

Freight service also runs on the east-west SPRINTER corridor and is temporally separated from passenger service. It is authorized to operate on weeknights between 10 P.M. and 4 A.M. Currently, the line is used two to three nights per week by BNSF and Pacific Sun freight trains, which traverse the corridor in approximately three hours.

2.1.2.3 Bus Network: MTS, NCTD, Private Operators

Both public and private buses operate within the NCC. Public bus service is provided by NCTD in the northern and central areas of the corridor, and by MTS in the south. Private coach services, Greyhound, and airport shuttles primarily use I-5 to make longer-distance trips through the corridor.

NCTD operates the vast majority of local bus service in the NCC. Its local buses, branded “BREEZE,” are the principal public transit option in all five NCC cities, with service reaching as far as the cities of Escondido and San Clemente and the communities of Ramona and Fallbrook. NCTD operates 34 bus routes that served 7.7 million riders in fiscal year 2011; 15 of those routes serve the NCC, carrying approximately 4.5 million passengers during the year.²³ This includes three COASTER Connection shuttles that operate from the Carlsbad Poinsettia Station during peak hours. These shuttle services meet COASTER trains to facilitate convenient passenger transfers, which improves the viability of COASTER as a commute mode since many employment centers are not within walking distance to rail stations. Several major employers in the area also provide private shuttles to and from the station.

In addition to traditional bus service, NCTD offers two on-demand “FLEX” services that provide door-to-door transportation to and from anywhere within the following designated service areas: southern Carlsbad (including Carlsbad Poinsettia Station) and Encinitas (including Encinitas Station). These services—which are available for an adult fare of \$5, or for free to anyone with a COASTER monthly pass—enhance COASTER service by providing the “last mile” connection to homes and employment centers.²⁴

²² SANDAG *Coordinated Plan 2012-2016* (Appendix C), July 2012.

²³ Ibid.

²⁴ The “last mile” (or “first mile”) refers to the access gap between transit services and a trip’s origin or destination. This is often cited as a reason more people do not ride transit: It can get riders close, but not close enough, for many trips.

MTS provides bus services in the southern portion of the corridor, reaching as far north as the University City neighborhood in the City of San Diego. Four MTS COASTER Connection shuttles operate principally in the NCC, linking the COASTER Sorrento Valley Station to employment sites in Sorrento Valley, Mira Mesa, and University City. As in Carlsbad, these public shuttle services are augmented by several private, employer-operated shuttles serving COASTER passengers. The other eight MTS bus routes in the NCC operate only at the southern edge of the corridor, providing service from University City to downtown San Diego, Old Town, and other major neighborhoods to the south.

Local bus routes in the NCC travel along regional arterials and local streets, with most of the public bus service in the corridor providing local circulation, serving short-distance trips, and acting as a feeder service to COASTER and SPRINTER services as well as local activity centers such as Camp Pendleton, Plaza Camino Real, and UCSD. With the exception of NCTD Route 101, which connects University City with Oceanside via Coast Highway, most bus services do not focus on serving regional and interregional trips.

2.1.2.4 Vanpools and Carpools

Some existing facilities and programs in the corridor encourage vanpooling and carpooling. SANDAG's Regional Vanpool Program provides subsidies to vanpool participants to encourage ridesharing. SANDAG subsidizes nearly 800 vanpools that serve approximately 6,000 passengers each weekday across San Diego County.²⁵ SANDAG also provides ride-matching services to encourage carpooling. Additionally, nine park-and-ride parking lots are located in the corridor to facilitate carpooling, vanpooling, and regional transit ridership. High-occupancy vehicle (HOV) lanes, commonly known as "carpool lanes," are provided on I-5 from the interchange at I-805 to just south of the interchange at Manchester Avenue. On a typical weekday, about 3,600 vehicles use the northbound HOV lane during the PM peak period, and about 1,800 and 1,400 vehicles use the southbound HOV lane during the PM and AM peak periods, respectively.²⁶ These figures are expected to grow significantly in the coming decades as travel demand continues to swell.

2.1.3 Existing Highway and Major Arterial Facilities

The NCC contains one major interstate highway that runs its entire length, several state highways of varying capacities, and multiple arterial roads. Together they comprise a roadway network that connects residents and visitors to the corridor's many residential, recreational, and community destinations.

2.1.3.1 Interstate Highways: I-5

I-5 is the principal north-south highway corridor in the western US and extends from the US/Mexico international border to the US/Canada international border. The federal government has named I-5 as one of six "Corridors of the Future" based on its essential role in interstate and international commerce.²⁷ In Southern California, I-5 connects San Diego County with Orange County and the Los Angeles metropolitan area. At the northern edge of the NCC, I-5 provides the primary access to Camp Pendleton, the country's second largest Marine Corps Base. Twenty miles south of the NCC, I-5 terminates at the San Ysidro Port of Entry, the world's busiest international border crossing.

²⁵ *iCommute Vanpool Program Hits Record-High Participation*, SANDAG rEgion Newsletter, October 2011. http://www.sandag.org/enewsletter/archives/october2011/feature_2.html. Accessed April 27, 2012.

²⁶ *District 11 Annual Summary of HOV and HOT Lane Operations 2010*, Caltrans, August 2012.

²⁷ U.S. Department of Transportation Press Release, September 10, 2007. <http://www.fhwa.dot.gov/pressroom/dot0795.htm>. Accessed April 27, 2012.

Most of I-5 within the project area was planned and constructed in the 1960s and 1970s as part of the Interstate Highway System. Within the NCC, I-5 has eight general-purpose lanes (four northbound and four southbound) that are separated by a median barrier. In the southern portion of the NCC—from the I-5/I-805 merge in San Diego to just south of Manchester Avenue in Encinitas—the highway also contains one HOV lane in each direction. The freeway includes 16 local street interchanges (in San Diego, Solana Beach, Encinitas, Carlsbad, and Oceanside) and four freeway-to-freeway interchanges (at I-805, SR 56, SR 78, and SR 76). I-5 acts as a local circulation and commuter link for coastal communities, a regional route to the Los Angeles metropolitan area, and as a regional and an international goods movement corridor. By the late 1980s, traffic congestion on I-5 had increased significantly due to population growth and shifts in the region's economy.

Within the NCC, I-5 serves as the transportation backbone, carrying more than 700,000 vehicle trips on an average weekday to and from local communities, employment centers, and recreational facilities.²⁸ Development of an additional north-south corridor to alleviate demand on I-5 is not feasible because of right-of-way limitations and natural resource constraints; thus, I-5 will be the only continuous north-south coastal route for the foreseeable future.

As congestion has grown on I-5, various studies have been initiated to determine how to best address corridor transportation. Between 1995 and 1997, Caltrans, SANDAG and other stakeholders conducted scoping meetings to initiate a Major Investment Study (MIS) for I-5, the LOSSAN rail corridor, parallel arterial streets, and other transportation modes in the NCC. Based on these scoping meetings, SANDAG developed the North Coast Transportation Study (the MIS for the NCC) in 2000. The MIS identified a range of transportation deficiencies and alternatives in the corridor along I-5 and I-805 between SR 52 and the Orange County line. Proposed improvements included the implementation of HOV lanes for the length of I-5 in the corridor, additional general-purpose lanes, and double-tracking on the LOSSAN rail corridor. Specific highway recommendations were developed concurrently by Caltrans in the Project Study Report for the I-5 NCC and supporting technical and environmental studies.

SANDAG's 2002 Regional High Occupancy Vehicle/Managed Lane Study determined that HOV demand in the corridor would require a four-lane HOV facility by 2030—an improvement that was then included in the 2030 RTP. Further technical study led to additional project elements such as the HOV viaduct on I-5 over Sorrento Valley, new general-purpose lanes in some segments, and direct access ramps. In November 2004, voters approved a 40-year extension of the *TransNet* sales tax measure, which is projected to generate \$14 billion for regional transportation improvements. The I-5 NCC project was among those listed on the ballot measure to receive funding through this program. The 2006 SANDAG Managed Lanes Value Pricing Study deemed "value pricing" feasible for the corridor HOV lanes.²⁹ Based on these studies, preparation of the I-5 North Coast Corridor Project Draft EIR/EIS was initiated and released for public review in June 2010.

Concurrently, the San Diego North Coast Corridor–Corridor System Management Plan (CSMP) was developed and released for public review in July 2010. A CSMP is required for the region to receive funds from California's Proposition 1B Corridor Mobility Improvement Account bond measure. Proposition 1B funding is directed to projects that move people and goods in California's most congested corridors. The CSMP looks at the entire integrated system of transit, local roadways,

²⁸ SANDAG/Caltrans Series 12 Model, November 2011.

²⁹ As detailed in Chapter 3B, Managed Lanes (now called Express Lanes) are HOV lanes that, in addition to providing uncongested travel for carpools, vanpools and transit vehicles, allow for excess capacity to be allocated to SOVs through variable pricing. The pricing for SOVs adjusts in real time in response to traffic conditions so as to maintain free-flow speeds for HOVs at all times. Express Lanes are highly efficient for managing highway operations since they prioritize HOV travel while allowing unused lane space (which would otherwise be wasted) to be occupied.

highways, pedestrians, and land use. The CSMP identifies priorities for each mode to phase improvements across jurisdictions and is a system- and performance-based approach to addressing mobility in the corridor.

Following the initial construction of I-5, few improvements to the corridor were made for several decades; however, in recent years, there have been multiple improvement projects, including freeway widening at the I-5/I-805 merge area, the addition of I-5 HOV lanes from the I-5/I-805 merge north to the Manchester Avenue interchange, construction of direct connector ramps (westbound SR 56 to southbound I-5) at the I-5/SR 56 freeway-to-freeway interchange, and other improvements. Additionally, Intelligent Transportation Systems (ITS) such as ramp meters and information displays have been introduced to the corridor to improve operations and capacity. The closest north-south highway alternative to I-5 is I-15, which parallels I-5 to the east. The I-5 and I-15 alignments are approximately 10 miles apart (separated by topographical barriers), and the I-15 corridor is a separate travel shed. (Travel sheds are defined considering origin and destination patterns, traffic volumes, land uses, terrain, route junctions, and modes of travel.) I-5, as well as other regional arterials and state highways, are shown in Figure 2-12.

2.1.3.2 Regional Arterials and State Highways

Regional arterials and state highways provide access to and within the NCC. Coast Highway and El Camino Real, the two primary north-south arterials in the NCC, supplement some of the local circulation provided by I-5. Before the construction of I-5, Coast Highway was the main north-south coastal route. After the development of I-5, control of the four-lane road was relinquished by the state to the jurisdictions through which it passed: Oceanside, Carlsbad, Encinitas, Solana Beach, Del Mar, and San Diego. Correspondingly, the jurisdictions have renamed Coast Highway to the following: Carlsbad Boulevard (Carlsbad), Highway 101/First Street (Encinitas), South Highway 101 (Solana Beach), Camino del Mar (Del Mar), Pacific Highway (San Diego), and it remains as Coast Highway in Oceanside. The road parallels I-5 about 0.5 mile to the west, traversing many of the same water resources. Congestion on I-5 generally spills over onto Coast Highway as “cut-through” traffic, creating congestion as drivers seek an alternate north-south coastal route; however, traffic calming, commercial development, and pedestrian enhancements in some areas have made Coast Highway a pedestrian oriented “Main Street” that does not provide a feasible alternative to I-5 for regional trips.

El Camino Real is the other north-south arterial in the corridor located 1 to 3 miles east of I-5. It runs through the newer, developing inland areas of San Diego, Encinitas, Carlsbad, and Oceanside and contains extensive commercial development near SR 76, SR 78, and SR 56 interchanges. El Camino Real is not continuous throughout the corridor, which prevents it from being a feasible alternative to I-5 for regional and some local trips. Within the corridor, El Camino Real runs from south of SR 56 to Via de la Valle in San Diego, and then again from Manchester Avenue in Encinitas to SR 76 in Oceanside.

In addition to the north-south regional arterials, there are three east-west state highways that intersect I-5 and provide access to the corridor:

- **SR 76** is a four-lane expressway from I-5 east to North Santa Fe Avenue, and a four-lane conventional highway to Jeffries Ranch Road before tying into the existing two-lane winding road east to I-15 and beyond. SR 76 intersects I-5 near the northern edge of the NCC. It is listed on the California State Scenic Highway System and is an east-west corridor between the communities of western Riverside County and the work and recreational areas of north coastal San Diego County.
- **SR 78** (located 3 miles south of SR 76) is the principal east-west arterial for northern San Diego County that links I-5 with I 15 to the east. There is extensive commercial development along SR 78.

It currently consists of three general-purpose lanes in each direction, and the construction of a new Express Lane in each direction is planned.

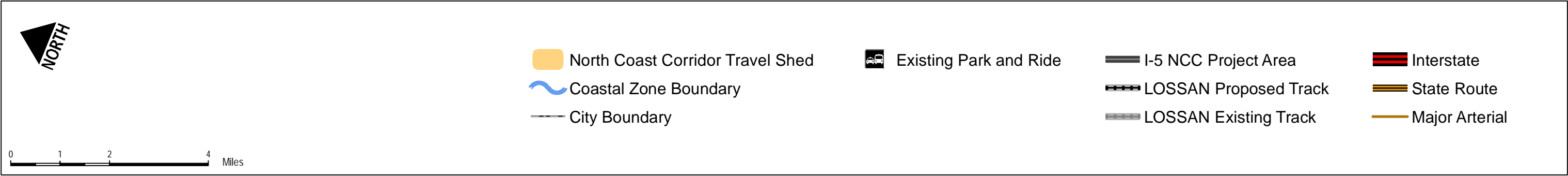
- **SR 56** (located 18 miles south of SR 78) is an east-west expressway corridor that connects I-5 with I-15 to the east. It currently consists of three general-purpose lanes in each direction; a new general-purpose lane in each direction is planned.

Numerous east-west arterials provide access to and from I-5 to the residential areas, places of employment, retail, and other destinations of the corridor. Many of these arterials have gaps due to environmental constraints. Capacity expansions or extensions are constrained by existing development and sensitive environmental resources.

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FIGURE 2-13

Highway and Major Arterial Facilities (Existing)

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2.1.3.3 Operations and Intelligent Transportation Systems

To better manage the existing transportation infrastructure through reduced congestion and improved reliability, the region employs electronic communications, equipment and information processing. Within the NCC, multiple ITS elements are being used. Real-time regional transportation information is distributed to travelers through 511, a phone- and Web-based service, which allows travelers to make informed decisions. Ramp metering manages traffic flow onto freeways to balance traffic flows. In the NCC, 48 of the 58 local street entrances to I-5 are metered. Four changeable message signs on I-5 also distribute travel information to drivers. Vehicle detection devices are located throughout the corridor to provide real-time data about the performance of I-5 to system operators.

2.1.4 Existing Coastal Access & Recreation Facilities

The corridor includes about 30 miles of Pacific Ocean coastline with world-renowned public beaches, coastal sandstone bluffs, and six lagoons that are part of river valley systems. Scenic public beaches include La Jolla Shores, Torrey Pines State Beach, Del Mar Beach, Cardiff State Beach, San Elijo State Beach, Moonlight State Beach, Leucadia State Beach, Carlsbad State Beach, and Oceanside State Beach. The beaches are used for surfing, swimming, tidepooling, camping, hiking, fishing, playing sports, and relaxing. At the NCC's designated state beaches alone (not including the numerous other public beaches), over seven million visitors were counted in the 2009–2010 fiscal year, which is more than twice the population of the entire San Diego region.³⁰ Primary access to these coastal areas is accomplished by private automobile. On I-5, 19 of the 30 interchanges provide direct access to the corridor's beaches and harbors via major arterial roads. While the majority of access to the NCC's coastal areas is provided by vehicle, all of the corridor's north-south passenger rail services also support access to these coastal beaches and/or lagoons, with some circulation and local access obtained on foot and by bicycle, as discussed in the following section.

The lagoons in the corridor have varying levels of recreational and educational facilities, including trails and interpretive facilities. Many of the corridor lagoons provide coastal and upland recreation opportunities. Additional upland recreation areas within the corridor include San Luis Rey River Trail, Los Peñasquitos Canyon Preserve, Torrey Pines State Reserve, and San Dieguito River Park, in addition to several other smaller community parks and open spaces.

2.1.4.1 Bicycle and Pedestrian Facilities

Within the NCC there is an existing bicycle and pedestrian network that provides access to the coast and other upland recreation areas. Like the corridor's arterial network, gaps and barriers in the routes prevent fulfilling many local and longer-distance trip needs. Existing primary bicycle and pedestrian routes in the NCC include the Coastal Rail Trail, California Coastal Trail, Camp Pendleton Trail, San Luis Rey River Trail, El Camino Real Bikeway, Palomar Airport Road/San Marcos Boulevard Bikeway, La Costa Avenue/Rancho Santa Fe Road Bikeway, Mid County Bikeway, SR 56 Bikeway, and the Central Coast Corridor (Figure 2-13). These routes connect public beaches and parks, residences, town centers, transit centers, and other activity centers.

SANDAG's 2050 RTP contains \$2.6 billion for an Active Transportation Program that seeks to improve bicycle and pedestrian facilities across the region, including the NCC. The program includes a Regional Bicycle Plan that encourages the development of a unified bicycle system throughout the San Diego region that serves the diverse needs of bicycle riders by providing connections between activity centers, transit facilities, and regional trail systems. One focus of this document is to improve bike and

³⁰ California State Park System Statistical Report, 2009/10 Fiscal Year, California Department of Parks and Recreation, 2010.

pedestrian network connectivity by providing links to the region's major bicycle facilities—including the Coastal Rail Trail as well as the planned I-5 North Coast Bike Trail (a part of the PWP/TREP program of improvements). By addressing existing barriers to east-west pedestrian and bicycle travel, the enhancements in the PWP/TREP will help further this regional goal, while simultaneously improving access to coastal resources, LOSSAN rail corridor stations, and other community facilities.

The Coastal Rail Trail, once fully completed, will provide a continuous north-south Class I bike path through the corridor with direct access to coastal facilities. The Coastal Rail Trail is part of the Pacific Coast “Bike”-Centennial Bicycle Route, which is the length of the California coastline. This bikeway serves many users: short segments serve as ideal commuter access between adjoining communities; longer segments accommodate the recreational bicycle users as well as some commuters; and the full length of this bikeway within San Diego County serves the interregional user.

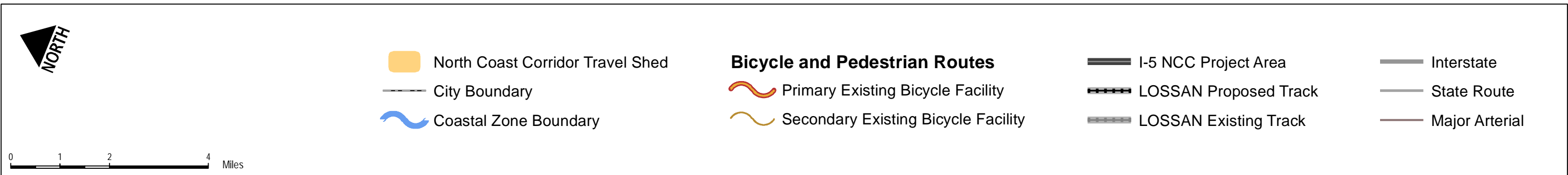
The California Coastal Trail is a parallel, complementary multimodal trail facility intended to be a continuous 1,200-mile public right-of-way along the California coastline. Within the NCC, the trail exists and/or is generally planned along the beach, roughly parallel to the Coastal Rail Trail (Figure 2-13). The trail California Coastal Trail fosters appreciation and stewardship of the scenic and natural resources of the coast through hiking and other complementary modes of non-motorized transportation. A primary goal of the trail, as articulated in the state-mandated, Coastal Commission-supported report, *Completing the California Coastal Trail*, is to “create linkages to other trail systems and to units of the State Park system, and use the Coastal Trail system to increase accessibility to coastal resources from urban population centers.”³¹ The Coastal Commission's Public Access Action Plan indicates that approximately 69% of the California Coastal Trail in San Diego County is completed, with approximately 20 miles of missing link located in North County at Camp Pendleton.

Within the corridor, many pedestrian and bicycle routes cross over or under the I-5 highway corridor and the LOSSAN rail corridor facilities. There are 35 such I-5 crossings and 33 rail crossings, with varying levels of quality. Physical crossings are not provided at all pedestrian/bicycle route and rail/freeway facility intersections, which leads to dead-ends and in some cases, unpermitted track crossings.

Bicycle paths, lanes, and routes provide differing levels of separation from automobiles within the NCC. Some bicycle access is also allowed on the I-5 freeway shoulders, specifically between Sorrento Valley Road and Genesee Avenue in San Diego and from Vandegrift Boulevard to Las Pulgas Road north of Oceanside.

All of the corridor's major transit services—Amtrak, Metrolink, COASTER and SPRINTER trains, as well as MTS and NCTD buses—accommodate bicycles on their systems. The San Diego NCC coastline is reasonably well equipped to accommodate non-motorized travel modes; however, a number of east-west bike and pedestrian routes are still precluded from crossing the I-5 and LOSSAN rail corridor facilities due to incomplete or inadequate facilities.

³¹ *Completing the California Coastal Trail*, California State Coastal Conservancy, January 2003.



DATA SOURCES: Caltrans, California Coastal Commission, Local Jursidictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

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FIGURE 2-14

Primary Bicycle and Pedestrian Routes

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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2.1.4.2 Transit and Highway Access

With the exception of Sorrento Valley, all COASTER commuter rail stations in the corridor are located within blocks of a coastal beach or lagoon. In addition, 15 local bus routes serve the NCC, many of which terminate at COASTER stations. This information indicates that, in addition to its primary role serving commute trips, the NCC's transit infrastructure could also serve tourist and recreational trips to coastal areas. However, as discussed in Chapter 3, transit has struggled to attract riders in places like the NCC, where population is sparse and trip origins and destinations are highly dispersed—a modern development pattern that is promoted, and best facilitated, by the automobile.

In addition, recreational trips to the coast often have group travel and baggage needs that make using transit less efficient or convenient. For travelers coming from outside the NCC, a transit trip to the beach typically requires multiple transfers, increasing total trip time and compounding baggage-related hassles. For NCC residents who could use local bus service to reach coastal areas, the short length of these trips often means that driving has substantial time and access advantages over fixed-route buses. Therefore, for both types of recreational travelers, transit generally is not competitive with driving.

As such, most coastal access in the NCC is facilitated by private automobile. As noted previously, I-5 has frequent exits that provide direct arterial access to the coast. During periods of high visitation such as summer weekends, corresponding travel demand leads to congestion on I-5 and thus impedes access to corridor coastal resources. Coast Highway provides alternate access to coastal facilities, but as it is primarily reached from I-5 and the corridor's east-west arterials, congestion on I-5 also tends to impede coastal access via this route.

2.1.5 Existing Natural Resources

The NCC includes approximately 30 miles of coastline in northern San Diego County—a region recognized for a number of unique and significant marine and environmentally sensitive resource areas. The coastal watersheds, lagoons, and upland areas in the corridor consist of diverse habitats and ecosystems that support a variety of plant and wildlife species. The corridor's most significant natural resource areas, such as the corridor's six coastal lagoons, also support some of the region's most significant passive and active coastal recreational opportunities for San Diego residents and visitors. This section briefly describes the most prominent marine and environmentally sensitive habitat areas in the corridor, which are discussed in more detail in Chapter 5 of the PWP/TREP.

2.1.5.1 Hydrology and Water Quality

Surface hydrology within the corridor is influenced primarily by the lagoons, creeks, and San Luis Rey River. The corridor improvement areas cross the following five (of the eleven) hydrologic units (HUs) within the San Diego Regional Water Quality Control Board (RWQCB) Basin:

- The **Santa Margarita HU** covers 750 square miles, with 26.5% in San Diego County and the remaining 73.5% in Riverside County. The watershed consists of a single major drainage—the Santa Margarita River—which comprises several smaller tributaries. The San Diego County portion of the watershed contains the Camp Pendleton Marine Corps Base, as well as the inland community of Fallbrook. The Santa Margarita River HU is one of the least-developed watersheds in southern California, and drains to the Oceanside Harbor at the southwest limits of the watershed.

- The **San Luis Rey** watershed is the largest of the four HUs within the corridor and is the least developed; however, development within this watershed is expected to increase from approximately 16% to 23% by 2015.³² The entire basin is drained by the San Luis Rey River.
- The **Carlsbad HU** comprises seven sub-basins that include San Elijo Lagoon (Escondido Creek), Cottonwood Creek, Batiquitos Lagoon (San Marcos Creek), Encinas Creek, Agua Hedionda Lagoon (Agua Hedionda Creek), Buena Vista Lagoon (Buena Vista Creek), and Loma Alta Creek. The freeway and rail bisect four lagoons in this HU: San Elijo Lagoon, Batiquitos Lagoon, Agua Hedionda Lagoon, and Buena Vista Lagoon. All four of the lagoon crossings, including Loma Alta Creek, are on bridge structures. Cottonwood Creek crosses under the freeway in a concrete culvert south of Encinitas Boulevard, and Encinas Creek crosses the corridor in a concrete box culvert south of Palomar Airport Road. Development within the Carlsbad HU is projected to increase from 56% to 70% by the year 2015.³³
- The **San Dieguito HU** drains into San Dieguito River. The developed area within the hydrologic unit is projected to increase from approximately 26% to 38% by 2015.³⁴
- The corridor begins near the middle of the **Los Peñasquitos HU** and crosses Carroll Canyon Creek, Los Peñasquitos Creek, and Carmel Creek. Existing facility crossings occur via bridge structures with the exception of Carmel Creek, which currently drains through a concrete box culvert. The developed area in this HU is projected to increase from 58% to 66% of the total watershed by the year 2015.³⁵

The San Diego RWQCB Basin Plan (Basin Plan) defines “beneficial uses” for water bodies as those necessary for the survival or well-being of people, plants, and wildlife. These uses promote tangible and intangible economic, social, and environmental goals.

Most of the inland waterways provide or could provide the following beneficial uses: agricultural supply, industrial service supply, contact and noncontact recreation, warm freshwater habitat, and wildlife habitat; the exceptions are Encinitas and Loma Alta Creeks, which are not designated for agricultural supply or industrial services supply. Additional beneficial uses include spawning, reproduction, and/or early development for San Dieguito River, and cold freshwater habitat for Soledad Canyon and Carroll Canyon Creeks and San Dieguito River. Los Peñasquitos Creek is designated for preservation of biological habitats of special significance, and beneficial use for rare, threatened, and endangered species is also assigned to Carroll Canyon Creek and San Luis Rey River. Beneficial use for hydropower generation is assigned to San Luis Rey River, and beneficial uses for groundwater resources associated with Loma Alta Creek and Encinas Creek include municipal and domestic supply (for both creeks) and industrial service supply (Encinas Creek only).

Beneficial uses for the lagoons in the corridor generally include contact and noncontact recreation; preservation of biological habitats of special significance, estuarine habitat (potential estuarine habitat for Buena Vista Lagoon), marine habitat, wildlife habitat, rare, threatened and endangered species; and fish migration and spawning, reproduction, and/or early development (with the exception of Buena Vista Lagoon, which is the only lagoon with the beneficial use of warm freshwater habitat). Beneficial uses for Los Peñasquitos Lagoon and Agua Hedionda also include shellfish harvesting, with additional beneficial uses assigned to Agua Hedionda for industrial service supply, commercial and sport fishing, and aquaculture. Loma Alta Slough is designated for contact and noncontact recreation, estuarine, marine and wildlife habitat, and rare, threatened and endangered species. The mouth of San Luis Rey

³² I-5 NCC Project Draft EIR/EIS (Section 3-10), June 2010.

³³ Ibid.

³⁴ Ibid.

³⁵ Ibid.

River is also designated for contact and noncontact recreation, marine and wildlife habitat, and rare, threatened and endangered species, as well as for fish migration.

2.1.5.2 Corridor Lagoons

San Diego's lagoons provide habitat for sensitive animals and plants, stopping points for migratory birds, natural water treatment and flood prevention, scenic beauty, opportunities for passive recreation, and many other benefits. However, portions of these lagoons were historically filled to construct transportation facilities, and—coupled with build out of the watershed to accommodate other adjacent developments and recreational use—increases in year-round freshwater input, accelerated sedimentation and water contamination, reduced tidal mixing, introduction of exotic species, and impacts on habitats and wildlife have occurred. Ongoing lagoon resource planning, restoration, and management has been implemented at varying levels for the corridor's lagoons and will continue to be essential in ensuring that the many flood, water quality, habitat, and recreational benefits of these significant watershed features are maintained and enhanced. The six lagoons in the NCC are Los Peñasquitos, San Dieguito, San Elijo, Batiquitos, Agua Hedionda, and Buena Vista. Three of the six lagoons have ongoing restoration programs. Restoration plans for the other three are being developed. Summary information about the status of each lagoon is provided in Table 2-2.

Los Peñasquitos Lagoon

Los Peñasquitos Lagoon is located in the northwest section of the city of San Diego. The lagoon area is owned entirely by public entities such as the State of California, City of San Diego, San Diego Metropolitan Transit Development Board, Caltrans, and San Diego Gas & Electric. The southernmost portion of the lagoon is part of the Torrey Pines State Reserve, and beach areas north and south of the lagoon mouth are State Parks recreation areas.

Los Peñasquitos Lagoon includes approximately 460 acres of tidal wetlands. The lagoon watershed includes Carroll Canyon Creek, Soledad Canyon Creek, Los Peñasquitos Creek and Carmel Creek. Habitats present in, or within the vicinity of, Los Peñasquitos Lagoon primarily include coastal salt marsh, estuarine, coastal and valley freshwater marsh, southern riparian scrub, beach, Diegan coastal sage scrub, southern maritime chaparral, and valley and foothill grasslands. The lagoon provides important wildlife habitat for special-status species including Belding's savannah sparrow, light-footed clapper rail, and western snowy plover, migratory birds, a variety of mammals, and nursery grounds for many fish species.

The Los Peñasquitos Lagoon Enhancement Plan was developed in 1985 by the California Coastal Conservancy with partial funding provided by local developers and homeowner associations. The enhancement plan was certified by the Coastal Commission as a part of the City of San Diego's North City Land Use Plan. The management program called for water quality monitoring and mechanically opening the lagoon mouth to prevent poor water quality from killing channel organisms. The Pacific Estuarine Research Laboratory (PERL), based at San Diego State University, was contracted to monitor lagoon water quality. This effort led to the opening of the lagoon mouth in the early 2000s, which was approved by the Coastal Commission pursuant to Coastal Development Permit #6-02-13. The Los Peñasquitos Lagoon Foundation continues to work to keep the lagoon mouth open, monitor physical changes, restore habitat, and improve channel circulation.

San Dieguito Lagoon

San Dieguito Lagoon is located in the cities of San Diego and Del Mar and is owned by a variety of private and public entities. Public ownership includes the State of California, Cities of San Diego and Del Mar, the 22nd District Agricultural Association, NCTD, Caltrans, San Dieguito River Valley Land

Conservancy, and the JPA. A large portion of the lagoon is owned by the California Department of Fish and Game (CDFG) and is maintained as a State Ecological Reserve, and much of the lagoon area along the San Dieguito River is owned by a JPA and is maintained as the San Dieguito River Park.

San Dieguito Lagoon is approximately 456 acres. The lagoon watershed includes the San Dieguito River and a number of drainages along I-5 that convey water to the river. Habitats present in or within the vicinity of San Dieguito Lagoon primarily include open water, estuarine/palustrine flats, salt marsh, brackish/freshwater marsh, coastal salt marsh, riparian scrub, and Diegan coastal sage scrub. The lagoon habitat supports special-status wildlife species including Belding's savannah sparrow, California least tern, western snowy plover, California gnatcatcher, and light-footed clapper rail.

The San Dieguito Lagoon Restoration Project, completed in 2011, restored 116 acres of coastal wetlands. The restoration project is designed to restore the aquatic functions of the lagoon through excavation of uplands and to expand the tidal basin and create subtidal and intertidal habitats east and west of I-5 and permanent inlet maintenance. Upon completion, the lagoon will serve as a fish hatchery and a refuge for migratory waterfowl as well as open recreational space. Southern California Edison and the San Dieguito River Park Authority are partners on the project, which was required to mitigate impacts on marine fish populations from the San Onofre Nuclear Generating Station. Coastal Development Permit #6-04-88 was issued by the Coastal Commission in October 2005, and construction began in fall 2006. Maintenance of the functioning wetland is the responsibility of Southern California Edison until 2050.

San Elijo Lagoon

San Elijo Lagoon is located in the city of Encinitas just north of Solana Beach and is owned primarily by public agencies including the State of California (CDFG), the County of San Diego, and the San Elijo Lagoon Conservancy. The lagoon is part of the larger San Elijo Lagoon Ecological Reserve that includes approximately 1,000 acres of wetland and upland habitat. The reserve is operated by CDFG and includes the San Elijo Nature Conservancy Center.

San Elijo Lagoon area consists of approximately 491 acres. The lagoon watershed encompasses all drainages that convey water into San Elijo Lagoon including Escondido Creek and San Elijo Creek. Habitats present in, or within the vicinity of, San Elijo Lagoon primarily include open water (estuarine and fresh), sand/mudflats, coastal salt marsh, fresh/brackish marsh, riparian, and Diegan coastal sage scrub. In addition, San Elijo Lagoon and its upland habitat support a number of special-status wildlife species including California least tern, Belding's savannah sparrow, California gnatcatcher, and light-footed clapper rail.

Stakeholders, including the San Elijo Lagoon Conservancy, SANDAG, and Caltrans, are currently coordinating efforts to prepare a Draft EIR for the San Elijo Lagoon Restoration Project. Plans include restoration of the hydrological regime and the marsh habitat and conversion from mudflats and low marsh habitat to middle and high marsh habitat. Two restoration alternatives under consideration include potential relocation of the lagoon inlet at Coast Highway, which could further enhance lagoon functions. Additionally, all of the restoration project alternatives under consideration will reduce tidal muting effects and enhance coastal lagoon habitat, particularly the mud flats.

TABLE 2-2: LAGOON SUMMARY TABLE

	Los Peñasquitos	San Dieguito	San Elijo	Batiquitos	Agua Hedionda	Buena Vista
Lagoon Owner/Operator	State Parks, City of San Diego, NCTD, Coastal Conservancy, Los Peñasquitos Lagoon Foundation	CDFG, San Dieguito River Park, JPA, County of San Diego, City of San Diego, 22nd Agricultural District, NCTD, Private	East of I-5: CDFG, County of San Diego, San Elijo Lagoon Conservancy West of I-5: CDFG, San Elijo Lagoon Conservancy	State Lands Commission, CDFG, Port of Los Angeles, Batiquitos Foundation	CDFG, San Diego Gas & Electric, Leases to YMCA, City of Carlsbad, Private	CDFG, Buena Vista Lagoon Foundation, Private
Size	460 acres	456 acres	491 acres	600 acres	286 acres	203 acres
Watershed Features	Carroll/Soledad Canyon Creek, Los Peñasquitos Creek, Carmel Creek	San Dieguito River, Drainages along I-5	Escondido Creek, San Elijo Creek	San Marcos, Encinitas, Encinas Creeks	Agua Hedionda Creek	Buena Vista Creek
Habitat	Coastal salt marsh, estuarine, coastal/valley freshwater marsh, southern riparian scrub, beach, Diegan coastal sage scrub, southern maritime chaparral, valley and foothill grasslands	Open water, estuarine/palustrine flats, salt marsh, brackish/freshwater marsh, coastal salt marsh, riparian scrub, Diegan coastal sage scrub	Open water (estuarine and fresh), sand/mudflats, coastal salt marsh, fresh/brackish marsh, riparian, Diegan coastal sage scrub	Eelgrass, with mud flats, coastal salt marsh, brackish emergent marsh, riparian, Diegan coastal sage scrub	Open water, brackish/freshwater, mudflats, estuarine flats, patchy salt marsh areas, riparian, Diegan coastal sage scrub, eelgrass	Estuarine, freshwater, coastal and freshwater marsh, southern riparian scrub, eucalyptus woodland
Special-Status Species	Belding's savannah sparrow, light-footed clapper rail, western snowy plover, California gnatcatcher	Belding's savannah sparrow, California least tern, western snowy plover, and light-footed clapper rail, California gnatcatcher	California least tern, Belding's savannah sparrow, California gnatcatcher, light-footed clapper rail	California least tern, western snowy plover, Belding's savannah sparrow, California gnatcatcher, light-footed clapper rail	Belding's savannah sparrow, California gnatcatcher, light-footed clapper rail	Belding's savannah sparrow, California gnatcatcher, light-footed clapper rail
Past & Present Restoration Efforts	Lagoon Enhancement Plan 1985	Southern California Edison Restoration initiated in 2006	San Elijo Lagoon Restoration Project Planning underway	Lagoon Enhancement Project, Port of Los Angeles/Long Beach 2006	Dredging and Eelgrass Planting; Removal of Toxic Algae	Buena Vista Lagoon Foundation Feasibility Study underway
Long-term Monitoring/Management	Tijuana Estuarine Group Monitoring, Lagoon Outlet Breaching	Coastal Commission Monitoring Restoration Project; Lagoon & Outlet Dredging	San Elijo Lagoon Foundation Monitoring/Management	Port of Los Angeles 10 year Monitoring of Enhancement Project	Removal/Monitoring of Toxic Algae; Maintenance Dredging	CDFG Ecological Reserve Monitoring/Management
Land Use	Open Space, utility corridors, municipal infrastructure (stormwater outfalls & sewer lines), small-scale restoration sites	Habitat Restoration, CDFG Ecological Reserve, JPA River Park	Preserved wetland & upland areas, passive recreational uses, fishing, horseback riding	Ecological Reserve, Recreation (trails), Interpretive Center (The Foundation), Ag Production	Habitat Preservation, Commercial/Industrial (Encina Power Plant; desalination plant), recreation (YMCA camps, water sports, fishing)	Recreation; fishing, hiking, wildlife viewing, nature tours; Ecological Preservation
Transportation Facility Crossings	LOSSAN Rail, I-5, Coast Highway	LOSSAN Rail, I-5, Jimmy Durante Blvd, Coast Highway, El Camino Real,	LOSSAN Rail, I-5, Coast Highway	LOSSAN Rail, I-5, Coast Highway	LOSSAN Rail, I-5, Coast Highway	LOSSAN Rail, I-5, Coast Highway, El Camino Real

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Batiquitos Lagoon

Batiquitos Lagoon is located in the city of Carlsbad and is owned by a variety of private and public entities. Public ownership includes the State of California (CDFG) and the State Lands Commission. The lagoon is maintained as a State Ecological Reserve by CDFG; however, public recreational use of the lagoon area is limited to trails and an interpretative center operated by the Batiquitos Lagoon Foundation and located on the northern edge of the eastern basin.

Batiquitos Lagoon comprises approximately 600 acres with a watershed that includes all drainages that feed the lagoon including San Marcos and Encinas Creeks. Habitats within or in the vicinity of Batiquitos Lagoon primarily include open water that supports eelgrass, with mud flats, coastal salt marsh, brackish emergent marsh, riparian, and Diegan coastal sage scrub at its perimeter. The large, open-water lagoon provides important habitat for fish, waterfowl, and shorebirds. Batiquitos Lagoon also provides important habitat supporting special-status wildlife species such as California least tern, western snowy plover, Belding's savannah sparrow, California gnatcatcher, and light-footed clapper rail. The slopes of the lagoon are also important wildlife corridors for both large and small mammals.

A large restoration project in Batiquitos Lagoon was completed in 1996 to permanently restore tidal influence to the lagoon while protecting important habitat. Restoration and 10 years of maintenance and monitoring was completed by the Port of Los Angeles/Long Beach as mitigation for loss of habitat in the Port's Outer Los Angeles Harbor. Coastal Development Permit #6-90-219 was issued in 2006 for the restoration and enhancement plan. The restoration project included 1) a rock tidal inlet structure to allow uninterrupted tidal flushing; 2) dredging to create habitats and maintain an open inlet; 3) replacement of two highway bridges (on Coast Highway); 4) scour protection for the I-5 and LOSSAN rail lagoon crossings; and 5) the creation and monitoring of least tern nesting sites. The CDFG is the long-term manager of the nature reserve.

Agua Hedionda Lagoon

Agua Hedionda Lagoon is located in the city of Carlsbad and is owned by a variety of private and public entities. Public ownership includes the State of California (CDFG), NCTD and Caltrans. CDFG maintains the eastern portion of the lagoon as the Agua Hedionda Lagoon Ecological Reserve, while NRG Energy, owner of the Encina Power Station, owns and maintains the western basin. Use of the lagoon is unique from that of the other corridor lagoons in that commercial, industrial and active recreational uses occur in the lagoon.

Agua Hedionda Lagoon is approximately 286 acres and is located in the Agua Hedionda and Macario Creek watershed. The lagoon is an important cultural, economic and environmental resource that provides critical habitat for migratory and resident birds and fish. Habitats present in, or within the vicinity of, Agua Hedionda Lagoon are primarily open water, brackish/freshwater, mudflats, estuarine flats, patchy salt marsh areas, riparian, Diegan coastal sage scrub, and eelgrass. The lagoon habitat supports special-status wildlife species such as Belding's savannah sparrow, California gnatcatcher, and light-footed clapper rail.

A restoration feasibility analysis for the lagoon was completed in 2004. Although, the Agua Hedionda Lagoon Foundation is active in preservation and maintenance of the lagoon, a major lagoon restoration project has yet to occur. The foundation has expressed a preference for keeping the existing open-water regime at the lagoon, which is further supported by the approved desalination plant that will ultimately replace the power plant.

Buena Vista Lagoon

Buena Vista Lagoon is located in the cities of Carlsbad and Oceanside and is owned by a variety of private and public entities. Public ownership includes the State of California, Cities of Carlsbad and Oceanside, NCTD, and Caltrans. The lagoon is part of the Buena Vista Lagoon Ecological Reserve that is maintained by CDFG and is used for a variety of recreational activities.

Buena Vista Lagoon consists of approximately 203 acres and is located in the Carlsbad watershed that drains Buena Vista Creek. The lagoon itself contains the only U.S. Army Corps of Engineers jurisdictional wetland/waters within the watershed. Buena Vista Lagoon is a freshwater lagoon that, for the most part, is not connected to the ocean except through a non-adjustable weir. Habitat present within or in proximity to the Buena Vista Lagoon consists primarily of estuarine, freshwater, coastal and freshwater marsh, southern riparian scrub, and eucalyptus woodland. Bird and waterfowl nesting islands were created in the lagoon in 1983. The lagoon provides important habitat supporting special-status wildlife species such as Belding's savannah sparrow, California gnatcatcher, and light-footed clapper rail.

The Buena Vista Lagoon Foundation and its partners have completed a strategic plan and a restoration feasibility analysis that proposed potential hydraulic regimes—saltwater, freshwater, or mixed water—and project alternatives. Restoration alternatives are being examined further as part of an ongoing lagoon restoration project EIR/EIS. In 2012, SANDAG agreed to assume the role of lead agency in the project in order to advance the progress of the EIR/EIS and facilitate future engineering, permitting, and construction phases.

2.1.5.3 Existing and Potential Habitat Areas

Riparian/Wetland Habitat

In addition to the large coastal lagoon system discussed previously, the corridor includes a number of significant coastal and inland waterways that support sensitive habitat. These include Cottonwood Creek, Moonlight Creek, Encina Creek, Loma Alta Creek, and San Luis Rey River.

Cottonwood Creek is a small creek that flows intermittently above- and below-ground through Encinitas between San Elijo and Batiquitos Lagoons. Cottonwood Creek is primarily channelized or underground near I-5; however, several drainages feed into Cottonwood Creek from the east side of I-5 to the west side where the outlet to the Pacific Ocean has recently been restored. Restoration efforts have also included the creation of Cottonwood Creek Park west of I-5. In this area, the creek channel has been restored to an above-ground channel between I-5 and the ocean. Moonlight Creek is a small tributary in Cottonwood Creek Park that runs parallel to and west of I-5. Moonlight Creek primarily conveys urban runoff from both sides of I-5 into Cottonwood Creek. Cottonwood Creek and Moonlight Creek flow through an urbanized section of Encinitas. Cottonwood Creek often flows through culverts and channels near I-5 and does not provide much flood relief, water quality improvement, or wildlife habitat until reaching the newly restored channels in Cottonwood Creek Park. Moonlight Creek supports some freshwater marsh habitat and southern willow scrub and provides habitat to riparian bird species and limited water quality and flood relief benefits.

The Encina Creek watershed includes the creek itself and a long earthen drainage parallel to I-5 that is fed mostly by urban and freeway runoff, which then flows into the creek through a concrete channel. Encina Creek contains many invasive plant species and has been channelized along some of its length. The drainage paralleling I-5 supports cattails, amphibians, and bird species. Encina Creek provides limited wildlife habitat and water quality and flood relief; however, because it is disturbed, the function and value of the habitat is limited.

Loma Alta Creek is highly disturbed and is fed by several concrete lined ditches. The creek extends from north of the California Street interchange to Mission Avenue. There is a riparian area just east of I-5 and north of Oceanside Boulevard that ultimately flows into the creek. Loma Alta Creek provides a limited amount of water quality filtration and flood relief; however, the creek's concrete lining and highly disturbed nature of the habitat minimizes these benefits.

San Luis Rey River is a significant resource and riparian feature within the corridor and is one of the few perennial rivers in San Diego County. The San Luis Rey River reach located within the corridor is a combination of open-water habitat, freshwater marsh, arundo scrub, and riparian habitat that supports a variety of common and sensitive wildlife species. San Luis Rey River also plays an important role in flood relief and improves water quality, which results from filtering by freshwater marsh species.

Upland Habitat

The San Diego coastal climate supports a wide variety of sensitive upland habitat areas. The majority of the significant habitat within the corridor is contained in and around the six coastal lagoons, on undeveloped hillside areas and mesas, within the inland waterways, and along the shoreline. In addition to the plant communities present, there are several communities with little or no vegetation. These include mud flat, salt flat, open water, and unvegetated or other waters of the US. Sensitive upland habitats identified in the corridor include Diegan coastal sage scrub, baccharis scrub, maritime succulent scrub, coastal bluff scrub, southern maritime chaparral, coastal sage, chaparral scrub, coast live oak woodland, Torrey pine forest, southern dune scrub, southern foredunes, and native grassland. Although not commonly considered a sensitive habitat type, nonnative grassland and nonnative woodland areas often provide valuable nesting, roosting and foraging habitat for raptors, and, therefore, some areas may be considered sensitive habitat areas and subject to resource protection policies.

Plants

The mosaic of vegetation communities that occur in the corridor support a number of protected special-status plant species. Each of the six coastal lagoons support coastal sage scrub, coastal bluff scrub, chaparral, native grasslands, bluff, and dune habitats, which are particularly recognized for supporting special-status plant species although the occurrence of such plants is not always associated with these habitats. Special-status plant species that occur within the corridor near the improvement areas that are listed as CDFG species of special concern, U.S. Fish and Wildlife Service (USFWS) candidate species, and non-listed California Native Plant Society rare and endangered plants include California adolphia, south coast saltscale, southern tarplant, Orcutt's pincushion, summer holly, sea dahlia, San Diego barrel cactus, Del Mar Mesa sand aster, Torrey pine, Nuttall's scrub oak, and Estuary seablite. In addition to these special-status species, a number of federal- and/or state-listed threatened and endangered species have been observed in the corridor near the improvements areas. These include the Del Mar manzanita, San Diego ambrosia, Encinitas baccharis, thread-leaved brodiaea, San Diego button celery, spreading navarretia, and San Diego mesa mint. Section 5.5 includes a list of special-status, federal- and/or state-listed plant and animal species and a general description of their location in the corridor and listing status.

Wildlife

Resources along the corridor support a number of sensitive wildlife species that have special status and/or recognition by federal and state resource agencies. Federal-listed wildlife include the coastal California gnatcatcher; state- and federal-listed wildlife species include the least Bell's vireo, southwestern willow flycatcher, least tern, light-footed clapper rail, western snowy plover, tidewater goby, Southern steelhead trout, and Pacific pocket mouse; state-listed wildlife include the Belding's

savannah sparrow and peregrine falcon; and Fully Protected Species include the clapper rail, least tern and peregrine falcon. Coastal sage scrub, southern maritime chaparral, and/or maritime succulent scrub have the potential to support San Diego horned lizard, Coronado Island skink, orange-throated whiptail, rufous-crowned sparrow, raptors, loggerhead shrike, desert woodrat, and the San Diego pocket mouse.

Many bird species that migrate along the Pacific Coast flyway use the lagoons in the NCC to stop over and forage. Several of these bird species are considered sensitive at their breeding grounds, but not necessarily along their migration routes. These include the white pelican, long-billed curlew, and double crested cormorant. The white-tailed kite—a California Fully Protected Species and Species of Special Concern—occasionally forages within the corridor (often over the agricultural fields). Nest sites are not known to occur within or in proximity to the PWP/TREP improvement areas. Other sensitive species known to occur in the corridor are the two-striped garter snake, least bittern, great blue heron, great egret, osprey, northern harrier, sharp-shinned hawk, Cooper's hawk, long-billed curlew, California horned lark, loggerhead shrike, and yellow warbler. Section 5.5 includes a list of special-status, federal-and/or state-listed plant and animal species and a general description of their observed location in the corridor and listing status.

The corridor also contains critical habitat for the least Bell's vireo, southwestern willow flycatcher, spreading navarretia, and California gnatcatcher. Vernal pools located in proximity to the corridor (near the Carlsbad Poinsettia Station) include critical habitat for the San Diego and Riverside fairy shrimp. Habitat areas along the creeks, rivers and lagoons and adjacent upland areas also provide wildlife corridors from inland San Diego County to the coastal region and connect large areas of natural open space that allow for wildlife movement. The lagoons include potential Essential Fish Habitat for northern anchovy, Pacific sardine, and jack mackerel. Open water in the San Luis Rey River may also provide Essential Fish Habitat.

2.2 POLICY CONTEXT: REGIONAL PLANNING AND SUSTAINABILITY EFFORTS

SANDAG and Caltrans utilize and promote the programs, policies, and strategies described in this section to develop an integrated approach to strengthening both the transportation and environmental resources of the NCC and the region. Improved mobility and the protection and enhancement of natural resources are necessary to achieve transportation system objectives, to improve the quality of life in the region's communities, and to ensure sustainable growth into the future. With limited funding available to achieve all of these goals, regional planning is also bound by fiscal constraints that require a constant focus on cost effectiveness and the balancing of regional needs.

2.2.1 Planning for Growth and Mobility

The explosive growth of the San Diego region in the last four decades serves as a reminder of the importance of effective planning by regional governments in order to ensure the provision of adequate and efficient infrastructure. As discussed in Chapter 3, the combination of rapid growth, fiscal and physical constraints, and the absence of reliable, multimodal travel options in the NCC have created both transportation and environmental deficiencies that continue to worsen. While the PWP/TREP will implement a comprehensive, multimodal solution to these deficiencies, a more desirable goal is to avoid the outgrowth of such deficiencies in the first place.

To deal with the region's continued growth—and to meet regional and state-mandated targets for energy consumption and air emissions—SANDAG employs a comprehensive, publically influenced planning process that attempts to anticipate and accommodate future demands. The process begins

with projecting regional population, employment, and housing needs decades into the future, which then informs the prioritization of transportation projects, housing and infrastructure development, and environmental preservation efforts. The results of this process are several policy documents that embody the goals and priorities of the San Diego region.

2.2.1.1 Regional Comprehensive Plan

SANDAG is responsible for developing the planning framework to integrate the region's land use and transportation system, and for managing regional growth while preserving natural resources and sustaining economic prosperity. The Regional Comprehensive Plan (RCP)—adopted in July 2004 and currently being updated—provides this planning framework upon which local and regional decisions can be made to move the region towards a sustainable future. It served as the basis for the 2050 RTP and its associated programs.

The RCP is notable for its emphasis on Smart Growth opportunities, which aim to concentrate housing and jobs in urban areas served by multimodal transportation systems. This type of growth discourages urban sprawl and preserves open space, agricultural, and natural resource areas. Smart Growth also advances the region's goals of mitigating the impacts of global climate change, including air emissions, sea level rise, and shoreline erosion. (See Section 2.2.1.2 for more on the RCP and the region's Smart Growth efforts.)

2.2.1.2 2050 Regional Growth Forecast

The 2050 Regional Growth Forecast (adopted by SANDAG in February 2010) provides a starting point for regional planning. The forecast is not intended to be a prescription for future growth; rather, it is intended to anticipate future development patterns, based on a combination of regional projections and input from local cities.

Based on the land use information received from local jurisdictions, as well as predictions of likely development patterns in the future, the 2050 Regional Growth Forecast projects that approximately 50% of future job and housing growth will occur in Smart Growth opportunity areas, which are defined as locations in the region that can support future growth and infill development close to jobs, services, and transit and public facilities. These opportunity areas were designated to maximize the use of existing infrastructure and to preserve open space and natural resources. In addition, the growth forecast projects that more than 70% of future job and housing growth is likely to occur within transit investment areas, which are given highest priority for future transit investments due to their transit-friendly density, land use, and demographic characteristics. The result will be that 56% of new residences and 42% of new jobs will be located within a 10-minute walk of high-frequency transit stations.³⁶ The development of new multimodal transportation facilities will be necessary to meet these future demands.

2.2.1.3 SANDAG 2050 Regional Transportation Plan

The PWP/TREP and the associated *I-5 NCC Project EIR/EIS* utilize land use and growth projections from the SANDAG 2050 Regional Transportation Plan (2050 RTP), which was adopted in October 2011 as the region's transportation and growth blueprint. SANDAG adopted the following vision statement for the 2050 RTP:

³⁶ SANDAG 2050 Regional Growth Forecast, February 2010.

A transportation system that supports a prosperous economy, promotes a healthy and safe environment, including climate change protection, and provides a higher quality of life for all San Diego residents. The transportation system should better link jobs, homes, and major activity centers; enable more people to walk, bike, and use transit; efficiently transport goods; and provide fast, convenient, effective transportation options for all people.

RTP Goals and Objectives

The 2050 RTP is based on six primary goals (Table 2-3). Taken together, the goals seek to:

- Enhance regional mobility by expanding travel choices, including transit, ridesharing, walking and biking options, and single-occupant auto travel.
- Ensure a reliable transportation system and travel times by improving traffic flow, reducing bottlenecks, and providing facilities that allow for consistent travel times with commensurate improvement of access to recreational destinations as well as general mobility.
- Develop transportation improvements that respect and enhance the environment and meet state-mandated emissions reduction targets.

TABLE 2-3: GOALS OF THE SANDAG 2050 REGIONAL TRANSPORTATION PLAN

Goal	Definition
Mobility	The transportation system should provide the general public and those who move goods with convenient travel options. The system should also operate in a way that maximizes productivity. It should reduce the time it takes to travel and the costs associated with travel.
Reliability	The transportation system should be reliable. Travelers should expect relatively consistent travel times, from day to day, for the same trip and mode of transportation.
System Preservation and Safety	The transportation system should be well maintained, to protect the public's investments in transportation. It also is critical to ensure a safe regional transportation system.
Social Equity	The transportation system should be designed to provide an equitable level of transportation services to all segments of the population.
Healthy Environment	The transportation system should promote environmental sustainability, and foster efficient development patterns that optimize travel, housing, and employment choices. The system should encourage growth away from rural areas and closer to existing and planned development.
Prosperous Economy	The transportation system should play a significant role in raising the region's standard of living.

Source: SANDAG 2050 RTP (Chapter 2), October 2011.

The RTP associates each broad goal with specific policy objectives to help focus the decision-making process. To support the goal of a prosperous economy, for example, one such policy objective is to “maximize the economic benefits of transportation investments.”³⁷ With financial constraints limiting the number of transportation projects possible, this objective requires selecting the projects that will yield the greatest benefit to the region as a whole; such balancing entails a careful evaluation of the region's varied needs, along with a rational assessment of which projects are most likely to attract users.

Sustainable Communities Strategy

The Sustainable Communities Strategy (SCS) is a new element of the 2050 RTP, its development mandated by California Senate Bill 375 (SB 375) (Chapter 728, Statutes of 2008). The SCS demonstrates how state-mandated greenhouse gas (GHG) emission targets, as established for the

³⁷ SANDAG 2050 RTP (Chapter 2), October 2011.

region by the California Air Resources Board, will be achieved through feasible development patterns, transportation infrastructure investments, and targeted transportation measures and policies. The 2050 RTP and SCS:

seek to guide the San Diego region toward a more sustainable future by integrating land use, housing, and transportation planning to create communities that are more sustainable, walkable, transit oriented, and compact. Planning for future patterns of density, how people get around, and how land is used is really driven by one goal: creating great places to live, work, and play.³⁸

The SCS also includes the San Diego Regional Bicycle Plan (titled *Riding to 2050*) and was originally adopted in May 2010 and then integrated into the SCS in October 2011. The bicycle plan encourages the development of a unified bicycle system throughout the region that serves the needs of all bicycle riders by looking for the best way to provide connections to local and regional activity centers, transit facilities, and regional trail systems. As a component of the RTP and SCS, the bicycle plan provides overall assistance to local jurisdictions in their efforts to improve the safety of bicyclists, enhance education for bicyclists, and increase awareness about bicycle travel.

Urban Area Transit Strategy

To initiate the transit planning effort for the 2050 RTP, SANDAG developed an Urban Area Transit Strategy (UATS) focused on the most urbanized areas of the region where investments in transit are generally most efficient and effective. The UATS is another component of the 2050 RTP that was developed to help the region comply with SB 375. The primary goals of the strategy are:

- Making transit more time-competitive with automobile travel.
- Maximizing the role of transit within the broader transportation system.
- Reducing vehicle miles traveled and greenhouse gas emissions in the region.³⁹

SANDAG and the project team undertook an extensive planning process that involved developing a range of differing transit strategies and approaches to determine the kind of transit future that is desirable for the San Diego region. Public and stakeholder input was sought to identify three transit network alternatives, which were then evaluated using performance measures and mode share goals that the project team developed through a collaborative process. The UATS utilized a three-pronged approach to (1) identify key corridors and communities that have the most potential for transit investments; (2) develop transit mode share goals (ranges) for each corridor/community; and (3) use the transit mode share goals and transit performance criteria to evaluate the alternatives and create a single transit network for incorporation into the 2050 RTP.

Transit Mode Share Targets

A primary output of the UATS is the establishment of transit ridership targets. Achieving SANDAG's regional GHG and vehicle miles traveled reduction goals will require an increase in the region's transit mode share, which is defined as the proportion of trips taken on public transportation. The 2050 RTP specifies that transit mode share will be measured using weekday, peak-period commutes between home and work, as this is the type of trip for which behavior shifts to transit are the most likely.

The current transit mode share (again measured only by peak-period commute trips) is 2 to 3% for the San Diego region as a whole and just over 5% in the SANDAG-defined urban area. Two of the region's densest areas boast significantly higher numbers: Downtown San Diego has a 24% transit mode share

³⁸ SANDAG 2050 RTP (Chapter 3), October 2011.

³⁹ Ibid., Technical Appendix 7.

and the largely residential central core area (which includes Mid-City neighborhoods as well as parts of eastern San Diego) is just below 12%. All other parts of the region have transit mode shares well below 10%.⁴⁰ For comparison, Table 2-4 lists the commute transit mode shares for selected U.S. cities; despite a handful of transit-centric areas, 17 of the nation's 30 largest cities have mode shares of 5% or less.⁴¹

TABLE 2-4: COMMUTE TRANSIT MODE SHARE (SELECTED U.S. CITIES)

City	Commute Transit Mode Share
New York City	55%
Washington, DC	37%
San Francisco	32%
Chicago	26%
Seattle	19%
Portland, OR	12%
Los Angeles	11%
<i>Goal for San Diego Urban Area and NCC</i>	<i>10-15%</i>
Denver	8%
Houston	5%
Phoenix	4%
San Diego*	4%
San Antonio	3%

Source: U.S. Census American Community Survey, 2005-2009 5-Year Estimates; SANDAG 2050 RTP (Technical Appendix 7), October 2011.

* For consistency, this figure includes only the city of San Diego. As noted above, SANDAG data breaks this down further, revealing a 2–3% transit-mode share for the entire San Diego region, and a 5% transit-mode share for the SANDAG-defined urban area.

The 2050 RTP sets an ambitious goal of achieving a peak-period commute transit mode share of 10–15% in the urban area by 2050 (a 400% increase from current levels). Though it may be difficult to reach, this growth in transit mode share will be crucial to meeting GHG reduction targets. To achieve the transit mode share goals, SANDAG divided the urban area into districts and established district-level mode share goals based largely on the viability of transit in each area. Transit investments in the 2050 RTP were then allocated according to these goals, with the greatest investment going to areas where transit is most likely to succeed. Downtown San Diego and the central core—where density and land use patterns are most conducive to transit—are charged with raising their transit mode shares to +30% and 20–25%, respectively. The goal for the NCC (10–15%) is ambitious given the area's limitations to transit effectiveness (discussed in Chapter 3A) and would be a major improvement from the current share (2–3%). Overall, decisions made at the regional level to implement regional goals and address state-mandated GHG reduction targets have resulted in a planned allocation of transit resources and projects throughout the region that focuses investment in the densest urban areas.

Goods Movement Strategy

The relationship between freight transportation and economic growth has long been recognized as an important ingredient in both regional and national policy. The 2050 Goods Movement Strategy (GMS), developed as part of the 2050 RTP, recognizes the importance of freight and goods movement to the

⁴⁰ SANDAG 2050 RTP (Technical Appendix 7), October 2011.

⁴¹ U.S. Census American Community Survey, 2009.

region's economic prosperity and seeks to balance regional and national freight priorities.⁴² The GMS serves as the region's freight blueprint, emphasizing the efficient flow of economic goods to and through the San Diego region via truck, rail, maritime, and air modes. It identifies and prioritizes the key infrastructure needs to maintain or grow goods movement in the region by providing additional throughput with increased capacity, efficiency, and connectivity.

By volume, the region's roads and highways accommodate more than 90% of its freight movements. This underscores the importance of maintaining an efficient and uncongested highway network to carry the economic activity generated by the region's active manufacturing and maritime industries, along with one of the nation's largest and most vital international border crossings. As two of the primary routes connecting San Diego to the rest of the nation, both the I-5 and LOSSAN corridors are identified in the GMS as key links in the region's goods movement network.

Funding

The 2050 RTP allocates over \$112 billion to transportation in the next 40 years, measured in 2010 dollars.⁴³ Of this sum, 50% is dedicated to transit-related uses, including capital, operations, and maintenance. Another 41% is allocated to roads and highways. The remainder is earmarked for active transportation projects (bicycle and pedestrian), Smart Growth incentives, and other initiatives. Subtracting operations, maintenance, and administrative costs, a total of \$26.6 billion (55%) is allocated for transit capital projects, \$16.0 billion (34%) for the construction of Express Lanes and other HOV facilities, and \$5.4 billion (11%) for general-purpose highway projects.⁴⁴ These proportions are depicted in

FIGURE 2-14: CAPITAL PROJECT ALLOCATIONS IN 2050 RTP

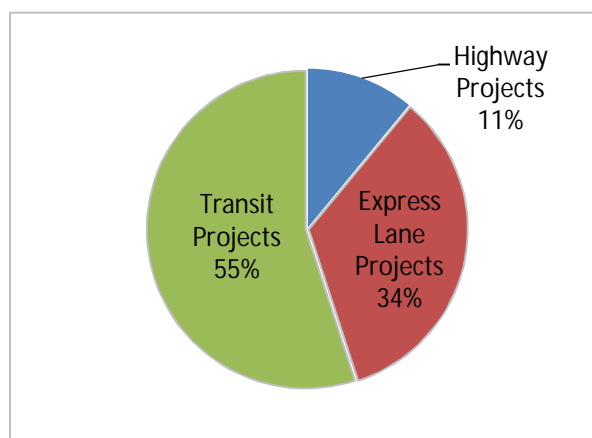


Figure 2-14. Because Express Lanes support transit service and discourage single-occupancy travel, they represent a more efficient use of capital funds than general-purpose highway expansions; overall, 89% of the 2050 RTP's capital budget is allocated to transit or transit-supportive highway projects.

Despite the seemingly large size of these expenditures, the 2050 RTP actually represents an abridged list of the region's desired transportation projects. By law, the 2050 RTP must conform to a revenue-constrained scenario that makes reasonable assumptions about funding availability in the coming decades. In the planning process, however, SANDAG first devises a revenue-unconstrained scenario, which is essentially a "wish list" of projects the region would accomplish if given unlimited resources. This unconstrained list is then pared to fit available funding according to the ranked priorities of the projects.

To keep fares low enough to attract ridership, most of the world's transit systems require public subsidies to operate. The proportion of costs covered by fare revenue—known as the "farebox recovery ratio"—is currently 35% in the San Diego region, which is consistent with national trends. The

⁴² SANDAG 2050 RTP (Chapter 6), October 2011.

⁴³ Ibid., Technical Appendix 7.

⁴⁴ SANDAG, October 2011.

remainder of transit funds comes from various public sources, ranging from federal grants to the local *TransNet* sales tax.

The amount of transit subsidy varies among the region's areas and types of transit service. In the densest areas of San Diego, bus and trolley routes enjoy high ridership and relatively low subsidies: In fiscal year 2011, MTS buses required \$1.53 in subsidy for each passenger boarding, while MTS trolleys' subsidy per passenger boarding was just \$0.77.⁴⁵ By contrast, local bus routes operated by NCTD—the main transit operator in the NCC—required a subsidy of \$4.09 for each passenger boarding, reflecting the challenges of providing efficient transit service in large, low-density suburban areas. Subsidy per passenger on the COASTER was \$6.92 in fiscal year 2011, reflecting the higher cost of operating and maintaining commuter rail service compared to bus service in the corridor.

Transit services that require large public subsidies present a cost/benefit dilemma for regional decision-makers. While there is a social benefit to providing transit access to everyone in the region, fiscal constraints mean that investing in areas with inherently low ridership effectively excludes investment in more cost-effective services in other areas. SANDAG has crafted a careful balance in the 2050 RTP that allocates transit throughout the urban area, ensures a fiscally sustainable transit system, and achieves regional transportation goals and state GHG mandates.

NCC Projects in the 2050 RTP

Due to the importance of the NCC in the regional and national transportation systems, the 2050 RTP includes numerous projects in the corridor. Some of these projects are contained in the PWP/TREP, while others are not—mostly because while they serve the NCC, they are located principally in other parts of the region. Altogether, the 2050 RTP includes over \$14 billion in capital projects that will serve the NCC (Table 2-5).

2.2.1.4 Smart Growth and Alternative Mode Opportunities

The SANDAG Board of Directors adopted the most recent Smart Growth Concept Map in January 2012. Shown in Figure 2-15, it identifies more than 200 existing and future transit-supportive and Smart Growth opportunity areas in the region, and is used by the board to prioritize transportation investments and determine eligibility for funds from the Smart Growth Incentive Program. The NCC contains over 15 of these Smart Growth opportunity areas, the majority of which are located in community cores near COASTER and SPRINTER transit stations.

The majority of the region's Smart Growth is planned to occur in places that have existing transit-supportive land use patterns—primarily the central core area. Since most of the NCC features a low-density, suburban land use pattern, it has not been SANDAG's primary focus for coordinated high intensity Smart Growth and transit investments. Nevertheless, local jurisdictions and SANDAG are working together to introduce stronger Smart Growth development clusters into the NCC to accommodate future growth with higher-density, mixed-use development, particularly around LOSSAN rail corridor stations.

⁴⁵ SANDAG Coordinated Plan 2012-2016 (Appendix C), July 2012.

TABLE 2-5: SANDAG 2050 RTP CAPITAL PROJECTS (NORTH COAST CORRIDOR)

	Mode/Facility	Project	Planning-Level Cost Estimate (2010 Dollars)*
PWP/TREP Capital Projects in 2050 RTP	LOSSAN Rail	Coastal Rail Double-Tracking	\$440M
		Parking and Station Improvements	\$129M
		Grade Separations	\$350M
		Del Mar Bluffs Stabilization	\$26M
		Del Mar Tunnel	\$1,184M
	Bus Rapid Transit	Mid-City to Palomar Airport Road via Kearny Mesa/I-805/I-5	\$10M
	Enhanced Bus	Coast Highway Rapid Bus or Other Enhancements	\$127M
	Highway (I-5) (Includes bicycle/pedestrian projects such as the I-5 North Coast Bike Trail and community enhancements)	Manchester Avenue to SR 78 (2 HOV Lanes)	\$480M
		La Jolla Village Dr to I-5/I-805 Merge (2 HOV Lanes)	\$250M
		I-5/I-805 HOV Connectors	\$110M
		I-5/I-805 Merge to Palomar Airport Rd (2 Express Lanes)	\$1,500M
		SR 56 Interchange	\$185M
		Palomar Airport Rd to Harbor Dr (2 Express Lanes)	\$1,170M
		SR 78 Interchange and HOV Connectors	\$346M
	Total Estimated Cost of PWP/TREP Capital Projects in 2050 RTP		\$6,307M
Other NCC Capital Projects in 2050 RTP**	SPRINTER Light Rail	SPRINTER Double-Tracking	\$970M
		SPRINTER Express	\$284M
	San Diego Trolley Light Rail	Mid-Coast Corridor Transit Project	\$1,642M
		UTC to Mira Mesa via Sorrento Mesa/Carroll Canyon	\$1,140M
		UTC to San Ysidro via Kearny Mesa, Mission Valley, Mid-City, Southeastern San Diego, National City/Chula Vista	\$2,548M
	Enhanced Bus	Oceanside to Vista via Mission Ave/Santa Fe Rd Corridor Rapid Bus	\$49M
		Old Town to Sorrento Mesa via Pacific Beach, La Jolla, UTC Rapid Bus	\$102M
	Highway	SR 56: I-5 to I-15 Additional Lanes	\$135M
		SR 78: I-5 to I-15 Express Lanes	\$570M
	Total Estimated Cost of Other NCC Capital Projects in 2050 RTP		\$7,440M

Sources: SANDAG 2050 RTP (Appendix A), October 2011; SANDAG/Caltrans Cost Estimates.

* These costs are planning-level estimates that appear in the 2050 RTP; actual project costs may differ.

** Projects will serve, but will not be principally located in, NCC.

TransNet Smart Growth Incentive Program

Since 1988, *TransNet*—the half-cent sales tax for local transportation projects—has been instrumental in expanding the transportation system, reducing traffic congestion and bringing critical transit projects to life. In 2004, voters chose to extend the half-cent sales tax to 2048. The *TransNet* sales tax extension includes a \$280 million Smart Growth Incentive Program (SGIP) to be allocated also through 2048. This program funds transportation and transportation-related infrastructure improvements and planning efforts that support and facilitate compact, mixed-use development focused around public transit, and that increase housing and transportation choices. As a result, approximately \$9 million in Smart Growth incentives are available per biennial funding cycle, which can be leveraged with local matching funds or other state and federal funds to augment the total amount of funding available. The RCP specifies to compete for these funds, an area must be designated on SANDAG's Smart Growth Concept Map (Figure 2-15).

About 75% of the areas on the Smart Growth Concept Map qualify as existing/planned Smart Growth areas.⁴⁶ The existing/planned areas are eligible to compete for both infrastructure and planning grants from the SGIP. Infrastructure grants could include streetscape or sidewalk enhancements, transit station improvements, traffic calming measures, or other quality of life amenities that support Smart Growth in that area. The remaining 25% of the areas on the map represent potential Smart Growth areas and are eligible to compete only for planning grants. These planning grants could be used to prepare specific plans, to update zoning ordinances, or to prepare other plans that provide the institutional framework for Smart Growth development in these areas.

Mid-Coast Corridor Transit Project

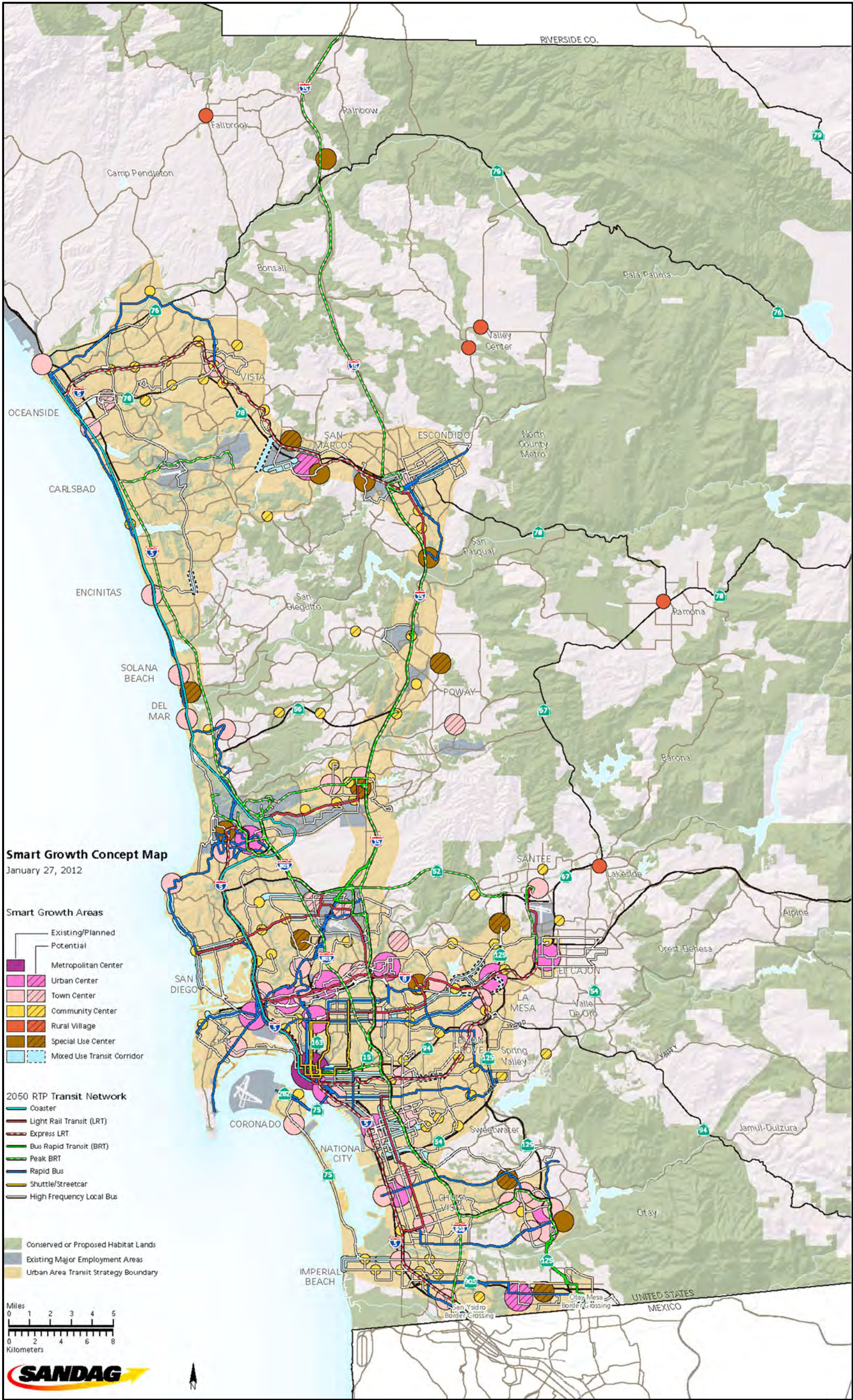
In 2011, the SANDAG Board of Directors approved an 11-mile extension of the San Diego Trolley light rail transit (LRT) system from just north of the Old Town Transit Center to UCSD and University City. Planned to open in 2018, the Mid-Coast Corridor Transit Project will improve public transit services between the many employment and activity centers in University City, UCSD, Old Town, and downtown San Diego, and will connect corridor residents with existing LRT lines that serve Mission Valley, South County communities stretching to the international border, and East County communities to Santee. Even though University City is the region's largest single employment center and one of its biggest trip generators, it is not served directly by regional transit. Instead, existing transit to these areas is mostly provided by local bus routes that travel on circuitous and congested streets, and are not competitive with individual auto travel.

Between Old Town and Gilman Drive, the Mid-Coast Corridor LRT system will travel in the existing railroad right-of-way owned by MTS on the east side of I-5. Three stations are proposed in this segment at Tecolote Road, Clairemont Drive, and Balboa Avenue. At Gilman Drive, the alignment will cross to the west side of I-5 to a station at Nobel Drive, then continue to the UCSD campus, cross I-5 again to serve major medical centers, and ultimately terminate at the University Towne Center (UTC) Transit Center and the adjacent shopping mall.

Completion of the Mid-Coast Corridor Transit Project will enhance direct public access between the NCC and regional residential, employment, and activity centers beyond the NCC, including the Mid-Coast Corridor as well as other areas linked by the LRT system. The planned rail transit connection provided by this project will improve travel options to the NCC and enhance NCC coastal access from throughout the region for residents, commuters, and visitors.

⁴⁶ *Smart Growth Areas by Place Type*, SANDAG, January 27, 2012.
http://www.sandag.org/uploads/projectid/projectid_296_14006.pdf. Accessed May 2012.

FIGURE 2-15: SAN DIEGO REGIONAL COMPREHENSIVE PLAN SMART GROWTH CONCEPT MAP



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2.2.1.5 Senate Bill 468 and Safe Access to Transit and Coastal Resources

California Senate Bill No. 468 (SB468), sponsored by local state Senator Christine Kehoe and signed into law in October 2011, detailed specific requirements for the NCC project. It directed the highway expansion to conform to the “8+4 Buffer Alternative” that is envisioned in the PWP/TREP, required highway and rail construction to proceed concurrently, and mandated the lowest possible environmental impacts in lagoon bridge construction. It also directed that “SANDAG shall establish a safe routes to transit program that integrates the adopted regional bicycle plan with transit services” within the NCC. This initiative, which SANDAG is now undertaking at the regional level, began in the NCC with the Safe Access to Transit and Coastal Resources (SATCR) study (included as Appendix A of the PWP/TREP). The SATCR study evaluated gaps and barriers in the existing and planned bicycle and pedestrian networks in the NCC that prevent or inhibit access to NCC rail stations and coastal activities/resources, and identified projects for incorporation into the PWP/TREP that would help address these deficiencies. Utilizing the following process, the SATCR study provided a comprehensive and systematic approach to identifying new projects and facility enhancements that would improve non-motorized access to transit and coastal resources in the NCC:

- Established transit and coastal resource destinations
 - Identified and mapped the LOSSAN rail corridor stations and significant coastal destinations and resources in the NCC. Coastal destinations and resources include major activity centers such as the Del Mar Racetrack and coastal city downtowns, and more broadly defined resources such as coastal lagoons and beaches.
- Identified gaps, barriers and other deficiencies in bicycle and pedestrian access routes to transit and coastal resources
 - Identified the bicycle and pedestrian facilities at existing and planned crossings of the I-5 highway and LOSSAN rail corridors to determine where potential deficiencies exist at crossing locations.
 - Mapped the existing and planned regional and local bicycle networks in the NCC to identify deficiencies in bicycle access to LOSSAN rail stations and coastal resources.
 - Established a three-quarter-mile radius around each LOSSAN rail station and mapped the existing pedestrian network (sidewalks and trails) within that radius to identify deficiencies in pedestrian access to those stations.
- Identified PWP/TREP improvements to address deficiencies
 - Identified PWP/TREP improvements that would correct the aforementioned gaps, barriers and other access deficiencies. These bicycle and pedestrian projects included new and improved facilities at I-5 highway and LOSSAN rail corridor crossings, implementation of segments of the Coastal Rail Trail within the LOSSAN right-of-way, and implementation of the new north-south I-5 North Coast Bike Trail within the highway right-of-way. These PWP/TREP projects would be implemented as part of the I-5 highway and LOSSAN rail corridor transportation projects and would include such facilities as upgraded bicycle routes (e.g., rebuilding an existing Class III bicycle facility as a Class II facility on a new I-5 bridge overcrossing) and new or wider sidewalks at highway and rail over- and undercrossings.
 - Analyzed opportunities for additional improvements across or along the I-5 highway and LOSSAN rail rights-of-way. The analysis concluded that no further improvements are necessary within the highway right-of-way, and that five potential opportunities for improvements within the LOSSAN right-of-way should be considered as part of future LOSSAN projects.

- Provided baseline information for potential independent pedestrian projects
 - Outside the I-5 highway and LOSSAN rail rights-of-way, the SATCR study provided pedestrian circulation information within a three-quarter-mile walking distance of LOSSAN rail stations. Local jurisdictions could use this mapped information to identify any additional opportunities to improve pedestrian access to transit stations and coastal resources that could be permitted independently of the PWP/TREP.

The SATCR analysis revealed that nearly all identified deficiencies would be addressed by PWP/TREP improvements. At the LOSSAN rail corridor, these improvements include the construction of several grade-separated crossings as well as the completion of several segments of the Coastal Rail Trail. At the I-5 corridor, key improvements include rebuilding highway over- and undercrossings with improved bicycle and pedestrian facilities; constructing the I-5 North Coast Bike Trail (a new regional facility that would run the length of the NCC); and implementing an extensive suite of Community Enhancements in local jurisdictions. Taken together, these improvements would accomplish the goals of the SATCR study and will help jump start the regional “safe routes to transit” program that SANDAG will undertake in response to SB468. A complete discussion of the SATCR analysis, results, and maps are included in the SATCR report in Appendix A. Further details about the planned bicycle and pedestrian improvements in the NCC are discussed below and shown in Figures 5.3-1A through 5.3-1E.

2.2.2 Reducing Regional Energy Consumption and Air Emissions

The planning efforts that underlie the 2050 RTP and its associated programs are based largely on efforts to reduce regional energy consumption and air emissions. These efforts are motivated not just by a desire to achieve long-term sustainability but also by legal mandates from California state regulatory bodies.

2.2.2.1 State-Mandated Greenhouse Gas Reduction Targets

The state of California has set ambitious goals for GHG reduction across its 18 metropolitan regions. In 2008, the California Air Resources Board set a 7% per-capita reduction in GHG emissions by 2020 and a 13% reduction by 2035 for the San Diego region.⁴⁷ Since a significant portion of GHG emissions come from transportation sources, these targets heavily influenced the composition of transportation projects and the design of the transportation network in the RTP. In addition, the region’s plan to meet these targets is contained in the SCS.

To achieve the mandated GHG reductions, the region cannot continue growing with the same transportation and land use patterns that dominated its past. SANDAG has determined that meeting the goals will require significant changes in travel behavior at the regional level, including both a reduction in vehicle miles traveled as well as an increase in the share of trips taken on public transit. As financial constraints limit the number of transportation projects possible, the RTP therefore attempts to direct transportation investment to the areas where the greatest changes are possible.

2.2.2.2 SANDAG Climate Action Strategy

Approved in March 2010, the Climate Action Strategy is SANDAG’s guide to climate change policy. Recognizing that many climate change solutions and impacts occur at regional and local levels, the strategy identifies a range of potential policy measures—“tools in the toolbox”—for consideration as

⁴⁷ The CARB-mandated GHG reduction targets apply only to cars and light trucks during weekday travel, using 2005 as the base year. While reductions are desired for all vehicle classes, only this single class is included in the performance measure.

SANDAG periodically updates long-term planning documents like the RTP and RCP and as local jurisdictions update their general plans and other community plans.

A primary focus of the Climate Action Strategy is to help SANDAG identify land use, transportation, and related policy measures and investments that could help SANDAG and local governments achieve GHG reductions from the on-road transportation sector, including measures to reduce GHG emissions from passenger cars and light-duty trucks as required in future updates of the RTP. The focus of the Climate Action Strategy is organized around the following four goals—some coupled with a specific set of objectives intended to reduce transportation-related GHG emissions at regional and local levels and help the region prepare for potential impacts to the transportation system:

- Reduce total miles of vehicle travel.
- Minimize GHG emissions when vehicles are used.
- Support increased use of low carbon alternative fuels.
- Protect transportation infrastructure from climate change impacts.⁴⁸

Potential policy measures are also identified for improving efficiency in buildings and energy use, protecting transportation and energy infrastructure from climate impacts, and helping SANDAG and local jurisdictions reduce GHGs from their operations. Decisions on which measures to pursue will be considered by regional and local officials, stakeholders, and the public during development of subsequent public policy documents (and related regulatory mechanisms).

2.2.2.3 SANDAG Regional Energy Strategy

The Regional Energy Strategy (RES)—approved in December 2009—provides information, goals, and policy measures for a comprehensive set of energy issues. It addresses a host of issue areas, including energy efficiency and conservation, renewable energy, the smart grid, transportation fuels, and the economics of clean energy. Although there is overlap between the energy policy guidance provided in the RES and the types of policy measures that would reduce GHG emissions addressed in the Climate Action Strategy, energy and climate change are not synonymous issues. As a result, SANDAG prepared the Climate Action Strategy to accompany the RES to provide further policy guidance on climate change and energy issues, respectively.

In light of significant state control over energy policy in certain areas like electricity and natural gas, the RES focuses on the opportunities and authority that SANDAG and its member agencies have to address energy issues and achieve both local and regional goals related to energy and climate change. SANDAG anticipates addressing energy considerations through future updates of the RCP and RTP, while local governments can use mechanisms like their General Plans and can participate in the SANDAG Energy Roadmap program. The RES identifies six core strategies that, if implemented, would help the region significantly in meeting its energy and climate change mitigation goals. The strategies, of which SANDAG and local governments could play integral roles in implementing, include the following:

- Pursuit of a comprehensive building retrofit program to improve efficiency and install renewable energy systems.
- Creation of financing programs to pay for projects and improvements that save energy.

⁴⁸ SANDAG *Climate Action Strategy* (Chapter 6), March 2010.

- Utilization of SANDAG-San Diego Gas & Electric Local Government Partnership funding to help local governments identify opportunities and implement energy savings at government facilities and throughout their communities.
- Support of land use and transportation planning strategies that reduce energy use and GHG emissions.
- Support of planning of electric charging and alternative fueling infrastructure.
- Support use of existing unused reclaimed water to decrease the amount of energy needed to meet the water needs of the San Diego region.⁴⁹

2.2.2.4 Caltrans Climate Action Program

The Climate Action Program developed by the Caltrans is an interdisciplinary effort intended to promote, facilitate, and coordinate implementation of climate change strategies and related activities within Caltrans and with partner agencies. The Climate Action Program serves as a resource for technical assistance, training, information exchange, and partnership-building opportunities.

The program focuses on both reducing GHG emissions and adapting to climate change. The overall objective is to balance progressive program delivery within the context of responsible environmental stewardship in a way that: 1) allows transportation strategies, plans, and projects as a whole to contribute to the state's GHG emission reduction plan; 2) provides guidelines, procedures, performance measures, and a quantifiable set of reporting protocols to monitor GHG footprints; 3) considers potential impacts of climate variability on transportation system and development of risk assessment for long lasting transportation investments; and 4) advances applied research to support climate change knowledge base in transportation.

2.2.2.5 Transportation Demand Management

To encourage the use of alternative modes—including carpool, vanpool, transit, biking and walking—SANDAG coordinates a variety of activities through the iCommute program. The goal of the program is to reduce congestion and air pollution while improving the commutes of residents. Program activities include carpool partner-matching, the Regional Vanpool Program, the iCommute Subsidy Program, the iCommute Guaranteed Ride Home Program, the Regional Bike Locker Program, the SchoolPool Program, employer outreach services, and marketing of transportation demand management (TDM). iCommute is a cost-effective method for easing traffic congestion and reducing air pollution through managing the demand for area roadways by offering a “gateway” of information, resources and tools describing regional TDM and commute options online or through SANDAG’s 511 regional transportation information program.

In addition to the regionwide emphasis of the iCommute program, the 2050 RTP also requires the development of corridor-specific TDM plans to address the varied needs and demands of the region’s distinct corridors and communities. Together, SANDAG and Caltrans are developing a comprehensive TDM plan for the NCC that seeks to 1) manage congestion during construction of NCC rail, transit-highway and roadway projects; and 2) act as a foundation for continued travel behavior changes in the corridor once construction is complete. The first phase in development of this plan is extensive market research and analysis of existing conditions—including all trip markets—by surveying and interviewing employers, commuters, schools, cities, and major institutions to identify the best opportunities for TDM programs and services in the corridor. Following this initial analysis, a comprehensive TDM plan that features customized strategies for the NCC will be developed to include tailored financial incentives to

⁴⁹ SANDAG Regional Energy Strategy, December 2009.

encourage travel behavior, public outreach to corridor residents and institutions, and performance monitoring to measure the program's effectiveness.

2.2.3 Preserving and Enhancing Natural Resources

Within the NCC, multiple regional efforts are underway to restore, preserve in perpetuity, and enhance the unique natural resources and habitats that comprise the local coastal environment.

2.2.3.1 Environmental Mitigation Program

The *TransNet* Extension Ordinance and Expenditure Plan, approved countywide by voters in November 2004, includes an Environmental Mitigation Program (EMP) funding allocation to mitigate habitat impacts of regional transportation projects. The EMP provides for proactive, large-scale acquisition and management of habitat lands for future mitigation before individual transportation projects cause habitat impacts. This plan creates a reliable approach for funding the required mitigation for future transportation improvements, while at the same time reducing overall costs and accelerating resource enhancement activities and project delivery. *TransNet* will provide the EMP with funding for the next 40 years to mitigate impacts from regional and local transportation projects (Biological Mitigation Fund), and for regional habitat acquisition, management, and monitoring activities (Regional Habitat Conservation Fund). This funding allocation is tied to mitigation requirements and the environmental clearance approval process for transportation projects outlined in the RTP.

In March of 2008, SANDAG entered into a Memorandum of Agreement (MOA) with the U.S. Fish and Wildlife Service, the CDFG, and Caltrans to formalize a process for implementing early land mitigation for transportation improvements. The MOA is a 10-year processing agreement that will allow SANDAG, Caltrans, and the wildlife agencies to evaluate how the EMP implements the provisions of the *TransNet* ordinance for early land mitigation.

The MOA has budgeted for implementation of mitigation over the next 10 years to assist in regional land management and monitoring. The *TransNet* EMP funding (in 2012 dollars) that is specifically programmed for the NCC corridor, allowing for expenditure of the EMP funds with implementation of the NCC transportation projects, includes the following:

- \$150.1 million for coastal wetland mitigation.
- \$4.8 million for freshwater wetland mitigation.
- \$26.1 million for upland mitigation.⁵⁰

After the first 10 years of the program, a comprehensive analysis will be conducted to quantify the direct cost savings associated with early mitigation. This direct cost savings will be used in the future to continue to assist with the implementation of regional habitat preservation efforts.

2.2.3.2 San Elijo Lagoon Restoration Project

The San Elijo Lagoon Restoration Project seeks to preserve, protect and enhance the San Elijo Lagoon Ecological Reserve and its watershed. To achieve this, a feasibility study was prepared to evaluate alternative actions to restore the habitat functions and values of the lagoon. San Elijo Lagoon is a vital coastal resource in the region as it provides a mechanism for conveyance and dissipation of floodwater, thereby reducing erosion by slowing runoff velocities, deposition of flood suspended sediments, shoreline stabilization, recharge of groundwater, and storage of surface water. San Elijo

⁵⁰ SANDAG, January 2013. Figures include approximately \$9 million (adjusted to 2012 dollars) already expended.

Lagoon also serves to filter suspended sediments, remove organic and inorganic nutrients, remove toxic substances, facilitate nutrient cycling, denitrification, and mineralization.

The City of Encinitas, U.S. Army Corps of Engineers, USFWS, CDFG, County of San Diego, and San Elijo Lagoon Conservancy are working to complete a Draft EIR/EIS for restoration of the lagoon. The Draft EIR/EIS will assess several alternatives that seek to restore the hydrological regime and the marsh habitat that is being converted from mudflats and low marsh to middle and high marsh. SANDAG/Caltrans have participated with the City of Encinitas and the U.S. Army Corps of Engineers as part of the feasibility analyses, as well as with other resource agencies as part of the National Environmental Policy Act (NEPA) 404 process for the I-5 project to determine the optimal bridge openings at all of the infrastructure crossings to help facilitate restoration plans for the lagoon. This large regional restoration project could ultimately facilitate the restoration of many hectares of wetlands and help to ensure the lagoon's continued functioning, greatly enhancing the coastal lagoon habitat.

2.2.3.3 Buena Vista Lagoon Restoration Project

The Buena Vista Lagoon Restoration Project lies within the cities of Carlsbad and Oceanside. The lagoon is California's first Ecological Reserve and is owned and managed by the CDFG. Historically a tidally influenced system, Buena Vista Lagoon has been affected by increased sedimentation from the surrounding watershed and, in the 1940s, construction of a concrete weir across the ocean entrance that controls the water level. The presence of the weir at the mouth of the lagoon, combined with increasing sediment and nutrient loading has reduced the depth and circulation of the lagoon, accelerated the growth of cattail, bulrush, and algae, and led to a decline of biodiversity and increased vector (e.g., mosquito) problems. Restoration is a high priority because, given current rates of sedimentation, it is predicted that the lagoon will fill in and become a wet meadow in less than 50 years. Restoration of Buena Vista Lagoon is a high priority (Tier One) project on the work program of the Southern California Wetlands Recovery Project.

Numerous agencies and organizations have been working toward restoring the lagoon, including, but not limited to, the California Coastal Conservancy, USFWS, RWQCB, NOAA, the Cities of Carlsbad and Oceanside, the Buena Vista Lagoon Foundation, and other permitting agencies. The first phase of restoration planning—consisting of several studies assessing the feasibility of restoring function and habitat values by modifying the lagoon's hydrology—was completed in 2010.

"Phase II" restoration planning is underway and consists of preparing preliminary engineering and environmental documents that require further development and evaluation of restoration alternatives for the lagoon. In 2012, SANDAG agreed to assume the role of lead agency in the project in order to advance the progress of the project EIR/EIS and facilitate future engineering, permitting, and construction phases. SANDAG/Caltrans have participated with the resource agencies as part of the NEPA 404 process for the I-5 project to determine the optimal bridge opening at I-5 to help facilitate (and not preclude) any future restoration plans for the lagoon.

2.2.3.4 Coastal Regional Sediment Management Plan

SANDAG received a grant from the California Department of Boating and Waterways for the development of a Coastal Regional Sediment Management Plan to facilitate the management of shoreline sand on a regional basis. The region is one of three areas in the state chosen to prepare a plan. This plan is part of a statewide program to develop a Sediment Master Plan led by the Coastal Sediment Management Workgroup, a group of state, federal, and local/regional entities.

The plan describes how management of sediment targeted at coastal erosion can be implemented in an expeditious, cost-effective, and resource-protective manner throughout the region. The goal is to identify sediment sources that can be used to restore and maintain coastal beaches and other critical areas of sediment deficit or excess, reduce the proliferation of protective shoreline structures, sustain recreation and tourism, enhance public safety, and restore coastal sandy habitats through a consensus-driven process.

While total loads of sediment reaching the ocean have been decreasing, a disproportionate amount ends up trapped in coastal wetlands due to factors related to urbanization such as unstable inlets, decreased tidal prisms, and ecosystem fragmentation. Routine maintenance dredging is required at most lagoons and harbors in the region, and sediment placement at beaches provides a beneficial reuse of suitable maintenance dredged materials. Healthy beaches are important for maintaining the integrity of the wetland systems existing behind them. Habitat quality may affect managed or sensitive species uses of beaches, including California grunion, Pismo clams, and shorebirds including threatened western snowy plover.

3A. THE NORTH COAST CORRIDOR PROBLEM: TRANSPORTATION AND RESOURCE DEFICIENCIES

The North Coast Corridor (NCC) is experiencing a crisis that is felt across all jurisdictions, facilities, and users. The corridor is characterized by deficiencies related to:

- Transportation and mobility constraints that affect coastal access and recreation opportunities.
- The need for new and enhanced transportation infrastructure that fosters healthy and sustainable coastal communities by minimizing traffic spillover on local streets, minimizing energy consumption, air and greenhouse gas (GHG) emissions, and by facilitating Smart Growth policies.
- Preservation and enhancement of water quality and natural habitats.

Chapter 2 describes the NCC today: its existing land uses, multimodal transportation facilities and services, and coastal recreational and natural resources. The chapter also summarizes the San Diego region's transportation policies, objectives and long-range plans that provide the foundation for improving mobility, access and coastal resources in the NCC in the future. Chapter 3A delves into issues and constraints within the existing corridor and describes the growing deficiencies that will affect not only the future transportation system and mobility in the corridor, but also access to and enjoyment of the NCC's shoreline and coastal recreation areas, health and sustainability of the NCC's coastal communities, and the ability to preserve and enhance the unique natural resources in the NCC.

Chapter 3A also assesses the NCC's transportation-system deficiencies in terms of corridor mobility, coastal access, community sustainability, and natural resources. These deficiencies are wide-ranging but stem mainly from the NCC's rapid growth over the last several decades as more residents, visitors, and businesses have placed demands on the corridor's finite infrastructure and resources. The impacts of growth will continue in the future, further exacerbating the threats to mobility, access, community sustainability and resource protection. The myriad transportation and resource deficiencies are discussed in this chapter and summarized in Table 3A-1.

Following the discussion of corridor deficiencies, Chapter 3B describes the regional and corridor plans and projects that will create the transportation, access, and resource vision for the NCC through 2050 to ensure that corridor access and resources are provided, protected, and enhanced to fulfill Coastal Act policy directives well into the future.

TABLE 3A-1: NORTH COAST CORRIDOR TRANSPORTATION AND RESOURCE DEFICIENCIES

Corridor Issue	Corridor Deficiency
Corridor Transportation and Mobility – Coastal Access & Recreation	Inadequate and Degrading Coastal Access and Recreation Opportunities
	Travel Demand and Growth
	Population and Employment Growth Greatly Outpaces Transportation Capacity Growth
	Travel Demand Greatly Outpaces Growth in Population, Employment, and Capacity
	Transit
	Low-Density Land Use Inhibits Successful Transit
	Limited Capacity on Los Angeles-San Diego-San Luis Obispo (LOSSAN) Rail Corridor
	Inadequate Access and Parking at Rail Stations
	Highway
	Consistently Heavy Weekday Highway Congestion
	Consistently Heavy Weekend Highway Congestion
	Few Non-Highway Routes for Local Traffic
	Without Improvements, Highway Congestion Will Continue to Worsen
	Lack of HOV Facilities Discourages HOV and Transit Use
	Driving Alone is the Dominant Travel Mode
	Bicycle and Pedestrian
	North-South Bicycle and Pedestrian Access is Hampered by Barriers due to Lack of Parallel Frontage Roads, Topographical and Lagoon Constraints
	Outdated Interchanges and Lack of Rail Crossings Result in Barriers to East-West Bicycle and Pedestrian Access to the Coast
Coastal Communities	Without Improvements, Local Traffic Will Continue to Degrade
	Energy Consumption Resulting from Travel Leads to Increases in Air Pollutants and Greenhouse Gas Emissions
	Transportation Infrastructure is Needed to Support Smart Growth Policies
Water Quality and Sensitive Coastal Habitats	Continued Degradation of Water Quality
	Continued Degradation of Lagoons
	Continued Degradation and Loss of Coastal Habitats

3A.1 THE MOBILITY PROBLEM

The NCC's transportation deficiencies are not limited to a single facility or mode, nor do the deficiencies affect only certain types of travelers. Rather, the problems of growth, demand, capacity, and congestion extend across all of the corridor's transportation facilities: transit, highway, bicycle and pedestrian. Inadequate and infrequent transit facilities and services, traffic congestion, travel delays, and incomplete bike and pedestrian networks together lead to limits and difficulties for resident, commuter, visitor, business and interregional traveler access to and through the corridor, and similarly lead to limitations for people accessing the coast and recreation areas. Despite the numerous coastal recreational resources in the NCC, access to coastal communities and coastal recreational and natural resources is hampered by the transportation-system deficiencies and mobility constraints of the corridor.

Deficiency: Inadequate and Degrading Coastal Access and Recreation Opportunities. The numerous multimodal transportation deficiencies identified in the NCC severely limit coastal access for residents and visitors alike—a condition that promises to worsen in the absence of transportation improvements.

Travel Demand and Growth. Larger in area than both Rhode Island and Delaware combined, and home to more people than 20 of the 50 states, San Diego County contributes significantly to the economic, political, social, recreational, and environmental well-being of California and the US. The county's location in the southwest corner of the US makes it the front door for the state and nation from the land ports of entry at the Mexican border as well as the seaport in San Diego Bay. People and goods depend on the county's rail and highway transportation network to access local, regional, state, and interstate destinations, and the transportation facilities in the NCC are key links in that regional transportation network. However, the transportation system in the NCC is breaking down because of the following:

- Unprecedented population and travel growth from 1970 to today.
- Physical constraints on transportation infrastructure and capacity.
- Projected continuing growth into the future.

Transit Access. The lack of adequate transit service and other alternative transportation modes to access the beach and upland coastal recreation areas is a recognized impediment to public coastal access. Directly linked to the region's objectives to provide transportation flexibility and ensure the movement of people rather than vehicles are Coastal Act policies that direct protection and enhancement of public access and recreation opportunities by (1) facilitating the provision or extension of transit service; (2) providing non-automobile circulation; (3) providing adequate parking facilities or serving new development with public transportation; and (4) ensuring the potential for public transit for high-intensity uses.

Availability of adequate parking facilities in coastal areas necessary to serve residents, commercial uses, and visitors who travel by car is an important variable that influences public access and recreation opportunities in the Coastal Zone. Where parking is not feasible, substitute means of access such as public transportation, pedestrian, and biking facilities are necessary to access the coast. However, parking constraints at transit stations and pedestrian and biking facility staging areas affects availability of these alternative travel modes as a means of reaching coastal areas. In particular, most users access rail by driving, and constrained station parking currently discourages many potential passengers from using rail.

Highway Access. The Coastal Commission Public Access Action Plan recognizes roadway congestion as one of the greatest impediments to public access in coastal areas and specifically notes that, among other things, traffic congestion and poor traffic circulation are significant problems where residents and visitors compete to use the same transportation system. As the region's population continues to grow, San Diego County residents and people in the adjacent regions and beyond will continue to seek access to the supply of coastal resources in the corridor, placing additional demand on the region's transportation network related exclusively to coastal access. Congestion on the I-5 highway also results in increased congestion on local arterial street networks when frustrated travelers exit the congested highway in search of alternate routes, which further restricts mobility and impedes access to coastal resources along local transportation corridors. Projected future demand for public access to the coast and upland recreation areas simply cannot be accommodated within the capacity limitations of the existing transportation network.

Bicycle and Pedestrian Access: Access to Natural Resources & Enhancement of Recreational Facilities. Population growth and development pressures in the NCC have resulted in loss of public access and recreational opportunities. As the population continues to grow in the corridor, people in San Diego County and adjacent regions will seek access to the remaining supply of coastal resources in the corridor, increasing demand for access to and use of the NCC's recreational facilities. Ultimately, the Coastal Act recognizes the necessity and benefit of providing varied transportation choices for all people to enjoy the coast, including alternative transportation modes that are not reliant on the automobile. These choices include not only transit but also active transportation modes such as walking and biking. Well-planned, non-motorized transportation networks can bridge the gap between origins or destinations and the transit system, addressing the classic "last mile" problem for transit users. Pedestrian and bike facilities create attractive transportation links between land uses that draw travelers out of their automobiles when making short, local trips and when seeking access to coastal resources. In addition to linking land uses and enhancing overall mobility, pedestrian and bike facilities serve as coastal recreational facilities, providing non-vehicular means for accessing and enjoying the varied shoreline and natural resource areas within the corridor.

3A.1.1 Travel Demand and Growth

The transportation and environmental deficiencies in the NCC stem from the numerous trip generators and activity centers in the corridor and have been exacerbated by the area's precipitous growth rates over the past four decades. This growth rate includes not just growth in the resident population but also significant growth in the number of people visiting NCC destinations, the number of jobs in the corridor, and the overall demand for travel.

3A.1.1.1 Trip Generators and Activity Centers

As described in Chapter 2, the NCC consists of approximately 111,215 gross acres (173 square miles) and is home to more than 525,000 people and 358,000 jobs. While this PWP/TREP addresses the portion of the corridor located only in the Coastal Zone, much of the NCC's primary transportation facilities—namely I-5 and the LOSSAN rail corridor—are located almost entirely in the Coastal Zone. These facilities are critical not only to maintaining access to the corridor's coastal areas but also to maintaining the regional, interregional, and international transportation systems. In 2010, the NCC accommodated over 1.4 million daily vehicle trips just on I-5 (or approximately 13% of the 11.5 million daily vehicle trips that occurred within San Diego County). By 2040, I-5 in the NCC is projected to

accommodate nearly 1.8 million daily vehicle trips (an increase of more than 26% over existing conditions).¹

Figure 3A-1 illustrates many of the corridor's main activity centers. With more than a half-million people living in the NCC, the corridor features many of the conventional residential trip generators: home, work, school, shopping, and recreation. However, the NCC is also a major tourism destination, accommodating millions of outside visitors each year. As shown in Table 3A-2, the NCC's five state beaches for which attendance is counted (not including the numerous other public beaches) attracted over 7.6 million visitors in the 2011–2012 fiscal year, which is more than twice the population of the entire San Diego region. As these five state beaches constitute approximately 50% of the NCC coastline, it is reasonable to conclude that the NCC coastline attracts significantly more than 7.6 million visitors each year. Attendance figures also show that 1.7 million people visited Legoland, 1.5 million attended the San Diego County Fair, and over 665,000 people visited the Del Mar Racetrack in recent years. These activity centers draw visitors from all over the region and state, all of whom place demands on the NCC's transportation system above and beyond those of the residential population.

TABLE 3A-2: ANNUAL USE OF SELECTED NORTH COAST CORRIDOR RECREATIONAL AND TOURISM DESTINATIONS

Recreation/Tourism Destinations	Annual Visitors
Torrey Pines State Beach and Natural Reserve	1.95 million (FY 2011–2012)
San Elijo State Beach	1.21 million (FY 2011–2012)
Cardiff State Beach	1.85 million (FY 2011–2012)
Carlsbad State Beach	1.42 million (FY 2011–2012)
South Carlsbad State Beach	1.19 million (FY 2011–2012)
San Diego County Fair	1.52 million (2012)
Del Mar Racetrack	0.65 million (2012)
Legoland	1.70 million (2010)

Sources: California Department of Parks and Recreation; Legoland; San Diego County Fair; Del Mar Thoroughbred Club.

3A.1.1.2 Travel Customers and Trip Types

The NCC is used by a wide variety of travelers who require an array of transportation solutions. A traveler's trip purpose, trip length, and origin and destination influence and often dictate the choice of travel mode. Because trip characteristics vary so widely, a multimodal corridor provides travelers with the ability to choose the mode that best meets their travel and access needs for each trip.

Residents

Local residents in the NCC make a variety of essential and discretionary trips to shop, run errands, go to school, and enjoy their communities' recreational opportunities. Many of their trips are short in distance and often include family members or other companions. Like most trips in the corridor, these are dominated overwhelmingly by the automobile; only 3% of commute trips with at least one end in the NCC are currently made by bus or rail during the peak periods—the times when the most transit service is provided (typically 6:00 A.M.–9:00 A.M. and 3:00 P.M.–6:00 P.M.).² When considering all trips, all day, it is therefore reasonable to deduce that even fewer than 3% of total trips are made by transit in the corridor. While local automobile trips within the NCC ideally would be made on the local street

¹ SANDAG/Caltrans Series 12 Model, November 2011.

² SANDAG 2050 Regional Transportation Plan (Technical Appendix 7), October 2011.

network, geographic constraints significantly limit arterial routes in much of the area, meaning that many of these trips are often forced onto the highway. Indeed, as discussed below, nearly 40% of weekday trips on I-5 are internal to the NCC, having both their origin and destination inside the corridor.

This use of I-5 for these internal trips contributes to highway congestion and subjects both local and regional travelers to substantial delays. The planned expansion of rail service in the corridor will provide benefits to commuters and longer-distance travelers but will be unlikely to attract many new internal trips since, as will be discussed in Section 3A.1.2.5, more than half the residences in the corridor are located farther than 5 miles from rail stations (and many are closer to I-5 than the LOSSAN rail corridor). In addition, rail service on the LOSSAN rail corridor is geared to the long-distance commute and interregional market with widely spaced stations (4–5 miles apart) for faster travel to a few key employment and community destinations. Local bus service may be appropriate for some of these internal trips, but their short length often means that driving has substantial time and access advantages over fixed-route buses—so most travelers still choose the automobile for their local purposes. (See Section 3A.1.2 for a broader discussion of the impediments to effective local transit in the NCC.)

Commuters

Commuters generally travel during peak periods and frequently leave the NCC to access employment sites throughout the region. Most commute trips within the corridor are southbound in the morning and northbound in the evening, reflecting the employment draw to the central and southern parts of the region; however, a small but growing “reverse-commute” pattern also exists, connecting the region’s central and southern residents to suburban employment centers in the NCC. As shown in Table 3A-3, just 3% of NCC commuters use rail and bus transit services for their work trips. A much larger percentage use a car/vanpool (10%) and drive alone (76%).

TABLE 3A-3: COMMUTE-TRIP MODE SHARE

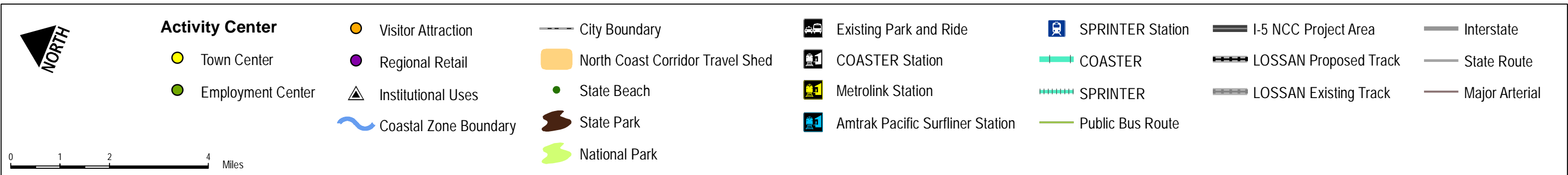
Area	Drive Alone	Carpool/Vanpool	Public Transit	Other Modes	Work at Home
North Coast Corridor	76%	10%	3%	2%	7%
California	72%	15%	5%	5%	4%
United States	76%	12%	5%	4%	3%

Source: San Diego NCC-CSMP (Chapter 4), July 2010.

Key factors that lead to the high rate of automobile commutes are the dispersed nature of trip origins (homes) and destinations (jobs) both inside and outside of the corridor. On the origin end of the trip, the established, generally low-density land use pattern in the NCC fails to generate the population concentrations necessary to truly support a major shift in transit mode share in the corridor. On the destination end of the commute trip, the regional distribution of jobs makes automobile travel more efficient for all but a few areas of concentrated employment (i.e., Sorrento Valley, downtown San Diego, Kearny Mesa, and University City). As discussed later in this chapter, few single employment centers in the San Diego region are large enough or concentrated enough to support transit connections to all parts of the region, particularly those parts with relatively low population densities such as the NCC.



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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD Flowlines, Imagery: DigitalGlobe March 2008

The Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map are for planning and engineering study purposes only. Data are derived from multiple sources. The digital Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map have not been adopted by the Coastal Commission, and do not supersede the official versions certified by the Coastal Commission as may be amended from time to time.

Disclaimer: The State of California makes no representations or warranties regarding the accuracy or completeness of the files or the data from which they were derived. The State shall not be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of these Coastal Zone boundary, jurisdiction and Local Coastal Program files or the data from which they were derived. Because the Coastal Zone boundary, jurisdiction and Local Coastal Program data files are merely representational, they and the data from which they were derived are not binding and may be revised at any time.

FIGURE 3A-1

Activity Centers (North Coast Corridor)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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Visitors

Visitors and locals enjoy the NCC for its approximately 30 miles of beaches, quaint coastal communities, parks, open spaces, coastal resorts, and entertainment venues. These visitor and recreational travelers often have unique needs that are not easily served with transit. For example, a family of four spending a Saturday on the beach would likely load a vehicle with boogie boards, umbrellas, and coolers full of food and drinks, which are difficult to transport on public transit. In addition, many recreational users travel (particularly on weekends) from locations east of the corridor that are not directly served by the major north-south NCC transit services. As a result, recreational users are much more likely to make their trips via automobile. While these types of trips do not generally lend themselves to travel by transit, recreational users are more likely to be in carpools; a study of NCC traffic found that between 54% and 65% of weekend traffic on some sections of I-5 comprises HOVs—a category that includes carpools as well as vanpools and buses.³

Businesses

International, interregional and regional businesses transport billions of dollars of goods annually using the intermodal freight transportation network in San Diego County. While there is freight service on the LOSSAN rail corridor, trucks carry more than 90% of the region's freight volume.⁴ Aside from locally based shipping, which is mostly by truck, the majority of goods that arrive in San Diego bound for other regions are also transferred to trucks before being shipped to inland destinations. This stems primarily from the economics of goods movement; businesses typically choose trucks to move freight through the region because it avoids the additional train-truck transfer that would be necessary before goods reach their final destinations. Over 70% of the freight volume originating in San Diego County or arriving at San Diego ports is bound for destinations within the county or the state of California; for many of these shipments, the cost of an intermodal transfer to rail simply does not make economic sense.⁵ It is expected that this heavy reliance on trucks for goods movement will continue.

As the primary link to the Los Angeles area, I-5 carries about one-third of all freight in the San Diego region, with an estimated value of up to \$88 billion in 2007 and an Annual Average Daily Truck Traffic of about 7,200.⁶ At a regional level, approximately 900,000 trucks entered the United States from Mexico through the San Diego region's three land ports of entry in 2007; these international truck volumes are projected to increase to 4.5 million by 2050. In contrast, about 9,000 loaded rail cars made this same crossing in 2007; this figure is anticipated to reach 20,000 by 2050. With many of these goods destined for distribution throughout the nation, I-5's role in goods movement alone makes it a vital economic lifeline—and its importance will continue to grow as international goods movement increases.

Interregional and Through Travelers

Corridor interregional and through travelers use NCC facilities at some point in the course of their travels, but generally do so as part of longer-distance trips to or from points outside the NCC. The region is bounded by several major commercial and tourism destinations—including Los Angeles, Orange County, Riverside County, and Baja California in Mexico—that attract many types of users. While some of these trips begin or end in the NCC (such as a family from Riverside visiting the beach or an Encinitas resident traveling to Los Angeles for a business meeting), other trips use the transportation facilities to pass through the NCC (such as freight from Mexico heading to the Port of

³ Caltrans *I-5 North Coast Freeway Operations Report*, June 2010.

⁴ SANDAG *2050 RTP* (Chapter 6), October 2011.

⁵ Ibid., Technical Appendix 11.

⁶ \$88 billion metric from SANDAG staff estimate, July 2011; all other freight metrics from the SANDAG *San Diego and Imperial Valley Gateway Study*, March 2010.

Los Angeles or a family from Chula Vista going to Disneyland). Through trips also include shorter journeys that are entirely within the region and cross into the NCC during the trip (such as a Fallbrook resident using I-5 to reach downtown San Diego).

On weekdays, over 20% of NCC travelers use NCC facilities for these interregional and through trips; this proportion is expected to grow by 2040.⁷ As I-5 and the LOSSAN rail corridor provide the only interregional transportation facilities to and through the NCC, they will continue to be essential in facilitating these travel patterns.

Trip Types

Based on the variety of customers in the corridor described above, there are a number of trip types occurring within the NCC that affect the operation of the corridor's transportation facilities. An understanding of how the facilities are used assists in framing the context of the improvements needed to achieve the PWP/TREP transportation and resource enhancement objectives for the corridor.

Table 3A-4 identifies the key types of travelers who use the NCC along with the general purposes, relative lengths, and primary types of trips they make. Trips that use NCC facilities are divided into the following four types, based primarily on where the "ends" of the trip fall:

- Internal Trip: Both ends of trip in NCC (regardless of distance)
 - *Example: An Oceanside resident taking a day trip to Carlsbad State Beach*
- Regional Trip: One or both ends of trip outside NCC, but within San Diego region
 - *Example: A commuter traveling from her Encinitas home to downtown San Diego; a Fallbrook resident using I-5 to visit relatives in Coronado*
- Interregional Trip: One end of trip within San Diego region, other end outside San Diego region
 - *Example: A family from Los Angeles visiting Legoland; a Mission Valley resident attending a business meeting in Orange County*
- Interregional–Through Trip: Both ends of trip outside San Diego region
 - *Example: Freight movement from Mexico to Los Angeles*

Table 3A-5 provides a breakdown of the existing and projected trip types of I-5 travelers in the NCC. As travel grows in the corridor, all types of trips are expected to increase in absolute terms, indicating a definite need for the NCC transportation system to accommodate new demand. In relative terms, the projections show an increasing proportion of regional and interregional trips using I-5 and a concurrent decrease in the proportion of internal trips. This information reflects the growing importance of I-5 to non-local travelers; as the region grows, the corridor will serve as an increasingly vital link in the regional and interregional transportation system. In addition, the increasing prevalence of longer-distance travelers also indicates a strong opportunity for the success of facilities such as Express Lanes, which serve these longer trips best by separating them from the slower "on-and-off" patterns of local and internal traffic.

⁷ SANDAG/Caltrans Series 12 Model, November 2011.

TABLE 3A-4: TYPICAL CHARACTERISTICS OF NORTH COAST CORRIDOR TRAVELERS AND TRIPS

	Residents	Commuters	Visitors	Businesses	Interregional & Through Travelers
<i>General Trip Purposes</i>	<i>Shop School Errands Recreation</i>	<i>Work</i>	<i>Recreation Tourism</i>	<i>Goods Movement</i>	<i>Multiple</i>
General Trip Length					
Short (< 5 miles)	X	X			
Medium (5–30 miles)	X	X	X	X	
Long (> 30 miles)		X	X	X	X
Trip Type					
Internal	X			X	
Regional	X	X	X	X	
Interregional	X	X	X	X	X
Interregional–Through			X	X	X

TABLE 3A-5: I-5 NORTH COAST CORRIDOR WEEKDAY TRIP-TYPE TRENDS (2010–2050)

	2010	2035	2040	2050
Internal	38.3%	30.1%	30.7%	28.9%
Regional	41.1%	46.8%	47.0%	47.8%
Interregional	19.4%	21.2%	21.1%	22.0%
Interregional–Through	1.2%	1.2%	1.2%	1.3%

Source: SANDAG/Caltrans Series 12 Model, November 2011. Note: Not all columns add perfectly to 100% due to rounding.

3A.1.1.3 Growth in the Corridor

Deficiency: Population and Employment Growth Greatly Outpaces Capacity Growth. Transportation facilities in the NCC were developed when there were significantly fewer people living and working in the corridor and region, and little infrastructure expansion has occurred over the past 40 years to accommodate the increase in travel resulting from population growth.

The growth forecasts, including those contained in the 2050 Regional Transportation Plan and Sustainable Communities Strategy (2050 RTP), project that the population of the San Diego region will grow significantly in the coming decades, which will spur related growth in housing, employment, and travel demand. Between 2010 and 2040, the region is expected to add nearly one million new residents—a 29% increase. Those new residents will result in demand for over 300,000 new housing units (a 27% increase) and the creation of approximately 400,000 new jobs (a 28% increase).⁸ To accommodate this influx, SANDAG and the local governments have implemented a Smart Growth land use strategy that seeks to increase population density, reduce vehicle miles traveled, and curb greenhouse gas emissions (see Chapter 2 and Section 3A.2.1).

Population Growth

I-5 was originally built as an eight-lane freeway in the late 1960s and 1970s and has not had any major improvements to keep pace with the significant population, employment, and travel-demand growth in the corridor over the last 40 years. During the period from 1970 to 2010, San Diego County more than doubled in population to over 3 million residents (Table 3A-6). The NCC coastal communities grew at least two- to three-fold, with several NCC communities swelling to five or ten times their 1970 populations. Over 500,000 people now reside within the NCC, which represents approximately 16% of the San Diego region's population. An additional 123,000 people are anticipated to reside in the NCC by the year 2040. In addition, there are approximately 204,000 housing units in the NCC with an additional 32,000 housing units expected to be constructed by 2040—a 15% increase.⁹

TABLE 3A-6: POPULATION GROWTH (NORTH COAST CORRIDOR AND SAN DIEGO COUNTY)

Jurisdiction	1970	2010	2040	Change: 1970 to 2010	Change: 2010 to 2040
Oceanside	40,494	179,105	214,530	342%	20%
Carlsbad	14,944	103,491	127,434	593%	23%
Encinitas	17,210	64,599	75,446	275%	17%
Solana Beach	5,744	13,338	15,619	132%	17%
Del Mar	3,956	4,455	5,059	13%	14%
San Diego (NCC only)	23,315	160,290	209,744	587%	31%
North Coast Corridor	105,663	525,278	647,832	397%	23%
San Diego County	1,357,854	3,224,432	4,163,688	137%	29%

Sources: SANDAG 2050 RTP (Chapter 3), October 2011; SANDAG/Caltrans Series 12 Model, November 2011.

Note: Existing (2010) populations are from the SANDAG/Caltrans Series 12 Model, and differ slightly from the final figures published in the 2010 U.S. Census.

⁸ SANDAG 2050 RTP (Chapter 3), October 2011.

⁹ SANDAG/Caltrans Series 12 Model, November 2011.

Interregional travel demand is influenced by growth in surrounding regions. The populations of Riverside County, Imperial County, and Baja California, Mexico, increased at significantly greater rates than San Diego County from 1970 to 2010, with Orange County close behind (Table 3A-7). The population of these neighboring regions is anticipated to increase substantially by the year 2040, with some regions nearly doubling in size. Like San Diego County, these regions depend on I-5 and the LOSSAN rail corridor to move people and goods to and through the NCC.

TABLE 3A-7: POPULATION GROWTH (INTERREGIONAL)

Jurisdiction	1970 (millions)	2010 (millions)	2040 (millions)	Change: 1970 to 2010	Change: 2010 to 2040
Orange County	1.42	3.01	3.85	112%	28%
Riverside County	0.46	2.19	4.10	376%	87%
Imperial County	0.07	0.17	0.33	149%	94%
San Diego County	1.36	3.22	4.16	137%	29%
Baja California, Mexico	0.87	3.25	5.36	273%	65%

Sources: SANDAG 2050 RTP (Chapter 3), October 2011; SANDAG/Caltrans Series 12 Model, November 2011; California Department of Finance; United Nations Department of Economic and Social Affairs; Mexico Consejo Nacional de Población (CONAPO).

Employment Growth

Employment within the NCC is primarily located along established transportation routes or concentrated into large activity/employment centers. Employment in the NCC has seen staggering growth since 1970—an increase of over 1,000% in corridor jobs (Table 3A-8). A considerable portion of the employment is located in the city of San Diego, with much of the growth occurring within Sorrento Valley, Sorrento Mesa, the University City/Golden Triangle area, and at the University of California, San Diego campus. Employment growth in the corridor is projected to continue within these established employment centers, as well as in burgeoning new areas of east Carlsbad and Oceanside.

TABLE 3A-8: EMPLOYMENT GROWTH (NORTH COAST CORRIDOR)

Jurisdiction	1970	2010	2040	Change: 1970 to 2010	Change: 2010 to 2040
Oceanside	12,040	41,620	60,337	246%	45%
Carlsbad	1,779	59,274	83,538	3,232%	41%
Encinitas	3,151	25,633	31,080	713%	21%
Solana Beach	1,050	7,099	8,671	576%	22%
Del Mar	1,004	3,895	4,690	288%	20%
San Diego (city)	2,832	140,763	170,209	4,870%	21%
TOTAL	21,856	278,284	358,565	1,173%	29%

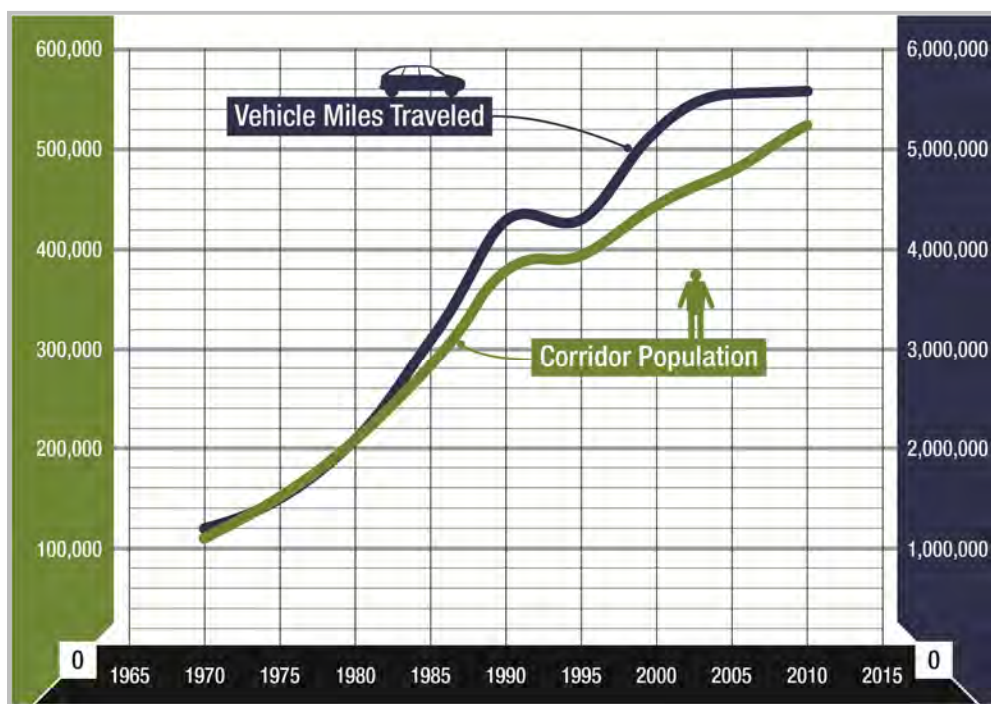
Sources: SANDAG 2050 RTP (Chapter 3), October 2011; San Diego NCC- CSMP (Chapter 3), July 2010; SANDAG/Caltrans Series 12 Model, November 2011.

Growth in Trip Making and Travel Demand

Deficiency: Travel Demand Greatly Outpaces Growth in Population, Employment, and Capacity. Travel demand on I-5 in the NCC has grown considerably since the current eight-lane facility opened in the late 1960s, significantly outpacing the growth in both population and employment. Highway capacity and infrastructure has not kept pace with these growth patterns over the last 40 years.

Population and employment growth tell only part of the story. While population has grown significantly in the region since 1970, vehicle miles traveled (VMT) have grown at an even faster rate. This indicates that people today are making more trips—and covering longer distances—than they were in 1970. This trend is prevalent in regions throughout the US as well as the NCC (Figure 3A-2). While the corridor experienced a decrease in VMT between 2005 and 2010, which is largely attributed to the economic downturn, VMT began to rebound in 2010 and is projected to continue its historical trend of rapid growth.

FIGURE 3A-2: POPULATION AND I-5 VEHICLE MILES TRAVELED, NORTH COAST CORRIDOR (1970–2010)



Source: San Diego NCC-CSMP (Chapter 4), July 2010; Caltrans Performance Measurement System (PeMS).

The historical growth in travel demand is even larger when examining the number of trips taken. Table 3A-9 shows historic, existing, and projected daily trips on selected segments of I-5 in the NCC (projections are for the No Build Alternative in which no improvements are made to I-5). Between I-805 and Carmel Valley Road, for example, daily trips increased by 528% from 1970 to 2010—a much higher growth rate than the 397% increase in corridor population over the same period. By 2040, this figure is expected to increase by another 32%, which greatly outpaces the projected 23% growth in

corridor population over the same period. This means that the strain on the transportation system will compound quickly without significant improvements.

TABLE 3A-9: ANNUAL AVERAGE DAILY TRIPS (I-5 NORTH COAST CORRIDOR)

I-5 Segment	1970	2010	2040 (No Build)	% Change (1970–2010)	% Change (2010–2040)
I-805 to Carmel Valley Rd.	48,000	301,500	399,000	528%	32%
Encinitas Blvd. to Leucadia Blvd.	43,000	209,500	280,900	387%	34%
Mission Ave. to SR-76	49,000	159,000	203,300	224%	28%

Sources: San Diego NCC-CSMP (Chapter 4), July 2010; SANDAG/Caltrans Series 12 Model, November 2011.

3A.1.2 Transit Deficiencies

Transit services in the NCC are relatively robust for an area of mostly low-density suburban development. However, the NCC still produces comparatively low transit ridership, resulting not just from its auto-oriented development patterns and local demographics but also from the many constraints on the transit system itself.

3A.1.2.1 Land Use Constraints

Deficiency: Low-Density Land Use Inhibits Successful Transit. The NCC's suburban, low-density development patterns make transit uncompetitive with the private automobile for most trips.

Transit works best when large numbers of people are traveling from the same starting point at the same time to the same destination. Transit struggles to attract riders in places like the NCC, where population is dispersed and trip origins and destinations are widely varied—a modern development pattern that is promoted, and best facilitated, by the automobile. Rail transit is generally designed to serve long-distance and commute trips with origins and destinations that are inside the travel shed of the rail stations (i.e., more dense population and employment centers). Short local trips generally are not well served by the longer-distance spacing of rail stations, interregional trip destinations generally extend beyond the rail station service area, and recreational trips have group travel and baggage needs that make using transit less efficient or convenient.

While the NCC's local bus system covers most major arterial roads in the corridor, the area's topographic constraints and circuitous and discontinuous street network make it difficult to route buses close enough to most residences and businesses to provide convenient access. For many trips, bus stops are located beyond practical walking distance. This access deficiency between transit and the trip origin or destination is referred to as the “first mile” or “last mile” gap, and is often cited as the reason that more people do not ride transit: It can get riders close, but not close enough, for many trips.

Studies have indicated a range of thresholds for transit-supportive residential densities, but one common reference, based on a review of transit-oriented development guidelines across the U.S., indicates that thresholds of 7 dwelling units per acre are necessary to support basic bus service, 15

dwelling units per acre for premium bus service, and 20–30 dwelling units per acre for rail services.¹⁰ Figure 3A-3 provides visual examples of these development patterns.

FIGURE 3A-3: TRANSIT-SUPPORTIVE LAND USE DENSITY EXAMPLES



Los Angeles, CA: 2.2 units/acre



Hollister, CA: 4.4 units/acre



Fresno, CA: 8.1 units/acre
Density to support bus service



Hermosa Beach, CA: 14.4 units/acre
Density to support premium bus service



Hayward, CA: 27.7 units/acre
Density to support rail service



Pasadena, CA: 35 units/acre
Density to support rail service

Source: "Visualizing Density," Lincoln Institute of Land Policy, 2007.

¹⁰ *Best Development Practices*, Reid Ewing, 1996.

The low-density development pattern in the NCC results in very few concentrated areas of population that could support high-frequency transit service. To create a transit-supportive environment and increase walking access to transit, the land use pattern in the NCC would need to be completely transformed: not only tripling residential densities, but also redeveloping communities with more walkable, grid-like, better-connected local street networks. While targeted areas of Smart Growth have been identified in the corridor, most of its built environment stems from a time when local land-use decisions supported low-density, single-use development. As such, suburban, single-family residential homes make up the majority of housing stock in the NCC, with typical densities under 7 dwelling units per acre and only a few pockets of higher densities. Given the built-out nature of the corridor as well as the local cities' adopted land use plans and Local Coastal Programs, large-scale land use changes are highly unlikely. This pattern therefore is projected to remain through 2050, while densities in other areas of the region will continue to intensify.¹¹

3A.1.2.2 Employment Constraints

Like many sprawling metropolitan areas, the San Diego region lacks a single dominant employment center. Regional employment is spread widely, with the top four centers of job concentration being University City/Golden Triangle, Kearny Mesa, downtown San Diego, and Mira Mesa. If the jobs of NCC residents were all concentrated in these areas, a large percentage of commuters might be able to take advantage of transit services. However, this is not the case; despite being the largest job centers in the region, in 2008 only 6% of jobs were located in University City, with even smaller proportions in Kearny Mesa (5.8%), downtown San Diego (5.2%), and Mira Mesa (5.1%).¹² In addition, the share of jobs in each of these communities is expected to decline even further in the coming decades.

When commuters leave the NCC, they travel to jobs that are scattered throughout the region, often in auto-dependent locations with an abundance of free parking. The land use patterns in the vast majority of San Diego's employment communities are characterized by low-density and/or business park development with limited pedestrian accommodations (which are essential enablers of transit service, since all transit riders are pedestrians for some part of their trips). The absence of large, concentrated, and growing employment centers—and the ongoing trend of employment dispersal—highlight the challenge of providing efficient transit service for commute trips in the NCC area.

3A.1.2.3 Trip-Characteristic Constraints

As noted earlier in this chapter, a significant portion of trips in the NCC are internal to the corridor, and many of these trips are often only a few miles in length—to include local errands and rides to work or school. These types of trips are difficult to capture with transit in all but the densest areas, since the access and waiting times for buses generally cannot compete with the automobile for such short distances, particularly in the NCC where most residents have a car available to make the trip. In addition, the tendency of travelers to “link” several local trips into a single voyage—such as leaving work, buying groceries, and picking up children from school—greatly multiplies the time advantages of driving over transit. Finally, many of these short local trips involve shopping, errands, or other cargo-intensive purposes that are not well suited for transit. Taken together, these factors result in a local population that generally does not choose transit over driving.

¹¹ SANDAG 2050 RTP (Chapter 3), October 2011.

¹² SANDAG 2050 Regional Growth Forecast, February 2010; SANDAG Urban Area Transit Strategy Policy Paper, September 2010.

3A.1.2.4 LOSSAN Rail Corridor Capacity Constraints

Deficiency: Limited Capacity on LOSSAN Rail Corridor. Single-track railway in nearly half of the LOSSAN corridor results in longer travel times, degrades on-time performance, and limits the number of trains that can operate in the corridor at any one time. These factors greatly hinder rail service from meeting growing passenger demand.

The NCC is a multimodal corridor that includes alternatives to automobile travel. In particular, the San Diego segment of the LOSSAN rail corridor provides COASTER commuter rail and Amtrak intercity passenger rail services in San Diego County, and connects with Los Angeles-based Metrolink commuter rail and SPRINTER light rail at the Oceanside Transit Center (Figure 3A-4). While the vast majority of trips in the NCC will continue to be by auto through 2040 and beyond, addressing deficiencies and constraints on the existing rail corridor enhances the rail alternative and improves access and mobility along San Diego's north coast.

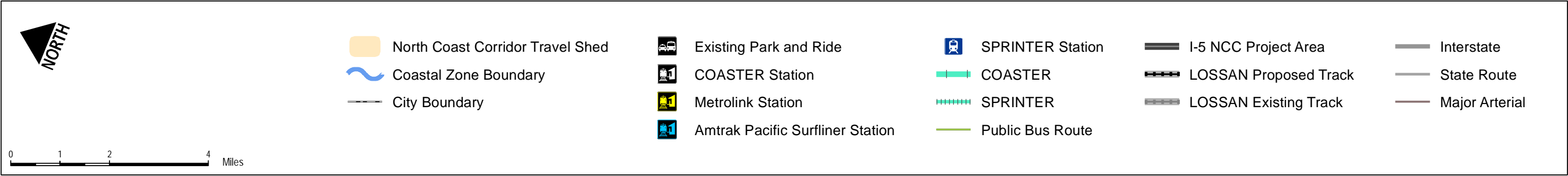
Growth in corridor travel is reflected in plans for increased rail service. Measuring travel in both directions, the COASTER trains currently connect Oceanside and downtown San Diego 22–26 times each weekday, plus 8–12 times per day on weekends. By 2030, COASTER commuter rail operations are expected to increase to 54 trains each weekday as well as increased weekend service. Similarly, 12 new Amtrak trips per day (in addition to the 22 that currently occur) are planned by 2030 to accommodate the projected increase in travel demand. Finally, Metrolink's operations from the Los Angeles area to Oceanside are expected to increase from 16 weekday trips to 20 by 2030 with new weekend service also planned.

With four rail operators sharing the LOSSAN corridor—COASTER, Amtrak, Metrolink, and freight carrier BNSF Railway—passenger rail services along corridor, including the NCC segments, are constrained by infrastructure that is significantly undersized for the volumes of traffic it accommodates. As shown in Figure 3A-5, 46% of the existing rail corridor in the NCC consists of single-track railway. These single-track sections greatly constrain the movement of trains through the corridor as trains must stop and wait at scheduled meets to allow for passing. Not only do these scheduled meets increase trip time for travelers, if one train experiences an unscheduled delay, it ripples throughout the corridor, affecting the schedules and on-time performance of other trains on the tracks. The result is relatively poor and unpredictable on-time performance on the LOSSAN rail corridor, particularly for Amtrak services, which have lower track priority than the COASTER (Figure 3A-6). Poor and unpredictable on-time performance deters people from choosing rail for trips in which it otherwise could be an acceptable option.

The single-track sections also limit the number of trains that can use the tracks at any given time, capping passenger capacity in the corridor. COASTER service operates every 30–45 minutes in the peak-period peak direction while Amtrak operates approximately hourly in the peak-period peak direction. With the addition of Metrolink and periodic BNSF freight service, the number of train trips during peak periods in the corridor is near capacity under current track conditions. The inability to increase service frequency on passenger rail reduces the attractiveness of rail as a viable transportation alternative in the NCC for many trips that require greater flexibility in travel-time choices. It also constrains the economic growth of freight rail service.



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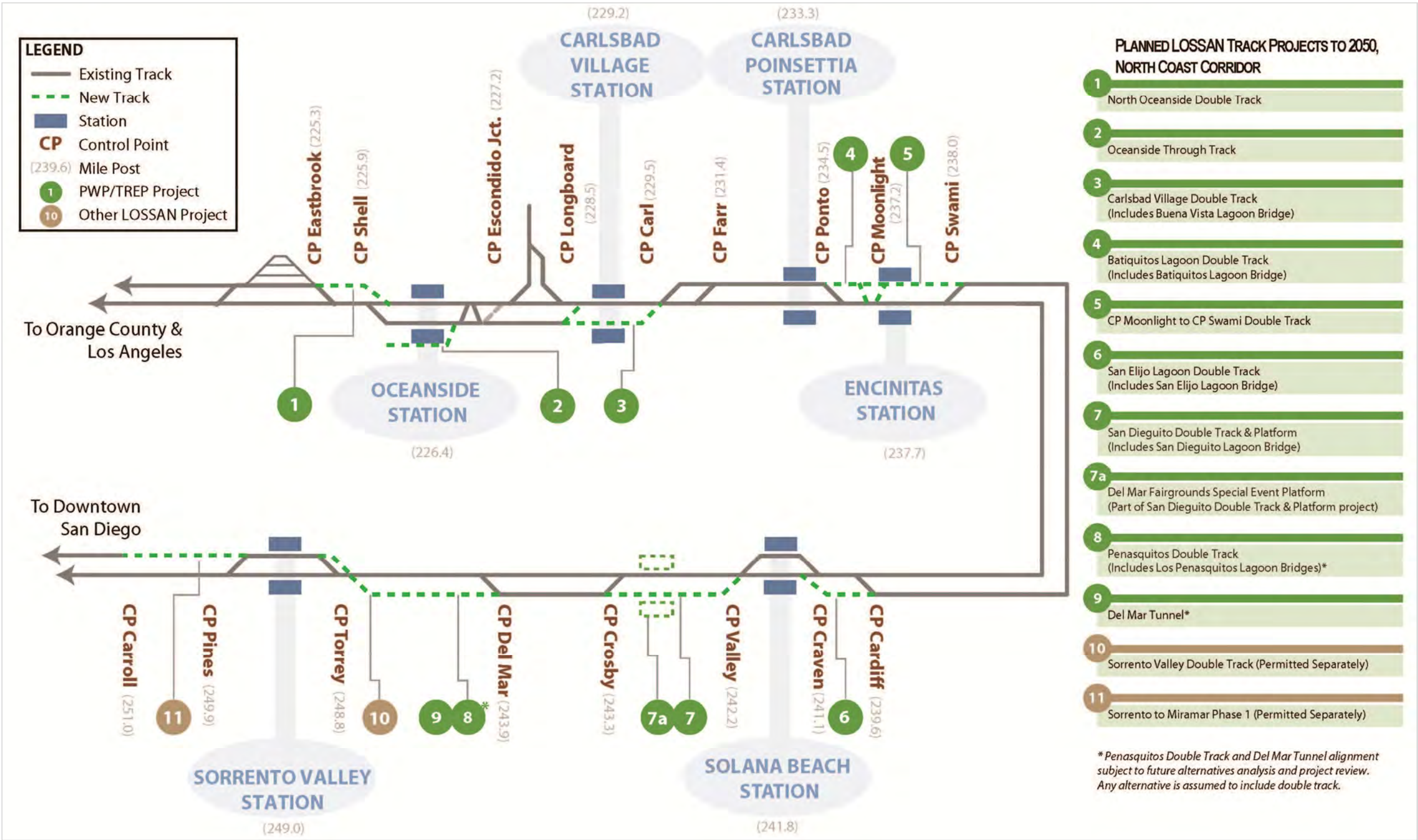
DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD Flowline, Imagery: DigitalGlobe March 2008

The Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map are for planning and engineering study purposes only. Data are derived from multiple sources. The digital Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map have not been adopted by the Coastal Commission, and do not supersede the official versions certified by the Coastal Commission as may be amended from time to time. Disclaimer: The State of California makes no representations or warranties regarding the accuracy or completeness of the files or the data from which they were derived. The State shall not be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of these Coastal Zone boundary, jurisdiction and Local Coastal Program files or the data from which they were derived. Because the Coastal Zone boundary, jurisdiction and Local Coastal Program data files are merely representational, they and the data from which they were derived are not binding and may be revised at any time.

FIGURE 3A-4
Rail and Transit Facilities (Existing)

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FIGURE 3A-5: LOSSAN TRACK CONFIGURATION (NORTH COAST CORRIDOR)

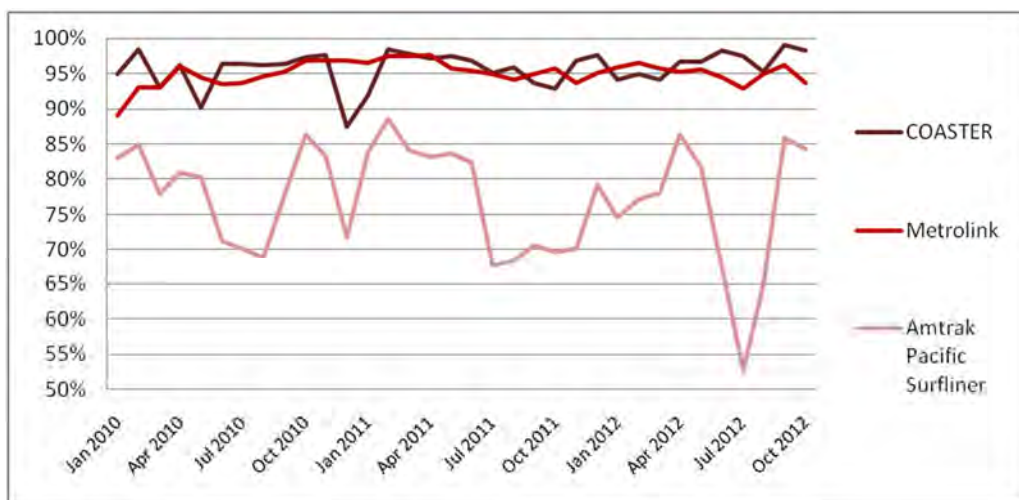


Source: SANDAG, October 2012.

Note: This schematic diagram of LOSSAN track in the NCC illustrates locations of single- and double-track segments, stub tracks, yards and sidings. A single line represents a segment of single track. Two parallel lines represent a segment of double track. Not to scale.

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FIGURE 3A-6: ON-TIME PERFORMANCE (LOSSAN RAIL CORRIDOR)



Source: SANDAG, December 2012.

SANDAG has projected that the planned capital improvements and more frequent service on the LOSSAN rail corridor will increase daily person-carrying capacity from approximately 18,000 per day to approximately 47,000 per day.¹³ This would more than double the current capacity of the line and, assuming equal distribution of rail ridership throughout the day, is approximately the equivalent of two freeway lanes of traffic.¹⁴ This projected level of LOSSAN rail corridor capacity exceeds the current and forecasted 2050 demand, meaning that everyone who is expected to travel by rail in the NCC will be accommodated with extra capacity to spare. However, due to the unique and varied characteristics of trips and travelers in the corridor (trip purpose, length, origin/destination, etc.), rail service—even with this excess capacity—simply will not be able address all trip needs. Nearly all of these trips that are unsuitable for rail must therefore be accommodated on the highway and roadway system in the corridor.

3A.1.2.5 LOSSAN Rail Corridor Access Constraints

Deficiency: Inadequate Access and Parking at Rail Stations. Most access to rail stations in the corridor is currently accomplished by car, and parking demand exceeds supply at most stations.

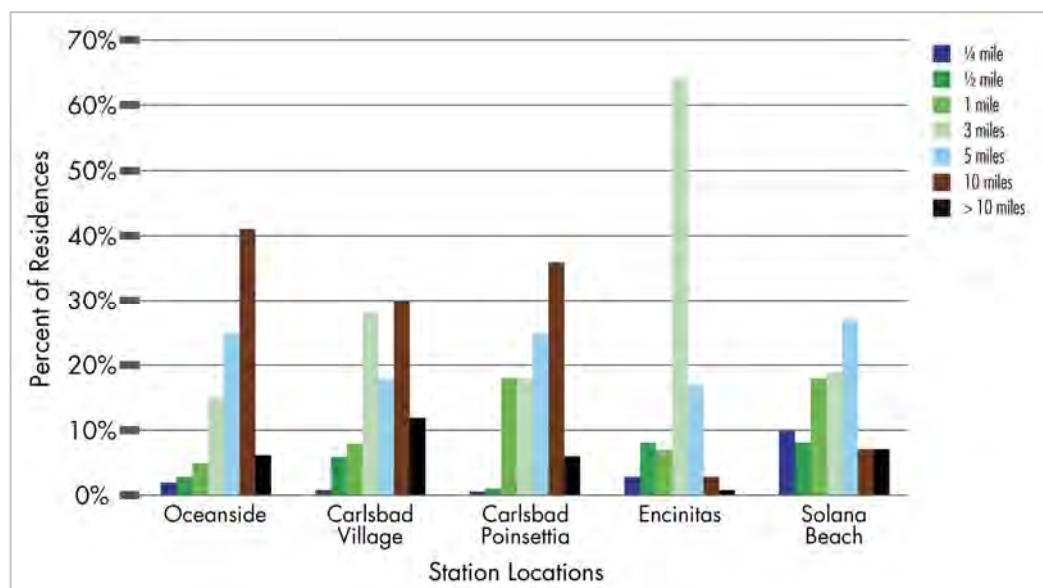
In attempting to improve the rail system so that it can capture more trips in the NCC, track capacity is only one of several essential factors; it is also essential to provide potential new riders with easy and reliable access to the stations. The area's low-density land use patterns mean that relatively few people are within efficient walk, bike and transit distance to COASTER stations; as shown in Figure 3A-7, more than half the residences in the corridor are located farther than 5 miles from rail stations (and many are closer to I-5 than the rail corridor). This results in most passengers accessing LOSSAN rail stations in the NCC by private automobile. During the morning peak period, on average, 63% of

¹³ SANDAG staff estimate, May 2012.

¹⁴ 47,000 trips/12 hours per service day = 3,900 trips per hour. In accordance with SANDAG models, a freeway lane is at capacity at approximately 2,000 vehicles per hour.

passengers boarding the COASTER at stations within the NCC drive alone and park at one of the stations.¹⁵ Combined with those who carpooled or were dropped off, 80% of NCC COASTER commuters arrive at the station by car. Relatively few passengers walk, bike, or take local transit buses to the stations, even though 17 local bus routes connect to them (Table 3A-10). To change this, corridor land uses would need to become much more transit-friendly (concentrated, higher-density development, with mixed uses and widespread pedestrian facilities) to achieve a significant shift in the way that users access rail. However, most of the corridor is already built out, and existing land use policies in the NCC cities' Local Coastal Programs (LCPs) generally support the current development patterns.

FIGURE 3A-7: DISTANCE OF RESIDENCES FROM COASTER STATIONS



Source: San Diego NCC-CSMP (Chapter 3), July 2010.

TABLE 3A-10: COASTER STATION FEEDER-BUS SERVICE, PARKING SUPPLY, AND PARKING UTILIZATION

Station	Rail and Intercity Services	Feeder-Bus Access	Parking Spaces	Average Weekday Utilization
Oceanside	COASTER, Amtrak, SPRINTER, Metrolink, Greyhound	Routes 101, 302, 303, 313, 318, 395, RTA Route 202*	1,259	71%
Carlsbad Village	COASTER	Routes 101, 325	540	90%
Carlsbad Poinsettia	COASTER	Routes 101, 444, 445, 446	335	97%
Encinitas	COASTER	Routes 101, 304, 309	309	98%
Solana Beach	COASTER, Amtrak	Routes 101, 308	326	95%
Sorrento Valley	COASTER	Routes 972, 973, 978, 979	118	73%

Source: North County Transit District. Each parking utilization rate represents an average of eight weekdays measured in November 2012.

*Operates from Riverside County to the Oceanside Transit Center

¹⁵ SANDAG Onboard COASTER Station Access Survey, 2009.

Assuming the corridor does not undergo wholesale redevelopment and most users continue to access rail by driving, a significant increase in ridership would require similar increases in the parking capacities at rail stations. While parking has expanded in recent years at the Encinitas, Oceanside and Carlsbad Village stations, insufficient parking in the rest of the corridor continues to inhibit many potential passengers from using rail corridor services. Table 3A-10 shows the current COASTER parking supply and utilization rates, reflecting approximately 2,800 parking spaces at NCC stations. On average, all of the COASTER station parking lots except Oceanside and Sorrento Valley are at least 90% full on weekdays, with several exceeding 95%. This constraint not only limits the number of people who can access the stations by automobile, but it also creates uncertainty among potential new riders, who might wish to commute via rail but cannot rely on parking being available every day. This lack of parking capacity therefore serves as a barrier to increased ridership.

Even if increased feeder-bus service is able to capture some trips to COASTER stations, the many inherent limitations to transit in the NCC mean that the automobile will continue to be the dominant mode of access to rail stations; therefore, further gains in ridership will require the construction of new, multi-level parking structures with thousands of parking spaces, rather than the surface parking lots with hundreds of spaces that currently exist. This would mean thousands of additional vehicles accessing parking via local streets, with significant implications for local communities and coastal access, as well as possible conflicts with LCPs.

3A.1.2.6 Local/Feeder-Bus Constraints

Another way to provide increased access to NCC rail stations could be through enhancement of the existing feeder-bus services. Figure 3A-8 shows the existing bus routes that serve NCC COASTER stations, including publicly provided COASTER Connection shuttles at the Sorrento Valley and Carlsbad Poinsettia stations. Taken together, these routes cover most of the major arterials and activity centers in the corridor, leaving few viable options for new direct feeder-bus routes. However, due to the low-density suburban development that pervades the NCC, only 51% of households are within one-half mile of a bus stop, compared to 66% of households across the region and 73% in the SANDAG-defined urbanized area.¹⁶ This demonstrates the considerable difficulty of providing transit service in suburban areas, where residences are spread out and automobile travel has a considerable advantage.

The existing local bus services operate at low to moderate frequencies, reflecting the relatively moderate ridership demand typical of low-density areas (compared to the denser central core areas). While improved frequencies would likely attract more riders, any increases in ridership (and accompanying fares) would not offset the increases in costs associated with providing more service. The result is likely to be that operating subsidies would increase at a faster rate than ridership. These increased subsidies would need to come from somewhere, and given the limited public operating funding available to transit agencies, the likely place would be through elimination of services elsewhere in the region. While revenue generated from fee-paying single-occupancy vehicle (SOV) travel on the I-5 Express Lanes could contribute to bus transit operating costs in the corridor, this revenue source is not projected to be sufficient to subsidize significant increases in both local bus service frequency and new bus rapid transit (BRT) services in the corridor. As noted in Section 3A.1.2.8, passenger fares cover less than half the cost of providing transit services in the region, meaning that significant subsidies are required to fund existing and new services. In fiscal year 2012, North County Transit District's (NCTD) local bus services required approximately \$30 million in annual operating subsidies.¹⁷ Because funding is scarce, regional decision-makers must make prudent

¹⁶ SANDAG/Caltrans Series 12 Model, November 2011.

¹⁷ *National Transit Database Transit Profiles*, Federal Transit Administration, 2009; SANDAG staff.

decisions on where and how to provide transit service that balances access with cost-effective returns on investment to ensure that the transit system is sustainable over time. Local bus service is planned on a short-term basis in order to remain flexible to changes in funding and ridership, and while improvements in local bus transit service are anticipated in the NCC over the next 40 years, there will always be limits on the feasibility of investment.¹⁸

In evaluating the benefits of enhancing bus service in the NCC, it is also important to consider the likelihood that users will actually use the enhanced services to make their trips. Even if the region invested extremely heavily in buses to provide high-frequency coverage in every area of the corridor, the decision on whether to use transit ultimately is up to the individual traveler. By definition, a feeder bus requires the passenger to transfer between bus and rail during their trip, adding more time and an extra logistical layer to the transit experience relative to driving. In 2000, a comprehensive survey of regional residents confirmed the long-held belief among transportation experts that this “transfer penalty” is a significant barrier to transit use, especially among those who already have access to cars.¹⁹ Therefore it is unlikely that enhanced bus service, even if implemented to the maximum extent, will supplant the automobile as the mode of choice for the majority of NCC travelers.

3A.1.2.7 BRT and Rapid Bus Constraints

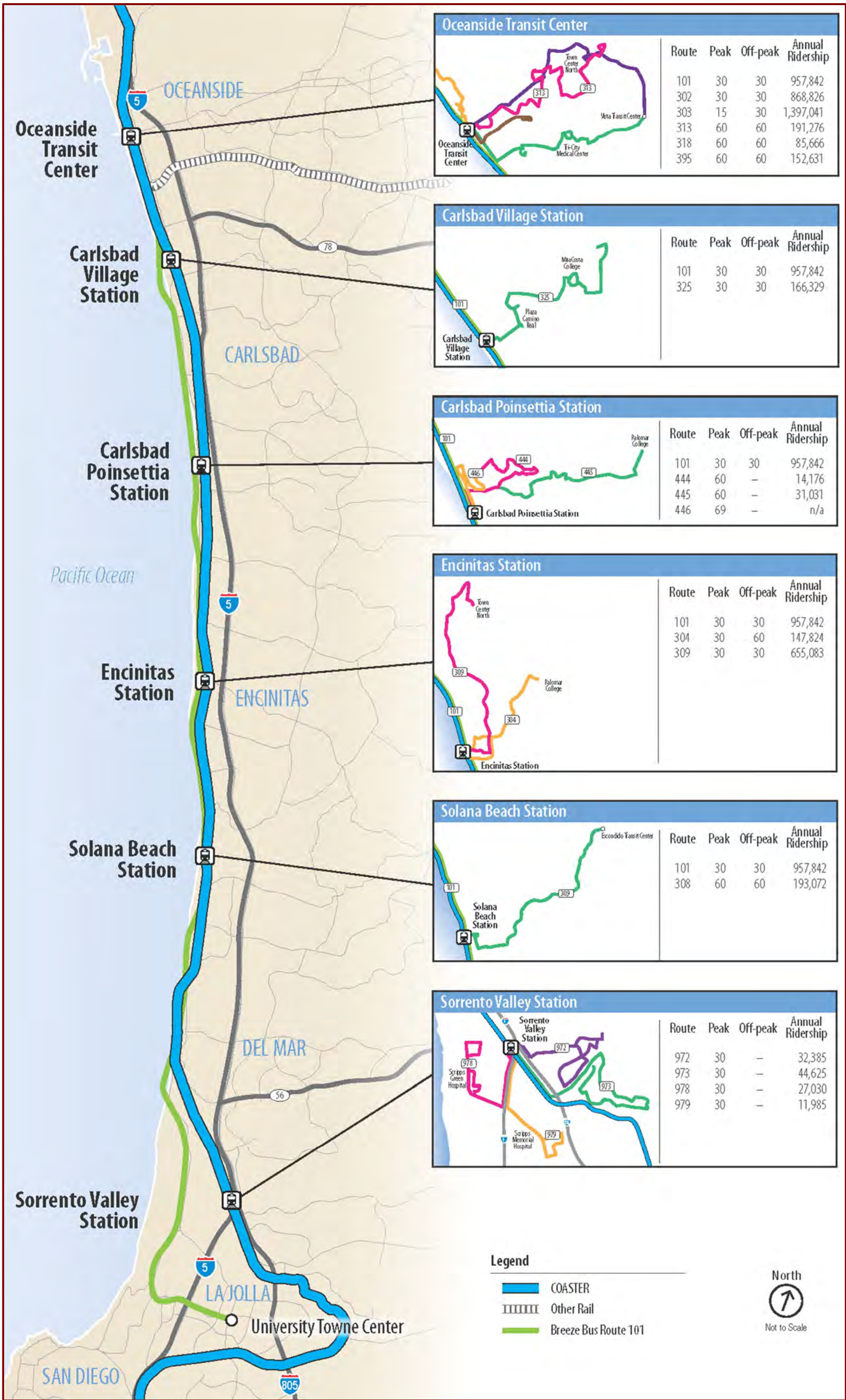
The NCC does not have any BRT, rapid bus, or high-frequency local bus services. Since, by definition, BRT operates on a congestion-free right-of-way that connects concentrated areas of population and employment, successful BRT depends wholly on implementing separated, congestion-free facilities (like the Express Lanes planned for I-5 in the NCC). Rapid bus service generally operates on major arterial streets that include infrastructure and facilities that reduce bus delays, increase bus travel speeds, and enhance bus stops with passenger amenities. These facilities can include dedicated bus lanes, street-lane striping (which allows buses to move ahead of stopped traffic at signalized intersections), traffic signal priority (which provides buses with a green light a few seconds ahead of adjacent automobiles), and enhanced shelters and real-time bus-arrival information at stops. In addition, rapid bus service generally includes a high level of service frequency (10 minutes or better). In locations where roadway constraints or characteristics cannot fully accommodate the rapid bus concept, improvements to local bus routes can often include select rapid bus features.

Implementation of BRT and improvements to local bus services are planned in the corridor over the next 40 years, including potential implementation of rapid bus features. But like local bus service, extensive investment in BRT or other bus service and infrastructure improvements in the NCC is constrained by the low land-use densities with few areas of concentrated populations, the challenging topography and circuitous street network that make providing direct and efficient service difficult, and limited funding. The reverse-commute BRT planned for the I-5 Express Lanes targets the peak-period commute trip between the high-density Mid-City residential area in central San Diego and the Palomar Airport Road business park in the NCC. There are other opportunities in the NCC to link dense population and employment centers. However, a BRT route between Oceanside and University City in San Diego utilizing the I-5 Express Lanes that was evaluated during development of the 2050 RTP failed to generate enough projected ridership from NCC residents to withstand the regional screening process for allocation of scarce resources. Nevertheless, implementation of this project and others will continue to be evaluated for feasibility in future RTPs.

¹⁸ In accordance with California Senate Bill 468, revenues from the proposed Express Lanes (in excess of administrative and operating costs) will be used in the I-5 corridor for the improvement of HOV facilities and transit services. These revenues could help to subsidize future transit services in the corridor.

¹⁹ *TransitWorks Strategic Plan Report*, Metropolitan Transit Development Board, January 2001.

FIGURE 3A-8: LOSSAN RAIL CORRIDOR FEEDER-BUS SERVICE MAP (EXISTING)



Sources: SANDAG/North County Transit District, October 2011.

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The 2050 RTP also identifies Coast Highway through the NCC as an appropriate corridor for enhancements to existing local bus service through implementation of incremental rapid bus features. While it is feasible that some other local bus routes could evolve into rapid bus services, to justify the capital investment in specialized traffic signals, street reconfigurations, enhanced bus stops and additional vehicles, and the operating investment in more frequent service necessary to convert to a rapid bus, these routes require consistent activity and population concentrations along their paths—something that many major arterials in the NCC lack.

3A.1.2.8 Funding Constraints

As discussed in Chapter 2, SANDAG needs to focus a large portion of its transit investment in areas where transit services are most likely to succeed: the region's higher-density, mixed-use, pedestrian-friendly communities. However, while the NCC lacks many of the transit-supportive characteristics of some of the region's central core communities, the 2050 RTP still includes significant investment in LOSSAN rail, BRT, and local bus infrastructure and service in the corridor—a level of investment that, compared to the more urbanized areas of the region, is somewhat disproportionate to its relatively lower ridership returns. Through the 2050 RTP, SANDAG has opted for a balanced system that provides transit access throughout the urban area, while simultaneously achieving regional and state goals. Tipping this balance to allocate additional regional transit resources to the NCC above what is identified in the 2050 RTP would come at the expense of regional transit ridership and other objectives.

In addition, providing a one-time capital investment in transit infrastructure is only part of the solution for improving transit in a region or corridor: Transit also requires continuous operating funding to keep services going. Like every other city and region in the U.S. (and most of the world), transit operations are subsidized heavily by local, regional, and national governments. In the San Diego region, passenger fares cover less than half the cost of providing service (and much less for the COASTER), meaning that public subsidies pay for the majority of transit operations.²⁰ This operating funding is scarce and diminishing, which greatly limits the region's ability to increase transit services; such scarcity requires difficult decisions to be made on how to allocate the region's resources, both to maximize returns on investment and to ensure fiscal sustainability. Through its 2050 RTP, SANDAG has adopted a prudent balance between expanding transit access and maintaining an efficient regional transit system that can be sustained.

3A.1.3 Highway Deficiencies

As population and corresponding travel has grown, traffic conditions have deteriorated both in the NCC and across the region. In its annual report on the San Diego region, the Texas Transportation Institute estimated that the average delay per peak-period driver was 38 person-hours per year in 2010—up from 8 hours in 1982.²¹ The same report estimated that the combined economic cost of this delay for all regional travelers was over \$1.5 billion annually. Within the NCC, periods of congestion on I-5 have grown in a similar fashion, increasing the duration of congestion throughout the day and lengthening travel times for motorists by up to 50% over free-flow levels. These conditions inhibit mobility, impair economic productivity, and limit access to NCC resources; without improvements, they will continue to deteriorate as growth continues. This means further increases in travel times, longer periods of daily congestion, and higher costs for all travelers.

²⁰ *National Transit Database Transit Profiles*, Federal Transit Administration, 2009.

²¹ *Texas Transportation Institute (TTI) Annual Urban Mobility Report*, Performance Measure Summary for San Diego, 2011. TTI defines peak hours as 6:00 A.M.–10:00 A.M. and 3:00 P.M.–7:00 P.M. both of these periods end one hour later than the SANDAG/Caltrans definition used elsewhere in this document.

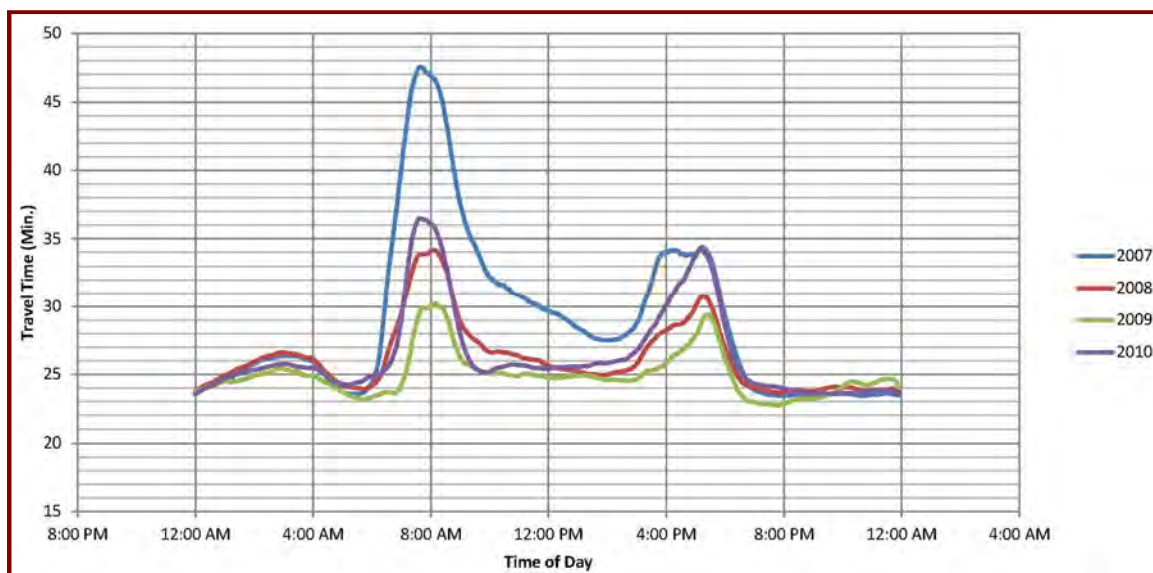
The worst road congestion generally occurs during peak periods, but over time the duration of these congested periods has increased, reflecting the increasing travel demand in the corridor. While congestion appears on both weekdays and weekends, these two periods often feature different types of trips and travelers

3A.1.3.1 Existing Weekday and Peak-Period Highway Travel

Deficiency: Consistently Heavy Weekday Highway Congestion. Weekday peak-period highway travel demand in the NCC exceeds current capacity, resulting in a breakdown of the transportation system, impediments to travel (such as long and unpredictable travel times), and constraints on access to coastal areas and resources. In the NCC, highway travel demand is projected to increase with or without planned highway improvements (and with planned improvements to the rail corridor). Failure to accommodate the projected increase in travel demand will result in an ongoing degradation of mobility and access in the corridor, particularly for peak-period commute trips.

The existing freeway facility is at capacity during peak periods, resulting in significant congestion and travel delays. On most highways, peak-period congestion applies to a single direction of travel, such as a morning peak period heading into downtown and an afternoon peak period heading out of downtown. Southbound I-5, however, experiences two peak periods during the day: Congestion occurs for an average of 5 hours in both the morning and afternoon peak periods (Figure 3A-9). (Also shown in the figure are the effects of the economic recession of 2008–2009, during which congestion and travel times temporarily decreased; these began increasing toward pre-recession levels in 2010.)

FIGURE 3A-9: AVERAGE WEEKDAY TRAVEL TIME – I-5 SOUTHBOUND (HARBOR DRIVE TO LA JOLLA VILLAGE DRIVE [27 MILES])



Source: Caltrans Performance Measurement System (PeMS), August 2012.

As shown in Table 3A-11, during uncongested periods it takes an average of 23–25 minutes to drive the 27 miles in either direction on I-5 between Harbor Drive at the north end of the corridor and La Jolla Village Drive at the south end. During the peak periods, mean southbound travel time increases to up to 34 minutes in the afternoon and 36 minutes in the morning. Northbound average travel time increases to up to 34 minutes during the afternoon peak period. This peak-period congestion and travel-time degradation is compounded by the multi-purpose nature of this highway that serves not only high volumes of commute trips, but also recreational, regional, interregional, and short-distance local trips.

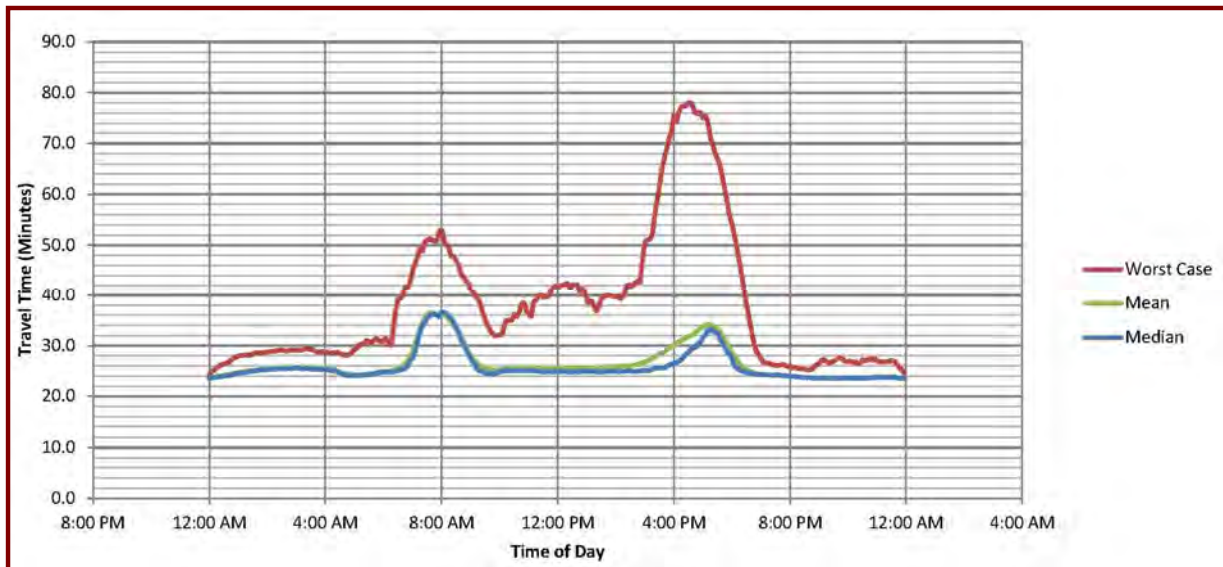
TABLE 3A-11: MEAN TRAVEL TIME – HARBOR DRIVE TO LA JOLLA VILLAGE DRIVE, 2010

	Uncongested Conditions	AM Peak Hours	PM Peak Hours
Northbound	23 minutes	23 minutes	34 minutes
Southbound	23–25 minutes	36 minutes	34 minutes

Source: Caltrans Performance Measurement System (PeMS).

When considering the amount of time lost due to congestion, these average travel times tell only part of the story. Individual travel times actually fluctuate widely based on day-to-day traffic conditions—sometimes longer than the average, sometimes shorter—which results in unreliable travel for all motorists. As Figure 3A-10 shows, while the peak-period travel time on southbound I-5 generally averages between 30 and 40 minutes, it can be as high as 78 minutes on the most heavily congested days.

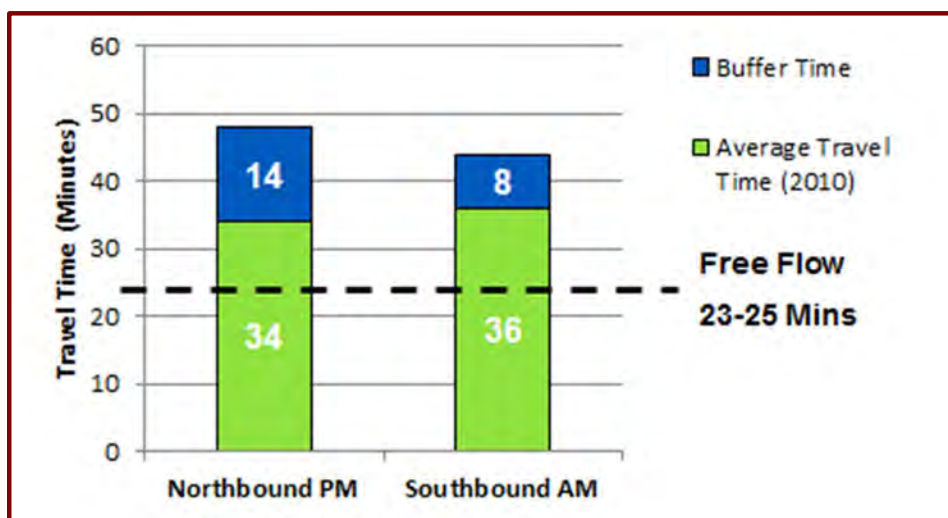
FIGURE 3A-10: TRAVEL-TIME VARIABILITY – I-5 SOUTHBOUND (HARBOR DRIVE TO LA JOLLA VILLAGE DRIVE), 2010



Source: Caltrans Performance Measurement System (PeMS), August 2012.

The concept of travel reliability focuses on this unpredictability by accounting for the wide distribution of travel times that is known to occur and measuring the amount of additional time (called “buffer time”) that would be needed to guarantee an on-time arrival 95% of the time. Figure 3A-11 presents mean travel and buffer times for travel through the I-5 NCC during peak periods. The bottom green portion of the graphs represents the average weekday (Tuesday through Thursday) travel times, and the top blue portion of the graphs represents the required “buffer time.” Therefore, while the *average* northbound afternoon peak-period travel time can be up to 34 minutes, the unpredictability of congestion means that these travelers cannot simply plan for a 34-minute trip. Rather, a commuter traversing the NCC actually must allow up to 48 minutes to ensure on-time arrival. These “buffered” travel times reflect the true economic and personal costs of congestion borne by the region’s residents, visitors, and businesses.

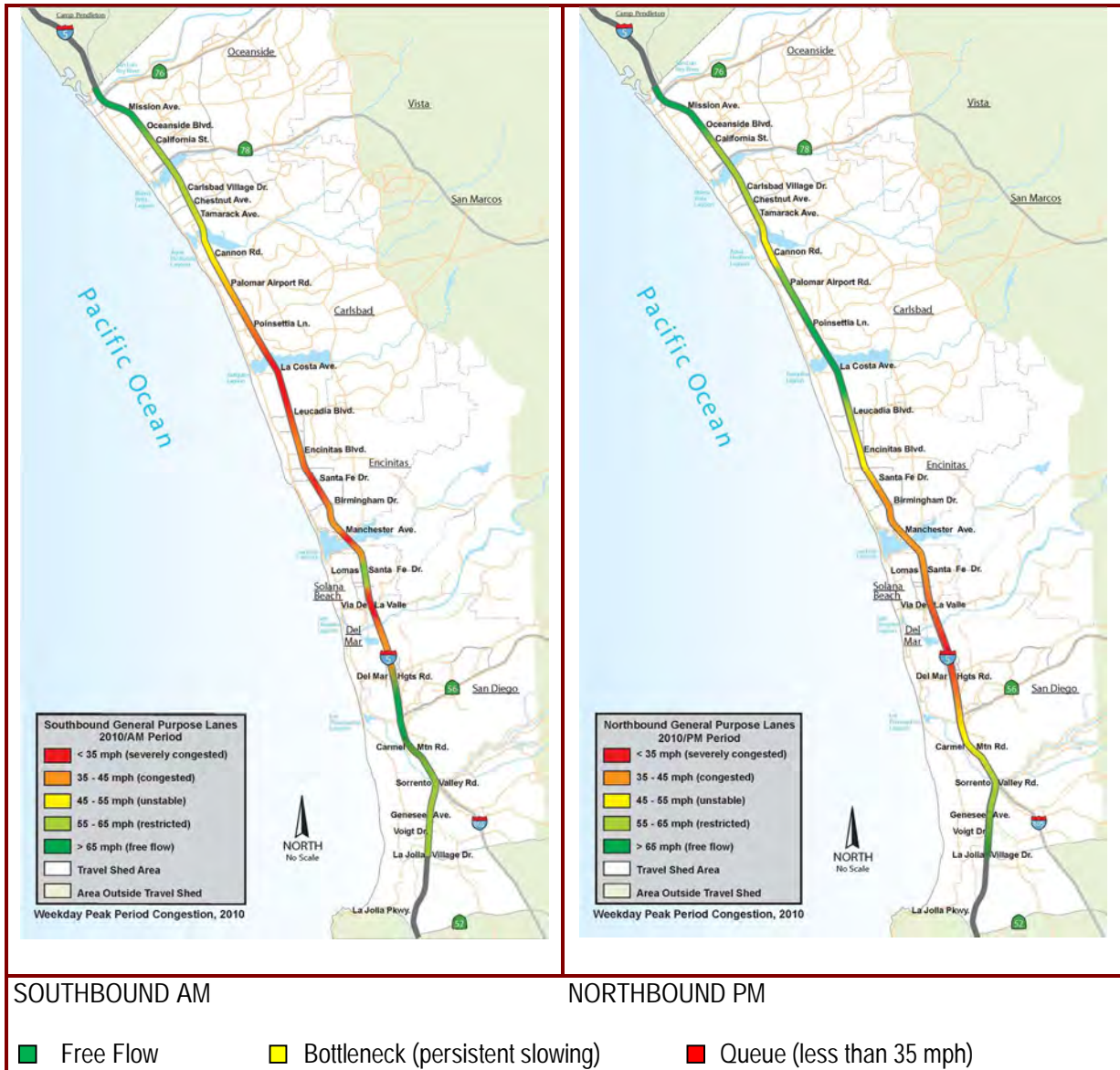
FIGURE 3A-11: WEEKDAY MEAN AND BUFFER TRAVEL TIMES (2010)



Source: Caltrans, September 2013.

Figure 3A-12 illustrates the geographic extent of existing congestion and travel delay along the I-5 NCC during the peak periods in both the southbound and northbound directions. The southern end of the corridor experiences the most congestion.

FIGURE 3A-12: WEEKDAY PEAK-PERIOD CONGESTION, 2010 (I-5 NORTH COAST CORRIDOR)



Source: San Diego NCC-CSMP (Chapter 5), July 2010.

3A.1.3.2 Weekend Highway Travel

Deficiency: Consistently Heavy Weekend Highway Congestion. Like weekday peak periods, weekend highway travel demand in the NCC exceeds current capacity, resulting in impediments to travel such as long and unpredictable travel times, as well as constraints on access to coastal areas and resources. Highway travel demand is projected to increase in the NCC with or without planned highway improvements (and with planned improvements to the rail corridor). Failure to accommodate the projected increase in travel demand will result in an ongoing degradation of mobility and access in the corridor on weekends, particularly for recreational trips.

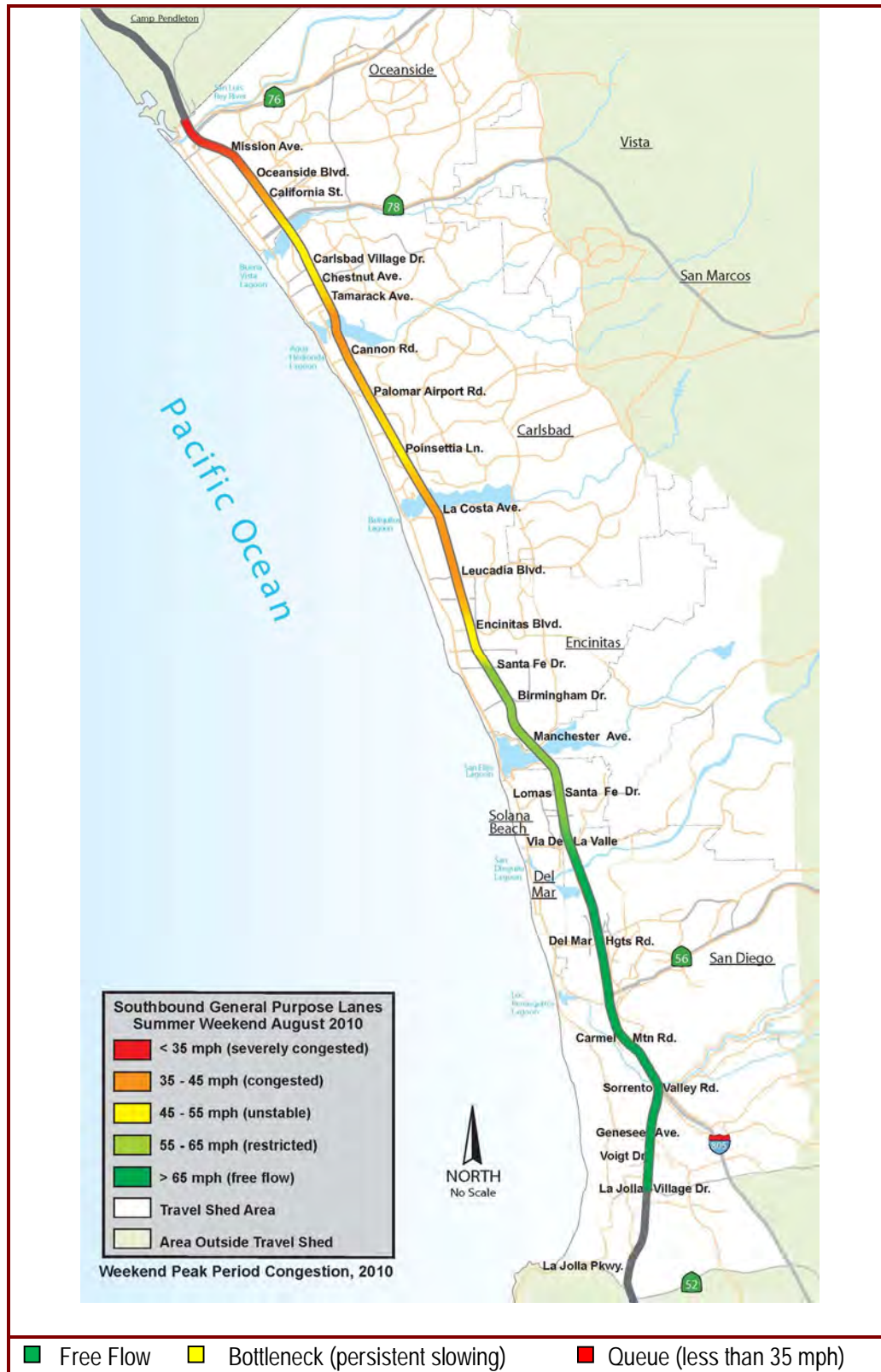
Unlike many other highways, I-5 in the NCC experiences significant congestion on weekends as well as on weekdays. During summer periods the weekend congestion can exceed the congestion experienced by travelers on weekdays. As population has grown in the region, more people have sought access to corridor coastal resources, placing an increased demand on the region's transportation network during non-commute times as well as the traditional weekday peak hours. Projected growth in population, employment, and travel demand will further intensify the pressure on I-5 to provide reliable access to the coast. The beaches within the NCC attract millions of visitors per year. At the NCC's five state beaches alone—without even considering the corridor's numerous other public beaches—there are over 7 million visitors per year, more than twice the population of the entire region (Table 3A-2).

Most of these coastal recreational trips in the NCC occur on weekends. The primary access route to beach and other coastal recreational resources in the corridor for both locals and visitors is I-5. As will be discussed later in the section, corridor topography and the resulting street network limit access alternatives. Because of this high demand for beach and coastal access, weekend traffic on I-5 approaches and sometimes exceeds weekday levels. Figure 3A-13 shows the geographic extent of existing congestion and travel delay along the I-5 NCC during summer weekends in the northbound direction; this congestion persists for much of the day along nearly the entire length of the corridor. Southbound congestion on weekends is similarly prevalent.

HOVs comprise approximately 60% of weekend traffic on studied segments of I-5 in the NCC, which is significantly higher than their weekday proportion.²² Because, by definition, HOVs transport more people per vehicle than single-occupancy vehicles (SOVs), they provide a more efficient use of highway facilities. As a result, HOV lanes enhance freeway capacity by carrying a greater number of people than freeway general-purpose lanes. Even with the large percentage of HOVs using the I-5 NCC on summer weekends, traffic congestion still persists, indicating that the freeway is carrying much larger volumes of people (versus autos) on weekends than weekdays.

²² Caltrans I-5 North Coast Freeway Operations Report, June 2010.

FIGURE 3A-13: SUMMER WEEKEND SOUTHBOUND CONGESTION (2010)



Source: San Diego NCC-CSMP (Chapter 5), July 2010.

3A.1.3.3 Limited Alternatives for Automobile Travel

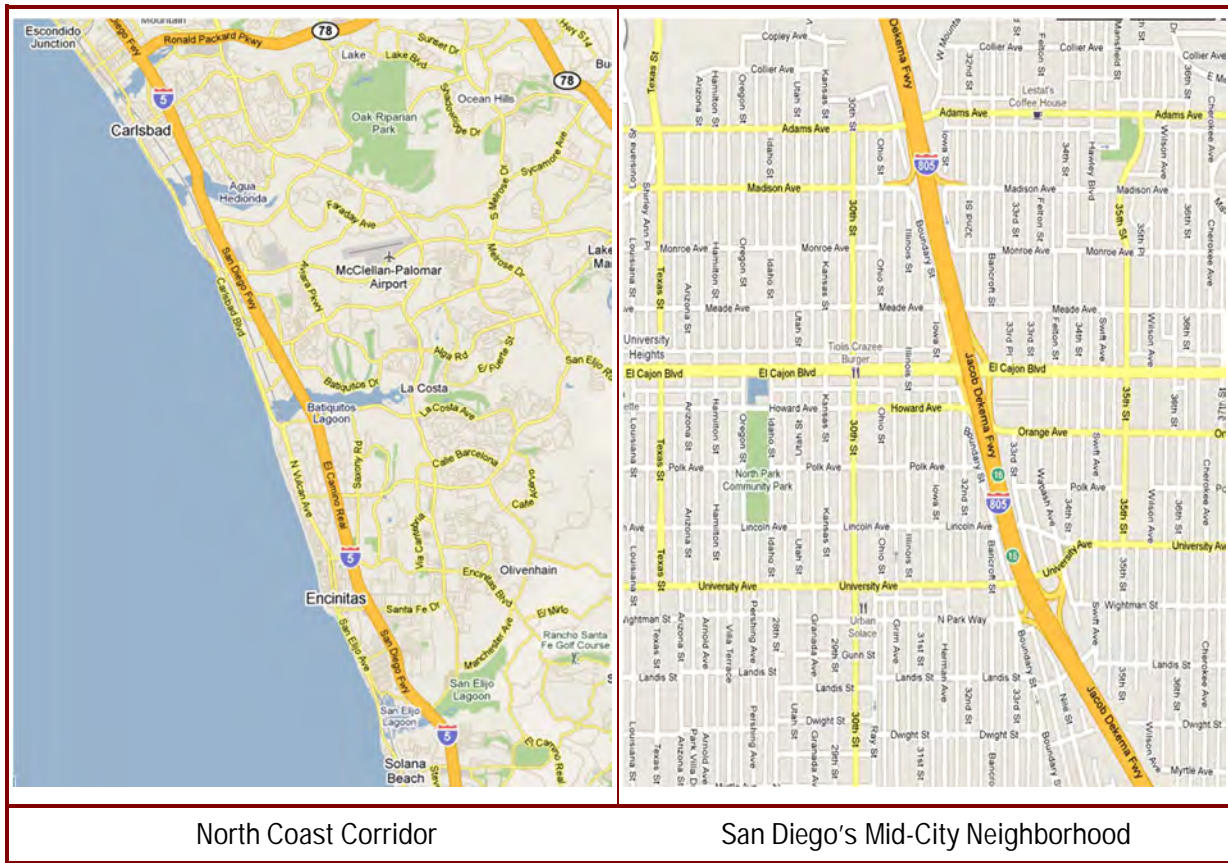
Deficiency: Few Non-Highway Routes for Local Traffic. There are few alternatives to I-5 for local travel in the corridor due to the lack of parallel roadways and the sparse and circuitous arterial street network. This forces significant local traffic onto I-5, exacerbating congestion on a facility that was intended primarily to serve regional and interregional travel.

Automobile trips comprise over 95% of all commute trips in the NCC and I-5. As the most continuous and highest-capacity roadway in the corridor, I-5 is often the most desirable choice for both long-distance and local travelers.²³ The default use of I-5 for short-distance local trips in the NCC compounds the demand on a facility that was intended primarily to serve regional and interregional travel. A key reason for the heavy use of I-5 for local trips is the lack of alternative routes for automobile travel in the corridor. Development of the local street network in the NCC has been restricted by topographical constraints that include hills, canyons, and six lagoons. As a result, the corridor arterial street network is sparse and circuitous, and the limited number of parallel arterial roadways in the corridor forces many local trips onto the freeway. These topographic and parallel street constraints are evident when the NCC's street network is compared to that of the Mid-City neighborhood of San Diego (Figure 3A-14). With its dense, grid-like pattern, the Mid-City street network provides far more local-trip route options and far greater access to and from the freeway than the streets of the NCC.

Coast Highway is the only parallel arterial road that extends the length of the NCC. This arterial is only one lane in each direction through most of Encinitas, and one lane southbound through Solana Beach. Moreover, most of the cities in the corridor are proceeding with "complete streets" projects on Coast Highway, which will provide for multimodal use and will include automobile-lane reductions in an effort to slow traffic and enhance the environment for pedestrians and bicyclists. These streetscape projects will promote nonautomobile circulation, access to transit and coastal amenities, and quality of life in the corridor. However, they will also contribute to the lack of high-capacity, north-south roadways in the NCC and will likely divert even more traffic onto I-5, compounding the need for capacity enhancement on the highway.

²³ SANDAG 2050 RTP (Technical Appendix 7), October 2011.

FIGURE 3A-14: COMPARATIVE STREET NETWORKS (NORTH COAST CORRIDOR AND SAN DIEGO)



Source: Google Maps, 2010.

3A.1.3.4 Persistent Highway Demand in the Future

Deficiency: Without Improvements, Highway Congestion Will Continue to Worsen. Travel demand on I-5 will continue to increase with or without improvements. If capacity is not enhanced to meet demand, the NCC will experience significant increases in the severity of congestion, the duration of congested periods, and the corridor travel time.

Within the NCC, existing and projected daily travel demand (VMT) on I-5 is shown in Table 3A-12. SANDAG and Caltrans produce travel demand forecasts every few years to support updates to the Regional Transportation Plan. Each forecast reflects a new horizon year (generally 10 years further out than the previous forecast) and incorporates projected population and employment growth, land use changes, and transportation system enhancements for the forecast horizon. SANDAG also implements updates and improvements to its travel demand model with each new forecast.

Over the course of the NCC project, SANDAG and Caltrans have produced two travel demand forecasts; the Series 11 forecast to a 2030 horizon year, and the Series 12 forecast to a 2040 horizon year. Both of these forecasts, which assume planned improvements to the parallel LOSSAN rail corridor, project significant growth in I-5 travel demand in the NCC of between 17% and 29% without implementation of the NCC highway improvements (the No Build scenario). This significant No Build growth projection indicates that travel demand (VMT) will occur regardless of whether highway-capacity improvements are made between today and the horizon years, and reveals that without any improvements, the highway will be unprepared to meet future demand. The No Build scenario will result in more chronically congested highways, significantly increased travel time, unpredictable and unreliable travel time, and increased emissions, impeding travel through the corridor and degrading access to coastal communities and resources.

Implementation of the NCC I-5 highway improvement project is projected to increase travel demand (VMT) by less than 10% over the No Build scenario (4.0% to 9.9% depending on model series and forecast year). This incremental difference between the No Build and Build scenarios is less a result of induced demand, and more a result of latent demand (i.e., improved access) and a shifting of travel from the parallel arterials of Coast Highway and El Camino Real to I-5 as travel becomes more efficient and reliable on I-5 and avoidance behavior is minimized.²⁴ As discussed in Section 5.1.2, between the 2030 No Build and 2030 Build scenarios, forecasts project respective reductions of 17% and 10% in VMT, and 12% and 3% in average daily traffic, on Coast Highway and El Camino Real with

²⁴ The model utilized by SANDAG captures induced demand, but has inherent limitations in the precision of forecasting traffic patterns and associated vehicle-generated emissions. The model applies a feedback mechanism that inputs congested travel speeds into the trip distribution and mode choice to account for travelers who changed their travel routes and modes in response to changed travel times, which may result in induced demand if the widened roadway leads to an increase in traffic over time. Although the model technologies limit the precision of estimated potential induced demand, SANDAG's approach to analyzing and forecasting future traffic conditions is consistent with current industry standards and modeling procedures. In CARB's report on SANDAG's Draft SB 375 SCS, it states, "A consultant review of SANDAG's methodologies for analyzing GHG emissions conducted in September 2010 referred to SANDAG's procedures as consistent with the 'state-of-the-practice.'" CARB staff expects that the next generation of travel models in the region will provide greater capability to account for induced demand. According to another report by Federal Highway Administration, current travel demand models account for some, but not all, of the travel behaviors that may contribute to the increased traffic from induced demand. According to CARB's September 2011 *Informational Report on the San Diego Association of Governments' Draft SB 375 Sustainable Communities Strategy*, "the Federal Highway Administration acknowledges the current technical limitations of analysis methods, which preclude precise accounting for some of these travel decisions." Accordingly, the PWP/TREP acknowledges the model limitations, but also applies SANDAG's model estimates as a reasonable measure to compare future travel conditions associated with the proposed project (Build Alternative) and the No Build Alternative. In addition, estimates are presented as a range to take into account the potential forecasting imprecision (e.g., approximately 4% to 10% increase in VMT between the No Build and the Build as a result of latent demand and traffic shifting).

implementation of the I-5 highway improvements.²⁵ The combined highway improvements and resulting change in travel behavior will make corridor travel on both the highway and local streets more efficient and reliable, improving coastal access.

TABLE 3A-12: DAILY VEHICLE MILES TRAVELED (I-5 NORTH COAST CORRIDOR)

	Existing		I-5 No Build		I-5 No Build % Change from Existing	I-5 Build		I-5 Build % Change from I-5 No Build
	2006	2010	2030	2040		2030	2040	
Daily VMT (Series 11)	5.44 million	–	7.05 million	–	29.6%	7.33 million	–	4.0%
Daily VMT (Series 12)	–	5.53 million	–	6.47 million	17.0%	–	7.11 million	9.9%

Source: SANDAG/Caltrans Series 11 Model, August 2010; SANDAG/Caltrans Series 12 Model, November 2011.

Table 3A-13 shows corridor mean travel times under current and future conditions during peak periods. When I-5 is uncongested, it takes approximately 23–25 minutes to traverse the 27-mile route from La Jolla Village Drive in San Diego to Harbor Drive in Oceanside. This same northbound trip currently takes 34 minutes during the afternoon peak period and is expected to take a congestion-ridden 70 minutes by 2040 under the No Build Alternative. The proposed improvements would address this future demand by increasing the operating effectiveness of the highway and enhancing mobility and access throughout the corridor.

²⁵ San Diego NCC–CSMP (Chapter 8), August 2010; SANDAG/Caltrans Series 12 Model, November 2011.

TABLE 3A-13: MEAN WEEKDAY PEAK TRAVEL TIMES (MINUTES), I-5 FROM LA JOLLA VILLAGE DRIVE TO HARBOR DRIVE

Time/Direction	2010	2040 No Build
A.M. Peak Period		
Northbound	23	37
Southbound	37	54
P.M. Peak Period		
Northbound	34	70
Southbound	34	40

Source: Caltrans Performance Management System (PeMS)

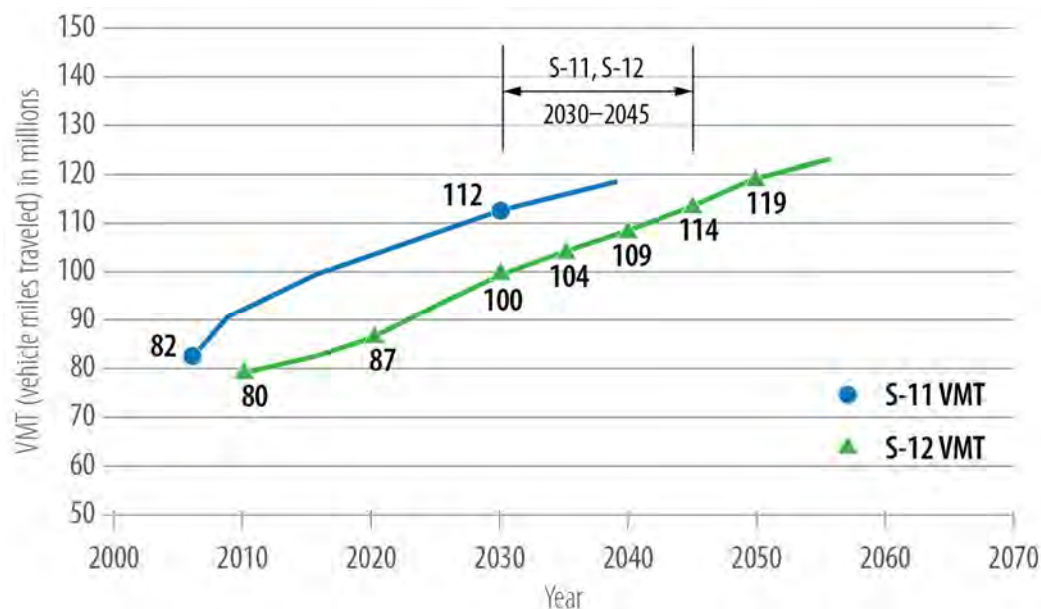
Note:

The primary transportation analysis and forecasting tool that is used in the San Diego region is the SANDAG Regional Transportation Model (RTM). The RTM projects future travel demand on the region's transportation system by analyzing local land use as well as the projected growth in regional demographics such as population, employment, and housing. The Series 11 RTM, which was the basis for SANDAG's 2030 Regional Transportation Plan (RTP), projected regional travel demand to the year 2030 in metrics such as Vehicle Miles Traveled (VMT) and Average Daily Traffic (ADT). The subsequent Series 12 model, used to develop SANDAG's 2050 RTP, projected these data to the year 2050. Additionally, during the NCC planning process that led to the 2010 Draft PWP/TREP, a specialized micro-simulation model based on Series 11 data was developed to provide NCC-specific projections of corridor travel time and congestion for the year 2030.

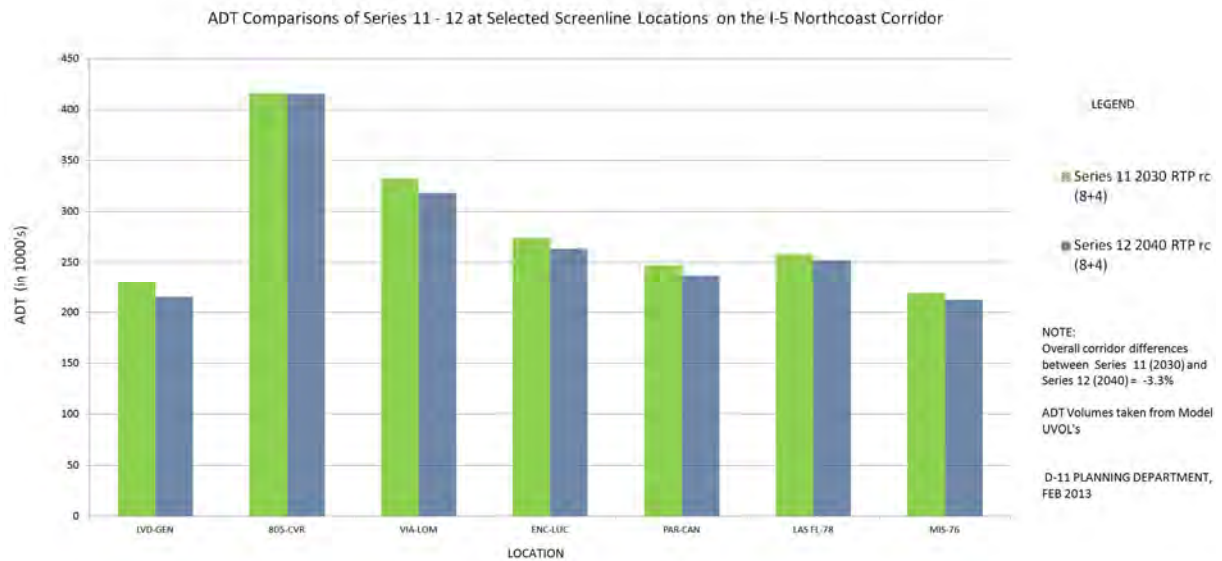
A comparison of key measures from the Series 11 and Series 12 RTMs indicates that the Series 11 travel demand forecast for the year 2030 is generally equivalent to the updated Series 12 travel demand forecast for the years 2040-2045. In other words, the growth in both population and travel demand that had originally been anticipated by 2030 is now projected to occur at least a decade later than previously forecast.

In terms of regional demographics, projections underlying the Series 11 RTM showed that the region would add approximately 1 million people by 2030. However, the updated projections that contributed to the Series 12 RTM show that this growth will now occur around 2040.

In terms of travel demand, both VMT and ADT show similar patterns. The figure below demonstrates that the Series 11 regional VMT projection for 2030 is roughly equivalent to the Series 12 regional VMT projection for 2045.



Additionally, the ADT comparison below indicates that, at points along I-5 throughout the NCC, Series 12 projected ADT for 2040 is slightly lower than, or generally equivalent to, Series 11 projected ADT for 2030. (Series 12 projected ADT for 2050 is slightly higher than the 2040 projections, reflecting some growth beyond 2040.)



As a result of this comparison of regional population and travel demand between Series 11 and Series 12, it can be reasonably concluded that the 2030 travel time and congestion forecasts developed for the NCC under the Series 11-based micro-simulation model are valid forecasts for 2040 for the corridor, and therefore these two metrics are presented as 2040 forecasts in the PWP/TREP.

As a result of increased travel times and reduced reliability on I-5, commuters will continue to experience work-trip delays, truck freight movements will be further affected, and access to coastal resources, activity centers, and facilities for local residents and visitors will become increasingly difficult. Figure 3A-15 displays the projected geographic length of congestion and travel delay in the corridor in 2040 without any operational improvements or enhancements to the existing transportation capacity. Congestion would expand significantly as compared to the current conditions (Figure 3A-12) to the extent that the entire length of the corridor in both directions is projected to experience severe congestion and traffic delay during the peak periods by 2040.

In addition, if no improvements are made to I-5, forecasts indicate that the projected increases in average daily traffic (ADT) would extend the time duration of congestion in both the northbound and southbound directions. Currently, congestion lasts for 5 hours per day in both the northbound and southbound directions. By 2040, if no improvements are made to I-5, the duration of congestion will more than double, with northbound congestion forecast to extend to 9–10 hours and southbound congestion extending to 13 hours.²⁶

3A.1.3.5 Disincentives for HOVs and Transit

Deficiency: Lack of HOV Lanes Discourages HOV and Transit Use. The lack of HOV lanes in the majority of the corridor means that carpools, vanpools, and buses must operate in the same congestion as general traffic. This eliminates the major time incentive for travelers to choose HOVs or buses rather than driving alone.

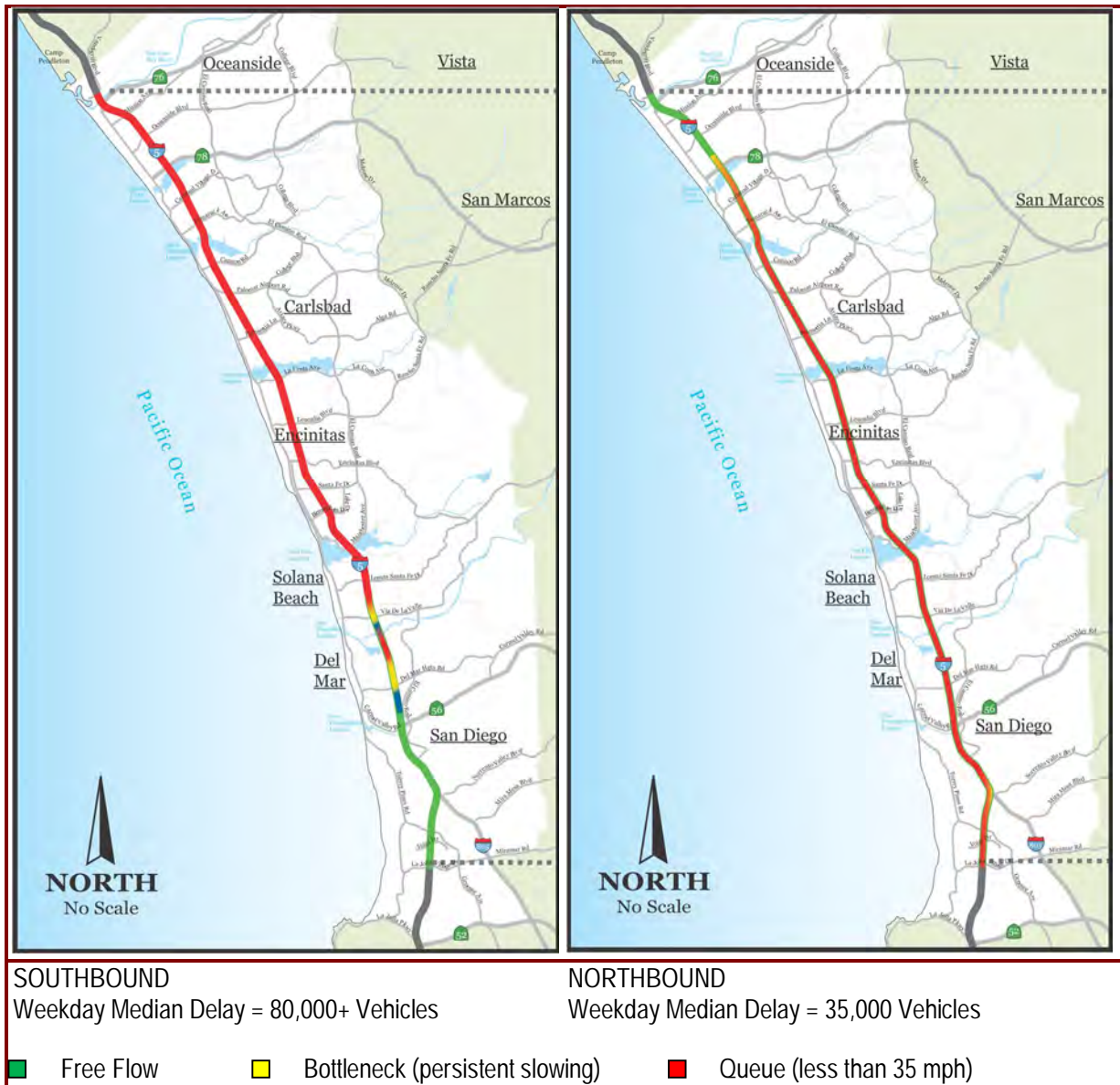
The increased travel times and reductions in reliability arising from congestion have severe impacts beyond just those to solo drivers. Without any designated lanes for HOVs in the majority of the corridor, congestion on I-5 also negatively affects carpools, vanpools, and transit vehicles.²⁷ These modes of travel are more efficient at moving people and, per person, are less environmentally damaging than SOVs. This makes these modes more desirable from both mobility and environmental perspectives. However, when HOVs and transit vehicles are forced to use congested freeway lanes with all other traffic, they become significantly less attractive and, especially with BRT, infeasible. This greatly diminishes the incentive for travelers to choose these alternative modes of transportation.

Deficiency: Lack of Capacity at I-5 Park-and-Ride Lots Discourages HOV Use. With many I-5 park-and-ride lots at or near capacity each day, the number of drivers who can take advantage of this HOV incentive is highly constrained. Such high occupancy rates also decrease the reliability of the park-and-rides, as potential users cannot rely on parking being available every day, and are therefore discouraged from participating in carpools and vanpools.

²⁶ San Diego NCC-CSMP (Chapter 5), July 2010.

²⁷ A single HOV lane in each direction currently exists in the NCC's southern portion, from La Jolla Village Drive to Manchester Avenue (approx. 10 miles). The remainder of the corridor (approx. 17 miles) contains no HOV facilities.

FIGURE 3A-15: WEEKDAY PEAK PERIOD CONGESTION – 2040 PROJECTED NO BUILD ALTERNATIVE (I-5 NORTH COAST CORRIDOR)²⁸



Source: SANDAG/Caltrans Series 11-based Micro-Simulation Model, August 2010.

²⁸ As discussed in Table 3A-13, the congestion levels shown for 2040 are from SANDAG's Series 11-based micro-simulation travel forecast for 2030. Due to the general "leveling off" of regional growth trends in both demographic and travel demand measures between the Series 11 and Series 12 growth forecasts, these 2030 Series 11-based transportation forecasts can be reasonably extrapolated to be valid forecasts for 2040.

Seven highway park-and-ride lots in the NCC allow I-5 travelers to leave their cars behind in favor of ridesharing options such as carpools and vanpools—a practice that directly reduces highway congestion, VMT, and per capita emissions. However, as shown in Table 3A-14, several of these lots are at or near capacity every day, with the facilities at SR 78, La Costa Avenue, and Carmel Valley Road exceeding 90% occupancy. This high occupancy rate limits the number of carpoolers who can use these highway-adjacent facilities, therefore acting as a disincentive to increased HOV travel. In addition, these high occupancy rates create uncertainty among current and potential users who might wish to commute via carpool but feel they cannot rely on parking being available every day.

TABLE 3A-14: I-5 PARK-AND-RIDE LOT AVERAGE OCCUPANCY RATES, 2012

Park-and-Ride Lot Location	Average Occupancy
Mission Avenue	65%
SR 78	95%
La Costa Avenue	93%
Encinitas Boulevard	41%
Birmingham Drive	45%
Carmel Valley Road	120%
Gilman Drive	88%

Source: Caltrans, December 2012.

3A.1.3.6 Corridor Transportation Mode Share

Deficiency: Driving Alone is the Dominant Travel Mode. Drive-alone travel comprises the vast majority of trips in the corridor. By improving the competitiveness of alternative modes, the overall corridor transportation-system capacity will increase.

While the NCC contains multimodal transportation facilities—including I-5, local roads, transit, and bike/pedestrian routes—the vast majority of trips in the corridor are made by automobile. This is because travel needs in the corridor and region are highly dispersed, with multiple origins, destinations, and times of travel. Driving—particularly on solo trips—provides travelers with a level of flexibility, convenience, and time savings that is difficult for transit, walking, and biking to achieve. Unfortunately, driving alone is also the least-efficient way to move people and a major contributor to both congestion and environmental damage.

Mode share data provide information on the percentage of total trips that occur on each mode of transportation. Table 3A-15 shows the existing work-trip mode share for trips in the NCC, California, and the United States. It reveals an extremely strong bias toward driving alone in the NCC, more than the rest of California and the nation. This demonstrates the disproportionate advantage of the automobile in such a dispersed, suburban area.

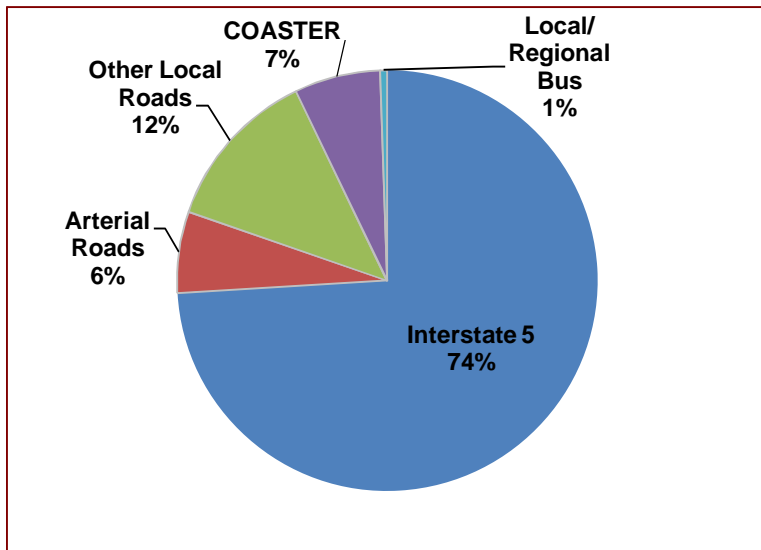
TABLE 3A-15: COMMUTE TRIP MODE SHARE

Area	Drive Alone	Carpool/Vanpool	Public Transit	Other Modes	Worked at Home
North Coast Corridor	76%	10%	3%	2%	7%
California	72%	15%	5%	5%	4%
United States	76%	12%	5%	4%	3%

Source: San Diego NCC-CSMP (Chapter 4), July 2010.

Another way to evaluate commute-trip mode share is to count the person-trips on each mode as they cross a common point during the peak periods. This allows for an analysis of mode share during commute times for trips with similar general travel paths (i.e., north-south). Los Peñasquitos Lagoon offers such an opportunity as I-5, LOSSAN rail corridor, and Coast Highway (the major north-south arterial) all cross the lagoon in close proximity. Figure 3A-16 illustrates the transportation mode used as travelers cross this point during the morning peak period. (While not all travelers are commuters, a significantly large percentage is traveling to work during the morning peak period.) These data indicate that the COASTER rail service carries approximately 7% of all person-trips at this location in the corridor during the morning peak period. Almost three-fourths of the person-trips at this location are on I-5.

FIGURE 3A-16: WEEKDAY AM PEAK MODE SHARE CROSSING LOS PEÑASQUITOS LAGOON



Source: San Diego NCC-CSMP (Chapter 4), July 2010.

South of Los Peñasquitos Lagoon, the COASTER makes only three stops: Sorrento Valley, Old Town, and Santa Fe Depot. The Sorrento Valley and Santa Fe Depot stations serve University City and downtown San Diego, respectively, which are two of the region's largest job centers. The higher transit mode share for this narrowly defined trip across the lagoon (7% on COASTER plus 1% on local/regional bus), as compared to the transit mode share for all commute trips in the corridor (3%), reflects that predictable work trips to the region's few large employment centers are generally the easiest to capture via transit. Planned enhancements to the LOSSAN rail corridor are anticipated to increase the transit mode share for these peak-period work trips. However, most commuters have other widely dispersed origins and destinations, and will continue to depend on the highway and arterial network for their work trips.

Both of these metrics indicate that there are opportunities in the NCC to increase the non-drive-alone mode share. Any shift away from SOV trips would enhance the capacity of the transportation system by shifting the focus from carrying more cars to carrying more people. Getting more people into carpools, onto transit, and using bicycles and their feet to travel would minimize the infrastructure expansion required to accommodate the overall travel demand in the corridor. SANDAG and Caltrans are striving for these goals. The 2050 RTP includes a program of projects that expand carpool and transit facilities and services in the NCC, in addition to innovative improvements for SOV travel, which will remain the predominant travel mode in the corridor.

3A.1.4 Bicycle and Pedestrian Deficiencies

Deficiency: North-South Bicycle and Pedestrian Access is Hampered by Barriers due to Lack of Parallel Frontage Roads, Topographical and Lagoon Constraints.

There are barriers and gaps in the north-south bicycle and pedestrian/trail networks in the corridor due to the absence of parallel frontage roads to the LOSSAN and I-5 facilities, and the presence of topographical and lagoon constraints, which collectively restrict continuous north-south bicycle and pedestrian travel through the corridor, thereby limiting options for non-vehicular travel and diminishing coastal access and recreation opportunities.

Within the NCC, there is an existing bicycle and pedestrian network that provides access to the coast and other upland recreation areas. Figure 3A-17 shows the primary bicycle and pedestrian facilities in the NCC. Several of these are regional routes intended to not only connect public beaches and parks, but also residences, town centers, transit centers, and other activity centers. However, gaps and barriers within the bike and trail network limit use of these facilities as an effective means of traveling within and through the corridor. The existing gaps and barriers also limit the ability of the bike and pedestrian network to serve as a viable coastal recreational facility that provides non-vehicular means for accessing and enjoying the shoreline and natural resource areas within the corridor.

SANDAG has prepared a Regional Bicycle Master Plan (2011) that encourages the development of a unified bicycle system throughout the San Diego region and serves the diverse needs of bicycle riders by providing connections between activity centers, transit facilities, and regional trail systems. Complementing the Regional Bicycle Master Plan, the Coastal Rail Trail is planned to provide north-south coastal access across the length of the NCC and beyond—primarily via a dedicated bicycle facility. The trail has been developed to different degrees throughout the corridor, with some segments providing completely separate rights-of way, other segments providing bike lanes on local streets, and other segments that have yet to be constructed.

In addition, the California Coastal Trail—which is intended to be a continuous 1,200-mile public right-of-way along the California coastline—is also under development, with approximately 69% of the trail currently completed in San Diego County.²⁹ The California Coastal Trail is intended to provide linkages to other inland parallel and vertical trail systems and to the State Park system, to facilitate increased accessibility to coastal resources and state parks along the shoreline and from urban population centers. Principles for designing the California Coastal Trail, as articulated in Completing the California Coastal Trail (Coastal Conservancy 2003), further provide that the California Coastal Trail “*is not a single designated pathway spanning the length of California’s shoreline. It should be envisioned as a yarn comprised of several different but roughly parallel threads—here widely separated, there drawn together—with each thread being a particular trail alignment or trail improvement that responds to a specific need or accommodates a particular purpose. One thread may be for beach walkers, another for bicyclists, another may be merely an interim or temporary alignment, or may be placed where it is because of topography, land ownership, or natural barrier.*”

While the NCC includes an existing bicycle and pedestrian network that provides access to the coast and other upland recreation areas, development of the local street network in the NCC has been restricted by topographical constraints that include hills, canyons, and six lagoons. As a result, the corridor arterial street network is sparse and circuitous, with a limited number of parallel arterial

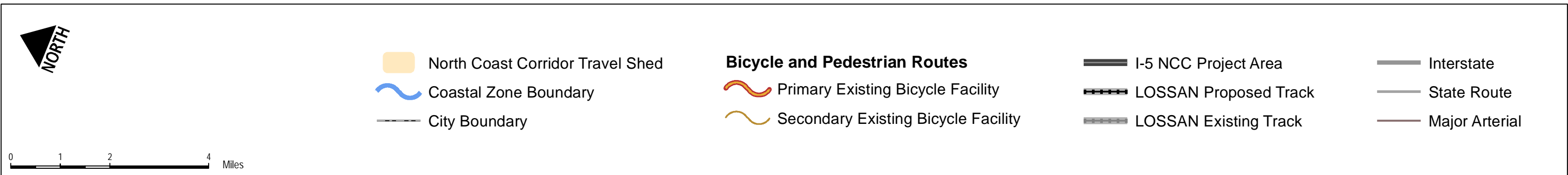
²⁹ Public Access Action Plan, California Coastal Commission, June 1999.

roadways, thus resulting in large gaps and barriers to north-south bicycle and pedestrian travel. These constraints, as well as others, have similarly hindered build-out of the Coastal Rail Trail and California Coastal Trail, which could otherwise provide additional north-south bicycle and pedestrian travel options through the corridor. In particular, the six coastal lagoons in the NCC provide a distinct barrier to north-south crossings, and incomplete local trail networks further exacerbate the barrier since there are no connecting or alternative routes around these resource areas.

Deficiency: Outdated Interchanges and Lack of Rail Crossings Result in Barriers to East-West Bicycle and Pedestrian Access to the Coast There are substandard segments, barriers, and gaps in the bicycle and pedestrian routes and trails in the corridor, resulting in an incomplete network that increases safety risk, limits opportunities for non-vehicular travel from inland areas to the coastline, diminishing coastal access and recreation opportunities.

Bicycle and pedestrian access to coastal resources, including coastal trails, from inland areas occurs along primary and secondary routes that run inland from the coast. In particular, the Regional Bicycle Master Plan is a significant transportation element providing east-west access to and from the shoreline, with local streets contributing to the network. These inland east-west routes are limited in the NCC, containing many gaps due to topographical constraints, absence of bicycle pedestrian crossings across the transportation facilities, and environmental barriers. Additionally, where many routes cross the I-5 highway and LOSSAN rail corridors at outdated interchanges, they narrow and quality degrades. Local roads cross I-5 in the east-west direction 35 times in the NCC, and nearly all of these crossings feature narrow and outdated facilities that are unaccommodating to bicycles and pedestrians. As a result, it is difficult to reach the shoreline and other recreational areas from inland areas—including the north-south trending Coastal Rail Trail and the California Coastal Trail—using these bicycle/pedestrian routes.

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

The Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map are for planning and engineering study purposes only. Data are derived from multiple sources. The digital Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map have not been adopted by the Coastal Commission, and do not supersede the official versions certified by the Coastal Commission as may be amended from time to time.

Disclaimer: The State of California makes no representations or warranties regarding the accuracy or completeness of the files or the data from which they were derived. The State shall not be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of these Coastal Zone boundary, jurisdiction and Local Coastal Program files or the data from which they were derived. Because the Coastal Zone boundary, jurisdiction and Local Coastal Program data files are merely representational, they and the data from which they were derived are not binding and may be revised at any time.

FIGURE 3A-17
Primary Bicycle and Pedestrian Routes

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3A.1.5 Mobility and Coastal Access Problem Summary and Conclusions

Travel demand in the NCC has and will continue to strain the existing transportation infrastructure and services. Both the I-5 highway and LOSSAN rail corridor will continue to be plagued by deficiencies that inhibit coastal access and economic growth by increasing travel times, decreasing reliability, and limiting travel choices. In addition, options for non-motorized travel in the corridor contain barriers and gaps making it difficult to complete local trips by foot or bicycle. In summary:

- Existing transportation facilities focus primarily on moving cars, not people, through the corridor.
- Passenger rail capacity and performance is constrained by infrastructure deficiencies, specifically the high percentage of single-track sections within the corridor.
- Parking demand at rail stations exceeds capacity, limiting access to the rail corridor.
- I-5 was originally built as an eight-lane freeway in the late 1960s and 1970s and has not had any major improvements to keep pace with the significant population, employment, and travel-demand growth in the corridor over the last 40 years.
- Highway demand exceeds capacity, resulting in traffic congestion, delays, and long travel times in the corridor, particularly for commute trips during peak periods and recreational trips on weekends.
- Highway congestion and delays result in unreliable and unpredictable trips for travelers.
- Due to topographic constraints, there are few arterial street alternatives to I-5 for local trips, which forces more trips onto the highway.
- The bicycle and pedestrian transportation network contains barriers, gaps, and substandard facilities, which discourages local bike and walk trips and inhibits access to coastal areas.
- Population, employment, and coastal recreational use are projected to continue to grow, placing even larger demands on the highway, rail, and trail systems in the corridor. Spillover or “cut through” traffic will negatively affect local arterials and coastal access routes.

To maintain and enhance mobility in the corridor and provide access to coastal communities and resources, improvements are needed to the corridor transportation system. These improvements should:

- Expand infrastructure that will serve and encourage alternatives to SOV trips, including carpools, vanpools, and rail and bus transit services.
- Address capacity needs on the highway since travel by car, including HOVs, will continue to comprise the majority of trips in the corridor.
- Increase options for non-motorized access to the coast, particularly for recreational trips.

While the vast majority of trips in the NCC will continue to be by auto through 2030 and beyond, transit will also continue to play a vital and growing role in the corridor's transportation network. Indeed, SANDAG's 2050 RTP includes major improvements to rail and bus transit facilities and services in the NCC to address some of the existing deficiencies and make transit more competitive with the automobile. The 2050 RTP's planned investments in cost-effective transit improvements, high-occupancy highway improvements, and expansion of bicycle and pedestrian facilities in the NCC will address growing travel demand and improve access and mobility along San Diego's north coast by focusing on moving people, and not just cars. This multimodal transportation vision will ensure that ongoing access to coastal resources in the NCC will be preserved and enhanced.

3A.2 IMPACTS TO COASTAL COMMUNITIES AND NATURAL RESOURCES

3A.2.1 Coastal Communities

In addition to corridor mobility and coastal access issues, the NCC is in need of transportation infrastructure improvements that will serve to foster healthy and sustainable coastal communities by limiting traffic congestion on local streets, minimizing energy consumption, air, and GHG emissions related to travel, and improving the transportation system in a way that supports Smart Growth as a means of accommodating future growth in the NCC..

3A.2.1.1 Transportation Impacts to Local Communities

Deficiency: Without Improvements, Local Traffic Will Continue to Degrade. In the absence of improvements to I-5, local traffic in the NCC will continue to degrade as spillover traffic increases, leading to greater local congestion, diminished coastal access, and negative impacts to community character.

While the deficiencies arising from congestion may be most visible on I-5, the effects are not limited solely to the highway. Highway congestion often causes regional and interregional trips to “spillover” onto local streets, as frustrated travelers exit the highway in search of less-congested routes. This results in through traffic using coastal access routes and local streets in attempts to bypass congestion, which negatively affects the character of these coastal communities as well as access to coastal resources. Such impacted communities include downtown Carlsbad and Encinitas (Figure 3A-18).

El Camino Real and Coast Highway, as the primary north-south arterial roads in the corridor, stand to be especially affected by spillover traffic as regular congestion on I-5 continues to worsen. Without improvements to I-5, this is expected to result in increases in average daily (weekday) traffic (ADT) volumes ranging from 7% to 15% on segments of both El Camino Real and Coast Highway.³⁰ It is likely that spillover impacts to seasonal and weekend travel will be even higher.

3A.2.1.2 Energy Consumption and Air Emissions

Deficiency: Energy Consumption Resulting from Travel Often Leads to Increases in Air Pollutants and GHG Emissions. Absent proposed PWP/TREP improvements, I-5 and parallel local streets in the NCC will continue to degrade, and will experience increased congestion and travel times coupled with reductions in fuel efficiency, impacts to air quality, and increased GHG emissions.

Energy consumption and air emissions have resulted in negative air quality impacts as well as increased GHG emissions and the resultant effects of global climate change. Energy, air quality, and GHGs are interrelated when it comes to transportation.

³⁰ I-5 NCC Technical Report #5: Traffic Demand Forecasting Report, Table 5.1, August 2007. Conducted in support of I-5 NCC Project Draft EIR/EIS.

FIGURE 3A-18: COASTAL COMMUNITIES POSSIBLY AFFECTED BY SPILLOVER TRAFFIC



Grand Avenue and State Street, Carlsbad



D Street and Coast Highway, Encinitas

Source: SANDAG Smart Growth Photo Library, 2008.

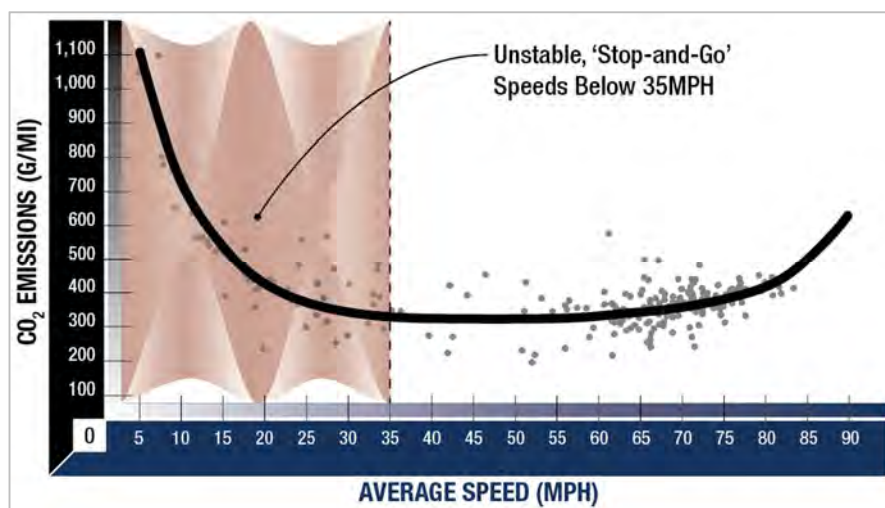
An individual automobile's energy consumption per mile is the result of many variables such as the type of vehicle, including make, model, size, and fuel technology; roadway terrain where steep grades result in greater fuel consumption; and travel speeds, which is a function of both posted speed and traffic congestion. On a broader scale, data and projections about vehicle energy consumption at the corridor and regional levels can generally be extrapolated from two key travel factors:

- **Vehicle Miles Traveled (VMT)** – the total number of miles traveled by all vehicles on a peak-period, daily, and/or annual basis.
- **Vehicle Hours Traveled (VHT)** – the total number of hours vehicles spent traveling during a period of time. It is directly related to traffic volumes, levels of traffic congestion, and the resulting average speed (miles per hour (mph)).

While VMT and VHT can act as proxies for measuring vehicle energy consumption in the region, it is misleading to assess such at the corridor level since VMT and VHT are not driven or limited by conditions only within the boundaries of the corridor. A key concept in the transportation and air quality relationship is identifying vehicle emissions and travel speeds at a given point in time. Congestion, particularly stop-and-go congestion, both decreases vehicle energy efficiency and increases VHT, leading to increased energy consumption and increased emissions. In general, stop-and-go traffic produces high emission rates for virtually all vehicle types and traditional urban-scale pollutants such as hydrocarbons (HC), carbon monoxide (CO), and nitrogen oxides (NOx). Fuel consumption increases by about 30% when average speeds drop from 30 mph to 20 mph, while a drop from 30 mph to 10 mph results in a 100% increase in fuel use.

Similarly, the highest carbon dioxide (CO₂) levels from mobile sources such as automobiles occur at stop-and-go speeds of 0–25 mph and speeds over 75 mph (automobiles are most efficient when operating at steady speeds), as illustrated in Figure 3A-19.³¹ As such, the effects of transportation congestion on air emissions, including GHG emissions, can be substantial. A report commissioned by the state of California estimated that approximately 10% of all on-road fuel consumed is a result of congestion.³²

FIGURE 3A-19: EMISSION SPEED PLOTS OF INDIVIDUAL TRIPS OR TRIP SEGMENTS



Source: "Traffic Congestion and Greenhouse Gases," University of California Transportation Center, Access Magazine No. 35, Fall 2009.

³¹ I-5 NCC Project Draft EIR/EIS (Section 4-6), June 2010.

³² Energy Efficiency Report, California Energy Commission, 1990.

Stop-and-go congestion and idling vehicles on I-5 emit more pollutants than free-flow traffic, contributing to increased emissions and reduced air quality in the corridor—a condition that will worsen as congestion increases. Without operational improvements or enhancements to the existing transportation capacity on I-5, traffic congestion on I-5 would expand significantly as compared to the current conditions, resulting in the entire length of the corridor in both directions experiencing severe congestion and traffic delay during the peak periods. Current congestion lasts for 5 hours per day in both the northbound and southbound directions. Congested travel hours under the No Build Alternative are projected to more than double, with northbound congestion forecast to extend to 9–10 hours and southbound congestion extending to 13 hours. Absent proposed PWP/TREP improvements, I-5 and parallel local streets in the NCC will continue to degrade, and experience increased congestion and travel times coupled with reductions in fuel efficiency, impacts to air quality, and increased GHG emissions.

Strategies to reduce GHG emissions (such as improved fuel economy and new fuel and vehicle types) are implemented most effectively at the state, national, or global levels. However, other strategies (such as improving efficiency and reducing demand on the transportation system) are better implemented at the regional or local level. Strategies to effectively reduce transportation energy consumption in the NCC—as well as improve air quality and address GHG emissions regionally—must be appropriately established and evaluated by SANDAG in terms of transportation efficiency and demand.

3A.2.1.3 Transportation Infrastructure Needs for Smart Growth

Deficiency: Existing Transportation Infrastructure is Inadequate to Support Smart Growth Policies. A robust multimodal transportation infrastructure is necessary to support Smart Growth efforts to accommodate future development within existing communities by ensuring that roads, bike routes, sidewalks, and other facilities offer safe, appealing, and comfortable travel.

The existing low-density development pattern in the NCC results in few concentrated areas of population to support high-frequency transit service. While large-scale land use changes are unlikely to occur in the corridor, SANDAG and local governments have implemented a “Smart Growth” land use strategy that seeks to increase population density to accommodate projected growth, while reducing VMT and curbing GHG emissions. However, Smart Growth must be supported by sufficient public services and when it comes to travel, successful Smart Growth efforts depend largely on the availability of a sustainable, multimodal transportation system that is interconnected with supportive development patterns.

Accordingly, the Smart Growth development pattern planned for the corridor will be difficult to achieve without a robust multimodal transportation infrastructure that offers a variety of transportation choices to support it. The corridor’s existing transportation infrastructure is inadequate to support Smart Growth policies and, as described previously, the corridor is in need of an improved transportation system that includes cost-effective transit improvements, high-occupancy highway improvements, and expansion of bicycle and pedestrian facilities to improve access and mobility within the NCC and beyond. This planned transportation infrastructure is a critical element to supporting Smart Growth efforts to accommodate future development within existing communities by ensuring that roads, bike routes, sidewalks, and other facilities offer safe, appealing, and comfortable travel to transit and activity centers. To accomplish this, focused improvements within the transportation system are particularly necessary to address the bicycle and pedestrian deficiencies discussed in Section 3A.1.4, to thereby

eliminate barriers in regional and local bicycle and pedestrian networks for improved accessibility to coastal resources and recreational facilities (beaches, lagoons, open spaces), transit stations and stops, and local activity centers. Such improvements are necessary to bridge the gap between origins or destinations and the transit system to facilitate transit use, and to provide active modes of travel such as walking and biking, thereby fostering more livable and walkable communities in which travel is not reliant on the automobile.

3A.2.2 Water Quality and Sensitive Coastal Habitats

The NCC is in need of transportation infrastructure improvements to address not only mobility, coastal access, and coastal community issues, but also water quality, lagoon, and natural habitat deficiencies. Such resource deficiencies at corridor beaches, lagoons, and recreation areas could affect recreation opportunities that depend on the quality of the natural resources that sustain them.

3A.2.2.1 Water Quality

Water quality within the NCC has been affected by increases in impermeable surface areas, stormwater pollutant loads, and direct alteration of watershed features, which contributes to a decrease in the valuable biological function of these areas.

Deficiency: Continued Degradation of Water Quality. Coastal waterbodies in the corridor have experienced decades of degradation from direct and indirect impacts of development—including the transportation facilities that cross these resources—which has negatively affected water quality that is essential for protection of sensitive coastal resources and water-dependent recreation.

Runoff from Corridor Urbanization, Development, and Transportation Facilities

Corridor urbanization and development has cumulatively affected water quality as impermeable surfaces have increased and vegetative cover has decreased. This has resulted in significant increases in stormwater pollutant loads and runoff velocity and volume, contributing to excessive erosion and sedimentation within corridor watersheds. Hydrology and water quality are also potentially affected in the coastal bluff areas of Del Mar along the rail facility where ongoing shoreline erosion problems caused by wave action require ongoing maintenance activities along or within the shoreline to ensure the facility is protected from failure.

The corridor transportation infrastructure generally contributes pollutants to surface waters, which are most often generated from roadways, parking lots, and disturbed landscapes. However, highway facilities are only a small percentage of the land area (2%) in the NCC, and I-5 also accounts for less than 2% of the tributary area of the five NCC watersheds.³⁴ Potential pollutants from the roadway and slopes include sediment, nutrients (nitrogen and phosphorus) from native and ornamental vegetation, metals (copper, lead, and zinc), fertilizers, and pesticides. Other than runoff from parking structures associated with the rail facilities, runoff from rail improvements is relatively minor because of limited impermeable surface area associated with rail lines.

The hydrology of the watersheds in the corridor has been directly altered by adjacent development and the existing highway and rail facilities, which have displaced watershed features including lagoon, river, stream, and drainage areas. In addition, realignment and/or channelization of inland waterways

³⁴ *Water Quality Technical Memorandum for I-5 North Coast Corridor Project (Section II)*, Caltrans, March 2013.

conveying stormwater through the watersheds to coastal water bodies have also resulted in significant modification to the hydrology of the corridor. The physical alterations of watershed features have resulted in a cumulative loss of wetland and riparian habitat areas that, in turn, has decreased the valuable biological function of these areas to naturally dissipate and filter sediment and pollutants in stormwater runoff prior to discharge to the lagoons and eventually the Pacific Ocean.

Level of Runoff Treatment

The majority of existing transportation facilities in the corridor was constructed before current regulations were enacted to control and treat stormwater discharge in order to protect and restore water quality. As such, many of the facilities do not include current retention or treatment methods for stormwater runoff. However, Caltrans recently developed and implemented a Best Management Practices (BMP) pilot program for runoff in the corridor highway facility, which includes detention devices at I-5 and Manchester Avenue, a wet basin at I-5 and La Costa Avenue, media filters at the La Costa Park & Ride and the SR-78 & I-5 Park & Ride, and a biofiltration system at I-5 and Palomar Airport Road. Consistent with federal and state law, as well as with the terms of its National Pollution Discharge Elimination System (NPDES) permit, Caltrans also implemented maintenance BMPs that include preventative measures to ensure that ongoing maintenance activities are conducted in a manner that reduces the amount of pollutants discharged to surface waters via Caltrans stormwater drainage systems. Maintenance BMPs are implemented in accordance with the Storm Water Quality Handbook – Maintenance Staff Guide, which provides detailed instructions on applying approved stormwater maintenance BMPs to maintain facility operations and highway activities in a manner that provides maximum protection of water quality.

From a Coastal Act perspective, the greatest area of concern is the transportation project's potential permanent contribution to impervious surface area. An increase in impervious surface is directly proportional to higher runoff volumes and higher runoff velocities (hydromodification). As a result, pollutants found in runoff are more likely to negatively affect wetland habitats and increase the risk of flooding.

Quality of Water Entering Lagoons and the Ocean

Existing water quality in the corridor is best characterized by the quality of water in receiving bodies. Within the corridor there are a number of impaired water bodies that, as defined by the Clean Water Act (CWA), do not meet water quality standards, and therefore cannot support the beneficial uses for which the water body has been designated. Impaired water bodies are also referred to as "water quality limited segments." States are required to compile a list of impaired water bodies, referred to as the "Clean Water Act Section 303(d) List of Water Quality Limited Segments" (303(d) List). Within the corridor, Los Peñasquitos Creek, Los Peñasquitos Lagoon, Soledad Canyon Creek, the Pacific Ocean at San Dieguito Lagoon, San Elijo Lagoon, Buena Vista Lagoon, Loma Alta Slough, the Pacific Ocean at the mouth of San Luis Rey River, and the San Luis Rey River are listed as impaired water bodies. Inland waterways that are tributaries of, or discharge into, these 303(d) impaired waters may also be considered part of the 303(d) listed water bodies.

A number of impaired water bodies were given special status under the CWA for which the state is required to identify waters that will not achieve water quality standards after application of effluent limits. For these impaired water bodies, states are required to develop plans for water quality improvement. The plans consider each water body and pollutant for which water quality is considered impaired, and include load-based (as opposed to concentration-based) limits called total maximum daily loads (TMDL), which is the maximum amount of pollution (both point and non-point sources) that a water body can assimilate without violating state water-quality standards. Caltrans is included as a stakeholder for Investigation Order R9-2006-076 titled, "Owners and Operators of Municipal Separate

Storm Sewer Systems, California Department of Transportation, Hale Avenue Resource Recovery Facility, and North County Transit District Responsible for the Discharge of Bacteria, Nutrients, Sediment, and Total Dissolved Solids into Impaired Lagoons and Adjacent Beaches and Agua Hedionda Creek.”

Pollutants discharging with a load or a concentration that commonly exceeds allowable standards and which are considered treatable by Caltrans-approved treatment BMPs are referred to as Targeted Design Constituents (TDC). TDCs in the corridor include sediment, metals (total and dissolved zinc, lead, and copper), nitrogen, phosphorus, and general metals. Table 3A-16 shows the Section 303(d) receiving water bodies within the corridor and the TDCs associated with them.

TABLE 3A-16: SECTION 303(d) LIST OF WATER QUALITY LIMITED SEGMENTS AND TARGETED DESIGN CONSTITUENTS

303(d) 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
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 River	Indicator Bacteria	N/A*
San Luis Rey River	Chloride & Total Dissolved Solids	N/A*

Sources: http://www.waterboards.ca.gov/tmdl/docs/303dlists2006/approved/r9_06_303d_reqtmlds.pdf
<http://www.stormwater.water-programs.com/wqpt/CoPM.asp?CO=SD&RTE=5>

* Not determined to be a constituent found within the Caltrans stormwater runoff monitoring program

In addition to the adverse impacts of polluted stormwater runoff from corridor facilities and adjacent land uses, water quality is also adversely affected, particularly within the corridor lagoons where fill embankments were used for bridge crossings for the existing highway and rail facilities. The fill embankments have substantially narrowed the lagoon cross-sections at the facility, thereby decreasing overall water circulation in the lagoon, and have contributed to and caused water stagnation. Filled to support rail or road crossings, the narrowed lagoon sections act as a partial dam, impeding the natural process of tidal flushing and slowing freshwater flows from inland waterways that convey sediment and pollutant loads to corridor lagoons during significant rainfall events. The result is a concentrated build-up of sedimentation and water pollutants within the lagoons, which substantially affects biological productivity and quality of coastal waters. The combined effects of polluted stormwater runoff from corridor facilities and adjacent land uses, the absence of current treatment methods for stormwater runoff, and the impacts of physically displacing or altering natural watershed features have resulted in negatively affected water quality in the corridor's coastal water bodies.

3A.2.2.2 Lagoon Restoration

Deficiency: Continued Degradation of Lagoons. The coastal lagoons in the corridor have experienced adverse impacts to water quality and to the numerous and varied sensitive habitat areas, plant and wildlife species supported within and adjacent to the lagoons. Physical alteration of lagoon areas from construction of highway and rail crossings and realignment and/or channelization of inland waterways have affected water quality and directly affected sensitive habitat areas. Polluted stormwater runoff and previous development encroachment of adjacent land uses have also affected lagoon areas by degrading water quality and substantially reducing the amount and quality of transitional and upland habitat areas that typically provide buffers between adjacent land uses and the sensitive habitats and species supported by the lagoons. These impacts have occurred over decades and require substantial resources and major restoration efforts to remedy.

The physical alteration of the coastal lagoons in the NCC that has affected water quality through corridor development and urbanization—including highway and rail crossings and realignment and/or channelization of inland waterways—has also directly affected the varied habitat areas, plant, and wildlife species supported within and adjacent to the lagoons. Direct displacement of habitat area resulting from construction of the corridor facilities, watershed alterations such as the diversion of freshwater from inland waterways, excess sedimentation and siltation, and, in some cases, reconfiguration of the lagoons' inlet at the ocean, have all contributed to degradation of lagoon resources. Modification to the natural process of lagoon breaching—a critical element providing flood relief, sediment transport to beaches, good water quality, and fish migration to and from the ocean and inland waterways—has particularly resulted in long-term impacts to lagoon habitats that are difficult to reverse without major restoration efforts. Table 3A-17 summarizes the main system concerns and constraints, sensitive resources, and restoration/management goals and efforts within the NCC lagoons.

Development encroachment has also reduced the amount and quality of transitional and upland habitat areas that typically provide buffers between adjacent land uses and the habitats and species supported by the lagoons. In some cases, development has occurred adjacent to the corridor lagoons, creating a fixed and hard lagoon-habitat edge where there is no vegetative buffer. Such a buffer would typically minimize erosion and treat contaminated stormwater runoff along the lagoon periphery, protect lagoon habitats from the introduction of non-native and invasive plant species, and limit disturbance to wildlife.

Notwithstanding the current issues associated with degraded water quality—physical alteration of the lagoons and development encroachment on adjacent lands—the corridor lagoons provide significant benefits in their respective watersheds for flood relief (by allowing high flows to slow and disperse into the larger water bodies), and for water quality (where sediment loads, nutrients, and toxins from stormwater are discharged and absorbed by vegetation within the lagoon prior to entering the ocean). The lagoons also contain sensitive habitat areas for threatened and endangered species, migratory birds, fish, and many different wildlife species. In addition, where associated with open space and adjacent habitat preservation areas, the corridor lagoons provide critical habitat linkages and wildlife corridors in a coastal area that has experienced rapid population growth and urbanization over the last several decades. The corridor lagoons also provide exceptional public recreation amenities with trail systems, interpretative areas, wildlife observation opportunities, and, in some cases, wide expansive beach areas where the lagoons meet the ocean.

Ongoing lagoon resource management has been implemented and will continue to be essential in ensuring that the many flood, water quality, habitat, and recreation benefits of these significant watershed features are maintained and enhanced. Los Peñasquitos, San Dieguito, Batiquitos, and Agua Hedionda Lagoons have all been subject to restoration efforts that have included ongoing inlet maintenance to allow for improved tidal circulation, water quality monitoring, and wetland and upland habitat restoration. While a number of stakeholder groups are coordinating restoration planning efforts for San Elijo and Buena Vista Lagoons, these lagoons have yet to undergo major comprehensive restoration programs; however, alternatives have been identified and environmental and technical studies are underway. Additionally, optimization studies have been conducted for the San Elijo, Buena Vista, and Batiquitos Lagoons' systems to determine optimum design of bridge crossings that would maximize hydraulic and ecological functions, and improve wildlife connectivity, and to ensure bridge design does not preclude any potential restoration alternative for San Elijo and Buena Vista Lagoons. These lagoons are included on the 303(d) list of impaired water bodies since they exceed standards for eutrophication, sediment and coliform bacteria, and nutrients. In addition, irrespective of current restoration efforts, all of the corridor lagoons require ongoing management to address the effects of increased year-round freshwater input, accelerated sedimentation and water contamination, reduced tidal mixing, introduction of exotic species, revegetation of disturbed areas, and impacts on habitats and wildlife from active recreation and adjacent development.

TABLE 3A-17: LAGOON SYSTEM SUMMARY CONCERNS AND CONSTRAINTS

Lagoon System	Los Peñasquitos	San Dieguito	San Elijo	Batiquitos	Agua Hedionda	Buena Vista
Concerns	<ul style="list-style-type: none"> Sedimentation/siltation Excess freshwater inputs/ increased salinity Lack of permanent tidal influence Invasive plant species Acoustic impacts from pile driving on both avian and fish species 	<ul style="list-style-type: none"> Sedimentation/siltation Sensitive bird species/ island maintenance Maintenance of open tidal inlet Eelgrass 	<ul style="list-style-type: none"> Increased freshwater/ nutrient-rich inputs Flooding/ vector control Sedimentation/siltation Reduced tidal prism/ constrictions resulting in a transition from mudflat to subtidal habitat 	<ul style="list-style-type: none"> Increased sedimentation/ siltation Excessive nutrient loads from agricultural land uses Invasive plant species 	<ul style="list-style-type: none"> Impaired Waterbody Indicator Bacteria Sedimentation Siltation Acoustic impacts from pile driving on both avian and fish species 	<ul style="list-style-type: none"> Sedimentation/siltation Sensitive bird species/ island maintenance
Special-Status Species	<ul style="list-style-type: none"> Belding's savannah sparrow Western snowy plover (Critical Habitat) Light-footed clapper rail California gnatcatcher Tidewater goby surveys are recommended by USFWS Wandering skipper surveys are recommended by USFWS 	<ul style="list-style-type: none"> Belding's savannah sparrow Light-footed clapper rail Western snowy plover (Proposed Critical Habitat) California least terns California gnatcatchers Tidewater goby surveys are recommended by USFWS Wandering skipper surveys are recommended by USFWS 	<ul style="list-style-type: none"> California least tern Belding's savannah sparrow California coastal gnatcatcher (Critical Habitat) Light-footed clapper rail 	<ul style="list-style-type: none"> Western snowy plover Belding's savannah sparrow California gnatcatcher California least tern Light-footed clapper rail 	<ul style="list-style-type: none"> Belding's savannah sparrow California gnatcatcher Light-footed clapper rail Tidewater goby surveys are recommended by USFWS Wandering skipper surveys are recommended by USFWS 	<ul style="list-style-type: none"> Belding's savannah sparrow California gnatcatcher Light-footed clapper rail
Constraints	<ul style="list-style-type: none"> LOSSAN Railroad Bridge Crossings (CC-059-09; approved 2/9/11) Highway 101 Crossing (approved/updated in 2005) Urban infringement 	<ul style="list-style-type: none"> Railroad Bridge Crossing Coast Highway Crossing Jimmy Durante Boulevard Upstream dams (e.g., Lake Hodges Dam) 	<ul style="list-style-type: none"> Railroad Bridge Crossing South Coast Highway 101 Crossing Concrete dike/floodgates Upstream reservoirs Buried utilities 	<ul style="list-style-type: none"> Railroad bridge crossing Carlsbad Blvd/Highway 101 crossing Buried utilities/infrastructure 	<ul style="list-style-type: none"> Encinas Power Plant Iron Lung Effect Poseidon Desalination Plant Future Intake (CDP E-06-013; approved 3/5/08) LOSSAN Railroad Bridge Crossing (CC-075-09; approved 3/12/10) PCH Crossing 	<ul style="list-style-type: none"> Concrete weir at Lagoon mouth Railroad Bridge Crossing Carlsbad Blvd/Coast Highway Crossing Buried Infrastructure
Goals	<p><u>San Diego LCP Goals</u></p> <ul style="list-style-type: none"> Preserve as open space; encourage restoration Minimize disturbance of wildlife; avoid blockage of tidal action Incorporate drainage control measures Remove/relocate public utility/facility projects from lagoon, as feasible <p><u>Del Mar LCP Goals</u></p> <ul style="list-style-type: none"> Develop pedestrian trails & bike paths Ensure protection of wetlands & ESHA 	<p><u>San Diego LCP Goals</u></p> <ul style="list-style-type: none"> Preserve floodplain, open waters of the lagoon and river, wetlands, marshlands & uplands; encourage restoration Enlarge to enhance plant and animal habitats, and to create a sufficient tidal prism to ensure adequate water circulation and to keep the mouth of the river open Minimize disturbance of wildlife Incorporate drainage control measures <p><u>Del Mar LCP Goals</u></p> <ul style="list-style-type: none"> Prohibit impediments to flow of floodwaters & restoration of tidal function Establish trails/bike paths that link coastal recreational areas Ensure protection of wetlands & ESHA; improve for use as a wildlife preserve 	<p><u>Encinitas LCP Goals</u></p> <ul style="list-style-type: none"> Preserve scenic views/vista points at lagoon Preserve the integrity, function, productivity, and long-term viability of sensitive habitats Acquire or preserve the entire undeveloped riparian corridor that drains into the lagoon Preserve/ protect no net loss of wetlands Maintain/enhance wildlife corridors Encourage passive/ compatible recreational activity Remove impediments to internal lagoon water circulation & increase tidal circulation 	<p><u>Carlsbad LCP Goals</u></p> <ul style="list-style-type: none"> Restoration of natural resources and wildlife habitat Maintain maximum amount of permanent open space Limit activities to habitat enhancement, educational and scientific nature study, passive recreation, and aquaculture having no significant adverse effect on natural processes or scenic quality Incorporate stringent drainage control measures upstream/upslope 	<p><u>Carlsbad LCP Goals</u></p> <ul style="list-style-type: none"> Wetland Acquisition/ Restoration Preserve Coastal Sage Scrub habitat Preserve California gnatcatcher habitat Maintain/ Expand Recreational Uses 	<p><u>Carlsbad/ Oceanside LCP Goals</u></p> <ul style="list-style-type: none"> Provide public access & passive recreation (e.g., upland trails/ fishing/ viewing areas) Protect sensitive biological habitats & water quality with buffers/ fencing/ restoration Minimize siltation, erosion & sedimentation Prohibit any diking, dredging or filling, except for the California Department of Fish and Game (CDFG) approved restoration
Restoration Efforts	<ul style="list-style-type: none"> Dredging/sedimentation control Reduce urban/landscape runoff Maintain tidal influence at lagoon mouth Control/remove invasive plant species 	<p><u>(Began in 2006)</u></p> <ul style="list-style-type: none"> Excavation for creation of new intertidal wetlands; lowering of floodplain elevation Development of native upland habitat/ bird nesting areas Creation of stormwater management basin Public access & interpretation component San Dieguito Memorandum of Understanding Planning/Restoration Site 	<ul style="list-style-type: none"> Dredging/ maintaining an open tidal inlet Tidal marsh restoration Removal of invasive weed species Modifications to constriction points Laser Planning/Preservation Site Subject of San Elijo Lagoon Restoration Project (under separate review) 	<ul style="list-style-type: none"> Maintain tidal inlet/ tidal flows Remove excess sediment Bird nesting habitat/ deep water fish habitat 	<ul style="list-style-type: none"> Dredging and Eelgrass Planting Removal of Toxic Algae/ Caulerpa (complete) -Hallmark Sites Planning/ Preservation 	<ul style="list-style-type: none"> Dredging/ sedimentation control Native vegetation restoration Subject of Buena Vista Lagoon Restoration Project (under separate review)
Monitoring/ Management	<ul style="list-style-type: none"> Annual maintenance dredging 	<ul style="list-style-type: none"> SCE Maintenance dredging for open inlet 	<ul style="list-style-type: none"> Maintenance dredging Invasive species control program Chemical/biological water quality monitoring to ensure adequate tidal mixing 	<ul style="list-style-type: none"> Maintenance dredging Reestablish eel grass and native cord grass Monitor invasive plant species Monitor chemical, biological, and tidal improvements within basins after 1996 restoration project initiated 	<ul style="list-style-type: none"> Monitoring of Toxic Algae/ Caulerpa (ongoing) Maintenance dredging 	<ul style="list-style-type: none"> Potential for new freshwater, saltwater or mixed regime with future restoration efforts Maintenance dredging

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3A.2.2.3 Natural Habitats

Deficiency: Continued Degradation and Loss of Coastal Habitats. Incremental loss of habitat areas resulting from urbanization in the corridor, including the existing transportation facilities, has resulted in significant cumulative impacts to open space areas, lagoon and inland waterways, transitional and upland habitats, and the numerous special-status plant and animal species they support. As a result, sensitive resources including wetlands, critical habitat, sensitive plant and animal species, and surface waters have continued to decrease in abundance and quality.

The corridor contains a wide variety of natural habitats with the potential to support threatened and endangered plant and wildlife species; however, urbanization and increased development has resulted in adverse effects on this natural environment.

Quality of Existing and Potential Corridor Habitat Areas and Wetlands

The corridor supports a variety of environmentally sensitive habitat areas (ESHA) as well as degraded habitat areas contained primarily in and around the coastal lagoons and the shoreline, inland waterways and undeveloped hillside areas, and mesas. The coastal lagoons and inland waterways support southern willow, mulefat scrub, freshwater marsh, southern willow scrub/freshwater marsh, southern arroyo willow woodland, coastal brackish marsh, southern coastal salt marsh, salt marsh transition, mud flat, salt flat, open water, San Diego mesa hardpan vernal pool, and eelgrass, salt flat, and other open water habitat. Several sensitive upland habitats are also included in the corridor, including coastal sage scrub, baccharis scrub, maritime succulent scrub, coastal bluff scrub, southern maritime chaparral, coastal sage–chaparral scrub, coast live oak woodland, Torrey pine forest, southern dune scrub, southern foredunes, and native grassland. Non-native grassland and non-native woodland areas are also present in the corridor and could provide valuable nesting, roosting, and foraging habitat.

ESHAs in the corridor support threatened and endangered plant and wildlife species. Several significant stands of native wetland and upland habitat areas have been preserved in, and adjacent to, the lagoons and other protected open space areas. However, the development of transportation facilities and adjacent development, realignment and/or channelization of inland waterways, armoring of the shoreline, vegetation clearing and thinning for fire protection of adjacent development, and rapid spread of exotic plant materials that supplant native plant species, have all had a cumulative negative effect on the corridor's natural environment.

The peripheries of the corridor lagoons are particularly sensitive to habitat disturbance and degradation—most often resulting from development encroachment, intense recreational use, and lack of adequate upland habitat buffers. In the corridor, these impacts are demonstrated by areas of severely degraded habitat void of vegetation, areas of disturbed southern arroyo woodland, and salt marsh and coastal brackish marsh. These areas have suffered from excessive erosion and have become infested with non-native and invasive plant species. In addition, wetland and riparian habitats typically found in inland waterways have been severely degraded by previous realignment and channelization of the corridor streams and drainages by both transportation improvements and adjacent land development. Several of the small streams and drainages that have been channelized are void of permeable surface and vegetation while other areas that have not been channelized continue to support some disturbed southern willow scrub, mulefat scrub, freshwater marsh, southern arroyo woodland, and salt marsh/brackish marsh. As with the disturbed habitat areas around many

lagoon peripheries, the NCC's smaller inland streams and drainages experience excessive erosion and infestation of non-native and invasive plant species.

Development encroachment adjacent to the NCC's lagoons and other inland waterways has caused a chronic loss of transitional habitat and has reduced the overall biological diversity of the resource, severed connections between coastal waterbodies and upland habitat, and limited the ability of the resources to evolve in response to environmental conditions such as sea level rise. In addition, development encroachment has eliminated natural buffers that provide water-quality benefits and that limit disturbance of wildlife from adjacent land uses.

Upland habitats, including Diegan coastal sage scrub, southern maritime chaparral, and native and non-native grassland, provide habitat for certain endangered and threatened species and serve as important buffers and transitional habitat for the corridor lagoons and inland waterways. These upland areas also provide wildlife corridors that connect remaining coastal and inland habitat areas, which allows for wildlife movement. Urbanization reduced upland habitat, resulting in areas with large openings of bare earth or areas that are vegetated with non-native species. Many of the disturbed upland areas in the corridor occur along trails or adjacent to development. The existing transportation facilities act as barriers to east-west wildlife migration where lagoons, rivers, creeks, and the surrounding upland habitat would otherwise provide corridors for wildlife to cross between inland and coastal areas. Although many of the existing highway and rail bridges have steep, narrow abutments at lagoon crossings or channelized drainages that wildlife can utilize for crossing, the design of these facilities does not adequately facilitate or support their use as wildlife corridors.

Populations of Threatened or Endangered Plants and Animals

Residential development and agriculture have imperiled a number of threatened and endangered plant species in the corridor; however, perhaps the most significant risk to special-status plant species and native habitats is incremental displacement by exotic and invasive plant species. Species including pampas grass, ice plant, African fountain grass, African veldt grass, and onion weed have become increasing problems as they spread along the transportation corridor rights-of-ways. African veldt grass is spreading into the habitats around the lagoons, and tamarisk, arundo, castor bean, and fennel are common invasive species within the wetland habitats of the corridor. Eelgrass is considered a special aquatic site and is found in the open water areas of Batiquitos and Agua Hedionda Lagoons. Eelgrass beds are threatened by *Caulerpa* toxic algae and have specific regulations concerning impacts and mitigation.

The NCC includes critical habitat for the least Bell's vireo, southwestern willow flycatcher, tidewater goby, and California gnatcatcher and is frequented by a number of other special-status wildlife species. Declines in these sensitive wildlife populations have occurred because of habitat loss and fragmentation resulting primarily from urban and agricultural development, degradation of feeding and nesting habitat, human disturbance, and predation. In the case of tidewater goby, stream culverts and water diversions, riparian habitat loss, sediment loads within the streams, and introduced predators threaten the species and limit the potential for tidewater goby to occur in the corridor. Indirect impacts to threatened and endangered species are caused by night lighting, exposure to air and water pollutants, edge effect exposure to adjacent land uses, and noise.

3B THE CORRIDOR VISION: PROJECT SOLUTION

Chapter 3A analyzed the myriad of transportation and coastal resource deficiencies that are present in the North Coast Corridor (NCC). This chapter presents the comprehensive corridor vision, a suite of multimodal solutions and resource enhancements projects that will address these deficiencies and improve mobility, coastal access and sensitive resources and quality of life in the corridor. Section 3B.1 presents the corridor objectives and summarizes this multimodal and resource enhancement vision. Section 3B.2 evaluates the many benefits that can be expected from its implementation, including a reduction in corridor deficiencies as well as the achievement of corridor and coastal resource objectives. Finally, Section 3B.3 discusses how the vision would be implemented, including discussion of beneficial projects that are already underway in the corridor. Table 3B-1 summarizes the transportation and resource deficiencies discussed in detail in Chapter 3A with the NCC solutions and benefits discussed in the following sections.

Following the discussion of corridor deficiencies, Chapter 3B describes the regional and corridor plans and projects that would create the transportation, access, and resource vision for the NCC through 2050 to ensure that corridor access and resources are provided, protected, and enhanced to fulfill Coastal Act policy directives well into the future. The NCC PWP/TREP proposes a suite of solutions that comprise the comprehensive corridor vision of the PWP/TREP. Designed to achieve the transportation, coastal access, and coastal resource protection and enhancement objectives of the corridor, the solutions in Section 3B.1 include multimodal improvements to the NCC's transportation facilities, from highway and road enhancements, to increased rail and bus transit services, to safer and more complete networks for bicycles and pedestrians. These transportation-system improvement projects have been identified and defined to best meet the goals, needs, demands, and characteristics of the NCC to enhance and sustain overall mobility and coastal access throughout the corridor and would:

- Expand rail corridor train and passenger capacity.
- Improve rail service reliability.
- Focus highway-capacity improvements on carpool, vanpool, and transit (buses and bus rapid transit [BRT]) facilities to move more people and not only cars.
- Reduce travel times and incentivize the use of high-occupancy vehicles (HOV).
- Maintain efficiency in the Express Lanes by allocating, through variable pricing, excess capacity to single-occupant vehicles (SOVs).
- Use the revenue from paying SOVs to support corridor transit services and HOV facilities.
- Eliminate barriers and close gaps in the bicycle and pedestrian route and trail network to improve non-motorized local and recreational access to coastal resources.

The vision promotes mobility system improvement projects that are necessary to support regional and state goals for minimizing energy consumption and air emissions, and for supporting and facilitating Smart Growth in the NCC. Achieving these goals would benefit the NCC coastal resources, including curtailing the effects of global climate change and sea level rise, improving public access, and protecting scenic, agricultural, sensitive habitat, and open space areas from potential future development extending beyond the developed core of the NCC. Beyond transportation, the vision also prescribes widespread environmental improvements to the NCC's sensitive coastal and upland resources to be implemented as part of the transportation solutions. The transportation projects planned for the NCC include the companion Resource Enhancement and Mitigation Program (REMP) to help restore, enhance, and expand coastal wetlands, freshwater wetlands, and upland areas in the

corridor. Hundreds of millions of dollars—almost exclusively made available through these corridor transportation projects from the region’s Environmental Mitigation Program (EMP) and which would not otherwise have been available—have been programmed for a REMP that would create, restore, and preserve hundreds of acres of sensitive habitat areas. The REMP would also improve the water quality of the corridor’s six lagoons and other waterbodies, including supporting opportunities to complete the restoration of two lagoons.

The regional EMP is funded through the *TransNet* local transportation sales tax, and contains the hundreds of millions of dollars specifically programmed for I-5 and the NCC corridor in the REMP. *TransNet* dollars can be spent only for transportation purposes, which include environmental mitigation associated with specific transportation projects. The transportation projects in the PWP/TREP would allow for expenditure of these vital EMP funds in the NCC. Due to the availability of these funds, there are opportunities to initiate land acquisition, undertake habitat enhancement and establishment, and make progress toward lagoon restoration in advance of the transportation projects with appropriate agreements in place. This comprehensive programmatic approach to mitigating transportation impacts also offers a rare opportunity to achieve large-scale, coordinated environmental benefits in the corridor.

Because the EMP funding is tied to implementation of the I-5 NCC transportation projects through the *TransNet* ordinance, the ability to achieve the same level of coastal access and environmental improvements without the multimodal transportation improvements would be effectively impossible on the scale proposed by the PWP/TREP. This funding does not exist elsewhere and would be re-directed to other transportation mitigation uses in other parts of the region if the suite of projects identified in the PWP/TREP does not move forward as contemplated.

Following presentation of the corridor vision, Section 3B.2 summarizes the benefits that would be realized upon implementation of the projects in the PWP/TREP. These benefits would achieve the transportation and coastal resource objectives presented in Section 3B.1 and would help fulfill the Coastal Act mandates to 1) minimize energy consumption and air emissions; 2) promote sustainable growth into the future by ensuring critical public transportation infrastructure and options are available to support Smart Growth opportunities; 3) protect, preserve and, where feasible, enhance public access and recreational opportunities; and 4) protect, preserve and, where feasible, enhance sensitive resources in the NCC. Taken together, the many components of the comprehensive corridor vision would improve the quality of life in coastal communities, further the region’s sustainability goals, and ensure continued use and enjoyment of coastal resources for the millions of people who visit the corridor each year.

Concluding the chapter, Section 3B.3 discusses the implementation of the corridor vision. While the PWP/TREP contains the majority of improvements that are planned for the corridor, some projects that will contribute to the achievement of NCC objectives are already underway or have recently been completed. Section 3B.3 provides brief descriptions of these projects as well as ongoing mitigation efforts being made by the California Department of Transportation (Caltrans), San Diego Association of Governments (SANDAG), local jurisdictions, and resource agencies.

TABLE 3B-1: TRANSPORTATION AND RESOURCE DEFICIENCIES, SOLUTIONS AND BENEFITS, NORTH COAST CORRIDOR

Corridor Issue	Corridor Deficiency	Corridor Solution & Benefits
Corridor Transportation and Mobility – Coastal Access & Recreation	<p>Travel Demand and Growth</p> <p>Population and Employment Growth Greatly Outpaces Transportation Capacity Growth</p> <p>Travel Demand Greatly Outpaces Growth in Population, Employment, and Capacity</p> <p>Transit</p> <p>Low-Density Land Use Inhibits Successful Transit</p> <p>Limited Capacity on Los Angeles-San Diego-San Luis Obispo (LOSSAN) Rail Corridor</p> <p>Inadequate Access and Parking at Rail Stations</p> <p>Highway</p> <p>Consistently Heavy Weekday Highway Congestion</p> <p>Consistently Heavy Weekend Highway Congestion</p> <p>Few Non-Highway Routes for Local Traffic</p> <p>Without Improvements, Highway Congestion Will Continue to Worsen</p> <p>Lack of HOV Facilities Discourages HOV and Transit Use</p> <p>Driving Alone is the Dominant Travel Mode</p> <p>Bicycle and Pedestrian</p> <p>North-South Bicycle and Pedestrian Access is Hampered by Barriers due to Lack of Parallel Frontage Roads, Topographical and Lagoon Constraints</p> <p>Outdated Interchanges and Lack of Rail Crossings Result in Barriers to East-West Bicycle and Pedestrian Access to the Coast</p> <p>Inadequate and Degrading Coastal Access and Recreation Opportunities</p>	<ul style="list-style-type: none"> Improves public access to the region's beaches and recreation areas through the addition of transit, highway, bike and pedestrian connections that allow access along the coast and to the coast from inland communities. Create flexible travel choices to integrate all forms of transportation including bikes, pedestrians, trains and cars Establish a new transportation backbone resulting in enhanced mobility and a significant reduction in travel times and congestion
Coastal Communities	<p>Without Improvements, Local Traffic Will Continue to Degrade</p> <p>Energy Consumption Resulting from Travel Leads to Increases in Air Pollutants and Greenhouse Gas Emissions</p> <p>Transportation Infrastructure is Needed to Support Smart Growth Policies</p>	<ul style="list-style-type: none"> Preserves the character of coastal communities and local access corridors by creating opportunities for neighborhood enhancement projects including the addition of nearly 30 miles of bike and pedestrian paths and upgrading transportation and recreation facilities, while protecting visual open space and providing extensive coastal resource viewing opportunities. Minimizes energy consumption and air emissions and results in healthy and sustainable communities Facilitates Smart Growth with a transportation system that promotes environmental sustainability and fosters efficient development patterns that optimize travel, housing, and employment choices
Water Quality and Sensitive Coastal Habitats	<p>Continued Degradation of Water Quality</p> <p>Continued Degradation of Lagoons</p> <p>Continued Degradation and Loss of Coastal Habitats</p>	<ul style="list-style-type: none"> Includes several hundred acres of sensitive coastal habitat restoration and permanent preservation as open space. Improves water quality at the six coastal lagoons along the corridor by opening up waterways to improve tidal flows.

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3B.1 THE COMPREHENSIVE CORRIDOR VISION

Addressing the transportation mobility, coastal access and coastal resource deficiencies, constraints and needs in the NCC requires a comprehensive approach that can achieve specific objectives while being sensitive to competing goals and constraints on the use of public funds. SANDAG and Caltrans have set forth a vision for improved mobility in the corridor that would enhance access to the coast and trigger other enhancements to coastal communities and coastal resources.

3B.1.1 Transportation and Mobility – Coastal Access and Recreation Vision

The Coastal Commission (partnering with local governments) is charged with ensuring that all members of the public have access to coastal resources under Section 30001.5(c) of the Coastal Act:

Maximize public access to and along the coast and maximize public recreational opportunities in the Coastal Zone consistent with sound resource conservation principles and constitutionally protected rights of private property owners.

The goal of sustained and improved coastal access in the NCC has a direct connection to the multimodal transportation components of the PWP/TREP. The current levels of congestion on both I-5 and the local street network hinder coastal access on a regular basis, and without capacity improvements, this condition will only worsen as the population grows. COASTER rail services are similarly limited, with heavy train traffic along single-tracked segments slowing the service and limiting its frequency, thereby limiting use of rail service as an alternative means of traveling to and through the corridor. Finally, options for non-motorized travel to coastal access and recreational areas—mostly provided by bicycle and pedestrian trails throughout the corridor—are also in need of enhancement due to various connection gaps, north-south and east-west constraints across existing transportation corridors, and constrained facilities. Implementation of the PWP/TREP would address each of these accessibility issues by bringing a multimodal network of improvements to the NCC.

Ensuring coastal access in the NCC can be divided into six broad objectives:

- **Congestion reduction.** Access to coastal areas should not be hampered by congestion in the transportation system—a problem that has already been cited as one of the two biggest impediments to coastal access by the Coastal Commission in its Public Access Action Plan.
- **Maintenance and expansion of transit service.** Public transit service should be a reliable and efficient option for all residents and visitors to access the coastal resources of the NCC. Where practical, transit services should be expanded in response to continued growth in population and demand, including higher-intensity modes such as rail and BRT.
- **Provisions for non-automobile circulation.** Coastal areas should have ample facilities that allow for movement via non-automobile means and should include transit and shuttle services, bicycle access lanes, and pedestrian facilities.
- **Adequate parking.** Coastal areas should have adequate parking facilities to serve the majority of residents and visitors who travel by car. Where parking is not feasible, substitute means such as public transit or shuttle services should be available to access the coast. Adequate parking facilities should be provided to support access to transit stations. Where possible, parking should also be provided at key bike and pedestrian trail staging areas and distributed throughout the corridor.
- **Access to natural resources and enhancement of recreational facilities.** Access to natural resources should be enhanced with new and improved recreational means of travel (via bike and trail facilities), in order to prevent the recreational needs of the growing population from overloading coastal recreation areas. The NCC's parks, beaches, trails, and other recreational facilities should

be preserved and expanded, where feasible, in order to provide recreational opportunities for coastal residents and visitors.

Because improved coastal access and transportation options are inextricably linked in the NCC, the corridor vision includes a multimodal transportation program that both encourages alternatives to SOV travel and addresses the growing travel demands in the corridor. Due to the large volume and diversity of trips in the corridor, improving and maintaining access and mobility cannot be achieved by focusing efforts on a single mode; therefore, the vision for the multimodal corridor:

- Expands rail corridor train and passenger capacity and improves trip reliability.
- Addresses highway operational deficiencies to improve trip reliability.
- Focuses highway-capacity improvements on carpool, vanpool, and transit (buses and BRT) facilities to move more people and not only cars.
- Reduces travel times and incentivizes the use of HOVs.
- “Manages” efficiency in the carpool/vanpool lanes by allocating, via variable pricing, excess capacity to SOV drivers.
- Uses the SOV-generated revenue to support corridor transit services and HOV facilities.
- Eliminates barriers and closes the gaps in the bicycle and pedestrian route and trail network to improve non-motorized local and recreational access to coastal resources.
- Protects and enhances natural resources, coastal resources, and corridor lagoons.

SANDAG and Caltrans have also directly linked these multimodal transportation improvements to coastal access and resource enhancements through the adoption of the following regional programs (discussed further in Section 2.2):

- The Regional Comprehensive Plan (RCP) and Smart Growth Concept Map that promotes pedestrian-friendly development near transit stations to encourage more walking, biking, and transit trips and to preserve open space and natural habitat areas.
- The Environmental Mitigation Program (EMP) that funds (via *TransNet*, the voter-approved local transportation sales tax) resource enhancement projects as part of specific transportation projects.

3B.1.1.1 Corridor Transportation and Coastal Access Objectives

The PWP/TREP identifies both transportation and coastal access goals for the NCC. Rather than treating them as separate and opposing values, the PWP/TREP integrates these two types of goals to not only balance the various transportation needs of the corridor, but also to enhance multimodal access throughout the corridor and thereby maintain and enhance, wherever feasible, access to the coast and upland recreation areas.

The transportation objectives are shown in Table 3B-2.

TABLE 3B-2: TRANSPORTATION OBJECTIVES FOR THE NORTH COAST CORRIDOR

Goal	Definition
Coastal Access	The NCC's transportation system should provide improved access to coastal areas for all residents and visitors.
Congestion Reduction	The NCC's transportation facilities should be free of congestion to the greatest extent possible. This means not only accommodating the transportation needs of today's residents, but also planning for the transportation needs of future residents, who will be part of the projected 23% growth in population over the next three decades.
Transportation Flexibility	In addition to providing benefits in the near term, the NCC's transportation system should be able to adapt to future changes in demand, transit ridership, technology, land use, and other influential factors.
Value Maximization	The NCC's transportation investments should maximize value, providing the greatest possible mobility benefits per dollar spent, for both the NCC and the entire region.
Integration into Larger System	The NCC's transportation system should be maintained and enhanced as an important link in the regional, state, and national transportation system.
Movement of People Rather than Vehicles	The NCC's transportation system should prioritize the movement of people, rather than simply vehicles, to maximize efficiency and reduce per capita pollution, energy consumption, and vehicle miles traveled.
Environmental Protection and Enhancement	The NCC's transportation system should promote sustainability and quality of life for residents and visitors, and protect the human and natural environments, wherever possible.

3B.1.1.2 Rail and Transit Vision

Consistent with the 2050 Regional Transportation Plan (2050 RTP), SANDAG envisions a coastal rail corridor that is capable of providing more frequent passenger and freight service with little conflict or delay. The 2007 *LOSSAN Final Program EIR/EIS* recommends rail improvements to:

“... develop a faster, safer and more reliable passenger rail system that provides added capacity in response to increased travel demand...between Los Angeles, Orange and San Diego Counties (between Los Angeles Union Station and San Diego Santa Fe Depot).”¹

In addition to rail, the 2050 RTP also calls for improvements in other transit services in the NCC, including local bus and BRT. The overall vision for transit in the NCC includes a program of projects to expand capacity, improve performance, and enhance access for all types of users. These projects, summarized in the following sections, are described in detail in Chapter 4.

Rail Corridor Infrastructure and Service Improvements

Forty-six percent of the LOSSAN rail corridor in San Diego County is single-tracked, which creates choke points when trains traveling in opposite directions meet. These conflicts create most of the delay in the corridor, and therefore corridorwide double-tracking is necessary to sufficiently increase capacity and service. The LOSSAN rail program in the NCC includes several double-tracking projects ranging in length from 0.6 to 2.9 miles (totaling approximately 14 miles of new track). More than any other rail improvement, this would do the most to increase capacity, increase reliability, and reduce travel time.

Beyond double-tracking, many other infrastructure enhancements are planned for the LOSSAN rail corridor. The installation of various stub tracks, layover tracks, and track crossovers would improve

¹ *LOSSAN Final Program EIR/EIS* (Section 1-2), September 2007.

operations for all four rail operators (COASTER, Amtrak, Metrolink and BNSF) in the corridor. Like double-tracking, these projects would increase capacity and decrease conflicts, which would result in better reliability and shortened travel times, ultimately making the choice to take transit a more attractive option. In addition, the program features enhanced pedestrian crossings, vehicle crossing improvements, and rail bridge replacements to improve safety and accessibility. Finally, station and parking improvements at NCC stations would increase passenger capacity, enhance quality of service, and improve access to coastal rail services. Such improvements also serve to enhance the passenger experience, which may contribute further to increased ridership.

Taken together, these infrastructure enhancements would bring multiple benefits to the NCC. The planned improvements would:

- Allow the COASTER to operate with 20-minute peak-period frequency, which would result in as many as 54 COASTER trains per day, versus 22 trains per day under current conditions (including additional weekend and off-peak service).
- Allow the COASTER to reduce corridor travel time by several minutes in each direction (Table 3B-3).
- Allow both the COASTER and Metrolink commuter rail services to extend their operations across county lines, providing more options for commuters in both the San Diego and Los Angeles areas.
- Provide increased capacity for interregional rail (Amtrak's Pacific Surfliner) on what is currently the nation's second-busiest intercity passenger rail corridor, allowing for more daily trains and shorter travel times.
- Allow interregional rail to add limited-stop or express trains during peak periods, increasing travel options and decreasing travel times for longer-distance trips.
- Provide increased capacity and enhanced travel times for freight rail carriers.
- Make it easier and more convenient for park-and-ride passengers to access stations.
- Increase COASTER ridership from 6,000 to 12,900 passengers per day, with capacity to accommodate up to 35,100.² This potential capacity equates to approximately two lanes of traffic being diverted from I-5 during the peak period.³

A new ride-sharing agreement between NCTD and Amtrak extends COASTER service to select Pacific Surfliner trains. Begun in October 2013, the program requires 6 Pacific Surfliner trains per day (3 in each direction) to stop at all COASTER stations in the NCC, rather than just at Oceanside and Solana Beach. Any passenger with a paid COASTER fare can ride these Amtrak trains at no extra cost. This effectively increases the frequency of COASTER service, providing better access to and from the NCC and further maximizing the capacity of the LOSSAN rail corridor.

As noted, the primary interregional rail service in the NCC is Amtrak's Pacific Surfliner. However, the Los Angeles-based Metrolink commuter rail system also serves the San Diego region with a single connection at Oceanside. Coordination efforts are currently underway to increase interregional rail access by allowing both Metrolink and the COASTER to travel farther across county lines in the south and north directions, respectively. This service enhancement, which depends on the aforementioned

² Current ridership from *SANDAG Coordinated Plan 2012-2016* (Appendix C), July 2012. Ridership and capacity projections from SANDAG modeling and staff estimates, April 2011 and May 2012.

³ Assume: 35,100 daily rider capacity; 75% of rail trips occur during the 6 hours of peak periods (20 min frequency during the peak, 60 minute frequency off-peak); lane capacity of 2,000 vehicles per hour; 1.28 average vehicle occupancy in general-purpose lanes (from SANDAG regional modeling data furnished April 2012). Calculation: $35,100 \times 0.75 = 26,325$ rail trips during peak periods; $26,325/6 = 4,388$ rail trips per peak hour; $4,388/1.28 = 3,428$ car trip equivalent; $3,428/2,000 \approx 1.7$ lanes of traffic.

rail corridor improvements, would provide new travel options for interregional travelers to access the various coastal communities between Los Angeles and San Diego counties.

In the shorter term, the transportation agencies are also working on better connection coordination between the arriving and departing COASTER and Metrolink trains at Oceanside. This would not only better align the timing between the two services, but would also allow cross-ticketing and marketing programs between COASTER and Metrolink. Once enacted, these enhancements would allow for smoother transitions between the NCC rail services, resulting in better interregional travel times and more options for travelers.

New BRT Services

The 2050 RTP includes the Mid-City to Palomar Airport Road BRT service, a new “reverse-commute” BRT on I-5 that would serve the peak-period commute trip between the high-density Mid-City residential area in central San Diego and the Palomar Airport Road business park in the NCC.⁵ Like the planned improvements to LOSSAN rail service, this new BRT line would help relieve congestion and reserve capacity on I-5 for other users, including visitors and recreational travelers who are not easily served by transit. However, as with the BRT services currently operating on I-15, implementation of BRT on I-5 is wholly dependent upon the construction of the planned Express Lanes.

Improvements to Local Bus Service

The 2050 RTP also includes enhancements to existing local bus transit in the corridor, including increases in operating funding for future, more frequent service to rail stations and coastal destinations. While the PWP/TREP does not directly include local bus service, the 2050 RTP includes an increased commitment of operating funds for local buses both within the NCC and across the region.⁷ While many transit dollars are earmarked for the region’s higher-density communities, North County Transit District (NCTD) would receive a share of the region’s operating funds to sustain and enhance its bus transit services in the NCC. Access to COASTER service remains a priority for both NCTD and the Metropolitan Transit System (MTS), and travelers can expect various enhancements to the 17 local bus routes that serve the NCC’s 6 COASTER stations. (See Figure 3A-8 for a graphical depiction of the existing COASTER-oriented services, including ridership and frequencies.) Future enhancements could include higher frequencies, extended operating hours, and other improvements. The 2050 RTP also includes specific funding to increase service frequencies to 15 minutes or better in key bus corridors, but at this stage it has not been determined how NCC routes may benefit from this augmentation.

The 2050 RTP also includes improvements to existing local bus service along Coast Highway. The Coast Highway bus transit improvements would be integrated and coordinated with multimodal improvements planned for Coast Highway by the cities along the corridor, creating vibrant coastal communities that are accessible by transit, bicycle, foot and auto. The envisioned transit enhancements along Coast Highway include increased service frequencies and a menu of potential roadway features to facilitate transit operations such as fewer stops, dedicated transit lanes, traffic signal priority, and intersection queue jumps (short dedicated lanes approaching intersections that would allow buses to advance to the intersection ahead of other vehicles stopped at traffic signals). The multimodal components of Coast Highway improvements would facilitate access to transit through implementation of sidewalk improvements, bicycle lanes, and traffic-calming techniques, and would promote the attractiveness of transit through landscaping, urban design, and amenities at bus stops such as embellished shelters and real-time next-vehicle arrival signs. Coast Highway bus transit improvements could include overlay rapid service with fewer stops than the parallel local service to

⁵ SANDAG 2050 RTP (Chapter 6), October 2011.

⁷ Ibid., Appendix 5.

decrease total trip time for longer-distance passenger trips. Ongoing coordination among SANDAG, NCTD and the coastal cities will define the optimum transit service and infrastructure enhancements within the Coast Highway multimodal corridor.

3B.1.1.3 Highway Vision

SANDAG and Caltrans aim to increase the capacity of I-5 in a way that moves people—not simply vehicles—more efficiently and effectively. The vision and purpose of the proposed highway improvements, as defined in the I-5 NCC Project Draft EIR/EIS, is:

“... to maintain or improve the existing and future traffic operations along I-5 in the North Coast Corridor in order to improve the safe and efficient regional movement of people and goods for the project design year of 2050.”⁸

This vision has its foundation in SANDAG's highway strategy, detailed in the 2050 RTP, which focuses on a system of Express Lanes throughout the region, including the NCC. Express Lanes (sometimes called Managed Lanes) are HOV lanes that, in addition to providing uncongested travel for carpools, vanpools and transit vehicles, allow for excess capacity to be allocated to SOVs through variable pricing. Express Lanes are highly efficient for managing highway operations, as they prioritize HOV travel while allowing unused lane space (which would otherwise be wasted) to be occupied.

HOVs and transit vehicles have priority in Express Lanes, meaning that SOVs would be allowed to enter only when excess capacity exists. The SOV access fee—posted at lane entrances and paid electronically via transponder—would vary based on real-time traffic conditions; as the Express Lanes approach a congested state, the fee would increase to discourage SOVs from entry.⁹ With real-time monitoring of traffic conditions and these variable pricing methods, the Express Lanes would preserve free-flow speeds and reliable travel times, even as the rest of the highway becomes congested, providing unconstrained access to the coast and through the corridor for many travelers. A similar system has already been implemented successfully on San Diego's parallel inland I-15 corridor.

Express Lanes on I-5 would provide travelers with the option to save time and money by carpooling rather than driving alone on congested freeway general-purpose lanes. They would also offer SOV drivers the choice to save time for a user fee, generating funds that can be used to further improve the transportation system, including funds that could be applied to planned BRT service that would travel on the Express Lanes in the corridor. California Assembly Bill 2032 (AB 2032) initially authorized the designation of certain California highway lanes as Express Lanes, referred to in the legislation as high-occupancy/toll (HOT) lanes. In authorizing the facilities, the Legislature found that these lanes:

“(b) ... provide an additional choice for users... Research has illustrated that utilizing an HOV lane for a fee with assured reliable time savings is valuable to persons across the income spectrum. The income profile of HOT lane users does not differ greatly from that of adjacent mixed-flow lanes.

(d) By providing the consumer a choice of paying a direct user fee for utilizing the unused capacity of the transportation system during peak periods, HOT lanes establish an equitable means of assessing a fee that is directly related to the burden placed on the transportation system...”

AB 2032 cites additional benefits that Express Lanes can have on highway corridors, including reducing congestion and travel time across all lanes, as well as the potential to finance congestion relief measures. As the authorizing legislation states, express/HOT lanes:

⁸ I-5 NCC Project Supplemental Draft EIR/EIS (Section 2.1), August 2012.

⁹ Non-fee users of the Express Lanes would not be required to have transponders.

“(c) ...create an alternative mechanism for financing transportation projects... used for transit services, highway maintenance, and other improvements...

(f) HOT lanes increase the efficiency of the transportation system by taking advantage of existing capacity without forfeiting the congestion mitigation and air quality benefits provided by HOV lanes.

(g) Revenue... reinvested in projects and services that provide traffic congestion relief.”

While Express Lanes would provide a revenue-generating source for transit and transportation improvements to HOV facilities, their primary objective would be to shift SOV drivers to carpools and transit with the incentive of free-flow travel. Far from being an expansion that suits only the needs of drivers, the addition of Express Lanes would also serve as an essential enabler of public transportation. By giving priority to buses and other HOVs, Express Lanes, and associated access to them at Direct Access Ramps (DARs), would make public transit possible; because this new infrastructure would support reliable, congestion-free trips, I-5 would be able to accommodate transit services like express buses and the planned BRT (see Section 3B.1.12). Comparable transit services already operate in the Express Lanes of the region's I-15 highway. Still, the flexibility of Express Lanes would allow for the implementation of many different access rules for SOVs, such as periods of HOV-only or freight-only traffic. However, the restriction of fee-paying SOVs from Express Lanes (for example, in favor of delaying requirements that HOVs contain three or more travelers) must be balanced against the revenue generated by SOVs that supports transit operations on the facility and in the corridor. In addition, the ability to change Express Lane access rules would depend on a combination of regional and state policies and would require the coordination and approval of several agencies, which must consider travel demand, facility capacity, revenue potential, and funding needs.

During peak periods, one Express Lane can be expected to carry nearly 70% more people than one general-purpose lane.¹⁰ This confers a clear benefit over traditional highway designs by providing major capacity enhancements within a relatively minor footprint. While the region is hoping to realize a significant increase in the NCC's transit mode share (see Chapter 2), even under the most optimistic projections, the majority of future travel demand would still be placed on the highways. SANDAG's Express Lanes strategy would go the furthest in helping the region accommodate the future demand on I-5—and maximize the value of its highway investment—by getting the most person-carrying capacity out of highway expansion.

Corridor mean travel times under current and future conditions during peak periods are shown in Table 3B-3. When I-5 is uncongested, it takes 23-25 minutes to traverse the 27-mile route from La Jolla Village Drive in San Diego to Harbor Drive in Oceanside. This same northbound trip currently takes 34 minutes during the PM peak period and is expected to take a congestion-ridden 70 minutes by 2040 without any improvements to the highway. Even with the planned improvements, travel time in 2040 is projected to be 45 minutes in the general-purpose lanes, indicating that the improvements would not even keep up with projected growth in demand (but would be vastly better than the No Build condition). In the new Express Lanes, however, PM peak travel would be nearly congestion-free, requiring just 28 minutes. In addition, planned enhancements to the LOSSAN rail corridor would allow the COASTER to make the same trip in 32 minutes in 2040, which would be an improvement of 5 minutes over the No Build Alternative.

¹⁰ SANDAG regional modeling data (furnished by SANDAG, April 2012) reveals average vehicle loads of 2.13 people/vehicle in Express Lanes and 1.28 people/vehicle in general-purpose lanes, and an overall lane capacity of 2,000 vehicles/hour. At capacity, Express Lanes therefore can be expected to carry 4,260 people/hour, while general-purpose lanes would carry 2,560 people/hour. $4,260/2,560 = 166\%$.

TABLE 3B-3: MEAN WEEKDAY PEAK TRAVEL TIMES (MINUTES), I-5 AND COASTER FROM LA JOLLA VILLAGE DRIVE TO HARBOR DRIVE

Time/ Direction	Interstate 5				COASTER*		
	2010	2040 No Build	2040 General-Purpose Lanes	2040 Express Lanes	2010	2040 No Build	2040 Improved
AM Peak Period							
Northbound	23	37	26	24	33	37	32
Southbound	36	54	36	24-26	33	38	30
PM Peak Period							
Northbound	34	70	45	28	33	37	32
Southbound	34	40	30	24-25	33	38	30

Source: Caltrans Performance Measurement System (PeMS); SANDAG/Caltrans Series 11-based Micro-Simulation Model, August 2010.

* COASTER times represent travel between Oceanside and Sorrento Valley Stations.

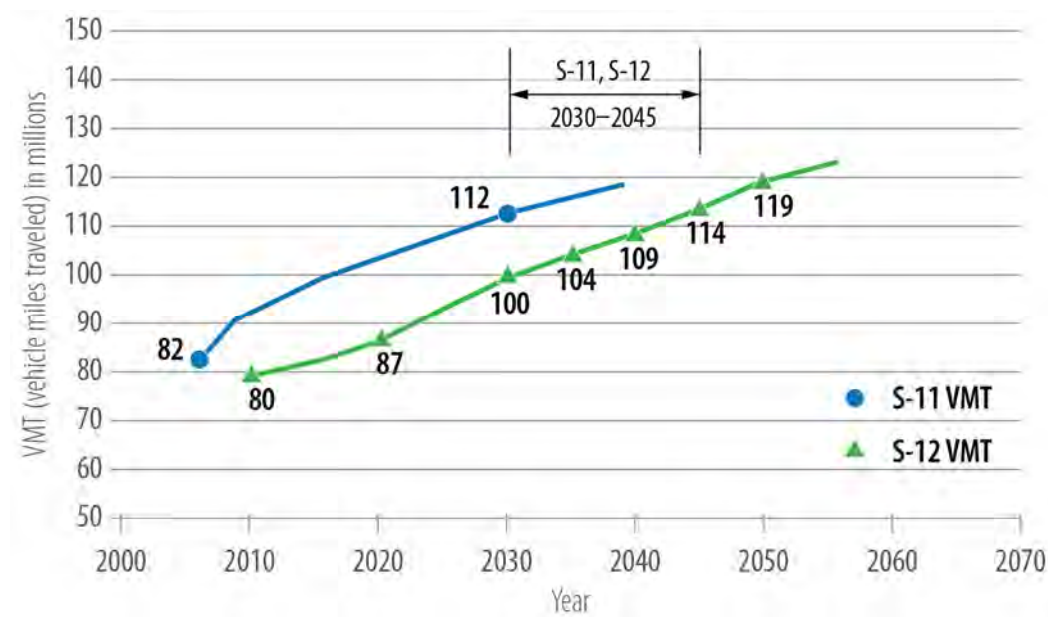
Note:

The primary transportation analysis and forecasting tool that is used in the San Diego region is the SANDAG Regional Transportation Model (RTM). The RTM projects future travel demand on the region's transportation system by analyzing local land use as well as the projected growth in regional demographics such as population, employment, and housing. The Series 11 RTM, which was the basis for SANDAG's 2030 Regional Transportation Plan (RTP), projected regional travel demand to the year 2030 in metrics such as Vehicle Miles Traveled (VMT) and Average Daily Traffic (ADT). The subsequent Series 12 model, used to develop SANDAG's 2050 RTP, projected these data to the year 2050. Additionally, during the NCC planning process that led to the 2010 Draft PWP/TREP, a specialized micro-simulation model based on Series 11 data was developed to provide NCC-specific projections of corridor travel time and congestion for the year 2030.

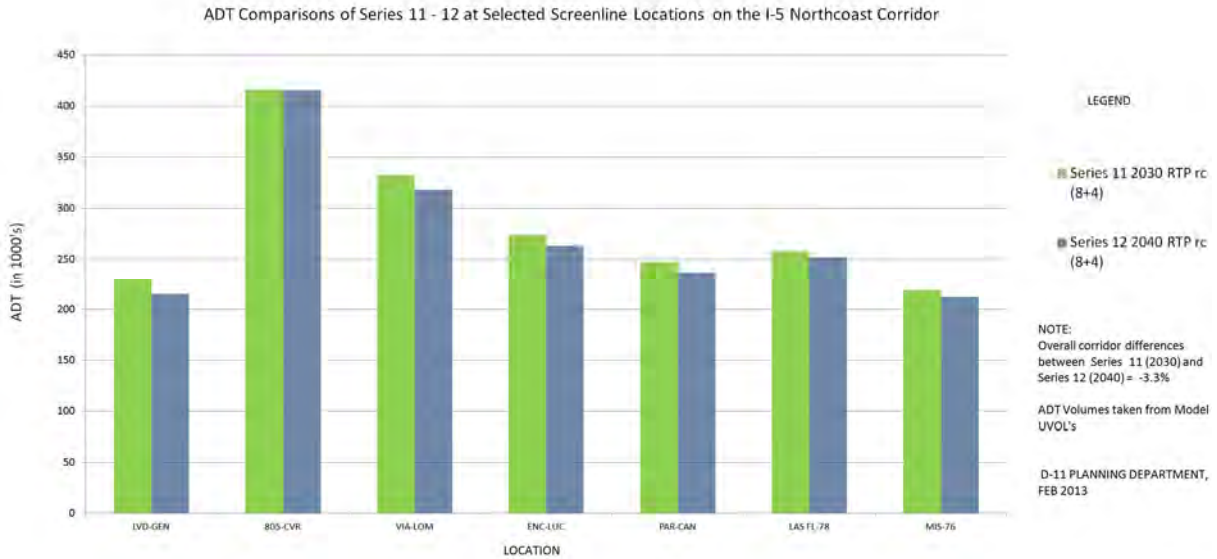
A comparison of key measures from the Series 11 and Series 12 RTMs indicates that the Series 11 travel demand forecast for the year 2030 is generally equivalent to the updated Series 12 travel demand forecast for the years 2040-2045. In other words, the growth in both population and travel demand that had originally been anticipated by 2030 is now projected to occur at least a decade later than previously forecast.

In terms of regional demographics, projections underlying the Series 11 RTM showed that the region would add approximately 1 million people by 2030. However, the updated projections that contributed to the Series 12 RTM show that this growth will now occur around 2040.

In terms of travel demand, both VMT and ADT show similar patterns. The figure below demonstrates that the Series 11 regional VMT projection for 2030 is roughly equivalent to the Series 12 regional VMT projection for 2045.



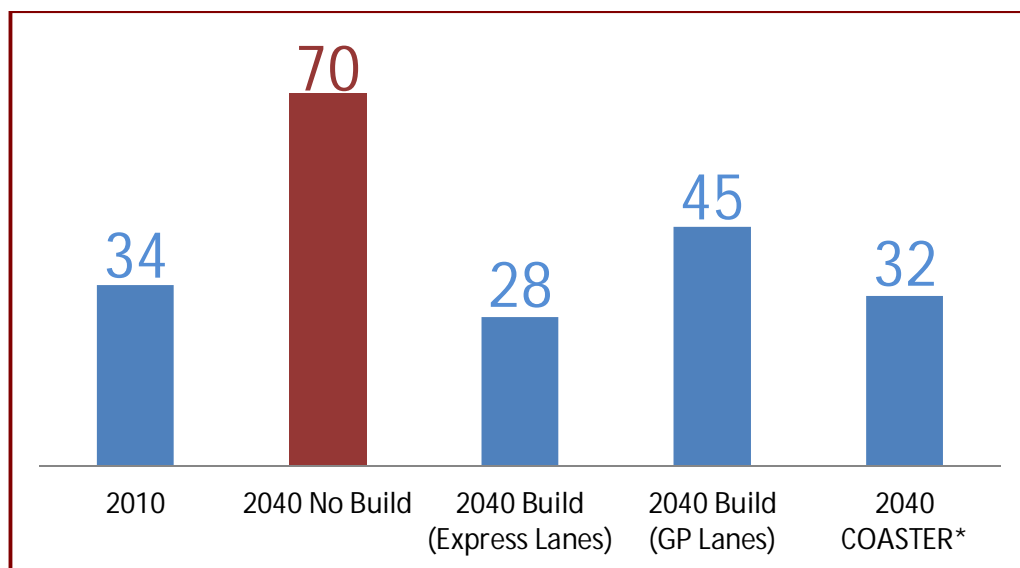
Additionally, the ADT comparison below indicates that, at points along I-5 throughout the NCC, Series 12 projected ADT for 2040 is slightly lower than, or generally equivalent to, Series 11 projected ADT for 2030. (Series 12 projected ADT for 2050 is slightly higher than the 2040 projections, reflecting some growth beyond 2040.)



As a result of this comparison of regional population and travel demand between Series 11 and Series 12, it can be reasonably concluded that the 2030 travel time and congestion forecasts developed for the NCC under the Series 11-based micro-simulation model are valid forecasts for 2040 for the corridor, and therefore these two metrics are presented as 2040 forecasts in the PWP/TREP.

Figure 3B-1 is a graphical depiction of the projected travel times during the PM peak period in the northbound direction.

FIGURE 3B-1: WEEKDAY NORTHBOUND PM MEAN TRAVEL TIME (MINUTES), FROM LA JOLLA VILLAGE DRIVE TO HARBOR DRIVE, 2010 AND 2040



Sources: Caltrans Performance Management System; SANDAG/Caltrans Series 11-based Micro-Simulation Model, August 2010; SANDAG/Caltrans Series 12 Model, November 2011.

* COASTER times represent travel between Oceanside and Sorrento Valley Stations.

Far from simply benefiting highway drivers, Express Lanes in the NCC would provide benefits to the entire corridor's transportation system, including:

- **Faster Travel Times** – An Express Lane trip through the entire corridor is projected to be 17 minutes faster in the afternoon peak period than a trip on the general-purpose lanes in 2040.
- **Reliable Travel Times** – Because the price for SOVs increases as traffic volumes on the Express Lanes increase, the lanes are managed to guarantee free-flow travel for HOVs, resulting in predictable and reliable travel for Express Lane trips.
- **Expanded Highway Capacity** – At capacity, Express Lanes are expected to carry nearly 4,300 people per hour during peak periods, compared to approximately 2,600 people per hour in a general-purpose lane, providing an efficient approach for expanding the capacity of the highway (moving people vs. cars).¹¹
- **Future Transit Infrastructure** – Free-flow lanes are essential to the success of transit services like BRT and highway express buses. Express Lanes on I-5, similar in concept to those already constructed on I-15, would provide the necessary facility for these future routes.
- **Source of Revenue** – In accordance with SB 468, revenues from paying SOV users of the Express Lanes (in excess of administrative and operating costs) will be used in the I-5 corridor for the improvement of HOV facilities and transit services.

¹¹ SANDAG regional modeling data (furnished by SANDAG, April 2012) reveals average vehicle loads of 2.13 people/ vehicle in Express Lanes and 1.28 people/vehicle in general-purpose lanes, and an overall lane capacity of 2,000 vehicles/ hour. At capacity, Express Lanes therefore can be expected to carry 4,260 people/hour, while general-purpose lanes would carry 2,560 people/hour.

- **Flexibility** – The ability to manage the use and vehicle composition of Express Lanes provides great flexibility for changing the way they are used in the future. Changes could respond to shifts in technology, land use, travel patterns, travel demand, economic conditions, and other travel characteristics; changes could include requiring higher vehicle occupancy and greater use of transit, or creating a truck route during certain times of day.

Although Caltrans recently extended the I-5 HOV lane (one in each direction) north to Lomas Santa Fe Drive/Manchester Avenue, most of the corridor does not have HOV facilities. SANDAG and Caltrans envision four Express Lanes for the NCC—two in each direction. The Express Lanes would be in the median of the highway, accessible at designated points from general-purpose lanes and via direct access ramps (DARs) from arterial streets at key locations. DARs would provide priority, unimpeded access to Express Lanes to further encourage carpool and transit use. To complement the Express Lanes, the following operational improvements are being considered for the highway corridor:

- Operationally improving general-purpose lanes at 13 locations through the addition of auxiliary lanes between on- and off-ramps, as well as various safety improvements.
- Improving traveler information to alert travelers to traffic conditions so that they can make informed decisions about routes and time of travel.
- Managing and integrating systems, including interconnecting ramp meters.

3B.1.1.4 Bicycle and Pedestrian Vision

The corridor vision for bicycle and pedestrian routes and trails includes an extensive network that provides access to the beaches, lagoons, open spaces, and coastal communities of the NCC. Local roads cross I-5 at 32 locations within the corridor, and many of these crossings are narrow and unaccommodating for bicycles and pedestrians, inhibiting their access to coastal resources. These limited crossings also reduce bicycle and pedestrian access to the Coastal Rail Trail, a separated facility adjacent to the LOSSAN rail corridor that is being developed throughout the NCC, as well as other regionally significant bicycle and pedestrian routes.

As part of the PWP/TREP planning process, and pursuant to California Senate Bill (SB) 468, SANDAG and Caltrans undertook a Safe Access to Transit and Coastal Resources (SATCR) study to identify various gaps or barriers within the regional and local bicycle and pedestrian networks that limit bicycle and pedestrian access to transit services and coastal resources in the NCC. The study informed the planning process and resulted in the incorporation of bicycle and pedestrian improvements into the PWP/TREP—particularly improvements across and parallel to the highway and rail corridors—to be implemented concurrently with the highway and rail projects. As overcrossings are rebuilt and undercrossings are widened to accommodate the new highway footprint, many existing pedestrian and bicycle facilities would be upgraded and new facilities would be added. Pedestrian and bicycle routes across lagoons would be similarly integrated into highway improvements. Additionally, the LOSSAN rail corridor would benefit from new pedestrian bridges and improved crossings that would provide safe and convenient ways for pedestrians and bicycles to cross the tracks, better connecting communities to the Coastal Rail Trail and area beaches. The SATCR report is included as Appendix A of the PWP/TREP.

Beyond establishing better connections with the Coastal Rail Trail, the PWP/TREP improvements also include completing several segments of the Coastal Rail Trail within the NCC. Caltrans and SANDAG have identified several planned Coastal Rail Trail segments within the LOSSAN rail right-of-way as projects to be included in the NCC program. These projects, which are discussed further in Section 4.4 and Section 5.3, would construct more than 7 miles of the Coastal Rail Trail in the cities of Encinitas

and Carlsbad. Where feasible, these Coastal Rail Trail segments would be built concurrently with adjacent track projects in the LOSSAN rail right-of-way,

The full range of bicycle and pedestrian improvements is not limited just to crossings, but also includes streetscape enhancements, trail connections, trailheads, and recreational staging areas. Additionally, the program of improvements would also include construction of the I-5 North Coast Bike Trail—a new facility running the entire length of the corridor roughly parallel to the highway that would complement the existing Coast Highway, Coastal Rail Trail, and the California Coastal Trail. The trail would consist of both separated and shared bicycle facilities and would be located partially in the Caltrans right-of-way (adjacent to I-5) and partially on adjacent city streets. Caltrans has worked with the local cities to determine the most beneficial alignment for this shared facility.

SANDAG's 2050 RTP contains \$2.6 billion for an Active Transportation Program that seeks to improve bicycle and pedestrian facilities across the region, including the NCC. The program includes a Regional Bicycle Plan that encourages the development of a unified bicycle system throughout the San Diego region that serves the diverse needs of bicycle riders by providing connections between activity centers, transit facilities, and regional trail systems. One focus of this plan is to improve bike and pedestrian network connectivity by providing links to the region's major bicycle facilities—including the Coastal Rail Trail as well as the future I-5 North Coast Bike Trail in the NCC. By addressing existing barriers to east-west pedestrian and bicycle travel, the enhancements in the PWP/TREP would help further this regional goal, while simultaneously improving access to coastal resources, LOSSAN rail corridor stations, and other community facilities.

The PWP/TREP includes replacement overcrossings at 20 locations, a new overcrossing at 1 location, and widened undercrossings at 11 locations—all of which would result in improvements over existing conditions. Among the 32 projects, and accounting for bicycle and pedestrian facilities separately:

- 2 would maintain the current sidewalk facilities.
- 24 would improve sidewalks over existing conditions.
- 10 would add new sidewalks or pedestrian crossings where none currently exist.
- 17 would maintain the current bicycle facilities.
- 13 would improve bicycle facilities over existing conditions.
- 1 would add new bicycle facilities or crossings where none currently exist.¹²

3B.1.1.5 Other Strategies to Minimize Highway Expansion

SANDAG and Caltrans understand that the region cannot build its way out of congestion and have therefore adopted several strategies to focus on managing demand. Population and travel demand will continue to grow in the NCC with or without highway or transit improvements, and SANDAG's goal is to accommodate the growth in the most efficient way possible, minimizing costs as well as environmental impacts.

I-5 was constructed in the late 1960s and 1970s. In the past 40 years, travel demand in the NCC has increased significantly, but capacity improvements on I-5 have been limited and the footprint of the highway has changed little. Improvements to I-5 in the NCC have included the interchange with the I-805 merge, the addition of HOV lanes in the southern portion of the corridor, and operational improvements such as variable message signs and ramp meters. In the absence of major highway

¹² The sum of these figures exceeds 30 because they account for crossings that contain both pedestrian and bicycle facilities, as well as crossings that provide improvements on one side and new facilities on the other.

expansion in the corridor, the region has focused on a variety of strategies that work together to manage the growth in demand and address the multiple needs of travelers. Without these ongoing strategies, many more freeway lanes than currently planned would be required to meet future forecasted travel demand. Instead, the ongoing and future approach includes the following major components:

- **Transportation Demand Management (TDM)** – TDM strategies have been and would continue to be an important method to reduce travel demand in the corridor by encouraging use of bus, carpooling, and other alternative modes. TDM strategies take advantage of (and help build a customer base for) alternative modes by removing obstacles and providing information and incentives to travelers to make it easy for them to reduce trips, reduce travel at the most congested times, or shift altogether from single-occupant driving.

On a regional level, SANDAG implements TDM through its iCommute program. The program assists commuters by providing free carpool and ride-matching services, a subsidized vanpool program, transit solutions, regional support for bicycling, the Guaranteed Ride Home program for regular transit commuters, and the SchoolPool carpooling program for parents. iCommute also provides free assistance to local businesses, helping them develop and implement customized employee commuter benefit programs that lower costs, increase productivity, and help the environment.

In addition to the regionwide emphasis of the iCommute program, the 2050 RTP also requires the development of corridor-specific TDM plans to address the varied needs and demands of the region's distinct corridors and communities. Together, SANDAG and Caltrans are developing a comprehensive TDM plan for the NCC that seeks to 1) manage congestion during construction of NCC rail, transit-highway and roadway projects; and 2) act as a foundation for continued travel behavior changes in the corridor once construction is complete. The first phase in development of this plan is extensive market research and analysis of existing conditions—including all trip markets—by surveying and interviewing employers, commuters, schools, cities, and major institutions to identify the best opportunities for TDM programs and services in the corridor. Following this initial analysis, a comprehensive TDM plan that features customized strategies for the NCC would be developed to include tailored financial incentives to encourage travel behavior, public outreach to corridor residents and institutions, and performance monitoring to measure the program's effectiveness.

- **Transportation Systems Management (TSM) and Operational Improvements** – TSM is a strategy to increase highway capacity without major capital investment, by enacting various operational improvements that increase system efficiency. These include construction of new auxiliary lanes on the outside of the freeway that would connect on- and off-ramps and allow for acceleration, deceleration, and merging—often the causes of traffic bottlenecks and congestion. Other improvements include Intelligent Transportation System (ITS) features (such as variable message signs) that provide real-time information for drivers to make informed decisions on travel routes, and corridorwide ramp meters at highway entrances to help regulate the flow of incoming traffic. Various corridor interchange improvements help eliminate or minimize bottlenecks in the transportation system. Additional detection, monitoring, and communications infrastructure would allow for incident response and active management of the highway.

3B.1.2 Coastal Communities Vision

3B.1.2.1 Local Streets and Neighborhood Enhancements

While the deficiencies arising from congestion may be most visible on I-5, the effects are not limited solely to the highway. Highway congestion often causes regional and interregional trips to “spillover” onto local streets, as frustrated travelers exit the highway in search of less-congested routes. This results in through traffic using coastal access routes and local streets in attempts to bypass congestion, which negatively affects the character of these coastal communities as well as access to coastal resources. The improvements in the PWP/TREP are intended to protect community character by alleviating spillover traffic demand within the NCC’s coastal communities. In addition, the improvements on I-5 would help support community goals to implement traffic calming and pedestrian enhancement measures along Coast Highway. As noted in Section 3A.1.3.3, most of the cities in the corridor are proceeding with “complete streets” projects on Coast Highway, which provide for multimodal use and include automobile-lane reductions, in an effort to slow traffic and enhance the environment for pedestrians and bicyclists. These streetscape projects will promote nonautomobile circulation, access to transit and coastal amenities, and quality of life in the corridor. However, they are also likely to divert even more traffic onto I-5, compounding the need for capacity enhancement on the highway,

Finally, the PWP/TREP provides an opportunity to preserve the character of coastal communities through protection of open space areas and neighborhood enhancement projects. These include new and improved bike routes and pedestrian paths that would not only increase connectivity between neighborhoods, but would also enhance community access to and along the coast.

3B.1.2.2 Minimize Energy Consumption and Air Emission

The suite of projects has been developed to respect and enhance the environment; reduce greenhouse gas (GHG) emissions from vehicles and continue to improve air quality in the region; and make transportation investments that result in healthy and sustainable communities.

To comply with SB 375, the California Air Resources Board (CARB) has set regional targets for GHG emissions from passenger cars and light-duty trucks. The projects in the PWP/TREP reduce or eliminate traffic congestion during peak periods of demand, managing the transportation system through measures that maximize the efficiency of the transportation network, and implementing measures designed to reduce GHG emissions and traffic congestion during peak periods of demand. The CARB targets for the San Diego region are a 7% per capita reduction in GHG emissions from passenger cars and light-duty trucks by 2020 and a 13% reduction by 2035 (compared with a 2005 baseline). The region’s 2050 RTP/SCS would meet the targets for 2020 and 2035. Implementation of the 2050 RTP and SCS would result in a 14% reduction in emissions by 2020, and a 13% reduction by 2035. Free-flow travel in the NCC would result in less exhaust emissions per vehicle than congested traffic. The free-flow condition of the Express Lanes and anticipated congestion reduction (reduced delay) on corridor general-purpose lanes would help reduce emissions per traveler in the corridor. A higher percentage of travel by HOVs would lead to fewer emissions per person-trip and correspondingly fewer GHGs emissions in the corridor.

In addition to contributing to the region’s achievement of GHG emission reduction targets identified in the 2050 RTP, the PWP/TREP capitalizes on additional opportunities to minimize energy consumption and reduce emissions by first comprehensively assessing transportation demands of the NCC, and then strategically balancing transportation investments in the NCC’s critical transportation corridors to meet those needs. The PWP/TREP includes a smaller set of transportation projects than those included in the 2050 RTP, and is a unique corridor in which infrastructure improvements to the parallel

LOSSAN rail and I-5 highway facilities may be planned, phased, and implemented to include expanded and enhanced non-vehicular transportation improvements (bicycle and pedestrian routes) specifically designed to meet the multimodal needs of the NCC while further minimizing vehicle miles traveled and corresponding energy consumption and air emissions.

3B.1.2.3 Facilitate Smart Growth, Multimodal Transportation and Economic Sustainability

A primary goal of the 2050 RTP is to ensure that the region's transportation system promotes environmental sustainability and fosters efficient development patterns that optimize travel, housing, and employment choices. A guiding theme for the 2050 RTP and SCS is to create communities that are more walkable, transit-oriented, and compact, thereby providing transportation options and lowering GHG emissions, and improving public health. By focusing future development on urban infill and redevelopment and improving accessibility to jobs, housing, education and recreation opportunities, the region is focused on establishing efficient land use patterns that contribute to reductions in GHG emissions, meeting San Diego's GHG targets, and reducing VMT. The goal of focusing development and infrastructure improvements in already developed areas is also supported by Coastal Act Section 30250:

(a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources.

The NCC area contains more than a dozen planned and potential Smart Growth areas, including those located at each of the LOSSAN rail corridor stations, with the exception of Sorrento Valley Station. Smart Growth areas consist of higher-density, mixed-use developments that are pedestrian friendly and transit oriented. In collaboration with SANDAG, local jurisdiction have committed to focusing projected growth in identified Smart Growth areas to enable SANDAG to coordinate regional transportation infrastructure and services with land use plans to help avoid increased traffic congestion, reduced mobility, and a deteriorating quality of life. SANDAG's sustainability strategy uses transportation investments (or "Smart Growth carrots") to encourage growth and development in urbanized areas and away from open spaces and sensitive environmental resources. Additionally, SANDAG's transit investments attempt to put transit where it is most likely to succeed by focusing effort in areas with land uses that support strong transit ridership. These roadway and transit investments would discourage sprawl by implementing projects in urban and suburban areas and not rural areas. In addition to focusing development away from natural environments and open space, experience and research have found that a higher proportion of trips are made by transit, foot, and bike in these Smart Growth areas.

3B.1.3 Water Quality and Sensitive Habitats Vision

The California Coastal Commission has the responsibility to "Protect, conserve, restore, and enhance environmental and human-based resources of the California coast and ocean for environmentally sustainable and prudent use by current and future generations." The beaches, lagoons, state parks, recreational facilities, and other coastal resources in the NCC are regional and statewide assets that shape the character of the natural and built environment along the coast. As residents and the agencies responsible for these resources look toward the future, they desire and are required to protect and enhance these assets and resources for human enjoyment and environmental preservation.

3B.1.3.1 Improve Water Quality

The Coastal Act requires that marine resources be maintained, enhanced, and restored and that special protection be given to areas and species of special biological importance or economic significance. The Coastal Act further requires that use of marine environments sustain the biological productivity and qualities of coastal waters and streams, and maintain healthy populations of all species and marine organisms. The Coastal Act also mandates that the biological productivity and the quality of coastal waters and streams be maintained and, where feasible, restored through means such as minimizing adverse effects of stormwater runoff, minimizing alteration of natural streams, and by maintaining natural buffer areas that protect riparian habitats.

Every coastal and inland waterbody in the corridor provides benefits in terms of flood relief, and potentially provide Environmentally Sensitive Habitat Areas (ESHA) and other habitats that support threatened and endangered species, migratory birds, fish, large mammals, and many different wildlife species. The PWP/TREP program of improvements, including implementation of a comprehensive Resource Enhancement Program (REP), provides an opportunity to restore and maintain water quality throughout the corridor's watersheds, which is essential to the protection of these sensitive coastal resources.

3B.1.3.2 Restore Lagoons

Lagoons provide significant benefits in their respective watersheds for flood relief, water quality, and maintenance of ESHAs that support threatened and endangered species, including migratory birds, fish, large mammals, and many different wildlife species. In addition, where associated with major open space and adjacent habitat preservation areas, the corridor lagoons provide critical habitat linkages and wildlife corridors in a coastal region that has experienced rapid population growth and urbanization over the last several decades, resulting in fragmentation of natural habitats. The corridor lagoons also provide exceptional open space and scenic resources, and public recreational resources with trail systems, interpretative areas, wildlife observing opportunities, and, in some cases, wide expansive beach areas where the lagoons meet the Pacific Ocean.

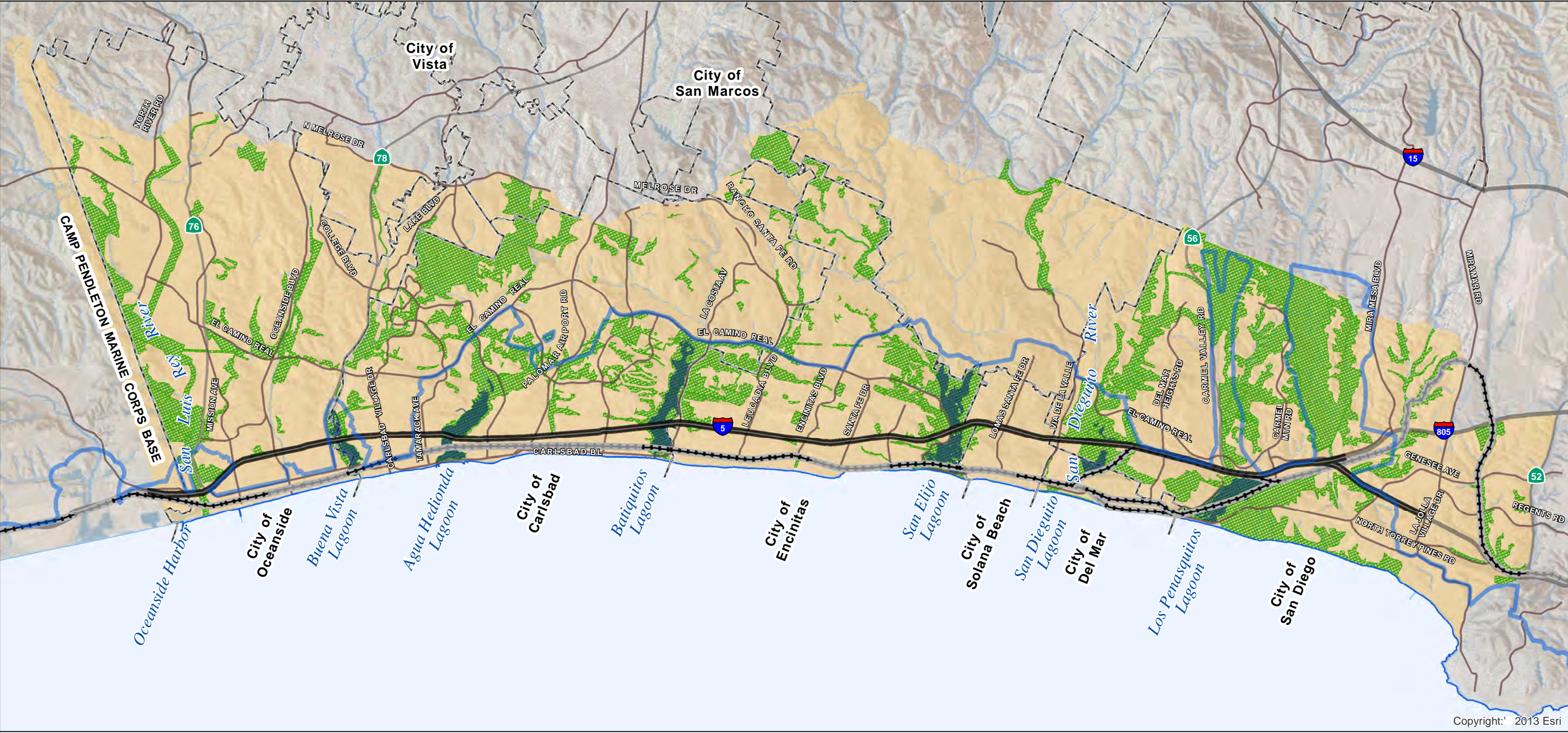
Many of the lagoons have been the subject of past and ongoing restoration programs and significant restoration efforts for San Elijo and Buena Vista Lagoons are currently in the planning phase, with alternatives identified and environmental and technical studies underway. There is the potential to restore tidal circulation in each of these lagoons as part of the restoration programs being considered, which would significantly improve the ecological health of the lagoons and adjacent areas and, in turn, better support ESHAs, degraded habitats, special-status species, and wildlife. Additionally, optimization studies have been conducted within these lagoon systems, and at Batiquitos Lagoon, to ensure design of bridge crossings maximizes hydraulic functions, minimizes fill, improves wildlife connectivity and does not preclude any potential future restoration alternative. The lagoon conservancies, resource agencies, the Coastal Commission, and the PWP/TREP place a high priority on progress toward ultimate restoration and long-term maintenance of these and all lagoons in the corridor.

The REMP also includes an endowment component that is intended to increase the capacity for long-term management and sustainability of the Batiquitos and Los Peñasquitos Lagoons and to support stewardship of these resources in perpetuity. This endowment includes funding for maintenance of lagoon inlets and channels deemed necessary to sustain tidal and fluvial flows and to reduce sedimentation within the lagoons, thereby sustaining ongoing lagoon restoration efforts.

3B.1.3.3 Enhance and Expand Natural Habitats

The Coastal Act requires that ESHAs be protected against significant disruption of habitat values, and that proposed development adjacent to ESHAs and parks be designed to prevent adverse impacts to those areas and be compatible with their continuance. Figure 3B-2 highlights the preservation areas designated by SANDAG in the NCC. The program seeks to strategically acquire and preserve ESHAs and degraded habitat areas in conjunction with implementing habitat restoration and establishment opportunities throughout the corridor.

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

The Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map are for planning and engineering study purposes only. Data are derived from multiple sources. The digital Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map have not been adopted by the Coastal Commission, and do not supersede the official versions certified by the Coastal Commission as may be amended from time to time.
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FIGURE 3B-2
Land Preservation Areas

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3B.2 BENEFITS OF THE COMPREHENSIVE CORRIDOR VISION

The implementation of the multimodal vision for the NCC would deliver numerous benefits to the region. These include not just better performance of the transportation system—which confers mobility and economic benefits to the entire region—but also increased access to coastal areas, protection and restoration of sensitive environmental resources, and improved air quality through reduced emissions.

3B.2.1 Achievement of Transportation and Coastal Access Vision

Broadly speaking, the transportation and coastal access objectives identified in Section 3B.2.1.1 are aimed at increasing regional mobility in ways that respect both the environmental and fiscal implications of transportation projects. The multimodal transportation vision for the NCC is an embodiment of those objectives, with each element of the strategy contributing to the maintenance of an effective and balanced transportation system and enhanced coastal access in the NCC.

Coastal resources in the corridor include the beaches, parks, lagoons, upland trails, and activity and recreational centers such as the Del Mar Fairgrounds and Racetrack. As demand for these resources continues to increase, the corridor improvements in the PWP/TREP would reduce or eliminate access impediments for residents and visitors alike. Both the I-5 highway and LOSSAN rail corridors' projects focus on increasing the efficient movement of people, rather than just vehicles. In addition, bicycle and pedestrian routes that are currently incomplete, not built to current standards or plans, or not available for access to coastal areas in the NCC would be upgraded and/or connected. Facilitating and encouraging non-automobile transportation with new and improved multimodal options would provide access to the coast and recreation areas with alternative modes of transportation (trails, bike paths, and transit). The PWP/TREP projects would add and improve sidewalks and bicycle lanes at highway and rail crossings throughout NCC communities, providing access to coastal amenities including the Coast Highway, the Coastal Rail Trail, and the California Coastal Trail. These projects would effectively eliminate many bicycle and pedestrian barriers, as well as provide enhanced connections with public transit centers, thereby promoting access to transit. This program of improvements will work to fulfill the Coastal Act requirement that coastal access and recreational resources not be simply protected but also enhanced over time.

3B.2.1.1 Ensuring Coastal Access and Recreation

The PWP/TREP would ensure coastal access for both residents and visitors to the corridor's many unique natural resources is maintained and enhanced—a goal that is directly supported by the NCC's transportation objectives.

Congestion Reduction

The Coastal Commission Public Access Action Plan recognizes roadway congestion as one of the greatest impediments to public access in coastal areas and specifically notes that, among other things, traffic congestion and poor traffic circulation are significant problems where residents and visitors compete to use the same transportation system.¹³ It is for this reason that the San Diego region's past and continuing efforts to reduce traffic congestion and maintain acceptable transportation services on I-5 and local transportation arterials are critical elements to protecting public access to recreational opportunities along the NCC coastline.

¹³ *Public Access Action Plan*, California Coastal Commission, June 1999.

This PWP/TREP recognizes that constructing new transportation corridors or new general-purpose lanes to meet travel demand would not solve the highway-capacity deficiency without affecting adjacent communities, lagoons and habitat areas. Therefore, to address the highway-capacity deficiency in the corridor in a way that would provide the most benefit to coastal access and natural resources while meeting regional travel demand, facility improvements are planned to accommodate more travelers (i.e., more people), more efficiently, and with minimal facility expansion (footprint) when compared to other transportation alternatives.

Express Lanes would accommodate future demand on I-5 by getting the most person-carrying capacity out of the least amount of highway footprint expansion, thereby reducing overall congestion on I-5 for all users, protecting and facilitating public access, and minimizing impacts to adjacent communities and sensitive coastal resources. As discussed in the following sections, Express Lanes would also enable new and expanded public transportation opportunities in the NCC by prioritizing and ensuring reliable travel for buses and other HOVs. In addition, both I-5 highway and LOSSAN rail infrastructure improvements would provide new opportunities to enhance pedestrian and bicycle coastal access facilities—all of which would provide alternative means of coastal access in the NCC and further reduce demand on I-5.

Maintenance and Expansion of Transit Service

Proposed PWP/TREP improvements for the LOSSAN corridor would contribute substantially to enhancing mobility throughout the NCC by increasing and improving rail service, providing new rail service at the Del Mar Racetrack and Fairgrounds, and supplementing parking supply at rail stations for new customers. The proposed Del Mar Fairgrounds Special Event Platform—currently planned to operate intermittently, during periods of high demand—would provide new access opportunities to the beach, San Dieguito River Park, and Del Mar Racetrack and Fairgrounds, which is one of the region's most popular tourist destinations. Planned access improvements to rail stations also include pedestrian and bicycle access.

The NCC does not currently have BRT service. Implementation of this type of transit improvement is planned in the corridor over the next 40 years, with successful BRT wholly dependent upon the implementation of the I-5 Express Lanes. The BRT planned for the I-5 Express Lanes would target the peak-period commute trip between the high-density Mid-City residential area in central San Diego and the Palomar Airport Road business park in the NCC. As with planned rail service improvements, BRT would serve to relieve congestion and reserve capacity on I-5 for other users, including visitors and recreational travelers who are not easily served with transit. In addition, improvements to local bus service are planned for the NCC, including along Coast Highway. The planned Coast Highway improvements would incrementally implement rapid bus features in coordination with planned multimodal improvements along Coast Highway by corridor cities. Planned bus transit improvements in the NCC would provide more service frequency, better access to coastal resources and rail transit, and infrastructure enhancements to facilitate transit operations and promote transit ridership among residents and visitors alike.

Provisions for Non-Automobile Circulation

The Coastal Act recognizes the necessity and benefit of providing varied transportation choices for all people, including alternative transportation modes that are not reliant on the automobile. These choices include not only transit but also active transportation modes such as walking and biking. Well-planned, non-motorized transportation networks can bridge the gap between origins or destinations and the transit system, addressing the classic “last mile” problem for transit users. In addition, pedestrian and bike facilities create attractive transportation links between land uses that draw travelers out of their automobiles when making short, local trips and when seeking access to coastal resources. Providing

pedestrian and bicycle access to the shoreline and upland recreation areas is one of the highest priorities of the Coastal Act.

A fundamental element of the PWP/TREP is that it would improve bicycle and pedestrian routes and trails, which would enhance the network and provide access to the NCC's transit stations, beaches, lagoons, open spaces, and coastal communities. Existing fragmented access routes and trails of the network would be upgraded and completed, eliminating barriers and gaps to provide safe, non-automobile circulation to and from coastal recreation areas, while creating new recreational opportunities.

Beneficial impacts to coastal access and recreation would also result from highway and rail improvements that include reconstructing under- and overpasses to better connect and improve bicycle and pedestrian access routes to the coast. These improvements would address travel-user separations to provide a more comfortable travel environment for pedestrians and bicyclists to further encourage these modes of travel across I-5 between inland and coastal areas, and in some locations would provide connections to regional bicycle facilities.

Adequate Parking

The presence of adequate parking facilities in coastal areas to serve residents, commercial uses and visitors who travel by car is an important variable that influences public access and recreation opportunities in the Coastal Zone. Transit services must be supported by ample parking, walking, and bicycle facilities in order to ensure maximum accessibility of the NCC's coastal resources via alternative modes of travel. In addition, as the majority of rail stations in the NCC are located just blocks from the beach, constrained parking resources could result in overflow parking by train passengers onto adjacent streets, which could displace parking resources used by people to access the coast by automobile. However, where adequate parking supply does occur, these parking resources support access to nearby beaches and recreation areas. Proposed PWP/TREP improvements include expanding parking areas at the corridor's transit stations, which would support passenger rail service and reduce the possibility of conflicts between rail passenger and coastal access parking resources on adjacent streets. Furthermore, PWP/TREP improvements include construction of new and enhanced staging areas for bike and trail facilities throughout the corridor. These improvements would increase access to and use of the NCC's recreational facilities.

Access to Natural Resources and Recreational Facilities

The improvements described above would not just improve travel choices, but also substantially enhance recreational opportunities in the corridor by completing linkages between communities, inland and coastal areas, and providing access opportunities to the NCC's regionally significant natural resource and recreation areas.

The corridor's most significant natural resource areas (such as the corridor's beaches and six coastal lagoons) support some of the region's most significant passive and active coastal recreational opportunities for San Diego residents and visitors.

When considering the unique needs and travel patterns of visitors and recreational travelers in the corridor, which are not easily served with transit, the region's past and continuing efforts to reduce traffic congestion and maintain acceptable transportation services on I-5 and local transportation arterials are critical elements to protecting public access to recreational opportunities along the San Diego County coastline. Proposed PWP/TREP improvements are necessary for maintaining and enhancing public access to the corridor's coastal areas by extending and improving transit service, reducing transportation congestion—particularly for the variety of coastal users in the corridor—

providing adequate public transportation and non-automobile circulation that support access to coastal recreational areas, and providing and/or enhancing recreational facilities.

As detailed in Section 5.3, rail improvements that increase capacity, reduce travel time, increase reliability, and provide new service area opportunities, such as those proposed, are major contributors to protecting and enhancing access to the coast. Furthermore, as the primary means for the public to reach shoreline access points and recreational destinations in the corridor, I-5 serves as the gateway to the entire San Diego coastal area and provides a unique scenic recreational traveling experience. As travel demand in the I-5 highway corridor continues to increase, so does the existing coastal access impediment of traffic congestion. Proposed PWP/TREP improvements focusing on HOV/Express Lanes would give priority to ride-sharing, public transit and—when capacity allows—SOVs via a variable price, while reducing overall congestion and facilitating public access on San Diego's primary transportation facilities. The proposed PWP/TREP would ensure that the corridor's large and varying customer base of HOVs (many of which are seeking access to coastal resources) would be provided with uncongested, reliable travel times.

PWP/TREP improvements for bicycle and pedestrian routes and trails would enhance an extensive network that provides access to the corridor's beaches, lagoons, open spaces, and coastal communities. In addition, the PWP/TREP establishes and constructs significant portions of a new I-5 North Coast Bike Trail—a continuous, non-motorized access trail running the length of the highway corridor that would complement the existing Coast Highway, Coastal Rail Trail, and California Coastal Trail. In addition, nearly 7 miles of the long-planned Coastal Rail Trail would be constructed within the LOSSAN rail right-of-way.

The addition of Express Lanes on I-5 includes the reconstruction of under- and overpasses—most of which would include enhancements to bicycle and pedestrian facilities that would address barriers and improve connections to bicycle and pedestrian routes to the coast, including routes across lagoon systems. Additionally, the LOSSAN rail corridor would benefit from new pedestrian bridges and improved crossings that would provide safe and convenient ways for pedestrians and bicycles to cross the tracks, better connecting communities to the Coastal Rail Trail, California Coastal Trail, and area beaches. These access improvements would serve to meet a primary goal articulated in the state-mandated, Coastal Commission-supported *Completing the California Coastal Trail* report: "Create linkages to other trail systems and to units of the State Park system, and use the Coastal Trail system to increase accessibility to coastal resources from urban population centers."¹⁴ PWP/TREP implementation would provide and connect several threads within the Coastal Trail system between inland and coastal communities, allowing the public to more easily access shoreline, lagoons and upland recreation resources.

Considering the significant alternative transportation options planned for the NCC, the PWP/TREP would maximize public access and recreational opportunities throughout the corridor consistent with public safety needs by:

- Improving public transportation infrastructure to support more frequent, attractive, and reliable rail, BRT and rapid bus service, resulting in increased transit ridership and reduced traffic congestion that would otherwise adversely affect the ability of the public to reach the coast along this primary coastal access corridor.

¹⁴ *Completing the California Coastal Trail*, California State Coastal Conservancy, January 2003.

- Improving and integrating transit services with other non-automobile modes of travel within the corridor to increase ridership and reduce traffic congestion that would otherwise adversely affect public coastal access.
- Facilitating and encouraging non-automobile transportation with new and improved multimodal improvements that would provide access to the coast and recreation areas with alternative modes of transportation (trails, bike paths, and transit). The PWP/TREP projects would add and improve sidewalks and bicycle lanes at many highway and rail crossings throughout NCC communities, providing access to coastal amenities including the Coast Highway, the Coastal Rail Trail, and the California Coastal Trail. These projects would effectively eliminate east-west bicycle and pedestrian barriers along the highway and rail corridors, and provide enhanced connections to the bicycle and pedestrian networks and to public transit centers, thereby promoting access to transit.
- Creating and constructing a new, corridor-long I-5 North Coast Bike Trail and constructing several missing links of the Coastal Rail Trail within the LOSSAN rail corridor right-of-way.
- Enhancing and providing bike and trail staging areas, including support facilities such as parking, which would be distributed throughout the corridor.
- Creating and enhancing pedestrian access to other natural resources, including lagoons and adjacent upland areas via trail and bicycle improvements throughout the corridor.

3B.2.1.2 Congestion Reduction

As discussed in Section 3.1.2, the NCC's transportation facilities today are plagued by congestion. From the peak-period backups along I-5 to the single-track delays on the LOSSAN rail corridor, the NCC represents a bottleneck not just for the San Diego region but also for the state and national transportation systems. Regular periods of congestion directly result in lost time—and lost money and access—for residents, commuters, and visitors. Bottlenecks on the highway and rail corridors also impede the efficient movement of goods in and through the region, including the economically vital connections to Mexico and the Port of San Diego, resulting in longer shipping times, higher product costs, and economic losses for the entire society. On I-5, these bottlenecks also spill into the local road network in the form of “cut-through” traffic, which congests local communities. Finally, congestion diminishes air quality throughout the corridor as vehicles are forced to operate at inefficient speeds in stop-and-go settings.

Highway improvements, however, are only one element of the multimodal solution envisioned by the PWP/TREP. The NCC program also includes LOSSAN rail corridor double-tracking, COASTER service improvements, new rapid bus and BRT services, enhanced local bus service, and greatly improved facilities for bicycles and pedestrians. Each improvement is aimed at increasing capacity in some way and, taken together, they represent a balanced approach to addressing the corridor's mobility and access problems. The fulfillment of the PWP/TREP's multimodal transportation vision would go a long way toward increasing corridor capacity, decreasing congestion, and providing faster, more reliable travel choices for the residents, visitors and businesses who use the NCC's transportation system to access homes, jobs, shopping, recreational venues, and coastal resources.

3B.2.1.3 Transportation Flexibility

While population growth in the NCC is expected over the next 40 years, other unforeseen changes may also occur that alter the mobility needs of the corridor's residents and visitors. Whether it is variations in travel patterns, modifications to land use policy, or advancements in technology, the transportation system should be equipped to respond to these changes as they happen. Caltrans and SANDAG understand that the current high level of demand for automobile travel may not persist forever—

particularly as regional congestion and fuel costs increase—and this is why they have chosen a program of multimodal improvements for the NCC.

The Express Lanes on I-5, for example, would not just allow more efficient automobile travel in the corridor, but would also serve as an essential enabler of future transit services, by providing a congestion-free path for express buses or BRT. The ability to manage these new, separated highway lanes to meet changing travel behavior and demand—by variable pricing when capacity allows, changing vehicle occupancy requirements, or even creating a truck route during certain times of day—guarantees that there would always be free-flow access to coastal resources and communities. The 2050 RTP already includes plans for a reverse-commute BRT that would utilize I-5, traveling from San Diego's Mid-City neighborhoods north to the business park near Palomar Airport Road in Carlsbad. The existence of Express Lanes would allow additional BRT service to be added in the future when demands dictate. Similarly, the planned LOSSAN rail corridor enhancements would allow for much greater capacity on the rail corridor than is needed today, ensuring that the rail infrastructure would be able to accommodate demand growth for many decades into the future.

3B.2.1.4 Value Maximization

The competing demands for the region's limited transportation funds require SANDAG to select projects using a rigorous evaluation of goals, priorities, and projections during the regional planning process. As discussed in Chapter 2, the 2050 RTP seeks to maximize the efficiency and effectiveness of transportation investments, and its prioritization of projects reflects this goal. While a basic level of funding is provided to all areas, the 2050 RTP's major investments focus where they are most likely to succeed; in the denser urban areas of the region this often means a greater emphasis on transit services, while in the outlying, more suburban areas, this might mean a higher proportion of new highway projects or improved local arterials.

This PWP/TREP contains a combination of transportation investments that improve the transportation system's efficiency by favoring implementation of high-capacity transit and highway facilities over expansion for single-occupancy autos. And because these facilities would offer fast and reliable travel choices for a variety of travelers to, through, and within the NCC, they are projected to attract sufficient use to maximize the value of the investments. While a transportation "wish list" for the NCC—one that is unconstrained by fiscal or legislative requirements—might contain even larger investments in transit, the corridor's demographic, employment, land use, geography, and travel pattern characteristics limit both the viability and cost-effectiveness of more significant investments in transit (Section 3A.1.2). The proposed projects for the NCC would greatly improve corridor mobility and access while balancing both the corridor and regional need to maximize the benefits per dollar spent.

3B.2.1.5 Integration into Larger System

The NCC is not an isolated corridor, but rather one piece in a much larger network of regional, state, and national transportation facilities. As a federally designated "Corridor of the Future," I-5 is an economically significant resource that plays a nationally significant role in the movement of people and goods. Similarly, LOSSAN is the nation's second-busiest passenger rail corridor as well as a significant freight facility. Considering the roles that these NCC facilities play in the national economy, it is clear that local congestion is not simply a local problem; such deficiencies create impacts that are felt well beyond the San Diego region.

It is therefore critical to ensure that the NCC's transportation infrastructure is maintained as an effective link in the national transportation system. The facilities must minimize congestion, remain in good repair, and take advantage of technological and operational advancements to increase efficiency. This

PWP/TREP accomplishes these goals by providing NCC facilities with their first major overhaul in decades, expanding the capacity of both the I-5 highway and LOSSAN rail corridors to accommodate new demand. In addition, this program features a wide range of repairs and enhancements—including grade separations, signal improvements, DARs, auxiliary lanes, and rail bridge replacements—that would increase throughput efficiency and help preserve the facilities for the long term. This program would allow the NCC to maintain its crucial role as an important link in the larger transportation network and ensure that degradation of NCC transportation facilities does not become the weak link in regional and interregional access to the coast.

3B.2.1.6 Movement of People Rather than Vehicles

The efficiency of a transportation system can be measured by the mobility benefits it provides in relation to its costs. Because each vehicle on a highway contributes to congestion, maximum efficiency is achieved when every vehicle is carrying the greatest amount of people or goods possible. While this is not a realistic scenario for all travelers—circumstances often require travel in SOV—high-occupancy travel is still something that can be encouraged with incentives. Express Lanes are one such incentive since they offer travelers a choice: Either travel alone and risk delays, or carpool and bypass congestion. It is in this way that Express Lanes prioritize the movement of people over the movement of vehicles, thus achieving both better mobility and higher capacity per dollar spent. As noted above, during peak conditions one Express Lane is able to carry nearly 70% more people than one general-purpose lane.¹⁵ This confers a clear benefit to the region by achieving greater mobility outcomes per dollar spent than a traditional, general-purpose lane highway expansion. Transit investments bring similar benefits by encouraging travelers to ride in high-occupancy trains or buses when it fits their travel needs. By focusing investments in the NCC on high-occupancy transit and Express Lane facilities, these projects would enable more efficient coastal access for many more people well into the future than would otherwise be possible under current conditions.

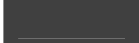
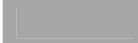
Prioritizing the movement of people over vehicles also contributes to environmental goals, since high-occupancy travel produces fewer GHG emissions per capita than single-occupancy trips. SANDAG is required by state law to meet GHG reduction targets, and the addition of Express Lanes to regional highways is a key component of the agency's strategy to achieve this. Similarly, the planned enhancements to the LOSSAN rail corridor would reap both mobility and environmental benefits by providing a better level of service that would encourage some travelers to ride the COASTER instead of driving alone. Efficient movement of people in the coastal corridor would enhance air quality along the coast and positively contribute to regional GHG reductions.

Table 3B-4 depicts the types of travelers who would benefit from the planned transportation improvements (separated by each transportation facility in the NCC).

¹⁵ SANDAG regional modeling data (furnished by SANDAG staff, April 2012) reveals average vehicle loads of 2.13 people/vehicle in Express Lanes and 1.28 people/vehicle in general-purpose lanes, and an overall lane capacity of 2,000 vehicles/hour. At capacity, Express Lanes therefore can be expected to carry 4,260 people/hour, while general-purpose lanes would carry 2,560 people/hour. $4,260/2,560 = 166\%$.

TABLE 3B-4: TRAVELERS BENEFITING FROM PLANNED TRANSPORTATION IMPROVEMENTS

	COASTER	Interregional Rail	I-5 Express Lanes	I-5 General-Purpose Lanes	Coast Highway Enhanced Bus	Local Bus	Bike & Pedestrian
Residents							
Short (< 5 miles)							
Medium (5-30 miles)							
Commuters							
Short (< 5 miles)							
Medium (5-30 miles)							
Long (> 30 miles)							
Visitors							
Medium (5-30 miles)							
Long (> 30 miles)							
Businesses							
Short (< 5 miles)							
Medium (5-30 miles)							
Interregional & Through Travelers							
Medium (5-30 miles)							
Long (> 30 miles)							

 Primary trip mode
 Secondary trip mode

3B.2.1.7 Environmental Protection and Enhancement

The multimodal vision would protect and enhance local communities and facilitate Smart Growth, and would reap environmental benefits through improved air quality, which would result from increased HOV travel as well as fewer vehicles operating in the inefficient, stop-and-go patterns of congestion. SANDAG is mandated by state law to reduce per capita GHG emissions by 2035, and the agency plans to achieve this through increases in both HOV travel and transit ridership. The PWP/TREP's investments in Express Lanes, LOSSAN rail corridor improvements, and transit service enhancements would directly contribute to these objectives, and are key components of SANDAG's overall strategy to meet the legal mandate. In addition, Caltrans is developing a plan to incorporate state-of-the-art rapid electric vehicle (EV) charging stations at all NCC park-and-ride facilities. Charging terminals for EVs would provide convenience to current users and act as an incentive for increased use of EVs in the future, potentially reducing GHG emissions associated with vehicle travel.

While the LOSSAN rail improvements and the addition of Express Lanes to I-5 would expand the transportation footprint within the Coastal Zone, SANDAG and Caltrans have selected the smallest-footprint highway alternative—8 existing general-purpose lanes plus 4 new Express Lanes separated by a buffer (8+4 with buffer)—from among the various expansion options considered for the corridor. Furthermore, the concurrent REMP, which is financially and legally tied to implementation of the

corridor transportation projects, ensures that significant contributions are made to the enhancement and protection of the NCC's environmental resources. The package of improvements planned for the NCC includes not just highway, rail, bicycle, and pedestrian enhancements, but also wetland and upland establishment, restoration, enhancement and preservation, lagoon bridge optimization, and the improvement of coastal trails and habitat areas. By taking advantage of *TransNet* transportation funding that would otherwise be unavailable for these purposes, the REMP ensures that the NCC's natural environment would benefit from the planned transportation improvements.

3B.2.2 Achievement of Coastal Communities Vision

The program of improvements in the PWP/TREP would make major contributions to the fulfillment of the NCC's coastal resource objectives and as well as the requirements of the Coastal Act.

3B.2.2.1 Local Streets and Neighborhood Enhancements

With continued increase in population and travel demand, the future promises increased levels of congestion in the NCC unless capacity improvements are made. The multimodal vision described in this chapter outlines a wide range of transportation improvements planned throughout the corridor to address the growing travel demand. The addition of Express Lanes to I-5 is one element of this solution, which would expand the highway's capacity for high-occupancy and transit vehicles. Reduced traffic congestion on I-5 would alleviate the pressure of local communities to address and accommodate "cut-through" traffic on Coast Highway and other arterial streets that may otherwise be affected as highway travelers search for alternate routes. Maintaining access along the I-5 corridor would also maintain access along the various local coastal transportation corridors in the NCC, ensuring spillover travel demand from I-5 would not affect local communities or precipitate improvements on local arterials that could affect the NCC's sensitive coastal resources.

In addition, the PWP/TREP includes community enhancement projects that consist of developing and/or enhancing community parks, protecting open space and habitat restoration, and constructing new and improved pedestrian and bicycle trails, mini-parks, enhanced view corridors, and improved scenic vista points within the NCC cities. These improvements would protect and enhance coastal community character (through sensitive design), while improving travel choices by creating and completing linkages between communities, inland and coastal areas, and enhancing access opportunities to the corridor's regionally significant natural resource and recreation areas. Again, funding for these improvements would be unavailable absent their connection to the funding made available by way of the *TransNet* ordinance.

Finally, the PWP/TREP provides unique opportunities to preserve the coastal character of the corridor, which is largely defined by the natural open space areas associated with the NCC lagoons. The PWP/TREP includes acquisition, preservation and restoration of lands within and adjacent to the lagoon systems, resulting in the parallel benefits of preserving visual open space for public enjoyment and protecting and enhancing natural resources. The PWP/TREP bicycle and pedestrian trail improvements would further provide new opportunities for the public to access to the NCC's significant open space areas for passive recreation and extensive coastal resource viewing opportunities, including views to and along the coastline and within the corridor's large open space and natural resource areas. In this regard, the PWP/TREP would contribute to and expand the corridor's visual open space resources, while providing continuous public viewing opportunities of the corridor's most significant natural features.

In addition, Caltrans has worked with the NCC communities to develop a set of Design Guidelines which are included in the PWP/TREP. The *I-5 NCC Project Design Guidelines* (Appendix C of the

PWP/TREP) include corridorwide and local design themes to preserve the natural and community visual characteristics of the existing corridor, and create a unifying visual thread. These guidelines would protect coastal views, incorporate community and regional identity into architectural features, and implement a conversion of existing ornamental freeway landscaping to sustainable, non-invasive native planting.

3B.2.2.2 Minimizing Energy Consumption and Air Emissions

Among the fundamental purposes of the PWP/TREP are extending transit service and providing the infrastructure needed to facilitate new transit service and Smart Growth, in order to reduce congestion on the existing transportation system and provide and improve multimodal transportation in the corridor. These improvements would inherently serve to minimize energy consumption and air emissions, while protecting, promoting and enhancing a variety of public access and recreational resources in the corridor as mandated by the Coastal Act. In addition, cleaner fuels and new vehicle technologies would help reduce the majority of smog-forming, criteria pollutants. Regional air quality is expected to improve from advances in vehicle technology and from implementation of the NCC and 2050 RTP transportation improvements.

The suite of NCC transportation improvements is an integral component of the 2050 RTP transportation infrastructure, which would collectively reduce congestion for autos, trucks, and public transit. At the regional scale, the percentage of peak-period auto travel occurring during congested periods is projected to drop from 27.7% under the No Build Alternative to 17.2% with implementation of the 2050 RTP transportation system improvement. Similarly, congested conditions for peak-period transit travel are projected to drop by nearly half (from 9.1% to 5.1%). The number of hours of delay per day for trucks is projected to decrease from 32,300 hours to 16,000 hours with the implementation of the 2050 RTP.¹⁶

As detailed in Section 5.1, despite the increase in VMT projected on I-5 under the I-5 NCC Project Build Alternative, corridor project improvements are projected to reduce congestion and lead to decreases in both Vehicle Hours Traveled (VHT) and Vehicle Hours of Delay (VHD) on I-5, as well as decreases in VMT and average daily traffic (ADT) on parallel arterials Coast Highway and El Camino Real, between the No Build and Build Scenarios. All of these factors would positively influence congestion-related vehicle emissions in the corridor, and would help to offset the projected increase of 4.0–9.9% in VMT on I-5 between the No Build and Build scenarios.¹⁷ Specifically, implementation of the project would provide the following transportation improvements that would lead to energy and air quality-related benefits when compared to the No Build Alternative:

- A reduction of 25-35% in peak-period corridor travel times on I-5 (Table 3B-3).
- A reduction of 4% in VHT on I-5.¹⁸
- A reduction of 47% in VHD on I-5.¹⁹
- Reductions of 17% and 10% in VMT on Coast Highway and El Camino Real, respectively.²⁰
- Reductions of 12% and 3% in ADT on Coast Highway and El Camino Real, respectively.²¹

¹⁶ SANDAG 2050 RTP (Chapter 2), October 2011.

¹⁷ As noted in Section 3A.1.3.4, the SANDAG/Caltrans Regional Travel Model forecasts projected growth in VMT ranging from 4.0% (Series 11 for year 2030) to 5.9% (Series 12 for year 2040) between the I-5 No Build and the I-5 Build scenarios.

¹⁸ San Diego NCC–CSMP (Chapter 8), August 2010.

¹⁹ Ibid.

²⁰ Ibid.

²¹ Caltrans/SANDAG Series 12 Model, November 2011.

- A decrease in the duration of daily peak-period congestion on I-5 from a range of 12 to 13 hours to a range of 5 to 6 hours.²²

In addition, with the unique opportunity to assess, plan and implement a variety of multimodal transportation enhancements in conjunction with improving the NCC's primary LOSSAN rail and I-5 highway transportation corridors, the PWP/TREP would also provide alternative transportation options (such as transit, HOV facilities, BRT options, pedestrian trails and bike paths) that efficiently and effectively accommodate more person trips in the corridor while minimizing energy, air quality and GHG impacts, particularly impacts per person-trip. The PWP/TREP improvements would reduce vehicle travel in several ways, including shifting from driving to other modes (e.g., rail, BRT, bicycling, walking), increasing vehicle occupancy (e.g., HOV/Express Lanes), and reducing vehicle trip lengths (e.g., park-and-ride facilities). These strategies to reduce VMT would generally also reduce vehicle-generated emissions of criteria pollutants and GHGs. Each mile that a vehicle travels, it emits more pollution; therefore, as the project reduces growth in vehicle travel mileage it would also reduce air pollutant and GHG emissions compared to the No Build Alternative. Technology improvements—such as ITS, electronic communications, and incident response systems—would further improve corridor efficiency and reduce congestion and idling. In general, by reducing motor vehicle idling and vehicles operating at inefficient stop-and-go speeds, the PWP/TREP would reduce vehicle air pollutant emissions. As such, though a minor increase in VMT is projected on I-5 under the Build Alternative, the long-term savings in operational energy requirements—from reduced congestion-related fuel consumption, out-of-direction travel, higher vehicle occupancy, and more trips made by walking and biking—would offset construction energy requirements and thereby minimize air emissions.

Collectively, proposed transportation improvements would reduce traffic congestion and encourage alternative modes of travel to SOVs, which would lead to more efficient use of fuel, reduced idling times, and would result in associated and corresponding energy consumption and air pollutant emission reductions. Transportation-related GHG emissions are in large part determined by the sum of individual travel choices, as well as other important factors like land use patterns and vehicle fuel efficiency. Additional Express Lanes, new and expanded park-and-ride facilities, improved bicycle and pedestrian features, ramp metering, and an improved transit-highway interface would be anticipated to improve traffic conditions and encourage alternative transportation modes, and thus reduce energy consumption, as more people carpool or choose other modal options. By accommodating current and projected growth in traffic demand in the existing transportation corridor, indirect and inefficient routing on parallel roads would be reduced. Finally, the PWP/TREP includes a program of multimodal transportation enhancements including trails, bike paths, and pedestrian improvements that would facilitate non-motorized circulation across the transportation facilities throughout the corridor.

The Coastal Act, as well as SB 468, recognizes the benefits of providing transportation choices for all people, not only to facilitate coastal access and recreation, but also as a means of reducing VMT, energy consumption and GHG emissions, and thus curtailing the effects of global climate change. While implementation of Coastal Act policies is limited to addressing development activities affecting coastal resources in the Coastal Zone, climate change is a coastal resource issue driven by land use and transportation activities that extend well beyond the boundaries of the NCC and the region. In this regard, Coastal Act policies that address reducing VMT and energy consumption by providing transit in the Coastal Zone are supported by the region's transportation objectives. These objectives are aimed at ensuring that the transit component of the NCC's transportation system is effectively integrated into

²² San Diego NCC—CSMP (Chapter 8), August 2010.

the regional, state, and national systems, and that transportation investments in the NCC complement the region's commitment to provide the greatest possible mobility project benefits per investment.

Investing available funds in transportation improvements that would support transportation solutions across jurisdictional boundaries and that would facilitate Smart Growth practices that maximize mobility at the regional level, is the best means of reducing VMT and energy consumption in the region to help achieve state-mandated GHG reductions, and thus support efforts to address the effects of global climate change on coastal resources.

Accordingly, implementation of the proposed PWP/TREP would be consistent with the regional plans developed to improve energy efficiency and reduce air quality and GHG emissions. The PWP/TREP's investments in LOSSAN rail improvements, Express Lanes, transit service and non-motorized travel directly contribute to regional GHG reduction objectives, and are key components of SANDAG's overall strategy to achieve compliance with SB 375 as well as compliance with SB 468.

3B.2.2.3 Facilitating Smart Growth, Multimodal Transportation, and Economic Sustainability

While corridor population and travel are expected to increase over the next 30 years, this growth will occur regardless of whether the PWP/TREP program improvements are implemented.²⁴ Transportation infrastructure improvements proposed by the PWP/TREP would support new and expanded transit services and would improve multimodal travel options, which would facilitate the region's Smart Growth efforts in the corridor.

Planned Smart Growth areas in the NCC would go a long way toward concentrating populations near rail stations but would be unable to transform the existing, much more far-reaching land use patterns into a broader transit-supportive environment, which would require a tripling of residential densities and redeveloping communities throughout the NCC and Coastal Zone with more walkable, grid-like, better-connected local street networks. However, Smart Growth is the most sustainable means of accommodating future growth in the NCC, and the 2050 RTP includes significant investment in LOSSAN rail, BRT, and enhanced local bus service in the corridor to accommodate this growth near stations and along transit routes.

As detailed in Section 5.2, both the proposed rail and highway projects would increase travel capacity in the corridor, thereby reducing travel times and improving quality of service. Focusing investment on facilities that encourage alternative modes of transportation—such as improving the existing LOSSAN rail corridor, introducing Express Lanes on I-5 that allow for express buses, BRT and HOVs, and developing bicycle lanes, sidewalks and trails—would assist in concentrating future growth into identified Smart Growth and other urban areas where corresponding travel demand can be accommodated by a combination of these alternative modes of transportation. These effects could contribute to economic growth by allowing time and money previously spent on travel to be used for other purposes, by attracting businesses and residents to places with increased accessibility or improved quality of life, and by reducing overall costs to society.

Proposed rail and bus transit improvements are expected to result in localized effects on the type of development that would occur in planned Smart Growth areas at LOSSAN stations. Stations along the rail corridor would remain in their existing locations, with parking expansion and other enhancements proposed at some locations. Because the areas surrounding existing stations are primarily developed, the increased transit service is likely to increase the rate of redevelopment or change the types of

²⁴ I-5 North Coast Corridor Project Draft EIR/EIS, June 2010.

establishments in these areas, thereby adding value to surrounding parcels and facilitating increased density to accommodate project corridor growth, which is consistent with Smart Growth goals.

The reliability and travel times of the proposed I-5 Express Lanes would provide users of the highway system an incentive to use public transit or higher-occupancy modes of transportation in the corridor. These facilities would provide public transportation to and from planned Smart Growth areas as well as those areas in the corridor with trip origins or destinations that cannot be served easily by the rail corridor.

Community enhancements included in the I-5 highway corridor improvements would further support non-automobile transportation. Bike and hiking trails, pedestrian corridor crossings, adding and widening of overpass sidewalks and bike lanes, and other improvements would create stronger links in the corridor. Many of these new links would significantly improve non-vehicular travel to transit stations, making access by alternative transportation modes more desirable in planned Smart Growth areas.

Finally, by providing improved public services to an existing corridor, development would be concentrated and supported by existing public services, and thereby would limit development sprawl into undeveloped areas. Any new development in the corridor would be located within, contiguous with, or in close proximity to existing development and public infrastructure. Any growth that would occur in the NCC and be served by the proposed infrastructure improvements would be infill or redevelopment, thereby accommodating projected growth that otherwise could occur at the urban fringe or beyond and lead to the development of open space or rural lands.

3B.2.3 Achievement of Water Quality and Sensitive Habitats Vision

3B.2.3.1 Improving Water Quality, Restoring Lagoons, and Enhancing Natural Habitats

The NCC is recognized for its varied, unique and significant marine and environmentally sensitive resource areas. The coastal watersheds, lagoons, and upland areas in the corridor consist of a range of diverse habitats and ecosystems that support a variety of plant and wildlife species. The region's resources warrant protection and enhancement in light of increasing population demands and development pressures to ensure long-term viability of natural resources in accordance with regional sustainability measures.

Water Quality, Wetlands and Environmentally Sensitive Habitat Areas

Specific to the proposed PWP/TREP, *TransNet* EMP funds have been programmed for the corridor and implementation of the NCC transportation projects would allow for expenditure of the EMP funds. Due to the availability of these funds, there are opportunities to initiate land acquisition, to undertake habitat establishment, enhancement, and preservation, and to make progress toward lagoon restoration in advance of the transportation projects with appropriate agreements in place. This comprehensive programmatic approach to mitigating transportation impacts also offers a rare opportunity to achieve large-scale, coordinated environmental benefits throughout the corridor.

As detailed in Sections 5.4 and 5.5 of the PWP/TREP, when compared to the No Build Alternatives, the proposed highway improvements would maximize the treatment of existing and new impermeable surfaces and reduce the pollutant burden in stormwater runoff along I-5 by incorporating Best Management Practices (BMPs) within the project footprint. Additionally, implementation of alternative travel options awarded by proposed rail improvements would further target water quality improvement throughout the corridor. This would result in a beneficial impact to water quality and overall enhancement of coastal waterbodies traversed by the transportation corridor facilities. Finally, the proposed bridge replacement and lengthening projects over the lagoons and other coastal waterbodies

would have a beneficial effect on hydrology, water quality, and ESHAs by constructing new bridges that better convey flood waters, allow for improved tidal flushing, reduce and/or minimize fill, and provide for increased habitat connectivity, thereby improving water quality and wetland habitat that sensitive species are reliant upon.

The PWP/TREP includes an REMP as part of the phased implementation plan. The proposed REMP provides for expenditure of EMP funds on resource enhancement activities that focus on establishing advanced habitat, and restoring, enhancing, preserving, and improving the ecological health of sensitive habitats and coastal wetlands in the PWP/TREP corridor via ongoing maintenance and critical planning and restoration activities that improve and/or sustain the ecological functioning of the resource. The PWP/TREP would facilitate acquisition and restoration of upland and wetland habitat areas throughout the corridor, and major lagoon restoration programs that include improved tidal circulation in the San Elijo and Buena Vista Lagoon systems. Capital improvement activities that improve hydraulic functions in lagoon systems are another critical enhancement feature. Restoring tidal circulation in corridorwide lagoon systems by reducing infill at currently constrained bridge crossings would significantly improve water quality and the ecological value of the lagoons and adjacent areas to better support ESHAs, special-status species, and wildlife.









3B.2.4 Summary of Benefits

Table 3B-5 provides an assessment of the ability to achieve the transportation and coastal resource objectives without (No Build) and with (Build) implementation of the NCC transportation projects. Qualitative performance assessments were made relative to existing conditions to indicate whether implementation of the multimodal projects in the NCC transportation vision would provide no change from existing conditions, improve on existing conditions, or degrade from existing conditions. In most cases, the PWP/TREP would improve on existing conditions and achieve the corridor objectives, whereas the No Build Alternative will not support the vision and will likely contribute to further degradation of the transportation corridors and coastal resources.

The PWP/TREP would provide an improved outcome for all coastal resource objectives. While coastal access may degrade only slightly with no corridor improvements, the improvements would greatly benefit coastal access. Water quality in the corridor would continue to degrade only without improvements. Lagoons would continue to degrade as well, but with planned improvements, restorations would significantly improve the status of the lagoons. While much of the corridor's existing natural habitat would remain whether improvements are made or not, this program offers the unique opportunity to add new ESHAs to the corridor.

Improvements to and/or the introduction of rail, bicycle, pedestrian, and HOV/Express Lanes facilities would provide more travel choices to the corridor. Capacity improvements would increase corridor person throughput on all modes while focusing on the movement of people, not cars, thereby addressing predicted growth in population and travel demand while maintaining reasonable and reliable travel times. Concentrated investment in an already developed corridor around Smart Growth nodes would further the region's goals for an improved connection between transportation and land use.

TABLE 3B-5: ACHIEVING THE VISION WITH NO BUILD AND BUILD ALTERNATIVES

Corridor Vision (and applicable factors)	No Build	Build	Notes
Ensuring Beach and Coastal Access <ul style="list-style-type: none"> Coastal access routes: Accessibility for all modes Coastal recreation facilities 			<ul style="list-style-type: none"> Over seven million annual beach visits in the corridor. Significant and desirable improvements to beach, recreational, and other coastal resource access. A majority of visitors arrive by carpool yet congestion and parking are problems. Build Alternative reduces congestion, especially for carpools and buses, improves local pedestrian and bike access, and makes transit a more viable alternative for tourist and leisure trips.
Water Quality Improvements <ul style="list-style-type: none"> Level of runoff Treatment of runoff 			<ul style="list-style-type: none"> Currently, some runoff from existing I-5 corridor goes untreated. Build Alternative would include improvement to treat new runoff as well as some existing runoff. Transportation improvements would include design measures (bridge crossings, smaller footprint) that accommodate restoration plans and include improvements in tidal circulation and that better convey flows under facilities from inland areas.
Lagoon Restoration <ul style="list-style-type: none"> Lagoon health 			<ul style="list-style-type: none"> San Elijo and Buena Vista Lagoons are experiencing degradation. Restoration plans are in process; however, funding is limited. Transportation improvements include a companion Environmental Mitigation Program that would contribute to the restoration efforts. Transportation improvements would include design measures (bridge crossings, smaller footprint) that accommodate restoration plans and include improvements in tidal circulation.
Enhanced and Expanded Natural Habitat <ul style="list-style-type: none"> Wetland Upland Coastal bluff 			<ul style="list-style-type: none"> Wetland and upland habitat areas are located on edges of existing I-5 highway corridor and LOSSAN rail corridor and would be affected by any widening. Acquisition and restoration of natural habitat provides opportunities for protection and enhancement of habitat values that substantially exceeds potential impacts of transportation improvements. Del Mar Bluffs are experiencing significant erosion and are affected by the LOSSAN rail corridor. Tunnel and removal of tracks from the bluff would eliminate need for ongoing maintenance of shoreline protection structures and could lead to bluff restoration.



Better than Existing Conditions

















Same as Existing Conditions



Worse than Existing Conditions

TABLE 3B-5: ACHIEVING THE VISION WITH NO BUILD AND BUILD ALTERNATIVES (CONTINUED)

Corridor Vision (and applicable factors)	No Build	Build	Notes
Congestion Reduction – Highway Congestion – Rail Delays – Travel Times			<ul style="list-style-type: none"> Forecasted No Build Alternative 2040 corridor travel time is 70 minutes in the PM peak. Build Alternative preserves free-flow travel time of 24 minutes in Express Lanes. General-purpose travel times also reduced by shift of vehicles to Express Lanes. Double-tracking and other rail improvements reduce rail conflicts, decrease travel times, and enhance operations.
Environmental Protection and Enhancement – Lagoon and Habitat Restoration – Air Quality – Alternative Modes – Smart Growth			<ul style="list-style-type: none"> Build Alternative would provide two lagoon restorations and ten hydrologically improved channels. Build Alternative would allow hundreds of acres of habitat to be created, preserved, or restored. By reducing congestion and promoting transit, Build Alternative would reduce emissions and improve air quality. Transportation/land use connection encouraged by concentrating transportation improvements in an already developed corridor, thereby preserving other undeveloped areas. More frequent, fast, and reliable rail service in the corridor encourages higher-density development around stations.
Transportation Flexibility – Changes in Demand – Changes in Land Use – Evolving Technology			<ul style="list-style-type: none"> Operation of Express Lanes on I-5 can be adapted as future needs dictate. LOSSAN rail corridor would vastly increase capacity, enabling it to meet future transit demands and provide a range of services to meet travelers' varied and changing needs.
Value Maximization – Economic Efficiency			<ul style="list-style-type: none"> Build Alternative would provide efficiency improvement to a vital regional and national corridor. No Build Alternative would allow NCC constraints to compound, hindering economic throughput.
Coastal Access – Meeting Demand – Multimodal Options			<ul style="list-style-type: none"> Build Alternative would increase multimodal options for reaching coastal resources. No Build Alternative would be unable to accommodate projected growth in both population and travel demand, inhibiting coastal access.
Integration into Larger System – Corridor Significance – Interregional Connections			<ul style="list-style-type: none"> Build Alternative would provide safety, rehabilitation, and operational enhancements. Build Alternative would prevent the San Diego region from becoming a bottleneck in the broader I-5 and LOSSAN corridors.
Movement of People Rather than Vehicles – Vehicle Occupancies – Alternative Modes			<ul style="list-style-type: none"> Express Lanes on I-5 would incentivize HOV and transit usage. Increased capacity and frequency on LOSSAN rail corridor, as well as new and enhanced bus services, would encourage transit usage. Enhanced pedestrian and bike facilities and connections would encourage use of alternative modes.



Better than Existing Conditions



Same as Existing Conditions



Worse than Existing Conditions

The vision and goals for both coastal resources and the transportation system can be achieved through a partnership of transportation and environmental projects. The transportation projects planned for the NCC include the companion EMP to help restore, enhance, and expand coastal wetlands, freshwater wetlands, and upland areas in the corridor. The EMP is funded through the *TransNet* local transportation sales tax, and contains hundreds of millions of dollars specifically programmed for I-5 and the NCC corridor. The transportation projects in the PWP/TREP would allow for expenditure of these vital EMP funds. Due to the availability of these funds, there are opportunities to initiate land acquisition, undertake habitat enhancement and establishment, and make progress toward lagoon restoration in advance of the transportation projects with appropriate agreements in place. This comprehensive programmatic approach to mitigating transportation impacts also offers a rare opportunity to achieve large-scale, coordinated environmental benefits in the corridor.

Because the EMP funding is tied to implementation of the I-5 NCC transportation projects through the *TransNet* ordinance, the ability to achieve the same level of coastal access and environmental improvements without the transportation improvements would be effectively impossible on the scale proposed by the PWP/TREP. The NCC transportation projects would make funding available from the *TransNet* EMP to implement lagoon restoration, water quality, and habitat improvements in the corridor. That funding does not exist elsewhere and would be re-directed to other transportation uses in other parts of the region if the suite of projects identified in the PWP/TREP does not move forward as contemplated.

3B.3 IMPLEMENTING THE COMPREHENSIVE VISION

Moving forward with a balanced approach to transportation-project implementation and resource enhancement would help achieve the coastal resource and mobility vision for the NCC. Transportation-project implementation would address mobility needs while the associated REMP would address coastal resource protection, restoration, and enhancement needs. As a program, the PWP/TREP is intended to accommodate corridor and regional growth in population and travel in an environmentally sustainable way. Through the program, coastal resource restoration, enhancement and expansion would be facilitated by environmentally sensitive engineering, by redevelopment that incorporates design measures to accommodate resource restoration and enhancement programs, by the strategic timing and phasing of corridor improvements, and by implementing a corridorwide REMP focused on improving water quality as well as coastal and upland natural habitat areas. These transportation improvements would also ensure continued and enhanced access to existing and improved coastal and upland recreational facilities. To be successful, the transportation program must include transit, highway, bike, and pedestrian improvements. Corridor customers vary widely and include commuter, recreational, business, freight, and other customers. These different markets and associated varying trip types require different transportation solutions.

Caltrans and SANDAG have already taken a number of steps toward achieving the vision for the corridor. Travel times and reliability are expected to improve on the LOSSAN rail corridor due to recent and ongoing rail projects. In addition, several bicycle and pedestrian projects in the NCC have already begun construction, and operational strategies implemented on the I-5 highway corridor would increase capacity and accommodate demand with little or no increase in the transportation infrastructure footprint. These improvements, which were permitted prior to the PWP/TREP and are shown in Figure 3B-3, include the following:

- **LOSSAN Rail Corridor:**

- In Oceanside, adding a third track and crossover tracks at Oceanside Transit Center (Oceanside Station).
- In Oceanside, double-tracking a 1.2-mile segment of the LOSSAN rail corridor and replacing the bridge over Loma Alta Creek.
- In Carlsbad, double-tracking a 1.9-mile segment of the LOSSAN rail corridor and replacing the bridge over Agua Hedionda Lagoon.
- In San Diego, replacing three timber trestle rail bridges in Los Peñasquitos Lagoon.
- In San Diego, planning and beginning construction of the Sorrento to Miramar Phase I project, which would double-track and straighten 1.1 additional miles of the LOSSAN rail corridor.

- **I-5 Highway Corridor:**

- From San Diego to Encinitas, constructing one HOV lane in each direction between I-805 and Manchester Avenue using the median shoulder of the freeway.
- In San Diego, planning and beginning construction on HOV-lane connectors between I-5 and I-805, as well as a DAR at Carroll Canyon Road, that allows direct access to the HOV facility.
- Promoting SANDAG's subsidized and growing vanpool program throughout the NCC, which has 186 vanpools with destinations in the corridor, serving approximately 1,500 people each day.
- Implementing ITS throughout the NCC, including ramp metering, changeable message signs, and the new Traveler 511 service that debuted in 2007, providing motorists and other travelers with real-time information on traffic conditions, and transit services to help make informed decisions about which routes and modes to use.

- **Bicycle and Pedestrian:**

- In San Diego, planning and beginning construction of a new Class I bicycle path from Sorrento Valley Road to Voigt Drive, which would remove an existing bicycle route on the I-5 shoulder.
- In San Diego, planning and beginning construction of the Genesee Avenue overcrossing of I-5, to include new auto and bicycle lanes providing enhanced bicycle access to University of California, San Diego, and adjacent areas.
- In San Diego, planning a new overcrossing of I-5 at Gilman Drive, to include new auto and bicycle lanes providing improved access between the two major sides of the campus of the University of California, San Diego.
- In Encinitas, planning and beginning construction of three new pedestrian crossings of the LOSSAN rail corridor (at El Portal Street, Santa Fe Drive, and Montgomery Avenue).

Consistent with this program, SANDAG and Caltrans have included a comprehensive program of lagoon restoration and habitat expansion in the corridor to mitigate both past and future transportation-project impacts. Specifically, plans to improve the hydrological regime and marsh habitat in San Elijo Lagoon are being coordinated by SANDAG and Caltrans with support from the City of Encinitas, the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the California Department of Fish and Game, the County of San Diego, and the San Elijo Lagoon Conservancy. As noted, plans to improve the Buena Vista Lagoon are also in process. SANDAG has contributed funding toward planning, research, and study that would ultimately restore many acres of wetland and enhance overall lagoon functions, including funding the environmental document for the San Elijo Lagoon Restoration.

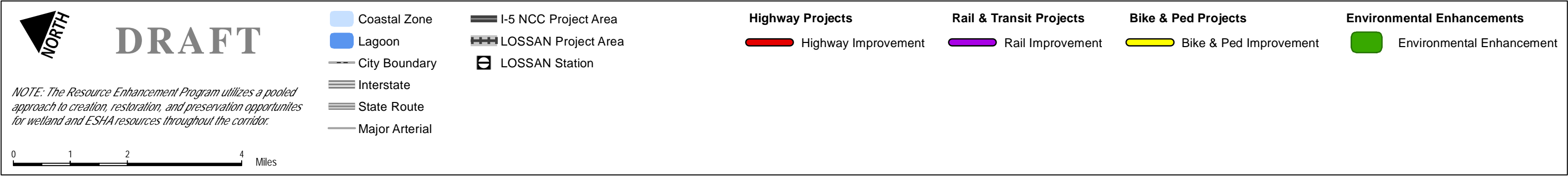
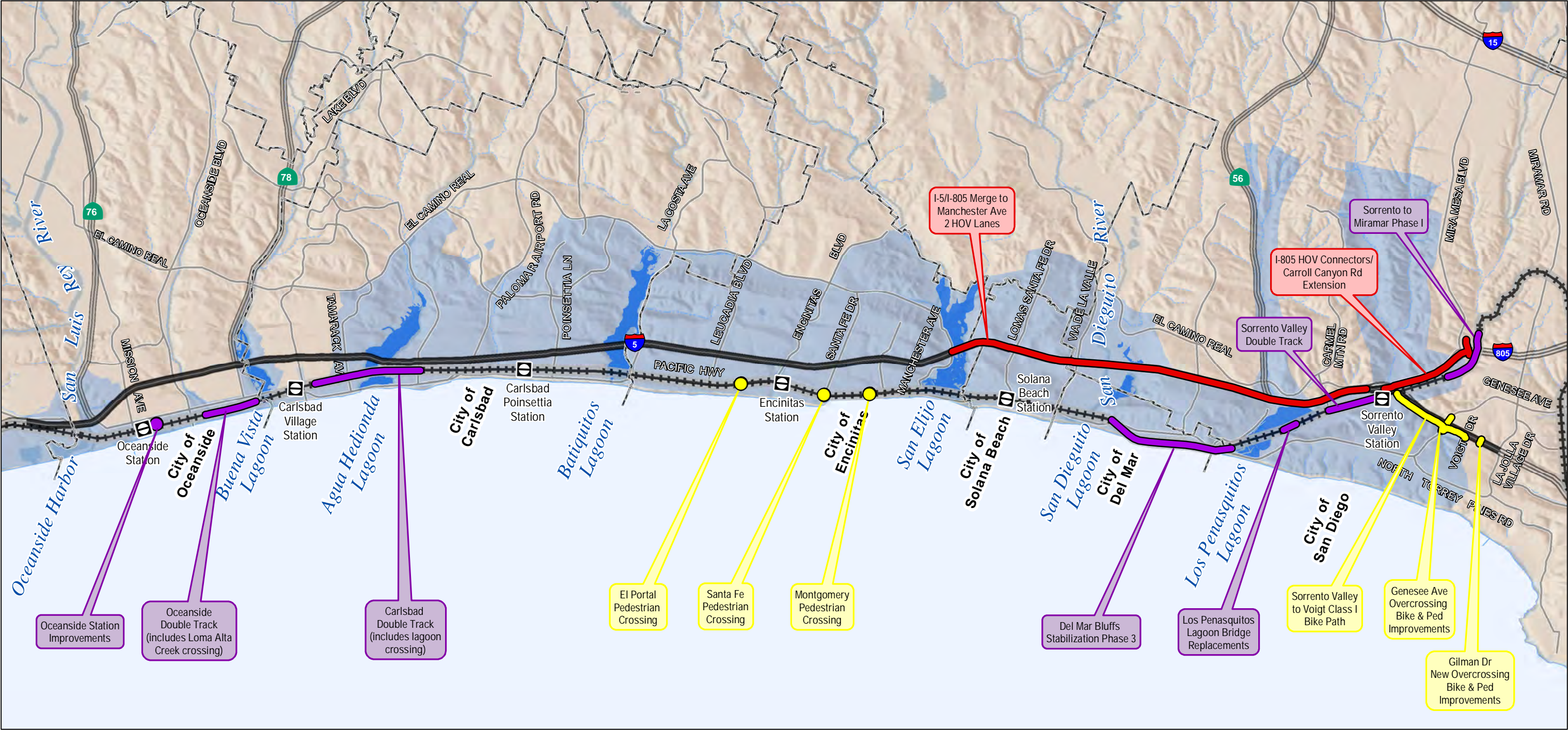
Furthermore, using *TransNet* EMP funding, Caltrans has acquired properties for habitat preservation, restoration, and/or establishment.

Future improvements to the NCC transportation facilities offer an opportunity to reverse and correct historical damage to coastal resources and improve the overall function of the I-5 highway corridor and the LOSSAN rail corridor. The NCC program envisions implementation of a comprehensive, corridorwide program to restore water quality and habitat. Implementing a corridorwide water quality enhancement program would help to restore watershed features lost by construction of transportation facilities and other development. Lengthened bridges and reduced footprints from structural supports would restore water and tidal circulation of lagoons, improve conveyance of stream flow and sediment transport from inland areas, facilitate passage of fish and other aquatic species, and restore natural shoreline processes, thereby enhancing biological productivity of marine resources. Existing transportation facilities—in conjunction with new transportation facility projects—would be reviewed and retrofitted to the maximum extent practicable with the best available technology to include BMPs to treat water quality within the corridor's watersheds.

Through the NCC program, significant marine resources and long-term biological productivity of coastal waters can be enhanced and restored by developing and implementing the comprehensive REMP. The program would include creating major lagoon restoration programs to improve tidal circulation in the San Elijo and Buena Vista Lagoon systems, preserving and/or restoring upland habitat areas via land purchase, and restoring riparian habitat areas within inland waterways in the corridor. As noted, restoring tidal circulation would significantly improve the ecological value of the lagoons and adjacent areas to better support ESHAs, degraded habitat areas, special-status species, and wildlife. Because San Elijo and Buena Vista Lagoons have yet to benefit from restoration efforts, they are the focus of numerous resource agencies and stakeholders.

Consistent, comprehensive, and proactive resource planning and management is necessary to effectively restore and preserve ESHAs and degraded habitat areas. Such an approach addresses individual project-specific impacts at the local level, as well as regional corridorwide cumulative resource impacts. The result of transportation-project implementation through the PWP/TREP would be a coordinated and comprehensive program for mitigation that exceeds traditional and often fragmented project-specific mitigation benefits by strategically acquiring and preserving ESHAs and degraded habitat areas in conjunction with habitat restoration and establishment opportunities. New and improved transitional habitat and buffer areas, restored riparian corridors, and preservation and/or restoration of habitat area via the purchase of upland habitat adjacent to corridor lagoons would help address water quality and the habitat needs of special-status and wildlife species. This would help achieve the overall goal of enhancing biodiversity and habitat value in the corridor as well as the region's EMP.

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS

FIGURE 3B-3
Project Improvements and Enhancements: Permitted Separately from PWP/TREP
North Coast Corridor Public Works Plan and Transportation and Resource Enhancement Program

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4.0 SCOPE OF PLANNED IMPROVEMENTS

To address the corridor's needs and vision, a balanced approach is necessary. This chapter describes the comprehensive program of North Coast Corridor (NCC) improvements, including those to the Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail line; Interstate 5 (I-5); other corridor transportation facilities; community, pedestrian, bicycle, and recreational infrastructure; and the corridor's natural and environmental resources. Corridor projects have been developed in response to existing infrastructure deficiencies, the need for both coastal resource protection, and enhancement, and transportation improvements. Only the specific projects described within this chapter are considered to be part of the PWP/TREP; references to other projects elsewhere in the document are intended to provide context.

A balanced, integrated approach to addressing these issues would enable implementation of solutions for both the I-5 highway corridor and LOSSAN rail corridor facilities, commensurate with unique resource enhancement opportunities. Protecting and enhancing coastal resources and improving mobility are necessary to maintain and improve quality of life of the coastal communities in the corridor, and to ensure the continued use and enjoyment of coastal resources for the millions of people who visit the corridor each year.

The coastal resource and mobility visions for the NCC represent ongoing efforts of the region and state to balance the needs of a large metropolitan area with the protection, enhancement, and accessibility of some of the region's and state's most valued resources. Residents, elected officials, businesses, and environmental stewards expect that such a balance would be maintained. As a result, the corridor program addresses and integrates the vision, goals, and needs of the region's transportation system and the coastal resources present within the corridor.

The program of improvements is described in the following sections and illustrated in Figure 4-2A through Figure 4-2G. This chapter includes only physical descriptions of the improvements. Potential benefits and impacts are described further in Chapter 5.

4.1 LOSSAN RAIL IMPROVEMENTS

The *LOSSAN Final Program EIR/EIS* (September 2007) included programmatic level plans for rail in the NCC. The *San Diego – LOSSAN Corridor Project Prioritization Analysis* (July 2009) further defined potential rail projects, including operational improvements and other benefits and impacts. Projects are described in Table 4-1. These rail projects include a mix of double-tracking, other track capacity enhancements, rail bridge replacement, vehicle crossing improvements, parking expansion, new platform locations, and other station enhancements. Generally, track projects improve capacity directly and, therefore, improve reliability, reduce travel times, and provide the opportunity for increased service levels. Other improvements may increase access to rail services or improve the passenger experience, which may lead to increased ridership.

4.1.1 Track Capacity

Just less than half of the LOSSAN rail corridor within the NCC is single track, which creates choke points when trains traveling in opposite directions meet.¹ These conflicts create most of the delays in the corridor and corridorwide double-tracking is necessary to sufficiently increase capacity and service. The LOSSAN rail program in the NCC includes double-tracking projects ranging in length from 0.6 to

¹ SANDAG, May 2012.

2.7 miles. Other track improvements similarly increase capacity and decrease conflicts, which improves rail reliability and decreases travel times.

4.1.1.1 Double-Tracking

- **Peñasquitos Double Track (San Diego):** Construct 1.7 miles of a second main track and replace bridges through Peñasquitos Lagoon from Control Point (CP) Torrey to a new CP Carmel Mountain.² This project would depend on the ultimate alignment of the Del Mar Tunnel (Section 4.1.4).
- **San Dieguito Double Track and Platform (Del Mar):** Construct 1.1 miles of second main track from CP Valley to CP Crosby, replace the San Dieguito River Bridge, and construct a new special-event platform adjacent to the Del Mar Racetrack and Fairgrounds (platform discussed further in Section 4.1.2). This project would result in a 2.8-mile stretch of double-track from CP Craven to CP Del Mar.³
- **San Elijo Lagoon Double Track (Encinitas):** Construct 1.5 miles of double-track between CP Cardiff and CP Craven, modify the existing at-grade crossing at Chesterfield Drive, and replace the San Elijo Lagoon Bridge with a new 500-foot-long double-track bridge at MP 240.4. The project would result in 4.2 miles of double-track from CP Swami to CP Valley.
- **CP Moonlight to CP Swami (Encinitas):** Add a second main track for the 0.8-mile stretch between CP Moonlight and CP Swami, resulting in a 2.4-mile stretch of double-track from CP Moonlight to CP Cardiff.
- **Batiquitos Lagoon Double Track (Encinitas/Carlsbad):** Construct 2.7 miles of a second main track between CP Ponto and CP Moonlight, replace the Batiquitos Lagoon Bridge, and expand the La Costa Avenue grade separation. This would result in 5.8 miles of double-track from CP Farr to CP Moonlight.
- **Carlsbad Village Double Track (Carlsbad):** Construct a 1.1-mile second main track and straighten a curve from Mile Post (MP) 228.4 to MP 229.5 including through the Carlsbad Village Station. This would lead to an 8.6-mile stretch of double-track from CP Shell to CP Ponto. The existing single-track bridge across Buena Vista Lagoon would be replaced with a new double-track bridge.⁴
- **East Brook to Shell Double Track:** Add a second main track and replace the San Luis Rey River Bridge in the 0.6-mile segment from CP East Brook to CP Shell. This would result in a 3.6-mile stretch of double-track from CP Westbrook to CP Escondido Junction. The improvements would increase on-time performance for Metrolink and northbound Amtrak and reduce delays for southbound Metrolink trains.⁶

² A control point is the location of a track signal or other marker that dispatchers specify when controlling trains. Control points are used to define project extent.

³ *Project Study Report: San Dieguito River Bridge Replacement and Second Track Project*, SANDAG, June 1, 2009.

⁴ *Project Study Report: Carlsbad Village Double-Track Project*, SANDAG, August 24, 2011.

⁶ *Project Study Report: San Luis Rey River Double-Track Project*, SANDAG, January 14, 2008.

TABLE 4-1: LOSSAN RAIL CORRIDOR PROJECTS IN THE NCC

Project	Location	Description	Extent (miles)	Phase
East Brook to Shell Double Track (includes San Luis Rey River Bridge)	Oceanside	Double-track; San Luis Rey River Bridge replacement	0.6	PE/EC
Oceanside Through Track	Oceanside	Addition of a third track and crossover to south of station to accommodate COASTER and Metrolink trains	0.3	Design
Oceanside Transit Center Parking Structure	Oceanside	Addition of a parking structure	—	Planning
Carlsbad Village Double Track	Carlsbad	Double-track; curve straightening on existing alignment. Buena Vista Lagoon Bridge replacement	1.1	PE/EC
Carlsbad Village Station Parking Structure	Carlsbad	Addition of a parking structure	—	Planning
Carlsbad Poinsettia Station Parking Structure	Carlsbad	Addition of a parking structure	—	Planning
Batiquitos Lagoon Double Track	Carlsbad/Encinitas	Double-track; Batiquitos Lagoon Bridge replacement; grade crossing expansion	2.7	PE/EC
Leucadia Boulevard Grade Separation	Encinitas	Grade separation at Leucadia Boulevard	—	PE/EC
Hillcrest Drive Pedestrian Crossing	Encinitas	Grade-separated pedestrian crossing at Hillcrest Drive (3 other crossings permitted prior to PWP/TREP)	—	PE/EC
Encinitas Station Parking Structure	Encinitas	Addition of a parking structure	—	Planning
CP Moonlight to CP Swami Double Track	Encinitas	Double-track	0.8	Planning
San Elijo Lagoon Double Track	Encinitas	Double-track; replacement of San Elijo Lagoon Bridge, grade crossing at Chesterfield Drive	1.5	Design
Solana Beach Station Parking Structure	Solana Beach	Addition of a parking structure	—	Planning
San Dieguito Double Track and Platform	Del Mar	Double-track; replacement of San Dieguito Lagoon Bridge; construction of new platform for fairgrounds special events	1.1	PE/EC
Del Mar Bluffs Additional Stabilization	Del Mar	Replacement of eroded track bed support, protection of bluff face and reinforcement of bluff toe	—	Planning
Del Mar Tunnel – Camino Del Mar or I-5/Peñasquitos	Del Mar	Alignment of tunnel and double-track beneath City of Del Mar or alignment of tunnel and double-track beneath I-5	2.7 / 4.6	Planning
Peñasquitos Lagoon Double-Track	Del Mar	Double-track between CP Torrey and CP Carmel Mountain and replacement of Los Peñasquitos bridges	1.7	Planning
Poinsettia Station Improvements	Carlsbad	Reconstruct tracks, realign platform and grade-separate pedestrian crossing at Carlsbad Poinsettia station	—	Design

PE/EC – Preliminary Engineering and Environmental Clearance

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4.1.1.2 Other Track Improvements

- **Oceanside Through Track (Oceanside):** Expand the rail portion of the station to the north and south, and add a third rail track to the southern end of the station. The existing boarding platform would be extended to the north. The southern end of the existing Platform 1 would be removed, and a new walkway would lead passengers to a new southern boarding platform. A series of turnouts and crossovers would be installed to enable trains to move laterally from track to track as they approach the platforms. Platform improvements would also be implemented. The improvements would allow for more simultaneous passenger train boarding of multiple train services, thus reducing travel times and facilitating future expansions of rail service. Freight trains, which now wait outside the station when passenger trains are present, would be able to pass through the station unimpeded.
- **Del Mar Bluffs Additional Stabilization (Del Mar):** Replace eroded track bed support, protect bluff face and reinforce bluff toe in order to provide continued operation of the rail service.

4.1.1.3 Bridge Replacement

Bridges throughout the corridor would be replaced in order to accommodate double-tracking. Additionally, many bridges have been in service for multiple decades and are structurally degraded, compounding the need for replacement. Other existing bridges would need a parallel bridge built to support corridor double-tracking. In some situations, bridge spans would be lengthened—and their footprints would be reduced—due to changes in bridge design and construction materials, including replacing creosote piles with longer spans and concrete piles. All new bridge structures would be designed to avoid and minimize impacts to adjacent sensitive resources. This analysis has been conducted as a part of the associated bridge optimization studies and would result in improved water quality, hydrologic connectivity and decreased sedimentation.

Track improvements that cross lagoons and therefore include bridge replacements are the following (additional information about each project is provided in Section 4.5):

- **Peñasquitos Double Track:** Includes bridge replacements through Peñasquitos Lagoon (dependent upon the selection of a tunnel alignment through Del Mar).
- **San Dieguito Double Track and Platform:** Includes San Dieguito River Bridge.
- **San Elijo Lagoon Double Track:** Includes San Elijo Bridge.
- **Batiquitos Lagoon Double Track:** Includes Batiquitos Lagoon Bridge.
- **Carlsbad Village Double Track:** Includes Buena Vista Lagoon Bridge.
- **East Brook to Shell Double Track:** Includes San Luis Rey River Bridge.

4.1.2 Station and Parking Improvements

The following station and parking improvements at LOSSAN corridor rail stations would increase passenger capacity, improve service, and enhance quality of service. (Parking improvements adjacent to I-5, such as park-and-ride lots, are listed in Section 4.2.6.) These improvements are all in the planning stage with the exception of Poinsettia Station Improvements, which are being designed.

- **Solana Beach Station Parking (Solana Beach):** Additional spaces at the COASTER Solana Beach Station.
- **Encinitas Station Parking (Encinitas):** Additional spaces at the COASTER Encinitas Station.
- **Poinsettia Station Parking (Carlsbad):** Additional spaces at the COASTER Carlsbad Poinsettia Station.

- **Poinsettia Station Improvements (Carlsbad):** Installation of an inter-track fence and a grade-separated pedestrian crossing at Carlsbad Poinsettia Station. New station platforms would be constructed to accommodate these improvements. The project is in the design stage and requires environmental approval.
- **Carlsbad Village Station Parking (Carlsbad):** Additional spaces at the COASTER Carlsbad Village Station.
- **Oceanside Station Parking (Oceanside):** Additional spaces at the existing Oceanside Transit Center to accommodate additional riders who access the station by private automobile.

Beyond the parking improvements planned at LOSSAN rail stations, several improvements to park-and-ride facilities on I-5 are also planned in the PWP/TREP. They are described in Section 4.2.6 with the other highway projects.

Some station platform projects improve access from special activity centers to the corridor's passenger rail services. Within the corridor, one station platform project is included:

- **Del Mar Fairgrounds Special Event Platform (Del Mar):** Part of the San Dieguito Double Track and Platform project (Section 4.1.1) is a new special events platform for the Del Mar Racetrack and Fairgrounds, to be located along the existing railway adjacent to the fairgrounds. The 1,000-foot platform with access to both main line tracks would provide seasonal access for special events. Ramps and steps would provide a direct link to the fairgrounds' parking lot. The platform and track would be elevated to be higher than the floodplain.

4.1.3 Roadway Grade Separations

Grade separations at crossing points between rail tracks and roadways improve safety and performance for all modes. The following roadway grade separations are planned:

- **Leucadia Boulevard Grade Separation (Encinitas):** An undercrossing of Leucadia Boulevard (MP 236.5) in Encinitas.
- **Two Additional Roadway Grade Separations:** Two additional grade separations between surface streets and the LOSSAN rail corridor are planned in the San Diego Association of Governments (SANDAG) 2050 Regional Transportation Plan (2050 RTP). The locations of these grade separations will be determined as part of the regional planning process and may be in the NCC. As discussed in Chapter 6A, additional project review would be required once more project details become available.

In addition to these roadway grade separations, three additional grade-separated crossings of the LOSSAN rail corridor are planned exclusively for bicycle and pedestrian users. They are listed below, and discussed in greater detail in Section 4.4 with the other bicycle and pedestrian improvements:

- **Coast to Crest Trail Crossing (Del Mar)**
- **Hillcrest Drive Pedestrian Undercrossing (Encinitas)**
- **Harbor Drive LOSSAN Crossing Bicycle/Pedestrian Improvements (Oceanside)**

4.1.4 Tunnels

The SANDAG 2050 RTP includes a rail tunnel to move the existing rail alignment away from the Del Mar bluffs, which are susceptible to failure and unable to accommodate double-tracking due to significant excavation, stabilization and ongoing maintenance needs of such a facility. The alignment of the tunnel is undecided and will be determined through an alternatives analysis.

There are two alternatives included in the *LOSSAN Final Program EIR/EIS*. The first would run underneath Camino Del Mar where tracks would then connect with the existing LOSSAN alignment across Los Peñasquitos and San Dieguito Lagoons. The second alternative tunnel would run under I-5 and daylight along the southern bluffs of the San Dieguito Lagoon. Tracks would reconnect with the existing LOSSAN rail corridor at-grade near the Del Mar race track. Should either of these tunnel options be selected, the existing rail track on the Del Mar bluffs would be removed from service. SANDAG is conducting a summary-level planning study of these alternatives in order to determine their influence on the design of the San Dieguito Bridge Replacement and Double-Track project. Further study is needed before an ultimate alignment is chosen.

- **Del Mar Tunnel, Camino Del Mar Option:** Construct a tunnel and second main track beneath Camino Del Mar from MP 243.6 to MP 245.5.
- **Del Mar Tunnel, I-5/Peñasquitos Option:** Construct a tunnel and second main track beneath I-5, bypassing Peñasquitos Lagoon and surfacing south of San Dieguito Lagoon.

4.2 I-5 HIGHWAY IMPROVEMENTS

The I-5 NCC Project would maintain or improve existing and future traffic operations on the existing I-5 freeway from La Jolla Village Drive in San Diego to Harbor Drive in Oceanside/Camp Pendleton, extending approximately 27 miles. In July 2011, Caltrans identified the 8+4 Buffer alternative as the Locally Preferred Alternative (LPA). The LPA consists of two high-occupancy vehicle (HOV)/Express Lanes in each direction, separated by a buffer from the existing four general-purpose lanes in each direction. This configuration is shown in Figure 4-1. The project includes the following elements:

- One new HOV/Express Lane in each direction from La Jolla Village Drive to just north of Lomas Santa Fe Drive. There is already one existing HOV/Express Lane in each direction from the I-5/I-805 merge to Lomas Santa Fe Drive, resulting in two total HOV/Express Lanes in each direction.
- Two HOV/Express Lanes in each direction would be added from just north of Lomas Santa Fe Drive to Harbor Drive/Vandegrift Boulevard.
- A buffer separating general-purpose lanes and HOV/Express Lanes varying in width up to 5 feet from near La Jolla Village Drive to Harbor Drive/Vandegrift Boulevard.
- Provision of a continuous HOV lane in each direction through the I-5 / I-805 junction with a freeway-to-freeway connector (flyover), crossing over the I-5 / I-805 merge and connecting the proposed project HOV/Express Lanes to existing HOV lanes just north of that merge.⁷

Additional project elements, including direct access ramps (DARs), auxiliary lanes, lagoon bridges, crossings, gateway features, park-and-ride facilities, ramp and interchange improvements, and Intelligent Transportation Systems (ITS) are discussed in the following sections.

⁷ I-5 NCC Project Supplemental Draft EIR/EIS, August 2012.

4.2.1 Express Lanes and Direct Access Ramps

Express Lanes enable the more efficient use of highway lanes and reduced travel times for the HOVs and fee-paying single-occupancy vehicles using the lanes. Conditions in Express Lanes can be controlled through real-time monitoring and traffic operations adjustments in order to achieve free-flow speeds and reliable travel times. Express Lanes operate as HOV lanes with transit vehicles, carpools and other HOVs traveling at free-flow speeds. Any additional capacity in the lanes, while still ensuring they are freely moving, can be used by single-occupancy vehicles (SOV) paying a fee. The fee varies in order to keep travel times reliable. A higher premium is therefore paid to use the uncongested Express Lanes when the general-purpose lanes are congested. Revenue from the lanes is invested in corridor transportation, specifically HOV facilities and transit service and operations. In the future as needs, priorities and demand changes, the facility is operationally flexible to adjust through changes to pricing, vehicle eligibility, and access control. Future transit service, including corridor bus rapid transit (BRT) service (see Section 4.3.1), has prioritized infrastructure to operate on. Additionally, Express Lanes allow for a large investment in HOV and transit capacity to be smoothed by providing managed access to SOVs. As HOV use grows, the percentage of SOVs using the lanes would decrease. The Express Lanes create a facility that focuses on moving people, not vehicles through the corridor. Express Lanes provide reliability to transit users, carpoolers and others who need reliability in their trips.

Express Lanes would be separated from the general-purpose lanes by a buffer that would vary in width (by up to 5 feet) and would be indicated with striping. Access and egress points would be limited to DAR and Intermediate Access Points (IAP). DARs allow direct access into the Express Lanes from overcrossings or tunnels at or near Voigt Drive (San Diego) and Manchester Avenue (Encinitas). The Manchester Avenue DAR would provide direct access to the San Elijo Multi-Use Facility, featuring a park-and-ride facility, BRT/transit station, and connections to recreational facilities near San Elijo Lagoon (Section 4.2.6). DARs reduce congestion and improve reliability because they provide a dedicated access route from a grade-separated interchange into Express Lanes for users and do not require drivers to weave across multiple general-purpose lanes. DARs are compatible with carpools, bus transit, and value pricing, and would support HOV/Express Lanes.

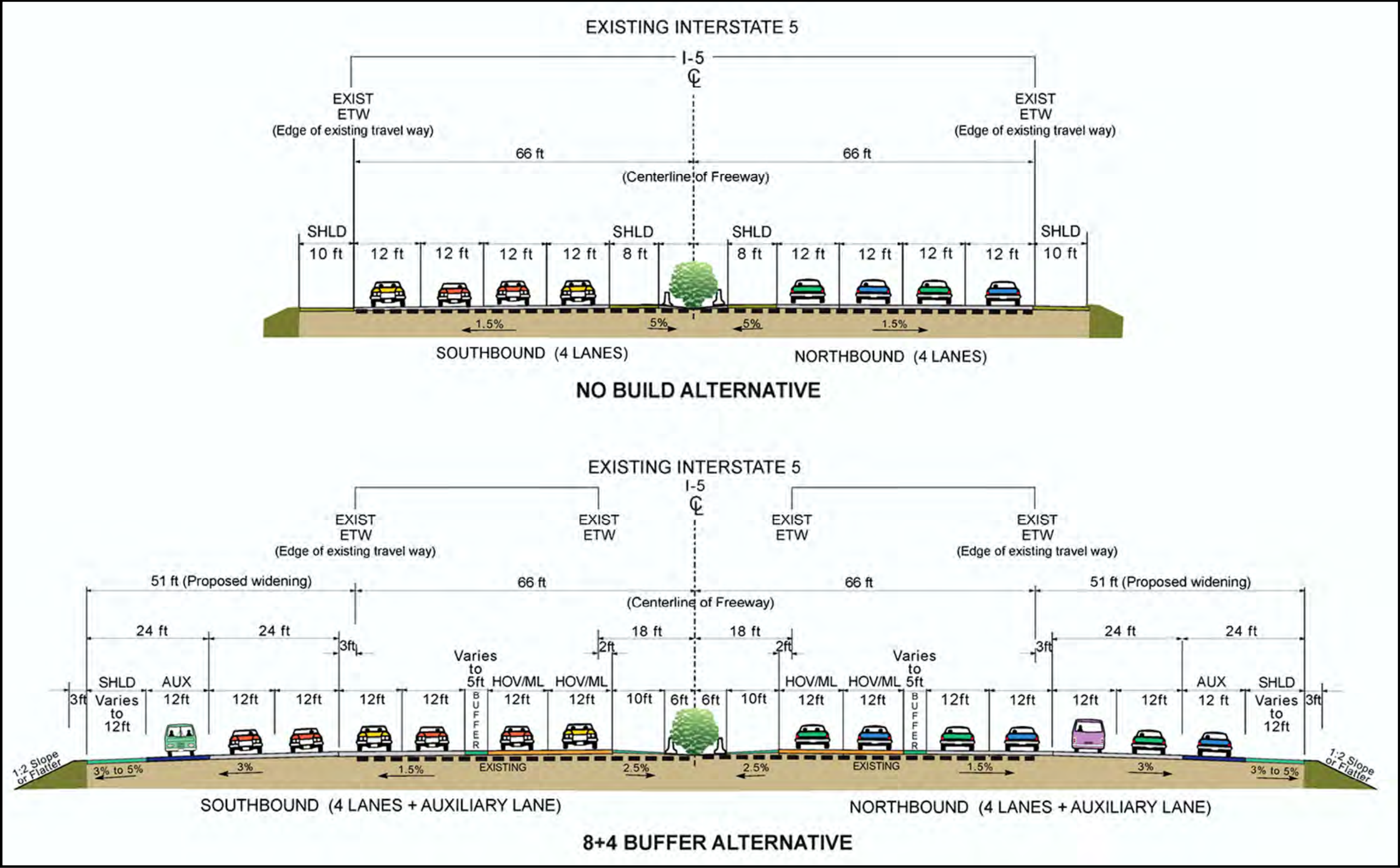
DAR locations were determined to best serve corridor travel needs. The locations provide direct access to the corridor's major activity centers, transit centers, origins, and destinations and while ensuring appropriate spacing. DAR locations and the activity centers they would provide links to are outlined in Table 4-2. Additionally, the Manchester Avenue DAR is located where parallel arterials end and therefore is a major access and egress point for I-5.

TABLE 4-2: DIRECT ACCESS RAMPS AS LINKS TO ACTIVITY CENTERS

Direct Access Ramps Locations	Activity Center
Voigt Drive – San Diego	UCSD, hospitals, employment center, shopping, hotels, future transit hub
Manchester Avenue – Encinitas	Public beach, future transit hub, community college, town centers

Source: I-5 NCC Project Draft EIR/EIS (Section 2-2).

FIGURE 4-1: TYPICAL CROSS SECTIONS FOR NO BUILD ALTERNATIVE AND 8+4 WITH BUFFER ALTERNATIVE



Source: Caltrans, December 2012.

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Additionally, Express Lane users are able access the lanes at specific access and egress points, also known as IAPs. Charged tolls would be posted and those who wanted to use the Express Lanes could merge into the facility from the general-purpose lanes. Fees for SOVs would be charged at access/egress points when the vehicles pass under overhead suspended scanners. In addition to suspended scanners, access points would have electronic signs displaying the current toll of various segments in the corridor. Ingress and egress locations are shown in Table 4-3.

TABLE 4-3: EXPRESS LANE INGRESS/EGRESS LOCATIONS (EXCLUDING DARS)

	Northbound Ingress/Egress	Southbound Ingress/Egress
La Jolla Village Drive	X	X
Carmel Mountain Road (IAP)	X	X
Del Mar Heights Road/Via de la Valle (IAP)	X	X
Lomas Santa Fe Drive (IAP)	X	X
Santa Fe Drive (IAP)	X	X
Poinsettia Lane (IAP)	X	X
Tamarack Avenue (IAP)	X	X
Oceanside Boulevard (IAP)	X	X
Harbor Drive	X	X

Source: I-5 NCC Project Supplemental Draft EIR/EIS, August 2012.

Note: Intermediate Access Points (IAP) where noted. La Jolla Village Drive and Harbor Drive are access points at ends of HOV/Express Lanes.

Violations in the HOV/Express Lanes law would be enforced by California Highway Patrol (CHP) based on an agreement with SANDAG similar to existing operations on the I-15 Express Lanes. This would include a combination of routine and special enforcement to ensure only HOV and vehicles with valid transponders are using the lanes.

4.2.2 Auxiliary Lanes

Auxiliary lanes are lanes on the outside of the freeway that typically connect on-/off-ramps and allow for weaving, acceleration, deceleration, merging, truck climbing, and other purposes supplementary to through traffic. These lanes maximize the capacity of a facility by reducing congestion caused by weaving and variable travel speeds. In the NCC, where access to local streets from I-5 (ramp volume) is high due to local trips using the freeway, the distances between interchanges is short, and freeway volumes are high, merging movements create greater levels of congestion. As such, 12-foot-wide auxiliary, acceleration, and deceleration lanes with shoulders up to 12 feet wide are planned for certain segments within the corridor. Auxiliary lanes improve the efficiency of the highway facility by moving disruptive merging out of the main travel lanes.

I-5 has, and would retain auxiliary lanes in the following segments:

- Genesee Ave to Sorrento Valley Road (Roselle Street) (NB deceleration lane)
- Genesee Ave to NB I-5 Bypass Lanes (NB weaving lanes)
- Carmel Mountain Road to Carmel Valley Road (NB weaving lane)
- Carmel Valley Road to Del Mar Heights Road

- Del Mar Heights Road to Via de la Valle (SB weaving lane; NB deceleration lane terminating at the Via de la Valle NB off-ramp would be extended to begin at the Del Mar Heights Road NB on-ramp)
- Via de la Valle to Lomas Santa Fe Drive
- Lomas Santa Fe Drive to Manchester Avenue
- La Costa Avenue to Poinsettia Lane (NB deceleration lane; SB acceleration lane)
- Palomar Airport Road to Cannon Road (NB weaving lane; SB acceleration lane beginning at the Cannon Road SB on-ramp would be extended to terminate at the Palomar Airport Road SB off-ramp)
- Cannon Road to Tamarack Avenue (NB acceleration lane beginning at the Cannon Road NB on-ramp would be extended to terminate at the Tamarack Avenue NB off-ramp)
- Carlsbad Village Drive to Las Flores Drive
- Las Flores Drive to Vista Way/State Route (SR) 78
- Vista Way/SR 78 to Cassidy Street
- Cassidy Street to California Street (NB only)
- California Street to Oceanside Boulevard (NB only)
- Mission Avenue to SR 76 (SB only)
- SR 76 to Harbor Drive

New or modified auxiliary lanes are proposed for the following segments:

- La Jolla Village Drive to Genesee Avenue (NB and SB weaving lanes)
- Genesee Avenue to Roselle Street (SB acceleration lane only)
- Del Mar Heights Road to Via de la Valle (extension NB as stated above)
- Lomas Santa Fe to Manchester Avenue (NB acceleration lane)
- Manchester Avenue to Birmingham Drive (NB and SB weaving lanes)
- Birmingham Drive to Santa Fe Drive (NB and SB weaving lanes)
- Santa Fe Drive to Encinitas Boulevard (SB weaving lane only)
- Encinitas Boulevard to Leucadia Boulevard (NB weaving lane only)
- Leucadia Boulevard to La Costa Avenue (SB acceleration lane only)
- Poinsettia Lane to Palomar Airport Road (NB and SB weaving lanes)
- Palomar Airport Road to Cannon Road (extension SB only as stated above)
- Cannon Road to Tamarack Avenue (extension NB only as stated above; SB weaving lane)
- Carlsbad Village Drive to SR 78 (extension SB only)
- Las Flores Drive to SR 78 (NB deceleration lane only)
- SR 78 to Cassidy Street (SB weaving lane; an existing SB auxiliary–weaving–lane would extend to the new SB auxiliary–weaving–lane that would begin at Oceanside Boulevard SB on-ramp)
- Cassidy Street to Oceanside Boulevard (extension of NB; SB weaving lane)
- Oceanside Boulevard to Mission Avenue (NB and SB weaving lanes)
- Mission Avenue to SR 76 (NB weaving only)
- SR 76 to Harbor Drive (NB deceleration lane, extension SB)

4.2.3 Lagoon Bridges

As I-5 passes through the NCC, it crosses five coastal lagoons. As such, the bridges that cross these lagoons would need to be upgraded or replaced as part of the project. This includes the replacement of some lagoon bridges and the lengthening of the I-5 bridges crossing San Elijo, Batiquitos and Buena Vista Lagoons. Lagoon bridge project descriptions are provided in *the I-5 NCC Project Supplemental EIR/EIS (August 2012)*.

One of the five existing lagoon bridges (crossing San Dieguito Lagoon) is relatively new with minor changes that do not require replacing the existing bridge. The remaining four lagoon bridges, including the I-5 crossings at San Elijo, Batiquitos, Agua Hedionda, and Buena Vista Lagoons, would be replaced due to the age of the existing bridge and increased width required for the project. Bridges would have a minimum width of 188 feet. The proposed bridge dimensions are summarized in Table 4-4 and additional project elements for these lagoons and their related waterways are identified below.

TABLE 4-4: I-5 BRIDGE DIMENSIONS

Bridge Structures	Bridge Dimensions				Notes
	Existing Dimensions		Proposed Project		
	Length	Width	Length	Width	
Los Peñasquitos Lagoon	—	—	—	—	—
Soledad Canyon Creek ¹	N/A	N/A	863 ⁴	60	HOV Connector flyover bridge across the creek
Los Peñasquitos Creek ¹	N/A	N/A	3,376 ⁴	60	HOV Connector flyover bridge across the creek
Carmel Creek ²	421	179-209	421	188-225	Bridge would be widened to the west
Sorrento Valley ³	N/A	N/A	443	15	—
San Dieguito Lagoon	650	179	650	258	Bridge would be widened to the west and east
San Elijo Lagoon	340	176-188	560	303-388	Width in bridge varies due to Manchester Avenue on- and off-ramps. Bridge supports would include 3 rows of approximately 12 or 13 columns each
Batiquitos Lagoon	219	2-68ft bridges w/ 19.2-ft gap	282	2-101ft bridges w/ 19.2-ft gap	Bridge supports would include 2 rows of 10 columns each
Agua Hedionda Lagoon	191	157.5	191	269	—
Buena Vista Lagoon	102.4	184	197	310	Bridge supports would include 2 rows of 32 columns each

Source: I-5 NCC Project Supplemental Draft EIR/EIS (Table 2.2.1), August 2012.

¹ Flyover Bridge ² Main I-5 Bridge ³ Bicycle Bridge N/A = There is no existing bridge at this location

⁴ The HOV Connector consists of two bridges connected in the center by a portion of roadway that lies on an embankment outside of the creek. The flyover bridges directly above the Soledad Creek and Los Peñasquitos Creek, respectively, are noted above. The total length of the HOV Connector would approximately be 4,459 feet, while the two bridges combined would approximately be 4,239 feet.

Minimal changes are proposed to the I-5 bridges in the vicinity of Los Peñasquitos Lagoon because the majority of the widening for HOV/Express Lanes was completed in the 1990s and early 2000s as part of the I-5/I-805/SR 56 interchange projects. Additionally, I-5 does not cross Los Peñasquitos Lagoon but instead creeks that feed into it. As a result, the proposed I-5 bridge over Carmel Creek needs to be widened by only 15 feet on the western side of the bridge to accommodate the second southbound HOV/Express Lane. Los Peñasquitos Creek and Soledad Creek would be crossed by two HOV/Express Lanes flyover bridges (3,376 feet long by 60 feet wide over Los Peñasquitos Creek; and 836 feet long by 60 feet wide over Soledad Creek) added to I-5 at the I-5/I-805 merge. In addition to these I-5 bridges, the Old Sorrento Valley Road crossing of Carmel Creek would be replaced with an upgraded bicycle and pedestrian trail, new bioswales and removal of the box culverts that convey Carmel Creek would be replaced with a bridge.

Across San Dieguito Lagoon, the project proposes to maintain the existing auxiliary lanes and widen the existing lagoon bridge to accommodate the LPA configuration rather than replace the bridge. The bridge width would be expanded from 179 to 258 feet; an increase of 79 feet. A short retaining wall would be placed on the east side of I-5 south of the San Dieguito River to avoid encroachment into a wetland at the base of the I-5 slope. A new bike/pedestrian path is proposed on the western freeway slopes across San Dieguito Lagoon. This would cross the lagoon in an area where no crossing exists, and would provide a possible connection to the Coast to Crest Trail. The bicycle/pedestrian path would be cut into a large fill slope south of the river. Where actually crossing the lagoon, the bicycle/pedestrian path would be suspended from the existing I-5 bridge.

At Agua Hedionda Lagoon, the proposed bridge would retain the existing 191-foot length, but would be approximately 269 feet wide with auxiliary lanes in both directions, an increase of 111.5 feet over the existing structure. The new bridge would be similar in design to the existing I-5 bridge designs at Batiquitos Lagoon. Specifically, it would have two rows of 16 four-foot diameter columns (cast-in-place drilled hole footings). Fewer columns would also result in less obstruction in the channel, and therefore, lower potential to slow flow through the bridge. The proposed bridge would have a channel bottom width of 76 feet, equal to the existing bridge cross section, with 2:1 channel slopes. A 16-foot-wide bench for wildlife crossing would be placed on both the northern and southern abutments; and a north/south bicycle/pedestrian path across the lagoon is proposed on the eastern side of I-5.

The I-5 bridge over San Elijo Lagoon is proposed to be 560 feet long. Construction of the new bridge would require a width of 303 to 388 feet to accommodate the construction area. The bridge width would vary due to the widening required for the on- and off-ramps to Manchester Avenue. A 265-foot channel bottom width is proposed, pursuant to lagoon optimization analysis. A 12-foot-wide bench to facilitate wildlife movement would be provided on the I-5 southern abutment, below a proposed 12-foot-wide fenced pedestrian path. In addition to the pedestrian path on the southern abutment and along the eastern fill slopes (similar to existing conditions), a proposed bicycle/pedestrian path connection would be provided on the western side of I-5 from Lomas Santa Fe to Manchester Avenue. The connection would be on a secondary bridge suspended from the I-5 structure.

The I-5 bridge over Batiquitos Lagoon is proposed to be 282 feet long, broken into north- and southbound bridges—each 127 feet wide with a 19.2-foot gap between them. The channel bottom would be 183.5 feet wide with a depth of -7 (National Geodetic Vertical Datum [NGVD]). The new channel would be a trapezoid with a level bottom between the abutments. The dimensions of the bottom would result in the same overall cross section as the modeled optimized bridge with a variable sloped bottom and the same width at -1.0 foot elevation (NGVD). The existing riprap within the channel bottom would be removed. The new I-5 bridge configuration would be similar to the existing bridge (i.e., two bridge structures with a gap separating the north- and southbound lanes). New abutments would

be built with 16-foot benches (for wildlife movement on the southern abutment, and for use as a pedestrian path and a wildlife corridor on the northern abutment).

The current enhanced I-5 bridge over Buena Vista Lagoon is proposed to be 197 feet long and 310 feet wide. Channel bottom width is estimated to be 105 feet wide and -6.0 feet (NGVD). Sixteen-foot benches for wildlife crossings would be built at both north and south I-5 abutments to accommodate use by small- and medium-sized mammals.⁹

4.2.4 Over and Undercrossing Replacement and Upgrading

To accommodate widening, most corridor overcrossings (Table 4-5) and undercrossings would need to be replaced or widened. This is in addition to the lagoon bridges identified in Section 4.2.3. Structure rehabilitation and upgrading presents the opportunity to upgrade and reconfigure local interchanges to improve pedestrian and bicycle circulation. The bicycle and pedestrian improvements are discussed further in Section 4.4.

The following undercrossings would be replaced:

- Carmel Valley Road Undercrossing would be widened (NB and SB directions)
- Via De La Valle
- Manchester Avenue
- Santa Fe Drive
- Encinitas Boulevard
- Cannon Road
- Chestnut Avenue
- Carlsbad Village Drive
- Oceanside Boulevard Overhead
- I-5/SR 76 Separation
- Harbor Drive/Camp Pendleton

In addition to over- and undercrossing replacements and bridges required to cross lagoons, the project would include additional new bridge structures as follows:

- Voigt Drive DAR
- Genesee Northbound Braided Ramp
- Genesee Southbound Braided Ramp
- I-5 HOV Flyover Connector I & II – at I-805 merge¹¹
- Carmel Creek – Sorrento Valley Road
- Manchester DAR Undercrossing Tunnel (I-5 Northbound)
- Manchester DAR Undercrossing at Northbound On-Ramp
- Oceanside Boulevard Overhead (NB Off-Ramp)
- Harbor Drive Undercrossing (I-5 Northbound Off-Ramp)

⁹ I-5 NCC Project Supplemental Draft EIR/EIS (Section 3.1), August 2012.

¹¹ The HOV Connector consists of two bridges connected in the center by a portion of roadway that lies on an embankment outside of the creek. The flyover bridges directly above the Soledad Creek and Los Peñasquitos Creek, respectively, are noted above.

TABLE 4-5: I-5 OVERCROSSING AND LAGOON BRIDGE WIDENING AND REPLACEMENTS

Location	Improvement
Genesee Avenue	Replaced by others
Carmel Valley Creek Bridge	Southbound Widening
San Dieguito River Bridge	Northbound/Southbound Widening
San Elijo Lagoon Bridge and Manchester Avenue Undercrossing	Replaced
Birmingham Drive Overcrossing	Replaced
Mackinnon Avenue Overcrossing	Replaced
Requeza Street Overcrossing	Replaced
Leucadia Blvd. Overcrossing	Replaced
La Costa Avenue Overcrossing	Replaced
Batiquitos Lagoon Bridge	Replaced
Poinsettia Lane Overcrossing	Replaced
Palomar Airport Road Overcrossing	Replaced
Aqua Hedionda Lagoon Bridge	Replaced
Chinquapin Avenue Overcrossing	Replaced
Tamarack Avenue Overcrossing	Replaced
Las Flores Drive Overcrossing	Replaced
Jefferson Street Overcrossing	Replaced
Buena Vista Creek Bridge	Replaced
SR 78/I-5 Separation	Replaced
Cassidy Street Overcrossing	Replaced
California Street Overcrossing	Replaced
Loma Alta Creek Bridge	Replaced
Brooks Street Overcrossing	Replaced
Mission Avenue Overcrossing	Replaced
Fourth St/Bush Street Overcrossing	Replaced
Neptune Way/8th Street Overcrossing	Replaced
San Luis Rey River Bridge	Replaced

Source: Caltrans, October 2012.

4.2.5 Regional and Local Gateway Features

Along the I-5 highway corridor, several key interchanges serve as the primary entryways to the region as well as local communities. The planned highway improvements include gateway features at these locations, which would contain artistic elements and other design treatments to enhance views, increase natural light, and create an inviting multimodal atmosphere around the interchange crossing.

There is one gateway feature of regional significance planned:

- Regional Gateway Feature at Harbor Drive (Oceanside):** Construct an art feature to serve as an entryway to Oceanside and the San Diego region. The design, which has not yet been decided, would be developed with input from the community and could include creative paving, evocative landscaping, and iconic structures that represent the region.

In addition, local gateway features are planned at several interchanges that would provide access to the corridor's town centers. As described in the *Interstate 5 North Coast Corridor Project Design Guidelines* (included as Appendix A to the PWP/TREP), these crossings are intended to "visually communicate their role as gateways to freeway drivers as well as those using local surface streets."¹² They would provide bicycle and pedestrian-friendly improvements on the local streets and integrate human-scale elements such as lighting and material textures. The local gateway interchanges are:

- **Via De La Valle (San Diego):** Provide primary access to Del Mar.
- **Encinitas Boulevard (Encinitas):** Provide primary access to downtown Encinitas.
- **Carlsbad Village Drive (Carlsbad):** Provide primary access to downtown Carlsbad.
- **Mission Avenue (Oceanside):** Provide primary access to downtown Oceanside.

The *Interstate 5 North Coast Corridor Project Design Guidelines* also note that gateway interchanges exist at Genesee Avenue (gateway to San Diego) and Lomas Santa Fe Drive (gateway to Solana Beach). While the improvements to these interchanges have been permitted separately from the PWP/TREP, they are expected to include gateway elements similar to the interchanges listed above. Coordination with the affected cities is underway to determine the preferred features at each location.

4.2.6 Park-and-Ride Improvements

The I-5 highway corridor contains several park-and-ride lots that facilitate carpooling and other ride-sharing activities. Many also serve as parking and staging areas for corridor recreational facilities such as lagoon trails and upland resources. By providing transportation options beyond single-occupant driving, these park-and-ride lots encourage alternative transportation modes and contribute to improved traffic conditions on I-5. In addition, they will help facilitate future transit services, such as BRT, that are planned for the corridor (Section 4.3.1).

Three existing park-and-ride facilities are planned for improvement, all of which are classified as community enhancement projects and described further in Section 4.4.5. While the ultimate number of parking spaces in each lot is still subject to design considerations, Caltrans has projected sufficient future demand to justify the maximization of available space for parking. The facilities are:

- **Carmel Valley Road Park-and-Ride (San Diego):** Also known as community enhancement SD#2B.
- **Birmingham Drive Park-and-Ride (Encinitas):** Also known as community enhancement EN#2A.
- **La Costa Avenue Park-and-Ride (Carlsbad):** Also known as community enhancement CB#1B.

Additionally, one new park-and-ride facility is planned:

- **Manchester Avenue DAR and San Elijo Multi-Use Facility (Encinitas):** Parking for approximately 150 cars, along with a BRT platform and an access road connecting to the DAR (described in Section 4.2.1).

Beyond the park-and-ride improvements planned at I-5, improvements to the parking facilities at LOSSAN rail stations are also planned in the PWP/TREP. They are described in Section 4.1.2 with the other LOSSAN projects.

¹² Caltrans *Interstate 5 North Coast Corridor Project Design Guidelines* (Section III), September 2013.

4.2.7 Ramp and Interchange Improvements

To accommodate widening and improve vehicular, pedestrian and bicycle circulation, local interchange ramps would undergo modifications. While the basic configuration would generally remain, the number of lanes and alignment would be modified to ensure that they accommodate expected traffic volumes and conform to current design standards. At some interchanges, ramps would be modified to address expected increases in local traffic and resulting accessibility needs. Most ramps would have HOV bypass lanes. Interchange improvements are shown in Table 4-6 and Table 4-7.

4.2.8 Intelligent Transportation System Features

The corridor already has ITS elements in place that would be supplemented by further improvements as part of the Transportation Managements System improvement plan for the corridor and region. These elements manage congestion using historical data, real-time information, and control and advanced communication networks to provide information about system operations to users and operators so they can make informed travel decisions. Additionally, ITS features improve the efficiency of existing infrastructure and reduce the need for major capacity increasing projects. Within the corridor, multiple ITS components are planned, including:

- Twenty-seven miles of new fiber-optic cable – Relaying real-time traffic information to highway operators and to signage along the corridor.
- Five new changeable message signs – Conveying information to motorists, including traffic conditions, alternate routes, special event, or traffic incident information. For Express Lanes, these signs would display tolls.
- Between 15 and 20 new closed circuit television cameras – Providing visual analysis of the freeway and congestion and security surveillance.
- Two new highway advisory radio channels – Providing drivers with real-time information about highway conditions to allow for educated travel decisions.
- New vehicle detection systems at five locations (nine total) – Detection devices provide traffic managers real-time information about how the freeway is operating.
- Arterial interconnect signals on El Camino Real – Maximizing the capacity of an existing facility.
- Ramp meters – Creating consistent and even flow – and a coordinated corridor-wide ramp metering system – Ultimately metering at all 58-on-ramps at buildout.
- Arterial signal timing enhancements.

4.2.9 Sound Walls, Retaining Walls, and Other Elements

Where feasible and reasonable, sound walls, or other forms of noise abatement, would be used based on the Caltrans Noise Protocol. Noise walls may be recommended as described in *the I-5 NCC Project Draft EIR/EIS* (Section 3-15, June 2010). That document describes sound walls required under a different highway footprint (10+4 with Buffer Alternative) and would therefore be revised and confirmed during final design. Following the final noise studies and prior to the Notice of Impending Development process, the location and size of sound walls and retaining walls will be reevaluated for feasibility, reasonableness, and impacts to coastal character.

TABLE 4-6: INTERCHANGE RAMP-LANE IMPROVEMENTS

Interchange	Location	Existing Number of Lanes			I-5 NCC Project Number of Lanes		
		SOV	HOV	TOTAL	SOV	HOV	TOTAL
Genesee Avenue	Genesee Avenue to SB I-5	1	0	1	2	1	3
	Genesee Avenue to NB I-5	1	0	1	2	1	3
Roselle Street	Roselle Street to SB I-5	1	0	1	2	1	3
Del Mar Heights Road	EB Del Mar Heights Road to SB I-5	1	1	2	2	1	3
	WB Del Mar Heights Road to SB I-5	2	0	2	2	1	3
	Del Mar Heights Road to NB I-5	2	0	2	2	1	3
Via de la Valle	WB Via de la Valle to SB I-5	2	0	2	2	0	2
	EB Via de la Valle to SB I-5	1	1	2	2	1	3
	EB Via de la Valle to NB I-5	2	0	2	2	0	2
Birmingham Drive	Birmingham Drive to SB I-5	2	0	2	2	1	3
	Birmingham Drive to NB I-5	1	1	2	2	1	3
Santa Fe Drive	Santa Fe Drive to SB I-5	1	1	2	2	1	3
	Santa Fe Drive to NB I-5	1	0	1	2	1	3
Encinitas Boulevard	Encinitas Boulevard to SB I-5	1	1	2	2	1	3
	Encinitas Boulevard to NB I-5	1	1	2	2	1	3
Leucadia Boulevard	Leucadia Boulevard to NB I-5	1	1	2	2	1	3
La Costa Avenue	La Costa Avenue to NB I-5	1	1	2	2	1	3
Palomar Airport Road	WB Palomar Airport Road to SB I-5	1	1	2	2	1	3
Tamarack Avenue	Tamarack Avenue to NB I-5	1	0	1	2	0	2
Carlsbad Village Drive	Carlsbad Village Dr to SB I-5	1	0	1	2	0	2
	Carlsbad Village Dr to NB I-5	1	0	1	2	0	2
Las Flores Drive	Las Flores Drive to SB I-5	1	0	1	2	0	2
SR 78	SR 78 to SB I-5	1	0	1	2	0	2
	Remove EB SR 78 to NB I-5 Connector						
Oceanside Boulevard	Oceanside Boulevard to SB I-5	1	1	2	2	1	3
	Oceanside Boulevard to NB I-5	2	0	2	1	1	2
Mission Avenue	Mission Avenue to SB I-5	1	1	2	2	1	3
	Remove EB Mission Ave to SB I-5 Ramp						
	Mission Avenue to NB I-5	1	0	1	2	1	3
SR 76	SR 76 to SB I-5	2	0	2	2	1	3
	SR 76 to NB I-5	2	0	2	2	1	3
	Remove NB I-5 to WB SR 76 Connector (closed to traffic)						
Harbor Drive	Harbor Drive to SB I-5	2	1	3	2	1	3
	Harbor Drive to NB I-5	1	0	1	2	0	2

Source: Caltrans, October 2012.

TABLE 4-7: INTERCHANGE LANE GEOMETRY IMPROVEMENTS

Interchange	Location	Lane Geometry Modifications
Del Mar Heights Road	I-5 SB Ramps	Ramp adjustments to remove free right-turn capabilities.
	I-5 NB Ramps	Convert NB left/through/right lane to a shared through right-turn lane, add a second left-turn lane (creating dual right and dual lefts).
Via de la Valle	I-5 SB Ramps	Ramp adjustments to remove free right-turn capabilities. Widen Via de la Valle to add an exclusive WB right-turn lane.
	I-5 NB Ramps	Ramp adjustments to remove free right-turn capabilities. Widen Via de la Valle to add an exclusive EB right-turn lane.
Manchester Avenue	I-5 SB Ramps	Ramp adjustments to remove free right-turn capabilities. Widen WB Manchester Avenue to add a second right-turn lane (creating dual right-turn lanes).
Birmingham Drive	I-5 SB Ramps	Proposed roundabout at intersection, otherwise standard signalized intersection.
	I-5 NB Ramps	Proposed roundabout at intersection, otherwise standard signalized intersection.
Santa Fe Drive	I-5 SB Ramps	Convert SB through lane to a shared through left-turn lane. Extend exclusive right-turn lane. Widen Santa Fe Drive to add a second WB left-turn lane (creating dual left-turn lanes).
	I-5 NB Ramps	Widen Santa Fe Drive to add a second EB left-turn lane (creating dual left-turn lanes).
Encinitas Boulevard	I-5 SB Ramps	Addition of an exclusive SB left-turn lane (creating dual left-turn lanes).
		Addition of an exclusive SB right-turn lane (creating dual right-turn lanes). Widen Encinitas Boulevard to add a second WB left-turn lane (creating dual left-turn lanes).*
	I-5 NB Ramps	Addition of an exclusive NB left-turn lane (creating dual left-turn lanes).
		Addition of an exclusive NB right-turn lane (creating dual right-turn lanes). Widen Encinitas Boulevard to add a second EB left-turn lane (creating dual left-turn lanes); and to add a third EB through lane.*
Palomar Airport Road	I-5 SB Ramps/ Palomar Airport Road	Ramp adjustments to remove free right-turn capabilities.
Tamarack Avenue	I-5 SB Ramps/ Tamarack Avenue	Addition of a WB left-turn lane (creating dual lefts).
	I-5 NB Ramps/ Tamarack Avenue	Addition of a right-turn lane (creating dual right-turn lanes).
Carlsbad Village Drive	I-5 SB Ramps/ Carlsbad Village Drive	Convert the SB shared left/through/right lane to a shared right/through lane, add an exclusive SB left-turn lane (creating a single left-turn lane and dual right-turn lanes). Widen Carlsbad Village Drive to add a second WB left-turn lane (creating dual left-turn lanes).
	I-5 NB Ramps/ Carlsbad Village Drive	Separate NB left-turn lane, convert right-turn lane to a shared left/through/right lane. Widen Carlsbad Village Drive to add a second EB left-turn lane (creating dual left-turn lanes).

TABLE 4-7: INTERCHANGE LANE GEOMETRY IMPROVEMENTS (CONTINUED)

Interchange	Location	Lane Geometry Modifications
Oceanside Boulevard	I-5 SB Ramps/ Oceanside Blvd	Convert SB shared left/through/right turn-lane into two separate lanes: shared left/through lane, and exclusive right-turn lane. Retain exclusive left-turn lane (creating dual left-turn lanes). Widen Oceanside Boulevard to extend the existing WB to SB right-turn lane further east along Oceanside Boulevard (up to near the I-5 NB ramps/Oceanside Boulevard intersection) to increase traffic storage. Widen Oceanside Boulevard to extend WB left-turn lane storage.
	I-5 NB Ramps/ Oceanside Blvd	Widen Oceanside Boulevard to extend EB left-turn lane storage.
Mission Avenue	I-5 SB Ramps/ Mission Avenue	Ramp adjustments to remove free right-turn capabilities. Remove EB to SB on-ramp, add dual EB left-turn lanes. Convert SB through/left to an exclusive left-turn lane (creating dual lefts), convert the exclusive southbound right-turn lane to a shared through right-turn lane. (need to update master file). Widen Mission Avenue to extend WB left-turn lane storage.
	I-5 NB Ramps/ Mission Avenue	Remove NB to EB free right-turn lane, add a second EB left-turn lane (creating dual lefts), add SB dual left-turn lanes.
SR 76	I-5 NB Ramps/ SR 76	Addition of a second NB left-turn lane (creating dual lefts).
Harbor Drive	I-5 SB Ramps/ Harbor Drive	Ramp adjustments to remove free right-turn capabilities (a separate project reconstructed the I-5 SB ramps/Harbor Drive intersection removing the free right-turn capabilities. However, the I-5 NCC Project would still realign the SB on-ramp from Harbor Drive).
		Widen WB Harbor Drive to extend the existing exclusive right-turn lane further east along Harbor Drive (up to Harbor Drive/San Rafael/Vandegrift Boulevard intersection) to increase traffic storage. Widen WB Harbor Drive to extend WB left-turn lane storage.
		Keep two existing through-lanes.
	I-5 NB On-Ramps/ Harbor Drive	<p>Realignment of NB to WB off-ramp to align with San Rafael intersection (EB right turn would be controlled by signal and would no longer be a free right turn).</p> <p>Convert NB shared through/right-turn lane into an exclusive through lane, eliminating the NB right-turn movement and improving pedestrian safety.</p>

Source: Caltrans, December 2012

Multiple retaining walls have been proposed along the I-5 alignment. Retaining walls would be used to reduce property acquisition needs, stabilize slopes, minimize impacts and accommodate engineered structures. In general, Caltrans' standard retaining walls (Type 1 through Type 5) or crib walls may be used without special design. Non-standard retaining walls may be utilized in suitable locations, but would require additional support work and design during the project design phase.

Design for safety devices, guard rails, end treatments, crash cushions, bridge rails, signs, and drainage improvements would all be designed consistent with Caltrans best practices and applicable mandatory design standards. Existing overhead and underground utilities (water, sewer, gas, electricity telephone, and other communications) would be relocated, as needed and within existing utility easements, where possible

4.3 OTHER TRANSPORTATION IMPROVEMENTS

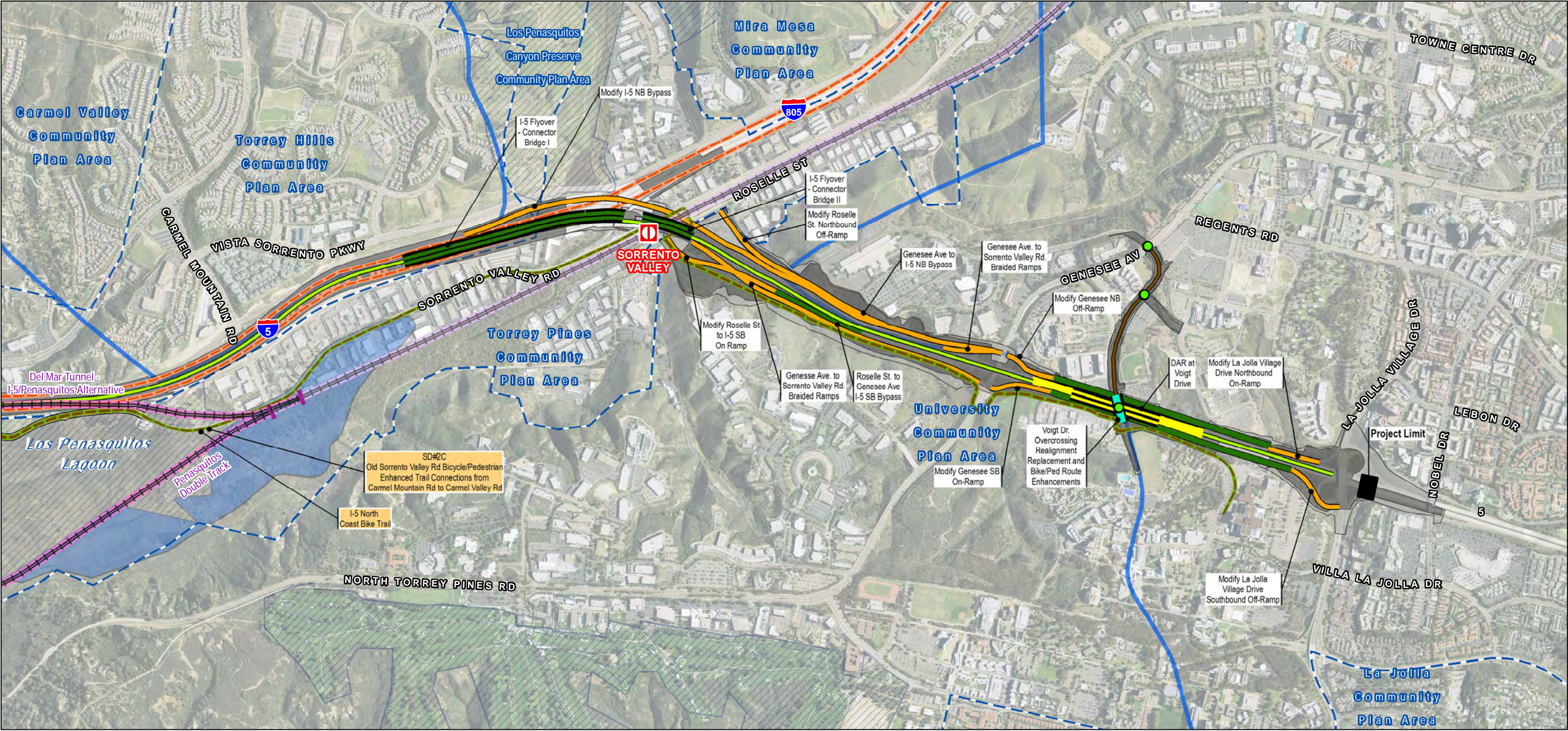
In order to fully understand and analyze the program of improvements in the NCC, the PWP/TREP includes other transportation enhancements planned for the corridor. Inclusion of these projects provides a comprehensive understanding of the mobility and resource benefits and impacts planned for the corridor. Each of these additional projects would be analyzed through separate environmental processes and are not addressed in the LOSSAN or I-5 environmental documents discussed in Sections 4.1 or 4.2, respectively. These enhancements are included in Figure 4-2A through Figure 4-2G: Planned Improvements.

4.3.1 Bus Rapid Transit (BRT)

A BRT route would use the new I-5 Express Lane facility as identified in the SANDAG 2050 RTP. BRT combines stations, enhanced vehicles, ITS, and priority running ways into a premier rubber-tire transit alternative with fast, frequent, and high-quality service. The first planned service for I-5, known in the 2050 RTP as Route 653, is a reverse-commute BRT that targets the peak-period commute trip between the high-density Mid City residential area in central San Diego and the Palomar Airport Road business park in the NCC. It would travel via Kearny Mesa/I-805 and the I-5 HOV/Express Lanes. Buses are planned to run at 15-minute intervals during the peak period by 2035. Although other routes have not been planned yet, additional BRT or traditional bus routes could use the Express Lanes and reap the same travel-time and reliability benefits. Such operations would be facilitated by the proposed DARs at Voigt Drive and Manchester Avenue, the new park-and-ride facilities planned at Manchester Avenue (San Elijo Multi-Use Facility) and SR 76, and enhanced park-and-ride facilities at other locations.

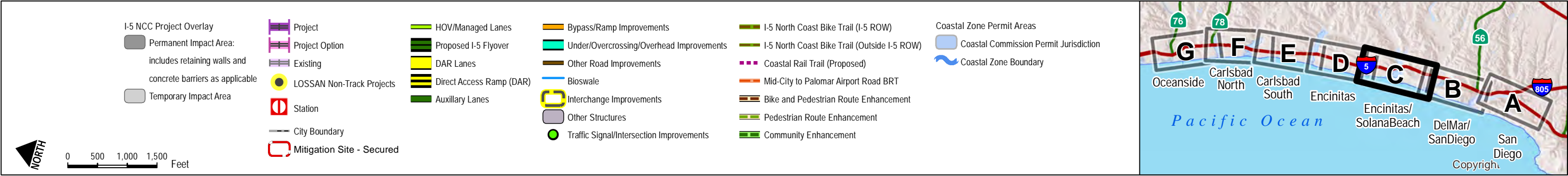
4.3.2 Improvements to Local Bus Service

While the PWP/TREP does not directly include local bus service, the 2050 RTP includes enhancements to existing local bus transit in the NCC, including increases in operating funding for future, more frequent service to rail stations and coastal destinations. The 2050 RTP also includes improvements to existing local bus service along Coast Highway. The Coast Highway bus transit improvements would be integrated and coordinated with multimodal improvements planned for Coast Highway by the cities along the corridor, creating vibrant coastal communities that are accessible by transit, bicycle, foot, and auto. The envisioned transit enhancements along Coast Highway include increased service frequencies and a menu of potential roadway features to facilitate transit operations such as fewer stops, dedicated transit lanes, traffic-signal priority, and intersection queue jumps (short dedicated lanes approaching intersections that would allow buses to advance to the intersection ahead of other vehicles stopped at traffic signals).



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DATA SOURCES: Caltrans, California Coastal Commission, Local Jursidictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

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Planned Improvements (City of Encinitas [South] / Solana Beach)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 4-2C

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

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FIGURE 4-2D

Planned Improvements (City of Encinitas [North])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

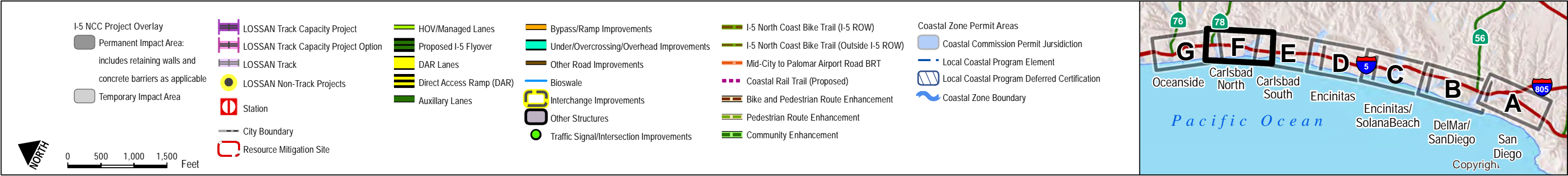
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FIGURE 4-2E
Planned Improvements (City of Carlsbad [South])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

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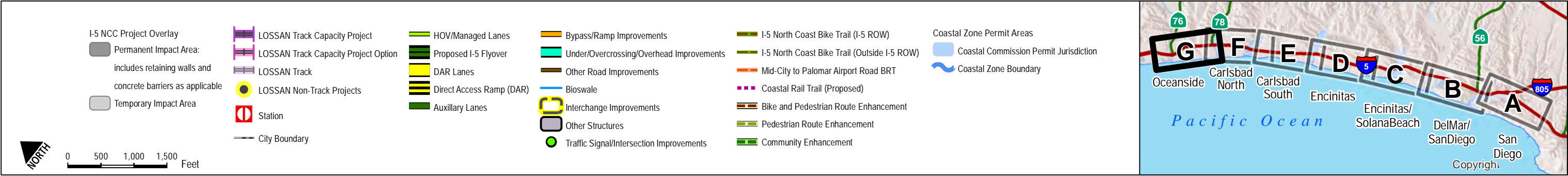
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FIGURE 4-2F
Planned Improvements (City of Carlsbad [North])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

The Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map are for planning and engineering study purposes only. Data are derived from multiple sources. The digital Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map have not been adopted by the Coastal Commission, and do not supersede the official versions certified by the Coastal Commission as may be amended from time to time.

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FIGURE 4-2G
Planned Improvements (City of Oceanside)
North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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The multimodal components of Coast Highway improvements would facilitate access to transit through implementation of sidewalk improvements, bicycle lanes, and traffic-calming techniques, and would promote the attractiveness of transit through landscaping, urban design, and amenities at bus stops such as embellished shelters and real-time next-vehicle arrival signs. Coast Highway bus transit improvements could include overlay rapid service with fewer stops than the parallel local service to decrease total trip time for longer-distance passenger trips. Ongoing coordination among SANDAG, NCTD and the coastal cities will define the optimum transit service and infrastructure enhancements within the Coast Highway multimodal corridor context.

4.3.3 I-5/SR 56 Interchange¹³

The Interstate 5/State Route 56 Interchange Project proposes to improve the traffic operations on I-5 between north of Del Mar Heights Road and south of Carmel Valley Road, and on SR 56 between El Camino Real and east of Carmel Country Road. Local streets and the surrounding communities experience increased demand and congestion during peak hours from I-5 and SR 56 traffic. Currently, drivers must exit the freeway to travel between southbound I-5 to eastbound SR 56 and westbound SR 56 to northbound I-5. This causes congestion at the El Camino Real and Carmel Valley Road intersection. Drivers use alternative routes, including El Camino Real, Carmel Valley Road, and Carmel Creek Road, which causes additional congestion on surface streets and through neighborhoods.

Project alternatives include improvements to local streets, adding auxiliary lanes along I-5 and SR 56, interchange improvements, or southbound-to-eastbound and westbound-to-northbound freeway connector ramps. An environmental document analyzing the alternatives was released in May 2012. The No Build Alternative is described below:

- **No Build Alternative** – Assumes the existing configuration for the I-5/SR 56 interchange with the improvements proposed as part of the I-5 NCC Project.

Four Build Alternatives have been selected for consideration. Features common to all the Build Alternatives include the following:

- Reconfigure Del Mar Heights Road interchange.
- Remove eastbound SR 56 slip-off-ramp to Carmel Creek Road.
- Construct auxiliary lane along southbound I-5 from Del Mar Heights Road to Carmel Valley Road.
- Widen northbound I-5 off-ramp at Carmel Valley Road from three to four lanes.
- Widen Carmel Valley Road from six to eight lanes between I-5 and El Camino Real.
- Widen westbound SR 56 between Carmel Country Road and El Camino Real from two to a minimum of three general-purpose lanes.
- Install ramp meters at Carmel Country Road and Carmel Creek Road westbound SR 56 on-ramps.
- Construct soundwalls, retaining walls, barriers, guard rails/end treatments, crash cushions, bridge rails, drainage improvements, detention basins, and signage at specific locations along the I-5 and SR 56 corridors.
- Relocate the AT&T-owned transcontinental fiber-optic line that parallels I-5 between Carmel Valley Road and Del Mar Heights Road to within High Bluff Drive and El Camino Real.

The four Build Alternatives are described as follows:

¹³ Interstate 5/State Route 56 Interchange Project Draft EIR/EIS (Executive Summary and Section 2.3), May 2012.

- **Direct Connector Alternative** – Proposes constructing direct freeway-to-freeway connectors in the west-to-north and south-to-east directions. Each connector ramp would have two general-purpose lanes. Additionally, this alternative includes extending the local bypass in both the northbound and southbound directions to the Del Mar Heights Road interchange, a separation barrier on westbound SR 56, auxiliary lanes along eastbound and westbound SR 56 between Carmel Creek Road and Carmel Country Road, and along the northbound and southbound local bypasses between Carmel Valley Road and Del Mar Heights Road, improvements to ramps, reconstructing the Del Mar Heights Road overcrossing, widening the El Camino Real undercrossing, the construction of 17 retaining walls, and other associated operational improvements. Additionally, the I-5 freeway widening associated with the proposed extension of the southbound I-5 local bypass would require modifications to Portofino Circle and portions of the common area for the Del Mar Villas condominium development.

Among the ramp improvements, the northbound and southbound off-ramps at Carmel Valley Road would be widened to four lanes at the intersections. The northbound on-ramp at Carmel Valley Road would be realigned to accommodate the west-to-north direct connector. The interchange ramps at Carmel Creek Road would be realigned to accommodate the proposed direct connectors, and the eastbound off-ramp at Carmel Creek Road would be widened to two lanes at the exit and four lanes at the intersection. The eastbound on- and off-ramps and westbound loop on-ramp at Carmel Country Road would be realigned to accommodate the widened SR 56 freeway mainline. Ramp meters and CHP pull-out pads would be included for on-ramps at the Carmel Valley Road, Del Mar Heights Road, Carmel Creek Road, and Carmel Country Road interchanges. Carmel Valley Road would be widened to eight lanes east of I-5, and the Carmel Valley Road/SR 56 on-ramp intersection would be widened to accommodate higher traffic volumes.

- **Auxiliary Lane Alternative** – Proposes constructing an auxiliary lane along southbound I-5 between the southbound on-ramp at Del Mar Heights Road and southbound off-ramp at Carmel Valley Road, to help facilitate merging traffic. The southbound off-ramp would be widened to a two-lane freeway exit and the northbound on and off-ramps would be widened at Carmel Valley Road. Additionally, the Carmel Valley Road/eastbound SR 56 on-ramp intersection would be widened to accommodate higher traffic volumes and westbound SR 56 would be widened to the north. The alternative would include the construction of seven retaining walls.
- **Hybrid Alternative** – The proposed westbound-to-northbound configuration from Carmel Country Road to Del Mar Heights Road featured in the Direct Connector Alternative would be combined with the proposed southbound-to-eastbound improvements featured in the Auxiliary Lane Alternative. The Hybrid Alternative would involve construction of a westbound SR 56 to northbound I-5 direct connector having two general-purpose lanes and an auxiliary lane along southbound I-5 between the southbound on-ramp at Del Mar Heights Road and the southbound off-ramp at Carmel Valley Road to reduce merging traffic. Widening also would occur at the southbound I-5 off-ramp (to a two-lane freeway exit) and northbound I-5 off-ramp at Carmel Valley Road. The Hybrid Alternative would include the extension of the I-5 local bypass in the northbound direction to the Del Mar Heights Road interchange, a separation barrier on westbound SR 56, auxiliary lanes along westbound SR 56 between Carmel Creek Road and Carmel Country Road and along the northbound local bypass between Carmel Valley Road and Del Mar Heights Road, and the construction of 13 retaining walls.

Among ramp improvements, the southbound I-5 off-ramp at Carmel Valley Road would be widened to two lanes at the exit, and the northbound and southbound I-5 off-ramps at Carmel Valley Road would be widened to four lanes at the intersections. The northbound I-5 on-ramp at Carmel Valley Road would be realigned to accommodate the west-to-north direct connector. The westbound loop on-ramp at Carmel Creek Road would be realigned to accommodate the proposed west-to-north

direct connector, and the eastbound off-ramp at Carmel Creek Road would be widened to two lanes at the exit and four lanes at the intersection. The westbound loop on-ramp at Carmel Country Road would be realigned to accommodate the widened SR 56 freeway mainline. Ramp meters and CHP pull-out pads would be included for on-ramps at the western segment of Carmel Valley Road, Del Mar Heights Road, Carmel Creek Road, and Carmel Country Road interchanges. Carmel Valley Road would be widened to eight lanes east of I-5 and the Carmel Valley Road/SR 56 on-ramp intersection would be widened to accommodate higher traffic volumes.

- **Hybrid with Flyover Alternative** – The Hybrid with Flyover Alternative is a variation of the Hybrid Alternative. It would include a proposed flyover structure that would connect eastbound Carmel Valley Road to the eastbound SR 56 fast lane, in addition to the Hybrid Alternative features (west SR 56 to north I-5 connector, a southbound I-5 auxiliary lane between the Del Mar Heights Road on-ramp and the Carmel Valley Road off-ramp, and the widening of the northbound and southbound off-ramps at Carmel Valley Road). This alternative would require non-standard lane and shoulder widths along Carmel Valley Road and tunneling behind the Carmel Valley Road undercrossing abutments to provide pedestrian/bicycle access. The alternative would also include the extension of the I-5 local bypass in the northbound direction to the Del Mar Heights Road interchange, a separation barrier on westbound SR 56, along eastbound and westbound SR 56 between Carmel Creek Road and Carmel Country Road, and along the northbound local bypass between Carmel Valley Road and Del Mar Heights Road, and the construction of 21 retaining walls.

Among ramp improvements, the southbound I-5 off-ramp at Carmel Valley Road would be widened to two lanes at the exit, and both the northbound and southbound I-5 off-ramp intersections at Carmel Valley Road would be widened to four lanes. The northbound on-ramp at Carmel Valley Road would be realigned to accommodate the west-to-north direct connector. The interchange ramps at Carmel Creek Road would be realigned to accommodate the eastbound flyover ramp, and the eastbound off-ramp at Carmel Creek Road would be widened to two lanes at the exit and four lanes at the intersection. Ramp meters and CHP pull-out pads would be included for on-ramps at the Carmel Valley Road, Del Mar Heights Road, Carmel Creek Road, and Carmel Country Road interchanges. Carmel Valley Road would be widened to eight lanes east of I-5 and the Carmel Valley Road/SR 56 on-ramp intersection would be widened to accommodate higher traffic volumes.

4.3.4 I-5/SR 78 Interchange¹⁴

The I-5/SR 78 interchange project is proposed to address existing congestion at the I-5/SR 78 interchange. Five alternatives are under consideration, ranging from No Build to an interchange with direct freeway-to-freeway connectors and DARs.

Currently, vehicles traveling from westbound SR 78 to southbound I-5 must turn left through a controlled intersection in order to access the I-5 entrance ramp. This movement is delayed during peak hours and causes congestion on westbound SR 78. Similarly, vehicles traveling from southbound I-5 to eastbound SR 78 exit onto the Vista Way exit ramp and turn right through a controlled intersection to enter SR 78. Vehicles queue on the exit ramp and experience delays during peak hours. Additionally, this queue extends onto I-5 contributing to congestion. Freeway-to-freeway connectors at this location are included in the region's Transportation Plan. Currently, preliminary engineering studies are underway to evaluate the feasibility of the alternatives, described below:

- **No Build Alternative** – The No Build Alternative assumes the existing configuration for the I-5/SR 78 interchange with the freeway widening improvements proposed as part of the I-5 NCC Project

¹⁴ I-5/SR 78 Interchange Project Preliminary Engineering Studies, June 2012.

and the ultimate SR 78 configuration as planned in the 2050 RTP. The No Build Alternative provides the baseline for comparison of impacts associated with the other alternatives.

- **Direct Connectors with DAR Alternative** – The Direct Connectors with DAR Alternative adds freeway-to-freeway direct connectors for the westbound (WB) SR 78 to southbound (SB) I-5 and the SB I-5 to eastbound (EB) SR 78 movements. Each direct connector consists of two mixed flow lanes and shoulders. This alternative also proposes the addition of a northbound (NB) and SB HOV DAR at Vista Way. The DARs would provide dedicated HOV freeway-to-freeway connection between I-5 and SR 78.
- **Direct Connectors without DAR Alternative** – The Direct Connectors without DAR Alternative includes all of the improvements described on the Direct Connector Ramps with HOV DAR Alternative except that it does not provide DARs at Vista Way. HOV traffic must merge into mixed flow lanes in order to make the freeway-to-freeway connections.
- **Single Connector without DAR Alternative** – The Single Connector without DAR Alternative adds a freeway-to-freeway direct connector for the WB SR 78 to SB I-5 movement. The direct connector consists of two mixed flow lanes and shoulders. This alternative also proposes a SB I-5 to EB SR 78 loop connector ramp that consists of two mixed flow lanes and shoulders. This connector would use a 3,500-foot collector distributor ramp that would provide access to Cassidy Street and Vista Way.
- **Wetlands Avoidance Alternative** – The Wetlands Avoidance Alternative adds a freeway-to-freeway direct connector for the SB I-5 to EB SR 78 movement. The direct connector consists of two mixed flow lanes and shoulders. This alternative also proposes a WB SR 78 to SB I-5 loop connector that consists of two mixed flow lanes, one HOV lane and shoulders. The I-5 loop connector would require the closure of the existing park-and-ride located in the northwest quadrant of the interchange. This alternative also proposes the realignment of SR 78 to the north in order to minimize impacts to the Buena Vista Lagoon and waters of the U.S.

4.3.5 Encinitas Boulevard Interchange¹⁵

The Encinitas Boulevard/Interstate 5 Interchange is located in the City of Encinitas. The interchange provides access to downtown, coastal attractions, the Encinitas COASTER Station, and commercial, retail and residential areas. Recent growth in the area has hindered interchange operations during peak hours. The Encinitas Boulevard Interchange Modification Project would construct improvements to ease congestion, improve traffic operations, and increase the safety of motorists, bicyclists, and pedestrians within the project area. The City of Encinitas is leading this effort, and an environmental document is expected in 2012. A Build Alternative and No Build Alternative are being considered for this project. The Build Alternative includes the following elements:

- Removal and replacement of existing undercrossing structure at Encinitas Boulevard
- Widening of Encinitas Boulevard through the interchange
- Lowering of Encinitas Boulevard
- Adding dual left-turn lanes in both directions to Encinitas Boulevard
- Adding eastbound through lane to Encinitas Boulevard
- Realignment of southbound ramp intersection
- Widening off-ramps at the terminus
- Ramp metering for on-ramps

¹⁵ Encinitas Boulevard/Interstate 5 Project Description, Caltrans.

- Construction of retaining walls and sound walls
- Adding bike lanes in both directions along Encinitas Boulevard, and
- Adding sidewalks in both directions along Encinitas Boulevard.

Currently, there are no sidewalks along Encinitas Boulevard within the interchange. Pedestrians must travel in existing bike lanes to cross the interchange. Several motorist/pedestrian accidents have occurred due to these conditions. Improvements increase pedestrian access, mobility, and safety. Bike lanes would also be striped throughout the project limits, allowing cyclists a dedicated traveled way.

The Encinitas COASTER Station is located within close proximity to the interchange. Many COASTER riders use or cross the interchange to access the station. Reducing congestion and improving the facility would increase access to the COASTER station. Moonlight Beach, downtown Encinitas and southern Leucadia are also directly accessed via the interchange.

The bicycle and pedestrian elements of this project are also designated as Community Enhancement EN#5A, which is included in the list of Community Enhancements in Section 4.4.5.

4.4 BICYCLE, PEDESTRIAN, AND RECREATIONAL IMPROVEMENTS

In addition to improved mobility on the LOSSAN rail and I-5 highway corridors that would increase coastal and recreational accessibility, many bicycle, pedestrian, and recreational enhancement projects would improve coastal access, recreational facilities, and neighborhood amenities. Caltrans and SANDAG met with corridor cities to identify enhancement opportunities that could be accomplished via simultaneous construction with the highway and rail projects and improve how these transportation facilities interface with adjacent communities. Projects should implement both community and regional project goals. These improvements would provide safer crossings of the highway and rail corridors, create more than 20 miles of new facilities, close gaps, and create new connections in the existing bicycle and pedestrian network, improve recreational trails, and enhance other new and existing facilities. Design and construction of these features would occur in coordination with each affected city and generally could include future formal cooperative agreements between Caltrans/SANDAG and each city, in which Caltrans/SANDAG would be responsible for construction and the cities would be responsible for maintenance.

4.4.1 Coastal Rail Trail

The Coastal Rail Trail is a dedicated bicycle facility in the region's coastal corridor, with most segments in or adjacent to the LOSSAN rail right-of-way. It is partially completed within the corridor, with varying levels of progress in each NCC city. Once fully completed, the Coastal Rail Trail would provide a continuous north-south bicycle route—mostly comprising Class I facilities—through the NCC with direct access to coastal resources and recreational facilities. As with the planned I-5 North Coast Bike Trail farther inland (Section 4.4.2), the Coastal Rail Trail serves many users: short segments serve as ideal commuter access between adjoining communities; longer segments serve to accommodate recreational bicycle users as well as some commuters; and the full length of the facility serves regional and interregional users.

Caltrans and SANDAG have identified opportunities to complete approximately 7 miles of the Coastal Rail Trail within the LOSSAN rail right-of-way as part of the NCC program of improvements, taking advantage of construction synergy with LOSSAN rail projects whenever possible. These segments, which are included for permitting in the PWP/TREP, are:

- **Chesterfield Drive to G Street (Encinitas):** Construct approximately 1.7 miles of dedicated bicycle facility in the LOSSAN right-of-way. Partially overlaps with LOSSAN San Elijo Lagoon Double Track project.
- **G Street to Leucadia Boulevard (Encinitas):** Construct approximately 1.7 miles of dedicated bicycle facility in the LOSSAN right-of-way. Partially overlaps with LOSSAN Batiquitos Lagoon Double Track project.
- **Leucadia Boulevard to La Costa Avenue (Encinitas):** Construct approximately 1.3 miles of dedicated bicycle facility in the LOSSAN right-of-way. Overlaps with LOSSAN Batiquitos Lagoon Double Track project.
- **Poinsettia Station to Palomar Airport Road (Carlsbad):** Construct approximately 0.9 mile of dedicated bicycle facility in the LOSSAN right-of-way.
- **Palomar Airport Road to Cannon Road (Carlsbad):** Construct approximately 0.5 mile of dedicated bicycle facility in the LOSSAN right-of-way. However, as shown in Figure 4-2E, a small portion of this segment lies outside the rail right-of-way, and therefore its implementation would require further coordination with the city.
- **Cannon Road to Tamarack Avenue (Carlsbad):** Construct approximately 1.2 miles of dedicated bicycle facility in the LOSSAN right-of-way.

In addition to these planned new segments of the Coastal Rail Trail, the PWP/TREP also includes the improvement of an existing Coastal Rail Trail segment in San Diego. Community enhancement project SD#2C (described in Section 4.4.5) would upgrade 1.1 miles of existing trail adjacent to Sorrento Valley and Los Peñasquitos Lagoon, to include a new bridge, overlooks, and a dedicated Class I bike path. The I-5 North Coast Bike Trail (Section 4.4.2) would share the facility.

4.4.2 I-5 North Coast Bike Trail

A key component of the I-5 highway improvements is the proposed I-5 North Coast Bike Trail, a new facility that would run the entire length of the NCC, roughly parallel to the highway. It would consist of both separated and shared bicycle facilities, located partially in the I-5 right-of-way and partially on adjacent city streets. Caltrans is continuing to work with local jurisdictions to determine the preferred alignment for this shared facility, with a preliminary alignment shown in Figures 4-2A through 4-2G; many segments are planned to be within, or immediately adjacent to, the Community Enhancement projects described in Section 4.4.5. As part of the highway construction, Caltrans would complete those portions of the bikeway that fall within the I-5 right-of-way; coordination with local jurisdictions would ensure completion of the remaining segments.

4.4.3 LOSSAN Crossings

Several grade-separated crossings of the LOSSAN rail corridor are planned in the PWP/TREP exclusively for bicycles and pedestrians:

- **Coast to Crest Trail Crossing (Del Mar):** Construct a new grade-separated crossing of the LOSSAN corridor at the Coast to Crest Trail, in the general proximity of the Del Mar Fairgrounds. The Coast to Crest Trail is a 55-mile east-west trail facility that is a major feature of the San Dieguito River Park. The majority of the trail system is built, but it lacks a facility for hikers to cross the LOSSAN rail corridor to reach the coast. As part of the PWP/TREP program of improvements, this essential link would be completed, providing safer coastal access between upland recreation areas and the shoreline. This project is also designated as Community Enhancement DM#1 and is

included in the list of Community Enhancements in Section 4.4.5. It does not yet have funding identified.

- **Hillcrest Drive Pedestrian Undercrossing (Encinitas):** Construct a new grade-separated crossing of the LOSSAN rail corridor at Hillcrest Drive in Encinitas. This crossing would provide connections to the Coast Highway local bicycle and pedestrian routes, the California Coastal Trail, and the planned Coastal Rail Trail segment from La Costa Avenue to Chesterfield Drive (Section 4.4.1.2). It would also provide a safe access route between residential areas and the beach, as it is located in the middle of a 1.3-mile stretch of the rail corridor (between Leucadia Boulevard and La Costa Avenue) that contains no designated (formal or Public Utilities Commission approved) crossings. This is one of four grade-separated LOSSAN crossings being constructed in Encinitas, with the other three permitted prior to the PWP/TREP.
- **Chestnut Avenue LOSSAN Crossing (Carlsbad):** Construct a new grade-separated crossing of the LOSSAN rail corridor for bicycles and pedestrians at Chestnut Avenue in Carlsbad. Similar to the Hillcrest Drive crossing in Encinitas, this crossing would provide a new access route from the residential areas and parks east of the LOSSAN rail corridor to the beach. It would connect to the Coastal Rail Trail (both existing and planned segments), the bicycle and pedestrian routes on Coast Highway, and the California Coastal Trail. This project is also designated as Community Enhancement CB#6 and is included in the list of Community Enhancements in Section 4.4.5. It does not yet have funding identified.
- **Harbor Drive LOSSAN Crossing Bicycle/Pedestrian Improvements (Oceanside):** Improve the existing undercrossing of the LOSSAN rail corridor located north of the San Luis Rey River, at the west end of the Harbor Drive parking lot. This project would provide bicycle and pedestrian access to coastal resources via an undercrossing that currently accommodates automobiles only. In conjunction with the proposed pedestrian improvements under I-5 north of the San Luis Rey River (Community Enhancement OC#8, described in Section 4.4.5), this project would provide a connection between the residential areas east of I-5 and the coast. This project is also designated as Community Enhancement OC#12 and is included in the list of Community Enhancements in Section 4.4.5. It does not yet have funding identified.

In addition to these exclusive bicycle and pedestrian crossings, three additional grade separations of the LOSSAN rail corridor are planned at local roadways, and will include bicycle and pedestrian improvements. They are listed below, and discussed in Section 4.1 with the other LOSSAN improvements:

- **Leucadia Boulevard Grade Separation (Encinitas)**
- **Two Additional Grade Separations (locations to be determined)**

4.4.4 I-5 Local Road and Trail Crossings

Local roads cross I-5 at 32 locations within the NCC. Many of these crossings do not have standard bicycle and pedestrian facilities and therefore do not facilitate non-motorized modes crossing the freeway.¹⁶ As overcrossings are rebuilt and undercrossings are widened to accommodate additional lanes on I-5, pedestrian and bicycle facilities would be upgraded. Sidewalks on 20 of these crossings would be 10 to 12 feet wide on each side of the street. Sidewalks would be at least 15 feet wide at six crossings: Voigt Drive (San Diego), MacKinnon Avenue (Encinitas), California Street, Brooks Street, Mission Avenue, and Bush Street (Oceanside).

¹⁶ San Diego NCC – CSMP (Chapter 2), July 2010.

In addition to local roads, San Luis Rey River Trail also crosses I-5 in Oceanside. The trail is a Class I facility on the south bank of the San Luis Rey River, whose watershed San Diego County has proposed to designate as a 1,700-acre regional park. As shown in Figure 4-2G, the trail's alignment lies just north of, and roughly parallel to, SR 76. At I-5, the facility consists of a 10-foot paved trail in a tunnel undercrossing. During highway construction, the trail would be widened to 12 feet within the tunnel undercrossing. This would provide bicyclists and pedestrians with a wider and safer crossing of I-5 and greater access to the recreational area at the river.

These enhanced crossings would improve access to schools, parks, and transit stations, and provide stronger connections between the inland and coastal areas of the NCC. Table 4-8 shows the existing and future pedestrian and bicycle crossings over I-5.¹⁷

TABLE 4-8: PEDESTRIAN AND BICYCLE IMPROVEMENTS ACROSS I-5

Facility Type	Existing Facilities	Future Facilities
Pedestrian Facilities		
No sidewalk	3	0
6-foot sidewalk or smaller	29	4
7-foot–9-foot sidewalk	0	1
10-foot sidewalk or larger	1	27
Bicycle Facilities		
Class III/Shared Use	24	9
Class II	7	21
Class I	2	2

New Class II bicycle lanes are planned for the following highway crossings (projects marked with asterisks [*] are coordinated with adjacent community enhancement projects listed in Section 4.4.5):

- Voigt Drive Overcrossing (San Diego)
- Via De La Valle Undercrossing (Encinitas)
- Manchester Avenue Undercrossing (Encinitas) (part of San Elijo Lagoon bridge replacement)
- MacKinnon Avenue Overcrossing (Encinitas)*
- Santa Fe Drive Undercrossing (Encinitas)
- Leucadia Boulevard Overcrossing (Encinitas)
- Palomar Airport Road Overcrossing (Carlsbad)
- Tamarack Avenue Overcrossing (Carlsbad)
- Chestnut Avenue Undercrossing (Carlsbad)
- Carlsbad Village Drive Undercrossing (Carlsbad)
- Jefferson Street Overcrossing (Carlsbad)
- California Street Overcrossing (Oceanside)*
- Mission Avenue Overcrossing (Oceanside)*
- Harbor Drive/Camp Pendleton Undercrossing (Oceanside)*

¹⁷ Two I-5 crossings are being permitted outside the PWP/TREP: The replacement of the Genesee Avenue Overcrossing and the construction of a new overcrossing at Gilman Drive, both in San Diego. Both crossings will be built with 8-foot sidewalks and Class II bike lanes.

Pedestrian improvements would be implemented at the following highway crossings (projects marked with asterisks [*] are coordinated with adjacent community enhancement projects listed in Section 4.4.5):

- Voigt Drive Overcrossing and Realignment (San Diego): Widen both sidewalks to 15 feet
- Del Mar Heights Road Overcrossing (San Diego): Widen both sidewalks from 5 feet to 12 feet
- Via De La Valle Undercrossing (San Diego): Widen both the 5-foot westbound and 3-foot eastbound sidewalks to 10 feet
- Manchester Avenue Undercrossing (Encinitas): New sidewalk (part of San Elijo Lagoon bridge replacement)
- Birmingham Drive Overcrossing (Encinitas): Widen westbound sidewalk from 5 feet to 12 feet, add new 12-foot eastbound sidewalk
- Mackinnon Avenue Overcrossing (Encinitas)*: Widen both sidewalks from 5.5 feet to 17 feet
- Santa Fe Drive Undercrossing (Encinitas)*: Widen both sidewalks to 10 feet
- Requeza Street Overcrossing (Encinitas)*: Widen both the 6-foot eastbound and 2-foot westbound sidewalks to 10 feet
- Leucadia Boulevard Overcrossing (Encinitas): Widen both sidewalks from 5 feet to 12 feet
- La Costa Avenue Overcrossing (Carlsbad)*: Widen both sidewalks from 5 feet to 12 feet
- Poinsettia Lane Overcrossing (Carlsbad): Widen both sidewalks from 6 feet to 12 feet
- Palomar Airport Road Overcrossing (Carlsbad): Widen both sidewalks from 6 feet to 10 feet
- Chinquapin Avenue Overcrossing (Carlsbad): Widen westbound sidewalk from 6 feet to 10 feet, add new 10-foot eastbound sidewalk
- Tamarack Avenue Overcrossing (Carlsbad): Widen both sidewalks from 6 feet to 12 feet
- Chestnut Avenue Undercrossing (Carlsbad): Widen both sidewalks from 5 feet to 10 feet
- Carlsbad Village Drive Undercrossing (Carlsbad): Widen both sidewalks from 6 feet to 10 feet
- Las Flores Drive Overcrossing (Carlsbad): Widen eastbound sidewalk from 6 feet to 10 feet, add new 10-foot westbound sidewalk
- Jefferson Street Overcrossing (Carlsbad): Widen westbound sidewalk from 6 feet to 10 feet, add new 10-foot eastbound sidewalk
- Cassidy Street Overcrossing (Oceanside): Widen eastbound sidewalk from 5.5 feet to 10 feet, add new 10-foot westbound sidewalk
- California Street Overcrossing (Oceanside)*: Widen eastbound sidewalk from 5 feet to 17 feet, add new 17-foot westbound sidewalk
- Oceanside Boulevard Undercrossing (Oceanside)*: Widen both 5.5-foot westbound and 6-foot eastbound sidewalks to 10 feet
- Brooks/Division Street Overcrossing (Oceanside)*: Widen westbound sidewalks from 5.5 feet to 17 feet, add new 17-foot eastbound sidewalk
- Mission Avenue Overcrossing (Oceanside)*: Widen westbound sidewalk from 4.6 feet to 12 feet, widen eastbound sidewalk from 5 feet to 17 feet
- Fourth Street/Bush Street Overcrossing (Oceanside)*: Widen westbound sidewalk to from 5 feet to 10 feet, widen eastbound sidewalk from 5 feet to 17 feet
- Neptune Way/8th Street Overcrossing (Oceanside): Widen both sidewalks from 5 feet to 10 feet
- Harbor Drive/Camp Pendleton Undercrossing (Oceanside)*: Widen eastbound sidewalk from 3 feet to 8 feet

4.4.5 Community Enhancements

Beyond highway crossings, a package of community enhancement projects is included in the PWP/TREP that would further improve access to coastal resources, recreational facilities, transit stations, and corridor activity centers. The Caltrans *I-5 NCC Project Draft EIR/EIS*, *I-5 NCC Project Supplemental Draft EIR/EIS* and the *I-5 North Coast Community Enhancement Plan* have identified these pedestrian, bicycle, and other community improvements (such as trails, parks, and parking) adjacent to the I-5 highway and LOSSAN rail rights-of-way that would be implemented as part of the NCC program of improvements. Some of these designated community enhancements are located at the I-5 crossings discussed above, while others are parallel to I-5 or outside the highway right-of-way. The projects are listed below, sorted by city.

As described in Sections 5.3.3.1 and 5.3.3.4, additional community enhancement projects may be incorporated into the PWP/TREP, if requested by the local government and in consultation with Caltrans/SANDAG, the Coastal Commission, and other affected agencies and stakeholders. Proposed projects must meet the four criteria listed in Implementation Measure 5.3.3, and initially projects may not have funding identified. With a fixed amount of highway-related funds available for community enhancements, one of the most important parts of the collaborative process between Caltrans, SANDAG, and the corridor cities is the prioritization of projects. While the vast majority of community enhancements projects do fall within funding limits, the unconstrained list of projects exceeds currently available resources. As future funding sources are identified, the following unfunded projects will be ready to advance:

- **DM#1 Coast to Crest Trail LOSSAN Crossing**
- **CB#6 Chestnut Avenue LOSSAN Crossing**
- **OC#12 Harbor Drive LOSSAN Crossing Bicycle/Pedestrian Improvements**

4.4.5.1 City of San Diego

- **SD#2A¹⁹ Carmel Valley Bicycle/Pedestrian Enhanced Trail Connection:** A 1.23-mile long, 12-foot-wide trail connection under the I-5 freeway structures would link the existing Old Sorrento Valley Road along Peñasquitos Lagoon easterly to the existing SR 56 bike path, providing access to the lagoon and to the ocean and creating a link between three regional trail systems (the Sea-to-Sea Trail from the Salton Sea to the Pacific Ocean, the existing Old Sorrento Valley Road trail, and the Carmel Valley Restoration Enhancement Project trail) and to the proposed Carmel Valley park-and-ride trailhead. The project would include removal of sediment under freeway bridges to promote movement of wildlife.
- **SD#2B Enhanced Park-and-Ride at Carmel Valley Road:** The existing park-and-ride (3.16 acres) on the west side of I-5 at Carmel Valley Road would be enhanced to improve both the commuter and trail user experience. Project elements include additional parking, improved paving leading to the trailhead, pedestrian amenities, enhanced landscaping including a native plant visual buffer between the trail and parking areas, and a trailhead and scenic overlook at Los Peñasquitos Lagoon.
- **SD#2C Old Sorrento Valley Road Bicycle/Pedestrian Enhanced Trail Connections from Carmel Valley Road to Carmel Mountain Road:** Provide separate Class I bikeway and pedestrian walkway from Carmel Valley Road (SR 56) to Carmel Mountain Road parallel to I-5. Proposed enhancements include the replacement of the existing culverts with a 443-foot-long

¹⁹ Naming convention used for consistency with maps and other chapters: SD=San Diego, SB=Solana Beach, EN=Encinitas, CB=Carlsbad, OC=Oceanside.

bridge, interpretive overlooks, and trail information stations. The trail would be 1.1 miles long and 12 feet wide. This project is also a segment of the Coastal Rail Trail and the I-5 North Coast Bike Trail.

- **SD#3 Bicycle/Pedestrian Enhanced Trail and Bridge on West Side of I-5 at San Dieguito Lagoon:** As part of the I-5 North Coast Bike Trail, this proposed Class I bike path would connect Del Mar Heights Road to Via de la Valle and would be 2.25 miles long and 12 feet wide.
- **SD#4 Pedestrian Overpass Connection North of Del Mar Heights Road:** A new bicycle and pedestrian bridge over I-5 north of Del Mar Heights Road. The overpass (616.80 feet long, 12 feet wide) would connect Lower Ridge Road on the east through an existing maintenance easement to the proposed I-5 North Coast Bike Trail on the west. The bridge would link two adjacent (but divided) neighborhoods and provide improved school and coastal access routes. New sidewalks would connect the bridge to existing neighborhood sidewalks.

4.4.5.2 City of Del Mar

- **DM#1 Coast to Crest Trail LOSSAN Crossing:** Construct a pedestrian crossing of the LOSSAN rail corridor at the western end of the Coast to Crest Trail, a 55-mile east-west recreational corridor connecting Del Mar with Volcan Mountain near Julian. As described in Section 4.4.3, the partially completed trail is a major feature of the San Dieguito River Park. The crossing may be incorporated into the adjacent San Dieguito Double Track and Platform project (Section 4.1.1). This project does not currently have identified funding.

4.4.5.3 City of Solana Beach

- **SB#1 Streetscape Enhancements on Ida Avenue:** Streetscape enhancements would be constructed along Ida Avenue from Academy Drive to south of Genevieve Street, including sidewalks, curbs, and landscaping. Improvements are consistent with the Eden Garden Master Streetscape Plan and Master Plan.
- **SB#2 Pedestrian Trailhead at Solana Hills Drive:** Provide street improvements along the northern end of Solana Hills Drive and construct a new trailhead at the south entrance to San Elijo Lagoon Ecological Reserve. The project would include parallel parking on Solana Hills Drive for trailhead visitors, pedestrian drop-off zone to facilitate trail access, street trees, street and security lighting, and shade structure, picnic tables, drinking fountain, litter receptacles, pet waste station, interpretive displays and information board as well as other amenities to support trailhead users. Better parking, access, and amenities would encourage public use of the San Elijo Lagoon Ecological Reserve.
- **SB#3 Gateway Open Space Preservation Site:** Contribute to the purchase of the Gateway parcel by the San Elijo Lagoon Conservancy. The 3.2-acre site, immediately adjacent to San Elijo Lagoon and Cardiff State Beach, will be preserved as open space.

4.4.5.4 City of Encinitas

- **EN#1 Pedestrian Enhanced Trail on Both Sides of I-5 at San Elijo Lagoon With Bridge Connection to Manchester Avenue:** A new trail and associated sidewalk improvements would be constructed under the I-5 bridge structure along the south side of Manchester Avenue and across San Elijo Lagoon, connecting the existing trail segments that are separated by the lagoon and freeway (similar to projects CB#1A and CB#3). These trail connections are identified in the Encinitas General Plan. This project consists of three basic components: 1) Paving and installing guardrails to improve the trail adjacent to the south bridge abutment with connecting trails on the east and west freeway slopes; 2) Constructing a pedestrian walkway structure across San Elijo

Lagoon, suspended from the west side of the widened freeway bridge; and 3) Constructing streetscape improvements and a sidewalk on the south side of Manchester Avenue. Existing trails are heavily used but have limited continuity and there is no connection across the lagoon. The new trail and associated sidewalk improvements would implement a future trail segment along Manchester Avenue identified within the City of Encinitas General Plan. The east-west trail connection would join the existing trails on the shores of the San Elijo Lagoon south of Manchester Avenue. The north-south connection would span the open water of the lagoon, connecting to the east-west sidewalk on Manchester Avenue. The proposed connections would promote a unified and effective trail system.

- **EN#2A Park-and-Ride Enhancements at Birmingham Drive:** Enhance the park-and-ride on the east side of I-5 at the intersection of Birmingham Drive and Villa Cardiff Drive with park-like amenities, new trees, and a pedestrian connection to the north. The improvements include construction of a roundabout at the south end of the lot, realignment of the northbound on-ramp, reconfiguration of the lot, and maximization of available parking space.
- **EN#2B Villa Cardiff Drive and MacKinnon Bridge Enhancements:** Sidewalks, trails, and new landscaping would connect the Hall Property Park with the east side of the freeway across the new MacKinnon Bridge (0.6 mile long, 12 feet wide) and south along Villa Cardiff Drive.
- **EN#3 Hall Property Park Trail Connecting to Santa Fe Drive:** Create a pedestrian connection between Hall Property Park and Santa Fe Drive thereby providing more direct and attractive access to the park from neighborhoods east of I-5. The 0.66-mile-long project would include a trail from Santa Fe Drive, along the Caltrans right-of-way, to the edge of the Hall Property Park along with wayfinding signs and plantings. This linear park connection would be located between the proposed highway on-ramp and the parking facilities of the existing commercial lot to the west.
- **EN#4 Trail Connecting Santa Fe Drive to Requeza Street with Wetland Revegetation:** A 0.45-mile-long, 12-foot-wide north-south trail connection on the east side of I-5 would connect Santa Fe Drive on the southern edge and Requeza Street on the north and include improved drainage and wetland vegetation restoration. This would allow residents north of Santa Fe and east of I-5 to readily access the Hall Property Park.
- **EN#5A Encinitas Boulevard Bicycle/Pedestrian Enhancements:** The Encinitas Boulevard Interchange Project (Section 4.3.4) would improve bicycle and pedestrian facilities. Currently, there are no sidewalks along Encinitas Boulevard within the interchange. Pedestrians must travel in existing bike lanes to cross the interchange. The interchange project would add bike lanes and sidewalks in both directions along Encinitas Boulevard.
- **EN#5B Trail Connecting Requeza Street to Encinitas Boulevard:** New 0.78-mile-long, 12-foot pedestrian/bicycle trail along the east side of I-5 connecting Requeza Street with Encinitas Boulevard between the freeway and existing commercial businesses to the east. It would improve the linkage to the Encinitas-San Marcos Regional Bicycle Corridor, identified by the San Diego Regional Bicycle Plan as a Class II facility. Minimizing wetland impacts along with revegetation would be a part of the design.
- **EN#6A Union Street Pedestrian Overpass:** This project would construct a 1,092-foot-long, 12-foot-wide pedestrian bridge across I-5 connecting Union Street on both sides of the freeway. The project would offer improved pedestrian infrastructure, better access to parks, and improved connections.
- **EN#6B Cottonwood Creek Park to Union Street Trail Connection with Wetland Revegetation:** This trail would run along the west side of I-5 from Encinitas Boulevard to Union Street with a connection to Cottonwood Creek Park. The 0.25-mile-long, 8-foot-wide trail project would also include revegetation of disturbed areas.

4.4.5.5 City of Carlsbad

- **CB#1A Bicycle/Pedestrian Enhanced Trail and Bridge on West Side of Batiquitos Lagoon:** New trail along the west side of I-5 between La Costa Avenue and Avenida Encinas, crossing Batiquitos Lagoon as a suspended facility under the I-5 bridge structure (similar to projects EN#1 and CB#3). It would connect to the planned east-west bridge crossing at the north end of the lagoon (project CB#2), providing improved connectivity in the lagoon's trail system.
- **CB#1B Park-and-Ride Enhancement at La Costa Avenue:** Provide reconfiguration of the existing park-and-ride lot at La Costa Avenue on the east side of I-5, to include enhanced lighting, improved landscaping, and maximization of available parking space. This includes improvements to the maintenance road accessing least tern area.
- **CB#2 Trail on Northeast Side of I-5 at Batiquitos Lagoon:** New east-west trail on the north abutment under I-5 would connect this existing trail to the new north-south I-5 North Coast Bike Trail along the west side of the lagoon (project CB#1A).
- **CB#3 Bicycle/Pedestrian Enhanced Trail and Bridge on East Side of I-5 at Agua Hedionda Lagoon:** A new trail facility would be constructed along the east side of I-5 at Agua Hedionda Lagoon from Cannon Road, crossing over Agua Hedionda Lagoon, to Chinquapin Avenue. The trail would include a pedestrian bridge crossing from north to south over the lagoon (similar to projects EN#1 and CB#1A) as well as an east-west crossing under the highway, connecting to existing lagoon trails and the planned Coastal Rail Trail segment from Cannon Road to Tamarack Avenue (described in Section 4.4.1).
- **CB#5 Chestnut Avenue I-5 Crossing Bicycle/Pedestrian Improvements:** Improved bicycle and pedestrian facilities to include Class II bicycle lanes and widened sidewalks in both directions. Currently there are no bicycle lanes and only narrow sidewalks at this undercrossing, which is heavily used by local residents to reach Holiday Park, immediately east of the highway. The improvements would provide continuity with the existing facilities on Chestnut Avenue adjacent to the interchange.
- **CB#6 Chestnut Avenue LOSSAN Crossing: Chestnut Avenue LOSSAN Crossing (Carlsbad):** A new grade-separated crossing of the LOSSAN rail corridor for bicycles and pedestrians at Chestnut Avenue in Carlsbad. As described in Section 4.4.3, this crossing would provide a new access route from the residential areas and parks east of the LOSSAN rail corridor to the beach, along with connections to the Coastal Rail Trail, the Coast Highway bicycle and pedestrian routes, and the California Coastal Trail. This project does not currently have identified funding.

4.4.5.6 City of Oceanside

- **OC#1 Pocket Park and Pedestrian Path at California Street:** Enhance the existing California Street Overpass to create a comfortable and convenient connection across I-5, including landscaping, pocket park at Moreno Way and I-5, widened sidewalks, and a more direct route for residents of the Moreno Street neighborhood east to California Street. It would also provide enhanced crossings at the intersection of California and Moreno Street, as well as the intersections of Soto Street with California and Valencia Streets. The existing bridge does not provide a pedestrian connection yet experiences high pedestrian traffic due to schools being located on both the west and east sides of the freeway. The pocket park and pedestrian connection from Moreno Street to California Street would use parcels acquired as part of the I-5 highway improvements.
- **OC#2 Oceanside Boulevard Pedestrian Streetscape Enhancement:** Widening of existing sidewalk and addition of landscape under and adjacent to the I-5 overpass along Oceanside Boulevard. This includes enhanced fencing along the SPRINTER tracks.

- **OC#3 Division Street Bicycle/Pedestrian Enhancements:** The pedestrian overcrossing would be widened and enhanced with special paving and landscaping. Other enhancements include provision of container planting, street trees and pavement design.
- **OC#4 Mission Avenue Bicycle/Pedestrian Enhancements:** Wider and more direct pedestrian routes as well as realignment of the freeway on and off-ramps to allow for signalized pedestrian crossings. This would improve pedestrian connections on a popular pedestrian route. Oceanside High School is in close proximity to the freeway ramps and would benefit from improvements to pedestrian access.
- **OC#5 Bush Street Bicycle/Pedestrian Enhancements and Community Gardens:** This project would connect the existing community gardens at Civic Center Drive and Witzel Street across an enhanced overpass and following the freeway in a linear park to Mission Avenue. This would include new sidewalk and widening of existing sidewalks, community garden plots, a paved trail from the east side of the bridge along the on-ramp to Buena Street, and new and improved lighting and landscaping. This project would extend existing thriving community gardens and join the communities separated by I-5.
- **OC#6 Community Open Space Park and/or Community Gardens:** Parcels acquired as part of the freeway improvements would be converted into a 0.285-acre community open space park and/or community gardens adjacent to the Family Recovery Center on Horne Street. Park design would be determined through other processes and community input but could include meandering paths, water features, detailed native plantings and public artwork.
- **OC#7 SR 76 Underpass: New Parking and Trailhead:** A new parking area with 51 parking spaces, trailhead staging area and other support amenities would support improved physical and visual access to the existing San Luis Rey bike path, a local and regional Class I facility, and be located east of the I-5 and State Route 76 interchange. An incomplete freeway bridge would be removed and the area would be restored. The existing bike trail does not have a defined trailhead or parking area and such a parking area could have a shared purpose as a park-and-ride, as peak use for commuter parking and recreational biking occur at different times. Design would seek to minimize impact from trail users.
- **OC#8 Pedestrian Underpass Improvements North of San Luis Rey River:** Enhance the existing 0.10-mile underpass under I-5 at San Luis Rey Drive. These improvements include a widened sidewalk, ADA compliant ramp connections connecting the two sides of I-5 under the highway, improved lighting and planting and public art. Option A would also include a sidewalk along I-5 northbound between San Luis Rey Drive and Monterey Drive. Option B would include an accessible trail connection from the undercrossing stairs on the east of I-5 to connect to a trail along San Luis Rey River. The existing undercrossing is used heavily by surfers and beach-goers to access to coast. Many residents in the area have expressed that they are uncomfortable using the existing isolated facility.
- **OC#10 Harbor Drive/Camp Pendleton Pedestrian and Bicycle Enhancements:** Improve the Eastbound sidewalk on the overcrossing and provide new Class II bike lanes. This includes a tunnel to avoid the I-5 northbound off-ramps for pedestrians, bicyclists and residents of the Capistrano neighborhood in Oceanside.
- **OC#12 Harbor Drive LOSSAN Crossing Bicycle/Pedestrian Improvements:** Improve the existing undercrossing of the LOSSAN rail corridor located north of the San Luis Rey River, at the west end of the Harbor Drive parking lot. This project would provide bicycle and pedestrian access to coastal resources via an undercrossing that currently accommodates automobiles only. In conjunction with the proposed pedestrian improvements under I-5 north of the San Luis Rey River (project OC#8), this project would provide a connection between the residential areas east of I-5 and the coast. This project does not currently have identified funding.

4.5 NATURAL RESOURCE AND ENVIRONMENTAL IMPROVEMENTS

A wide range of projects are planned to restore and protect water quality and environmentally sensitive habitat areas (ESHA) in the NCC through implementation of the Resource Enhancement and Mitigation Program (REMP) and treatment Best Management Practices (BMPs) for both the new and existing impervious pavement. Each portion of the corridor project is designed to the maximum extent practicable with the best available technology, and in compliance with the 2013 Caltrans Statewide Storm Water Permit issued by the Water Resources Control Board. To further support water quality treatment within the corridor, Caltrans would use porous pavement at the Manchester park-and-ride (San Elijo Multi-Use Facility, and would also use porous pavement at the enhanced vista point in Encinitas located northwest of San Elijo Lagoon. The functionality of the porous pavement at these locations would be assessed to help determine the feasibility of its use at other highway facilities in the corridor. The program will comprehensively address water quality improvements throughout the corridor in relation to each receiving water body in the NCC. Treatment BMPs would consist of permanent measures to improve or at a minimum prevent degradation of storm water quality during the operation of the facility after completion of the construction. Caltrans approved treatment BMPs (which may be used where feasible) include biofiltration systems, infiltration devices, detention devices, dry weather flow diversions, gross solid removal devices, media filters, and wet basins. Preliminary locations for bioswales and detention basins are shown in Figure 4-2A through 4-2G.

In addition to providing a comprehensive approach to addressing water quality for the NCC, the PWP/TREP includes the REMP as part of the Implementation Framework, described in more detail in Chapter 6A. The REMP was developed in close coordination with regulatory and resource agencies with jurisdictional oversight over resources within the corridor to identify compensatory mitigation opportunities that address unavoidable impacts, and to implement projects that benefit existing natural resources, which exceed standard ratio-based compensatory mitigation programs. The proposed REMP employs a combination of measures to mitigate for coastal resource impacts resulting from implementation of the PWP/TREP transportation infrastructure and community enhancement projects. The constrained, primarily built-out condition of the NCC leaves few opportunities for land acquisition typically necessary to implement traditional, ratio-based compensatory mitigation. However, the NCC is home to six major lagoon systems that represent some of southern California's most significant natural resource areas. These lagoon systems, associated upland habitat, and riparian wetland interface and their contributing watersheds provide large, contiguous areas that support sensitive habitats for a variety of plant and wildlife species, and that provide water quality, flood control, groundwater recharge, and recreational benefits. The NCC's lagoon systems and their habitats are biologically unique and cannot be replicated elsewhere. As such, the REMP focuses on opportunities to protect the NCC's lagoon systems from potential future degradation and to expand, restore, and/or enhance habitat within these systems. This approach requires comprehensive solutions with efforts focused on ecosystem-wide enhancements, including preservation, restoration, and long-term management. The REMP approach to evaluating and implementing compensatory mitigation projects at the regional scale and in advance of PWP/TREP project impacts, and designing lagoon bridges to avoid and minimize project impacts, results in greater benefits to coastal resources throughout the corridor than if only ratio-based, project and site-specific compensatory mitigation were employed.

The REMP includes options for allocating funds from SANDAG's Environmental Mitigation Program (EMP) for a variety of regionally significant mitigation opportunities, including the establishment, restoration (re-establishment or rehabilitation), enhancement, preservation, and long-term management of coastal wetlands and adjacent riparian areas, other transitional habitats, and upland habitat areas. These mitigation activities include 1) acquisition of habitat parcels for the REMP because of the sites' contribution to protecting and enhancing NCC lagoon system and watershed functions and services

and meeting no net loss through establishment and restoration; 2) acquisition, preservation, and if necessary, enhancement, of parcels that contribute to regionally significant resources, including upland habitat areas; 3) planning and implementation of regionally significant lagoon restoration projects; 4) providing long-term non-wasting endowments for two regionally significant lagoons to fill funding gaps for maintenance and management activities; and 5) funding a Scientific Advisory Committee to provide technical support for the design, implementation, and monitoring of the suite of mitigation activities described in this REMP.

The designs for bridges that cross lagoons have been evaluated through intensive hydraulic and sediment transport analyses to allow for full tidal exchange, to restore/improve wildlife movement, and to maximize the avoidance and minimization of direct and indirect impacts of the I-5 widening project as required by the resource and regulatory agencies. These optimized bridges and increased lagoon channel cross-sectional areas protect existing tidal lagoon system functions and services and do not constrain future options for restoring tidal flows to lagoons that are currently restricted. The optimized bridge lengths and channel configurations are included in the REMP; however, funding for these enhancements would be provided through capital expenditures.

The opportunities identified within this REMP, including early acquisition of sites containing high-value habitat for long-term preservation, will be phased ahead of or concurrent with unavoidable impacts from planned PWP/TREP transportation infrastructure and community enhancement projects. Implementing the REMP and individual compensatory mitigation sites in advance of unavoidable impacts will reduce typically required mitigation ratios by reducing the uncertainty of location, type, and quantity of mitigation and reducing temporal loss of habitat acreage, functions, and services from construction-related impacts. In addition, phasing transportation facility infrastructure at sensitive locations has been specifically designed to avoid and minimize impacts, protect existing lagoon system functions and services, and allow for future large-scale lagoon restoration projects.

The REMP opportunities and asset evaluations were identified and developed in coordination with various NCC natural resource stakeholders and resource and regulatory agencies. In consultation with these entities, SANDAG and Caltrans have identified several categories of mitigation opportunities (described in the following section) and a variety of resource protection options to address regionally significant needs. In some cases, the opportunity to implement site-specific compensatory mitigation efforts has already been secured via land acquisition of suitable restoration sites.

In coordination with stakeholder groups and resource and regulatory agencies, SANDAG and Caltrans have identified two large-scale restoration and enhancement projects (San Elijo and Buena Vista lagoons) and one large-scale lagoon establishment project (San Dieguito W-19 property). Technical studies and environmental documents for these projects are being developed and the various stakeholder groups and resource and regulatory agencies are considering implementation of these projects, depending on the alternative chosen, for compensatory mitigation for the NCC transportation projects. SANDAG and Caltrans have been assisting through participation in project planning and provision of funds for technical and environmental studies.. In coordination with resource and regulatory agencies, SANDAG and Caltrans funded hydraulic and sediment transport studies to analyze I-5 and LOSSAN bridge designs at the corridor lagoons to maximize avoidance and minimization of impacts, reduce tidal muting, and restore/improve wildlife movement.. These optimized bridge designs in concert with expanded channel dimensions allow for possible future establishment, restoration and enhancement of tidal wetlands and improved water quality within the lagoons.

A summary of the mitigation (establishment/no net loss), restoration/enhancement/preservation (enhancement), and lagoon management endowment (contingency) opportunities proposed by major

lagoon system/waterbody within the NCC is provided below. See also Chapter 6B and the Mitigation Site Assessments (Appendix H) for further details on the REMP.

4.5.1.1 Los Peñasquitos Lagoon

The resource agencies have indicated that an endowment for dredging to maintain the opening at the mouth of Los Peñasquitos Lagoon is an important enhancement within the I-5 NCC. Los Peñasquitos Lagoon is located along the northwest border of the City of San Diego, just south of the City of Del Mar. The lagoon is located in the Los Peñasquitos watershed, which encompasses approximately 95 square miles.

Construction of a new bridge on Sorrento Valley Road over Carmel Creek by the interchange of I-5 and SR 56, in place of the three box culverts, is also proposed to meet design standards for hydrological flows under I-5 and provide for emergency vehicle and utility maintenance access. This area of Sorrento Valley is closed to vehicles and is now only open to pedestrians and bicyclists. The current condition restricts flows and impedes wildlife movement. The bridge would enhance wildlife movement by allowing wildlife to move under Sorrento Valley Road and I-5.

In addition, to mitigate impacts to sensitive upland habitats associated with the PWP/TREP, SANDAG/Caltrans propose establishment of higher quality upland habitat on the Deer Canyon II mitigation site located adjacent to Deer Canyon Creek, south of SR 56. The Deer Canyon II site is within the Peñasquitos Hydrologic Unit and has been identified for preservation within a Multiple Habitat Planning Area. In total, the Deer Canyon II site is approximately 22.2 acres in size, including the majority of the upper slopes of the larger Deer Canyon mitigation site. The larger site is split into two parcels: 1) the lower portion that abuts the creek; and 2) the upland slopes to the north, where the upper parcel mitigation described herein is proposed to take place. Approximately 8.2 acres of the 22.2-acre upper parcel is already planned and approved for coastal sage scrub (CSS) establishment and preservation of some nonnative grassland for associated impacts to that habitat on coastal projects.

Presently, the mitigation site is dominated by nonnative vegetation. Upland mitigation would result in establishment of Diegan CSS in existing nonnative grassland habitat onsite, and will include exotic control, dethatching, container planting, seeding, and likely use of temporary irrigation. The main goals of the mitigation are to provide wildlife habitat for the California gnatcatcher (*Polioptila californica californica*) and other native wildlife species habitat by removing nonnative grassland and establishing high-quality CSS habitat, improving CSS habitat and ecosystem continuity through connectivity between coastal wetlands and native uplands, and preserving the restored areas in Deer Canyon as permanent open space. The CSS habitat would also provide a buffer to the riparian habitat at the base of the slope in the adjacent mitigation areas, and provide slope stability and protection from erosion during rain events.

4.5.1.2 San Dieguito Lagoon

SANDAG and Caltrans, in cooperation with the San Dieguito River Valley Joint Powers Authority (JPA), are proposing to provide for establishment and management of high-quality tidal and brackish wetland and native upland habitats on the 107-acre San Dieguito Lagoon W19 mitigation site located on the eastern side of San Dieguito Lagoon. The San Dieguito Lagoon W19 mitigation site is located in the San Dieguito River Valley, within the northern portion of the City of San Diego. The mitigation site is located within the Focused Planning Area of the JPA's San Dieguito River Park, as well as the City of San Diego Multiple Habitat Planning Area. Implementation of the REMP at this site would complement the Southern California Edison San Dieguito Wetland Restoration Project and contribute to achieving

the overall vision of the restored San Dieguito Lagoon system through establishment of approximately 50 acres of coastal salt marsh and 9.6 acres of upland habitat, as well as 19.8 acres of restored/enhanced upland habitat along the berms around the wetland and in a native grassland floodplain area adjacent to the wetland. Approximately 2.73 acres of the total site area has been reserved by the JPA for their own mitigation needs outside of the projects listed in the PWP/TREP. The remaining 47.27 of the created coastal salt marsh and upland habitat would be used as mitigation for the I-5 NCC Project.

Depending on the restoration option selected and implemented for the site, restoration activities would involve modification to the site's existing hydrology, topography and vegetation communities to varying degrees; however, all options involve establishing a tidal wetland area west of the San Diego Gas & Electric (SDG&E) utility corridor and a brackish wetland area east of the SDG&E utility corridor. In addition, creating native upland vegetation communities would support and maximize sensitive biological resources onsite, and create a seamless connection to restored wetland areas and adjacent open space lands. In addition, SANDAG/Caltrans purchased the Dean Family Partnership site ("Dean parcel") located immediately east of the I-5 right-of-way between Del Mar Heights Road and the I-5/San Dieguito Lagoon Bridge. The area is vegetated with weedy species and some coyote brush (*Baccharis pilularis*). To mitigate impacts to sensitive upland habitats as a result of PWP/TREP implementation, SANDAG/Caltrans propose restoration and establishment of CSS and enhancement and preservation of southern maritime chaparral on the Dean parcel. The goal of the mitigation site is to permanently retire development potential of the site, preserve existing high-quality upland habitat through site protection (easements and fence), and restore existing disturbed upland habitat through exotics removal and active restoration to increase native species cover and diversity.

There is potential onsite to create and restore CSS and possibly some maritime succulent scrub, as well as enhance southern maritime chaparral. Creation and /restoration activities onsite would include a significant weed eradication program with container planting and seeding of native species, and along with some temporary irrigation. In areas where erosion gullies exist, the reestablishment of target native vegetation communities within the gullies would also assist in stabilizing the area, as well as the implementation of BMPs and/or installed check dam to slow runoff and erosion within the gullies. A total of 20.8 acres of CSS could be restored by increasing species diversity within the existing disturbed *Baccharis* scrub onsite. Existing high-quality CSS/maritime chaparral (1.5 acres) would be preserved. The existing dirt roads would be minimized but maintained for utility access.

The proposed mitigation treatments and native vegetation community establishment would improve habitat adjacent to the San Onofre Nuclear Generation Station (SONGS) San Dieguito Wetland Restoration Project. The Dean parcel is situated between SONGS and existing high-quality uplands on slopes located south of the lagoon. Therefore, restoration of this site would strengthen the wetlands/uplands connection, which is especially important given the difficulties experienced on the SONGS project to restore uplands habitat on dredged lagoon materials south of the lagoon and immediately east of the Dean parcel.

4.5.1.3 San Elijo Lagoon

San Elijo Lagoon is one of the last lagoons within northern San Diego County that has not yet had a major restoration project. The San Elijo Lagoon consists of approximately 491 acres and the lagoon watershed encompasses all drainages that convey water into San Elijo Lagoon including Escondido Creek, San Elijo Creek, and their tributaries. SANDAG/Caltrans propose funding the restoration of San Elijo Lagoon to mitigate impacts as a result of PWP/TREP implementation. The San Elijo Lagoon Restoration Project includes restoring the hydrological regime and the marsh habitat, and converting

some of the middle and high marsh habitat to mudflats and low marsh habitat within San Elijo Lagoon. The mitigation program for the San Elijo Lagoon Restoration Project aims to provide comprehensive lagoon restoration through a suite of possible restoration alternatives, which may include infrastructure improvements where the facilities cross the Lagoon, hydrological improvements to the Lagoon mouth opening, and, where determined appropriate, through providing endowments for Lagoon planning, restoration, and maintenance in the future.

The mitigation program would result in the restoration and enhancement of an integrated ecosystem, providing improved habitat for fish, birds, and benthic organisms. These efforts would not only serve to substantially enhance and restore water quality in the corridor, but they would also serve to restore, enhance, and protect different habitat types within the Lagoon ecosystem. This large regional restoration project could ultimately facilitate the restoration of many hectares of wetlands, which would help to ensure the lagoon's continued health and greatly enhance the coastal lagoon habitat.

Detailed design of the mitigation program would begin upon selection of a preferred alternative by the resource agencies, and completion of environmental review. The City of Encinitas, U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), National Oceanic and Atmospheric Administration (NOAA) Fisheries, Regional Water Quality Control Board, Coastal Commission, County of San Diego, and the San Elijo Lagoon Conservancy are working to complete a Draft EIR/EIS for restoration of the lagoon. SANDAG/Caltrans participated with the City of Encinitas, USACE, Coastal Commission, and other resource agencies in the feasibility analyses and modeling studies to determine the optimal bridge openings at all major transportation crossings across the lagoon for facilitating the mitigation program and assisted with the funding for the planning. Based on this work, the I-5 bridge and LOSSAN bridge (depending on the selected alternative) over San Elijo Lagoon would be lengthened and the channels widened to maximize the circulation and wildlife habitat within the lagoon.

In addition, SANDAG/Caltrans propose rehabilitating, preserving, and managing existing uplands habitat on the Laser Preservation parcels ("Laser parcels") located immediately north of San Elijo Lagoon (west of I-5 and north and east of Manchester Avenue) to mitigate impacts to sensitive upland habitats. The goal of the mitigation program on the Laser parcels is to remove development potential of the parcels, preserve existing upland habitat through site protection (easements and fence), improve habitat value through the removal of nonnative species in areas adjacent to the lagoon, and ensure management in perpetuity.

The proposed mitigation for the Laser parcels would be for protected open space, habitat preservation, and management. The proposed preservation and management of the native uplands vegetation communities would preserve sensitive plants onsite, occupied California gnatcatcher habitat (two territories), and CSS and coastal bluff scrub habitat and ecosystem continuity through connectivity between coastal wetlands and native uplands. Mitigation would result in increased native upland buffer between I-5 and San Elijo Lagoon. As the natural topography adjacent to San Elijo Lagoon is highly visible from the I-5 corridor, preservation would ensure the Laser parcels' contribution to the surrounding area's scenic quality and landscape character.

4.5.1.4 Batiquitos Lagoon

Batiquitos Lagoon has already undergone a large-scale restoration project funded by the Port of Los Angeles that began in 1994. As with Los Peñasquitos Lagoon, the resource agencies have indicated that an endowment for dredging to maintain the openings at the mouth of Batiquitos Lagoon is an important enhancement within the I-5 NCC.

SANDAG/Caltrans propose to mitigate impacts to sensitive upland habitats associated with the PWP/TREP by preserving and managing existing high-quality uplands habitat on the La Costa preservation parcel located along the south shore of Batiquitos Lagoon (east of I-5, south of La Costa Avenue and east of Piraeus Street). SANDAG/Caltrans purchased the 19.75-acre La Costa preservation parcel—which was identified as consisting of high to very high habitat values in the Multiple Habitat Conservation Plan for coastal northern San Diego County—and is located within a Biological Core Linkage area. Numerous special-status wildlife species are also identified within and adjacent to Batiquitos Lagoon, and critical habitat for the California gnatcatcher is designated on the entirety of the parcel. The goal of the preservation acquisition and mitigation program is to remove development potential of the parcel, to enhance disturbed CSS areas through rehabilitation efforts, to preserve existing high-quality upland habitat through site protection (easements and fence), and to manage the parcel in perpetuity. In addition, and contingent upon a willing seller and reasonable cost, SANDAG/Caltrans have identified the Batiquitos Bluffs parcel as a potential restoration and preservation site for both wetland and upland habitats. Assessment of the parcel as a feasible mitigation site is currently underway.

4.5.1.5 Agua Hedionda Lagoon

SANDAG/Caltrans purchased property that was proposed for development located along the margins of the northeastern portion of Agua Hedionda Lagoon, referred to as the Hallmark properties. The Hallmark properties consist of three parcels of land: a western parcel and two adjoining eastern parcels. The western parcel (Hallmark West) is approximately 11.1 acres in size and is located between Park Drive and Agua Hedionda Lagoon. The other two parcels (Hallmark East) are next to one another between the lagoon and the neighborhoods along Via Hinton and Via Marta; these parcels comprise approximately 8.2 acres. To mitigate PWP/TREP impacts to USACE jurisdictional and state wetlands, as well as sensitive upland habitats, SANDAG/Caltrans proposes to permanently retire development potential of the Hallmark parcels' sites, to preserve existing wetland and upland habitat through site protection (easements and fence), to restore and enhance existing upland habitat through exotics removal and planting/seeding, and to create tidal salt marsh habitat.

The total created salt marsh area at the Hallmark West parcel would equal 4.2 acres: 1.3 acres on Caltrans property and 2.9 acres on CDFW property. Creation of salt marsh in the existing fill would enhance flow and habitat quality of the adjacent salt marsh habitat on CDFW land. The additional sub-tidal channels and low marsh/mudflat would increase flushing and provide important foraging habitat for a number of bird species and the additional mid- and high marsh would form contiguous salt marsh habitat with the adjacent habitats. Created tidal salt marsh would have similar species composition and structure as observed in representative salt marsh habitat found within Agua Hedionda Lagoon near the mitigation site.

Upland mitigation would restore and enhance existing disturbed CSS habitat (4.28 acres) and sparse CSS (0.9 acre) onsite, and preserve extant occupied CSS habitat (1.04 acre) on the Hallmark West parcel. Enhancement would occur through site access restriction to reduce the disturbance regime associated with unauthorized site entry, seed applications, and weed control during a 5-year maintenance period corresponding with the salt marsh establishment period, and long-term management for site protection and weed control. Establishment of CSS on some bare ground and disturbed habitat areas (approximately 2.0 acres) at the Hallmark West parcel would include exotic control, container planting and seeding and possibly temporary irrigation. After approval of the proposed salt marsh and upland mitigation area and proposed work on CDFW property, Caltrans will begin developing a detailed mitigation plan for the sites. The resource agencies will be consulted

during the design process to ensure that plans account for any concerns with grading, types of habitats created, and potential temporary impacts to adjacent habitats.

At the Hallmark East parcel, SANDAG/Caltrans propose to rehabilitate and restore 0.45 acre of brackish marsh habitat and establish southern willow scrub in a drainage that is currently nonnative woodland (0.17 acre). Approximately 1.5 acres of CSS would be established in areas that are disturbed/ornamental but are not deed restricted or located within fire buffer areas. The existing good quality CSS (0.78 acre) would be preserved, and disturbed CSS (1.14 acres) and *Baccharis* scrub (0.28 acre) would be enhanced at the Hallmark East parcel. In addition, the project would enhance the functions and services of the wetland buffer that separates residential development from the adjacent riparian habitat on Agua Hedionda Creek. CSS vegetation would be created and enhanced to provide greater resources for California gnatcatcher and other sage scrub obligate species. Nonnative trees and perennial plants in the wetland in the middle of the parcels and annual and perennial exotic plants within the CSS on site would be removed.

4.5.1.6 Buena Vista Lagoon

SANDAG/Caltrans propose restoration of the hydrological regime and the wetland habitat within Buena Vista Lagoon to mitigate PWP/TREP impacts. The lagoon is part of the Buena Vista Lagoon Ecological Reserve that is maintained by CDFW. Buena Vista Lagoon is a freshwater lagoon that, for the most part, is not connected to the ocean except through a non-adjustable weir. Restoration alternatives under consideration include the following common components: 1) opening the lagoon inlet at the terminus of the watershed and adjacent to the Pacific Ocean, allowing passive restoration to a fresh water or a salt water system; 2) modify rail and highway bridge designs over the Buena Vista Lagoon, offsetting wetland fill impacts with the establishment of new wetland areas and improved flushing and stream flow; 3) restoring tidal/fluvial hydrology and maintaining hydrologic conditions through dredging; 4) improving flows through construction improvements to Coast Highway by opening up basins that have historically been separated; and 5) providing endowments for future lagoon maintenance and planning.

The Buena Vista Lagoon Restoration Project seeks to preserve, protect and enhance the Buena Vista Lagoon Ecological Reserve. The Buena Vista Lagoon mitigation program would provide an opportunity to modify rail and highway bridge designs over the Buena Vista Lagoon, which could ultimately have a beneficial effect on water quality and marine resources by offsetting wetland fill impacts with the establishment of new wetland areas and providing for improved flushing and stream flow where feasible. Restoring hydrodynamic conditions in Buena Vista Lagoon would significantly improve water quality and the ecological value of the lagoon, riparian system, and adjacent upland areas to better support ESHA, special-status species, and wildlife.

Numerous agencies and organizations have been working toward restoring the lagoon, including, but not limited to, the California Coastal Conservancy, USFWS, RWQCB, NOAA Fisheries, USACE, the cities of Carlsbad and Oceanside, the Buena Vista Lagoon Foundation, the Coastal Commission, and other local permitting agencies. The first phase of restoration planning—consisting of several studies assessing the feasibility of restoring function and habitat values by modifying the lagoon’s hydrology—was completed in 2010. “Phase II” restoration planning, consisting of preparation of preliminary engineering and environmental documents, is underway, with SANDAG agreeing to be the lead agency for purposes of processing the environmental document. SANDAG/Caltrans have also participated with the resource agencies as part of the NEPA 404 process for the I-5 project to determine the optimal bridge openings at all major transportation crossings to help facilitate (and not preclude) any future restoration plans for the lagoon.

A number of restoration alternatives were developed over the past few years under the direction of several federal and state agencies, including the California State Coastal Conservancy (SCC), USFWS, and CDFW. The Buena Vista Lagoon Foundation and its partners have completed a strategic plan and a restoration feasibility analysis that identifies proposed potential hydraulic regimes—saltwater, freshwater, or mixed water—and project alternatives. Restoration alternatives are being further examined as part of an ongoing lagoon restoration project EIR/EIS. Assuming stakeholder buy-in, completion of this document can be expected in 2015 with final engineering, permitting, and construction to follow as funding allows.

4.5.1.7 Cottonwood Creek

There is a small creek flowing intermittently above- and belowground through Encinitas between San Elijo and Batiquitos Lagoons. Cottonwood Creek Park was recently created west of I-5, restoring the creek to an aboveground channel between I-5 and the ocean. Moonlight Creek is a small tributary primarily carrying urban runoff from both sides of the freeway parallel to I-5 and immediately west of I-5 where it enters Cottonwood Creek at the park. There is some riparian habitat along this drainage, but the habitat is also disturbed with giant reed, pepper trees, nasturtium (*Tropaeolum majus*), ice plant, and eucalyptus trees. This creek could be restored, as could the slopes, which are a mixture of disturbed CSS and ornamental plants. Restoration of this area with a walking trail along the sewer easement has been identified in the as a community enhancement by Caltrans landscape architecture and by the City of Encinitas as a preferred option. Approximately 1.4 hectares (3.5 acres) of riparian habitat and 2.0 hectares (5.0 acres) of CSS could be restored in this area. Because this is a one-time maintenance improvement, this is a community enhancement and not part of the REP compensatory mitigation package.

4.5.1.8 San Luis Rey River

The San Luis Rey River near I-5 is a large open water channel with primarily freshwater marsh and arundo scrub along the banks. Two projects proposed for the area, Coast Highway Seismic Retrofit and the recently completed Pacific Street Bridge have already proposed restoration of the wetlands along the banks of the river through exotic removal and revegetation with natives. The program would include revegetation of temporary impact areas and potentially restoration after removal of an SR 76 ramp. Mitigation for impacts at the San Luis Rey River would occur in other lagoons.

4.5.1.9 Bridge Optimization (Achieving Hydraulic Lift in Lagoons)

Lagoon optimization studies were completed for San Elijo, Batiquitos, and Buena Vista Lagoons to inform the design of the I-5 and LOSSAN railroad bridges to optimize tidal flow, fluvial flow, and sediment transport. Optimized bridge lengths were also identified for Coast Highway and inlets within San Elijo and Buena Vista Lagoons to maximize system benefits. The studies conclude that constructing longer and/or deeper channels and crossings at these lagoon locations would improve water quality, increase the quality of coastal wetland habitat, increase tidal range, decrease flood impacts, and improve the overall health and function of the lagoon systems. Bridge optimization projects are funded specifically through capital expenditures and designed to avoid and minimize project impacts and protect existing lagoon system functions and services. At several crossings, the optimized bridges will also allow for large-scale lagoon restoration projects. The optimized bridge designs involve lengthening lagoon bridges and expanding lagoon channel dimensions along the I-5 highway and LOSSAN rail corridors would maximize avoidance and minimization of impacts, reduce tidal muting, and restore/improve wildlife movement. These optimized bridge designs in concert with expanded channel dimensions allow for possible future establishment, restoration, and enhancement of tidal wetlands and improved water quality within the lagoons.

5.0 COASTAL DEVELOPMENT POLICIES AND RESOURCES

INTRODUCTION

This chapter evaluates the scope of improvements included in the North Coast Corridor (NCC) Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP) (as described in Chapter 4) for consistency with applicable coastal development policies of the California Coastal Act (Coastal Act), and, where applicable, includes a brief summary evaluation of consistency with local coastal program (LCP) policies for each affected city in the NCC. This chapter builds on the discussion of mobility and resource deficiencies—and the vision and goals for the NCC described in Chapters 3—as these issues relate directly to the ability to evaluate potential coastal resource concerns and opportunities presented by the scope of improvements.

This chapter includes 10 sections, nine of which evaluate the scope of improvements for consistency with applicable coastal development policies, and are organized by the following Coastal Act issue areas: 5.1 – Energy Conservation and Emissions Reduction; 5.2 – Promotion of Public Transit and Smart Growth; 5.3 – Public Access and Recreation; 5.4 – Marine Resources: Water Quality and Wetlands; 5.5 – Environmentally Sensitive Habitat Areas and Special-Status Species; 5.6 – Archaeological and Paleontological Resources; 5.7 – Coastal Visual Resources; 5.8 – Site Stability and Management; and 5.9 – Agricultural Resources.

Each of the Coastal Act issue area sections begins with a setting description of existing coastal resources in the NCC that could be affected by the scope of improvements. A discussion of potential coastal resource concerns—developed in consultation with California Coastal Commission (Coastal Commission) staff as general guidance in identifying potential resource issues to help frame the PWP/TREP impact analysis—is provided after each coastal resource setting description. This section is then followed by an impact analysis for the proposed NCC scope of improvements, including Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail and I-5 highway corridor improvements, and community and resource enhancement projects. The impact analysis reflects those discussions contained within the *LOSSAN Final Program EIR/EIS* (September 2007) and the *Interstate 5 North Coast Corridor Project Final EIR/EIS* (scheduled release in 2013), where applicable.

Each issue area section then discusses resource opportunities and benefits presented by the NCC scope of improvements. Each PWP/TREP section is followed by a series of policies and design/development strategies applicable to all proposed PWP/TREP improvements, and project-specific implementation measures applicable to PWP/TREP projects that are subject to the Notice of Impending Development (NOID) review process. PWP/TREP policies, design/development strategies, and implementation measures are to be interpreted and implemented as follows:

- **PWP/TREP Policies** reflect Coastal Act policy requirements for each coastal resource issue area addressed in Chapter 5, and provide for managing and balancing PWP/TREP improvement activities to avoid, minimize, and/or mitigate potential impacts to coastal resources, and to enhance coastal resources where feasible. PWP/TREP policies express relevant resource protection provisions of the Coastal Act in context with the PWP/TREP goals and objectives presented in Chapters 1 and 3 (and the scope of improvements discussed in Chapter 4) and are to be considered and interpreted in light of the narrative and diagrams provided in those chapters. Policies apply to all proposed PWP/TREP improvements that are subject to future federal consistency review, PWP Amendment/NOID review, or coastal development permits.

- **Design/development strategies** provide guidance for designing and implementing PWP/TREP projects consistent with PWP/TREP policy and Coastal Act requirements, while allowing an adaptive approach to future project design and development decisions to be applied on a case-by-case, project-specific basis. In particular, design/development strategies for rail improvements are consistent with potential strategies and mitigation measures contained within the *LOSSAN Final Program EIR/EIS*, and are intended to provide guidance for future rail projects that have been agreed to be processed through future individual federal consistency review. PWP/TREP design/development strategies apply to all proposed PWP/TREP improvements that are subject to future federal consistency review, PWP Amendment/NOID review, or coastal development permits, as applicable.
- **Implementation measures** reflect applicable mitigation measures contained within the *Interstate 5 North Coast Corridor Project EIR/EIS* and are intended to more specifically define and implement the policy requirements and design/development strategies included in the corresponding section of Chapter 5 for specific projects identified in the PWP/TREP. Implementation measures apply to all proposed PWP/TREP improvements subject to the NOID review process.

The Coastal Act consistency analysis lists Coastal Act policy directives addressed in each section and evaluates proposed rail, highway, community, and resource enhancement projects for consistency with applicable Coastal Act policy requirements. The consistency analysis discusses how PWP/TREP policies and design/development strategies address potential coastal policy issues for all PWP/TREP projects, including rail projects. The consistency analysis also discusses how the implementation measures for specific PWP improvements ensure the improvements could be implemented consistent with applicable Coastal Act requirements.

The Coastal Act issue area sections conclude with a brief summary of the PWP/TREP's potential consistency with LCP policies for each certified corridor city affected by the scope of improvements. The LCP consistency analysis identifies where specific LCP policies present potential conflicts for the PWP improvements that could require amendment of the certified LCPs to ensure consistency of the PWP with applicable policies.

As detailed in Chapter 1 and Chapter 4 of the PWP/TREP, the LOSSAN rail projects, as evaluated and determined on a case-by-case-basis, are subject to review by the Coastal Commission through the federal consistency review process only. As such, the certified LCPs would not serve as the standard of review for the rail improvements that would improve the movement of freight passengers and interstate rail traffic. Therefore, the LCP consistency analysis included in this chapter may provide non-binding guidance in evaluating such rail improvements for consistency with applicable California Coastal Management Program/Coastal Act policies in the context of the PWP/TREP vision, goals, and objectives for the overall transportation system.

The last section of this chapter (5.10 – Coastal Act Policy Conflict Resolution) revisits the coastal development policy/consistency analysis in each of the preceding nine sections in the context of the Coastal Act directive to resolve potential Coastal Act policy conflicts in a manner that, on balance, is the most protective of significant coastal resources.

5.2 PROMOTION OF PUBLIC TRANSIT AND SMART GROWTH

The North Coast Corridor (NCC) has little remaining developable land, but significant growth in both population and employment are still projected in the coming decades. To accommodate these new residents and workers—along with the accompanying increases in travel demand—the San Diego Association of Governments (SANDAG) and California Department of Transportation (Caltrans) have developed regional policies aimed at better connecting land use and transportation decisions, increasing multimodal transportation options, and encouraging a new pattern of Smart Growth in corridor cities.

This section describes the public-transit facilities and Smart Growth policies in the NCC, and analyzes the projected impacts of PWP/TREP projects on corridor transit and growth. The section concludes with an analysis of the proposed transportation improvements' consistency with the California Coastal Act.

5.2.1 Public Transit and Smart Growth in the Corridor

After experiencing steady population and employment growth since 1970, the NCC's transportation facilities have become overcrowded and are unable to efficiently accommodate current travel demand. This growth trend is still active and promises to continue well into the future, meaning that corridor transportation facilities—along with regional travel times, air quality, and quality of life—will continue to degrade without improvements. The vision for the NCC (described in depth in Chapters 3 and 4) seeks to implement a broad multimodal solution to the corridor's transportation problems, and to integrate these infrastructure improvements with new Smart Growth policies that will provide for more compact development, less sprawl, and greater options for nonautomobile circulation.

5.2.1.1 Public Transit

The NCC's public transit network provides links between the corridor's numerous origins and destinations, as well as access to regional communities, employment, and activity centers. Intercity, commuter, and light rail (along with buses, vanpools, and paratransit) all contribute to the network; however, with current land use patterns and the wide dispersal of residences and jobs throughout the region, public transit is largely unable to compete with the private automobile in meeting transportation demand in the NCC. New and expanded transit services, coupled with the limited amount of remaining undeveloped land in the corridor, have fostered development of a regional Smart Growth policy intended to integrate land use and regional transportation resources. Corridor public-transit services are illustrated in Figure 5.2-1.

LOSSAN Rail Corridor

The Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail corridor provides north-south commuter and intercity rail service along the coast, reaching north to Los Angeles (and beyond to Santa Barbara and San Luis Obispo) and south to San Diego. Increasing the frequency, and therefore the quality of service, is limited by the fact that within the NCC only 54% of the line has a second track. This deficiency causes congestion as trains are forced to wait for oncoming trains to pass before proceeding through single-tracked segments. This congestion is compounded by the four different users of the rail corridor: COASTER commuter rail, Metrolink commuter rail, Amtrak intercity rail, and BNSF freight trains. The three passenger services are described below.

COASTER commuter rail service runs between Oceanside and downtown San Diego and serves eight stations—six of which are within the NCC. The North County Transit District (NCTD), the NCC's primary transit agency, operates COASTER service. A typical weekday includes 22 trips through the

corridor (11 in each direction) with four additional trains added on Friday evenings and during special events (such as San Diego Padres or Chargers games). Less-frequent service is provided on Saturdays (10 trains per day) and Sundays (8 trains per day). Travel between Oceanside and San Diego takes an average of 57 minutes. Average weekday ridership is approximately 5,500 passengers (1.6 million passengers per year) with the majority of those customers beginning or ending their trips in the NCC. Parking spaces at COASTER stations constrain ridership; on average, all of the COASTER station parking lots (except Oceanside and Sorrento Valley) are at least 90% full on weekdays with several exceeding 95%.¹

Metrolink commuter rail service, which serves the greater Los Angeles area, has a southern terminus at the Oceanside Transit Center. On weekdays, 16 Metrolink trains serve Oceanside (12 trains to and from Los Angeles and 4 trains to and from San Bernardino). Weekend service is limited to 6 daily trains (4 serving Los Angeles and 2 serving San Bernardino). Metrolink boardings from Oceanside average 575 passengers per weekday (approximately 150,000 passengers per year).

Amtrak Pacific Surfliner service operates along the entire LOSSAN rail corridor, conducting intercity rail operations between downtown San Diego, Los Angeles, Santa Barbara, and San Luis Obispo. Surfliner trains stop at the Solana Beach and Oceanside stations in the NCC and operate 22 runs on weekdays (11 in each direction) with an average headway of 60 to 90 minutes. Average travel time between Los Angeles and downtown San Diego is 2 hours and 45 minutes. In fiscal year 2012, approximately 766,000 passengers boarded the Pacific Surfliner at stations within the NCC with approximately 422,000 boardings at Solana Beach and 344,000 at Oceanside.²

A new ride-sharing agreement between NCTD and Amtrak extends COASTER service to select Pacific Surfliner trains. Begun in October 2013, the program requires 6 Pacific Surfliner trains per day (3 in each direction) to stop at all COASTER stations in the NCC, rather than just at Oceanside and Solana Beach. Any passenger with a paid COASTER fare can ride these Amtrak trains at no extra cost. This effectively increases the frequency of COASTER service, providing better access to and from the NCC and further maximizing the capacity of the LOSSAN rail corridor.

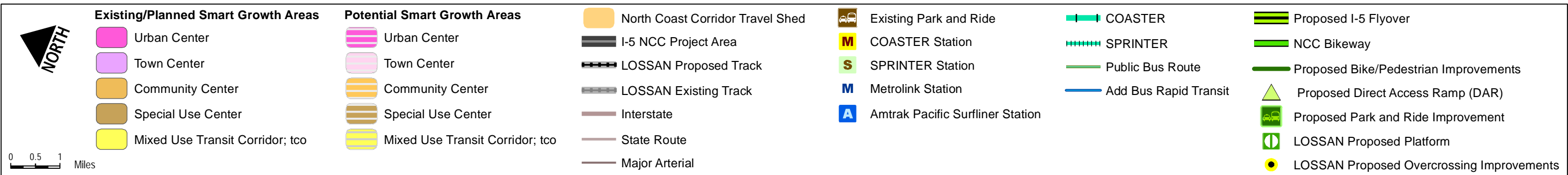
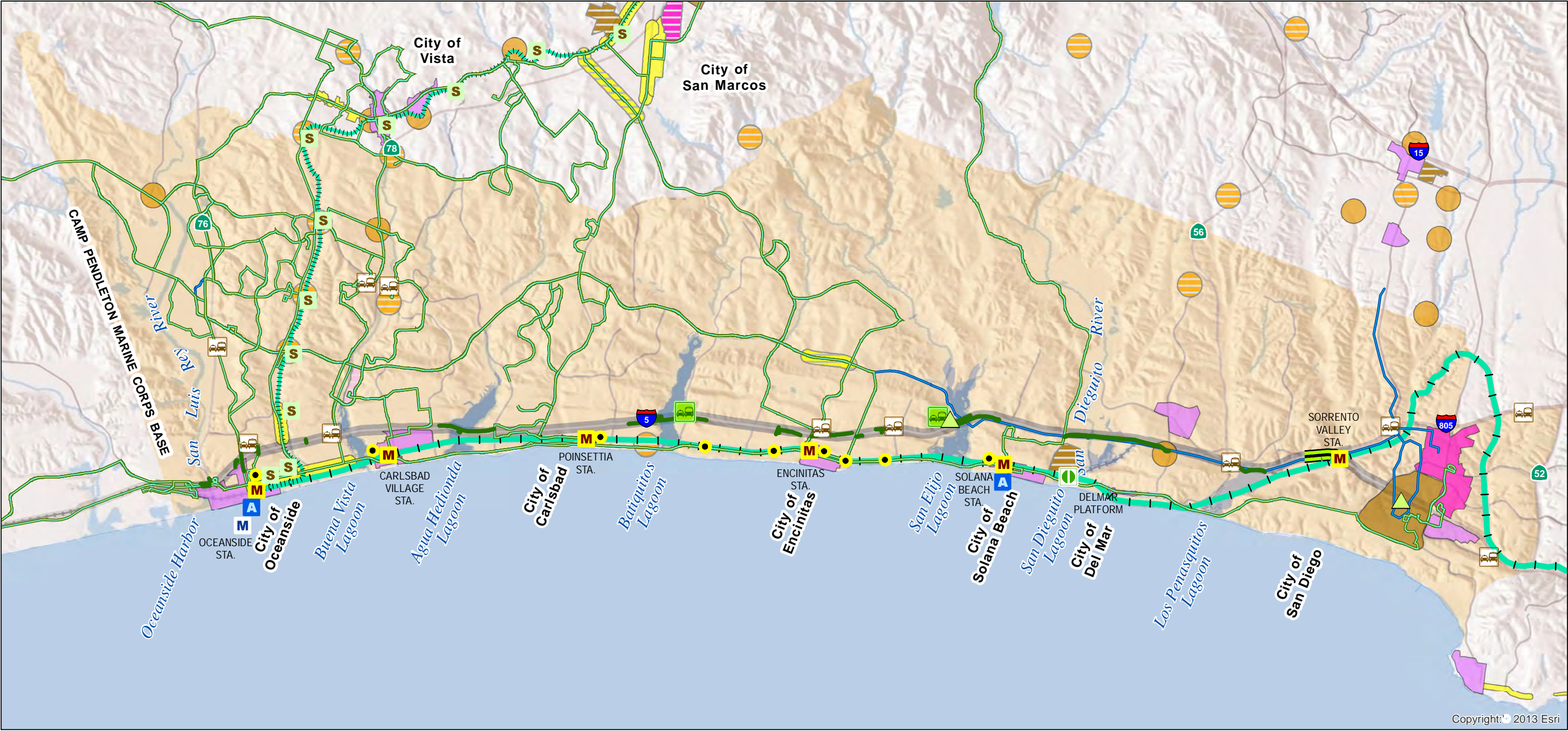
Other Corridor Transit

The SPRINTER light rail line runs east from the Oceanside Transit Center—the northern terminus of the COASTER—to Escondido. Of the 15 stations on the 22-mile line, 7 are within the NCC, and trains run every 30 minutes in each direction. SPRINTER passenger service was initiated in March 2008 and now attracts over 2 million passengers annually (approximately 7,000 passengers each weekday).³ SANDAG's 2050 Regional Transportation Plan (2050 RTP) contains plans to double-track the SPRINTER corridor by 2030, which will allow for increased frequencies as well as express service.

¹ NCTD, November 2012. See Section 3A.1.2.5.

² SANDAG, January 2013.

³ SANDAG *Coordinated Plan 2012-2016* (Appendix C), July 2012.



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, ArcGIS On-line

FIGURE 5.2-1
Public Transit and Smart Growth Concept Map

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Most local bus service in the NCC is provided by NCTD. Its local buses (branded “BREEZE”) are the principal public-transit option in all five NCC cities, with service reaching as far as the cities of Escondido and San Clemente and the communities of Ramona and Fallbrook. The NCTD operates 34 bus routes, which served 7.7 million riders in fiscal year 2011. Of those routes, 15 serve the NCC, carrying approximately 4.5 million passengers annually.⁴ The bus routes include three COASTER Connection shuttles that operate from the Carlsbad Poinsettia Station during peak hours. These shuttle services meet COASTER trains to facilitate convenient passenger transfers, which improves the viability of the COASTER as a commute mode since many employment centers are not within walking distance to rail stations. Several major employers in the area provide shuttles to and from the COASTER stations.

In addition to traditional bus service, NCTD offers two on-demand “FLEX” services that provide door-to-door transportation to and from anywhere within the following designated service areas: southern Carlsbad (including Carlsbad Poinsettia Station) and Encinitas (including Encinitas Station). These services—which are available for an adult fare of \$5, or for free to anyone with a COASTER monthly pass—enhance COASTER service by providing the “last mile” connection to homes and employment centers.⁵

The San Diego Metropolitan Transit System (MTS) provides bus services in the southern portion of the corridor, reaching as far north as the University City neighborhood in San Diego. Four MTS COASTER Connection shuttles operate principally in the NCC, linking the Sorrento Valley COASTER Station to employment sites in Sorrento Valley, Mira Mesa, and University City. As in Carlsbad, these public shuttle services are augmented by several private, employer-operated shuttles serving COASTER passengers. The other eight MTS bus routes in the NCC only operate at the southern edge of the corridor, providing service from University City to downtown San Diego, Old Town, and other major neighborhoods to the south.

Local bus routes in the NCC travel along regional arterials and local streets, with most of the public bus service in the corridor providing local circulation, serving short-distance trips, and acting as a feeder service to COASTER and SPRINTER services as well as local activity centers such as Camp Pendleton, Plaza Camino Real, and the University of California, San Diego (UCSD). With the exception of Route 101, which connects University City with Oceanside via Coast Highway, most bus services do not serve regional and interregional trips.

SANDAG’s Regional Vanpool Program provides subsidies to vanpool commuters in order to encourage ridesharing and manage roadway demand during peak travel times. Nearly 800 subsidized vanpools serve approximately 6,000 passengers each weekday across San Diego County, with increasing congestion and faster travel times in carpool lanes leading to growing participation in the program.⁶ Additionally, nine park-and-ride parking lots are located in the corridor to facilitate carpooling, vanpooling, and regional transit ridership.

While transit carries many trips in the NCC each day, the actual percentage of trips made using public transit (called the transit “mode share”) is small. Data from the 2050 RTP show that only 3% of commute trips with at least one end in the NCC are made by bus or rail during the peak periods—the times when the most transit service is provided (typically 6:00 A.M.–9:00 A.M. and 3:00 P.M.–6:00 P.M.).⁷

⁴ SANDAG *Coordinated Plan 2012-2016* (Appendix C), July 2012.

⁵ The “last mile” (or “first mile”) refers to the access gap between transit services and a trip’s origin or destination. This is often cited as a reason more people do not ride transit: It can get riders close, but not close enough, for many trips.

⁶ “iCommute Vanpool Program Hits Record-High Participation,” rEgion (SANDAG’s e-newsletter), October 2011.

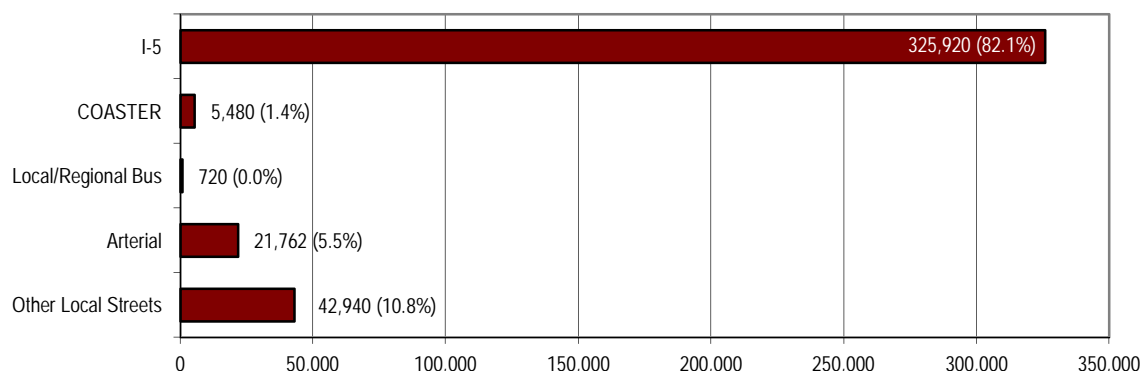
⁷ http://www.sandag.org/enewsletter/archives/october2011/feature_2.html. Accessed April 27, 2012.

⁷ SANDAG *2050 RTP* (Technical Appendix 7), October 2011.

When considering all trips, all day, it can be deduced that even fewer than 3% of total trips are made by transit in the corridor.

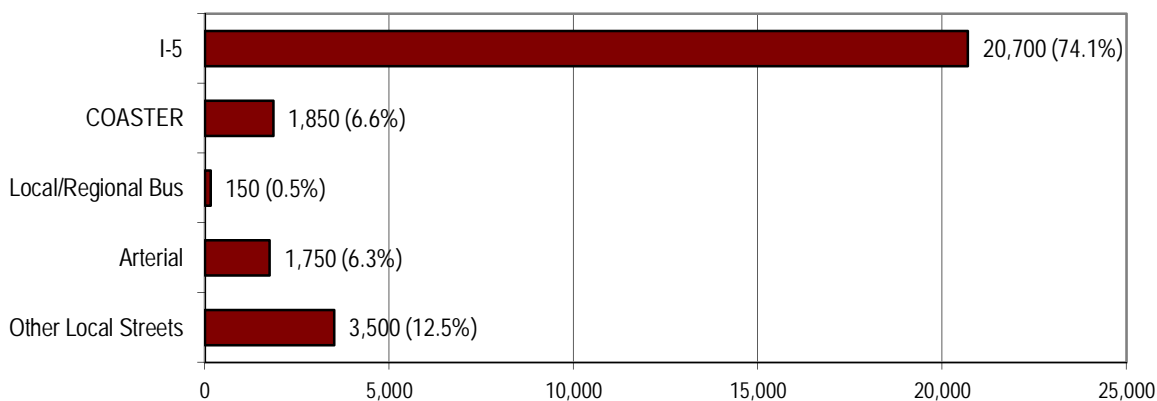
The transit mode share is slightly higher in certain parts of the corridor, reflecting the fact that regular commute trips to major employment centers are the easiest to capture with transit. Figure 5.2-2 and Figure 5.2-3 depict the overall daily and peak-period mode shares for trips across Los Peñasquitos Lagoon, a location where LOSSAN rail, I-5, and Coast Highway all converge in close proximity. Customers using I-5 account for the vast majority of trips with over 80% of the daily mode share and nearly 75% of the AM peak period. During the peak period, the COASTER mode share is much higher (6.6%) than during the overall day (1.4%), reflecting the fact that the COASTER serves two of the region's largest job centers (University City and downtown San Diego). Many other commute destinations for NCC travelers are highly dispersed, making them less conducive to transit ridership.

FIGURE 5.2-2: DAILY MODE SHARE
(Based on Daily Person Trips at Los Peñasquitos Lagoon)



Source: San Diego NCC – CSMP (Chapter 4), July 2010.

FIGURE 5.2-3: AM PEAK MODE SHARE
(Based on Daily Person Trips at Los Peñasquitos Lagoon)



Source: San Diego NCC – CSMP (Chapter 4), July 2010.

5.2.1.2 Smart Growth

The NCC traverses a largely urbanized portion of northwest San Diego County. The coastal areas generally consist of medium-density and small-lot residential developments. Northeastern San Diego County—east of the corridor and away from the coast—has experienced development at a slower (and later) pace, due in part to an early lack of necessary infrastructure and other needs. Recently, the non-coastal areas have been experiencing urbanization in the form of low-density residential developments on larger lots with ample open space.

Most of the NCC is considered nearly fully developed with urban uses. Few vacant, developable parcels of land remain in the immediate vicinity of the LOSSAN rail and I-5 corridors. In general, the coastal area of San Diego County is developed with medium-density residential and other uses, and any new growth would be accommodated by redevelopment and infill development on vacant lots. The eastern parts of the study area, however, have more available vacant developable land, and growth is in the form of larger-scale residential and commercial developments. Table 5.2-1 shows the remaining developable acres in each of the six corridor jurisdictions as well as the portion of that land planned for residential development. All jurisdictions have less than 10% of their land available for future development, with even lower percentages reserved for residential uses.

TABLE 5.2-1: REMAINING DEVELOPABLE LAND (2008)

Jurisdiction	Total Acres	Remaining Developable Land ^a		Remaining Planned Residential ^b	
		Acres	Portion of Total Acres	Acres	Portion of Total Acres
Oceanside	26,987	2,275	8%	1,118	4%
Carlsbad	25,041	1,581	6%	851	3%
Encinitas	12,529	871	7%	697	6%
Solana Beach	2,183	37	2%	28	1%
Del Mar	1,141	40	3%	32	3%
San Diego	218,388	10,285	5%	5,651	3%
Total	286,269	15,089	5%	8,377	56%

Source: SANDAG, July 2012.

a – Remaining Developable Land is vacant land not identified as constrained by habitat or steep slope.

b – Remaining Planned Residential is vacant land planned for single-family, multi-family, mobile-home, mixed-use, or other residential uses.

SANDAG is the regional agency responsible for preparing population, housing, and employment projections for San Diego County, with forecasts based on the general and community plans of each of the region's jurisdictions. The 2050 Regional Growth Forecast—adopted in 2010 and used extensively to create the 2050 RTP—is a starting point for regional planning that seeks to anticipate future development patterns. It is based on regional projections and input from local cities. Each of the six municipal jurisdictions in the NCC has its own individual growth management plans or policies. These plans generally focus on managing growth to ensure that new development does not occur at the expense of the natural environment or existing development, nor before adequate infrastructure and services are in place.

Population forecasts by SANDAG and Caltrans suggest that population growth and associated development will continue in the corridor and region. Table 5.2-2 shows population growth estimates for the various jurisdictions in the NCC ranging from 14% to 31% between 2010 and 2040. San Diego, Carlsbad, and Oceanside are expected to grow the most with 31%, 23%, and 20% growth rates,

respectively, while Encinitas, Solana Beach, and Del Mar have lower, but still significant, projected growth rates. Compared to the overall growth for the county (29%), most corridor cities are expected to grow more slowly, owing largely to the fact that these coastal cities are constrained by land area and are nearly fully developed already. Higher levels of anticipated growth in Carlsbad and San Diego are due to the amount of available developable land inland away from the coast on the urbanizing fringe.

TABLE 5.2-2: POPULATION GROWTH (NORTH COAST CORRIDOR AND SAN DIEGO REGION)

Jurisdiction	1970	2010	2040	Percent Change 1970–2010	Percent Change 2010–2040
Oceanside	40,494	179,105	207,237	342%	20%
Carlsbad	14,944	103,491	127,434	593%	23%
Encinitas	17,210	64,599	75,446	275%	17%
Solana Beach	5,744	13,338	15,619	132%	17%
San Diego (<i>NCC only</i>)	23,315	160,290	209,744	587%	31%
Del Mar	3,956	4,455	5,059	13%	14%
North Coast Corridor	105,663	525,278	647,832	397%	23%
San Diego Region	1,357,854	3,224,432	4,163,688	137%	29%

Sources: SANDAG 2050 RTP (Chapter 3), October 2011; SANDAG/Caltrans Series 12 Model, November 2011.

Note: Existing (2010) populations are from the SANDAG/Caltrans Series 12 Model and differ slightly from the final figures published in the 2010 U.S. Census.

Growth is projected to occur not only in the NCC but throughout the neighboring regions accessed by the I-5 highway and LOSSAN rail corridors, including Orange County and Riverside County to the north, Imperial County to the east, and Baja California, Mexico, to the south. Travel demand in the NCC has been driven largely by this population and housing growth as land has become scarce within the corridor, requiring more people to commute farther distances to reach employment. Through 2050, it is forecasted that within the San Diego region 56% of new residences and 42% of new jobs will be located within a 10-minute walk of high-frequency transit stations, indicating that development of new, multimodal transportation facilities is necessary to meet these future demands.⁸

SANDAG's Regional Comprehensive Plan (RCP)—adopted in 2004 and currently being updated—provides the planning framework upon which local and regional decisions can be made to move the region towards a sustainable future. The RCP served as the basis for the 2050 RTP and its associated programs and provides context for local and regional decisions while balancing the needs and goals of the region. The RCP is shaped by the principles of sustainability and Smart Growth, including a policy approach that connects local and regional transportation and land use plans and develops incentives for Smart Growth planning. As part of implementing the RCP and identifying areas that may be eligible for Smart Growth incentives, SANDAG developed a Smart Growth Concept Map. This map, which is shown in Figure 5.2-1 with current transit facilities overlaid, was updated in 2012 and identifies over 200 existing and future transit-supportive and Smart Growth opportunity areas in the region. The NCC contains over 15 of these areas, the majority of which are located in community cores near COASTER and SPRINTER transit stations.

The map is being used by SANDAG's Board of Directors to prioritize transportation investments and determine eligibility for funds from the Smart Growth Incentive Program (SGIP). Funded by the voter-approved *TransNet* sales tax, SGIP provides local jurisdictions with funds—\$280 million allocated over 40 years, which in recent years has equated to \$9 million per biennial funding cycle—for planning and

⁸ SANDAG 2050 Regional Growth Forecast, February 2010.

implementing compact, mixed-use development focused around public transit. Smart Growth principles simultaneously improve the regional transportation system's performance and support local economic and development needs. To attract developers, businesses, and residents, Smart Growth communities focus on mixed-use development by using land and infrastructure efficiently, creating pedestrian-oriented neighborhoods that are attractive and distinctive, and providing desirable transportation and housing choices that are less dependent on the automobile.

5.2.2 PWP/TREP Concerns

Transportation investments can lead to reduced travel times, improved accessibility within or among regions, and reduced accidents and air pollution. These effects can contribute to economic growth by allowing time and money previously spent on travel to be used for other purposes. However, these initial accessibility and quality-of-life benefits may be compromised by corresponding increases in population and employment growth, which can contribute to impacts beyond those directly attributable to the changes in the transportation system itself. For these reasons, proposed PWP/TREP improvements support efforts to concentrate development in developed areas with existing public infrastructure and services, including transportation facilities. This discourages sprawl into undeveloped areas—thus limiting the potential negative impacts to air quality and coastal resources, as well as slowing the growth of vehicle miles traveled (VMT)—and saves money by avoiding major expansions of public infrastructure and services into new areas.

Accordingly, SANDAG and local governments have implemented a “Smart Growth” land use strategy that seeks to increase population density to accommodate projected growth, while reducing VMT and curbing greenhouse gas emissions. However, Smart Growth must be supported by sufficient public services, and when it comes to travel, successful Smart Growth efforts depend largely on the availability of a sustainable, multimodal transportation system that is interconnected with supportive development patterns. The corridor needs an improved transportation system that includes cost-effective transit improvements, high-occupancy highway improvements, and expanded bicycle and pedestrian facilities to improve access and mobility within the NCC and beyond. This planned transportation infrastructure is a critical element to supporting Smart Growth efforts to accommodate future development within existing communities by ensuring that roads, bike routes, sidewalks, and other facilities offer safe, appealing, and comfortable travel. Absent adequate public transportation infrastructure to serve the corridor's concentrated development pattern and maintain quality of life and growth, new development could instead occur in undeveloped and rural areas if land use controls and public works allow for it.

5.2.2.1 LOSSAN Rail Corridor Impact Assessment

Public Transit

The improvements to the LOSSAN rail corridor—as well as the planned implementation of new Bus Rapid Transit (BRT) and other transit services in the NCC—would enable improved transit service with higher frequencies, shorter travel times, and more reliability. As such, the improvements would have no negative impact on public transportation. By providing an auto-competitive, public-transit alternative in the corridor, transit demand is expected to increase to more fully utilize the expanded capacity.

The proposed projects would help to accommodate existing and projected travel demand by increasing rail and bus capacity and therefore improving travel times and reliability while reducing congestion; moreover, the identified rail improvements would address potential conflicts between the planned increase in transit services and continuing freight operations in the LOSSAN rail corridor, resulting in more attractive and competitive passenger rail service in the NCC. Table 5.2-3 shows that the number

of passenger trains operating in the LOSSAN rail corridor in the NCC is projected to nearly double between today and 2030 (from approximately 65 trains to 119 each weekday). Commensurate increases in frequency are planned for the supporting bus and shuttle routes that serve corridor stations (e.g., the NCTD COASTER Connection shuttles). The number of corridor freight trains is also expected to increase (from between 5 and 7 to 9 each day).

TABLE 5.2-3: PLANNED WEEKDAY SERVICE (LOSSAN RAIL CORRIDOR)

	Existing (2010)	Near-Term (2015) Service Expansion	Mid-Term (2020) Service Expansion	Long-Term (2030) Service Expansion
Amtrak	22	26	36	36
COASTER	22	30	36	54
Metrolink	16	16	16	20
BNSF	5-7	7	9	9
Total	65-67	79	97	119

Sources: SANDAG 2050 RTP (Chapter 6), October 2011; San Diego – LOSSAN Corridor Project Prioritization Analysis, Final Project Report, July 2009.

Smart Growth

Regional projections show that growth of the region (and the resultant increased demand for passenger and freight service) will occur with or without the proposed PWP/TREP improvements; therefore, the LOSSAN rail corridor improvements would not have any discernible effect on projected growth in the corridor.⁹ However, implementing both the rail and bus transit improvements could have some localized effects on the type of development that may occur around LOSSAN rail station areas. Stations along the rail corridor would remain in their existing locations (with parking expansion and other enhancements proposed at some locations). Because the areas surrounding existing stations are mostly developed already, the increased transit service would add value to surrounding parcels and (provided local land use policies support them) higher-value land uses. Significantly improved transit service could increase the rate of development or change the types of establishments that develop. Overall, the effects of such changes would be small given the existing and planned land uses in these suburban areas. This redevelopment would likely conform to Smart Growth principles, as it would be greater in density and focused on nearby transportation facilities.

5.2.2.2 I-5 Highway Corridor Impact Assessment

Public Transit

Planned improvements to I-5 would expand capacity and improve operations on the highway corridor to meet current and projected travel demand. Because travel times and reliability would improve for higher-occupancy modes, corridor travelers would have a greater incentive to use high-occupancy vehicles (HOV) such as carpools, vanpools, and transit buses to traverse the NCC instead of driving alone. Proposed highway improvements may, individually or cumulatively, encourage increased vehicle trips in the corridor because of improved operating conditions; however, occupancies per vehicle would be higher and therefore would lead to a much higher person throughput and more efficient use of the highway infrastructure. In addition, the Express Lanes would serve as essential enablers of high-intensity transit modes such as BRT, providing the infrastructure necessary to expand transit services in the future as demand warrants.

⁹ LOSSAN Final Program EIR/EIS (Section 3-15), September 2007.

Smart Growth

Implementing the PWP/TREP improvements on I-5 would enhance an existing highway that serves an existing urban area as opposed to a new highway that could spur new areas of development. The project aims to maintain or improve existing and future traffic operations along I-5 while prioritizing the movement of people over the movement of vehicles.

Due to the urbanized nature of the corridor and limited availability of developable land, there is no known development potential in the corridor that would depend on implementing the proposed highway improvements. As such, growth in the project area and surrounding region is expected to occur with or without implementation of the proposed project.

As shown in Table 5.2-1, only 5% of land within the six jurisdictions in the study area is considered available for future development, of which nearly half is planned for residential uses. The few undeveloped, vacant properties surrounding I-5 have been identified as infill redevelopment projects, city-approved projects, or protected open space.

Local jurisdictions along the I-5 highway corridor have identified growth forecasts and anticipated maximum build-outs within their local planning documents and implementing guidelines, including the cities' certified Local Coastal Programs (LCP) discussed in Chapter 2. These plans and policies generally focus on managing growth to ensure that new development does not occur at the expense of the natural environment, coastal resources, or existing development, nor before adequate infrastructure and services are in place.

The existing I-5 highway corridor experiences severe congestion during peak hours; the proposed project is intended to relieve both the existing and anticipated future increase in congestion. Design of the project was coordinated with regional growth forecasts based on approved land use plans. To contain costs and environmental impacts, project design does not provide for excess capacity beyond planned growth. Given the built-out land use pattern in corridor cities (as discussed in Section 5.2.1.2), the limited availability of developable land, local land use and regional policies controlling future growth, and the costs associated with redevelopment, the proposed highway improvements would have minimal potential to result in growth-inducing impacts.

The potential for moderate growth in the project vicinity is inevitable and consistent with local land use plans and current trends. The benefits associated with the proposed project would not substantially affect the location, rate, type, or amount of growth in the project vicinity because of other limits on growth, including land use controls within local and regional plans and policies, and the highly urbanized nature of the existing land uses.

Alternatively, without adequate public infrastructure (including transportation facilities) to serve the corridor's concentrated development pattern and maintain quality of life and growth, new development could occur instead in undeveloped and rural areas outside the corridor such as the inland cities and unincorporated areas to the east. Beyond the negative regional effects of increased VMT and greenhouse gas emissions that would result from such sprawling development, coastal resources in the NCC could also be affected by increased vehicle trips to and from rural areas to reach common public and commercial support services and coastal recreation areas. In addition, whatever development would occur in the coastal areas would likely to experience increased traffic congestion and associated degradations in both air quality and quality of life.

5.2.3 PWP/TREP Opportunities, Design/Development Strategies, and Policies/Implementation Measures

While corridor population and travel are expected to increase over the next 30 years, this growth will occur regardless of whether the PWP/TREP program of improvements is implemented. The regional goals of livability and sustainability require a healthy economy, improved and efficient mobility, and reliability of the transportation systems that serve to connect the local communities. By allowing approved and concentrated growth to occur in the already urban corridor (supported by sufficient public infrastructure and services), additional growth is not forced to spill over into undeveloped or rural areas. Focusing investment on facilities that encourage alternative modes of transportation—such as improving the existing LOSSAN rail corridor, introducing Express Lanes on I-5 that encourage HOVs and allow for transit vehicles, or developing bike lanes and sidewalks—will concentrate future growth in urban areas where corresponding travel demand can be accommodated by a combination of these alternative modes of transportation.

5.2.3.1 Corridor Opportunities

As stated previously, growth within the project area is expected to occur under any circumstance with or without the proposed project. The potential for moderate growth in the project vicinity is inevitable and consistent with local land use plans and current trends. Transportation infrastructure improvements proposed by the PWP/TREP would support new and expanded transit services and improve multimodal travel options, which would facilitate the region's Smart Growth efforts as a sustainable means of accommodating growth in the corridor. The PWP/TREP includes transportation system improvements that address the needs of people who travel on foot and via public transportation and bicycles, ensuring that the transportation system facilitates walking, riding bikes, and riding buses and trains as a safe and easier means of travel—a critical element of successful Smart Growth policies.

Improvements to the corridor's main north-south routes would accommodate existing and future travel demand that results from projected growth in the NCC's population and employment. The proposed project would improve reliability and reduce travel time on both the LOSSAN rail corridor and the I-5 Express Lanes, which would provide incentives to travelers to use rail as well as other transit services (such as buses and carpools) that would utilize the proposed Express Lanes and direct access ramps (DARs). In addition, the proposed infrastructure improvements would provide new opportunities to develop and improve bike lanes, sidewalks, and trails, which would encourage non-vehicular travel in the corridor.

The proposed Manchester Avenue DAR and San Elijo Multi-Use Facility (consisting of a park-and-ride, BRT station, and recreational amenities such as parking and trailheads) would provide direct access to the I-5 Express Lanes for HOVs and transit vehicles, including the Mid-City to Palomar Airport Road BRT, as well as other BRT services that may be added in the future as demand increases. The DAR would prevent these vehicles from having to weave through congestion in the I-5 general-purpose lanes when entering or exiting the highway, which would not only shorten travel time for transit and HOVs but would also reduce travel demand on the highway's general-purpose lanes. The park-and-ride/BRT station would include a new access road, parking for about 150 cars, and a bus platform—all of which would facilitate ridesharing and bus transportation.

Traffic congestion on I-5 inhibits many potential carpool, vanpool, and bus transit options, as these modes of travel are subject to the same traffic congestion on the highway that single-occupancy vehicles (SOVs) experience. The combination of increased support facilities—such as the DAR and the park-and-ride/BRT station—along with the proposed Express Lanes would provide strong incentives for travelers to shift to ridesharing and public transit, as these modes would be easier to access and would

possess a major advantage over SOV travel: direct access to the uncongested Express Lanes, where reduced travel times and increased reliability would be assured. Accordingly, the proposed PWP/TREP improvements would encourage alternative transportation modes as viable substitutes for SOV travel.

The LOSSAN rail corridor improvements would lead to shorter travel times and improved reliability, and would enable increased frequencies for inter- and intra-city public transit in the corridor. The improvements would provide a track in each direction in nearly the entire corridor, thereby allowing for an increase to corridor capacity to over 47,000 passengers each day.¹⁰ Station facilities and parking improvements at LOSSAN rail corridor stations would further increase passenger capacity and enhance quality of service. LOSSAN rail corridor improvements would also provide enhanced inter- and intra-regional access to coastal-dependent industry and recreation, coastal and upland areas supporting recreation, various tourist destinations, and visitor-serving areas. Providing higher-quality rail service in the LOSSAN rail corridor is one of the public infrastructure elements necessary to fully realize Smart Growth potential in areas around LOSSAN rail corridor stations.

5.2.3.2 PWP/TREP Policies, Design/Development Strategies and Implementation Measures

The proposed improvements would maintain and enhance public access to the coast by improving public transit in the corridor with reliable, uncongested transit service, Express Lanes, and DARs, and by providing for nonautomobile circulation throughout the corridor with new and improved bike lanes, sidewalks, and trails. In addition, implementing the PWP/TREP would limit the expansion of the public works facility to within the established corridor serving existing, permitted, and planned development according to approved land use plans. As the proposed new highway facilities, rail track and station improvements, and pedestrian crossings—as well as the associated community and resource enhancements—inherently address potential transit and growth issues identified by applicable Coastal Act policies, no policies, design/development strategies or implementation measures are necessary to further ensure PWP/TREP consistency with the Coastal Act.

As discussed in Chapter 6, to coincide with the monitoring reports that SANDAG prepares for regularly updated regional transportation and growth plans, a transportation report package will be submitted every four years in order to provide details on improvements to the entire NCC transportation system as described in the PWP/TREP. The report will provide an overall picture of the progress made during the reporting period toward meeting the 30-year transportation goals expressed by the regions within regional plans and the PWP/TREP. The report will consider a variety of factors to track overall enhancements to the transportation system within the corridor, particularly those necessary to ensure that positive steps toward improved connectivity and mass transit are developed to reduce vehicle miles traveled and energy usage as described in the PWP/TREP. It will include updates on capital improvements, an accounting of dollars invested, changes in transportation trends, and information on other transportation strategies implemented through the corridor. The report will also include descriptions of areas where measureable enhancements have been realized as well as areas where the results do not meet expectations, an analysis of the factors behind those results, and potential adaptive management solutions for improvements where necessary. Moreover, the report will provide a reassessment of land-use changes over time and identify new opportunities for improved transit services as a result of those changes.

¹⁰ SANDAG, May 2012.

5.2.4 Coastal Act Consistency

Coastal Act Section 30250 requires new development to occur in already developed areas and areas with adequate public services. This requirement is intended to concentrate development away from undeveloped rural areas and thus avoid significant adverse effects, either individually or cumulatively, on coastal resources:

(a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land divisions, other than leases for agricultural uses, outside existing developed areas shall be permitted only where 50 percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size of surrounding parcels.

(b) Where feasible, new hazardous industrial development shall be located away from existing developed areas.

(c) Visitor-serving facilities that cannot feasibly be located in existing developed areas shall be located in existing isolated developments or at selected points of attraction for visitors.

Coastal Act Section 30252 encourages the development of nonautomobile public access to the coast to reduce demand on coastal access roads:

The location and amount of new development should maintain and enhance public access to the coast by (1) facilitating the provision or extension of transit service, (2) providing commercial facilities within or adjoining residential development or in other areas that will minimize the use of coastal access roads, (3) providing nonautomobile circulation within the development, (4) providing adequate parking facilities or providing substitute means of serving the development with public transportation, (5) assuring the potential for public transit for high-intensity uses such as high-rise office buildings, and by (6) assuring that the recreational needs of new residents will not overload nearby coastal recreation areas by correlating the amount of development with local park acquisition and development plans with the provision of onsite recreational facilities to serve the new development.

Section 30254 limits constructing or expanding public works facilities to the capacity generated by permitted development:

New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the provisions of this division; provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with this division. Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreation, and visitor-serving land uses shall not be precluded by other development.

5.2.4.1 Public Transit

The planned transit improvements would result in shorter travel times and improved reliability, and would enable increased frequencies for inter- and intra-city public transit in the corridor. With close to half of the LOSSAN rail corridor operating on a single track with no passing track, the improvements (implemented in multiple projects) would lead to double-track in nearly the entire corridor. These

phased projects are required to accommodate the planned increase in LOSSAN rail corridor services over the next several decades (Table 5.2-3). By 2030, COASTER service is planned to nearly double, with the capacity to serve up to 35,000 passengers daily; the overall capacity in the corridor is expected to be 47,000 passengers per day across all rail services.

Station facilities and parking improvements at LOSSAN rail corridor stations would increase passenger capacity and enhance quality of service. The new Del Mar Fairgrounds Special Event Platform would provide for improved nonautomobile access to coastal resources, including Cardiff State Beach, San Dieguito River Park and Lagoon, and the Del Mar Racetrack and Fairgrounds. Parking structures or significant expansions to parking facilities would be planned for all NCC stations (Oceanside, Carlsbad Village, Carlsbad Poinsettia, Encinitas, Solana Beach, and Sorrento Valley). Parking at stations is a major capacity constraint and acts as a barrier to many potential rail corridor users. On average, all of the COASTER station parking lots (except Oceanside and Sorrento Valley) are at least 90% full on weekdays, with several exceeding 95%.¹¹ This constraint not only limits the number of people who can access the stations by automobile, but it also creates uncertainty among potential new riders, who might wish to commute via rail but cannot rely on parking being available every day. This lack of parking capacity therefore serves as a barrier to increased ridership. Providing additional parking resources at NCC rail stations will be a critical component to supporting increased rail use in the future.

The I-5 highway corridor improvements would prioritize access by HOVs and transit vehicles, thus incentivizing their use. The corridor's two Express Lanes in each direction would provide reliably uncongested travel to HOVs, vanpools, buses, and other transit vehicles using I-5. Any additional capacity in the Express Lanes would be available to SOVs for a fee, which would ensure that excess capacity in the lanes is not wasted and that the benefits of overall decreased traffic congestion for all trip types are realized. The price for SOVs would vary in real time (based on the use of the Express Lanes) to ensure that they remain uncongested. Revenues collected would be allocated to further improve corridor transportation services. Compared to the No Build Alternative, adding Express Lanes to the I-5 corridor for the 2030 Build Alternative would nearly double HOV volumes during peak periods in the peak direction (Table 5.2-4).

TABLE 5.2-4: WEEKDAY HIGH-OCCUPANCY VEHICLE VOLUMES (I-5 CORRIDOR)

From	To	AM Peak			PM Peak		
		Existing ^a	2030 No Build ^b	2030 Build	Existing ^a	2030 No Build ^b	2030 Build
Northbound							
I-5/I-805 Junction	Carmel Valley Road	300	1,920	2,000	1,100	1,620	2,540
Carmel Valley Road	Lomas Santa Fe Drive	300	1,580	1,640	1,100	1,230	2,130
Southbound							
Lomas Santa Fe	Carmel Valley Road	1,200	1,030	2,400	350	1,010	2,030
Carmel Valley Road	I-5/I-805 Junction	1,200	1,030	2,800	350	1,480	2,430

Source: I-5 NCC Project Draft EIR/EIS (Section 1-3), June 2010.

a – Existing conditions include current baseline information.

b – 2030 No Build Alternative includes ongoing operations and maintenance and separate projects in the corridor through 2030.

¹¹ NCTD, November 2012. See Section 3A.1.2.5.

The 2050 RTP includes plans for a “reverse commute” BRT service on I-5 that would serve the peak-period commute trip between the high-density Mid-City residential area in central San Diego and the Palomar Airport Road business park in the NCC. Other transit services utilizing the Express Lanes—several of which were evaluated during the 2050 RTP planning process—could be added as travel demand increases in the corridor.

The LOSSAN rail corridor is used mostly for commuter and intercity travel, but with improvements in the frequency and span of service, it could serve other types of trips, including recreation and leisure trips for local users. All six LOSSAN rail stations in the NCC are within blocks of a major coastal resource—either a public beach or lagoon. The reliability and travel times of the highway Express Lanes and corresponding facilities would provide users of the highway system with a similar incentive to use higher-occupancy modes of transportation in the corridor, including bus transit services that are planned for future implementation. These facilities would allow for the provision of public transportation to coastal areas—which are underserved, including those areas of the NCC less accessible to LOSSAN rail corridor stations—as well as trips with origins or destinations that could not be served easily by the rail corridor. These corridor improvements would provide enhanced inter- and intra-regional access to coastal-dependent industry and recreation, coastal and upland areas supporting recreation, various tourist destinations, and visitor-serving areas, which would maintain and enhance critical public transport services for industries vital to the economy of the region, state, and nation.

Proposed community enhancements would further support nonautomobile transportation. Bike and hiking trails, including components of the Coastal Rail Trail, pedestrian corridor crossings, adding and widening of overpass sidewalks and bike lanes, upgraded and expanded parking facilities at rail stations, grade separations, and other improvements would create stronger links in the corridor. Many of these new links would significantly improve non-vehicular public access to and within the Coastal Zone and to recreation areas, making access by alternative transportation modes more desirable. These enhancements are discussed in detail in Section 4.4.1.

The proposed PWP/TREP multimodal program focuses on implementing transportation improvements that would meet the region’s varied transportation needs, including rail, bicycle, and pedestrian facilities. While each of these non-highway improvements would increase corridor capacity, collectively, they would still not accommodate expected corridor travel growth or avoid highway improvements that will be critical to maintaining an efficient transportation system in the NCC that meets the travel demands of residents, commuters, visitors, and goods movement.

Planned improvements to the NCC would help provide coastal public-transit access and would provide for greater nonautomobile circulation within the corridor. I-5’s Express Lanes and DARs would provide priority service for buses and other transit vehicles as well as HOVs. Future bus routes using this infrastructure would enable direct access to coastal resources. Additionally, trips otherwise made by private automobile could use these new services and thereby provide additional capacity for other vehicles to access the coast. Reduced LOSSAN rail travel times, increased frequencies, and improved weekend and off-peak service would make rail more competitive with the automobile as an access mode for coastal resources. Many of the corridor’s bicycle and pedestrian routes are disjointed because of topographical and infrastructure barriers. The proposed project improvements would create or materially improve many of these necessary connections, including 26 highway over- and under-crossings that would be rebuilt with improved bike and pedestrian facilities. By developing pedestrian bridges and corridor bike and hiking trails (and adding and enhancing sidewalks and bike lanes), safe, nonautomobile-dependent routes to and within the Coastal Zone would be provided. As such, the proposed NCC improvements are consistent with Section 30252 of the Coastal Act.

5.2.4.2 Growth

Providing higher-quality rail service in the LOSSAN rail corridor is one of the public infrastructure elements necessary to fully realize Smart Growth opportunities around LOSSAN rail corridor stations. Developing a transportation system that facilitates riding bicycles and walking as safe and easy means of travel to and from transit opportunities is also a critical component of successful Smart Growth policies. Accordingly, the PWP/TREP incorporates several pedestrian and bicycle improvements identified during the development of the Safe Access to Transit and Coastal Resources (SATCR) study, which is included as Appendix A of the PWP/TREP. As described in Chapter 2 and Section 5.3, SANDAG and Caltrans conducted the SATCR study during the PWP/TREP planning process to identify gaps or barriers within the regional and local bicycle and pedestrian networks that limit bicycle and pedestrian access to transit services and coastal resources in the NCC. During the study, the identified gaps and deficiencies—particularly those that inhibit east-west crossing of the highway and rail corridors—informed the NCC planning process and resulted in the incorporation of many pedestrian and bicycle improvements into the PWP/TREP (to be implemented concurrently with the highway and rail projects).

These pedestrian and bicycle improvements would improve safety and accessibility for mass transit riders who walk or bike to transit facilities, and would also increase overall community walkability in areas surrounding transit stations that are planned for Smart Growth. During its development, the SATCR study identified the needs of pedestrians and cyclists that extend beyond the corridor's transit stations to and from the surrounding neighborhoods, and then identified adjacent NCC project elements that presented opportunities to address these needs. By influencing the selection and design of project elements, the SATCR process contributed to the broad suite of pedestrian, bicycle, and community enhancements that are included in the PWP/TREP (described in more detail in Chapter 3B, Chapter 4, and Section 5.3). These transit-friendly pedestrian and bicycle improvements, combined with the LOSSAN rail projects and other investments in corridor transit, will collectively support Smart Growth in the NCC, which will, in turn, ensure that future growth can be accommodated with a mix of uses that enable nonauto-oriented development. With a mix of uses in a concentrated area, many trips can be made on foot or bicycle. Destinations farther away could be reached by using regional transit systems. An improved rail corridor would support Smart Growth development.

Improvements to the corridor's main north-south highway would accommodate existing and future travel demand resulting from projected population and employment growth. Accommodating some of this travel demand in the I-5 highway corridor would have multiple benefits. As facility improvements focus on non-SOV travel, growth in travel could be accommodated by a higher percentage of transit options and HOVs, meaning that each individual person-trip would have a smaller impact as the ratio of people to vehicles increases. Addressing future I-5 congestion would alleviate the need to accommodate existing and future vehicles on the Coast Highway and other arterial streets that could otherwise require widening or other improvements, resulting in significant impacts to coastal communities and to public recreational areas. Providing corridor access by addressing congestion on I-5 would allow infrastructure to support planned growth in the already developed corridor as infill and redevelopment. If public services in the corridor are insufficient to accommodate existing or additional development, growth would likely encroach into rural and undeveloped areas as people seek to improve quality of life. By enabling growth in already developed areas, significant impacts on natural areas are averted.

Growth within the project area is projected to occur with or without the proposed improvements.¹² Growth is considered to have an indirect relationship to the proposed project that cannot be directly minimized through alternate project features or design. However, by improving public services, especially transit, in an already developed corridor planned to absorb regional growth, growth would occur in these areas—instead of in further sprawling land use patterns that develop natural or rural areas—therefore limiting impacts to natural resources. SANDAG estimates that nearly 80% of future job and housing growth will occur within the region's already developed urbanized areas, which include the coastal cities of the NCC.¹³ The regionally projected growth in the NCC supported by the proposed infrastructure improvements would mostly be infill or redevelopment. Previous Coastal Commission decisions have found that concentrating development in already developed areas supports transit services and opportunities. Capacity enhancements in the NCC would ensure that the corridor is able to support the regionally planned growth. The potential for moderate growth in the project vicinity is inevitable and consistent with local land use plans and current trends; therefore, no adverse effects associated with growth are anticipated by implementing the PWP/TREP.

5.2.4.3 Coastal Act Consistency Analysis Summary

The proposed rail, highway, and community enhancement projects would increase travel capacity in the corridor, thereby reducing travel times and improving quality of service. Although such improvements could induce growth in other regions or corridors, the NCC is almost entirely built-out and contained by natural and jurisdictional borders including the Pacific Ocean to the west, Camp Pendleton to the north, dense University City and downtown San Diego to the south, and the I-15 travel shed to the east. By providing improved public services to an existing corridor, development would be concentrated and supported by existing public services, and thereby would limit development sprawl into undeveloped areas. Any new development in the corridor would be located within, contiguous with, or in close proximity to existing development and public infrastructure. Any growth that would occur in the NCC and that would be served by the proposed infrastructure improvements would be infill or redevelopment. This growth would actually replace growth that otherwise would occur outside the corridor at the urban fringe or beyond, leading to the development of rural lands. As unplanned growth would not be induced by these improvements (and therefore the increase in capacity would not have any indirect impacts on other public services), the improvements would be consistent with Coastal Act Section 30250.

Proposed planned improvements to the LOSSAN rail corridor and the I-5 highway corridor would also improve rail and traffic operations. To be found consistent with Coastal Act Section 30254, the proposed program must serve existing development, or if it accommodates new development, such development must be at planned and approved densities. The proposed LOSSAN rail and I-5 highway corridors' improvements would be located within a developed urban area and would provide safe and adequate travel circulation for growth that is already planned and anticipated. The regionally projected growth that would occur in the NCC would be supported by the proposed infrastructure improvements. These regional growth projections concentrate and maintain anticipated development growth within and/or contiguous to the existing developed corridor and reduce development pressure on rural or undeveloped lands. Proposed improvements would not induce new or unplanned growth within the Coastal Zone. As such, the LOSSAN rail corridor and I-5 highway corridor development is consistent with Section 30254.

Based on available project and environmental data and policies and implementation measures included herein, the proposed PWP/TREP improvements would concentrate development in already developed

¹² LOSSAN Final Program EIR/EIS (Section 3-15), September 2007.

¹³ SANDAG 2050 RTP (Chapter 3), October 2011.

areas, encourage the development of non-SOV access to the coast, and limit the capacity of the proposed public works facilities to serve only permitted development; therefore, the PWP/TREP is consistent with Sections 30250, 30252 and 30254 of the Coastal Act.

5.2.5 Local Coastal Program Consistency

For LOSSAN rail corridor projects included in the PWP/TREP that improve the movement of freight, the LCP policy consistency analysis provides guidance or background information for analyzing rail project consistency with Sections 30250, 30252 and 30254 of the Coastal Act, as appropriate and applicable (see Chapter 1 for additional discussion of LCP applicability to rail projects that may fall under the exclusive jurisdiction of the Surface Transportation Board). The corridor's LCP transit and Smart Growth policies are summarized with brief city-specific consistency analyses below. These integrate and supplement Sections 30250, 30252 and 30254 of the Coastal Act.

5.2.5.1 Local Coastal Program Consistency Analysis Summary

Some of the certified LCPs in the corridor include policies that mirror the requirements of Sections 30250, 30252, and 30254 of the Coastal Act; however, the LCPs for San Diego, Encinitas, Carlsbad, and Oceanside also include additional and specific policies and development standards that support a multimodal approach to transportation and ensure that new growth is supported by adequate public infrastructure.

City of San Diego

The City of San Diego LCP contains Smart Growth and public-transit policies in the North City Land Use Plan, in addition to some of the individual community plans affected by the proposed PWP/TREP improvements. The City's LCP includes several policies that address concentrating development in already developed areas where infrastructure, transportation, commercial, and recreational options exist. The LCP policies also focus on improving access to public transit and providing a balanced transportation system that serves multiple modes. The LCP, with its collective plan components, includes Smart Growth and transit policies that are particularly unique to this portion of the corridor as follows:

- North City Land Use Plan
 - Improve public transportation between La Jolla and the rest of metropolitan San Diego.
- Torrey Pines Community Plan
 - Public mass transit service, including bus, light rail, and commuter rail should be provided to and through the Torrey Pines community.
- Torrey Hills Community Plan
 - Support the provision of secure park-and-ride facilities in the vicinity of access points to the major regional transportation facilities.
 - Expand transit services to Torrey Hills.
- University Community Plan
 - Encourage alternative modes of transportation by requiring developer participation in transit facility improvements, the Intra-Community Shuttle Loop and the light rail transit (LRT) line.
 - Encourage the development of a high-speed, LRT system to serve the university community and other northern communities.

- North City Future Urbanizing Area (NCFUA) Framework Plan
 - The community cores should contain dedicated transit rights-of-way for BRT or LRT service, providing access to the regional transit system. Where feasible, local feeder-bus or shuttle service should be provided to connect the residential areas with the community core. Development of a local transit center where trunk-line and feeder-bus service connect is encouraged and should be located in the community core.
 - Create a land use and circulation pattern that supports multimodal travel habits for people living and working in the NCFUA. Give preference to transit on congested road segments.
 - The North City West Community Plan designates a regional transit terminal at El Camino/Del Mar Heights Road. The NCFUA transit service should connect with this and other links to the regional transit network.
 - Practical and convenient alternatives to the automobile should be provided at the time of need by providing transit stops, buses, signage, and other improvements.

PWP/TREP improvements would improve public transit access (directly or indirectly) to all of the community plan areas in San Diego's North City. Although not all of the proposed services would be provided with the program of projects included in the PWP/TREP, the LOSSAN rail corridor improvements, the addition of Express Lanes that enable BRT, and the provision of continuous bike and pedestrian routes would enhance the public-transit network in the corridor. As such, these policy requirements do not present potential policy conflicts and would not require that policies be amended to ensure consistency of the PWP/TREP improvements with the certified LCP.

City of Encinitas

The City of Encinitas LCP encourages an integrated, convenient, diverse transportation system, including expanding public transit and emphasizing it in future development while preserving community values and character. This includes promoting other modes of transport to reduce dependence on the personal automobile, encouraging shuttle service and park-and-ride facilities, and cooperating with San Diego County and SANDAG to help plan and implement a regional multimodal transportation system that is accessible to residents in the city.

The City of Encinitas LCP also indicates that the land occupied by the LOSSAN rail and I-5 highway corridors is to be reserved and protected for transportation purposes, and will not allow development or encroachment of any other private use, structure or facility. Compatible public uses, facilities, and support spaces such as landscaping, localized street widening or realignment, development of a "linear park," public automobile parking or shared parking in a public district, and pedestrian, bicycle, or trail facilities may be considered. Additionally, the areas adjoining the highway corridor are to remain as low-density residential while preserving the best natural features—thus avoiding the creation of a completely urbanized landscape—and maintaining I-5 interchange areas to conform to the specifications of this overall goal.

PWP/TREP improvements would encourage a multimodal transportation system. The DAR included at Manchester Avenue and the adjacent San Elijo Multi-Use Facility would enable the development and efficient use of park-and-ride facilities by auto travelers as well as any future bus services that are added as travel demand grows. The lands used by the LOSSAN rail and I-5 highway corridors would remain as transportation facilities, and adjacent projects would be compatible public uses, including the provision of parallel and complementary bike and pedestrian paths that connect to important coastal resource areas. Smart Growth is anticipated to occur around the LOSSAN rail corridor station—one of the regional Smart Growth areas identified by SANDAG—and not along the low-density residential I-5

highway corridor. As such, these policy requirements do not present potential policy conflicts and would not require that policies be amended to ensure consistency of the PWP/TREP improvements with the certified LCP.

City of Carlsbad

Although the Agua Hedionda Lagoon segment of the City of Carlsbad's LCP remains an area of deferred certification, the City of Carlsbad's certified Agua Hedionda Land Use Plan (LUP) provides guiding policy to address development therein, including Policy 7.12, which states:

Public transit availability shall be provided as follows:

- a) As land within the Specific Plan area develops, the North County Transit Company bus system should be expanded to provide optimum levels of service.
- b) Future street systems within the Specific Plan area shall be constructed in a manner which can accommodate the public bus system.
- c) Accessory facilities, such as bus turnouts, shelter and benches shall be provided at key locations along the existing and future bus routes.

PWP/TREP improvements would provide for increased public-transit availability through provision of a multimodal transportation system that accommodates increased bus, carpool/vanpool, HOV, and rail activity in accordance with the regional vision identified within the 2050 RTP. As such, this policy does not present a potential conflict, and would not require amendment to ensure consistency of the PWP/TREP improvements with the certified LCP.

City of Oceanside

The City of Oceanside LCP has as an objective to “endorse infilling and revitalization of the Coastal Zone for the purpose of creating an attractive, balanced and economically sound urban environment.” Supporting policies include promoting development of a high level of transportation facilities, public services, and amenities, such as supporting continued high levels of NCTD service and supporting expansion and upgrades of Amtrak service, commensurate with travel demand. Additionally, new development is conditional on essential public facilities being able to serve the demands of the growth.

PWP/TREP improvements would provide public services in the form of transportation, which could enable infill development in Oceanside. Improvements to the LOSSAN rail corridor would provide the capacity necessary to increase NCTD, Metrolink, Amtrak, and freight services. As such, these policy requirements do not present potential policy conflicts and would not require that policies be amended to ensure consistency of the PWP/TREP improvements with the certified LCP.

Summary

Based on available project and environmental data and the policies and implementation measures included herein, the proposed PWP/TREP improvements would focus any induced development in already developed areas, enhance nonautomobile public access to the coast, and limit the expansion of the proposed public works facilities to the capacity generated by permitted development through the programming and design of improvements and the application of reasonable mitigation measures; therefore, the PWP/TREP is consistent with applicable Smart Growth and public transportation policies of the corridor LCPs, and policies would not need to be amended to implement the proposed transportation facility improvements.

5.1 ENERGY CONSERVATION AND EMISSIONS REDUCTION

This section describes the effect transportation has on energy consumption, air quality and greenhouse gas (GHG) emissions, and examines how the North Coast Corridor (NCC) program of transportation improvements would minimize energy consumption in the corridor and contribute to regional GHG reductions and air quality improvements. Because transportation has such a direct effect on energy consumption and GHG emissions, it is difficult to separate the latter two in any discussion of transportation systems and travel demand. Therefore, this section provides a comprehensive discussion of the interrelationships among transportation, energy consumption and conservation and emissions before discussing energy and emissions independently, and is organized as follows:

- An overview of the relationship among transportation, energy consumption and emissions reduction in the region and NCC (Section 5.1.1), to include:
 - A summary of growth projections
 - A discussion of the general benefits of transportation improvements to pollutant emissions
 - An explanation of the relationship between transportation metrics and pollutant emissions
 - A summary of policy requirements and local efforts to reduce emissions and improve air quality
- A summary of PWP/TREP concerns related to energy and emissions, including the projected impacts of the project to the rail corridor, the highway corridor, and the region (Section 5.1.2).
- Identification of PWP/TREP opportunities, design/development strategies, and policies and implementation measures (Section 5.1.3).
- A discussion of consistency with the Coastal Act (Section 5.1.4).
- A discussion of Local Coastal Program consistency (Section 5.1.5).

5.1.1 Transportation, Energy Conservation and Air Emissions

Transporting goods and people accounts for roughly half of California's energy consumption.¹ As population and travel have grown over the past several decades, the energy needed to power this movement of people and goods has grown correspondingly. While state and federal policies are increasing the use of alternative fuels and low-emission vehicles, consumption of non-renewable resources, such as fossil fuels, remains high. Current and future energy consumption in the NCC is largely a function of regional and corridor growth, and the resulting demand for movement of goods and people along both the LOSSAN rail and I-5 highway corridors.

5.1.1.1 Regional and Corridor Growth

Historic Growth

From 1970 to 2010, the San Diego region more than doubled in population. In 2010, the region held over 3.2 million people, 1.1 million homes, and 1.5 million jobs.² Most of the population growth was due to longer life spans and increased birth rates versus migration into the region. Growth has occurred not only in San Diego County and the NCC project area but also in adjacent regions accessed by the I-5 highway and Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail corridors, including Orange County and Riverside County to the north, Imperial County to the east, and Baja California, Mexico, to

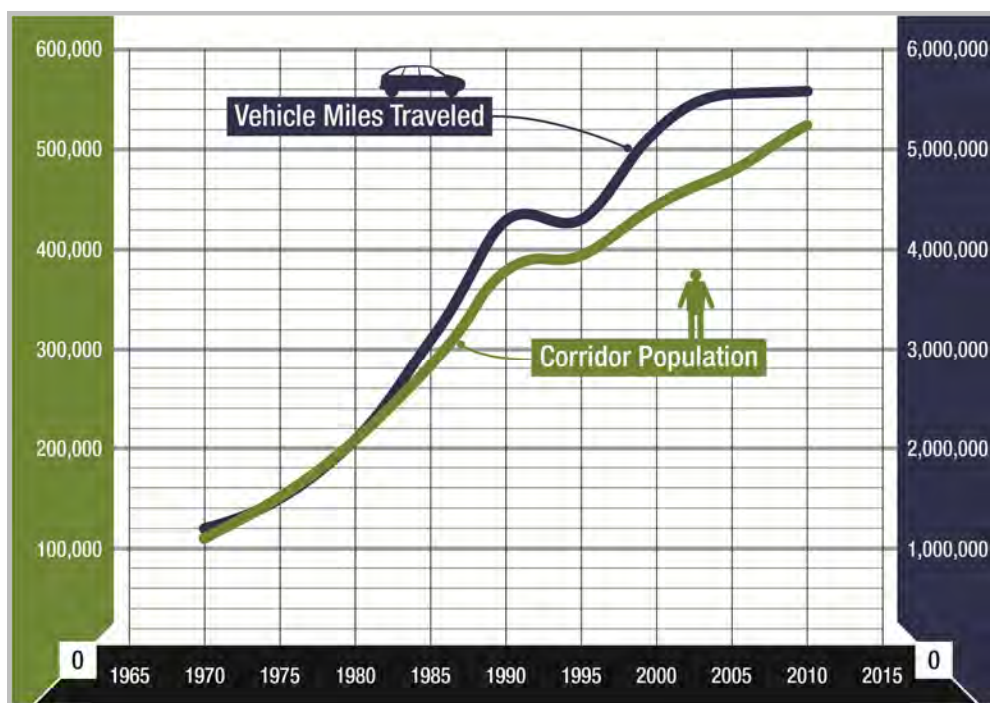
¹ California Energy Commission. Consumer Energy Center: Transportation, 2006.
<http://www.consumerenergycenter.org/transportation/index.html>.

² SANDAG 2050 RTP (Chapter 3), October 2011; SANDAG/Caltrans Series 12 Model, November 2011.

the south. During this period, travel demand in the corridor has been driven largely by this multi-regional population and housing growth, as development has occurred beyond the corridor and more are people commuting longer distances for housing and employment.

Across the nation, and as people's lives have become more mobile, travel demand has historically increased at a higher rate than population growth. This situation is also true in the San Diego region with travel demand in the NCC growing at a faster rate than population. This trend indicates that people today are making more trips and covering longer distances than in the past, as shown in Figure 5.1-1. In the NCC, established land use patterns of low density and segregated use lead to a high dependence on the private automobile. As noted in Section 5.1.2.2 below, even in the absence of highway-capacity improvements, VMT on I-5 in the NCC is expected to increase by at least 17% by 2040.³

FIGURE 5.1-1: POPULATION AND I-5 VEHICLE MILES TRAVELED, NORTH COAST CORRIDOR (1970–2010)



Source: San Diego NCC-CSMP (Chapter 4), July 2010; Caltrans Performance Measurement System (PeMS).

Future Growth and Infill Development

Through 2040, it is forecast that regional land use and development patterns will change from past patterns of expansion into far-reaching and undeveloped areas to a focus on new infill development in existing developed areas. The San Diego Association of Governments (SANDAG) growth models predict that the region will grow by another 939,000 people by 2040—a 29% increase. Over 300,000

³ As discussed in Section 5.1.2.2, the SANDAG/Caltrans Series 11 model projected a 29.6% increase in VMT on I-5 between 2006 and the 2030 No Build Alternative. The Series 12 model projected a 17.0% increase in VMT on I-5 between 2010 and the 2040 No Build Alternative.

new homes and nearly 400,000 new jobs will be added during this same period.⁴ In addition, the number of homes located within one-half mile of public transit services is projected to increase from 45% (2008) to 64% (2050).⁵ To accommodate this influx, SANDAG and the local governments have implemented a Smart Growth land use strategy that seeks to increase population density, minimize growth in vehicle miles traveled (VMT), and curb air pollutant and GHG emissions.⁶ The policies and trends toward Smart Growth indicate that new transportation facilities will be necessary to continue to meet interregional and regional travel demand as well as corridor and localized growth and travel demand.

As discussed in Section 5.2, the NCC is 95% developed with urban uses. Of the 5% of remaining developable land, approximately half (or 3% of NCC land area) is available for residential uses. Population in the NCC is expected to grow 23% between 2010 and 2040. Due to the built-out nature of the corridor, this population growth will be accommodated through redevelopment and infill development in accordance with the region's Smart Growth policies (more dense, mixed-use development in urban areas near transportation facilities). As a result, the NCC improvements will not induce new growth or sprawl, but rather accommodate forecast growth in the urban corridor, promoting mobility in a more efficient manner.

The NCC's current transportation facilities are plagued by congestion. From the peak-period backups along I-5 to the single-track delays on the LOSSAN rail corridor, the NCC represents a bottleneck not just for the San Diego region but also for the state and national transportation systems. Congestion diminishes air quality throughout the corridor as vehicles are forced to operate at inefficient speeds in stop-and-start settings. Moreover, these bottlenecks on I-5 also spill into the local road network in the form of "cut-through" traffic, which congests local communities and potentially results in localized air pollutant emissions. In addition to congestion, circuitous routes caused by the corridor's topography further increase energy consumption, air quality impacts, and vehicle emissions. With population growing and travel demand increasing even more rapidly, the future promises even greater levels of congestion in the NCC unless capacity improvements are made.

As the region's transportation system and infrastructure expand to keep pace with projected population and travel growth, policies that emphasize multimodal transportation networks focusing on Smart Growth areas and high-occupancy vehicle (HOV) travel (carpools, vanpools and transit)—combined with new technologies that reduce energy consumption and vehicle emissions—will minimize or reduce growth in energy consumption, air pollution, and emissions. As discussed in Sections 5.2 and 5.3, some measures to reduce energy consumption and improve air quality are already in place. The LOSSAN rail corridor provides an alternative to automobile travel in the corridor through both intercity and commuter rail. The corridor has existing bicycle and pedestrian facilities. Local governments are also working to implement planned Smart Growth development, which would lower the demand for automobile trips.⁸ And, through SANDAG, the region promotes a Transportation Demand Management program that includes subsidized vanpools, telecommuting and other methods for reducing travel demand.

⁴ SANDAG 2050 RTP (Chapter 3), October 2011; SANDAG/Caltrans Series 12 Model, November 2011.

⁵ SANDAG 2050 RTP (Chapter 3), October 2011.

⁶ SANDAG Regional Comprehensive Plan, July 2004. Smart Growth focuses housing and jobs within urban areas served by a multimodal transportation system, which, in turn, reduces urban sprawl and preserves open space, and agricultural and natural resource areas.

⁸ SANDAG Trip Generation for Smart Growth: Planning Tools for the San Diego Region, June 2010.

5.1.1.2 Pollutant Emission Benefits of Transportation Improvements

In the NCC, automobile trips comprise currently over 95% of all commute trips, resulting in significant energy consumption in the corridor attributable to auto use.⁹ The proposed NCC transportation improvements are intended to move more people (versus more cars) through the corridor more efficiently while reducing congestion and minimizing impacts to coastal resources. Proposed improvements include HOV/Express Lanes, rail and bus transit, park-and-ride facilities, and bicycle/pedestrian facilities. These strategies are anticipated to have multi-pollutant benefits by reducing vehicle travel and/or positively affecting vehicle speeds and traffic flow, and are described below.

HOV/Express Lanes

HOV/Express Lanes are intended to maximize the person-carrying capacity of a roadway by altering the design and/or operation of the facility to provide priority treatment for HOVs, such as carpools, buses, and vans. By providing two important incentives—reduced travel time and improved trip time reliability—HOV facilities encourage travelers to shift from single occupancy vehicles to HOV use. This shift should reduce vehicle trips, VMT, and associated emissions from these activities. In addition, HOV/Express Lanes are designed to operate at faster speeds, even during peak periods, and so the strategy also results in an increase in travel speeds for vehicles using the HOV lane.

HOV/Express Lanes affect air pollution emissions in several ways. First, restricting the additional lanes to certain vehicles encourages ridesharing among commuters, resulting in fewer vehicle trips and emissions of all pollutants. HOV/Express Lanes also increase travel speeds for HOV traffic that is able to utilize the lanes, and potentially along the entire roadway. Consequently, the speed changes may have different effects for different pollutants, and could even increase some emissions. Implementation of HOV/Express Lanes also could result in some additional emissions that may partially offset the benefits of vehicle trip reduction if some people who previously used transit now switch to carpools, thereby increasing the number of vehicles on the road. However, in general, HOV/Express Lanes would be expected to reduce all pollutants.

Rail and Bus Transit

The ability of transit to move high volumes of people generally leads to more energy efficient and less polluting travel compared to travel by automobile. This is particularly true during peak commute hours when most automobile trips are comprised of single occupant vehicles (SOV) while transit vehicles (both bus and rail) carry their heaviest loads. Enhancements to the transit network and services in the NCC, including commuter rail, BRT and local bus services, will provide more viable and attractive travel options which will encourage shifts from SOV to transit. The result reduces energy consumption and emissions by decreasing the number of SOVs on the road.

While travel by transit is generally more energy efficient, higher train volumes and more locomotives traveling on the LOSSAN corridor would lead to greater energy consumption. However, there is a direction relationship between rail corridor congestion and energy consumption by trains. Energy consumption increases as rail corridors become more congested. Bottlenecks caused by single-tracked railway sections (currently more than half of the corridor) result in inefficient locomotive speeds and idling to allow for passing trains. These factors all decrease the efficiency of locomotive travel and further increase energy consumption. Current bottlenecks and speed restrictions will continue and

⁹ SANDAG 2050 RTP (Technical Appendix 7), October 2011.

increase under the No-Build Alternatives, exacerbating the increased energy use from higher volumes of trains and locomotive miles in the corridor. Double-track improvements planned under the Build Alternative will allow for standard speeds along the rail corridor and reduce idling.

Bottlenecks and slower speeds on the rail corridor also lead to increases in emissions from locomotives. Although it is anticipated that innovations in low-emissions locomotive technology through and beyond 2040 will result in cleaner locomotives operating in the corridor (as existing locomotives reach the end of their useful lives and are replaced by new, more efficient models, and new locomotives are acquired to provide more service frequency), emissions will increase if the rail corridor becomes more congested. Relieving track congestion through expansion of double-track segments will improve operations along the rail corridor, leading to an overall reduction in air pollutant emissions, including GHG emissions.

Park-and-Ride Facilities

Park-and-ride facilities include the construction or expansion of parking lots where people can park their vehicles and then join a carpool, vanpool or transit service. Typically, park-and-ride facilities are used in suburban areas. This strategy reduces emissions by decreasing the number of single-occupancy vehicles on the road.

By encouraging drivers to reduce VMT by sharing car trips or taking transit, park-and-ride lots reduce emissions of all pollutants associated with driving, as shown in the table below. However, the emissions benefits will not be proportional for all pollutants, since the use of a park-and-ride facility requires individuals to drive to the facility. As a result, this strategy does not reduce the number of vehicle cold starts that are taken, during which time the highest emissions output of CO, NO_x, and VOCs are produced (in fact, it is possible that park-and-ride lots could lead to increased vehicle trip starts if people who used to pick each other up at individual homes now each drive to the park-and-ride lot).

Since park-and-ride facilities reduce VMT but not cold starts, they generally are less effective at reducing CO, NO_x, and VOCs than other demand management strategies that reduce vehicle trip-making entirely. They can be effective, however, in reducing localized CO; for instance, by reducing vehicle trips into a central business district. Park-and-ride facilities are expected to reduce all pollutants, though they may not contribute significantly to emission reductions. However, they are an important element in supporting congestion relief efforts as well as public transit and ridesharing. Thus, when taken with the combined benefits of a variety of strategies, park-and-ride facilities can be an important component addressing air quality problems.

Bicycle and Pedestrian Improvements

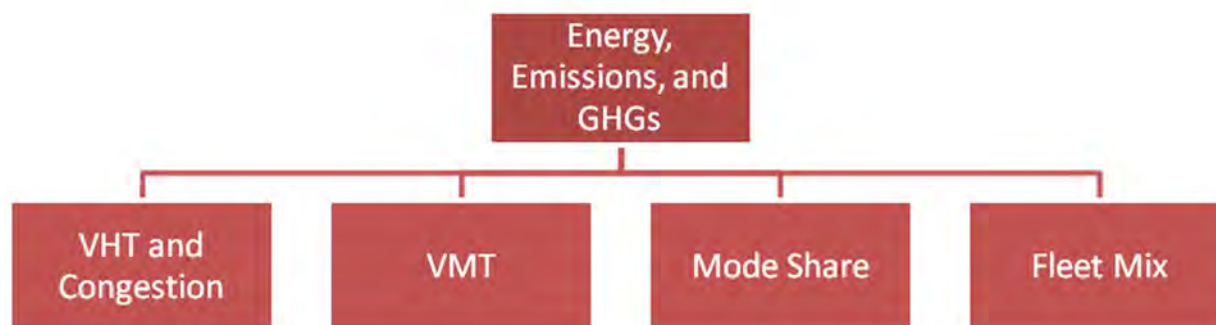
Bicycle and pedestrian projects/programs include a wide range of investments and strategies to facilitate and encourage non-motorized travel. Examples of these strategies include: bicycle paths and lanes, sidewalks, bicycle racks or lockers, pedestrian urban design enhancements, bicycle share programs, and bicycle incentives. These projects can serve both commute and non-commute trips.

Bicycle and pedestrian projects/programs should reduce all pollutants by reducing VMT; however, impacts are likely to be small given limited shifts from driving and relatively short trip distances. Improved connections to transit services, however, can result in reductions in longer vehicle trips. Bicycle and pedestrian projects reduce all pollutant emissions; in fact, each trip shifted from a single-occupancy vehicle to a bicycle or to walking results in a 100% reduction in vehicle emissions for that trip.

5.1.1.3 Relationship Between Transportation Metrics and Pollutant Emissions

In 2010, on-road transportation represented almost 50% of GHG emissions in the San Diego region.¹⁰ As shown in Figure 5.1-2, on-road transportation's contribution to GHG emissions is dependent on several main factors, including the types of vehicles on the road (fleet mix); the type of fuel the vehicles use (gasoline, diesel, or alternative fuels); and the time, distance and efficiency of vehicle travel. While some strategies to reduce GHG emissions—such as improved fuel economy and new fuel and vehicle types—will be determined at the state, national or global levels, others—such as improving efficiency and reducing demand on the transportation system—will be implemented at the local level. The effects of transportation demand and congestion on air emissions, including GHG emissions, can be substantial.

FIGURE 5.1-2: DEFINING TRANSPORTATION FACTORS FOR ENERGY, AIR POLLUTANT EMISSIONS, AND GREENHOUSE GAS EMISSIONS



Transportation, particularly motor vehicles, is a large source of pollutant emissions. Transportation (including cars, trucks, trains, planes, and ships) is estimated to be responsible for 38% of California GHG emissions in 2009.¹¹ Like energy consumption, air pollution is generally monitored and measured on a regional basis (e.g., air basin, air district boundaries, and counties). While global climate change is a cumulative impact resulting from many years of technological and societal changes and is generally addressed on a larger scale (e.g., state, national, global), GHG inventories have been prepared for smaller regions of emission sources (e.g., cities, counties), and GHG emissions can be estimated for individual projects, such as the proposed improvements. Individual transportation projects may have incremental contributions to GHG emissions, but they generally do not create enough GHG emissions to significantly affect global levels.

Vehicle Miles Traveled and Vehicle Hours Traveled

An individual automobile's energy consumption per mile is the result of many variables, such as the type of vehicle, including make, model, size, and fuel technology; roadway terrain, where steep grades result in greater fuel consumption; and travel speed, which is a function of both posted speed and traffic congestion. On a broader scale, data and projections about vehicle energy consumption at the corridor and regional levels can generally be extrapolated from two key travel factors:

¹⁰ SANDAG 2050 RTP Final EIR (Chapter 4), October 2011.

¹¹ California Greenhouse Gas Inventory for 2000-2009 — by Category as Defined in the Scoping Plan, California Air Resources Board, 2011. http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-09_2011-10-26.pdf.

- **Vehicle Miles Traveled (VMT)**, which is the total number of miles traveled by all vehicles in a given period of time.
- **Vehicle Hours Traveled (VHT)**, which is the total number of hours vehicles spent traveling in a given period of time. It is directly related to traffic volumes, levels of traffic congestion, and the resulting average speed (miles per hour [mph]).

While VMT and VHT can act as proxies for measuring vehicle energy consumption in the corridor, it is misleading to assess these metrics at the corridor level. Policies, plans, and programs to reduce transportation energy consumption, as well as improve air quality and address GHG emissions are appropriately established and evaluated on a regional level by both SANDAG and the State of California. These regional policies capture the combined and interrelated influence of various components of the regional transportation system on energy consumption. The purpose and role of the proposed NCC transportation improvements are to efficiently move more people to, from, and through the corridor as part of the regional transportation network. Given the regional nature of the transportation system, travel behavior (i.e., travelers do not know corridor boundaries), and energy consumption, looking at the regional relationships among vehicle travel, population, and person-trip characteristics (travel mode) provides a more meaningful discussion of the proposed NCC project influence on energy consumption and conservation than restricting analysis to the corridor alone. More directly, the proposed NCC transportation improvements are intended to support regional policies to increase the efficiency of regional transportation/transit; therefore, an assessment of the role the corridor transportation improvements play in the region (by considering regional VHT, VMT, VMT per capita, and HOV/transit-mode share) is as important as the assessment of corridor-only VHT and VMT to the energy consumption discussion.

VMT is calculated as a product of traffic volume and distance for each link and is a measure of the amount and extent of travel in a specified area and time period. It is not unusual for VMT to increase on a transportation facility when a transportation improvement is implemented, as traffic seeks out the new, more optimum route that may be faster or more reliable. In some cases, an improvement may encourage more trips in the study area or corridor, and reduce the VMT outside the study area or corridor, as trips shift to the new or enhanced facilities. VHT is calculated as a product of traffic volume and travel time on each link and is a measure of time spent in travel. The vast majority of transportation improvements will create a decrease in VHT, compared to a No Build Alternative.

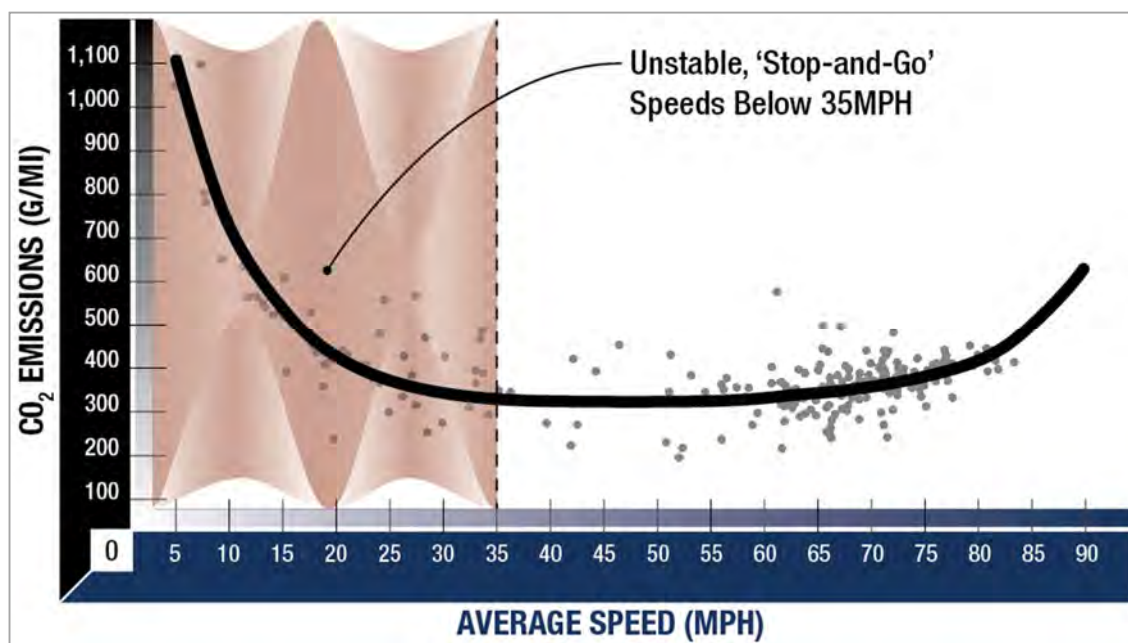
Vehicle Speed and Vehicle Hours of Delay

Another key concept in the transportation and air quality relationship is vehicle speed. Average speed (miles per hour) is calculated as a ratio of VMT to VHT. It is one of the best measures for distinguishing the differences in overall benefit among the No Build Alternative and the Build Alternative. Vehicle hours of delay (VHD), which has an inverse relationship to vehicle speed, represents the total number of hours vehicles spent traveling below 35 mph on the highway in a given period of time. Like VHT, VHD is directly related to traffic volumes, levels of traffic congestion, and the resulting average speed.

As indicated above, an increase in VMT can be expected with the addition of new corridor transportation facilities, since VMT is a measure of the amount and extent of travel in the area of concern. However, simultaneous decreases in VHT and VHD—and the corresponding increase in average vehicle speed—indicate a more efficient network and less congestion. Reduced congestion results in an associated reduction in vehicle-generated pollutant emissions that would otherwise occur during stop-and-go traffic conditions. Accordingly, VMT should be analyzed in conjunction with VHT, VHD and average speed to obtain a correct understanding of the nature of transportation impacts.

Stop-and-go congestion and idling vehicles emit more pollutants than free-flow traffic, contributing to increased emissions and reduced air quality—a condition that worsens as congestion increases. Fuel consumption increases by about 30% when average speeds drop from 30 mph to 20 mph, while a drop from 30 mph to 10 mph results in a 100% increase in fuel use. Figure 5.1-3 illustrates the relationship between travel speeds and carbon dioxide (CO₂) emissions from mobile sources such as automobiles. Automobiles are most efficient when operating at moderate and steady speeds (i.e. little to no VHD). As shown in the figure, the highest level of CO₂ emissions occurs at speeds of less than 35 mph—when traffic is not only slow, but also generally unstable (stop-and-go).¹² As such, the effects of transportation congestion on air emissions, including GHG emissions, can be substantial. A report commissioned by the State of California estimated that approximately 10% of all on-road fuel consumed is a result of congestion.¹³

FIGURE 5.1-3: EMISSION SPEED PLOTS OF INDIVIDUAL TRIPS OR TRIP SEGMENTS



Source: "Traffic Congestion and Greenhouse Gases," University of California Transportation Center, Access Magazine No. 35, Fall 2009.

Strategies that affect vehicle speeds and traffic flow conditions will have different impacts on different pollutants. Emissions rates for VOCs, NO_x, and CO vary with vehicle speed. However, in general, emissions rates for particulate matter, or sulfur oxides (SO_x) do not vary substantially with vehicle speeds, yet particulate matter emissions are affected slightly due to tire and brake wear.¹⁴ Congestion—particularly stop-and-go congestion—both decreases vehicle energy efficiency and increases VHT and VHD, leading to increased energy consumption. In general, stop-and-go traffic produces higher emission rates for virtually all vehicle types and traditional urban-scale pollutants such as hydrocarbons, CO and NO_x.

¹² I-5 NCC Project Draft EIR/EIS (Section 4-6), June 2010.

¹³ Energy Efficiency Report, California Energy Commission, 1990.

¹⁴ Multi-Pollutant Emissions Benefits of Transportation Strategies, ICF International, 2006.

5.1.1.4 Policy Requirements and Regional Efforts to Improve Air Quality

Federal and State Requirements

Criteria Pollutants. The federal Clean Air Act (passed in 1970 and last amended in 1990) forms the basis for the national air pollution control effort. The U.S. Environmental Protection Agency (EPA) is responsible for implementing most aspects of the Clean Air Act, which include establishing the National Ambient Air Quality Standards (NAAQS) for the following “criteria pollutants”: ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter with an aerodynamic diameter less than or equal to 10 microns in size (PM₁₀) and less than or equal to 2.5 microns in size (PM_{2.5}), and lead. The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation.

The Clean Air Act delegates the regulation of air pollution control and the enforcement of NAAQS to the states. In California, air quality management and regulation have been legislatively granted to the California Air Resources Board (CARB). CARB has also established the California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS.

An area is designated “in attainment” when it is in compliance with the NAAQS or the CAAQS, respectively. These standards are set by the EPA or CARB for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as being in “attainment” for that particular pollutant. If an area exceeds the standard, the area is classified as “nonattainment” for that pollutant.

The I-5 NCC is located within the San Diego Air Basin (SDAB) in which the San Diego Air Pollution Control District (SDAPCD) is responsible for air quality management. The SDAB—located in the southwestern corner of California and comprising all of San Diego County—provides the basis for measuring and monitoring air pollutants. The majority of the population and emissions are concentrated in the western portion of the 4,260-square-mile basin. Despite a growth in population of more than 50% and a doubling of VMT over the past 20 years, overall air quality in the SDAB has improved, reflecting the benefits of cleaner vehicle technology.¹⁵

Attainment status for criteria pollutants in the SDAB is shown in Table 5.1-1. Although there are no ambient standards for volatile organic compounds (VOC) (also referred to as reactive organic compounds and reactive organic gases) or oxides of nitrogen (NO_x), they are important as precursors to O₃.

¹⁵ LOSSAN Final Program EIR/EIS, September 2007.

TABLE 5.1-1: SAN DIEGO AIR BASIN ATTAINMENT STATUS

	Federal (EPA)	State (CARB)
O ₃ (1 hour)	Attainment*	Nonattainment
O ₃ (8-hour – 1997) (8-hour – 2008)	Attainment (Maintenance Area) Nonattainment (Marginal)	Nonattainment
CO	Attainment (Maintenance Area)	Attainment
PM ₁₀	Unclassifiable**	Nonattainment
PM _{2.5}	Attainment	Nonattainment
NO ₂	Unclassifiable/Attainment	Attainment
SO ₂	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(no federal standard)	Attainment
Hydrogen Sulfide	(no federal standard)	Unclassified
Visibility-Reducing Particles	(no federal standard)	Unclassified

Sources: EPA, *Region 9: Air Programs, Air Quality Maps, 2013*; CARB, *Area Designations Maps / State and National, 2013*.

* The federal 1-hour standard of 0.12 parts per million (ppm) was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in State Implementation Plans.

** At the time of designation, if the available data does not support a designation of attainment or nonattainment, the area is designated as unclassifiable.

Direct emissions of PM₁₀ in the SDAB increased 69% from 1975 to 2000 and are forecast to continue to increase, although at a slower rate. The increase can be attributed to growth in area-wide source emissions (mainly dust from vehicles on paved and unpaved roads, construction and demolition equipment operations, and particulates from residential fuel combustion.). This growth reflects the increase in regional population and VMT. PM₁₀ emissions from stationary sources are also expected to increase slightly because of industrial growth.

CO and VOCs are largely produced by gasoline combustion, with the largest mobile sources being light-duty gas vehicles (including passenger cars, motorcycles, and trucks) and non-road gasoline sources (e.g., lawn and garden equipment and light commercial equipment). The largest source of transportation-related PM₁₀ and PM_{2.5} emissions is fugitive dust from unpaved and paved roads. Diesel vehicles and equipment are the largest contributors of direct PM₁₀ and PM_{2.5} exhaust emissions from transportation. Transportation-related NO_x and SO_x emissions are not dominantly produced by any one category of vehicles; light-duty vehicles, heavy-duty vehicles, and off-highway mobile sources each contribute a moderate share toward transportation NO_x and SO_x emissions.¹⁶

CO concentrations in the SDAB decreased approximately 56% from 1981 to 2000.¹⁷ As a result, the federal CO standards have not been exceeded since 1989, and the state standard has not been exceeded since 1990. The non-desert portion of the SDAB is designated as a federal attainment maintenance area. With continuing enforcement of motor vehicle regulations, the air basin will likely maintain its attainment status for both federal and state standards.¹⁸ Pollutant burden levels of CO and

¹⁶ *Multi-Pollutant Emissions Benefits of Transportation Strategies*, Federal Highway Administration, 2011.

¹⁷ *LOSSAN Final Program EIR/EIS* (Section 3-3), September 2007.

¹⁸ *Ibid.*

NO_x are predicted to decrease statewide through 2020 due to the implementation of stringent standards, control measures, and state-of-the-art emission control technologies.

Greenhouse Gases. In addition to criteria air pollutants, greenhouse gases (GHG) are regulated in California and are acknowledged by the EPA as a subset of air pollution.²⁰ GHGs are gases that trap heat in the atmosphere; principal GHGs include CO₂, methane (CH₄), nitrous oxide (N₂O), O₃, and water vapor (H₂O). The greenhouse effect traps heat in the troposphere through a threefold process: short-wave radiation emitted by the Sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long-wave radiation; and GHGs in the upper atmosphere absorb this long-wave radiation and emit this long-wave radiation into space and toward the Earth. This “trapping” of the long-wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect. Some GHGs, such as CO₂, CH₄, and N₂O, occur naturally and are emitted to the atmosphere through natural processes and human activities. Of these gases, CO₂ and CH₄ are emitted in the greatest quantities from human activities. Emissions of CO₂ are largely by-products of fossil-fuel combustion, whereas CH₄ results mostly from off-gassing associated with agricultural practices and landfills. Man-made GHGs, which have a much greater heat-absorption potential than CO₂, include fluorinated gases (e.g., hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride), which are associated with certain industrial products and processes.²¹

The effect each GHG has on climate change is measured as a combination of the volume or mass of its emissions and the potential of a gas or aerosol to trap heat in the atmosphere, known as its global warming potential (GWP). The GWP varies among GHGs; for example, the GWP of CH₄ is 21, and the GWP of N₂O is 310. Total GHG emissions are expressed as a function of how much warming would be caused by the same mass of CO₂. Thus, GHG gas emissions are typically measured in terms of pounds or tons of “CO₂ equivalent” (CO₂E).²²

In 2007, the United Nations’ Intergovernmental Panel on Climate Change observed that “changes in atmospheric concentrations of GHGs and aerosols, land cover and solar radiation alter the energy balance of the climate system,” and that “increases in anthropogenic GHG concentrations is very likely to have caused most of the increases in global average temperature since the mid-20th century.”²³ These changes in global climate may have potential impacts on coastal resources, including rising sea level, increased coastal flooding and erosion, inundation of developed areas and public access and recreation areas, alterations to existing sensitive habitat areas, ocean warming, changes in marine species diversity, distribution, and productivity, and increased ocean acidification.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05 establishing California GHG emission reduction targets. These goals are to reduce GHG emissions to 1) 2000 levels by 2010; 2) 1990 levels by the 2020; and 3) 80% below the 1990 levels by the year 2050. In 2006, these goals were reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. In 2008, Senate Bill 375 (SB 375) passed, providing a means to implement the AB 32 goals for cars and light trucks to reduce GHG emissions to 1990 levels by 2020. SB 375

²⁰ *Greenhouse Gas Emission Inventory*, CARB, April 2012; *Climate Change – Greenhouse Gas Emissions*, EPA. <http://www.epa.gov/climatechange/emissions/index.html>.

²¹ *Climate Action Team Report to the Governor and Legislature*, California Climate Action Team, March 2006.

²² The CO₂ equivalent for a gas is derived by multiplying the mass of the gas by the associated GWP, such that MT CO₂E = (metric tons of a GHG) x (GWP of the GHG). For example, the GWP for CH₄ is 21. This means that emissions of 1 metric ton of methane are equivalent to emissions of 21 metric tons of CO₂.

²³ *Climate Change 2007: Synthesis Report – Summary for Policy Makers*, Intergovernmental Panel on Climate Change, November 2007. http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf.

requires the CARB to develop regional GHG emission reduction targets for 2020 and 2035 and to review each region's determination that its plan achieves those targets. Regional metropolitan planning organizations are required to include a sustainable communities' strategy in their regional transportation plan (RTP) that seeks to achieve these targeted reductions in GHG emissions.

In response to the transportation sector accounting for more than half of California's CO₂ emissions, AB 1493 (Pavley) was enacted in 2002, which required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set the GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. When fully phased in, the near-term (2009–2012) standards will result in a reduction of about 22% in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term (2013–2016) standards will result in a reduction of about 30%. California's efforts to reduce GHG emissions from light-duty motor vehicles have been expanded by parallel regulation of GHG emissions and fuel economy by the EPA and National Highway Traffic Safety Administration, respectively, most recently in August 2012. The first phase of the Corporate Average Fuel Economy standards, for model year 2017 to 2021, are projected to require, on an average industry fleet-wide basis, a range from 40.3 to 41.0 miles per gallon in model year 2021.²⁶

California adopted a Low Carbon Fuel Standard (Executive Order S-1-07) in 2007 that requires a reduction in the carbon intensity of California's passenger vehicle fuels by at least 10% by 2020. This reduction will be achieved by offering a variety of fuel options for personal vehicles that include electricity, natural gas, propane, and biofuels. SANDAG has taken strides to assess what regional infrastructure is needed to accommodate more alternative fuel choices across the region. It also has supported the development of publicly accessible electric charging stations.²⁷

Energy, air quality, and GHGs are interrelated when it comes to transportation. Reductions in energy consumption resulting in changes in travel behavior and technological advances often lead to reductions in air pollutants and GHG emissions. The California Coastal Act seeks to minimize energy consumption and VMT within the Coastal Zone, which, in turn, can assist in ensuring consistency with regional SDAPCD or CARB requirements, and state legislation relating to potential air pollution emissions and GHGs.

The proposed I-5 highway corridor improvements are included in the 2050 RTP. The corridor improvements are also included in the 2030 Revenue Constrained RTP, the 2008 Regional Transportation Improvement Program, and the 2012 Regional Transportation Improvement Program, which were found to conform with regional, state, and federal air quality standards set by SANDAG, the Federal Highway Administration, and the Federal Transit Administration; therefore, the program of projects conforms with the State Implementation Plan.

Regional Policy Efforts to Improve Air Quality

In 2006, Caltrans developed a Climate Action Program to promote clean and energy-efficient transportation, and to facilitate and coordinate implementing climate change strategies and related activities within Caltrans and partner agencies. Two of the main strategies of the Climate Action Program are to reduce GHG emissions from transportation (through system improvements, lowered

²⁶ 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, EPA and National Highway Traffic Safety Administration, EPA-HQ-OAR-2010-0799/NHTSA-2010-0131, 2012.

²⁷ SANDAG 2050 RTP (Chapter 3), October 2011.

congestion, and utilization of intelligent transportation systems) and from land use sources (including increasing efficiency of facilities, fleets, and equipment through reduction measures and technology). The Climate Action Program emphasizes using technological and market mechanisms for reducing GHG emissions, developing alternative fuels and vehicles, and increasing vehicle efficiency to gain the most reductions.

In 2008, the State of California has set ambitious goals for GHG reduction across its 18 metropolitan regions through SB 375. As part of SB375, CARB set targets for cars and light trucks in the San Diego region that call for a 7% per-capita reduction in GHG emissions by 2020 and a 13% reduction by 2035. Since a significant portion of GHG emissions come from transportation sources, these targets heavily influenced the composition of transportation projects and the design of the transportation network in the 2050 RTP.

In 2010, SANDAG published a Climate Action Strategy (CAS) that was prepared under a partnership with the California Energy Commission. The CAS acts as a guide for SANDAG and local governments and policymakers in addressing climate change. The CAS recognizes the importance of local and regional action to achieve statewide climate goals and identifies how local jurisdictions can participate in achieving those goals. Because local governments have greater control over some areas of decisionmaking, the CAS emphasizes those areas where the greatest impact can be made at the local level (e.g., land use patterns, transportation infrastructure and related public investment, building construction and energy use, and government operations). These areas constitute the majority of statewide emissions. A major purpose of the CAS is to identify land use and transportation policy measures that would help the SANDAG region meet or exceed its SB 375 targets for reducing GHG emissions from passenger cars and light-duty trucks. For each of the subject areas, goals, objectives, and policy measures are introduced to further describe how GHG emissions reductions could be achieved. The goals that are applicable to the PWP/TREP include the following²⁸:

- Minimize GHGs when vehicles are used.
- Promote use of low-carbon alternative fuels.
- Protect transportation infrastructure from climate change impacts.
- Protect energy infrastructure from climate change impacts.
- SANDAG and local governments lead by example.

The 2050 RTP includes a Sustainable Communities Strategy (SCS), which demonstrates how development patterns and the transportation network, policies, and programs will work to achieve the region's 2020 and 2035 GHG emission reduction targets. In accordance with SB 375, the building blocks of the 2050 RTP/SCS include the following:

- A land use pattern that accommodates the region's future employment and housing needs, and that protects sensitive habitats and resource areas.
- A transportation network of public transit and Express Lanes, and highways, local streets, bikeways, and walkways built and maintained with available funds.
- Managing demands on the transportation system (also known as transportation demand management [TDM]) in a way that reduces or eliminates traffic congestion during peak periods of demand.

²⁸ SANDAG 2050 RTP Final EIR (Chapter 4), October 2011.

- Managing the transportation system (also known as transportation system management [TSM]) through measures that maximize the efficiency of the transportation network.
- Innovative pricing policies and other measures designed to reduce VMT and traffic congestion during peak periods of demand.²⁹

Central to the San Diego region's SCS are explanations for how the San Diego region will grow while improving the quality of life.³⁰ Caltrans acknowledged the need to develop energy-efficient projects in the Director's Policy on Energy Efficiency, Conservation and Climate Change (June 2007), which states that Caltrans "incorporates energy efficiency, conservation, and climate change measures into transportation planning, project development, design, operations, and maintenance of transportation facilities, fleets, buildings, and equipment to minimize use of fuel supplies and energy sources and reduce GHG emissions."

The key difference between past and current regional planning efforts is a sharper focus on reducing GHG emissions from cars and light trucks. For these vehicles, the state has developed a three-tiered approach to reducing GHG emissions. The state has enacted laws to increase vehicle fuel efficiency and to increase the use of alternative, lower carbon transportation fuels. SANDAG and other regional stakeholders are supporting infrastructure planning for alternative fuels.³¹ Together, with the regional land use policies and transportation investments contained in the 2050 RTP, the reductions in GHG emissions as required by AB 32 and SB 375 will occur throughout the SDAB.

The 2050 RTP and its SCS will guide the San Diego region toward a more sustainable future by focusing housing and job growth in urbanized areas, protecting sensitive habitat and open space, and investing in a transportation network that provides residents and workers with transportation options that will help reduce GHG emissions. The PWP/TREP will assist in achievement of these goals by increasing public transit capacity and accessibility, as well as reducing congestion. It is anticipated that with each RTP (every four years) there will be new opportunities to help reduce GHG emissions. The regionwide 2050 RTP/SCS reduces energy consumption and GHG emissions with the following key achievements:

- Meets state GHG reduction mandates.
- Funds \$2.7 billion for regional and local bicycle and pedestrian projects and programs.
- Provides 156 new miles of trolley service and a new trolley tunnel in downtown San Diego.
- Expands and speeds up COASTER service in the NCC.
- More than doubles the transit service miles and increases transit frequency in key corridors.
- Creates 130 miles of Express Lanes to facilitate carpools, vanpools, and premium bus service and creates new carpool and telework incentive programs to reduce solo driving.
- Doubles the number of homes and jobs within one-half mile of transit.³⁵

²⁹ SANDAG 2050 RTP (Chapter 3), October 2011.

³⁰ Ibid., Chapter 2.

³¹ Ibid., Chapter 3.

³⁵ Ibid.

5.1.2 PWP/TREP Concerns

Environmental documentation and analysis prepared for the proposed improvements in the rail and highway corridors indicate that energy use and the emission of some air pollutants in the corridors are expected to increase whether corridor transportation improvements are constructed or not, as a result of regionally projected population, employment, and travel growth in the NCC.⁷³ Increases in energy consumption, air pollutants and GHG emissions from rail and highway improvements could occur from the locomotives and vehicles using the proposed transportation facilities. Proposed PWP/TREP improvements could also individually or cumulatively affect energy use, air quality, and GHG emissions caused by short-term project construction.

5.1.2.1 LOSSAN Rail Corridor Impact Assessment

The LOSSAN rail corridor between San Luis Obispo and San Diego is the second busiest intercity rail corridor in the nation. In 2010, more than 8 million passengers used the rail corridor to commute to work, and for vacations and other purposes.⁷⁴ As shown in Table 5.1-2, the Amtrak Pacific Surfliner, which operates along the corridor between San Diego and San Luis Obispo, carries approximately 2.7 million passengers annually (approximately 7,400 per weekday), including over 700,000 annual boardings within the NCC. Amtrak's 20-Year Improvement Plan projects ridership to increase to 4.7 million annually (13,400 per weekday) by 2030 along the Pacific Surfliner route, with approximately 1.3 million of these riders boarding in the NCC. The PWP/TREP program of improvements—most notably the double-tracking of the LOSSAN rail corridor—will enable these increases in service.

TABLE 5.1-2: LOSSAN RAIL CORRIDOR PASSENGER BOARDINGS (2012 EXISTING AND 2030 PROJECTED)

	2012		2030	
	Daily	Annual	Daily	Annual
Entire LOSSAN Rail Corridor				
Amtrak Pacific Surfliner ^a	7,400	2.7 million	13,400 ^c	4.7 million
Commuter Rail (Metrolink/COASTER)	21,100	5.6 million ^c	39,000 ^c	10.5 million
Total LOSSAN	28,500	8.3 million	52,400	15.2 million
North Coast Corridor Segment of LOSSAN Rail Corridor^b				
Amtrak Pacific Surfliner	2,200*	700,000	3,800 ^c	1.4 million
Commuter Rail (Metrolink/COASTER)	4,100	1.1 million ^c	18,500 ^c	4.9 million
Total NCC	6,300	1.8 million	22,300	6.3 million

Sources: Amtrak, NCTD, SCRRA, and SANDAG Ridership Reports; LOSSAN Corridorwide Strategic Implementation Plan.

^a Amtrak Pacific Surfliner weekday averages based on Federal Fiscal Year 2012

^b NCC includes the following stations: Oceanside, Carlsbad Village, Carlsbad Poinsettia, Encinitas, Solana Beach, and Sorrento Valley

^c Calculated using the following annualization factors that are based on Fiscal Year 2012 or Federal Fiscal Year 2012 data:

Pacific Surfliner Annualization Factor: 354

Metrolink/COASTER Annualization Factor: 268

⁷³ LOSSAN Final Program EIR/EIS (Sections 3-3 and 3-5), September 2007; I-5 NCC Project Draft EIR/EIS (Sections 3-14, 3-16), June 2010.

⁷⁴ SANDAG 2050 RTP (Chapter 6), October 2011.

The Metrolink and COASTER commuter rail systems serve over 5.6 million passengers annually throughout their service areas (the Los Angeles and San Diego regions, respectively). Within the NCC, these services accommodate approximately 1.1 million annual boardings (an average of 4,100 each weekday). By 2030, these commuter rail lines are projected to serve 10.4 million passengers annually, with the NCC portion increasing four-fold to 4.9 million (approximately 18,500 riders per weekday). Ridership on the COASTER commuter rail service, which operates between Oceanside and downtown San Diego, has more than tripled since service was initiated in 1995 to over 1.7 million riders annually (approximately 6,500 per weekday).⁷⁵ Expansion of travel routes and destinations by rail through interconnectedness of rail infrastructure and associated ease of rail travel will encourage additional rail ridership. The COASTER is scheduled to expand its service significantly through 2040, gradually increasing the number of trains that traverse the corridor each weekday from 22 to 54, with additional weekend service also planned.⁷⁶ With the proposed LOSSAN corridor improvements in the NCC, COASTER ridership is projected to increase to over 12,900 passengers each weekday by 2040, and will have the capacity to carry up to 35,000.⁷⁷

In addition to passenger rail service, the LOSSAN rail corridor also accommodates freight rail. Between 2005 and 2020 the number of freight locomotive miles traveled along the entire LOSSAN rail corridor will increase an estimated 66% (most freight trains require four locomotives).

Energy Consumption

By 2020, the combined increase in passenger and freight locomotive miles in the corridor is estimated to be 62% above 2005 levels, with passenger rail miles increasing 56% and freight rail miles increasing 66% above 2005 levels.⁷⁸ These changes will result in a corresponding increase the energy consumption by locomotives in the LOSSAN rail corridor. However, this estimate is based entirely on locomotive miles and does not consider energy used per person transported, the fuel efficiency of the trains at different speeds, impacts of locomotive idling, or potential mode shifts from private automobile to rail.⁷⁹ The projected growth in rail passengers and the ability to reduce train idling and maintain steady speeds are dependent on the LOSSAN rail corridor improvements.

Planned improvements to the LOSSAN rail corridor would address current corridor operating deficiencies, which would help reduce congestion and improve speeds, and lead to greater energy conservation.

Air Quality and Greenhouse Gas Emissions

As with energy consumption, improvements and expanded capacity in the LOSSAN rail corridor would lead to growth in locomotive miles, and therefore growth in the pollutant and GHG emissions directly attributable to rail miles traveled. Pollutants would generally be expected to increase in direct proportion to the growth in locomotive miles. Program-level analyses for the LOSSAN corridor indicate that by 2020, improvements along this entire corridor could lead to emissions that exceed daily SDAPCD air quality thresholds for NO_x and for other pollutants.⁸² In addition, the program-level analysis indicates that locomotives will emit 64% more GHGs in 2020 than they did in 2005.⁸³

⁷⁵ LOSSAN Corridor Strategic Assessment, Wilbur Smith Associates, January 2010.

⁷⁶ SANDAG 2050 RTP (Chapter 6), October 2011.

⁷⁷ SANDAG/Caltrans Series 12 Model, November 2011.

⁷⁸ LOSSAN Final Program EIR/EIS (Section 3-5), September 2007.

⁷⁹ Ibid.

⁸² The LOSSAN Final Program EIR/EIS (September 2007) determined that the Rail Improvements Alternative would exceed the South Coast Air Quality Management District's threshold for NO_x in the South Coast Air Basin by 2020 without applying

However, projections for locomotive emissions for future periods are likely overstated because they do not account for the expected change to a cleaner locomotive fleet and more efficient, less congested operations on the rail corridor resulting from project improvements. While the individual projects in the rail corridor, or the entire program of rail corridor improvements, are unlikely to significantly affect global levels, the projects' incremental contributions should be addressed.⁸⁴

Conversely, increased service levels on the rail corridor could lead to increased auto emissions. More service on the corridor would require more frequent waits at at-grade railroad crossings for autos.⁸⁵ In addition, passenger increases anticipated as a result of LOSSAN rail corridor improvements would lead to more traffic around stations as riders access station park-and-ride facilities or get dropped off at stations. Both of these "secondary" impacts from rail corridor improvements could increase vehicular emissions in localized air quality hotspots, at-grade crossings, and around stations.⁸⁶ However, the grade separations proposed as part of a three improvement options would help to minimize potential emissions from idling automobiles and trucks at at-grade crossings. The proposed double-tracking through the study area could also reduce vehicular delays at crossings by allowing two trains to pass through a given area at the same time.

The overall growth in the number of trains and locomotives on the LOSSAN rail corridor described previously will contribute to air emissions in the SDAB; however, agreements between operators and regulators will provide locomotive fleet emission improvements in California 20 years ahead of the rest of the country.

Temporary Construction Impacts

Energy consumption associated with constructing the LOSSAN rail corridor track, station, and support facility improvements would result in one-time, non-recoverable energy costs associated with construction. Given the scope and scale of the improvements proposed, it is anticipated that the construction-related energy requirement would be substantial.⁸⁷

Constructing the proposed rail improvements would cause temporary increases in air pollutant emissions in the project area. Emissions sources would include diesel-powered construction equipment, workforce travel to and from the project site, and fugitive dust from construction activities. Implementing the LOSSAN rail corridor improvements would be done incrementally over many years; therefore, potential for cumulative impacts to the SDAB would be reduced as projects would be spread out both geographically and over time.⁸⁸

5.1.2.2 I-5 Highway Corridor Impact Assessment

As discussed in Section 5.1.1.3, freeway VMT is only one component in the relationship between the comprehensive transportation system and air pollutant and GHG emissions. Other important factors include congestion levels, vehicle speeds, VHT and VHD, as well as the levels of VMT and traffic on parallel local arterials. In this case, the modest increase in projected VMT on I-5 (relative to the No Build scenario) would be partially offset by increased vehicle speeds, reduced congestion and reduced

mitigation and not assuming the use of Tier 3 locomotives. Similar exceedances of SDAPCD NO_x thresholds were determined to be possible based on this analysis.

⁸³ LOSSAN Final Program EIR/EIS (Section 3-3), September 2007.

⁸⁴ Ibid., Section 3-5.

⁸⁵ Ibid., Section 3-3.

⁸⁶ Ibid.

⁸⁷ Ibid.

⁸⁸ San Diego NCC–CSMP, August 2010

hours of delay on I-5, and decreases in both VMT and average daily traffic (ADT) on parallel arterials Coast Highway and El Camino Real. All of these factors positively influence congestion-related vehicle emissions and would help to offset the projected increase in I-5 VMT. Specifically, construction of the four Express Lanes would provide the following transportation improvements that would lead to energy and air quality-related benefits when compared to the No Build Alternative:

- A reduction of 25-35% in peak-period corridor travel times on I-5.⁸⁹
- A reduction of 4% in VHT on I-5.⁹⁰
- A reduction of 47% in VHD on I-5.⁹¹
- Reductions of 17% and 10% in VMT on Coast Highway and El Camino Real, respectively.⁹²
- Reductions of 12% and 3% in ADT on Coast Highway and El Camino Real, respectively.⁹³
- A decrease in the duration of daily peak-period congestion on I-5 from a range of 12 to 13 hours to a range of 5 to 6 hours.⁹⁴

Because the proposed project would improve traffic operations, it will contribute to lower air pollutant emissions, including particulate matter emissions, as compared to the No Build Alternative. Therefore, the proposed project is in conformance for federal PM₁₀ and PM_{2.5} standards and is unlikely to increase the frequency or severity of any existing exceedances regarding the nonattainment of state PM₁₀ and PM_{2.5} standards.

Vehicle Miles Traveled

Within the NCC, existing and projected daily VMT on I-5 is shown in Table 5.1-3 for the Build and No Build scenarios. Over the course of the NCC project, SANDAG and Caltrans have produced two travel demand forecasts; the Series 11 forecast to a 2030 horizon year, and the Series 12 forecast to a 2040 horizon year. Both of these forecasts, which assume planned improvements to the parallel LOSSAN rail corridor, project significant growth in I-5 travel demand in the NCC of between 17% and 29% without implementation of the NCC highway improvements (the No Build scenario). This significant No Build growth projection indicates that the majority of growth in travel demand and VMT will occur regardless of whether highway-capacity improvements are made between today and the horizon years, and reveals that without any improvements, the highway will be unprepared to meet future demand.

As shown in Table 5.1-3 and Figure 5.1-4, with the addition of the four Express Lanes—and assuming all other planned projects (highway, rail and transit) are implemented in accordance with the 2050 RTP and the PWP/TREP—the travel forecasts project only an additional 4.0% (Series 11, 2030) to 9.9% (Series 12, 2040) increase in VMT above the level of the No Build projection. This incremental difference between the No Build and Build scenarios is less a result of induced demand (i.e. new trips created), and more a result of latent demand (i.e., improved access) and a shifting of travel from the parallel arterials of Coast Highway and El Camino Real to I-5, as travel becomes more reliable on I-5 and “spillover” traffic on local roads is minimized.

⁸⁹ SANDAG/Caltrans Series 11-based Micro-Simulation Model, August 2010.

⁹⁰ *San Diego NCC–CSMP* (Chapter 8), August 2010.

⁹¹ Ibid.

⁹² Ibid.

⁹³ SANDAG/Caltrans Series 12 Model, November 2011.

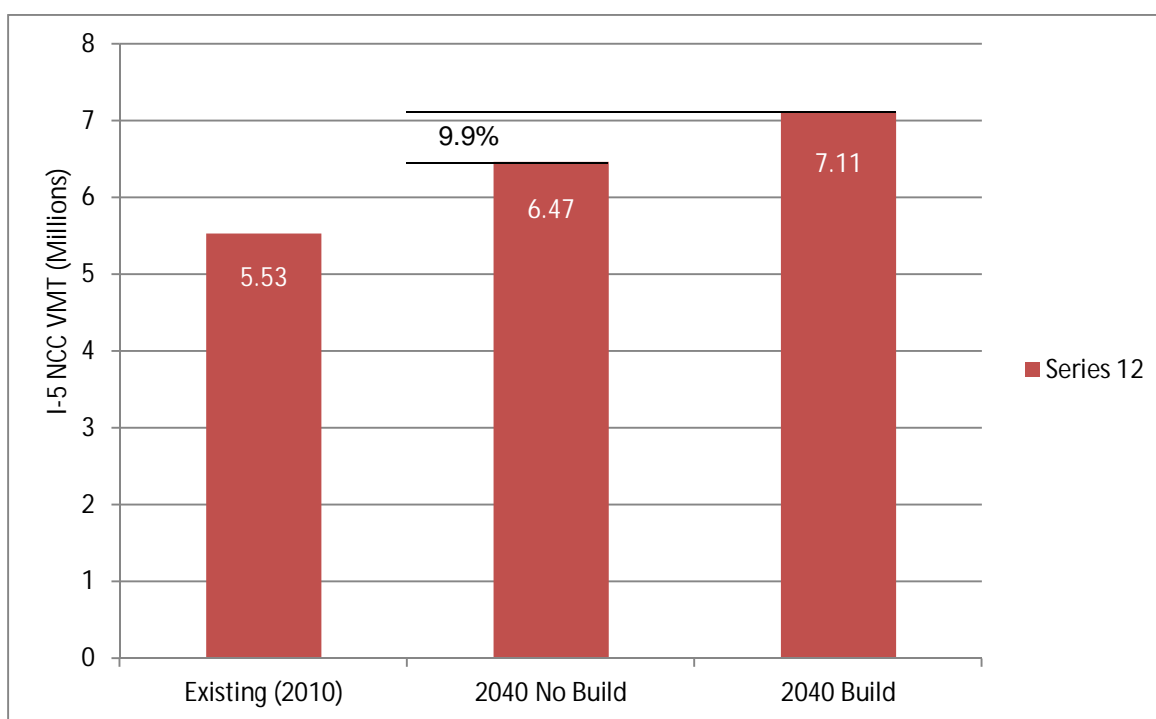
⁹⁴ *San Diego NCC–CSMP* (Chapter 8), August 2010.

TABLE 5.1-3: DAILY VEHICLE MILES TRAVELED ON I-5 IN THE NORTH COAST CORRIDOR

	Existing		I-5 No Build		I-5 No Build % Change from Existing	I-5 Build		I-5 Build % Change from I-5 No Build
	2006	2010	2030	2040		2030	2040	
Daily VMT (Series 11)	5.44 million	–	7.05 million	–	29.6%	7.33 million	–	4.0%
Daily VMT (Series 12)	–	5.53 million	–	6.47 million	17.0%	–	7.11 million	9.9%

Source: SANDAG/Caltrans Series 11 Model, August 2010; SANDAG/Caltrans Series 12 Model, November 2011.

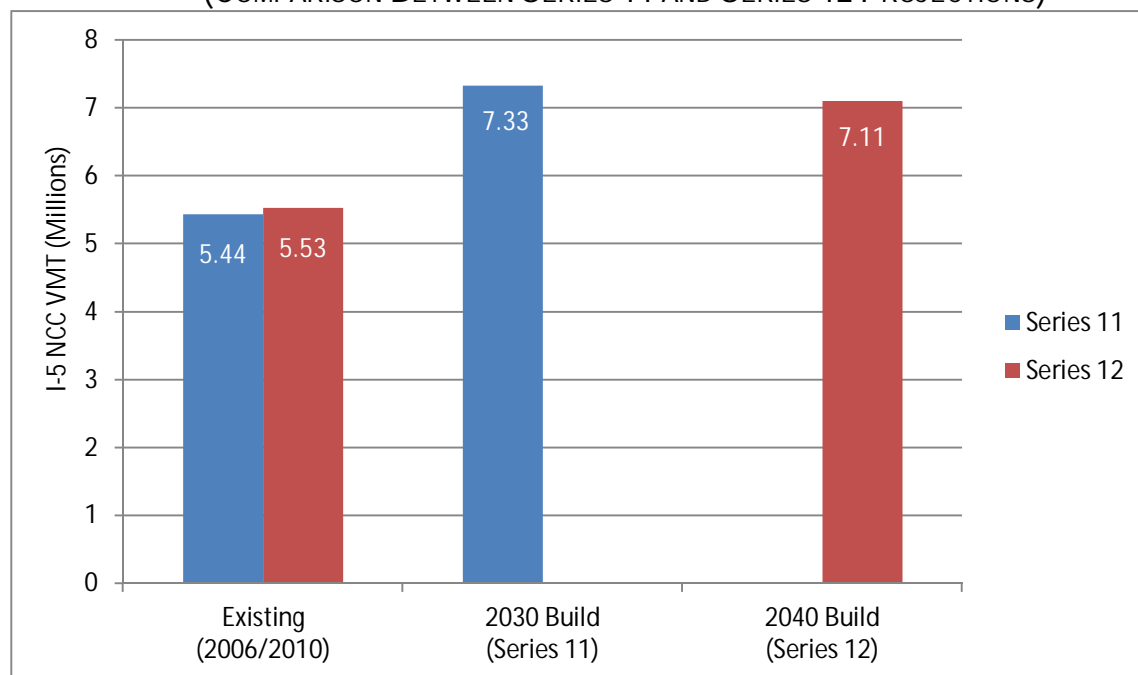
FIGURE 5.1-4: DAILY VEHICLE MILES TRAVELED ON I-5 IN THE NORTH COAST CORRIDOR



Source: SANDAG/Caltrans Series 12 Model, November 2011.

The combined highway improvements and resulting change in travel behavior will make corridor travel on both the highway and local streets more efficient and reliable, improving coastal access. In addition, as shown in Figure 5.1-5, most of the I-5 VMT growth that was originally projected to occur by 2030 in the Series 11 forecast is now projected to occur well beyond 2040 in the Series 12 forecast, resulting in a slower VMT growth rate for the highway than previously projected, further indicating that the highway improvements will accommodate, rather than induce, travel demand.

FIGURE 5.1-5: DAILY VEHICLE MILES TRAVELED ON I-5 IN THE NORTH COAST CORRIDOR
(COMPARISON BETWEEN SERIES 11 AND SERIES 12 PROJECTIONS)



Sources: SANDAG/Caltrans Series 11 Model, August 2010; SANDAG/Caltrans Series 12 Model, November 2011.

It is also important to note that increases in VMT on I-5 relate to vehicle VMT and not person VMT. In other words, the proposed Express Lanes on I-5 are expected to encourage an increase in carpools and vanpools in the corridor, resulting in more people per vehicle traveling through the corridor. With a projected increase in person-trips that is greater than the projected increase in VMT, the result would be lower energy consumption per person-trip. The ability to increase person-carrying capacity on the NCC I-5 Express Lanes would improve access to coastal and other recreational use areas at a lower energy requirement per person than under existing conditions or the No Build Alternative.

Congestion and Travel Time

As discussed in Section 5.1.1.3, VMT is only one component of the relationship between the transportation system and energy and emissions. Despite the modest increase in VMT projected on I-5, the highway improvements are also projected to reduce congestion on I-5, leading to decreases in travel times, VHT, and VHD; additional decreases are also projected in both VMT and Average Daily Traffic (ADT) on parallel local arterials Coast Highway and El Camino Real. All of these factors positively influence congestion-related vehicle emissions and will help to offset the projected increase in I-5 VMT. Compared to the No Build Alternative, the specific congestion-related benefits include:

- A reduction of 25-35% in peak-period corridor travel times on I-5.⁹⁸
- A reduction of 4% in VHT on I-5.⁹⁹

⁹⁸ SANDAG/Caltrans Series 11-based Micro-Simulation Model, August 2010.

⁹⁹ San Diego NCC-CSMP (Chapter 8), August 2010.

- A reduction of 47% in VHD on I-5.¹⁰⁰
- Reductions of 12% and 3% in ADT on Coast Highway and El Camino Real, respectively.¹⁰¹
- A decrease in the duration of daily peak-period congestion on I-5 from a range of 12 to 13 hours to a range of 5 to 6 hours.¹⁰²

Corridor mean travel times under current and future conditions during peak periods are shown in Table 5.1-4. When I-5 is uncongested, it takes 23-25 minutes to traverse the 27-mile route from La Jolla Village Drive in San Diego to Harbor Drive in Oceanside. In the PM peak period, this same northbound trip currently takes 34 minutes and is expected to take a congestion-ridden 70 minutes by 2040 without any improvements to the highway. Even with the planned improvements, travel time for this trip in 2040 is projected to be 45 minutes in the general-purpose lanes, indicating that the improvements would not even keep up with projected growth in demand (but would be vastly better than the No Build condition).

TABLE 5.1-4: MEAN WEEKDAY PEAK TRAVEL TIMES (MINUTES), I-5 FROM LA JOLLA VILLAGE DRIVE TO HARBOR DRIVE

Time/ Direction	2010	2040 No-Build	2040 General-Purpose Lanes	2040 Express Lanes
AM Peak Period				
Northbound	23	37	26	24
Southbound	36	54	36	24-26
PM Peak Period				
Northbound	34	70	45	28
Southbound	34	40	30	24-25

Sources: Caltrans Performance Measurement System (PeMS); SANDAG/Caltrans Series 11-based Micro-Simulation Model, August 2010.

Currently, a large portion of the existing freeway facility is at capacity during the peak periods; thus, the projected 17% to 29% increase in VMT on I-5 under the No Build Alternative can be accommodated only by extending the durations of the peak periods. On most highways, peak-period congestion applies to a single direction of travel, such as a morning peak period heading into downtown or an afternoon peak period heading out of downtown. Southbound I-5, however, experiences two peak periods during the day. Congestion occurs for an average of five hours per day in both the southbound and northbound directions.

By 2040 under the No Build Alternative, congestion will expand significantly as compared to 2010 conditions, to the extent that the entire length of the corridor in both directions is projected to experience severe congestion and traffic delay during the peak periods. In addition, if no improvements are made to I-5, forecasts indicate that the projected increases in average daily traffic will extend the duration of congestion in both the northbound and southbound directions (i.e., longer peak periods). In 2006, congestion lasted on average 5-6 hours in both the northbound and southbound directions. By 2030, if no improvements are made to I-5, congested travel hours will more than double, with projected northbound congestion extending to 9-10 hours and southbound congestion extending to 13 hours each day.¹⁰³ This would lead to drastic increases in VHD, negatively influencing energy consumption

¹⁰⁰ San Diego NCC-CSMP (Chapter 8), August 2010.

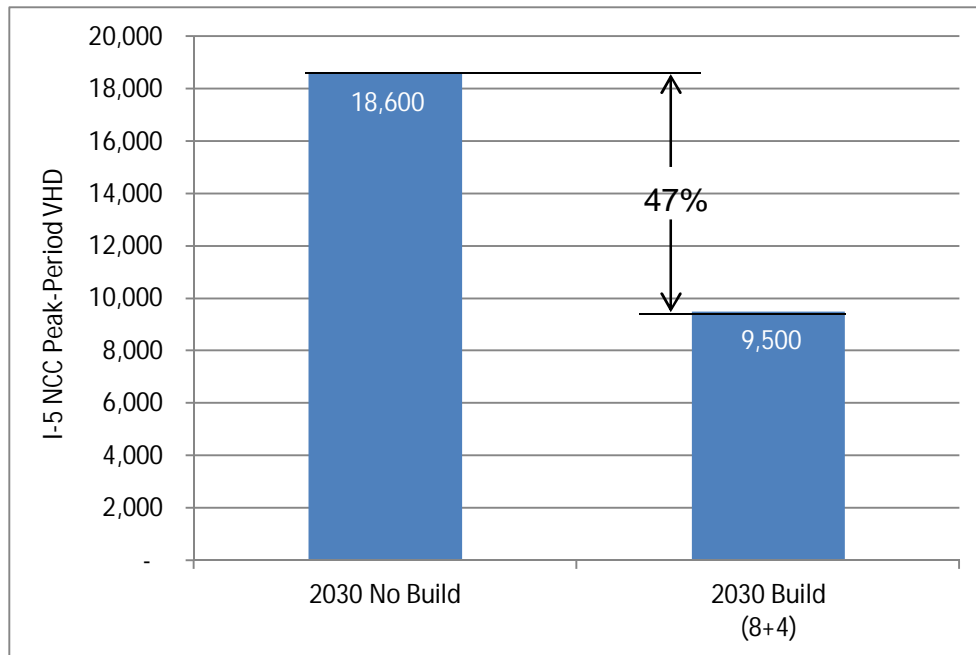
¹⁰¹ SANDAG/Caltrans Series 12 Model, November 2011.

¹⁰² San Diego NCC-CSMP (Chapter 8), August 2010.

¹⁰³ Ibid.

and air emissions in the corridor, By contrast, the planned improvements to I-5 would reduce this projected VHD by 47%, as shown in Figure 5.1-6.

FIGURE 5.1-6: I-5 NCC PEAK-PERIOD VEHICLE HOURS OF DELAY



Source: San Diego NCC-CSMP (Chapter 8), August 2010.

Strategies to Reduce Highway Energy Consumption and Emissions

The projected increase in I-5 NCC VMT between the No Build alternative and the Build scenario for the proposed project is relatively small (approximately 4.0% to 9.9%) and, as stated previously, is less a result of induced demand (i.e. new trips created), and more a result of latent demand (i.e., improved access) and a shifting of travel from the parallel arterials of Coast Highway and El Camino Real to I-5, as travel becomes more reliable on I-5 and “spillover” traffic on local roads is minimized. To further minimize growth in VMT, the region has designed a number of regional and project strategies/improvements to encourage options to the use of single-occupant vehicles. These improvements include:

- Proposed community enhancements include 23 miles of bike and pedestrian facilities designed to significantly expand and improve the functionality of the existing bicycle and pedestrian system.
- The Express Lane system is designed to provide a competitive option to single-occupant vehicles by ensuring a reliable, congestion-free travel option throughout the corridor for carpools, vanpools, and buses. In doing so, the corridor would move more people per VMT.
- The Express Lane system includes a congestion-pricing element, designed to allow solo drivers to use the Express Lanes only by paying a fee, using the region's FasTrak® electronic transponder system. Fee revenue generated through FasTrak® would further support transportation services.
- In addition to the construction of the Express Lanes, the NCC program includes expansion of commuter rail services. Much like the Express Lanes, these improvements are designed to provide a competitive option to single-occupant vehicles.

- A three-pronged Transportation Demand Management (TDM) strategy includes outreach, education, and incentives to reduce solo driving through improved vanpools, carpools, telework, and bicycle programs.
- SANDAG is working to minimize urban sprawl through the implementation of the SCS and Smart Growth, including a focus on Smart Growth near rail stations in the NCC.

The PWP/TREP also includes a number of operational and TSM improvements (e.g., ramp meters, vehicle detection, and changeable message signs), designed to maximize the efficiency of the existing system and to provide improved traveler information. These key project elements would improve air quality by reducing overall congestion levels and further minimizing the impact of added VMT.¹⁰⁶

Temporary Construction Impacts

Construction emissions result from material processing, emissions created by on-site construction equipment, and emissions arising from traffic delays caused by construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications, selection of lower-emitting construction equipment, and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events.¹¹³

Construction activities such as the use of heavy equipment, detours, lane closures, the import and export of materials and equipment, and other activities could substantially increase energy consumption. To the extent feasible, measures to reduce energy consumption would be implemented during construction of the proposed improvements.¹¹⁴

Construction of the proposed NCC transportation improvements would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials. Specifically, construction activities associated with segment widening, mainline bridge construction, and overcrossing/undercrossing construction would generate air pollutant and GHG emissions. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions.

The principal criteria pollutants emitted during construction would be PM₁₀ and PM_{2.5}. The source of the pollutants would be fugitive dust created during clearing, grubbing, excavation, and grading; demolition of structures and pavement; vehicle travel on paved and unpaved roads; and material blown from unprotected graded areas, stockpiles, and haul trucks.¹¹⁵ A secondary source of pollutants during construction would be the engine exhaust from construction equipment. The principal pollutants of concern from these engines would be NO_x and VOC emissions that would contribute to the formation of O₃, which is a regional nonattainment pollutant.

¹⁰⁶ I-5 NCC Project Supplemental Draft EIR/EIS, March 2012.

¹¹³ Ibid.; *Prioritization of Transportation Projects for Economic Stimulus with Respect to GHGs*, UC Davis/Caltrans, 2009.

¹¹⁴ I-5 NCC Project Draft EIR/EIS (Section 3-16), June 2010.

¹¹⁵ I-5 NCC Project Supplemental Draft EIR/EIS, March 2012.

Site preparation and roadway construction typically involve clearing, cut-and-fill activities, grading, removal of or improvement to existing roadways, and paving of roadway surfaces. Construction-related effects on air quality from proposed highway improvements would be greatest during the site preparation and demolition phases, which involve excavation, handling, and transport of soils to and from the site. These activities could temporarily generate PM₁₀ and PM_{2.5}. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site could deposit mud on local streets, which could be an additional source of airborne dust after it dries. PM₁₀ emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM₁₀ emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

In addition to dust-related PM₁₀ emissions, heavy-duty trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO₂, NO_x, VOCs, and some soot particulate (PM₁₀ and PM_{2.5}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

Minimal air quality impacts could also occur from construction of the proposed community enhancement projects. Construction of the majority of the community enhancements would occur within the project's construction footprint and these were accounted for within the construction emissions budget. Grading, paving, and landscaping for these features would be accomplished in conjunction with the freeway project.¹¹⁶ (Refer to Chapter 4 for a list of community enhancements and bicycle and pedestrian facilities.)

Emissions from the construction phase of the project were estimated through the use of emission factors from the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Road Construction Model Version 6.3.2,¹¹⁷ which was released in July 2009 and was the most recent version when the analysis was performed.¹¹⁸ Assumptions in the Draft Air Quality Analysis for the I-5 NCC Project, prepared in 2007, were used when running the Road Construction Model Version 6.3.2, with the exception of start date, which was assumed to be 2010 to represent a conservative anticipated first year of construction, corresponding with the first year of the initial phase (2010-2020) of project implementation. The modeled bridge construction scenario assumed a project length of 0.036 miles and an area of 4.3 acres, constructed during a 12-month period. Daily maximum area disturbed was assumed to be 0.9 acre per day, and no soil import or export haul trucks trips would be made. The modeled roadway widening scenario assumed a project length of 1.3 miles and an area of 28 acres, also constructed within a 12-month period. For this scenario, daily maximum area disturbed was

¹¹⁶ I-5 NCC Project Supplemental Draft EIR/EIS, March 2012.

¹¹⁷ The 2007 Draft Air Quality Analysis for the I-5 NCC Project, which was used for the Draft I-5 NCC Project EIR/EIS air quality analysis, estimated potential construction air quality impacts resulting from construction activities, but did not calculate CO₂ emissions. The 2007 Air Quality Analysis used the SMAQMD Road Construction Emissions Model Version 5.1, which did not calculate CO₂ or other GHG emissions. The SMAQMD Road Construction Emissions Model Version 6.3.2 estimates CO₂ emissions and provides more recent emission factors than Version 5.1; therefore, criteria air pollutant emissions presented in this section are also estimated using Version 6.3.2 (i.e., EMFAC 2007 and OFFROAD 2007 emission factors).

¹¹⁸ The SMAQMD released a more recent version in August 2013 (Version 7.1.4); however, it would tend to estimate lower air pollutant emissions because it reflects some statewide measures that are intended to reduce off-road vehicle and heavy-duty truck emissions.

assumed to be 4.6 acres per day and that 4,000 cubic yards per day of import would occur, resulting in 200 round trip haul truck trips per day. For the purposes of estimating emission, construction phasing for both the bridge construction and roadway widening model scenarios consisted of the following assumptions: grading/land clearing (1.2 months), grading/excavation (5.4 months), drainage/utilities/sub-grade (3.6 months), paving (1.8 months). Estimated maximum daily and annual construction emissions of VOC, NO_x, CO, PM₁₀, and PM_{2.5} generated during construction of the bridge construction scenario and the roadway widening scenario are presented in Table 5.1-5.

TABLE 5.1-5: ESTIMATED CONSTRUCTION EMISSIONS

Estimated Daily Maximum Emissions (pounds per day, unmitigated)					
Improvement	VOC	NO _x	CO	PM ₁₀	PM _{2.5}
Bridge Construction	4.3	36.5	19.4	10.8	3.5
Roadway Widening	30.9	239.3	308.3	55.7	18.0
Estimated Annual Emissions (tons per year)					
Improvement	VOC	NO _x	CO	PM ₁₀	PM _{2.5}
Bridge Construction	0.5	4.2	2.2	1.2	1.0
Roadway Widening	2.2	16.5	19.7	5.9	1.7

Source: Dudek Draft Greenhouse Gas Assessment, October 2011.

Construction emissions are assessed against the federal general conformity de minimis thresholds, which are used to determine conformity of a federal action with existing air quality plans. The de minimis threshold for CO in an area under a maintenance plan is 100 tons per year. The de minimis thresholds for O₃ (8-hour) moderate nonattainment are 100 tons per year for both NO_x and VOC. The de minimis threshold for PM₁₀ nonattainment is 100 tons per year. Although the SDAB is not a federal nonattainment or maintenance area for PM₁₀, it is a state nonattainment area; therefore, use of this limit would represent a conservative threshold.¹¹⁹

Construction of the proposed project would also result in GHG emissions, which are primarily associated with use of off-road construction equipment and vehicles and on-road construction and worker vehicles. The SMAQMD Road Construction Model Version 6.3.2 was used to calculate the annual CO₂ emissions based on the construction scenario used in the 2007 Draft Air Quality Analysis for the I-5 NCC Project. The model results were adjusted to estimate CH₄ and N₂O emissions in addition to CO₂. The CO₂ emissions from off-road equipment and on-road trucks, which were assumed by the Road Construction Model to be diesel-fueled, were adjusted by factors derived from the relative CO₂, CH₄, and N₂O for diesel fuel used in off-road equipment and on-road trucks as reported in the California Climate Action Registry's (CCAR) *General Reporting Protocol*¹²⁰ for transportation fuels and the GWP for each GHG. The CO₂ emissions associated with construction worker trips and vendor trips were multiplied by a factor based on the assumption that CO₂ represents 95% of the CO₂E emissions associated with passenger vehicles.¹²¹ The results were then converted from annual tons per year to metric tons per year.

¹¹⁹ I-5 NCC Project Supplemental Draft EIR/EIS (Chapter 2), March 2012.

¹²⁰ California Climate Action Registry General Reporting Protocol, 2009.

¹²¹ Greenhouse Gas Emissions from a Typical Passenger Vehicle, EPA, 2004.

Table 5.1-6 presents estimated annual GHG construction emissions for the two construction scenarios in the representative year (2010) from on-site and off-site emission sources. As shown, annual estimated total GHG emissions during bridge construction would be 365 metric tons of CO₂E in 2010. Annual estimated total GHG emissions during road widening construction would be 1,764 metric tons of CO₂E in 2010. Within the road widening component, emissions generated by haul trucks would result in the greatest contribution of construction GHG emissions, generating approximately 1,333 metric tons of CO₂E.

TABLE 5.1-6: ESTIMATED ANNUAL CONSTRUCTION GHG EMISSIONS

Improvement	Tons CO ₂	MT CO ₂ E ^a
Bridge Construction	399	365
Roadway Widening	1,938	1,764

Source: Dudek Draft Greenhouse Gas Assessment, October 2011.

^a CO₂E: Carbon Dioxide Equivalent; MT: metric tons.

As previously stated, the I-5 NCC highway improvements are included in the 2050 RTP/SCS transportation network improvements phased project list; therefore, the I-5 NCC improvements and associated emissions were analyzed in the 2050 RTP/SCS EIR. The 2050 RTP/SCS EIR estimated annual construction emissions from construction activities, including worker vehicle trips, transport of materials to and from the construction site, and operation of construction equipment. Annual construction emissions due to regional growth/land use change were estimated based on the proportion of development was estimated for each time period based on forecasted housing units and jobs and average annual emissions. Annual construction-related GHG emissions associated with implementation of 2050 RTP transportation network improvements would vary depending on the number and types of projects occurring in a given year. However, based on the 2050 RTP phased project list for 2020, 2035, and 2050, the number of miles and acres of transportation-related construction that could be reasonably expected for each year were estimated and “average” annual construction was modeled. Estimated average annual CO₂E emissions generated during construction of forecasted improvements based on projected miles and acreage is provided in Table 5.1-7.

TABLE 5.1-7: TRANSPORTATION NETWORK IMPROVEMENTS ASSUMPTIONS AND ESTIMATED ANNUAL CONSTRUCTION EMISSIONS OF CO₂E

Source Category	2010–2020 ^a	2021–2035 ^a	2036–2050
Total Miles	977	314	244
Miles/Year	98	21	16
Total Acres	3,975	1,242	775
Acres/Year	398	83	52
MT CO ₂ E/Year	9,683	6,415	6,206

Source: SANDAG 2050 RTP/SCS EIR (Chapter 4), October 2011.

^a Miles and acres estimates provided in the SANDAG 2050 RTP/SCS EIR Appendix D are slightly less than estimates provided in Section 4.8, Greenhouse Gas Emissions, of the Final EIR. Consistent with the other transportation construction assumptions in the SANDAG 2050 RTP/SCS EIR, mileage and acreage estimates provided in Appendix D are reflected in Table 5.1-8. Construction Modeling Assumptions: 500 trucks per day importing soil; 100 trucks per day exporting soil; truck capacity of 20 CY; 10 acres per day disturbed.

As shown in Table 5.1-7, average annual construction GHG emissions from implementation of the 2050 RTP transportation network improvements would be 9,683 metric tons of CO₂E per year from 2010-2020, 6,415 metric tons of CO₂E per year from 2021-2035, and 6,206 metric tons of CO₂E per year from 2036-2050. As the project is included in the 2050 RTP, construction of the PWP/TREP improvements would be required to implement mitigation measures included in the 2050 RTP EIR. Applicable measures outlined in the 2050 RTP EIR, such as employing alternative fueled vehicles and recycling construction debris, are incorporated as design/development strategies in Section 5.1.3.3.

5.1.2.3 Regional Impact Assessment

Regional Vehicle Miles Traveled

While I-5 NCC VMT is projected to be 4.0% to 9.9% greater under the Build Alternative than the No Build Alternative, the fact that VMT is projected to decrease on major parallel roadways underscores the beneficial role that I-5 Express Lane improvements will play in the broader NCC transportation network. These transportation network benefits can be extended to the role of the NCC improvements in the region. Achieving regionwide VMT reductions is a key part of SANDAG's multimodal Express Lanes strategy. NCC transportation improvements are just part of the larger regional multi-modal system of improvements planned for in the 2050 RTP. As shown in Table 5.1-8, implementation of the I-5 NCC project has little impact on region wide VMT in 2040, resulting in just 1.6% greater regional VMT than without the project. This negligible increase is more than offset by the more efficient travel (reduced travel times, periods of congestion and VHD) resulting from the I-5 NCC project, which is a primary indicator of reductions in energy consumption and air emissions. Furthermore, the difference between the 2010 baseline (existing conditions) and the RTP Build Alternative in 2040 is 29.4 million VMT per day or approximately a 35% increase, which corresponds with the projected regional population increase through 2040. As discussed in Chapter 3A, since 1970 VMT has historically grown at a faster rate than population. The projected parallel trends in VMT and population growth through 2040 appears to indicate that the region's multi-modal transportation program combined with regional strategies to reduce VMT will be successful in minimizing growth in VMT.

TABLE 5.1-8: DAILY REGIONAL VEHICLE MILES TRAVELED (MILLIONS), WITH AND WITHOUT I-5 NCC IMPROVEMENTS

	Existing (2010)	No Build (2040)	No Build Percent Change from Existing	I-5 NCC Build (2040)	I-5 NCC Build Percent Change from No Build
Regional Daily VMT	82.86	110.44	33.3%	112.21	1.6%

Source: SANDAG/Caltrans Series 12 Model, November 2011.

On a regional and systemwide basis, implementation of the transportation projects in the 2050 RTP will result in lower VMT per capita than the 2050 RTP No Build Alternative. The 2050 RTP contains the proposed PWP/TREP improvements, including I-5 HOV/Express Lanes in the NCC, which are key links in the regional multimodal network. As shown in Table 5.1-9, a 5.5 percent decrease in per capita regional VMT is projected if all transportation projects in the RTP, including the NCC projects, are implemented. The regional analysis demonstrates the potential energy savings that can be derived from a systemwide, multimodal approach to transportation improvements (combined with local and

regional land use policies that concentrate growth in already developed areas) as identified in the 2050 RTP.

TABLE 5.1-9: DAILY REGIONAL VEHICLE MILES TRAVELED PER CAPITA, WITH AND WITHOUT 2050 RTP IMPROVEMENTS

	Existing (2010)	No Build (2050)	No Build Percent Change from Existing	2050 RTP (Includes I-5 NCC Project)	2050 RTP Percent Change from No Build
Regional Daily VMT/Capita	24.20	26.69	10.3%	25.23	-5.5%

Sources: SANDAG 2050 RTP/SCS EIR (Appendix F), October 2011; SANDAG 2050 RTP (Chapter 2), October 2011.

The improvements in the PWP/TREP will contribute significantly to the projected regional increase in HOV and transit-mode share from 2010 to 2050. As the region's HOV/Express Lane network is completed, HOV use in the region is anticipated to grow, with carpooling increasing by 48% as a commute method.¹²⁴ In addition, the transit-commute mode share for the region's urbanized area (which includes most of the NCC) is projected to increase from 5.2% to over 10% with the 2050 RTP and PWP/TREP improvements.¹²⁵

Thus, fewer regional VMT per capita, combined with larger regional HOV and transit-mode shares, and reduced VHT would translate into improved energy conservation and reduced energy consumption when compared to the No Build Alternative.

The 2050 RTP, which includes the proposed program of multimodal transportation improvements in the NCC, is expected to improve energy conservation and reduce emissions compared with the No Build Alternative and compared with existing conditions. Implementation of 2050 RTP transportation improvements would improve air quality, and on a per-capita basis, GHG emissions will be reduced and less transportation fuel will be consumed compared to the No Build Alternative.¹²⁶

Implementing the 2050 RTP will also result in dramatic shifts in how San Diego commuters get to work and how long it will take. By 2050, the percentage of commutes in which people drive alone during peak periods will fall from 81% to 69%. The percentage of commuters who use public transit will nearly double (from 6% in 2008 to 11% in 2050). Meanwhile, the percentage of commuters who bicycle or walk to work will almost double (from 2.5% to 4.8%). These shifts in how San Diego commuters get to work during peak periods may seem small, but they can significantly reduce congestion and make travel faster.¹²⁷ Additionally, a higher percentage of these trips will last no more than 30 minutes, even during peak periods of demand when most people are commuting. Seven out of 10 trips are expected to take 30 minutes or less, whether driving alone or carpooling. About 14% of public transit trips to work and higher education will last 30 minutes or less, compared with only 8% under the No Build Alternative.¹²⁸ Compared with the No Build Alternative, the 2050 RTP would result in a transportation

¹²⁴ SANDAG 2050 RTP (Chapter 2), October 2011.

¹²⁵ Ibid., Technical Appendix 7.

¹²⁶ Ibid., Chapter 3.

¹²⁷ Ibid., Chapter 2.

¹²⁸ Ibid.

network that improves travel conditions and air quality and promotes an equitable distribution of benefits.

The 2050 RTP includes a network that integrates many modes of transportation, with a mix of projects and a wide variety of transportation choices distributed across the region. This multimodal network is expected to promote a substantial increase in carpooling, demands for public transit, and bicycling and walking for work trips both during peak hours and at other times. The 2050 RTP contains the largest investment in bicycle and pedestrian infrastructure of any San Diego RTP to date. These investments will result in significant increases in bicycle and walking trips (a 120% increase, compared with the No Build Alternative).¹²⁹ The percentage of work trips made by walking, bicycling, and taking public transit will slightly more than double. Nearly one out of three commutes will be made using modes of transportation other than driving alone. By contrast, less than one out of five trips in the No Build Alternative would turn away from driving alone. Under the 2050 RTP, vehicle miles per capita will also be reduced by 5%, while daily travel by transit will double compared to the No Build Alternative.¹³⁰

The 2050 RTP's transportation infrastructure, including the I-5 NCC improvements, will also help reduce congestion for autos, trucks, and public transit. The percentage of peak-period auto travel occurring during congested periods is projected to drop from 27.7% under the No Build Alternative to 17.2% under the 2050 RTP. Similarly, congested conditions for peak-period transit travel are projected to drop by nearly half (from 9.1% to 5.1%) under the 2050 RTP. The number of hours of delay per day for trucks will also be cut in half (from 32,300 hours to 16,000 hours) with the implementation of the 2050 RTP. Regional air quality is also expected to improve in the future. Cleaner fuels and new vehicle technologies will help reduce the majority of smog-forming pollutants.¹³¹

Regional GHG Emissions Estimates

SANDAG Regional Transportation Model. Although VMT is anticipated to slightly increase regionwide, VHT would decrease because of reduced congestion, resulting in an associated reduction in vehicle-generated pollutant emissions. The Series 10 SANDAG regional transportation model was used to develop a 2005 baseline for emissions for the entire region, which was estimated to be 44,550 tons of CO₂ per day. It was projected that in 2030, the NCC 8+4 Build Alternative emissions would be 59,280 tons of CO₂ per day, which is 780 tons per day (1.3%) less than the No Build emissions estimate for the entire region of 60,060 tons of CO₂ per day.

A similar analysis was done using the Series 11 model, which estimated a 2006 baseline of 44,940 tons of CO₂ per day. The 2030 8+4 Build Alternative was estimated to generate 63,920 tons of CO₂ per day, which is 340 tons of CO₂ per day (0.5%) less than the 2030 No Build estimate of 64,260 tons of CO₂ per day. The Series 12 model estimated that in 2035, the 8+4 Build Alternative was estimated to generate 55,300 tons of CO₂ per day, while the No Build Alternative would generate 56,090 tons of CO₂ per day. As such, the 8+4 Build Alternative would generate 790 tons of CO₂ per day (1.4%) less than the No Build Alternative in 2035, resulting in a reduction in regional GHG emissions compared to the No Build conditions.

Since the emissions modeling software is currently limited to generating output only for freeway mainlines, and not local streets, the above analysis does not reflect any reduction in GHG emissions that could result from reduced queue lengths at ramp meters and intersections. Because the proposed

¹²⁹ SANDAG 2050 RTP (Chapter 2), October 2011.

¹³⁰ Ibid.

¹³¹ Ibid.

project would reduce delay at these locations, there is the potential for further reduction in GHG emissions from vehicles spending less time idling. Accordingly, the reduction of congestion would partially offset the increase in VMT caused by the project compared to the No Build conditions. Based on the model analysis described above, the project would not result in additional trips at a regional level, but would likely rearrange them to focus on the facility with increased capacity. Therefore, the project is not anticipated to appreciably impact GHG emissions on a regional level.

Truck volumes in the region currently range from 9,000 to 10,345 that equated to 4%-6% of the overall traffic volumes. At a very gross level, the Series 12 model also forecasts truck VMT. The Series 12 model shows a 2010 baseline of 3.6% of traffic (VMT) to be truck traffic, but forecasts that it would increase to 4.5% by 2040. Truck-related VMT is not anticipated to change with or without the 8+4 I-5 improvement at a regional level. At a corridor level, the difference between 2040 Build Alternative (708,000 VMT) and the 2040 No Build Alternative (683,000 VMT) is estimated to be 3.5%. Based on VMT, existing truck travel represents 6.8% of 2010 travel and 10.5% of 2040 travel in the corridor. Regardless of transportation improvements, an increase in truck travel in San Diego and along I-5 would occur over time. Accordingly, although an increase in vehicle and truck travel could potentially occur on a regional and/or corridor level, the project is not anticipated to substantially increase trips or VMT in the San Diego region.

California Emissions Projection Analysis Model. CARB has developed California Emissions Projection Analysis Model (CEPAM), which is a database that estimates population and vehicle trends. This tool, formerly called the California's Emission Forecasting System (CEFS), provides data for human population, vehicle population, annual VMT, and fuel usage for the years 1980 through 2020. It also provides criteria pollutant emissions measured in tons per day in 5 years increments starting in 1975 through 2020, as well as 2008 as the base year, since the most recent CEPAM Almanac was in 2009.

Emissions for VOC, NO_x, CO, SO_x, PM₁₀, and PM_{2.5} for years 2000, 2005, 2008, 2010, 2015 and 2020 were gathered from the inventory and provided in Table 5.1-8 below. As shown, there has been a steady decrease in VOC, NO_x and CO emissions over time, with reductions ranging from 16% to as much as 35%, over each 5-year increment. Emissions of SO_x dropped substantially from 2000 to 2005, but then nearly stabilized from 2005 to 2020. Emissions of PM₁₀ and PM_{2.5} fluctuated from 2000 to 2020, decreasing in between some data intervals and increasing in others. Particulate matter is largely a result of fugitive dust emissions from vehicle traveling on paved and unpaved roads and total emissions would not substantially decrease with increased vehicle efficiency.

Table 5.1-10 also displays trends for the San Diego County, including average annual population, average annual total vehicles, average VMT per day, and average daily vehicle fuel consumption. Both human population and vehicle population increased noticeably between 2000 and 2005 (8% and 15%, respectively) and then continued to increase from 2005 to 2020, but at a lower rate. VMT and vehicle fuel consumption also reduced noticeably from 2000 to 2005 (18%), but fluctuated in the following years reported.

Over the 20-year period— from 2000 to 2020— ROG decreased 70%, NO_x decreased 67%, CO decreased 75% and SO_x decreased 42%. PM_{2.5} decreased 1%; however, PM₁₀ increased 5%. Contrary to the general decrease in emissions from 2000 to 2020, annual population increased 25%, annual vehicle population increased 37%, daily VMT increased 30%, and daily vehicle fuel consumption increased 27%. Looking at it from a narrower scope, between base year 2008 to 2015, ROG decreased 33%, NO_x decreased 37%, CO decreased 75%, PM₁₀ decreased 3%, and PM_{2.5} decreased 6%; SO_x was estimated to increase by 4%. Conversely, growth trends increased during this

period: from 2008 to 2015, population increased 7%, vehicle population increased 9%, VMT increased 5%, and vehicle fuel consumption increased 3%. In summary, over the years reported in Table 5.1-10, there was a general decrease in emissions despite the increase in population and VMT growth.

TABLE 5.1-10: CEPAM 2009 SAN DIEGO COUNTY ALMANAC ESTIMATES

2009 Almanac Estimated Annual Emissions (tons per year)						
Pollutant	2000	2005	2008	2010	2015	2020
VOC	96.2	62.6	51.0	44.5	34.4	28.8
NO _x	145.5	113.1	100.5	87.9	63.6	48.0
CO	1007.1	656.8	531.2	456.2	327.4	250.6
SO _x	0.91	0.92	0.48	0.48	0.50	0.53
PM ₁₀	5.21	5.52	5.60	5.47	5.41	5.48
PM _{2.5}	3.80	3.92	4.00	3.88	3.77	3.76
2009 Almanac Estimates and Projections						
Trend	2000	2005	2008	2010	2015	2020
Population (total number of people)	2,836,477	3,051,175	3,146,627	3,199,706	3,375,210	3,550,714
Vehicles (total number of vehicles)	1,930,480	2,229,140	2,288,870	2,329,640	2,486,590	2,654,130
Vehicle Miles Traveled (thousands of miles/day)	74,567	87,944	87,022	86,948	91,223	96,987
Vehicle Fuel Consumption (thousands of gallons/day)	4,356	5,159	5,067	5,033	5,244	5,538

Source: CARB CEPAM 2009 Almanac – Population and Vehicle Trends Tool and Standard Emissions Tool

There are many factors that could contribute to a decrease in emissions over time despite an increase in population and VMT. Both advances in vehicle efficiency and improvements to transportation efficiency would reduce emissions. Fuel efficiency standards for vehicles resulting in improved fuel economy, state-of-the-art emission control technologies, and alternative and new, lower carbon fuels would reduce fuel consumption and associated vehicular emissions. Regional transportation efficiency would increase by reducing VHT and increasing speed; thus, reducing congestion and associated vehicle emissions. In addition to improved congestion and reduced vehicle delay, the project would also encourage the use of public transit services and higher persons per vehicle through HOV lanes, bus rapid transit, and park-and-ride facilities; provide alternatives to vehicular travel with pedestrian and bicycle facilities; and utilize intelligent transportation systems. These facilities, improvements, and strategies would reduce demand on the regional transportation system, reduce SOV travel, and reduce VMT, which would partially offset the increase in persons and vehicles.

As illustrated in Table 5.1-10 and described above, between 2008 and 2015, human population and vehicle population increased at a higher rate than VMT and fuel consumption. Although these trends fluctuated from 2005 through 2020, in general, the population growth rate was greater than the growth rates for VMT and fuel consumption. The depressed state of the economy, which was realized both nationally and locally, has influenced travel in recent years; may it be in the form of less home-to-work trips, less leisure travel, or less truck transport of goods. Nonetheless, a VMT growth rate less than a population growth rate indicates a potential that transportation improvements, such as the ones proposed, have and would continue to slow an otherwise consistent regional increase in VMT. In addition, in most comparisons between the years reported (in 5-year intervals), fuel consumption

growth was at a lower rate than VMT growth. This supports the notion that advances in vehicle technology and increased vehicle efficiency would result in reduced fuel consumption and associated emissions.

As discussed in Section 5.1.1.2, in 2010 CARB set specific targets for reducing GHG emissions for cars and light trucks for each of the state's regions from a 2005 base year as part of its mandate under SB 375. The GHG targets set for the San Diego region call for a 7% per-capita reduction by 2020 and a 13% per-capita reduction by 2035. The San Diego region will meet or exceed these targets by, among other means, using land in ways that make developments more compact, conserving open space, and investing in a transportation network that gives residents transportation options.¹³² The proposed improvements would assist in achieving these targets through increases in both HOV travel and transit ridership. The PWP's investments in Express Lanes, LOSSAN rail improvements, and transit service enhancements directly contribute to these objectives, and are key components of SANDAG's overall strategy to meet the legal mandate. The 2050 RTP for the San Diego region would result in GHG emission reductions that exceed the state's targets for 2020 and meet them for 2035. It would result in a 14% reduction in emissions by 2020 and a 13% reduction by 2035.¹³³

The 2050 RTP/SCS encourages growth to occur in areas of existing urban development, and near existing and planned transit corridors. In addition, it encourages higher-intensity residential and commercial development. These strategies would increase energy efficiency and encourage use of transit services. However, the amount of new development and redevelopment needed to accommodate expected growth would lead to more GHG-emitting sources.¹³⁴

GHG emissions associated with land use in the SANDAG region were forecast to 2035 by University of San Diego's Energy Policy Initiatives Center (EPIC). Activities that are not related to regional land use planning, such as civil aviation, waterborne navigation, and industrial process, are not included. The 14% population and 12.1% jobs increase from 2020 to 2035 would lead to greater sources for GHG emissions, including residential units, commercial sources, and waste. The total land use-based GHG emissions in 2035 are projected to be 19.93 million metric tons of CO₂E, or 37% greater than GHG emissions in 2010 (14.53 million metric tons of CO₂E).¹³⁵

As the corridor improvements conformity with the State Implementation Plan analysis is conducted for the region, it does not include an analysis of local CO or Mobile Source Air Toxins (MSATs) at the project level. Although emissions are predicted to increase concurrent with the increase in VMT on I-5, detailed CO hotspot analysis completed for the region, which included select intersections in the NCC, concludes that the proposed project's future traffic conditions would not exceed federal and state 1- or 8-hour standards for CO during the AM or PM peak periods at any of the analyzed intersections.¹³⁶ All other intersections in the project area are predicted to experience less delay time and improved operating conditions. As a result, the proposed project would not result in or contribute to any significant local air quality impacts due to future operations and is considered to be satisfactory for local CO impacts.¹³⁷

¹³² SANDAG 2050 RTP (Chapter 2) October 2011.

¹³³ Ibid.

¹³⁴ SANDAG 2050 RTP Final EIR, October 2011.

¹³⁵ Ibid.

¹³⁶ Intersections where CO concentration hotspot modeling results are provided include: Palomar Airport Road and I-5 access ramps; Genesee Avenue and I-5 access ramps; and, Del Mar Heights Road and I-5 access ramps.

¹³⁷ I-5 NCC Project Draft EIR/EIS (Section 3-14), June 2010.

Based on the federal and state guidance for analysis of particulate matter, the improvements to I-5 are not defined as a project of air quality concern as the project seeks to relieve congestion, improve operations, and provide better circulation.¹³⁸

Modeling of six MSAT emissions for the I-5 project indicates a substantial decrease in emissions of these toxics between existing conditions and 2030 for both the No Build and the proposed project. The proposed project would result in a slight increase in VMT on I-5 when compared to the No Build Alternative; however, the No Build Alternative would accommodate fewer vehicles, including HOVs and bus rapid transit (BRTs), thereby increasing congestion and resulting in a breakdown of travel speeds and increased emissions caused by the idling vehicles. The proposed project would reduce congestion and travel time and associated air emissions otherwise caused by idling vehicles.¹³⁹ Additionally, the EPA has issued a number of regulations that will dramatically decrease MSATs through cleaner fuels and cleaner engines. According to a Federal Highway Administration analysis, even if the number of VMT increases by 64%, reductions of 57% to 87% in MSATs are projected from 2000 to 2020.¹⁴⁰

Diesel emissions are typically generated from construction vehicles during the construction phase, as well as some diesel emissions from trucks during the operational phase. Diesel exhaust is mainly composed of particulate matter and gases, which contain potential cancer-causing substances. Emissions from diesel engines currently include over 40 substances that are listed by the EPA as hazardous air pollutants and by CARB as toxic air contaminants. On August 27, 1998, CARB identified particulate matter in diesel exhaust as a toxic air contaminant, based on data linking diesel particulate emissions to increased risks of lung cancer and respiratory disease. In September 2000, CARB adopted a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles: Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles and the Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines. The goal of the plan is to reduce diesel particulate matter emissions and the associated health risk by 75% in 2010 and by 85% by 2020.¹⁴¹ Since 2000, CARB has adopted several Airborne Toxic Control Measures to reduce emissions from fleets of off-road diesel vehicles and heavy-duty truck fleets.

5.1.3 PWP/TREP Opportunities, Design/Development Strategies, and Policies/Implementation Measures

5.1.3.1 Corridor Opportunities

Addressing energy, air quality, and GHG emissions in the NCC while also accommodating the projected growth in travel demand and achieving better coastal access requires a comprehensive approach to the transportation system. As discussed in Chapter 3, the strategy to maintain mobility and access in the NCC includes a multimodal transportation program that both accommodates projected growth, including the large volumes and diversity of trips in the corridor, and encourages alternatives to SOV travel. While rail improvements provide one component of the multimodal system, the multimodal

¹³⁸ *Transportation Conformity Guidance for Qualitative Hot-Spot Analysis in PM10 and PM2.5 Non-Attainment and Maintenance Areas*, EPA and Federal Highway Administration. As cited in *I-5 NCC Project Draft EIR/EIS* (Section 3-14), June 2010.

¹³⁹ *Draft Air Quality Analysis for the I-5 North Coast Corridor Project*, August 2007.

¹⁴⁰ *SANDAG 2050 RTP Final EIR* (Chapter 4), October 2011. These are national figures, and therefore data for individual roadways in California and San Diego may vary.

¹⁴¹ *Ibid.*

transportation approach also has its foundation in SANDAG's regional highway strategy, detailed in the RTP, which focuses on a system of Express Lanes throughout the region.

The LOSSAN rail corridor in the NCC includes a program of projects to expand capacity, improve performance, and enhance access. These projects are described in detail in Chapter 4 and would include the following:

- Double-track projects to reduce and eliminate single-track segments to increase capacity and reliability, and reduce travel time
- Trackwork improvements for increased operations and reliability
- Bridge replacements to improve the safety of existing services
- Expansion of parking at rail stations to enhance access
- Additional funded transit connections that encourage alternatives to parking at rail stations

The planned improvements would:

- Allow the COASTER to operate with 20-minute peak-period frequency, which would result in as many as 54 trains per day versus the 26 trains per day under existing conditions (including weekend and off-peak service);
- Make it easier and more convenient for park-and-ride passengers to access stations; and
- Increase COASTER ridership from 6,000 to 12,900 passengers per day, with capacity to accommodate up to 35,000 (47,000 across all corridor rail services).¹⁴² This potential capacity equates to more than two lanes of traffic being diverted from I-5 during the peak period.¹⁴³

In addition to infrastructure and operational improvements along the rail corridor, the NCC project contains more than a dozen planned and potential Smart Growth areas, located mostly near the LOSSAN rail corridor stations as well as populated areas of the local cities.¹⁴⁴ Implementing proposed improvements in the LOSSAN rail corridor presents multiple opportunities to reduce energy use and improve air quality. New infrastructure would reduce delays and therefore reduce energy consumption and emissions from idling locomotives. Investment in the rail corridor would enable increased frequencies and reduced travel times, which, along with Smart Growth development at stations, would be expected to more than double ridership on LOSSAN rail corridor passenger services between 2008 and 2040. Higher rail ridership would mean fewer automobile trips in the corridor and corresponding decreases in auto energy consumption and emissions. While an increase in locomotive miles would lead to an increase in overall energy use and associated air emissions, reductions in train idling time as well as a shift in mode share from SOVs to commuter and intercity rail would partially offset such growth. In addition, improvements in locomotive air pollution controls and new lower-emission, high-efficiency vehicles would result in continued reductions of pollutant emissions and energy use.

¹⁴² Current ridership from *SANDAG Coordinated Plan 2012-2016* (Appendix C), July 2012. Ridership and capacity projections from SANDAG modeling and staff estimates, April 2011 and May 2012.

¹⁴³ Assume: 47,000 daily rider capacity; 75% of rail trips occur during the 6 hours of peak periods (20 min frequency during the peak, 60 minute frequency off-peak); lane capacity of 2,000 vehicles per hour and 1.28 average vehicle occupancy in general-purpose lanes (from SANDAG regional modeling data SANDAG, April 2012). Calculation: $47,000 * 0.75 = 35,250$ rail trips during peak periods; $35,250/6 = 5,875$ rail trips per peak hour; $5,875/1.28 = 4,590$ car trip equivalent; $4,590/2,000 \approx 2.3$ lanes of traffic.

¹⁴⁴ *SANDAG Smart Growth Concept Map*, January 2012. See Section 2.2.

The proposed NCC highway improvements would incorporate the following multimodal opportunities by providing Express Lanes and highway-capacity improvements that would:

- Primarily accommodate carpools, BRT, and vanpools that move more people, not necessarily more vehicles.
- Reduce congestion and travel delays, providing free-flow travel, particularly on the Express Lanes, which, in turn, reduce VHT and emissions.
- Encourage carpooling, vanpooling and transit use by providing the appropriate facilities to reduce delays and make these alternatives modes more time competitive with driving on highway general-purpose lanes.

5.1.3.2 PWP/TREP Policies

Caltrans/SANDAG would implement the following policy to ensure that proposed improvements are designed, implemented, and maintained to reduce energy use, improve air quality, and minimize GHG emissions:

- **Policy 5.1:** New highway, rail station, bicycle and pedestrian improvements, and associated community enhancements shall seek to minimize increases in energy consumption, VMT, and person hours of travel, and be consistent with SDAPCD and CARB requirements. Where new development may potentially increase energy consumption or be inconsistent with air pollution requirements, appropriate mitigation measures shall be required and implemented as discussed in Sections 5.1.3.3 and 5.1.3.4.

5.1.3.3 PWP/TREP Design/Development Strategies

The following design/development strategies provide guidance for designing and implementing specific PWP/TREP rail projects, and Caltrans/SANDAG shall utilize the following strategies for all projects subject to NOID procedures, consistent with the energy conservation and air pollutant emission reduction policies of PWP/TREP Policy 5.1, amended LCPs and the Coastal Act.

1. Project-level analysis of potential energy and air quality impacts from improvements should confirm proposed improvements will avoid substantial increases to energy use or emissions, as appropriate. Should project-level analysis find that previously unidentified permanent or temporary increases to energy use or emissions would result from proposed improvements, additional study and implementation of avoidance and/or mitigation measures will ensure project consistency with the PWP/TREP Policy 5.1 and applicable Coastal Act policies.
2. Where feasible, corridor design should minimize grade changes in steep terrain areas to reduce the fuel consumed during vehicle and rail transportation (e.g., gasoline and diesel fuel).¹⁴⁵
3. Construction should be subject to a construction energy conservation plan, where feasible.
4. Best Management Practices for project-level emissions mitigation for proposed improvements should be implemented to address the potential for regional and localized impacts.
5. To minimize energy consumption, and in order to be consistent with SB 468, construction activities along the LOSSAN and I-5 transportation corridors should be coordinated whenever possible.

¹⁴⁵ For the LOSSAN rail corridor, the road program-level analysis led to measures to reduce the amount of energy consumed. If the proposed improvements were implemented, the project-level analysis and design would be evaluated for the feasibility of incorporating these measures.

6. To minimize energy consumption during construction, public awareness campaigns to encourage carpooling and commuting during non-peak traffic hours should be implemented.
7. Encourage the use of innovative technologies to reduce the amount of cement (production is very energy intense) used in pavements and bridges, and yet have stronger, longer-lasting concrete.
8. Best Available Control Technology should be implemented during construction and operation of projects, and should include the following:
 - Solicit preference construction bids that use Best Available Control Technology.
 - Employ use of alternative fueled vehicles.
 - Create an energy conservation plan.
 - Streamline permitting process to infill, redevelopment, and energy-efficient projects.
 - Use the minimum feasible amount of GHG-emitting construction materials that is feasible.
 - Recycle construction debris to the maximum extent feasible.
9. Additional and/or new bicycle storage facilities (racks, locks, etc.) will be included in the improvements to existing park and ride and rail station improvements, if feasible.

5.1.3.4 Implementation Measures

Caltrans/SANDAG, as applicable, would utilize the following implementation measures for all projects subject to Notice of Impending Development (NOID) procedures:

- **Implementation Measure 5.1.1:** Mitigation measures to minimize temporary construction impacts such as the emission of fugitive dust, PM₁₀, and PM_{2.5}, should be implemented including:
 - Design and Construction requirements, which would:
 - Minimize land disturbance.
 - Use watering trucks to minimize dust; watering should be sufficient to confine dust plumes to the project work areas.
 - Suspend grading and earth moving when wind gusts exceed 25 mph unless the soil is wet enough to prevent dust plumes.
 - Cover trucks when hauling dirt.
 - Stabilize the surface of dirt piles if not removed immediately.
 - Limit vehicular paths on unpaved surfaces and stabilize any temporary roads.
 - Minimize unnecessary vehicular and machinery activities.
 - Sweep paved streets at least once per day where there is evidence of dirt that has been carried on to the roadway.
 - Revegetate disturbed land, including vehicular paths created during construction to avoid future off-road vehicular activities.
 - Remove unused material.

- Compliance with Caltrans Standard Specification Section 14.9.03, or its future equivalent relating to Dust Control:¹⁴⁶
 - Prevent and alleviate dust by applying water, dust palliative, or both under Section 14-9.02 (Air Pollution Control) and by covering active and inactive stockpiles under Sections 13-4.03C(3) (Stockpile Management) and 14-9.02.
 - Apply water under Section 17 (Watering).
 - Apply dust palliative under Section 18 (Dust Palliative).
 - If ordered, apply water, dust palliative, or both to control dust caused by public traffic.
- **Implementation Measure 5.1.2:** Roadway system efficiency should be improved by better managing the region's transportation resources and traveler information in order to minimize congestion, improve reliability and safety, and enhance the overall productivity of the transportation system by implementing the following measures:
 - Placing Intelligent Transportation System informational gathering systems, such as closed-circuit television cameras and loop detectors, in order to gather, process, and disseminate information to the transportation system users. System improvements would be planned and installed in coordination with Caltrans design and landscape personnel to be consistent with the visual and biological resource policies contained within the PWP/TREP in order to ensure that the improvements would not adversely impact significant coastal resources or views.
 - Including electronic communications, such as ramp meters, changeable message signs, and "511" – call in and web traveler service. Ramps meters and signs would be planned and installed in coordination with Caltrans design and landscape personnel to be consistent with the visual and biological resource policies contained within the PWP/TREP in order to ensure that the improvements would not adversely impact significant coastal resources or views.
 - Providing incident responders such as Freeway Service Patrol to reduce traffic congestion by efficiently removing disable vehicles from the freeway, decreasing the potential for additional incidents caused by onlookers or the resulting stop-and-go traffic.
- **Implementation Measure 5.1.3:** The project design of the NCC should include greening and resource conservation, including:
 - When installing new highway lighting and traffic signals as part of construction, where feasible energy-efficient lighting and light-emitting diode (LED) traffic signals will be used;
 - When removing existing highway lighting and traffic signals as part of construction, where feasible they will be replaced with energy-efficient lighting and LED traffic signals;
 - Incorporating sustainable landscaping and utilizing reclaimed water for irrigation where reclaimed water is available.

5.1.4 Coastal Act Consistency

Coastal Act Section 30253 provides for consistency with air pollution requirements and the minimization of energy consumption and VMT:

New development shall do all of the following:

¹⁴⁶ Caltrans Standard Specifications, 2010.

- (3) Be consistent with requirements imposed by an air pollution control district or the State Air Resources Board as to each particular development.
- (4) Minimize energy consumption and VMT.

The Coastal Act requires that designing, implementing and operating new development within the Coastal Zone minimize energy consumption and VMT and that new development be consistent with air quality requirements, which includes restrictions on GHG emissions.

In summary, increasing traffic congestion under the No Build Alternative would result in conditions inconsistent with the air quality policies of the Coastal Act because they would exacerbate nonattainment status of the SDAB. Implementing the PWP/TREP would include construction-phase best management practices (BMPs) to ensure project consistency with requirements of the SDAPCD or CARB. Based on available project and environmental data and the policies and implementation measures included herein, the proposed PWP/TREP improvements would minimize energy consumption and VMT and would be consistent with requirements of the SDAPCD or CARB. Energy consumption and VMT reduction would be achieved by focusing expected natural growth in travel on modes other than SOVs and by applying reasonable mitigation measures, and therefore the PWP/TREP is consistent with Section 30253 of the Coastal Act. Relative to the No Build Alternative, the PWP/TREP improvements would provide substantial energy, air pollutant, and emissions benefits by reducing overall congestion and encouraging rail, transit and carpool use.

Analysis supporting this consistency determination is provided below.

5.1.4.1 SDAPCD and CARB Consistency

As stated previously, the SDAPCD is the regional air pollution control district that has jurisdiction over the proposed NCC improvements and CARB is the applicable state air quality agency. Implementing the PWP/TREP would include construction-phase BMPs to ensure project consistency with requirements of the SDAPCD or CARB. Table 5.1-11 presents applicable state and local laws, ordinances and standards that the PWP/TREP would comply with. In addition, mitigation measures included in the I-5 NCC Draft EIR/EIS, LOSSAN Program EIR/EIS and the 2050 RTP/SCS EIR would be implemented during project construction and operation; these measures would comply with applicable SDAPCD rules and regulations. Construction and operation of proposed improvements would comply with SDAPCD and CARB requirements.

TABLE 5.1-11: LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Applicable Laws, Ordinances, Regulations, and Standards	Description
State Regulations	
Health and Safety Code, Section 41700	Restricts emissions that would cause nuisance or injury.
Idling of Commercial Heavy Duty Trucks (13 CCR 2485)	CARB adopted an Airborne Toxic Control Measure (ATCM) to control emissions from idling trucks. The ATCM prohibits idling for more than 5 minutes for all commercial trucks with a gross vehicle weight rating over 10,000 pounds. The ATCM contains an exception that allows trucks to idle while queuing or involved in operational activities (2004).
In-Use On-Road (13 CCR 2025) and Off-Road (13 CCR 2449) Diesel-Fueled Fleets	These regulations are intended to reduce emissions of diesel particulate matter, NOx and other criteria pollutants from in-use diesel-fueled vehicles. The On-Road regulation applies to vehicle owners and sellers in California and establishes a compliance schedule for fleets to meet the Best Available Control Technology requirements. The Off-Road regulation specifies performance requirements and requires exhaust retrofits for fleets that do not meet the NOx or diesel particulate matter target rates.
Local Regulations	
SDAPCD Regulation IV: Prohibitions; Rule 50: Visible Emissions	Prohibits any activity causing air contaminant emissions darker than 20% opacity for more than an aggregate of 3 minutes in any consecutive 60-minute time period. In addition, Rule 50 prohibits any diesel pile-driving hammer activity causing air contaminant emissions for a period or periods aggregating more than 4 minutes during the driving of a single pile (1997).
SDAPCD Regulation IV: Prohibitions; Rule 51: Nuisance	Prohibits the discharge, from any source, of such quantities of air contaminants or other materials that cause or have a tendency to cause injury, detriment, nuisance, annoyance to people and/or the public, or damage to any business or property (1969).
SDAPCD Regulation IV: Prohibitions; Rule 55: Fugitive Dust	Regulates fugitive dust emissions from any commercial construction or demolition activity capable of generating fugitive dust emissions, including active operations, open storage piles, and inactive disturbed areas, as well as track-out and carry-out onto paved roads beyond a project site (2009).
SDAPCD Regulation IV: Prohibitions; Rule 67.0: Architectural Coatings	Requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories (2001).
SDAPCD Regulation XI: National Emission Standards for Hazardous Air Pollutants; Subpart M, Rule 361.145: Standard for Demolition and Renovation	Requires owners and operators of a demolition or renovation activity to provide written notification of planned asbestos stripping or removal to the Control Officer no less than 10 days prior to demolition and/or asbestos removal. A Notification of Demolition and Renovation Form and fee is required with written notification. Procedures for asbestos emission control are provided under Rule 361.145 and must be followed in accordance with this regulation (1995).

The SDAPCD adopts, promulgates, and enforces rules and regulations for achieving and maintaining NAAQS and CAAQS. Since the SDAPCD only regulates non-mobile (stationary and some area) sources, only the stationary and area source control measures, as identified in the SDAPCD Regional Air Quality Strategy and State Implementation Plan, have been incorporated by SDAPCD into its rules and regulations. However, the PWP/TREP-generated emissions would be from mobile sources, and not from stationary sources. In regards to construction-generated emissions, compliance with SDAPCD Rule 55 would minimize dust released from soil during construction and demolition activities.¹⁴⁷

The California Clean Air Act requires areas that are designated nonattainment of CAAQS for O₃, CO, SO₂, or NO₂ to prepare and implement plans to attain the standards by the earliest practicable date (Health and Safety Code Section 40911(a)). CAAQS for each of these pollutants have been attained in the SDAB. Currently, there is no requirement for PM₁₀ and PM_{2.5} attainment plans for state PM₁₀ and PM_{2.5} nonattainment areas. In response to the state nonattainment designation for O₃, the SDAPCD prepared and adopted Regional Air Quality Strategy for attaining state O₃ standards. The 2009 Regional Air Quality Strategy Revision, dated April 22, 2009, is designed to meet the California Clean Air Act goal of reducing O₃ precursor emissions (VOCs and NO_x). Future development would be required to be consistent with the emission reduction strategies in the Regional Air Quality Strategy in order to comply with SDAPCD rules and regulations and obtain required SDAPCD permits.¹⁴⁸ However, construction of the proposed improvements would not require permits from the SDAPCD.

The principal sources of off-road emissions associated with 2050 RTP/SCS projects would be train operations; port activities, including materials handling equipment and ship operations; and construction. All other sources of emissions including off-road emissions (e.g., stationary sources, ships, airplanes, trains, construction) are either regulated or reported by SDAPCD, CARB, or EPA and these emissions are addressed in the SDAPCD Regional Air Quality Strategy.¹⁴⁹

One of the key objectives of the proposed project is to improve the efficient regional movement of people and goods, averting future conditions associated with substantial gridlock on the facility. Improvement of traffic flow, along with provision of improved bike/pedestrian facilities, would contribute to improvement in regional air quality once in operation. As a result, even considering the potential for increased freeway travel (i.e., latent demand and draw from local streets and roads), the project would be consistent with regional air quality plans.¹⁵⁰ Implementation measures discussed above would minimize air pollutant emissions, which may also reduce GHG emissions, and further ensure consistency with SDAPCD and CARB plans and requirements.

5.1.4.2 Vehicle Miles Traveled, Energy Consumption, and Air Quality and Greenhouse Gas Emissions

The transportation of people and goods in cars, trucks, buses, and motorcycles is the single largest source of GHG emissions in the San Diego region. In 2006, on-road transportation accounted for 46% of total emissions in the region, with cars and light-duty trucks alone responsible for 41%. Heavy-duty trucks and vehicles represented about 5% of GHG emissions. Civil aviation and rail (passenger and freight) accounted for 6%, and additional emissions result from electricity that powers the trolley.¹⁵¹

¹⁴⁷ SANDAG 2050 RTP Final EIR (Chapter 4), October 2011.

¹⁴⁸ Ibid.

¹⁴⁹ Ibid.

¹⁵⁰ I-5 NCC Project Supplemental Draft EIR/EIS, March 2012.

¹⁵¹ SANDAG 2050 RTP (Chapter 3), October 2011.

Growth in NCC population, employment, and travel is anticipated to occur whether improvements are made or not. In fact, between 60% and 85% of the projected growth in VMT on I-5 would occur even without the project.¹⁵² As discussed in Section 5.1.1, implementing the proposed transportation improvements in the NCC would result in more VMT on I-5; however, the increased VMT would be all or partially offset by the operational and travel improvements gained from the improved rail and new Express Lanes facilities, including lower VHT (i.e., fewer idling trains and congested hours of highway travel) and shifts to HOV travel (carpools and transit), which result in more overall person-carrying capacity in the corridor. In addition, the PWP/TREP program of multimodal transportation enhancements would improve mobility in the corridor by providing alternative transportation options (such as transit, HOV facilities, pedestrian trails and bike paths) that efficiently and effectively accommodate more person-trips in the corridor while minimizing energy, air pollutant and GHG impacts, particularly impacts per person-trip. The proposed PWP/TREP improvements would enhance the energy and air quality efficiency of improved access and mobility in the corridor.

The Coastal Act recognizes the benefits of providing transportation choices for all people to not only coastal public access and recreation, but also as a means of reducing VMT, energy consumption and GHG emissions, and thus curtailing the effects of global climate change. While implementation of Coastal Act policies is limited to addressing development activities affecting coastal resources in the Coastal Zone, climate change is a coastal resource issue driven by land use and transportation activities that extend well beyond the boundaries of the NCC and the region. In this regard, Coastal Act policies which address reducing VMT and energy consumption through provision of transit in the Coastal Zone are supported by the region's transportation objectives to ensure the NCC's transit-focused transportation system is effectively integrated into the regional, state, and national system, and that transportation investments in the NCC compliment the region's commitment to provide the greatest possible mobility project benefits per investment. Investing available funds in transportation improvements that will support transportation solutions across jurisdictional boundaries, and which will facilitate Smart Growth practices that maximize mobility at the regional level, is the best means of reducing VMT and energy consumption in the region to help achieve state-mandated GHG reductions, and thus support efforts to address the effects of global climate change on coastal resources.

The transportation vision for the NCC identified by SANDAG and Caltrans includes the addition of Express Lanes to I-5, which will address growing travel demand and would expand the highway's capacity for high-occupancy and transit vehicles. The vision also includes LOSSAN double-tracking, COASTER service improvements, new BRT service, enhanced local bus services, and better facilities for bicycles and pedestrians. Each improvement is aimed at increasing capacity in some way and, taken together, they represent a balanced approach to addressing the mobility and access problem. The fulfillment of the PWP/TREP's multimodal transportation vision will go a long way toward increasing corridor mobility, decreasing congestion, decreasing VHT, and reducing VMT, which would reduce associated air pollutant and GHG emissions.

Proposed rail improvements would allow for increased passenger rail service in the corridor to accommodate projected passenger demand and improve the attractiveness of rail as an alternative to SOV travel in the corridor. Increased passenger service would increase locomotive miles, which, with

¹⁵² As noted in Table 5.1-3, VMT in the Series 12 model projections would increase from 5.53 million in 2010 to 6.47 million in the 2040 No Build Alternative, or to 7.11 million in the 2040 Build scenario. Therefore, 60% of the total rise in VMT would occur under the No Build Alternative (0.94 million ÷ 1.58 million). Similarly, VMT in the Series 11 model projections would increase from 5.44 million in 2006 to 7.05 million in the 2030 No Build Alternative, or to 7.33 million in the 2030 Build Alternative. Therefore, 85% of the total rise in VMT would occur under the No Build Alternative (1.16 million ÷ 1.89 million).

existing technology, would lead to an overall increase in energy consumption and emissions of criteria pollutants and GHGs; however, the combination of projected higher ridership due to more frequent and faster service, fewer congestion-related delays, and less train idling, with cleaner, more energy-efficient locomotives would help offset energy consumption and emissions in the rail corridor that result from higher rail VMT. Continued improvements in locomotive air pollution controls, along with the anticipated Tier 3 standards (the EPA's emission standards for non-road diesel engines) would result in continued reductions of pollutant emissions per mile of locomotive travel. Additionally, while each SOV trip incrementally adds more VMT and energy use, the number of projected trains (frequency of service) in the corridor would generally stay constant as rail person-trips increase up to passenger capacity thresholds (20,000 trips per day with the project), resulting in decreases in expended energy and produced emissions per person-trip as rail use increases to fill available capacity.¹⁵³ The LOSSAN rail corridor improvements would also be consistent with the California Energy Plan, which encourages reducing transportation-related energy needs by including efficient public transportation. Improvements to public transit infrastructure have been found to be consistent with Coastal Act Section 30253 as they encourage the use of a more efficient mode of transportation.

More frequent, faster, and reliable rail service in the corridor could lead to public support and demand for denser housing or other development around LOSSAN rail corridor stations, as planned for in SANDAG's adopted Smart Growth policies and Concept Map. Such development would allow for residents and other travelers to increase their use of rail services in the corridor, as well as increase walk and bike modes for local trips. This activity would further reduce VMT, VHT, energy use and air emissions. This concept is elaborated in Section 5.2: Public Transit and Smart Growth.

The proposed suite of projects and other projects included in the 2050 RTP have been selected and designed to primarily address declines in travel mobility measures (e.g., reducing delay) that are projected to result from long-term population growth. The proposed transit improvements (i.e., rail, BRT, park-and-ride for transit, and transit infrastructure) and enhancements and capacity additions for alternative modes of transportation (i.e., HOV and Express Lanes, park-and-ride for carpooling, and bicycle and pedestrian facilities), are more likely to reduce GHG emissions than new roads or mixed flow additions because they add capacity, but also reduce VMT.¹⁵⁴

The proposed project would generate a reduction in vehicle travel in several ways, including shifts from driving to other modes (i.e., transit [rail and BRT], bicycling, walking), increasing vehicle occupancy (e.g., HOV/Express Lanes), and reducing vehicle trip lengths (e.g., park-and-ride facilities). These strategies to reduce overall VMT (assuming no other effects) would also reduce vehicle-generated emissions of air pollutants and GHGs. Each mile that a vehicle travels, it emits more pollution; therefore, as the project reduces vehicle travel mileage it would also reduce air pollutant and GHG emissions.

The proposed I-5 Express Lane system would prioritize and incentivize an increase in HOV and transit use and maximize corridor person throughput. Although total VMT would increase in 2040 compared to existing conditions (because of the increased number of HOV and transit trips), these improvements would reduce VHT and VMT per person-trip as more persons can be transported in fewer vehicles. Improvements to the I-5 corridor would encourage the use of carpools, vanpools and transit, including planned BRT service in the corridor, by providing uncongested, free-flow facilities for these modes.

¹⁵³ The energy and emissions reductions per person trip would occur for all transportation modes that increase occupancy per vehicle, including buses and carpools.

¹⁵⁴ *Prioritization of Transportation Projects for Economic Stimulus with Respect to GHGs*, UC Davis/Caltrans, 2009.

Greater use of HOVs would lead to less energy consumption and air emissions per person-trip. In addition, since energy consumption and emissions increase as congestion increases, reduced congestion and resulting reductions in VHT in the corridor would have positive benefits for energy use and air quality. Because most (approximately 60% to 85%) of the growth in VMT on I-5 would occur even without the highway improvements and these improvements both encourage HOV use and would reduce congestion, much of the energy and emissions increases from incremental project increases in VMT would be partially offset by decreases in energy consumption and emissions because of higher vehicle occupancy and more efficient travel on the highway.

In addition to providing facilities for HOV and transit vehicles, SOVs would be allowed to access the Express Lanes for a fee, which would vary (the more congestion on the Express Lanes, the higher the SOV cost to use them) to ensure the lanes stay congestion free. The permitted use of HOV lanes by SOVs would have multiple energy use benefits, and revenues from these fees would be support operation of the Express Lanes and invested in corridor public transit services, which would increase transit's competitiveness as an option for travel in the corridor. Also, charging fees to SOVs using the Express Lanes would allow use of the facility when capacity exists. There may be times when excess capacity would exist on the Express Lanes while the main lanes are congested. By managing the congestion pricing and allowing some SOVs into the Express Lanes for a fee, congestion on the main lanes—and corresponding energy use and emissions—would be reduced without negative effects to the HOV and transit users of the Express Lanes.

Technology, such as intelligent transportation systems, electronic communications, and incident response systems, would further improve corridor efficiency and reduce congestion and idling as required by Implementation Measure 5.1.3. By reducing vehicle idling (assuming constant emissions factors and no other effects that would further impact emissions), the project would reduce vehicle air pollutant emissions; some of each pollutant is producing during engine operation even if a motor vehicle is not moving. Specifically, the combustion process results in exhaust emissions of all criteria pollutants and running loss evaporative emissions also occur during idling, as the hot engine and exhaust system vaporizes gasoline, causing additional release of VOCs.¹⁵⁵

Design provisions would also ensure reduced energy usage and emissions, including more energy-efficient lighting, reduced cement and increased recycled material pavement, and sustainable landscaping. Additional auxiliary and Express Lanes, new and expanded park-and-ride facilities, improved bike lane and sidewalk features, ramp metering, and an improved transit-highway interface would likely improve traffic conditions and encourage alternative transportation modes, and thus reduce energy consumption and emissions. In addition, Caltrans is developing a plan to incorporate electrical infrastructure at the new and expanded NCC park-and-ride facilities, including installation of state-of-the-art rapid electric vehicle charging stations. The provision of rapid chargers would enable a greater transition to zero-emissions vehicles that may otherwise not occur without the enhanced access to public electric vehicle charging stations; thereby, potentially reducing GHG emissions associated with vehicle travel.

By accommodating current and projected growth in traffic demand on the existing highway facilities, indirect and inefficient routing would be reduced. As highway congestion grows, drivers are more likely to take alternative routes, using local arterials that are often circuitous and lead to higher VMT. Additionally, travel on the established, high-volume route would reduce potential impacts on local

¹⁵⁵ *Multi-Pollutant Emissions Benefits of Transportation Strategies*, ICF International, 2006.

communities and coastal access from those trying to avoid highway congestion by using local arterials, including localized air quality impacts. By providing sufficient capacity to control congestion, out-of-direction travel would be minimized, as would be pressure to construct new or larger transportation corridors in local communities and undeveloped areas.

In addition to reducing per-capita VMT, the proposed project would reduce the number of vehicle trips and associated emissions through the implementation of a broad range of bicycle and pedestrian improvements. During the first portion of a vehicle trip, when the vehicle engine starts cold, the vehicle emits some pollutants at a much higher rate than during the remainder of the trip, since emissions control technology does not operate as efficiently when cold as it does when the vehicle is warm. Most bicycle and pedestrian projects reduce vehicle trips entirely, and will eliminate both cold start and running emissions.¹⁵⁶ In addition, many of the community enhancements planned as part of the project in the corridor would connect regional and local bicycle and pedestrian routes and thereby make them viable travel modes for many corridor trips. In general, a reduction in VMT that occurs entirely through vehicle trip elimination, such as the proposed bicycle and pedestrian improvements, would result in a nearly proportional reduction in emissions of air pollutants and GHGs from light-duty motor vehicles. For instance, reducing light-duty vehicle commute travel by 5% due to mode shifts from vehicles to bicycles or walking should result in approximately a 5% reduction in emissions of all pollutants by light-duty vehicles on work trips assuming the same emissions factors.¹⁵⁷ Accordingly, utilization of bicycle and pedestrian facilities as an alternative transportation mode would effectively reduce air pollutant and GHG emissions. Bicycle and pedestrian connection enhancements are described and illustrated in detail in Chapter 4 and Section 5.3.

Additionally, the corridor vision for bicycle and pedestrian routes and trails includes an extensive network that provides access to the beaches, lagoons, open spaces, and coastal communities of the NCC. Local roads cross I-5 at several locations within the corridor, and many of these crossings are narrow and unaccommodating for bicycles and pedestrians, inhibiting their access to coastal resources. These limited crossings also reduce bicycle and pedestrian access to the Coastal Rail Trail, a separated facility adjacent to the LOSSAN rail corridor that is being developed throughout the NCC.

The program of improvements in the PWP/TREP represents a significant opportunity to enhance existing bicycle and pedestrian facilities and add new facilities across and along the highway corridor. As overcrossings are rebuilt and undercrossings are widened to accommodate the new highway footprint, many existing pedestrian and bicycle facilities will be upgraded and new facilities will be added. Pedestrian and bicycle routes across lagoons would be similarly integrated into highway improvements. Additionally, the LOSSAN corridor will benefit from new pedestrian bridges and improved crossings that will provide safe and convenient ways for pedestrians and bicycles to cross the tracks, better connecting communities to the Coastal Rail Trail and area beaches.

The proposed NCC improvements also include non-capacity adding projects such as sound walls and certain community enhancements (e.g., open space and gardens, gateway features, and landscaping). These components of the PWP/TREP are not expected to change long-term VMT growth projections; therefore, they are designated neutral for long-term GHG emissions, or as providing long-term GHG reduction by reducing pavement roughness and thus improving fuel economy. Although this is not strictly the case as implementation of these components will produce construction emissions, it is

¹⁵⁶ *Multi-Pollutant Emissions Benefits of Transportation Strategies*, ICF International, 2006.

¹⁵⁷ *Ibid.*

reasonable to assume that these projects will not, on average, increase yearly operational air quality or GHG emissions.¹⁵⁸

There are numerous federal, state, and local rules, regulations, and standards that would apply to the proposed PWP/TREP, which would reduce energy consumption and air pollutant and GHG emissions associated with transportation. In addition, various plans, programs, and projects would reduce transportation-generated emissions locally and regionally, which would improve air quality conditions in the SDAB and reduce the San Diego region's contribution to global climate change. Examples of these include the 2050 RTP/SCS, implementation of specific measures in CARB's Scoping Plan, Caltrans's Climate Action Program, SANDAG's CAS, SANDAG's Electric Vehicle Project, California Low Carbon Fuel Standards, Pavley Standards, and local city and county Climate Action Plans.

The levels of fuel consumption and GHG emissions result from the region's reliance on petroleum-based gasoline and diesel fuels, as well as the average fuel efficiency of vehicles. The region's need for gasoline and diesel is projected to decline from about 4.5 million gallons per day in 2008 to about 4.2 million gallons per day by 2050. The projected reduction in fuel consumption is due in large part to fuel efficiency standards for vehicles and state-mandated increases in the supply and use of alternative transportation fuels.¹⁵⁹

By 2050, most of the highway, transit, and active transportation (bicycle and pedestrian) improvements, along with other infrastructure projects, would be in place and operational in accordance with the 2050 RTP/SCS. Existing state measures are expected to continue to be in place that would help to reduce emissions related to on-road transportation. The Low Carbon Fuel Standard would be fully phased in and cars and light trucks meeting the Pavley/EPA/NHTSA emission standards would replace most current vehicles. GHG emissions from transportation would be reduced through the use of more efficient vehicles and less carbon-intense fuels, reducing transportation-related emissions in 2050, as facilitated by implementation of state measures.

In addition, ARB's Scoping Plan functions as a roadmap for plans to achieve GHG reductions in California as defined in AB 32, which calls for GHG emissions to be reduced to 1990 levels by 2020. The Scoping Plan contains the main strategies California will implement to reduce CO₂E emissions by 169 million metric tons, or 28.4% below the state's projected 2020 emissions level of 596 million metric tons of CO₂E under a business-as-usual scenario. In the absence of reliable 1990 GHG emissions estimates, CARB recommends an equivalent metric of 15% below 2005 GHG emissions. In the SANDAG region, EPIC has estimated land use and transportation emissions for 2005 to be 13.64 and 15.90 million metric tons of CO₂E, respectively.¹⁶⁰

All 18 cities and the County of San Diego have completed a GHG inventory, many prepared as part of the San Diego Foundation's Climate Initiative. A GHG inventory is the first step toward preparing a Climate Action Plan, which is a document that provides guidance to jurisdictions for achieving GHG reduction goals. Since SANDAG does not implement land use policy, decisions regarding how and when to implement land use strategies that will result in reduced GHG emissions outlined in the SCS will ultimately come from the local-agency level. A Climate Action Plan provides measures for reducing emissions through policies similar to those in the SCS, such as by encouraging building retrofits or

¹⁵⁸ *Prioritization of Transportation Projects for Economic Stimulus with Respect to GHGs*, UC Davis/Caltrans, 2009.

¹⁵⁹ SANDAG 2050 RTP (Chapter 3), October 2011.

¹⁶⁰ *San Diego County Greenhouse Gas Inventory: An Analysis of Regional Emissions and Strategies to Achieve AB 32 Targets*, University of San Diego, September 2008.

mandating an energy efficiency code in new construction. Many jurisdictions have or are currently preparing climate planning documents, including the City of Encinitas, the City of San Diego, and the County of San Diego.

The rail improvements to the corridor would result in beneficial reductions in energy use and emissions, including GHGs, in localized areas (as well as the entire I-5 highway corridor) by increasing rail ridership and decreasing rail congestion and associated locomotive idling along the corridor and at existing stations. Regional air quality would be improved by encouraging SOV trips to shift to the LOSSAN rail corridor; however, energy and air emissions mitigation during construction and operation and/or continued improvement in the locomotive fleet would remain important to ensure that rail improvements would not individually or cumulatively result in significant adverse air quality impacts in the study area.

While construction of the proposed transportation improvements would require significant energy consumption and result in additional emissions, these short-term emissions would be partially offset by the long-term post-construction operational benefits of the transportation system (e.g., highway and pedestrian facilities). The long-term savings in operational energy requirements from reduced congestion-related fuel consumption, out-of-direction travel, higher vehicle occupancy, and more trips made by walking and biking would in part offset construction energy requirements.¹⁶¹ Energy use and emissions from constructing improvements are addressed in Implementation Measures 5.1.1. By seeking to accommodate existing and planned demand through more efficient modes while addressing the existing land use constraints and topographical barriers, improvements within the I-5 corridor, combined with those in the LOSSAN rail corridor, are consistent with Coastal Act Section 30253, as they seek to maximize person throughput while minimizing the level of energy use and emissions per person mile traveled.

The impact of the improvements on GHG emissions would be similar to criteria pollutants. While increases in GHGs would be expected to occur with increased use of the LOSSAN and I-5 corridors, the proposed transportation improvements would also decrease congestion-related delays and idling along these corridors, offsetting a portion of that increase. In addition, these improvements would increase the person-carrying capacity in the corridor, improving coastal access and mobility while reducing the per person energy use and corresponding air pollution emissions. Further, continued improvements in air pollution controls, new reduction technologies, and older fleet replacement with newer more efficient models will result in continued reductions of pollutant emissions per mile traveled.¹⁶² Accordingly, the PWP/TREP improvements would be consistent with the Coastal Act policy for reduced energy consumption and VMT.

5.1.5 Local Coastal Program Consistency

Certified local coastal programs (LCPs) in the corridor include policies that may affect energy use and/or air quality, such as those related to land use, transportation, and access, which are discussed in Sections 5.2 and 5.3; however, LCPs generally do not include locally-specific policies and development standards on these issues. Based on available project and environmental data and the design/development strategies, and policies and implementation measures included herein, the proposed PWP/TREP improvements would offset the energy use generated by the incremental

¹⁶¹ I-5 NCC Project Draft EIR/EIS (Section 3-16), June 2010.

¹⁶² Ibid., Section 3-14; LOSSAN Final Program EIR/EIS (Section 3-3), September 2007.

increase in VMT on I-5 by reducing VHT and energy use per person-trip. PWP/TREP improvements would be consistent with air quality requirements through sensitive programming, design, and construction and by applying reasonable design/development strategies and mitigation measures; therefore, the NCC PWP/TREP is consistent with applicable energy, VMT, and air quality/GHG policies of the corridor LCPs.

5.3 PUBLIC ACCESS AND RECREATION

This section examines how the PWP/TREP program of improvements would enhance public access to and along coastal and upland recreational areas in the North Coast Corridor (NCC). The planned multimodal improvements include major upgrades to transit infrastructure and service, as well as a large package of bicycle, pedestrian, and community enhancements. Taken together, the PWP/TREP improvements would:

- Improve access to and along coastal and upland recreation areas for all users, including transit and non-motorized modes.
- Add over 28 miles of new bicycle and pedestrian facilities.
- Close many important gaps in regional and local bicycle networks.
- Provide safer crossings of the Interstate 5 (I-5) and Los Angeles-San Diego-San Luis Obispo (LOSSAN) corridors for bicycles and pedestrians.
- Provide new streetscape enhancements, community gardens, and open space parks in corridor cities.
- Implement enhanced bus service between corridor cities.
- Improve the frequency and reliability of commuter and intercity rail service.
- Create highway infrastructure that provides congestion-free access to coastal recreation areas for high-occupancy vehicle (HOV) and transit users.

5.3.1 Public Access and Recreation Resources in the Corridor

As discussed in Chapter 2, the NCC contains a variety of public access opportunities to numerous types of recreational resources. The beaches, lagoons, state parks, recreational facilities, and other coastal resources in the NCC are regional and statewide assets that shape the character of the natural and built environment along the corridor. Most coastal access to and within the corridor is accomplished by private automobiles (approximately 70%), with nearly every interchange along I-5 providing direct access to a significant coastal recreational area.¹

While the majority of access to the NCC's coastal recreational areas is provided by vehicle, all of the corridor's north-south passenger rail services also support access to NCC beaches and/or lagoons, with other, local access obtained on foot and via bicycle. North-south passenger rail service in the corridor includes six stations that are located just a few blocks from a beach, lagoon, or state park. The SPRINTER light rail, initiated in March 2008, is an east-west rail line that generally runs parallel to the State Route 78 (SR 78) corridor. SPRINTER also supports coastal access from inland areas, serving 13 stations on the 22-mile line between the Escondido Transit Center and the Oceanside Transit Center. In addition, local east-west bus service supports coastal access across I-5 from inland areas east of I-5.

5.3.1.1 Beaches

The corridor includes about 30 miles of Pacific Ocean coastline with world-renowned public beaches that drive the local, regional, and state economy. Scenic public beaches in the corridor include La Jolla Shores, Scripps Pier, Black's Beach, Torrey Pines Gliderport, Torrey Pines State Beach, Del Mar Beach, Cardiff State Beach, San Dieguito Rivermouth (Dog Beach), Solana Beach (Pillbox), Seaside State Beach, San Elijo State Beach, Moonlight State Beach, Leucadia State Beach (Beacon's Beach),

¹ San Diego NCC—Corridor System Management Plan (Chapter 3), July 2010.

Stone Steps Beach, Grandview Beach, Ponto State Beach, Carlsbad State Beach, and Oceanside State Beach. The beaches are used for surfing, swimming, tide pooling, camping, hiking, fishing, sports, and relaxation. The designated state beaches alone (not including the other public beaches) attracted more than 7 million visitors in the 2009–2010 fiscal year, which is more than twice the population of the entire San Diego region.²

5.3.1.2 Natural Resource Areas

The corridor's most significant natural resource areas also support the corridor's most significant passive and active coastal recreational opportunities. The lagoons in the corridor have varying levels of recreational and educational facilities, including trails and interpretive facilities, with many of them providing both coastline and upland recreation opportunities. Additional upland recreation areas within the corridor include the following:

- **Los Peñasquitos Canyon Preserve** is an open space jointly owned and administered by the City and County of San Diego. The preserve is located east of I-5 in San Diego and consists of approximately 4,000 acres of Peñasquitos and Lopez canyons and is characterized by steep slopes, riparian stream corridors, flat mesa tops, and grassy hillsides that host a diverse collection of flora and fauna. The preserve provides biking and hiking recreation on designated trails.
- **Torrey Pines State Natural Reserve** is managed by the California Department of Parks and Recreation. The reserve consists of approximately 2,000 acres of land surrounded by the Pacific Ocean to the west, Del Mar to the north, La Jolla to the south, and I-5 to the east. The reserve has several components, including the Main Reserve, an Extension Reserve, Los Peñasquitos Marsh Natural Preserve, and Torrey Pines State Beach. The reserve includes a visitor center and offers a variety of programs for the public and volunteers ranging from interactive presentations and guided tours to trail maintenance. The mouth of Los Peñasquitos Lagoon is located at the northern end of the main reserve.
- **Los Peñasquitos Lagoon** is encompassed by the Los Peñasquitos Marsh Natural Preserve and is one of the last salt marshes and waterfowl refuges remaining in Southern California. Los Peñasquitos Lagoon is home to several rare and endangered species of birds and serves as a stopping and nesting place for many migratory birds.
- **San Dieguito River Park (SDRP)** encompasses approximately 88,000 acres of land, originating at the mouth of San Dieguito Lagoon and extending east along the San Dieguito River valley. The SDRP is administered by the San Dieguito River Valley Regional Open Space Park Joint Powers Authority (JPA). The JPA is working to create a regional open space greenway and park system by preserving and restoring land along the length of the San Dieguito River watershed, which would include the Coast to Crest Trail, an integrated corridor of walking, equestrian, and bicycle trails that would extend 55 miles from the Pacific Ocean to Volcan Mountain, near Julian. The trail is partially completed, with a significant gap remaining on its western end due to a lack of crossing facilities at the LOSSAN rail corridor. A PWP/TREP project that would eliminate this barrier, the Coast to Crest Trail Crossing, is discussed in Section 5.3.3.1.

The coastal area of the SDRP has a variety of landowners, including the JPA, the California Department of Fish and Wildlife (CDFW), the State of California 22nd District Agricultural Association, the cities of San Diego and Del Mar, the Southern California Edison company, and the North County Transit District. Access to the SDRP coastal area for recreational use is available via several unconnected segments of the planned Coast to Crest Trail (Figure 5.3-1B).

² State Park System Statistical Report, 2009/10 Fiscal Year, California Department of Parks and Recreation.

- **San Elijo Lagoon County Park and Ecological Reserve** is located between Encinitas and Solana Beach and extends inland to the community of Rancho Santa Fe. The reserve is bordered by the Pacific Ocean to the west and a mix of residential and undeveloped land to the east, north, and south. The reserve is owned by the State of California to the west of I-5 and by the County of San Diego to the east of I-5. The County of San Diego and CDFW have an agreement to operate both the eastern and western basins of San Elijo Lagoon as a State Ecological Reserve under the administration of the San Diego's County Parks and Recreation department.

The entire reserve is approximately 1,000 acres and consists primarily of a shallow-water estuary fed by a watershed from Escondido Creek and Orilla Creek tributaries. The reserve contains a diverse habitat with six plant communities—including coastal strand, salt marsh, freshwater marsh, riparian scrub, coastal sage scrub, and mixed chaparral—which support a variety of plant and wildlife species.

The reserve includes over 5 miles of hiking trails open to the public. A nature center on the northwest side of the lagoon features exhibits interpreting the lagoon's natural and cultural resources as well as the "green" design and construction features of the building. It serves as a base for education, land stewardship, and environmental protection.

- **Batiquitos Lagoon/Aviara Trails** is located in Carlsbad, just north of Encinitas, and is owned and preserved by the State of California as a State Ecological Reserve. Batiquitos Lagoon is bounded by the Pacific Ocean to the west, steep hills to the south traversed by La Costa Avenue, gentle slopes to the north adjacent to the Aviara development and golf course, and San Marcos Creek to the east, which serves as the connection between Batiquitos Lagoon and the watershed farther east.

Batiquitos Lagoon is approximately 610 acres and is currently subject to coordinated restoration efforts by the Port of Los Angeles, the City of Carlsbad, the CDFW, the California State Lands Commission, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service. The lagoon reserve includes a nature center, and a 2-mile public hiking trail served by one public parking lot near the nature center and four public parking lots along Batiquitos Drive.

- **Agua Hedionda Lagoon/CDFW Reserve** is an approximately 400-acre, man-made water body that was constructed in 1954. The lagoon is owned by Cabrillo Power II, a privately owned corporation that leases the lagoon to the City of Carlsbad to manage recreational and commercial uses. Agua Hedionda Lagoon is bounded by the Pacific Ocean to the west, undeveloped land to the east, the Encina Power Plant to the south, and residential development to the north.

Recreational activities at Agua Hedionda Lagoon include boating, water skiing, canoeing, fishing, biking, walking and hiking along the shoreline. The City of Carlsbad allows boating and water skiing on the lagoon, and the YMCA operates a canoeing center. A white sea bass research facility, jointly managed by Hubbs/Seaworld and CDFW, and a commercial mussel-growing facility are the lagoon's two aquaculture facilities. CDFW manages a 186-acre wetland ecological reserve at the eastern end of the lagoon.

- **Buena Vista Lagoon** is an approximately 350-acre freshwater lagoon owned by the CDFW, which manages the lagoon as an ecological preserve. Buena Vista Lagoon is located on the border between Oceanside and Carlsbad and is bounded by the Pacific Ocean to the west; urban development, SR-78, and Jefferson Street to the east; and urban development to north and south. Additionally, the Buena Vista Lagoon Foundation, a nonprofit organization, works as an advocate for the lagoon to conserve and restore marsh and wetlands areas.

Recreational uses at Buena Vista Lagoon include fishing and passive recreation such as hiking and picnicking. A nature center provides exhibits of the natural resources found at the lagoon, and supports classroom programs and guided nature walks for the public.

- **San Luis Rey River** is located primarily along SR 76 in Oceanside. Originating in the Palomar and Hot Springs Mountains, the river extends approximately 55 miles across northern San Diego County to the ocean, forming a watershed with an area of approximately 562 square miles.

The river watershed supports 36 vegetation communities, with the coastal sage scrub, chaparral, and grassland communities being the most abundant; numerous protected and sensitive species and vegetation communities occur throughout the watershed. Within Oceanside, the watershed includes the 7-mile San Luis Rey River Trail, which is a paved, Class I bicycle and pedestrian trail that follows the San Luis Rey River.

5.3.1.3 Bicycle and Pedestrian Resources

Within the NCC, there is an existing bicycle and pedestrian network that provides access to and along the coast and other upland recreation areas. Existing primary bicycle and pedestrian routes include the Coastal Rail Trail, California Coastal Trail, Camp Pendleton Trail, San Luis Rey River Trail, El Camino Real Bikeway, Palomar Airport Road/San Marcos Boulevard Bikeway, La Costa Avenue/Rancho Santa Fe Road Bikeway, Mid County Bikeway, SR-56 Bikeway, and the Central Coast Corridor (shown on the maps in Section 5.3.3). These regional routes connect public beaches and parks, residences, town centers, transit centers, and other activity centers.

Once fully completed, the Coastal Rail Trail will be a continuous north-south route adjacent to the LOSSAN rail corridor, providing access to and along coastal facilities. This bikeway serves many users: short segments support commuter access between adjoining communities; longer segments accommodate recreational users as well as some commuters; while the full length of the bikeway within San Diego County serves regional and interregional users. Significant portions of the Coastal Rail Trail have been completed in Solana Beach, Carlsbad, Oceanside, and San Diego, but several gaps still exist in the corridor. Beyond the planned improvements within the LOSSAN rail right-of-way that are included in the PWP/TREP (described in Section 5.3.3.1), the completion of other unfinished segments of the Coastal Rail Trail is being pursued concurrently by several local jurisdictions.

The statewide California Coastal Trail is intended to be a continuous 1,200-mile public right-of-way along the California coastline. The trail will provide linkages to other inland trail systems and to the State Park system to facilitate improved accessibility to coastal resources and state parks from urban population centers. The Coastal Commission's public access plan indicates that approximately 69% (55 miles) of the California Coastal Trail is completed in San Diego County, with approximately 20 miles of missing links located in North County at Camp Pendleton, Point Loma (a military reservation), and naval shipyards and portions of the Port of San Diego. The California Coastal Trail shares facilities with the Coastal Rail Trail in some parts of the NCC.

5.3.2 PWP/TREP Concerns

The proposed PWP/TREP transportation improvements would not adversely affect coastal access and recreational resources. Rather, the proposed improvements have been planned and designed to facilitate improvements to the corridor's existing transportation network and to enhance multimodal access throughout the corridor. The proposed PWP/TREP addresses existing concerns regarding maintaining access to and along the coast and upland recreation areas, and would enhance, wherever feasible, coastal access and recreation opportunities and facilities in the NCC.

5.3.2.1 Coastal Access Deficiencies

Chapters 2 and 3 provide context and background information on existing public access and recreation opportunities in the corridor, and issues associated with maintaining and improving existing and future access opportunities to the corridor's unique coastal resources in light of increasing transportation

demand. As discussed in Chapters 2 and 3, although land use patterns are essentially established in the NCC and the majority of developable land is built-out, the corridor and adjacent regions will continue to experience population and employment growth, thereby resulting in increased demand for reliable transportation options. Demand for transport of goods and services will also continue to grow to sustain the regional, state, and national economy. This demand on the corridor's transportation network will continue to grow irrespective of implementing the PWP/TREP transportation improvements.

Also independent of the proposed PWP/TREP transportation improvements is the ever-increasing demand for public access to and along coastal resources from within and outside the corridor. Population growth and development in the NCC have resulted in loss of public access and recreational opportunities where access to and use of previous open spaces, beach areas, and historic trails have been eliminated due to development pressures over time. As the population continues to grow in the corridor, San Diego County and people in the adjacent regions will seek access to and along the remaining supply of coastal resources in the corridor, placing an additional increased demand on the region's transportation network related exclusively to coastal access.

As with most other significantly populated coastal communities in California, unmet transportation demand results in community residents, commuters, and visitors competing for limited capacity on existing transportation systems for various uses. Despite numerous coastal recreational resources and many points of coastal access in the corridor, coastal access is hindered by disjointed, congested, and limited routes. This includes not just the highway, but also arterial and local roads, as well as the LOSSAN rail corridor.

Beyond motorized travel, these capacity constraints also apply to bicycles and pedestrians. In many places throughout the corridor, the I-5 and LOSSAN corridors act as barriers to coastal access. While the SANDAG 2050 Regional Transportation Plan (2050 RTP) contains a regional bicycle network, key elements of this system are either incomplete or inadequate due to the existence of these east-west barriers. As part of the PWP/TREP planning process, SANDAG and Caltrans have developed a Safe Access to Transit and Coastal Resources (SATCR) study to identify various gaps or barriers within the regional and local bicycle and pedestrian networks which limit bicycle and pedestrian access to transit services and activity centers in the NCC. In addition, many potential north-south routes are limited by the six corridor lagoons, as they lack frontage roads or other crossing facilities other than the highway. These limitations in the transportation network directly limit opportunities for public access to and along both coastal and upland recreation areas.

To address these concerns PWP/TREP improvements would be planned and designed to maintain and enhance public access to and along the coast by: 1) extending and improving transit service; 2) reducing transportation congestion, particularly for the variety of coastal users in the corridor; 3) providing adequate parking facilities and/or public transportation and non-automobile circulation that support access to and along coastal recreational areas; and 4) providing and/or enhancing recreational facilities. In addition, the PWP/TREP ensures that the proposed transportation improvements would accommodate services to coastal-dependent land use, essential public services, and basic industries vital to the economic health of the region, state, or nation.

One of the primary goals of the PWP/TREP is to implement improvements to the existing transportation system, thereby eliminating existing impediments and enhancing coastal access opportunities for residents and visitors. The PWP/TREP would improve coastal access and recreation by reducing congestion on rail and highway facilities, thus reducing competition for capacity on the existing transportation systems between community residents, commuters, and visitors. Furthermore, the

PWP/TREP would remove existing access impediments by improving mobility across all transportation modes.

The PWP/TREP includes measures to assure that existing and proposed transportation facilities, especially public access trails and bikeways that are bisected by existing rail and highway facilities, are constructed and/or improved and maintained for long-term integrity of coastal access and recreation opportunities. These measures would also provide for project phasing and construction activities to be designed and scheduled to minimize adverse impacts to public access and recreational resources.

Finally, as discussed in Sections 5.4 and 5.5, the PWP/TREP includes infrastructure improvements and a Resource Enhancement and Mitigation Program (detailed in Chapter 6B) to address water quality, lagoon, and natural habitat deficiencies. These project elements would serve to protect and enhance natural resources at corridor beaches, lagoons, and recreation areas that sustain and support coastal and resource-dependent recreational uses.

5.3.2.2 LOSSAN Rail Corridor Impact Assessment

As noted in Section 5.3.2, the proposed PWP/TREP transportation improvements would not adversely affect coastal access and recreational resources. Rather, they would improve the corridor's existing transportation network to maintain access to and along the coast and upland recreation areas, and to enhance, wherever feasible, coastal access and recreation opportunities and facilities. Traffic congestion on I-5, which is the NCC's major coastal access thoroughfare, and the limited capacity of the rail corridor to provide an alternative means of transportation to I-5, constitute constraints on public access to and along the shoreline and upland recreation areas.³

As described in detail in Chapter 3A, passenger rail services along the LOSSAN rail corridor are currently constrained by infrastructure that is significantly undersized for the volumes of traffic it accommodates. Currently, about half of the 27 miles of rail within the NCC consists of single track, which greatly constrains the movement of trains through the corridor by causing other trains to "stack" at each end of single track while waiting for another train to pass. Stacking results in delays that in turn reduce the attractiveness of rail as a travel mode choice and as an alternative means of access to coastal resources. Since travel time and reliability are among the most important factors in the public's choice of transportation modes, longer and uncertain travel times make rail in the NCC an unattractive travel option.⁴

In addition, while access to LOSSAN rail corridor stations is primarily by private automobile, constrained parking currently discourages many potential passengers from using rail. On average, all of the COASTER station parking lots except Oceanside and Sorrento Valley are at least 90% full on weekdays, with several exceeding 95%.⁵ This constraint not only limits the number of people who can access the stations by automobile, but it also creates uncertainty among potential new riders, who might wish to commute via rail but cannot rely on parking being available every day. This lack of parking capacity therefore serves as a barrier to increased ridership. Providing additional parking resources at rail stations will be a critical component to supporting increased rail use in the future.

As the proposed rail improvements are implemented throughout the corridor, access to and along coastal resources and recreation opportunities would be enhanced. Future rail project designs could accommodate new or improved pedestrian and bicycle amenities that provide access across the rail

³ San Diego NCC—Corridor System Management Plan (Chapter 2), July 2010.

⁴ LOSSAN Final Program EIR/EIS (Section 1), September 2007.

⁵ NCTD, November 2012. (See Section 3A.1.2.5.)

corridor, where determined feasible, thus providing non-automobile access from inland corridor communities to and from the coast.

As the majority of rail and transit station improvements would be located either within the existing right-of-way, below grade (tunnel options), or within developed areas, PWP/TREP improvements would not be expected to substantially encroach into adjacent recreational lands. Temporary impacts to public access and recreation from proposed rail improvements could occur if construction staging areas are located such that significant access routes or recreational areas are displaced and inaccessible to the public, or if construction activities substantially disrupt coastal recreational experiences, particularly during the summer when demand for coastal access is at its highest.

5.3.2.3 I-5 Highway Corridor Impact Assessment

Proposed PWP/TREP transportation improvements would improve the corridor's existing transportation network and thereby maintain access to and along the coast and upland recreation areas, and enhance, wherever feasible, coastal access and recreation opportunities and facilities. Planning and designing PWP/TREP transportation improvements for the highway corridor to ensure existing concerns regarding access and recreation are addressed are particularly critical when considering the following facts:

- Without full development of the region's proposed rail improvements, the region will not be able to meet travel demand in the corridor and, therefore, traffic congestion on I-5 will continue to degrade and constitute a significant constraint on public access to and along the shoreline and upland recreation areas.
- I-5, one of only two major north- and southbound highways in San Diego County (the other being I-15), is the corridor's major coastal access thoroughfare and the only coastal alternative to Highway 101 (Coast Highway). Coast Highway has limited opportunity to accommodate increased travel demand throughout the corridor as its potential expansion capacity is restricted by topographical constraints, including the corridor's six coastal lagoons and the shoreline. Furthermore, because Coast Highway is subject to local traffic calming strategies, pedestrian improvements, and revitalization of historic commercial activity centers in many of the corridor's coastal cities, it functions more as a pedestrian-oriented "Main Street" rather than a viable alternative route to I-5 for regional trips.⁶
- The beaches, lagoons, state parks, recreational facilities, and other coastal resources in the NCC are of regional and statewide importance, and the majority (approximately 70%) of coastal access to these resources is via private automobiles.⁷
- Higher traffic volumes occur during weekends than weekdays on some sections of I-5, with HOVs comprising up to 60% of vehicles (compared to 13% HOV use during the weekday), demonstrating the high demand on the facility to support access to recreational and visitor destinations along the coast of San Diego.⁸

As the primary transportation corridor throughout the NCC and, in some cases, the only means of gaining access to and along the corridor's significant recreational resources, the proposed highway improvements would maximize the existing right-of-way for the benefit of those seeking access to and along the coast and upland recreation areas.

⁶ San Diego NCC—Corridor System Management Plan (Chapter 2), July 2010.

⁷ Ibid., Chapter 3.

⁸ Caltrans I-5 North Coast Freeway Operations Report, June 2010.

In addition, as proposed highway improvements are implemented throughout the corridor, coastal access and recreation enhancement opportunities would be made available. Future project designs could accommodate new or improved pedestrian and bicycle amenities that provide for access across the highway, where determined feasible, thus providing non-automobile access from inland corridor communities to and from the coast.

As the majority of highway improvements would be located either within the existing corridor right-of-way or within developed areas, PWP/TREP highway improvements would not substantially encroach into adjacent recreational lands; however, some linear and incremental encroachment onto adjacent recreational lands would occur. The proposed improvements would not result in any long-term adverse impacts since the function of the recreational facilities would remain.⁹ Temporary impacts to public access and recreation from proposed highway improvements could also occur where construction traffic and staging areas disrupt travel patterns to the coast and inland recreation areas, particularly during the summer season when demand for coastal access is at its highest, and/or if construction staging areas are located such that significant recreational areas are displaced and inaccessible to the public, or if construction activities substantially disrupt coastal recreational experiences. These temporary impacts to public access and recreation would be localized, however, and would not disrupt corridor-wide resources at the same time.

5.3.3 PWP/TREP Opportunities, Policies, Design/Development Strategies and Implementation Measures

5.3.3.1 Corridor Opportunities

The PWP/TREP includes significant improvements to the corridor's transportation system, including rail and bus transit, highway Express Lanes, and bicycle and pedestrian facilities.¹⁰ These improvements would encourage greater use of public transportation, carpooling, and vanpooling, and improve the connectivity of bicycle and pedestrian trails that provide access to and along important coastal resource areas. The program of improvements provides for a multimodal transportation system that would support local, regional, interstate, and international access to coastal-dependent industry, coastal and upland areas supporting recreation, various tourist destinations, and visitor-serving areas. The PWP/TREP community enhancement projects (discussed further below) include many improvements that will improve safety and accessibility for mass transit riders who walk or bicycle to transit facilities and eliminate barriers in the regional and local bicycle and pedestrian networks, thereby improving access to coastal resources, recreational facilities, and transit services in the corridor. In addition, the proposed transportation improvements would maintain critical transportation infrastructure for industries vital to the economy of the region, state, and nation.

The PWP/TREP includes no measures that would interfere with the public's right to access the shoreline. In fact, the improvements would maximize public access and enhance recreation opportunities throughout the corridor consistent with public safety needs by:

- Improving public transportation infrastructure to support more frequent, attractive, and reliable rail, bus rapid transit (BRT), and enhanced local bus transit service, resulting in increased transit

⁹ I-5 NCC Project Draft EIR/EIS (Section 3.1), June 2010.

¹⁰ As detailed in Chapter 3B, Express Lanes (formerly called Managed Lanes) are HOV lanes that, in addition to providing uncongested travel for carpools, vanpools and transit vehicles, allow for excess capacity to be allocated to SOVs through variable pricing. The pricing for SOVs adjusts in real time in response to traffic conditions so as to maintain free-flow speeds for HOVs and transit at all times. Express Lanes are highly efficient for managing highway operations, as they prioritize HOV travel while allowing unused lane space (which would otherwise be wasted) to be occupied.

ridership and reduced traffic congestion that would otherwise adversely affect the ability of the public to reach the coast along this primary coastal access corridor.

- Improving and integrating transit services with other modes of travel within the corridor to increase ridership and reduce traffic congestion that would otherwise adversely affect public coastal access.
- Providing for and encouraging non-automobile transportation with new and improved multimodal transportation facilities that would provide access to and along the coast and upland recreation areas (including trails, bicycle paths, and multimodal transit services). The improvements would: provide bicycle and pedestrian facilities and routes that connect with public transit centers, thereby promoting carpooling and compatibility with transit services; improve bicycle and pedestrian facilities at nearly all community streets and regional roadways that cross I-5 and the rail corridor; and complete significant segments of the Coastal Rail Trail as well as the I-5 North Coast Bike Trail, an entirely new bicycle facility planned for the I-5 corridor.
- Providing access connections from inland areas to coastal areas with reconfigured interchanges, overcrossings, undercrossings, and adjacent intersections (all of which would be constructed with pedestrian and bicycle facilities) as well as community enhancement features that would increase connectivity between neighborhoods.
- Encouraging pedestrian and bicycle access opportunities by providing separation between pedestrian, bicycle, and vehicular traffic with adequate space and striping.

The PWP/TREP would provide new recreational areas adjacent to, and along, the shoreline and within upland areas, and could provide and enhance low-cost visitor-serving recreation facilities by:

- Creating and enhancing pedestrian access to and along natural resources, including lagoons and adjacent upland areas via trail and bicycle facility improvements throughout the corridor.
- Constructing trailheads, community gardens, and open space parks in corridor communities.
- Providing transportation access to and along recreational and low-cost visitor-serving recreation areas for transit-dependent populations that may not otherwise be able to access coastal areas.
- Providing opportunities to potentially tunnel a portion of the rail facility, resulting in the removal of existing aboveground track and potentially creating new parkland for public use.
- Providing for an efficient and readily accessible multimodal transportation system that could provide primary access in the region to coastal-dependent recreational resources, coastal and upland areas supporting recreation, and to various tourist destinations and visitor-serving areas.

The PWP/TREP includes transportation improvements and a Resource Enhancement and Mitigation Program to address water quality, lagoon, and natural habitat deficiencies (discussed in more detail in Sections 5.4 and 5.5 and Chapter 6B). These project elements would protect and enhance natural resources at corridor beaches, lagoons, and recreation areas that sustain and support coastal and resource-dependent recreational uses.

Access Benefits of Planned Improvements

As discussed previously and in Chapter 3A, passenger rail services along the LOSSAN rail corridor are constrained by infrastructure that is significantly undersized for the volumes of traffic it accommodates, resulting in frequent delays and reducing the attractiveness of rail as a travel mode choice and an alternative means of access to and along coastal resources. Proposed rail improvements would increase capacity, shorten travel time, and improve the on-time performance and reliability of the passenger and freight rail service in the LOSSAN rail corridor. These rail improvements would increase

operational flexibility for COASTER, Metrolink, and Amtrak services, and would provide a more viable alternative mode of travel to the automobile.

The PWP/TREP rail improvements would benefit public coastal access by improving commuter and intercity passenger rail service to provide an alternative to the private automobile, thereby relieving traffic congestion on I-5. Freight rail services operated by BNSF Railway would also be improved by the proposed PWP/TREP projects, providing an essential public service for coastal-dependent industries such as the Port of San Diego, as well as other shipping and commercial industries vital to the economic health of the region, state, and nation.

In addition, while access to LOSSAN rail corridor stations is primarily by private automobile, constrained parking at stations currently discourages many potential passengers from using the rail corridor. As the majority of rail stations are located just blocks from the beach, constrained parking resources result in overflow parking by train passengers onto adjacent streets, which displaces parking resources that could be used by people to access the coast by automobile; conversely, where ample parking supply does occur at LOSSAN stations, these excess parking resources could also be used to support access to and along nearby beaches and recreation areas. Proposed PWP/TREP improvements would include expanding parking areas at the corridor's transit stations, which would benefit passenger rail service and eliminate or reduce conflicts between rail passenger and coastal access parking resources on adjacent streets. Finally, adding a new platform in Del Mar would substantially improve rail service for coastal access to an area not currently served. The Del Mar platform would provide new access opportunities to the beach, San Dieguito River Park, and Del Mar Fairgrounds and Racetrack, one of the region's most popular tourist destinations.

Other proposed transit improvements include enhancements to existing local bus transit in the corridor, including increases in operating funding for future, more frequent service to rail stations and coastal destinations. While the PWP/TREP does not directly include local bus service, the 2050 RTP includes an increased commitment of operating funds for local buses both within the NCC and across the region.¹¹ While many transit dollars are earmarked for the region's higher-density communities, North County Transit District (NCTD) would receive a share of the region's operating funds to sustain and enhance its bus transit services in the NCC. Access to COASTER service remains a priority for both NCTD and the San Diego Metropolitan Transit System, and travelers can expect various enhancements to the 17 local bus routes that serve the NCC's 6 COASTER stations. Future enhancements could include higher frequencies, extended operating hours, and other improvements. The 2050 RTP also includes specific funding to increase service frequencies to 15 minutes or better in key bus corridors, but at this stage it has not been determined how NCC routes may benefit from this augmentation.

Among the planned improvements are enhancement to the existing local bus service along Coast Highway. The Coast Highway bus transit improvements would be integrated and coordinated with multimodal improvements planned for Coast Highway by the cities along the corridor, creating vibrant coastal communities that are accessible by transit, bicycle, foot and auto. The envisioned transit enhancements along Coast Highway include increased service frequencies and a menu of potential roadway features to facilitate transit operations such as fewer stops, dedicated transit lanes, traffic signal priority, and intersection queue jumps (short dedicated lanes approaching intersections that would allow buses to advance to the intersection ahead of other vehicles stopped at traffic signals). The multimodal components of Coast Highway improvements would facilitate access to transit through

¹¹ SANDAG 2050 RTP (Appendix 5), October 2011.

implementation of sidewalk improvements, bicycle lanes, and traffic-calming techniques, and would promote the attractiveness of transit through landscaping, urban design, and amenities at bus stops such as embellished shelters and real-time next-vehicle arrival signs. Coast Highway bus transit improvements could include overlay rapid service with fewer stops than the parallel local service to decrease total trip time for longer-distance passenger trips. Ongoing coordination among SANDAG, NCTD and the coastal cities will define the optimum transit service and infrastructure enhancements within the Coast Highway multimodal corridor.

Finally, the 2050 RTP also includes the Mid-City to Palomar Airport Road BRT service, a new “reverse-commute” BRT on I-5 that would serve the peak-period commute trip between the high-density Mid-City residential area in central San Diego and the Palomar Airport Road business park in the NCC.¹² Like the planned improvements to LOSSAN rail service, this new BRT line would help relieve congestion and reserve capacity on I-5 for other users, including visitors and recreational travelers who are not easily served by transit. However, as with the BRT services currently operating on I-15, implementation of BRT on I-5 is wholly dependent upon the construction of the planned Express Lanes.

As described in detail in Chapter 3, congestion on I-5 impedes travel and, as the corridor’s primary coastal access facility, existing congestion on I-5 adversely affects the public’s ability to travel to the NCC’s significant recreation areas. While travel in the corridor has increased significantly in the last several decades, I-5 infrastructure has remained relatively constant, with little physical expansion to meet increasing travel demand. To address the highway capacity deficiency in the corridor in a way that would provide the most benefit to coastal access and natural resources while meeting regional travel demand, PWP/TREP highway improvements would accommodate more travelers (i.e., more people), more efficiently, and with minimal facility expansion (footprint) when compared to other transportation alternatives.

The PWP/TREP recognizes that constructing new transportation corridors or new general-purpose lanes to meet travel demand would not solve the highway capacity deficiency without affecting adjacent communities, lagoons, and habitat areas, and would potentially result in increased emissions and reduced air quality. By contrast, the planned highway Express Lanes would provide significantly more person-carrying capacity per lane than general-purpose lanes by promoting carpool, vanpool, and other transit alternatives to single-occupancy vehicles (SOV) in the corridor. Furthermore, Express Lanes would specifically serve the large number of recreational travelers on weekends, as approximately 60% of weekend traffic on I-5 consists of HOVs, thus improving access opportunities to the coast and inland recreation areas.¹⁴

PWP/TREP transportation improvements would reduce traffic congestion on I-5 in the corridor, which would not only alleviate the pressure to construct new transportation corridors, but would also reduce impacts to nearby arterial streets that may otherwise require widening to accommodate existing and future transportation demands. Without the planned highway improvements, traffic forecasts project average weekday increases of nearly 7% in peak-period traffic on both El Camino Real and Coast Highway—the NCC’s primary north-south arterials, often used as alternate routes when I-5 is congested—with several segments of these arterials experiencing traffic increases of 15% or more.¹⁵ It is likely that traffic impacts to seasonal and weekend travel would be even higher.

¹² SANDAG 2050 RTP (Chapter 6), October 2011.

¹⁴ Caltrans I-5 North Coast Freeway Operations Report, June 2010.

¹⁵ I-5 NCC Technical Report #5: Traffic Demand Forecasting Report, August 2007. Conducted in support of I-5 NCC Project Draft EIR/EIS.

Additional benefits to public access would occur from the proposed Manchester Avenue Direct Access Ramp (DAR) and San Elijo Multi-Use Facility in Encinitas. The proposed DAR would provide direct access to the I-5 Express Lanes for HOVs and transit vehicles, including the Mid-City to Palomar Airport Road BRT, as well as other BRT services that may be added in the future as demand increases. This would save these vehicles from having to weave through the I-5 general-purpose lanes to enter or exit the highway, which not only will shorten travel time for transit and HOVs, but will also reduce congestion on the highway's general-purpose lanes. The San Elijo Multi-Use Facility would include a new access road, a park-and-ride facility featuring passenger drop-off locations, and parking for about 150 cars, and a bus platform, all of which would facilitate ride-sharing and bus transportation. It would also provide a staging and parking area for users accessing the adjacent San Elijo Lagoon trail network, as well as the Class II bicycle lanes on Manchester Avenue that connect to several regional bicycle routes and coastal resources.

Traffic congestion on I-5 inhibits many potential carpool, vanpool, and bus transit options, as these modes of travel currently are subject to the same traffic congestion on the highway that SOVs experience. The combination of these increased support facilities—such as the DAR and the Park-and-Ride/BRT Station—along with the proposed Express Lanes would provide strong incentives for travelers to shift to ride-sharing and public transit, as these modes would be easier to access and would possess a major advantage over SOV travel: direct access to the uncongested Express Lanes, where reduced travel times and increased reliability would be assured.

SB468 and Safe Access to Transit and Coastal Resources

California Senate Bill No. 468 (SB468), sponsored by local state Senator Christine Kehoe and signed into law in October 2011, directed that “SANDAG shall establish a safe routes to transit program that integrates the adopted regional bike plan with transit services” within the NCC. This initiative, which SANDAG is now undertaking at the regional level, began in the NCC with the Safe Access to Transit and Coastal Resources (SATCR) study (included as Appendix A of the PWP/TREP). The SATCR study evaluated gaps and barriers in the existing and planned bicycle and pedestrian networks in the NCC that prevent or inhibit access to NCC rail stations and coastal activities/resources, and identified projects for incorporation into the PWP/TREP that would help address these deficiencies. Utilizing the following process, the SATCR study provided a comprehensive and systematic approach to identifying new projects and facility enhancements that would improve non-motorized access to transit and coastal resources in the NCC:

- Established transit and coastal resource destinations
 - Identified and mapped the LOSSAN rail corridor stations and significant coastal destinations and resources in the NCC. Coastal destinations and resources include major activity centers such as the Del Mar Racetrack and coastal city downtowns, and more broadly defined resources such as coastal lagoons and beaches.
- Identified gaps, barriers and other deficiencies in bicycle and pedestrian access routes to transit and coastal resources
 - Identified the bicycle and pedestrian facilities at existing and planned crossings of the I-5 highway and LOSSAN rail corridors to determine where potential deficiencies exist at crossing locations.
 - Mapped the existing and planned regional and local bicycle networks in the NCC to identify deficiencies in bicycle access to LOSSAN rail stations and coastal resources.

- Established a three-quarter-mile radius around each LOSSAN rail station and mapped the existing pedestrian network (sidewalks and trails) within that radius to identify deficiencies in pedestrian access to those stations.
- Identified PWP/TREP improvements to address deficiencies
 - Identified PWP/TREP improvements that would correct the aforementioned gaps, barriers and other access deficiencies. These bicycle and pedestrian projects included new and improved facilities at I-5 highway and LOSSAN rail corridor crossings, implementation of segments of the Coastal Rail Trail within the LOSSAN right-of-way, and implementation of the new north-south I-5 North Coast Bike Trail within the highway right-of-way. These PWP/TREP projects would be implemented as part of the I-5 highway and LOSSAN rail corridor transportation projects and would include such facilities as upgraded bicycle routes (e.g., rebuilding an existing Class III bicycle facility as a Class II facility on a new I-5 bridge overcrossing) and new or wider sidewalks at highway and rail over- and undercrossings.
 - Analyzed opportunities for additional improvements across or along the I-5 highway and LOSSAN rail rights-of-way. The analysis concluded that no further improvements are necessary within the highway right-of-way, and that five potential opportunities for improvements within the LOSSAN right-of-way should be considered as part of future LOSSAN projects.
- Provided baseline information for potential independent pedestrian projects
 - Outside the I-5 highway and LOSSAN rail rights-of-way, the SATCR study provided pedestrian circulation information within a three-quarter mile walking distance of LOSSAN rail stations. Local jurisdictions could use this mapped information to identify any additional opportunities to improve pedestrian access to transit stations and coastal resources that could be permitted independently of the PWP/TREP.

The SATCR analysis revealed that nearly all identified deficiencies would be addressed by PWP/TREP improvements. At the LOSSAN rail corridor, these improvements include the construction of several grade-separated crossings as well as the completion of several segments of the Coastal Rail Trail. At the I-5 corridor, key improvements include: rebuilding highway over- and undercrossings with improved bicycle and pedestrian facilities; constructing the I-5 North Coast Bike Trail (a new regional facility that would run the length of the NCC); and implementing an extensive suite of Community Enhancements in local jurisdictions. Taken together, these improvements would accomplish the goals of the SATCR study and will help jump start the regional “safe routes to transit” program that SANDAG will undertake in response to SB468. A complete discussion of the SATCR analysis, results, and maps are included in the SATCR report in Appendix A. Further details about the planned bicycle and pedestrian improvements in the NCC are discussed below and shown in Figures 5.3-1A through 5.3-1E.

Planned Improvements: Coastal Rail Trail

The Coastal Rail Trail is a dedicated bicycle facility in the region’s coastal corridor, with most segments in or adjacent to the LOSSAN rail right-of-way. It is partially completed within San Diego County, with varying levels of progress in each NCC city. Once fully completed, the Coastal Rail Trail would provide a continuous north-south bicycle route—mostly comprising Class I facilities—through the NCC with direct access to and along coastal facilities. The Coastal Rail Trail serves many users: short segments serve as ideal commuter access between adjoining communities; longer segments serve to accommodate recreational bicycle users as well as some commuters; and the full length of the facility serves regional and interregional users.

Caltrans and SANDAG have identified the following opportunities to complete some segments of the Coastal Rail Trail that are within the LOSSAN rail right-of-way as part of the NCC program of improvements (thus taking advantage of construction synergy with LOSSAN rail projects whenever possible):

- **Chesterfield Drive to G Street (Encinitas):** 1.7 miles; partially overlaps with LOSSAN San Elijo Lagoon Double Track project.
- **G Street to Leucadia Boulevard (Encinitas):** 1.7 miles; partially overlaps with LOSSAN Batiquitos Lagoon Double Track project.
- **Leucadia Boulevard to La Costa Avenue (Encinitas):** 1.3 miles; overlaps with LOSSAN Batiquitos Lagoon Double Track project.
- **Poinsettia Station to Palomar Airport Road (Carlsbad):** 0.9 mile.
- **Palomar Airport Road to Cannon Road (Carlsbad):** 0.5 mile.
- **Cannon Road to Tamarack Avenue (Carlsbad):** 1.2 miles.

In addition to these planned new segments of the Coastal Rail Trail, the PWP/TREP also includes the improvement of an existing Coastal Rail Trail segment in San Diego. Community enhancement project SD#2C (described later in the section) would upgrade 1.1 miles of existing trail adjacent to Sorrento Valley and Los Peñasquitos Lagoon, to include a new bridge, overlooks, and a dedicated Class I bike path. The I-5 North Coast Bike Trail (also described later in the section) would share the facility.

Beyond the Coastal Rail Trail segments within the LOSSAN rail and I-5 highway rights-of-way that are planned in the PWP/TREP, the region's local jurisdictions are also working with SANDAG to identify funding for the design and construction of several segments located outside these rights-of-way. The SANDAG Regional Bicycle Plan Early Action Program (EAP)—described in more detail later in this section with the other projects permitted separately from the PWP/TREP—includes several projects that will largely complete the Coastal Rail Trail in the NCC. In addition, the EAP includes the construction of many segments in San Diego that are located outside the NCC, such as University Towne Center, Rose Canyon, and Pacific Highway. Taken together, these combined efforts on the Coastal Rail Trail from SANDAG and local cities demonstrate the region's intention to complete this important facility.

Planned Improvements: I-5 North Coast Bike Trail

A key component of the I-5 highway improvements is the proposed I-5 North Coast Bike Trail, a new facility that would run the entire length of the NCC, roughly parallel to the highway. It would consist of both separated and shared bicycle facilities, and would be located partially in the I-5 highway right-of-way and partially on adjacent city streets. Caltrans is continuing to work with local jurisdictions to determine the preferred alignment for this shared facility, with a preliminary alignment shown on the six local maps provided on Figures 5.3-1A through 5.3-1E. As part of the highway construction, Caltrans would complete those portions of the bikeway that fall within the I-5 highway right-of-way; coordination with local jurisdictions would ensure completion of the remaining segments.

As an inland alternative to the Coastal Rail Trail—except in parts of Oceanside where it is planned to share facilities with the Coastal Rail Trail—the I-5 North Coast Bike Trail would provide the following access benefits (sorted by jurisdiction):

- The San Diego segment (Figure 5.3-1A) would connect the University of California, San Diego (UCSD) to the cities of Del Mar and Solana Beach, providing access to COASTER's Sorrento Valley Station, and Los Peñasquitos and San Dieguito Lagoons. This enhancement would connect

to multiple regional and local bicycle and pedestrian routes, including the Coastal Rail Trail, the California Coastal Trail, and the Sea-to-Sea Trail.

- The Solana Beach segment (Figure 5.3-1B) would connect riders to San Diego, Del Mar, and Encinitas. The planned route would share city streets for the majority of its Solana Beach alignment, providing access to several adjacent schools and other activity centers. It would also connect to existing bicycle facilities on Via de la Valle and Lomas Santa Fe Drive, which provide access to and along coastal recreational resources as well as COASTER and Amtrak's Solana Beach Station.
- The Encinitas segment (Figures 5.3-1B and 5.3-1C) would connect riders to Solana Beach and Carlsbad. The planned route would share city streets for much of its Encinitas alignment, but would utilize several separated trails and overcrossings (Community Enhancement projects EN#1, EN#4, EN#5B, and EN#6A below). The route would connect to existing local bicycle facilities on Santa Fe Drive and Leucadia Boulevard, as well as regional bicycle facilities at Manchester Avenue and Encinitas Boulevard. At Encinitas Boulevard, it would also provide access to rail services at nearby COASTER's Encinitas Station.
- The Carlsbad segment (Figures 5.3-1C through 5.3-1E) would connect riders to Encinitas and Oceanside. The planned route would utilize city streets for some of its Carlsbad alignment—including sharing Class II facilities with the existing Coastal Rail Trail segments along Avenida Encinas and State Street—but would have its own Class I facility in many locations, including both lagoon crossings. It would connect to existing local bicycle facilities on La Costa Avenue, Poinsettia Lane, Cannon Road, and Tamarack Avenue, as well as regional bicycle facilities at Palomar Airport Road and the parallel Coastal Rail Trail. It would also provide adjacent access to COASTER's Carlsbad Poinsettia and Carlsbad Village Stations.
- The Oceanside segment (Figure 5.3-1E) would connect Carlsbad to Camp Pendleton and the regional bicycle routes extending north to Orange County. The planned route would feature a mix of Class I, II, and III facilities, and would connect to two east-west regional bicycle routes: the Oceanside-Escondido Inland Rail Trail (at Oceanside Boulevard) and the San Luis Rey River Trail (adjacent to SR 76). By sharing the majority of its Oceanside alignment with the Coastal Rail Trail, the I-5 North Coast Bike Trail would be located closer to the LOSSAN rail corridor than the highway in Oceanside, providing convenient bicycle and pedestrian access to Oceanside Station (COASTER, SPRINTER, Metrolink and Amtrak), the SPRINTER's Coast Highway Station, and numerous coastal resources.

Planned Improvements: LOSSAN Crossings

Along the LOSSAN rail corridor, the PWP/TREP includes new grade separations that would improve public access to coastal and inland recreation areas for automobiles, pedestrians, and bicycles at major intersections. Grade separations would reduce conflicts between pedestrians, bicycles, and motor vehicles along the rail corridor, which would increase coastal access opportunities as well as the safety of several modes of travel without impairing the speed or the unique travel experience available along the coastal rail corridor. Where possible, these improvements will be constructed concurrently with adjacent track projects to minimize construction impacts. The planned crossing improvements exclusively for bicycles and pedestrians are:

- **Coast to Crest Trail Crossing (Del Mar):** Construct a pedestrian crossing of the LOSSAN rail corridor at the western end of the Coast to Crest Trail, a 55-mile east-west recreational corridor connecting Del Mar with Volcan Mountain near Julian. The partially completed trail is a major feature of the San Dieguito River Park, but it has several gaps, including the lack of a facility for hikers to cross the LOSSAN rail corridor to reach the coast. As part of the PWP/TREP program of

improvements, this essential link would be completed, enhancing safety as well as facilitating coastal access between upland recreation areas and the shoreline. This project is also designated as Community Enhancement DM#1 and is included in the list of Community Enhancements later in the section. It does not yet have funding identified.

- **Hillcrest Drive Pedestrian Undercrossing (Encinitas):** Construct a new grade-separated crossing of the LOSSAN corridor at Hillcrest Drive in Encinitas; unlike the planned grade separation at Leucadia Boulevard, this crossing would be for pedestrians and bicycles only. This project would provide a much-needed access route between residential areas and the beach, as Hillcrest Drive is located in the middle of a 1.3-mile stretch of the rail corridor (between Leucadia Boulevard and La Costa Avenue) that contains no crossings. It would connect to the Coast Highway local bicycle and pedestrian routes, the California Coastal Trail, and the planned Coastal Rail Trail segments between Chesterfield Drive and La Costa Avenue. This project would be part of a package of four grade-separated pedestrian crossings being constructed in Encinitas along the LOSSAN corridor, with the other three permitted prior to the PWP/TREP.
- **Chestnut Avenue LOSSAN Crossing (Carlsbad):** Construct a new grade-separated crossing of the LOSSAN rail corridor at Chestnut Avenue in Carlsbad. Similar to the Hillcrest Drive crossing in Encinitas, this crossing would provide a new access route from the residential areas and parks east of the LOSSAN rail corridor to the beach. It would connect to the Coastal Rail Trail (both existing and planned segments), the bicycle and pedestrian routes on Coast Highway, and the California Coastal Trail. This project is also designated as Community Enhancement CB#6 and is included in the list of Community Enhancements later in the section. It does not yet have funding identified.
- **Harbor Drive LOSSAN Crossing Bicycle/Pedestrian Improvements (Oceanside):** Improve the existing undercrossing of the LOSSAN rail corridor located north of the San Luis Rey River at the west end of the Harbor Drive parking lot. This project would provide bicycle and pedestrian access to coastal resources via an undercrossing that currently accommodates automobiles only. In conjunction with the proposed pedestrian improvements under I-5 north of the San Luis Rey River (Community Enhancement OC#8, described below), this project would provide a connection between the residential areas east of I-5 and the coast. This project is also designated as Community Enhancement OC#12 and is included in the list of Community Enhancements later in the section. It does not yet have funding identified.

In addition to these exclusive crossings for bicycles and pedestrians, three additional grade-separated crossings of the LOSSAN rail corridor are planned at local roadways that will include bicycle and pedestrian improvements:

- **Leucadia Boulevard Grade Separation (Encinitas):** Construct a new grade-separated crossing of the LOSSAN rail corridor at Leucadia Boulevard in Encinitas, to be used by bicycles and pedestrians as well as motorized traffic. This crossing would facilitate safer access to coastal resources, including Leucadia State Beach, for the residential neighborhoods east of the rail corridor; the current crossing is at-grade and contains incomplete sidewalks and no bicycle facilities. In addition, it would provide the first grade-separated crossing in the 2.7-mile stretch of track between Encinitas Station and La Costa Avenue. The new crossing would connect to the Class II bicycle lanes on Leucadia Boulevard, the Coast Highway local bicycle and pedestrian routes, the California Coastal Trail, and the planned Coastal Rail Trail segments between Chesterfield Drive and La Costa Avenue.
- **Two Additional Roadway Grade Separations:** Two additional grade separations between surface streets and the LOSSAN rail corridor are planned in the SANDAG 2050 RTP. The locations

of these grade separations have yet to be determined. (As discussed in Chapter 6A, additional project review would be required once more project details become available.)

Planned Improvements: I-5 Local Road and Trail Crossings

Beneficial impacts to coastal access and recreation would also result from highway improvements. Local roads cross I-5 at 32 locations within the NCC, in addition to the San Luis Rey River Trail crossing in Oceanside. Many of these crossings have substandard or incomplete bicycle and pedestrian facilities that inhibit safe crossing of the freeway by non-motorized modes. As overcrossings are rebuilt and undercrossings are widened to accommodate additional lanes on I-5, pedestrian and bicycle facilities will be upgraded. These improvements would address travel-user separations to provide a safer and more comfortable travel environment for pedestrians and bicyclists. Additionally, the majority of the sweeping, “free right” turns for autos that currently exist at I-5 on-ramps will be eliminated and replaced by 90-degree turns with safety signals for bicycles and pedestrians.

These improvements would further encourage the use of bicycle and pedestrian modes between inland and coastal areas, and in many instances, would provide connections to regional corridors and Class I and Class II bicycle facilities.¹⁶ Table 5.3-1 summarizes the planned improvements at I-5 crossings. Specific details on the scope of each crossing project can be found in Chapter 4.

For bicyclists, new Class II lanes are planned for the following highway crossings (projects marked with asterisks [*] are coordinated with adjacent community enhancement projects):

- Voigt Drive Overcrossing (San Diego)
- Via De La Valle Undercrossing (San Diego)
- Manchester Avenue Undercrossing (Encinitas) (part of San Elijo Lagoon bridge replacement)
- MacKinnon Avenue Overcrossing (Encinitas)*
- Santa Fe Drive Undercrossing (Encinitas)
- Leucadia Boulevard Overcrossing (Encinitas)
- Palomar Airport Road Overcrossing (Carlsbad)
- Tamarack Avenue Overcrossing (Carlsbad)
- Chestnut Avenue Undercrossing (Carlsbad)*
- Carlsbad Village Drive Undercrossing (Carlsbad)
- Jefferson Street Overcrossing (Carlsbad)
- California Street Overcrossing (Oceanside)*
- Mission Avenue Overcrossing (Oceanside)*
- Harbor Drive/Camp Pendleton Undercrossing (Oceanside)*

In addition, pedestrian improvements are planned for the following highway crossings (projects marked with asterisks [*] are coordinated with adjacent community enhancement projects):

- Voigt Drive Overcrossing (San Diego)
- Del Mar Heights Road Overcrossing (San Diego)
- Via De La Valle Undercrossing (San Diego)

¹⁶ SANDAG's *Draft San Diego Regional Bicycle Plan* (March 2010) defines Class I bikeways as “Bike Paths,” which are physically separated from vehicular traffic, and Class II bikeways as “Bike Lanes,” which include pavement markings and signage used to allocate a portion of the roadway for exclusive or preferential bicycle travel. Class III bikeways are local roads marked with signs and/or arrows for shared use between bicycles and automobiles.

- Manchester Avenue Undercrossing (Encinitas) (part of San Elijo Lagoon bridge replacement)
- Birmingham Drive Overcrossing (Encinitas)
- MacKinnon Avenue Overcrossing (Encinitas)*
- Santa Fe Drive Undercrossing (Encinitas)
- Requeza Street Overcrossing (Encinitas)*
- Leucadia Boulevard Overcrossing (Encinitas)
- La Costa Avenue Overcrossing (Carlsbad)*
- Poinsettia Lane Overcrossing (Carlsbad)
- Palomar Airport Road Overcrossing (Carlsbad)
- Chinquapin Avenue Overcrossing (Carlsbad)
- Tamarack Avenue Overcrossing (Carlsbad)
- Chestnut Avenue Undercrossing (Carlsbad)
- Carlsbad Village Drive Undercrossing (Carlsbad)
- Las Flores Drive Overcrossing (Carlsbad)
- Jefferson Street Overcrossing (Carlsbad)
- Cassidy Street Overcrossing (Oceanside)
- California Street Overcrossing (Oceanside)*
- Brooks/Division Street Overcrossing (Oceanside)*
- Mission Avenue Overcrossing (Oceanside)*
- Fourth Street/Bush Street Overcrossing (Oceanside)*
- Neptune Way/8th Street Overcrossing (Oceanside)
- Oceanside Boulevard Undercrossing (Oceanside)*
- Harbor Drive/Camp Pendleton Undercrossing (Oceanside)*

TABLE 5.3-1: PEDESTRIAN AND BICYCLE IMPROVEMENTS ACROSS I-5

Facility Type	Existing Facilities	Future Facilities
Pedestrian Facilities		
No sidewalk	3	0
6-foot sidewalk or smaller	29	4
7- to 9-foot sidewalk	0	1
10-foot sidewalk or larger	1	27
Bicycle Facilities		
Class III/Shared Use	24	9
Class II	7	21
Class I	2	2

Planned Improvements: Community Enhancements

In addition to the North Coast Bike Trail, Coastal Rail Trail, and corridor crossing improvements, the PWP/TREP also includes community enhancement project concepts that, if implemented, would substantially benefit the corridor's pedestrian, bicycle, and recreational uses. The proposed community enhancement projects were identified and developed in close collaboration with affected communities

through coordinating project-development team meetings, developing preliminary design concepts, meeting with city officials and community stakeholders, and hosting community workshops. Pursuant to a cooperative agreement between Caltrans and the affected cities, Caltrans and SANDAG would construct the community enhancement projects throughout the NCC as part of highway and rail construction, and maintenance agreements would be organized with each city that allow future maintenance to become the responsibility of the local jurisdiction.

Generally, community enhancement projects consist of developing and/or enhancing pedestrian and bicycle facilities, community parks and open space buffers, interpretive facilities at lagoons, wetland restoration, enhanced view corridors, and improved scenic vista points within the six affected cities. These improvements would substantially enhance recreational opportunities in the corridor, while improving travel choices, by creating and completing linkages between communities, inland and coastal areas, and access opportunities to the corridor's regionally significant natural resource and recreation areas.

In addition, parcels that are purchased for highway widening (but not required for use as permanent state right-of-way) could be considered for community pocket parks or public open space at the request of the local jurisdictions. The package of community enhancement projects included in the PWP/TREP, which were selected through a collaborative effort between Caltrans and the corridor cities, include several such sites. The PWP/TREP also includes a Resource Enhancement and Mitigation Program, discussed in more detail in Sections 5.4 and 5.5 and Chapter 6B, which involves acquisition and habitat creation and enhancement of properties in the corridor that would be maintained as natural open space areas, thereby enhancing resources that would be accessible from travelers in the corridor and from surrounding areas.

As described in Implementation Measure 5.3.3 (Section 5.3.3.4), additional community enhancement projects may be incorporated into the PWP/TREP, if requested by the local government and in consultation with Caltrans/SANDAG, the Coastal Commission, and other affected agencies and stakeholders. Proposed projects must meet the four criteria listed in Implementation Measure 5.3.3, and initially projects may not have funding identified. With a fixed amount of highway-related funds available for community enhancements, one of the most important parts the collaborative process between Caltrans, SANDAG, and the corridor cities has been the prioritization of projects. While the vast majority of community enhancements projects do fall within funding limits, the unconstrained list of projects exceeds currently available resources. As future funding sources are identified, these unfunded projects—which currently include projects DM#1 and OC#12, listed below—will be ready to advance.

Community Enhancements: City of San Diego (Figure 5.3-1A and Figure 5.3-1B)

- **SD#2A Carmel Valley Bicycle/Pedestrian Enhanced Trail Connection:** Construct a Class I undercrossing just south of Carmel Valley Road, connecting Old Sorrento Valley Road (project SD#2C) to the existing SR 56 bicycle path. This would provide access to Los Peñasquitos Lagoon, the nearby coast, and the proposed Carmel Valley Park-and-Ride trailhead (project SD#2B). It would also allow bicyclists to cross the highway in a Class I facility, without having to ride on either Carmel Valley Road or El Camino Real. Finally, the enhancement would create links between several regional and local trail systems, including the Coastal Rail Trail, the Sea-to-Sea Trail (connecting the Salton Sea to the Pacific Ocean), and the existing local bicycle routes along El Camino Real and Carmel Valley Road).
- **SD#2B Enhanced Park-and-Ride at Carmel Valley Road:** Improve the existing park-and-ride facility on the west side of I-5 to include an improved trailhead, pedestrian amenities, enhanced

landscaping including a native plant visual buffer between the trail and parking areas, and a scenic overlook at Los Peñasquitos Lagoon. This would connect to the proposed highway undercrossing (project SD#2A) as well as the proposed Old Sorrento Valley Road trail improvements (project SD#2C), which would be a shared facility for both the Coastal Rail Trail and I-5 North Coast Bike Trail.

- **SD#2C Old Sorrento Valley Road Bicycle/Pedestrian Enhanced Trail Connections from Carmel Valley Road to Carmel Mountain Road:** Construct a Class I bicycle and pedestrian facility from Carmel Valley Road/SR 56 to Carmel Mountain Road parallel to I-5, to include interpretive overlooks and trail information stations. In conjunction with projects SD#2A and SD#2B, this enhancement would provide improved connections to existing bicycle and trail systems that lead to both coastal and upland recreation areas and activity centers. Both the Coastal Rail Trail and the I-5 North Coast Bike Trail would share the facility, providing corridor-length mobility for bicycles and pedestrians.
- **SD#3 Bicycle/Pedestrian Enhanced Trail and Bridge on the West Side of I-5 at San Dieguito Lagoon:** Construct a new Class I bicycle and pedestrian facility adjacent to the highway over San Dieguito Lagoon, in conjunction with the highway bridge construction. This would provide a new route for bicycles and pedestrians through San Dieguito Lagoon as well as new connectivity between northern San Diego and the cities of Solana Beach and Del Mar. The I-5 North Coast Bike Trail would share the facility, providing corridor-length mobility for bicycles and pedestrians.
- **SD#4 Pedestrian Overpass Connection North of Del Mar Heights Road:** Construct a new bicycle and pedestrian bridge over I-5 north of Del Mar Heights Road. The bridge would link two adjacent but divided neighborhoods and provide improved access routes to two schools as well as coastal and recreational resources. It would also connect to the proposed I-5 North Coast Bike Trail, providing corridor-length mobility for bicycles and pedestrians.

Community Enhancement: City of Del Mar (Figure 5.3-1B)

- **DM#1 Coast to Crest Trail LOSSAN Crossing:** Construct a pedestrian crossing of the LOSSAN rail corridor at the western end of the Coast to Crest Trail, a 55-mile east-west recreational corridor connecting Del Mar with Volcan Mountain near Julian. As described previously, the partially completed trail is a major feature of the San Dieguito River Park, but it has several gaps, including the lack of a facility for hikers to cross the LOSSAN rail corridor to reach the coast. As part of the PWP/TREP program of improvements—possibly in conjunction with the adjacent San Dieguito Double Track and Platform project (Section 4.1.1)—this essential link would be completed, enhancing safety as well as facilitating coastal access between upland recreation areas and the shoreline. This project does not currently have identified funding.

Community Enhancements: City of Solana Beach (Figure 5.3-1B)

- **SB#1 Streetscape Enhancements on Ida Avenue:** Construct streetscape enhancements including sidewalks, curbs, and landscaping along Ida Avenue from Academy Drive to south of Genevieve Street. This would provide for safer pedestrian and bicycle circulation in the surrounding community of Eden Gardens. The improvements would be consistent with the Eden Gardens Master Plan and Master Streetscape Plan, thus preserving the unique character of the historic neighborhood.
- **SB#2 Pedestrian Trailhead at Solana Hills Drive:** Construct street improvements along the northern end of Solana Hills Drive, including a new trailhead and parking at the south entrance to San Elijo Lagoon Ecological Reserve. This would provide greater access to the San Elijo Lagoon recreational facilities for bicycles and pedestrians, including those who wish to drive from farther destinations in order to utilize the reserve's many trails and recreational facilities. The I-5 North

Coast Bike Trail would also share this facility, providing corridor-length mobility for bicycles and pedestrians.

- **SB#3 Gateway Open Space Preservation Site:** Contribute to the purchase of the Gateway parcel by the San Elijo Lagoon Conservancy. The 3.2-acre site, immediately adjacent to San Elijo Lagoon and Cardiff State Beach, will be preserved as open space.

Community Enhancements: City of Encinitas (Figure 5.3-1B and Figure 5.3-1C)

- **EN#1 Bicycle/Pedestrian Enhanced Trail on Both Sides of I-5 at San Elijo Lagoon With Bridge Connection to Manchester Avenue:** Construct new trails and associated sidewalks along the south side of Manchester Avenue, across San Elijo Lagoon under the I-5 bridge structure, and on the south side of the lagoon adjacent to the planned bridge replacement. This would provide important linkages between several heavily used trail segments that exist around the lagoon, which are discontinuous due to the barriers presented by both the lagoon and the highway. The I-5 North Coast Bike Trail would share this facility at the lagoon crossing, providing corridor-length mobility for bicycles and pedestrians. The planned improvements, which are consistent with the city's general plan, would create a unified and effective trail system around this important natural resource. The improvement would also provide connections to the existing Class II bicycle lanes on Manchester Avenue that extend in both directions, providing further links to the Coastal Rail Trail, Cardiff State Beach, LOSSAN rail services, and many inland activity centers.
- **EN#2A Park & Ride Enhancements at Birmingham Drive:** Improve the existing park-and-ride facility to include new parking spaces and a trailhead for the proposed trail along Villa Cardiff Drive (project EN#2B). This would provide new bicycle and pedestrian access routes to the park-and-ride facility, promoting non-motorized travel in the corridor. It would also connect to the I-5 North Coast Bike Trail via the Villa Cardiff Drive trail.
- **EN#2B Villa Cardiff Drive and MacKinnon Bridge Enhancements:** Construct new sidewalks, trails, and landscaping along Villa Cardiff Drive and the rebuilt MacKinnon Avenue overcrossing. This would connect the residential areas east of I-5 to the Hall Property Park on the west side the highway, as well as provide a bicycle and pedestrian link to the proposed park-and-ride facility at Birmingham Drive (project EN#2A). It would also connect to the I-5 North Coast Bike Trail, which would share the MacKinnon Avenue overcrossing and provide corridor-length mobility for bicycles and pedestrians.
- **EN#3 Hall Property Park Trail Connecting to Santa Fe Drive:** Construct a new trail on the west side of I-5 from Santa Fe Drive to the Hall Property Park. This would provide bicycle and pedestrian access to the park from Santa Fe Drive, connecting to the existing Class II bicycle lanes that extend west from the highway to the coast. These existing lanes provide access to the Coastal Rail Trail, the California Coastal Trail, and rail services at Encinitas Station. This project would also connect to the I-5 North Coast Bike Trail via the improved undercrossing at Santa Fe Drive, providing corridor-length mobility for bicycles and pedestrians.
- **EN#4 Trail Connecting Santa Fe Drive to Requeza Street with Wetland Revegetation:** Construct a trail connecting Santa Fe Drive to Requeza Street, including improved drainage and wetland vegetation restoration. In conjunction with the Hall Property Park Trail (project EN#3), the improved undercrossing at Santa Fe Drive, and the proposed trail leading from Requeza Street north to Encinitas Boulevard (project EN#5B), this project would provide a continuous bicycle and pedestrian facility between Encinitas Boulevard and the new Hall Property Park. The I-5 North Coast Bike Trail would also share the facility, providing corridor-length mobility for bicycles and pedestrians.

- **EN#5A Encinitas Boulevard Bicycle/Pedestrian Enhancements:** Construct new 10-foot sidewalks on both sides of the Encinitas Boulevard undercrossing and maintain the existing Class II bicycle lanes. This project would improve pedestrian access across the highway, providing safer connections between the proposed trails on the east side of the I-5 (projects EN#4 and EN#5B), the I-5 North Coast Bike Trail, Cottonwood Creek Park, COASTER's Encinitas Station, and coastal resources including Moonlight State Beach. This segment of Encinitas Boulevard also constitutes the western end of the Encinitas-San Marcos Regional Bicycle Corridor, which continues inland approximately 13 miles to the City of San Marcos.
- **EN#5B Trail Connecting Requeza Street to Encinitas Boulevard:** Construct a new trail along the east side of I-5 connecting Requeza Street with Encinitas Boulevard. In conjunction with the Hall Property Park Trail (project EN#3), the rebuilt overcrossing at Santa Fe Drive, and the proposed trail leading from Santa Fe Drive north to Requeza Street (project EN#4), this project would provide a continuous bicycle and pedestrian facility between Encinitas Boulevard and the new Hall Property Park. The I-5 North Coast Bike Trail would also share the facility, providing corridor-length mobility for bicycles and pedestrians. Finally, this project would connect to the existing Class II bicycle lanes on Encinitas Boulevard, which comprise the western end of the 13-mile Encinitas-San Marcos Regional Bicycle Corridor.
- **EN#6A Union Street Pedestrian Overpass:** Construct a new pedestrian and bicycle crossing over I-5, along with a new park on the west side of the bridge in a parcel owned by the City of Encinitas. The I-5 North Coast Bike Trail would share the facility, providing corridor-length mobility for bicycles and pedestrians. At its western end, this project would connect to the proposed recreational trail leading to Cottonwood Creek Park (project EN#6B), which would then connect to an existing local trail leading to Encinitas Boulevard; this would provide a new bicycle and pedestrian route across the highway to Encinitas Station, the Coastal Rail Trail, the Encinitas-San Marcos Regional Bicycle Corridor, and coastal resources including Moonlight State Beach.
- **EN#6B Cottonwood Creek Park to Union Street Trail Connection with Wetland Revegetation:** Construct a new trail connecting Cottonwood Creek Park to Union Street on the west side of I-5. This project would connect the proposed new overcrossing at Union Street (project EN#6A) to the existing City of Encinitas recreational trail leading to Encinitas Boulevard, creating a new bicycle and pedestrian route across the highway to Encinitas Station, several regional bicycle and pedestrian routes, and coastal resources. On the northern end, the project would also connect to the I-5 North Coast Bike Trail at Union Street, which would provide corridor-length mobility for bicycles and pedestrians.

Community Enhancements: City of Carlsbad (Figure 5.3-1C, Figure 5.3-1D, and Figure 5.3-1E)

- **CB#1A Bicycle/Pedestrian Enhanced Trail and Bridge on West Side of Batiquitos Lagoon:** Construct a trail along the west side of I-5 from La Costa Avenue to Avenida Encinas, crossing Batiquitos Lagoon as a suspended facility under the I-5 bridge structure (similar to projects EN#1 and CB#3). This would provide a new route for bicycles and pedestrians to cross the lagoon, and in conjunction with the proposed connection to the lagoon's eastern trails (project CB#2), would create a full loop for pedestrians around the lagoon. The I-5 North Coast Bike Trail would share the facility, providing corridor-length mobility for bicycles and pedestrians. At its southern end, the project would also connect to the existing Class II bicycle facility at La Costa Avenue. At the northern end, it would merge with the Class II facilities of the Coastal Rail Trail along Avenida Encinas, which feature direct routes to COASTER's Poinsettia Station as well as South Carlsbad State Beach.
- **CB#1B Park-and-Ride Enhancement at La Costa Avenue:** Improve the existing park-and-ride facility to include new parking spaces and landscaping. By connecting to the existing Class II

bicycle route at La Costa Avenue as well as the proposed Batiquitos Lagoon crossing (project CB#1A) and I-5 North Coast Bike Trail, this project would provide improved bicycle and pedestrian access to the park-and-ride facility, promoting non-motorized travel in the corridor.

- **CB#2 Trail on Northeast Side of I-5 at Batiquitos Lagoon:** Construct a trail connection between the proposed lagoon crossing (project CB#1A) and the existing trail on the east side of I-5. In conjunction with the proposed lagoon crossing, this project would complete a full loop for pedestrians around Batiquitos Lagoon. It would also connect to the previously approved Rosalena Trail, to be located along the northwest perimeter of the lagoon atop the lagoon bluffs. Finally, the planned trail would also connect to the I-5 North Coast Bike Trail, providing corridor-length mobility for bicycles and pedestrians.
- **CB#3 Bicycle/Pedestrian Enhanced Trail and Bridge on East Side of I-5 at Agua Hedionda Lagoon:** Construct a trail along the east side of I-5 crossing Agua Hedionda Lagoon as a suspended facility under the I-5 bridge structure (similar to projects EN#1 and CB#1A). The project would also include an east-west crossing under the highway, connecting to existing lagoon trails and the planned Coastal Rail Trail segment from Cannon Road to Tamarack Avenue (described previously). The I-5 North Coast Bike Trail would share the facility, providing corridor-length mobility for bicycles and pedestrians.
- **CB#5 Chestnut Avenue I-5 Crossing Bicycle/Pedestrian Improvements:** Construct new Class II bicycle lanes and widen sidewalks in both directions. Currently there are no bicycle lanes and only narrow sidewalks at this undercrossing, which is heavily used by local residents to reach Holiday Park, immediately east of the highway. The improvements would provide continuity with the existing Class II bike lanes that proceed east on Chestnut Avenue, as well as the adjacent Class II lanes located to the west of the interchange on Harding Street.
- **CB#6 Chestnut Avenue LOSSAN Crossing:** Construct a new grade-separated crossing of the LOSSAN rail corridor for bicycles and pedestrians at Chestnut Avenue in Carlsbad. As described previously, this crossing would provide a new access route from the residential areas and parks east of the LOSSAN rail corridor to the beach. It would connect to the Coastal Rail Trail (both existing and planned segments), the bicycle and pedestrian routes on Coast Highway, and the California Coastal Trail. This project does not currently have identified funding.

Community Enhancements: City of Oceanside (Figure 5.3-1E)

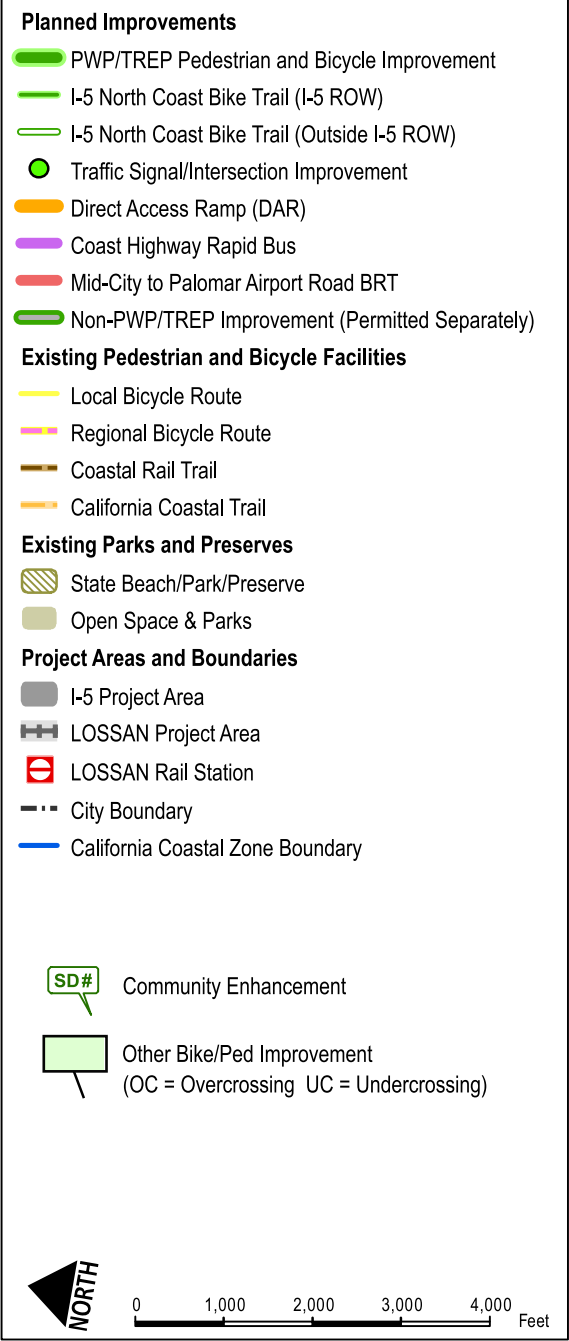
- **OC#1 Pocket Park and Pedestrian Path at California Street:** Construct new Class II bicycle lanes and 17-foot sidewalks at the replaced California Street overcrossing, to include landscaping elements and a pocket park at Moreno Way. The project would also enhance pedestrian crossings at the intersection of California and Moreno Street, as well as the intersections of Soto Street with California and Valencia Streets. This project would provide a safer route for pedestrians and bicycles to cross the I-5, connecting several residential neighborhoods, schools, and activity centers on both sides of the highway. The Class II bicycle lanes would connect to existing Class III facilities on California Street in both directions, with the western route connecting to the Coastal Rail Trail and other coastal resources.
- **OC#2 Oceanside Boulevard Pedestrian Streetscape Enhancement:** Construct widened sidewalks and landscaping at the Oceanside Boulevard undercrossing, as well as enhanced safety fencing at the adjacent SPRINTER rail right-of-way. Existing Class II bicycle lanes, which are part of the regional Oceanside-Escondido Inland Rail Trail, would be maintained. This project would provide improved pedestrian safety at the highway crossing, which is within 1 mile of two SPRINTER light rail stations—the Coastal Rail Trail and the California Coastal Trail—and several activity centers.

- **OC#3 Division Street Bicycle/Pedestrian Enhancements:** Construct new 17-foot sidewalks on each side of the rebuilt overcrossing, as well as widened sidewalks on Brooks Street east of the highway. Existing Class III bicycle facilities would be maintained. This project would provide a safer connection between the residential neighborhood west of the highway—which includes Oceanside High School—to Ron Ortega Recreation Park and other significant activity centers to the east.
- **OC#4 Mission Avenue Bicycle/Pedestrian Enhancements:** Construct new widened sidewalks and Class II bicycle lanes at the replaced overcrossing, including realignment of the highway on- and off-ramps to allow for signalized pedestrian crossings. This project would provide safer access for bicyclists and pedestrians crossing the highway to access downtown Oceanside, Oceanside High School, Oceanside Station (COASTER, SPRINTER, Metrolink and Amtrak), and coastal resources. The new bicycle lanes would connect to the existing Class II bicycle lanes that extend east on Mission Avenue; to the west, the City of Oceanside is preparing to realign Mission Avenue to include enhanced bicycle and pedestrian facilities as well.
- **OC#5 Bush Street Bicycle/Pedestrian Enhancements and Community Gardens:** Construct facilities to connect the existing community gardens at Civic Center Drive and North Weitzel Street (west of I-5) with new community garden plots to the east of I-5. The project would also construct a paved trail and linear park from the east side of the overcrossing to Buena Street, and construct wider sidewalks on Buena and Santa Barbara Streets. In conjunction with the Bush Street overcrossing replacement, this project would provide improved pedestrian and bicycle access across I-5, connecting existing and new community gardens as well as residential neighborhoods on both sides of the highway.
- **OC#6 Community Open Space Park and/or Community Gardens:** Construct a 0.285-acre community open space park and/or community gardens adjacent to the Family Recovery Center on Horne Street. Park design would be determined through other processes and community input but could include meandering paths, water features, detailed native plantings and public artwork. This project would provide a new recreational area for nearby residents as well as clients and staff of the Family Recovery Center.
- **OC#7 SR 76 Underpass: New Parking and Trailhead:** Construct a new parking area and trailhead east of the highway at the SR 76 interchange, including the removal of an obsolete highway ramp. This project would improve bicycle and pedestrian access to the San Luis Rey River Trail, which is a regional Class I facility along the river, whose watershed the County of San Diego has proposed to designate as a 1,700-acre regional park. Just west of this site, the trail crosses under I-5 in a tunnel (which is also planned for improvement) and connects with the Coastal Rail Trail, I-5 North Coast Bike Trail, and regional bicycle routes leading north to Camp Pendleton and Orange County. To the east, the trail continues along the river for approximately 7 miles, and then connects to other local bicycle and pedestrian facilities.
- **OC#8 Pedestrian Underpass Improvements North of San Luis Rey River:** Improve the existing sidewalk under I-5 north of the San Luis Rey River to include new ramps, lighting, and landscaping. The existing crossing is isolated, poorly lighted, and not in compliance with Americans with Disabilities Act requirements. The planned improvements would provide pedestrians—particularly those living in the residential neighborhoods east of the highway—with a safer access route to cross the highway and reach coastal resources.
- **OC#10 Harbor Drive/Camp Pendleton Bicycle and Pedestrian Enhancements:** Construct new Class II bicycle lanes and widen the existing eastbound sidewalk to 8 feet. This would provide safer means for bicycles and pedestrians to cross the highway, providing access to Oceanside Harbor, the San Luis Rey River Trail and recreation area, and the regional bicycle route extends north to

Camp Pendleton and Orange County. The I-5 North Coast Bike Trail also would share the facility, providing corridor-length mobility for bicycles and pedestrians.

- **OC#12 Harbor Drive LOSSAN Crossing Bicycle/Pedestrian Improvements:** Improve the existing undercrossing of the LOSSAN rail corridor located north of the San Luis Rey River at the west end of the Harbor Drive parking lot. This project would provide bicycle and pedestrian access to coastal resources via an undercrossing that currently accommodates automobiles only. In conjunction with the proposed pedestrian improvements under I-5 north of the San Luis Rey River (project OC#8), this project would provide a connection between the residential areas east of I-5 and the coast. This project does not currently have identified funding.

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DATA SOURCES: Planned Improvements (Caltrans 2012); Existing Pedestrian and Bicycle Facilities, Existing Parks and Preserves (SANDAG 2012); Imagery (Bing Maps 2012); California Coastal Commission Local Jurisdictions, SanGIS

The Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map are for planning and engineering study purposes only. Data are derived from multiple sources. The digital Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map have not been adopted by the Coastal Commission, and do not supersede the official versions certified by the Coastal Commission as may be amended from time to time. Disclaimer: The State of California makes no representations or warranties regarding the accuracy or completeness of the files or the data from which they were derived. The State shall not be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of these Coastal Zone boundary, jurisdiction and Local Coastal Program files or the data from which they were derived. Because the Coastal Zone boundary, jurisdiction and Local Coastal Program data files are merely representational, they and the data from which they were derived are not binding and may be revised at any time.

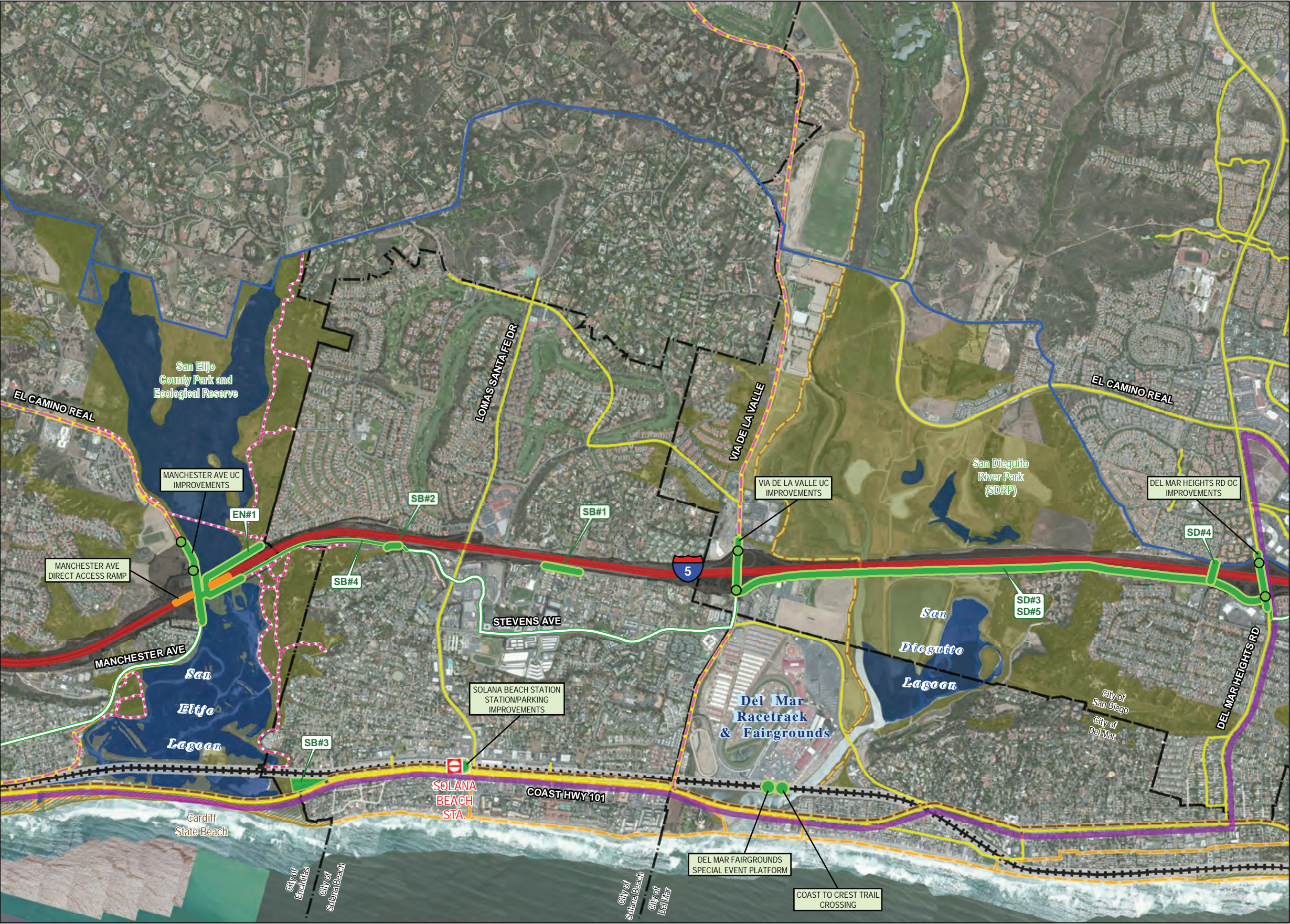
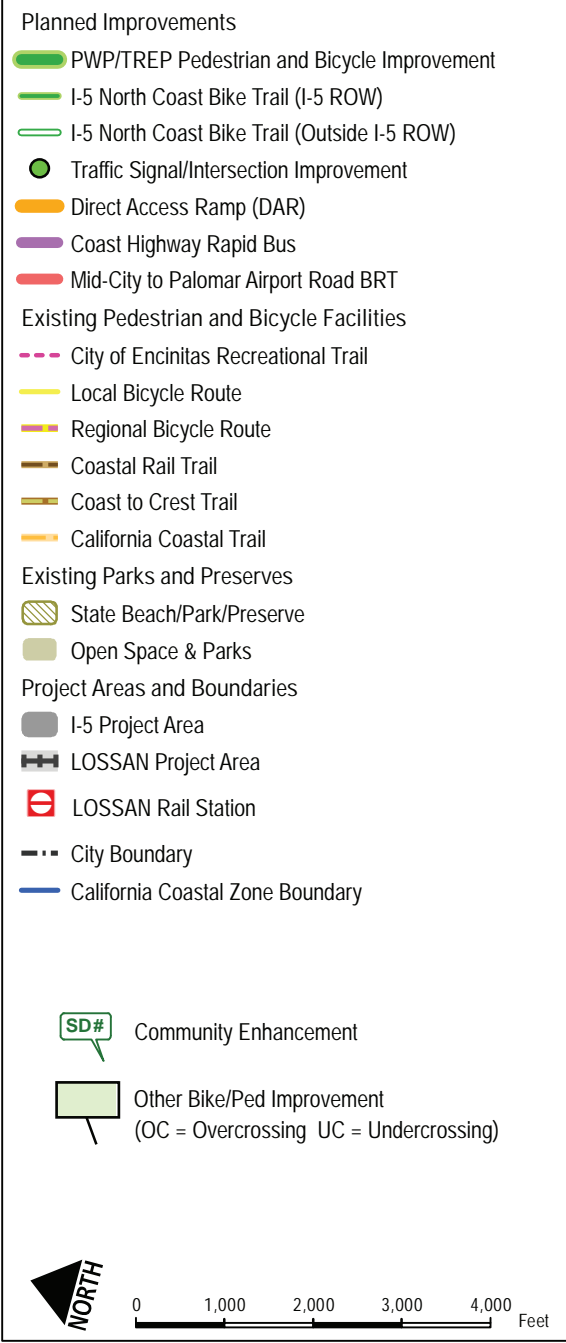
Planned Coastal Access Improvements (North San Diego and South Del Mar)

North Coast Corridor PWP/TREP

DRAFT: MARCH 2013

FIGURE 5.3-1A

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

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FIGURE 5.3-1C

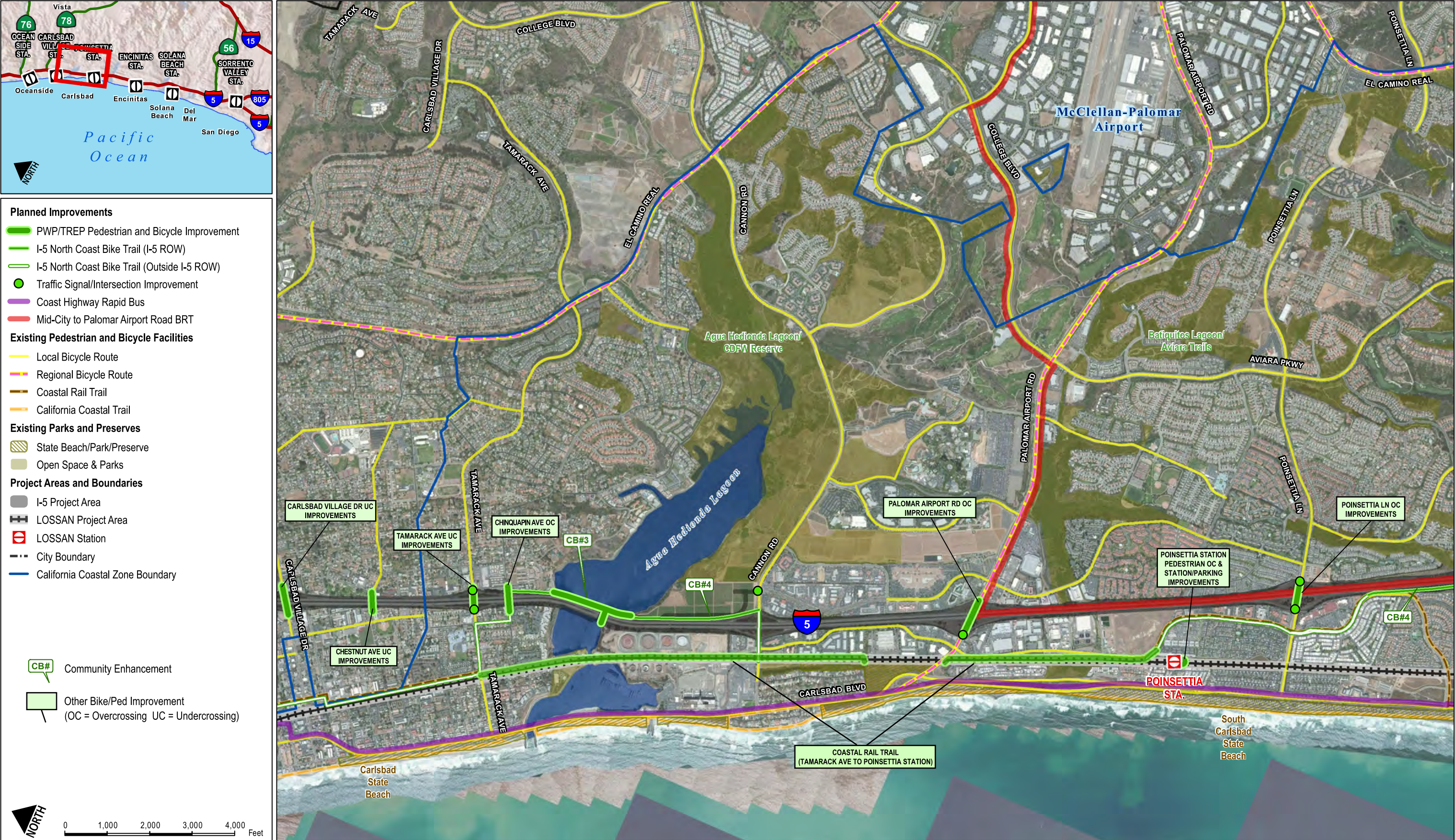
Planned Coastal Access Improvements (North Encinitas and South Carlsbad)

North Coast Corridor PWP/TREP

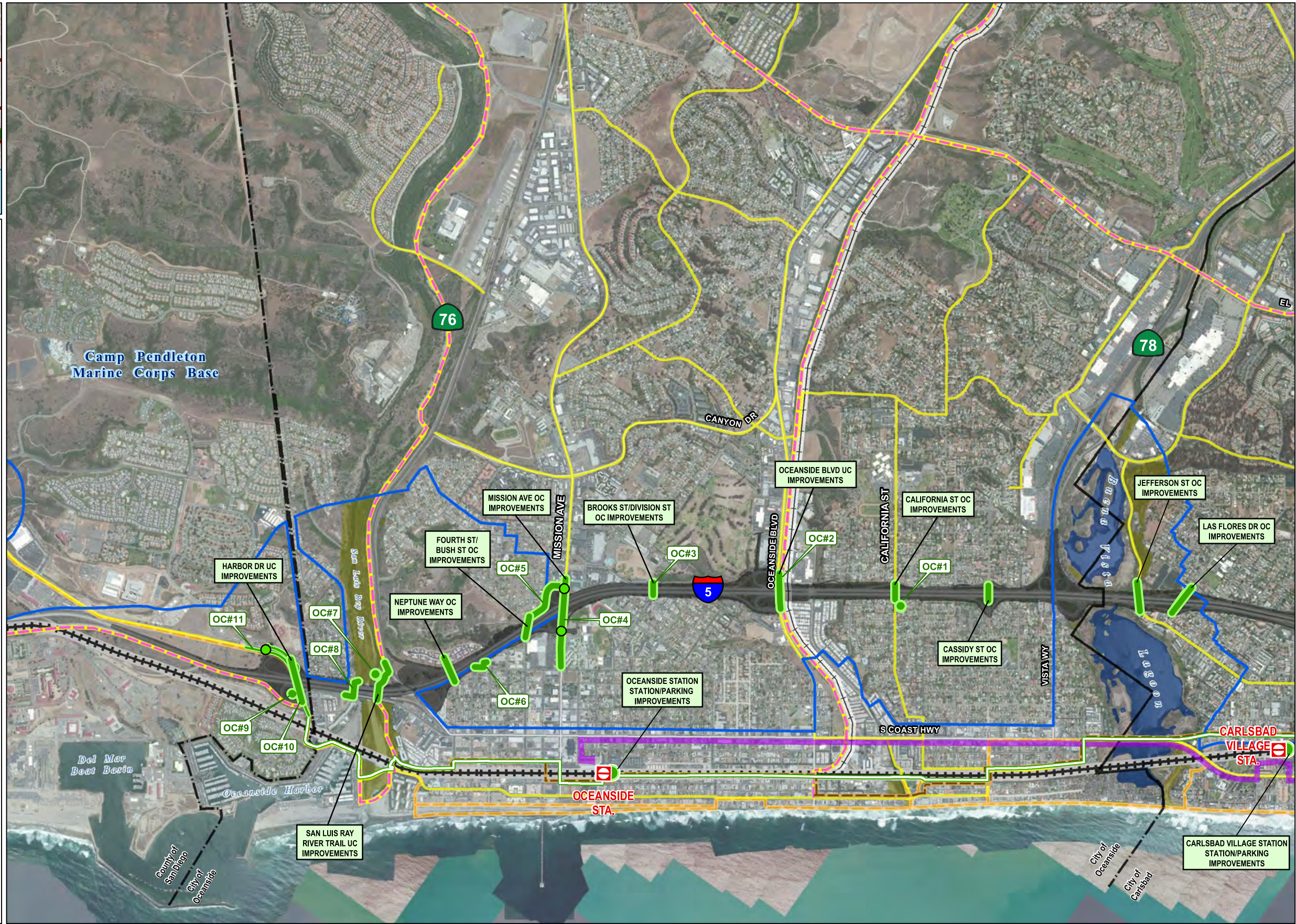
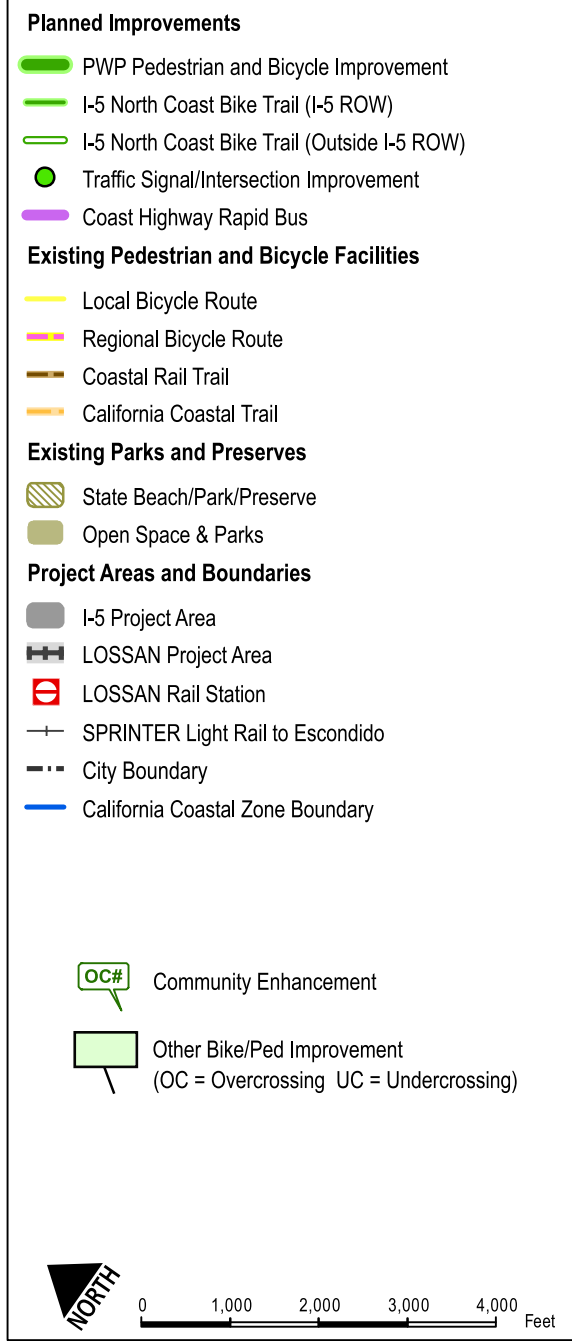
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DATA SOURCES: Planned Improvements (Caltrans 2012); Existing Pedestrian and Bicycle Facilities, Existing Parks and Preserves (SANDAG 2012); Imagery (Bing Maps 2012); California Coastal Commission, Local Jurisdictions, SanGIS

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FIGURE 5.3-1E
Planned Coastal Access Improvements (North Carlsbad and Oceanside)

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Coastal Access Improvements Permitted Separately from PWP/TREP

The regional commitment to improving coastal access in the NCC extends beyond the PWP/TREP, with many improvements being permitted separately. The following projects support the PWP/TREP goal of improving coastal and upland access and are already advancing through the stages of planning and delivery:

- **Genesee Avenue Overcrossing (San Diego):** Construct new sidewalks and Class II bicycle lanes, providing connections to existing local bicycle routes and the Sorrento Valley to Voigt Class I Bike Path.
- **Sorrento Valley to Voigt Class I Bike Path (San Diego):** Construct a new dedicated bicycle facility parallel to I-5, which would connect UCSD and Sorrento Valley Station, and eliminate the need for bicyclists to ride on the freeway shoulder. This project would share facilities with the I-5 North Coast Bike Trail.
- **Gilman Drive Overcrossing (San Diego):** Construct a new overcrossing of I-5 at Gilman Drive, to include new auto and bicycle lanes, providing improved access between the two major sides of the campus of the University of California, San Diego.
- **Montgomery Avenue Pedestrian Undercrossing (Encinitas):** Construct new pedestrian rail crossing, providing improved coastal access.
- **Santa Fe Drive Pedestrian Undercrossing (Encinitas):** Construct new pedestrian rail crossing, providing improved coastal access.
- **El Portal Street Pedestrian Undercrossing (Encinitas):** Construct new pedestrian rail crossing, providing improved coastal access.

Additionally, SANDAG and corridor cities are pursuing the completion of several other Coastal Rail Trail projects (beyond those included in the PWP/TREP) as part of the SANDAG Regional Bicycle Plan EAP. Adopted in September 2013, the EAP allocates funding to numerous bicycle and pedestrian projects of regional significance, including segments of the Coastal Rail Trail in the NCC that are unfinished or need additional improvements. Taken together, the PWP/TREP and EAP projects will nearly complete the Coastal Rail Trail throughout the NCC and the region. Notable NCC Coastal Rail Trail projects in the EAP include the following:

- **Del Mar to Sorrento via Carmel Valley (San Diego):** Improve the existing Coastal Rail Trail segment along Carmel Valley Road between the Del Mar city limit and I-5. This project will be adjacent to Community Enhancement SD#2C, which will also improve an existing Coastal Rail Trail segment.
- **Coastal Rail Trail Del Mar (Del Mar):** Improve the existing Coastal Rail Trail alignment through Del Mar to include improved striping and bike infrastructure.
- **Chesterfield Avenue to Solana Beach (Encinitas):** Improve the existing Coastal Rail Trail alignment in Encinitas from Chesterfield Avenue to the Solana Beach city limit, including the crossing of San Elijo Lagoon via Coast Highway. Improvements may include improved striping and bike infrastructure.
- **Palomar Airport Road to Cannon Road (Carlsbad):** Construct the planned Coastal Rail Trail segment between Palomar Airport Road and Cannon Road in Carlsbad to include the small segment outside the LOSSAN rail right-of-way that is not included in the PWP/TREP.
- **Oak Avenue to City Limit (Carlsbad):** Construct the planned Coastal Rail Trail segment in Carlsbad between Oak Avenue and the Oceanside city limit to include the crossing of Buena Vista Lagoon via Coast Highway.

- **Oceanside Boulevard to Wisconsin Avenue (Oceanside):** Construct the planned Coastal Rail Trail segment in Oceanside between Oceanside Boulevard and Wisconsin Avenue.
- **Loma Alta Marsh Bridge (Oceanside):** Construct a bridge crossing for the Coastal Rail Trail over Loma Alta Marsh in Oceanside.

5.3.3.2 PWP/TREP Policies

Caltrans and SANDAG would implement the following policy to ensure that proposed improvements are designed, implemented, and maintained to provide for maximum protection of public access to and along recreational resources.

Policy 5.3.1: Maximum public access to and along coastal and inland recreational resources in the PWP/TREP planning area shall be protected and enhanced, consistent with public safety and sensitive coastal resource needs.

5.3.3.3 PWP/TREP Design/Development Strategies

The following design and development strategies provide guidance for siting and designing specific PWP/TREP rail projects, and Caltrans/SANDAG shall utilize the following strategies for all projects subject to NOID procedures, consistent with the public access and recreation policies of PWP/TREP Policy 5.3.1, amended local coastal programs (LCPs), and the Coastal Act:

Project-level analysis for potential coastal access and recreation impacts of infrastructure improvements should confirm that proposed improvements will minimize, to the maximum extent feasible, substantial impacts to coastal access and recreation resources. Should project-level analysis find that previously unidentified permanent or temporary impacts to coastal access and recreational resources will result from proposed improvements, additional study of feasible avoidance and mitigation measures to ensure project consistency with applicable Coastal Act public access and recreation policies should be achieved during future, project-specific Federal Consistency review.

1. To ensure a balanced approach to multimodal transportation system improvements, PWP/TREP project implementation and phasing should be carried-out consistent with phasing procedures and requirements provided in Chapter 6A – Implementation, and all relevant procedures.
2. Submittals for individual highway, rail station and pedestrian crossings, community, and resource enhancement projects located within or directly adjacent to an existing public coastal access or recreation area (trail or parkland) should include a description of features included in the project and should detail the type and location of mitigation elements included in the project, which avoid and/or minimize potential temporary construction impacts to coastal access and recreation. Submittals for community enhancement projects should include a cooperative maintenance agreement with the affected city.
3. To the extent feasible, all new/improved rail and highway facility pedestrian crossings will be designed and constructed in compliance with the Americans with Disabilities Act.
4. Caltrans/SANDAG will conduct ongoing coordination with the affected local jurisdiction/s regarding project design for each specific development project. Public signage and educational materials will be provided for future public access and community enhancement projects, which will include public educational measures to ensure that users are aware of temporary impacts that may be present due to construction, and to identify new public access components that are completed as a part of the PWP/TREP.

5.3.3.4 Implementation Measures

Caltrans/SANDAG would utilize the following implementation measures for all projects subject to Notice of Impending Development (NOID) procedures:

- **Implementation Measure 5.3.1:** NOID submittals for individual highway, rail station and pedestrian crossings, transit and community enhancement projects should include a final construction schedule identifying dates for project construction which should be scheduled, to the maximum extent feasible, to avoid adverse effects on traffic flow on I-5 and local arterials by closure of no more than one lane in either direction of I-5 during peak travel hours.
- **Implementation Measure 5.3.2:** NOID submittals for individual highway, rail station and pedestrian crossings, transit and community enhancement projects should include a Demolition, Staging, Storage, Fueling, and Debris/Excess Graded Material Disposal Plan which should include provisions and requirements designed to ensure that public access pedestrian and bicycle trails and/or public recreation areas are not adversely affected by these elements of project activities, and that the footprint of disturbance associated with these activities is the minimum possible, in accordance with Caltrans' proposal. No fencing or other barriers except as specifically authorized pursuant to an approved NOID should be placed in a location that would limit public access to pedestrian or bicycle trails or other public recreation areas.
- **Implementation Measure 5.3.3:** Additional community enhancement projects may be incorporated into the PWP/TREP, if requested by the local government and in consultation with Caltrans/SANDAG, Coastal Commission, stakeholders and resource and regulatory agencies, as applicable, and assuming the project has been identified as meeting the following evaluation criteria:
 1. The project is located within or adjacent to the LOSSAN rail and/or I-5 highway right-of-way;
 2. The enhancement project will provide regionally significant community, public access and/ or coastal resource benefits;
 3. The project will not result in significant environmental impacts beyond the impacts identified and evaluated in the LOSSAN Program EIR/EIS, the I-5 North Coast Corridor EIR/EIS, and/or the NCC PWP/TREP;
 4. Funding is available to complete project planning, design, construction and maintenance of the enhancement.

Additional community enhancement projects may be incorporated into the PWP/TREP pursuant to 1) the applicable NOID and/or PWP amendment procedures outlined in Chapter 6A of the PWP/TREP, 2) the coastal development permit review process, and/or 3) the federal consistency certification process.

5.3.4 Coastal Act Consistency

The Coastal Act contains numerous policies that address protection and enhancement of public access and recreation opportunities.

Coastal Act Section 30210

In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Coastal Act Section 30211

Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

Coastal Act Section 30212

30212(a) provides that in new shoreline development projects, access to the shoreline and along the coast shall be provided except in specified circumstances, where:

(1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources.

(2) adequate access exists nearby, or,

(3) agriculture would be adversely affected. Dedicated access shall not be required to be opened to public use until a public agency or private association agrees to accept responsibility for maintenance and liability of the accessway.

Coastal Act Section 30212.5

Wherever appropriate and feasible, public facilities, including parking areas or facilities, shall be distributed throughout an area so as to mitigate against the impacts, social and otherwise, of overcrowding or overuse by the public of any single area.

Coastal Act Section 30213

Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.

Coastal Act Section 30214

(a) The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case including, but not limited to, the following:

(1) Topographic and geologic site characteristics.

(2) The capacity of the site to sustain use and at what level of intensity.

(3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area and the proximity of the access area to adjacent residential uses.

(4) The need to provide for the management of access areas so as to protect the privacy of adjacent property owners and to protect the aesthetic values of the area by providing for the collection of litter.

(b) It is the intent of the Legislature that the public access policies of this article be carried out in a reasonable manner that considers the equities and that balances the rights of the individual property owner with the public's constitutional right of access pursuant to Section 4 of Article X of the California Constitution. Nothing in this section or any amendment thereto shall be construed as a limitation on the rights guaranteed to the public under Section 4 of Article X of the California Constitution.

(c) In carrying out the public access policies of this article, the commission and any other responsible public agency shall consider and encourage the utilization of innovative access management techniques, including, but not limited to, agreements with private organizations which would minimize management costs and encourage the use of volunteer programs.

Coastal Act Section 30223

Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.

Coastal Act Section 30252

The location and amount of new development should maintain and enhance public access to the coast by (1) facilitating the provision or extension of transit service, (2) providing commercial facilities within or adjoining residential development or in other areas that will minimize the use of coastal access roads, (3) providing nonautomobile circulation within the development, (4) providing adequate parking facilities or providing substitute means of serving the development with public transportation, (5) assuring the potential for public transit for high intensity uses such as high-rise office buildings, and by (6) assuring that the recreational needs of new residents will not overload nearby coastal recreation areas by correlating the amount of development with local park acquisition and development plans with the provision of onsite recreational facilities to serve the new development.

Coastal Act Section 30254

New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the provisions of this division; provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with this division. Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal-dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreation, and visitor-serving land uses shall not be precluded by other development.

As planned and designed, the system of proposed PWP/TREP transportation improvements would result in inherent substantial benefits to coastal access and recreation. The proposed corridor design and development strategies ensure that coastal access and recreational resources would be considered in the planning and design for the corridor improvement projects so that maximum public access to and along coastal and inland recreational resources in the PWP/TREP corridor would be protected (and where feasible, enhanced), consistent with public safety and sensitive coastal resources needs. Implementation of the proposed improvements would significantly enhance public access to and along the coast and inland recreational resources; without the proposed project, coastal access is expected to continue to degrade because of projected population growth and constrained facilities, resulting in a substantial increase in congestion on the region's primary access corridor to the coast.

As the primary means for the public to reach shoreline access points and upland recreational destinations in the corridor, I-5 serves as the gateway to the entire San Diego coastal area and provides a unique scenic, recreational traveling experience. As travel demand in the I-5 highway corridor continues to increase, so does the existing coastal access impediment of traffic congestion. Proposed PWP/TREP improvements focusing on Express Lanes would give priority to ride-sharing and public transit (and when capacity allows, SOVs), while reducing overall congestion, protecting and

facilitating public access, and funding transit investments. The proposed PWP/TREP program ensures that the corridor's large and varying customer base of HOVs (many of which are seeking access to and along coastal resources) would be provided with a reliable transportation corridor. In addition, rail improvements that increase capacity, reduce travel time, increase reliability, and provide new service area opportunities, such as those proposed, are readily recognized as major contributors to protecting and enhancing coastal access to and along the coast. Proposed PWP/TREP improvements would contribute substantially to enhancing multimodal access throughout the corridor by increasing rail service; providing new rail service at Del Mar Fairgrounds and Racetrack; accommodating better vehicle, pedestrian, and bicycle access to rail stations; and supplementing parking supply at rail stations to support access to and along nearby beaches and upland recreational areas.

Proposed improvements would include public transportation infrastructure to support more frequent, attractive, and reliable bus transit services (including BRT and enhanced local bus services), which would result in higher transit ridership and reduced traffic congestion that would otherwise adversely affect the ability of the public to reach the coast along this primary coastal access corridor. Proposed improvements would encourage non-automobile transportation with new and improved multimodal transportation improvements that would provide access to and along the coast and recreation areas via trails, bicycle paths, and transit. Improved bicycle and pedestrian facilities and routes would better connect with public transit centers, thereby promoting carpooling and compatibility rail and bus improvements. Such improvements would not only facilitate multimodal access to and along the coast, but would also provide multimodal access to recreational and low-cost visitor-serving recreation areas for transit-dependent populations that may not otherwise have the means to access coastal areas.

Proposed grade separations along the LOSSAN rail corridor would provide new or improved, convenient pedestrian and bicycle crossings over the tracks, better connecting communities to area beaches. Proposed highway improvements would include reconstructing under- and overpasses, which would present an opportunity to connect and improve local and regional bicycle and pedestrian routes to and from the coast. Additionally, new and enhanced access routes across lagoons would be similarly integrated into proposed improvements. These PWP/TREP components would serve to meet one of the primary goals, as articulated in *Completing the California Coastal Trail*, which is to "Create linkages to other trail systems and to units of the State Park system, and use the Coastal Trail system to increase accessibility to coastal resources from urban population centers."¹⁷ PWP/TREP implementation would provide and connect several threads within the coastal trail system between inland and coastal communities access the shoreline, lagoons and upland recreation, thus helping to achieve the goals of *Completing the California Coastal Trail*.

PWP/TREP development strategies and implementation measures would require that transportation system improvements be implemented in a balanced manner to ensure that the maximum benefit of the multimodal transportation improvements program is realized. PWP/TREP policies and implementation measures would ensure that maximum public access to and along coastal and inland recreational resources in the NCC be protected and enhanced consistent with public safety and sensitive coastal resources needs. PWP/TREP implementation measures would also address design criteria of new pedestrian and bicycle amenities to ensure appropriate separation of vehicular, pedestrian and bicycle facilities to provide a more comfortable travel environment for pedestrians and bicyclists to further encourage these modes of travel across I-5 between inland and coastal areas.

¹⁷ *Completing the California Coastal Trail*, California State Coastal Conservancy, January 2003.

PWP/TREP development strategies and implementation measures further require that project-level analysis for corridor improvements evaluate potential coastal access and recreation impacts and confirm that proposed improvements avoid substantial impacts to coastal access and recreation resources, or that additional study and mitigation measures be implemented if potential impacts are identified. In the event that additional study is required to address previously unidentified potential impacts, project consistency with applicable Coastal Act public access and recreation policies would be achieved during future, project-specific federal consistency or NOID review, where applicable.

PWP/TREP project implementation and phasing would be carried out consistent with phasing procedures and requirements provided in Chapter 6A – Implementation to further ensure a balanced approach to multimodal transportation system improvements. These phasing procedures and requirements would identify project phasing and implementation priorities for rail improvements, and provide the mechanism to track the progress of rail corridor project implementation in the context of all other PWP/TREP highway, community, and resource enhancement project implementation. The procedures also provide for maximum flexibility in implementing all PWP/TREP improvements to accommodate opportunities and uncertainties in potential future funding availability and local, state, and federal political and policy decisions, while ensuring that projects are implemented in a way that balances rail and highway improvements, and that community and resource enhancements are implemented prior to, or concurrent with, project implementation.

PWP/TREP development strategies and implementation measures would further address potential public access and recreation impacts associated with construction activities (including construction scheduling) to avoid impacts to access during the summer season, and staging to minimize displacement of recreational areas and/or interference with access routes. This would also function to coordinate and minimize construction staging locations where possible among PWP/TREP projects.

As described in Sections 5.1 and 5.2, the proposed PWP/TREP includes improvements to public transportation facilities necessary to serve and support existing and future land uses previously approved by the Coastal Commission pursuant to certified LCPs and/or approved coastal development permits. The proposed transportation improvements would not result in excessive growth-inducing impacts that could result in overburdening the corridor's recreational resources. As such, PWP/TREP improvements would not be growth-inducing, nor would the proposed transportation improvements substantially increase vehicle miles traveled or exacerbate existing congestion problems on I-5.

Additionally, the proposed PWP/TREP improvements are not projected to result in substantial impacts to travel demand and traffic congestion on the NCC's local roads. While highway capacity improvements in other corridors sometimes can induce more travel on local roads, the majority of the NCC is projected to experience the opposite effect: demands for local roads would diminish in many places as a result of the improvements to I-5. As noted in Chapter 3A, the corridor's topographic constraints and circuitous street network make I-5 the most direct north-south route for many trips, but frequent congestion on the highway leads many travelers to attempt their trips on local roads instead. With additional capacity available on I-5, this "spillover traffic" in local communities would be reduced. Caltrans has conducted several evaluations of the I-5 project's impacts to local traffic, with the following results projected between the No Build and Build scenarios:

- Coast Highway and El Camino Real, the two primary north-south alternatives to I-5, were projected to experience reductions in vehicle miles traveled of 17% and 10%, respectively, between the 2030 No-Build and 2030 Build scenarios.¹⁸
- Coast Highway and El Camino Real were projected to experience overall reductions in Average Daily Traffic (ADT) of 12% and 3%, respectively, between the 2035 No-Build and 2035 Build scenarios.¹⁹
- In an analysis of 131 roadway segments—including key arterials and intersections selected jointly by Caltrans and corridor cities—the proposed highway improvements were shown to have negligible impacts on local traffic, with 68 of the 131 segments (52%) experiencing either decreases or no change in 2030 ADT between the No Build and Build scenarios. An additional 51 segments (39%) were projected to experience ADT increases of less than 10%. Only 12 (9%) of the local NCC roadways would experience increases in ADT of over 10%.²⁰
- Even with increases in ADT on some roadways, only 3 segments (2%) that were under capacity in the 2030 No Build scenario were projected to exceed capacity in the 2030 Build scenario. Eighty-five segments that were under capacity in the 2030 No Build scenario remained under capacity in the 2030 Build scenario and five segments that were over capacity in the 2030 No Build scenario are projected to be under capacity in the 2030 Build scenario.²¹
- A study of traffic level of service at 75 key intersections near freeway access points showed either improvement or no change at 73 intersections (97%) in the morning peak period and 68 intersections (91%) in the evening peak period, when comparing the 2030 No Build and 2030 Build scenarios.²²

Taken together, these data indicate that the capacity improvements on I-5—by providing a better option for north-south travel than local roads—actually will help to relieve traffic congestion in the NCC's communities.

While the NCC provides unique and varying recreational opportunities, population growth and decades of private development in the region have diminished these opportunities. As the region's population has expanded and open lands, beaches, and historic trails have become developed, more people have sought the use of the corridor's coastal recreation resources. In addition, many critical support facilities for access and recreation have been affected as available transportation, transit, parking, and other amenities have become overburdened and have become difficult to accommodate or expand given the shrinking supply of land available to provide for such facilities. Thus, improving and maintaining overall mobility in the corridor is critical to removing existing transportation impediments to coastal access and meeting future demand for access to and along coastal and upland recreation opportunities. Moreover, coastal access is expected to continue to degrade because of projected population growth and constrained facilities. The PWP/TREP would prevent or reduce significant adverse impacts to coastal access compared to a No Build Alternative. NCC program improvements would provide a multimodal transportation system, providing reliable access to and from coastal-dependent industry and coastal and upland areas in the corridor and entire San Diego region, and would thereby affirmatively implement Coastal Act policies that require maximum protection and, where feasible, enhancement of

¹⁸ I-5 NCC Corridor System Management Plan (Chapter 8), August 2010.

¹⁹ SANDAG/Caltrans Series 12 Model, November 2011.

²⁰ I-5 NCC Technical Report #5: Traffic Demand Forecasting Report (Section 3.3), August 2007. Conducted in support of I-5 NCC Project Draft EIR/EIS.

²¹ I-5 NCC Technical Report #6: Freeway Interchange Operations Report (Section 3.6), August 2007. Conducted in support of I-5 NCC Project Draft EIR/EIS.

²² Ibid, Section 3.4.

coastal access and recreation. Finally, as discussed in Sections 5.4 and 5.5, the PWP/TREP includes improvements and a Resource Enhancement and Mitigation Program (detailed in Chapter 6B) to address water quality, lagoon, and natural habitat deficiencies. These project elements would serve to protect and enhance natural resources at corridor beaches, lagoons, and recreation areas that sustain and support coastal and resource-dependent recreational uses.

5.3.5 Local Coastal Program Consistency

Appendix A includes a detailed policy consistency analysis matrix for each certified LCP area that would be affected by the proposed highway corridor improvements, and by those rail corridor improvements that would be subject to coastal development permit or public works plan requirements. For LOSSAN rail projects included in the PWP/TREP that improve the movement of freight, the LCP policy consistency analysis provides guidance and background information for analyzing rail project consistency with Sections 30210, 30211, 30212, 30212.5, 30213, 30214, 30223, 30252, and 30254 of the Coastal Act, as appropriate and applicable (see Section 1.1.3 for additional discussion of LCP applicability to rail projects that may fall under the exclusive jurisdiction of the Surface Transportation Board). All of the LCPs include policies that mirror, in part, the Coastal Act's policies addressing public access and recreational resources; however, the certified LCPs also include a range of additional, detailed, and site-specific policies and development standards that address protection, enhancement, and potential impacts to public access and recreational resources. As such, the corridor's LCP access and recreation policies are summarized with brief city-specific consistency analyses below, which also integrate and supplement the consistency analysis for Coastal Act sections listed above. A complete list of LCP policies and corresponding consistency analysis is included in the LCP Policy Consistency Analysis matrix for each city (Appendix A).

5.3.5.1 Local Coastal Program Consistency Analysis Summary

Each of the corridor's LCPs has explicit policies and/or development standards that address public access and recreation. Common policies and/or development standards that reflect the provision and enhancement of public access and recreational opportunities throughout all of the corridor's LCPs:

- Encourage the preservation, protection, and provision of a full range of recreational areas distributed throughout the area; preferably low-cost visitor and recreational facilities.
- Encourage bicycle and pedestrian access to recreation facilities, including providing bicycle racks.
- Encourage the use of appropriate public lands and facilities for park and recreation purposes to the maximum extent feasible consistent with the maintenance of natural resources.
- Protect and improve existing physical access to and along the shoreline and ocean.
- Preserve where possible, open space such as beaches, parks, cliffs, tidepools, coastal waters, and canyons.
- Pursue development of a transportation system, including use of bus, light rail, shuttle service and bicycles that would provide access to and along the ocean, recreational areas, and commercial centers, which would provide alternatives to private automobile use.
- Provide and maintain an inter-linking network of trails for horseback riding, hiking, and bicycling compatible with open space goals and the transportation system to allow for commuter and recreation desires.
- Provide for the needs of pedestrians in all future design and development decisions (including roadways for pedestrians, bicyclists and vehicular traffic), including traffic control measures and

pedestrian crossings where necessary, thus minimizing areas of conflict between pedestrians, bicycles, and vehicular traffic.

- Implement an effective system of signing (including design, construction, and maintenance of signs) for new and existing accessways, specifically shoreline access and parking signing.
- Give priority to visitor-serving commercial recreation facilities over private residential, general-industrial or general-commercial uses.
- Provide a network of transportation systems that is integrated, complementary, and compatible with other citywide and regional goals, which would link the entire community to all of its own activity areas and to the San Diego metropolitan area as a whole.

The proposed PWP/TREP's primary goal is to maintain and improve multimodal transportation opportunities in the NCC. Proposed improvements would create and enhance features for an efficient and integrated transportation program by increasing rail, carpooling, and public transit capacity within the corridor, and by providing multimodal linkages for pedestrian and bicycle circulation. The project includes bicycle and pedestrian facilities and routes that connect with public transit centers, link neighborhoods, and connect inland and coastal areas and recreation opportunities, including implementation of major elements of the I-5 North Coast Bike Trail and Coastal Rail Trail. PWP/TREP improvements would also include a number of reconfigured interchanges, overpasses, and underpasses that would greatly enhance pedestrian and bicycle circulation opportunities to the coast. Bicycle and pedestrian facilities and routes would also connect with public transit centers, link neighborhoods, and connect inland and coastal areas.

As such, the PWP/TREP is consistent with these policies. Moreover, coastal access is expected to continue to degrade because of projected population growth and constrained facilities. The PWP/TREP would prevent or reduce significant adverse impacts to coastal access compared to a No Build Alternative.

City of San Diego

The City of San Diego LCP contains specific policies in the North City Land Use Plan, in addition to each of the individual Community Plans, which require protection and enhancement of public access and recreation for particular recreational resources in the city.

North City Local Coastal Program – Land Use Plan

Torrey Pines

- Designate and preserve as open space the exceptional topography and ecosystem in this community, including Los Peñasquitos Lagoon, Torrey Pines State Park Reserve areas, Crest Canyon, San Dieguito Valley, and the sandstone cliffs overlooking San Dieguito Valley.
- Permit only those recreational activities that do not have a negative impact on lagoon ecosystems or on the environment of the Torrey Pine tree.
- Encourage and support the development of a mass transportation system to serve the San Diego region and specifically the Torrey Pines area.
- Develop a system of bikeways, pedestrian ways, and horse trails compatible with the open space goals and transportation system to allow for commuter and recreation desires.
- Continue the cooperative working relationship with the Metropolitan Transit District Board (MTDB) and SANDAG in the planning and implementation of a fixed bikeway system for San Diego.

North City West

- Provide separate systems for pedestrian and bicycle traffic.
- Connect individual neighborhoods (via the community mass transit system) with the town center, industrial/office park, and high school.
- Establish alternative transportation modes for public access to and along the shoreline, particularly to be considered and implemented during peak-use periods and the summer months, as suggested by the SANDAG Coastal Access Report of 1978.
- Pursue development of a system of bicycle trails that will connect major activity areas such as the university to the town center, the proposed commercial center in North City West, and the recreational centers of the area, with a focus on the ocean and natural scenic corridors.
- Pursue development of a transportation system (including use of bus, light rail, shuttle service, and bicycles) that will provide access to and along the ocean, commercial centers, and the university. Parking areas should be identified primarily inland; however, emphasis should not be placed on the automobile.
- Pursue development of alternative transportation systems during the earliest stages of development of North City West to eliminate unnecessary traffic congestion and encourage the use of public transit and other transportation modes by future residents.
- Pursue expansion of existing bicycle paths to include Cannel Valley Road and Sorrento Valley Road.

University-La Jolla

- Provide maximum protection to the Torrey Pines Natural Preserve.
- Develop a linkage system to connect recreational and natural open space areas throughout the community.

University Community Plan

- Improve accessibility and use relationships within the community by establishing well-defined, multimodal linkage systems.
- Establish standards that give physical design direction to private developments and public improvements.

Torrey Pines Community Plan

- Require that Transportation Demand Management strategies are implemented within the Sorrento Valley industrial area. Provide bicycle racks/lockers, showers, and locker room facilities for employees who bicycle or walk to work.

PWP/TREP improvements in the City of San Diego would include constructing a trail connection under the highway structures in the Caltrans right-of-way from Peñasquitos Creek to Sorrento Valley Road to create a better linkage between COASTER's Sorrento Valley Station, the residential and commercial developments near Sorrento Valley Road, and the existing trails at Peñasquitos Creek. The proposed Carmel Valley bicycle/pedestrian trail connection would provide a new, paved bicycle/pedestrian trail, providing access to the lagoon and the ocean, and creating a link to the proposed Carmel Valley Park-and-Ride trailhead, which would include improvement of pavement leading to the trailhead with a scenic overlook at Los Peñasquitos Lagoon. Additionally, the PWP/TREP would enhance trail connections from Carmel Valley Road to Carmel Mountain Road, provide enhanced bicycle and pedestrian trail and bridge facilities on the west side of I-5 at San Dieguito Lagoon, provide a new

pedestrian overpass North of Del Mar Heights Road, and construct a significant segment of I-5 North Coast Bike Trail within the I-5 right-of-way.

The public access and recreational resource protection policies of the City of San Diego LCP do not present potential policy conflicts for the proposed PWP/TREP improvements and therefore these policies would not need to be amended to implement the proposed transportation improvements. The proposed PWP/TREP is consistent with all relevant City of San Diego LCP public access and recreation policies; no LCP policy amendments are required.

City of Del Mar

The City of Del Mar LCP includes policies that provide guidance in analyzing potential access and recreation issues associated with proposed rail and improvements:

- The improvement or establishment of alternative transportation modes shall be designed to assure protection of sensitive resources and the retention of the small-town scenic qualities of Del Mar.

In regards to recreational opportunities, the City of Del Mar's LCP has established policies that would facilitate a system of public parks and recreational facilities to support the year-round needs of both residents and visitors to the area and encompass a full range of activities for people of all ages, physical conditions, and socioeconomic situations. These policies are as follows:

- The City shall implement a comprehensive program to preserve existing open space and recreation lands and where feasible acquire additional lands to meet the long-range needs of residents and visitors. This program shall be developed using the following criteria:
 - Small “pocket parks,” also known as “mini-parks,” should be utilized in the largely developed areas of the City where land for larger parks is difficult to obtain.
 - Park planning should be integrated with planning for open space, conservation, hiking, bicycle, and equestrian trails, regional parks, and scenic highways. Whenever practical, parks should be linked together by a system of trails and/or open space.
- The City shall cooperate with other jurisdictions in the acquisition and preservation of open space and recreation lands through the following:
 - Encourage the expansion of nearby State and County parks, including continued cooperation with other local, State, and Federal agencies to implement the San Dieguito Lagoon Resource Enhancement Program.
 - Cooperate in the planning and implementation of the San Dieguito River Valley Regional Open Space Park and ensure that said park plan or that for any other park along the San Dieguito River would avoid impacts to resources.

Proposed PWP/TREP improvements would provide for enhanced alternative transportation modes for the community of Del Mar, particularly relating to rail where a new platform would support access to the Del Mar Fairgrounds and Racetrack and nearby coastal areas. In addition, rail improvements would facilitate increased and efficient alternative transportation, providing for a reduction in private vehicle use to and from Del Mar's coastal areas. The proposed PWP/TREP includes bicycle and pedestrian improvements that would enable safer crossings of I-5 and the LOSSAN rail corridors, improving non-automobile access to and along local coastal resources as well as the Del Mar Fairgrounds and Racetrack. In addition, tunnel options for rail alignments through Del Mar provide an opportunity to remove existing rail facilities from the Del Mar bluffs, the San Dieguito River Valley, and Los Peñasquitos Lagoon, which could ultimately restore these areas as open space and/or passive recreational use areas.

The PWP/TREP would also include an essential link of the Coast to Crest Trail at the LOSSAN corridor within the San Dieguito River Park, helping to complete the 55-mile east-west trail connecting Del Mar with Volcan Mountain near Julian. This trail improvement would facilitate coastal access between upland recreation areas the shoreline.

The public access and recreational resource protection policies of the City of Del Mar LCP do not present potential policy conflicts for the proposed PWP/TREP improvements and therefore these policies would not need to be amended to implement the proposed transportation improvements. The proposed PWP/TREP is consistent with all relevant City of Del Mar LCP public access and recreation policies; no LCP policy amendments are required.

City of Encinitas

The City of Encinitas references Sections 30211, 30212, 30212.5, 30214, 30220, 30223, 30231, 30240, 30252 of the Coastal Act into its LCP, and contains various program-wide policies to provide public access and circulation to the shoreline, to maintain and preserve open space areas, and to provide open spaces for recreational use.

The City has implemented the following LCP policies to facilitate public access and circulation to the shoreline:

- The City will encourage continued public vertical access by:
 - Cooperating with the State in planning for the Cardiff and San Elijo State Beach areas and the South Carlsbad State Beach area to increase the external accessibility and usability of these beaches, as well as enhancing their visitor-serving potential; and
- The City will support increased public transportation service to shoreline recreational areas designated for increased visitation, including the following:
 - Support existing and increased levels of service where needed by the North County Transit District;
 - Support low-cost transfers between all transit operators in the Coastal Zone;
 - Encourage the provision of transit stops and crosswalks at all major beaches; and
 - When bus transportation to beaches is deemed feasible, inset bus bays at major beach transit stops shall be considered to provide for passenger embarkation/debarkation.
- Establish a balance of natural open space and “improved” recreational open space and implement measures to preserve, and maintain the natural environment.
- Leave appropriate areas of neighborhood and community parks in a natural state, retaining natural topography and vegetation where preservation is feasible.
- Provide for early acquisition of park sites to ensure proper location, adequate size, and lower costs through development of a program that identifies future park needs and possible future sites.

As the City strives to have coastal areas continue to play a dominant role in providing residents with open spaces for recreation, the LCP also contains the following policies:

- The City shall continue to support the acquisition and improvement through outright purchase, private donations, establishment of tax benefits, living trusts, etc., of additional local park sites.
- The City recognizes Cardiff Beach State Park, San Elijo Beach State Park, South Carlsbad Beach State Park and Moonlight Beach (future City) State Park, as the major visitor destination beaches in the Encinitas area. The City will work with the State to upgrade and promote access to and along

these State beaches, and will act to upgrade and promote access to Moonlight Beach, in order that they may receive an increased proportion of visitor uses.

The proposed PWP/TREP includes a number of recreational trail improvements intended to facilitate and compliment the city's trail system. Class I bicycle facilities would be constructed along 4.6 miles of the LOSSAN right-of-way, closing a major gap in the Coastal Rail Trail and providing connections to several existing local bicycle routes. In addition, the portions of the I-5 North Coast Bike Trail within the I-5 right-of-way also would be constructed, with the remaining segments to be completed via future collaboration with the city.

The PWP/TREP would improve pedestrian access to the San Elijo Lagoon area via a bicycle and pedestrian trail on both sides of I-5, with a bridge connection to Manchester Avenue. The proposed community enhancement features would greatly increase connectivity between neighborhoods east and west of I-5. The project would include public recreational amenities such as trails to facilitate public access from inland to coastal areas of the city.

PWP/TREP improvements would include a number of reconfigured interchanges, overpasses, and underpasses (all of which would be constructed with pedestrian and bicycle facilities) that would greatly enhance pedestrian and bicycle circulation opportunities to the coast. Bicycle and pedestrian facilities and routes would also connect with public transit centers, link neighborhoods, and connect inland and coastal areas.

PWP/TREP improvements would also connect Cottonwood Creek Park to Union Street and would construct a bridge to provide pedestrian access across I-5. A new pocket park would be located at the western end of the pedestrian bridge on a vacant parcel owned by the City of Encinitas. The proposed pedestrian bridge and trail improvements at Manchester Avenue would include adding new trail and associated sidewalk improvements under the I-5 bridge structure across San Elijo Lagoon with paving and guardrails to improve the trail adjacent to the south bridge abutment with connecting trails; constructing a pedestrian walkway structure across San Elijo Lagoon; and improving the streetscape on Manchester and a sidewalk on the south side. The new trail and associated sidewalk improvements would connect existing trail segments that are separated by the lagoon and highway.

PWP/TREP improvements would include sidewalks and trails connecting the Hall Property Park with the east side of the highway across MacKinnon Bridge and south along Villa Cardiff Drive. The PWP/TREP would also improve Birmingham Drive and Villa Cardiff Drive with an enhanced park-and-ride facility, new trees, and a pedestrian connection to the north. The proposed trail connecting Hall Property Park to Santa Fe Drive would provide more direct and attractive access to the park from neighborhoods east of I-5.

In addition, a new trail would connect Santa Fe Drive on the south and Requeza Street on the north and would include improved drainage and wetland vegetation restoration. The improvements would provide pedestrians and bicyclists direct access from Santa Fe Drive to Requeza Street, and would create a connection to the trail improvements of the Hall Property Park Trail. A new trail along the east side of I-5 would also connect Requeza Street with Encinitas Boulevard, thereby improving public access to local beach areas.

Additional benefits to public access would result from development of the proposed Manchester Avenue DAR and San Elijo Multi-Use Facility in Encinitas. This multimodal facility would include a new direct access ramp onto I-5, parking for carpoolers and vanpoolers, a bus platform, and coastal-access amenities such as trailheads—all of which would facilitate ride-sharing and multimodal transit options

through direct access to the uncongested Express Lanes where reduced travel times and reliability for residents, commuters, and recreationists are assured.

The public access and recreational resource protection policies of the City of Encinitas LCP do not present potential policy conflicts for the proposed PWP/TREP improvements and therefore these policies would not need to be amended to implement the proposed transportation facility improvements. The proposed PWP/TREP is consistent with all relevant City of Encinitas LCP public access and recreation policies; no LCP policy amendments are required.

City of Carlsbad

In regards to recreation and visitor-serving facilities within the Mello I land use segment, the City's LCP states: "Several Coastal Act policies require consideration of visitor-serving uses." The Mello Bill highlighted public recreation as one of the Chapter 3 policies to be specifically addressed in this LCP. Other applicable policies of the Act include Sections 30212.5, 30213, 30222, 30223 and 302500(c). Of particular interest is 30222 which states:

The use of private lands suitable for visitor-serving commercial recreational facilities designed to enhance public opportunities for coastal recreation shall have priority over private residential, general industrial, or general commercial development, but not over agriculture or coastal-dependent industry.

Land use policies for the Mello II land use segment under the City of Carlsbad LCP that address recreation and visitor-serving uses (including city and regional parks, as well as shoreline access issues) are listed below:

- Additional city parks will be required in conjunction with new development. These parks should be a minimum of 5 acres in order to accommodate a wide variety of both active and passive uses. Locations of additional city parks are Altimira Park (12 acres) and North La Costa Park (5 acres); both are listed as proposed parks in the Parks and Recreation Element of Carlsbad's General Plan.
- An access trail shall be provided along the southern shoreline of Buena Vista Lagoon to facilitate public awareness of the natural habitat resources of the lagoon. To protect the sensitive resources of this area, access development shall be limited and designed in consultation with the CDFW. In permitted development of properties adjacent to the lagoon, offers of dedication of lateral accessways, irrevocable for a term of 21 years, shall be required to be provided to the City of Carlsbad, State Coastal Conservancy, or other appropriate public agencies. Such access dedications shall be of at least 25 feet in width upland from environmentally sensitive areas and any required buffers thereto. In addition, the City of Carlsbad, State Coastal Conservancy, and Wildlife Conservation Board shall seek to obtain lateral accessways across developed lands.

Public Access Land Use Policies for the West Batiquitos Lagoon/Sammis Properties land use segment under the City of Carlsbad LCP, state that:

A pedestrian walkway shall be provided along the western portion of areas G and H from approximately Avenida Encinas on the north to the San Marcos Creek Bridge on the south. The walkway shall be permanently open to use by the public.

Lagoon accessways, blufftop accessways or equivalent overlook areas, and a bike path/pedestrian walkway, shall be provided if agricultural land on the north shore of Batiquitos Lagoon is developed.

Public Access Land Use Policies for the East Batiquitos Lagoon/Hunt Properties land use segment under the City of Carlsbad LCP, state that:

La Costa Avenue is designated a major arterial providing coastal access from inland areas to the east.

A public access trail system along the north shore of Batiquitos Lagoon with adequate trailhead public parking areas shall be required as a condition of approval for any development along the north shore pursuant to the Pacific Rim Master Plan.

Public access along the south shore shall be provided as part of La Costa Avenue improvements. Access shall include but not be limited to a pedestrian walkway and bicycle lane along the entire south shore length covered by this LCP segment.

Lagoon accessways and overlook areas along the north shore shall be provided.

The proposed PWP/TREP improvements would include a number of recreational trail, bicycle, and pedestrian improvements intended to facilitate public access and recreation in Carlsbad, including a segment of the Coastal Rail Trail and the I-5 North Coast Bike Trail within the I-5 right-of-way.

Improvements would include an enhanced bicycle and pedestrian trail and bridge at I-5 on the west and east side of Batiquitos Lagoon with trail connections to existing and proposed lagoon perimeter trails. Proposed trails on east side of I-5 at Agua Hedionda Lagoon would improve access to the lagoon by providing a pedestrian bridge that would connect to the Coastal Rail Trail system currently being developed by the City. The park-and-ride enhancement features at La Costa Avenue would provide additional parking to the existing park-and-ride at La Costa Avenue on the east side of I-5.

The public access and recreational resource protection policies of the City of Carlsbad LCP do not present potential policy conflicts for the proposed PWP/TREP improvements and therefore these policies would not need to be amended to implement the proposed transportation facility improvements. The proposed PWP/TREP is consistent with all relevant City of Carlsbad LCP public access and recreation policies; no LCP policy amendments are required.

City of Oceanside

The City of Oceanside LCP includes the following policies, applicable to the proposed PWP/TREP, to ensure that adequate access to and along the coast would be provided and maintained:

- Existing and new public accessways shall not be closed or converted to other uses without approval from the California Coastal Commission.
- The City, in conjunction with the CDFW, shall continue its efforts to provide and maintain an adequate buffer zone between Buena Vista Lagoon and development along its shore...Within the buffer zone only passive recreation uses (such as walking, nature study, photography, small resource interpretive facilities and viewing areas) shall be allowed with no structures other than permitted by this policy and only very minor alteration of natural land forms or conditions for uses permitted by this policy.
- The bicycle path along SR 76 shall be extended under I-5 and the railroad track to the river mouth on the south side of the San Luis Rey River if and when funds are available to do so.

The City of Oceanside LCP also includes policies to provide and maintain a wide range of public recreation areas, beach support facilities, and visitor-serving facilities, commensurate with need. Policies that are applicable to the proposed PWP/TREP include:

- The City shall continue to promote coastal tourism through the revitalization of the coastal area and upgrading of visitor amenities.
- Since Oceanside beaches serve a recreational function for primarily non-local persons, the City shall seek funding assistance from State or County agencies for acquisition and construction of new parking facilities.

The City of Oceanside LCP includes policies to maximize public access in the San Luis Rey River and environs consistent with natural resources values. In addition, low-cost recreation and visitor-serving facilities would be a priority land use in the river area under the City's LCP, commensurate with public demand for such facilities:

- If and when funds become available, establish a viewing area with interpretive signs on the south side of Capistrano Drive, across from Capistrano Park.
- Where appropriate, require developers to participate in construction of an on- and off-site site bicycle and pedestrian facility improvements.
- Require developers to participate in the construction of on- and off-site bicycle and pedestrian facility improvements in the San Luis Rey River area (LUP SLR River policy #1d).
- Support the inclusion of a bicycle/pedestrian trail system in conjunction with the development of the SR 76 bypass project (LUP SLR River policy #1e).

The proposed PWP/TREP includes a number of recreational trail, bicycle, and pedestrian improvements intended to facilitate public access and recreation in Oceanside. Proposed improvements would include a parking/staging area for recreation at SR 76 (consisting of a new parking area, trailhead staging area and other support amenities) to support improved physical access to the existing Class I San Luis Rey River Trail.

The PWP/TREP improvements would enhance pedestrian overpass connections on Mission Avenue and Bush Street. The Mission Avenue overpass improvements would provide wider and more direct pedestrian routes as well as realignment of the highway on- and off-ramps to allow for signalized pedestrian crossings, and would improve existing pedestrian connections on a popular pedestrian route. The enhanced pedestrian overpass improvements on Bush Street would connect existing community gardens at Civic Center Drive and Witzel Street. Furthermore, improvements would provide enhancements to the Division Street Overpass, which would include widening of the existing pedestrian overpass (enhanced with special paving and landscaping). The California Street Overpass would also be enhanced with the addition of a pocket park at Moreno Way and I-5, new landscaping, and widened sidewalks.

Pedestrian streetscape enhancement is also proposed at Oceanside Boulevard, which would include sidewalk and landscape improvements under and adjacent to the I-5 overpass, improved fences along the SPRINTER tracks, and enhanced plantings, lighting, and public artwork. A regional gateway feature would be provided at Harbor Drive to reflect regional identity as an entry to Oceanside and the County, and bicycle and pedestrian enhancements provided at Harbor Drive/Camp Pendleton.

The public access and recreational resource protection policies of the City of Oceanside LCP do not present potential policy conflicts for the proposed PWP/TREP improvements and therefore these policies would not need to be amended to implement the proposed transportation facility improvements. The proposed PWP/TREP is consistent with all relevant City of Oceanside LCP public access and recreation policies; no LCP policy amendments are required.

5.4 MARINE RESOURCES: WATER QUALITY AND WETLANDS

This section examines how the PWP/TREP program of improvements would address potential project impacts to water quality and coastal wetlands, and how the PWP/TREP provides a unique opportunity to improve water quality along the transportation corridors and to enhance significant wetland resources in the North Coast Corridor (NCC). Taken together, the PWP/TREP improvements would:

- Implement a comprehensive, corridor-wide program to restore water quality and wetland habitat along the 30-mile NCC coastline.
- Maximize the treatment of surface water runoff through existing surfaces, and new impermeable surfaces, incorporating stormwater Best Management Practices (BMPs) within the project footprint and reducing the pollutant burden in stormwater runoff along I-5.
- Propose bridge/culvert replacement and bridge lengthening projects over specific lagoons and other coastal waterbodies to better convey flood waters and allow for improved tidal flushing, to reduce sedimentation and improve the flow of water, and thereby improve water quality and the ecological value of the lagoons and riparian systems.
- Implement a comprehensive, corridor-wide Resource Enhancement and Mitigation Program (REMP), which includes a variety of regionally significant wetland restoration and enhancement opportunities, including acquiring and preserving properties that contribute to protecting and enhancing lagoon system and watershed function and values, proactively restoring and enhancing degraded properties that achieve no net loss of wetland habitat, promoting opportunities for regionally significant lagoon restoration or enhancement projects, and providing endowments for long-term maintenance of the lagoon system through inlet dredging and maintenance.

5.4.1 Coastal Waters and Wetlands in the Corridor

The NCC is located in a region that contains some of the most significant remaining coastal lagoons in southern California. The corridor's lagoons, coastal waterbodies, and smaller watershed drainages support a variety of marine resources including open water, wetland, and riparian habitats. Figure 5.4-1A illustrates the hydrologic units of the corridor, Figure 5.4-1B preliminarily identifies the percentage of pavement to be treated by sub-watershed within the I-5 corridor, and Figure 5.4-2A through Figure 5.4-2G provide an overview of existing and potential open water, wetland, and riparian habitat areas in the I-5 corridor based on the setting evaluated and documented for purposes of preparing the PWP/TREP. As the corridor's natural resources are subject to change throughout implementation of the PWP/TREP, the marine resource mapping included in Figure 5.4-2A through Figure 5.4-2G provide the baseline from which to evaluate potential project impacts to known and potential wetland resources, and to determine when the provisions of this section apply to future project implementation pursuant to the Notice of Impending Development (NOID) procedures enumerated in Chapter 6A.

5.4.1.1 Water Quality

The NCC area parallels the coastline throughout northern San Diego County and lies entirely within the coastal region of the San Diego Basin. As discussed in Chapter 2, the corridor improvement areas cross the following 5 of 11 hydrologic units (HUs) within the San Diego Regional Water Quality Control Board (RWQCB) Basin: The Santa Margarita, San Luis Rey River, Carlsbad, San Dieguito, and the Peñasquitos HUs. These HUs contain the corridor's coastal lagoons, the San Luis Rey River, and many other coastal streams, drainages, and wetland resources. Each HU has been developed to varying degrees and all are expected to experience between 7% and 14% more development by 2015.

While the corridor and entire San Diego coastal region has experienced rapid development over the last several decades, the corridor contains significant hydrologic features with many beneficial uses for San Diego residents, visitors, and natural resources. Surface hydrology within the corridor is influenced primarily by the coastal lagoons, creeks, and San Luis Rey River. The corridor contains six significant coastal lagoon systems including Los Peñasquitos, San Dieguito, San Elijo, Batiquitos, Agua Hedionda, and Buena Vista. In addition, the corridor includes the following significant coastal and inland waterways: Carroll Canyon Creek/Soledad Canyon Creek, Los Peñasquitos Creek, Carmel Creek, San Dieguito River, Cottonwood Creek/Moonlight Creek, Encinas Creek, Loma Alta Creek/Slough, Buena Vista Creek, the San Luis Rey River and Oceanside Harbor.

Figure 5.4-2A through Figure 5.4-2G illustrate the significant surface hydrologic features within the I-5 corridor including the lagoons, rivers, streams/creeks and other drainages.

The California Coastal Basin Aquifer is the primary aquifer identified in the corridor. Shallow groundwater likely occurs adjacent to, or in the vicinity of, streams, rivers, and lagoons within the corridor and in the coastal bluff areas of Del Mar. Groundwater is also likely to saturate surface and formational materials near alluvial or estuarine environments, such as the mouths of the major drainage areas and lagoons.

Beneficial Uses

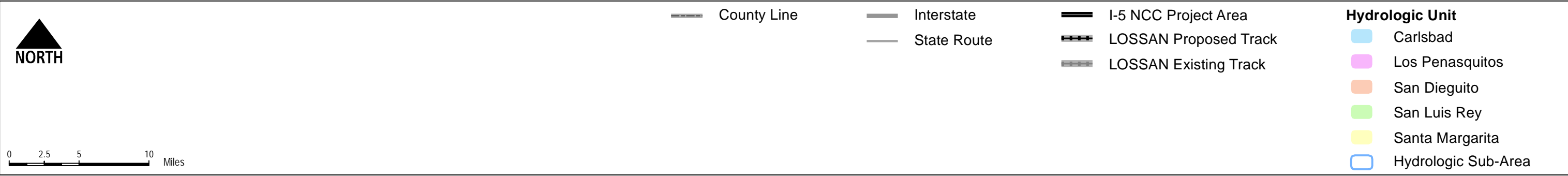
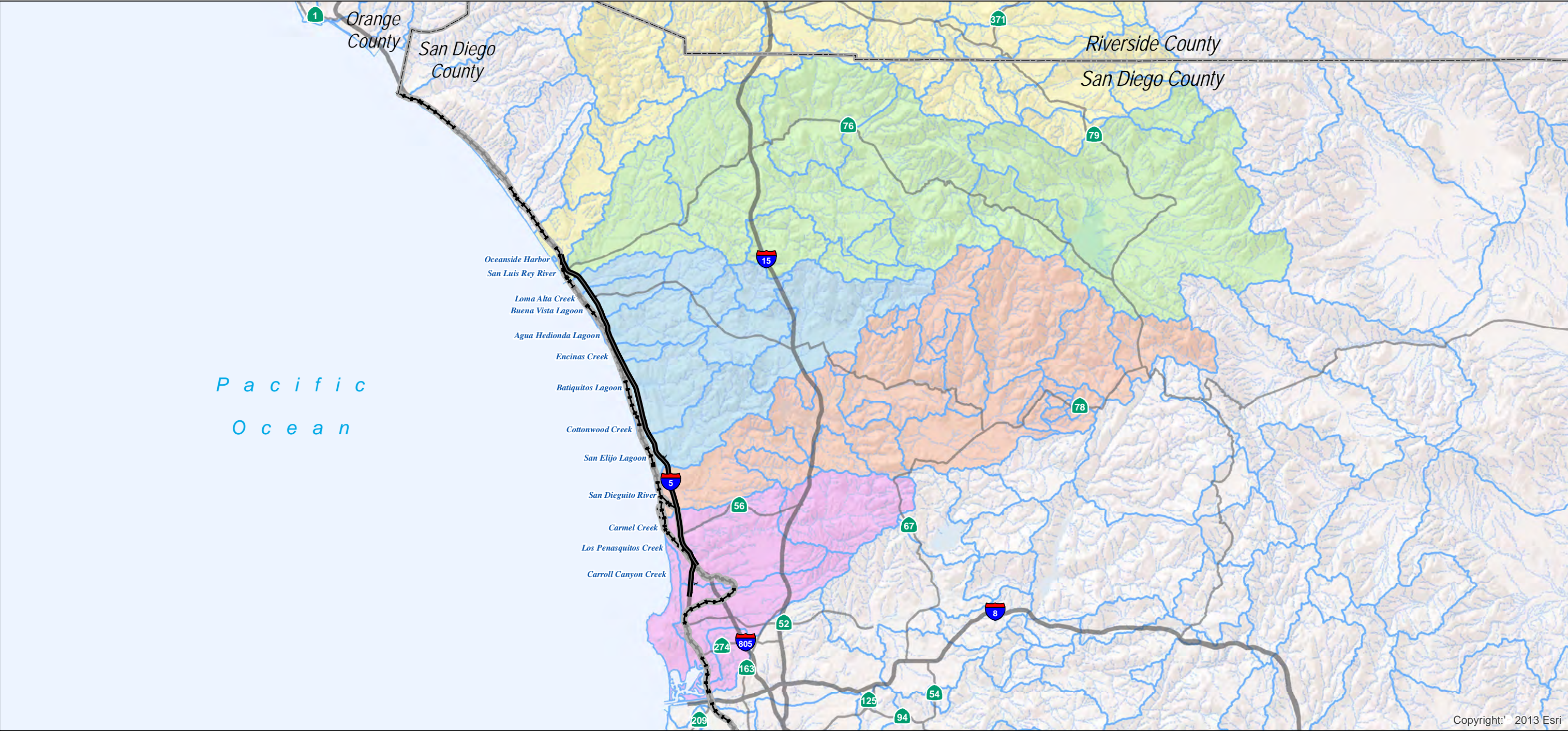
The San Diego RWQCB Basin Plan (Basin Plan) defines “Beneficial Uses” for water bodies as those necessary for the survival or well-being of people, plants, and wildlife. The text below as well as Table 5.4-1 and Table 5.4-2 provide information relative to beneficial uses for the corridor’s lagoons and coastal and inland surface waters.

5.4.1.2 Corridor Lagoons

Corridor lagoons provide significant benefits in their respective watersheds for flood relief (by allowing high flows to slow and disperse into the larger water bodies) and for water quality (where sediment loads, nutrients, and toxins from stormwater are discharged and absorbed by vegetation within the lagoon prior to entering the ocean). As discussed in Chapter 2 (Section 2.2.6.2), the lagoons also contain sensitive habitat areas for threatened and endangered species and migratory birds, as well as for fish and many different wildlife species. In addition, where associated with open space and adjacent habitat preservation areas, the corridor lagoons provide habitat linkages and wildlife corridors in a coastal area that has experienced rapid population growth and urbanization over the last several decades. Most of the corridor lagoons provide public recreation amenities with trail systems, interpretative areas, wildlife observation opportunities, and, in some cases, expansive beach areas where the lagoons meet the ocean.

Beneficial Uses

Beneficial uses for the lagoons in the corridor generally include contact and non-contact recreation; preservation of biological habitats of special significance; estuarine habitat (potential estuarine habitat for Buena Vista Lagoon); marine habitat; wildlife habitat; rare, threatened and endangered species; fish migration; spawning, reproduction, and/or early development (with the exception of Buena Vista Lagoon, which is the only lagoon with the beneficial use of warm freshwater habitat). Beneficial uses for Los Peñasquitos and Agua Hedionda Lagoon include shellfish harvesting, with additional beneficial uses in Agua Hedionda for industrial service supply, commercial and sport fishing, and aquaculture. Loma Alta Slough is designated for contact and non-contact recreation, estuarine, marine and wildlife habitats, and rare, threatened, and endangered species. The mouth of San Luis Rey River is also designated for contact and non-contact recreation, marine habitat, wildlife habitat, and rare, threatened and endangered species, as well as for fish migration.

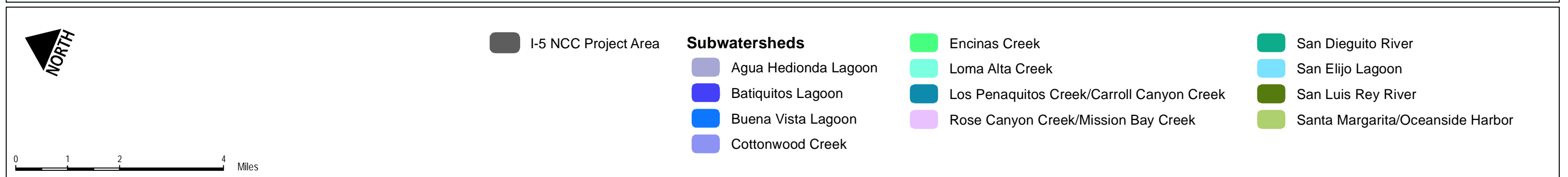
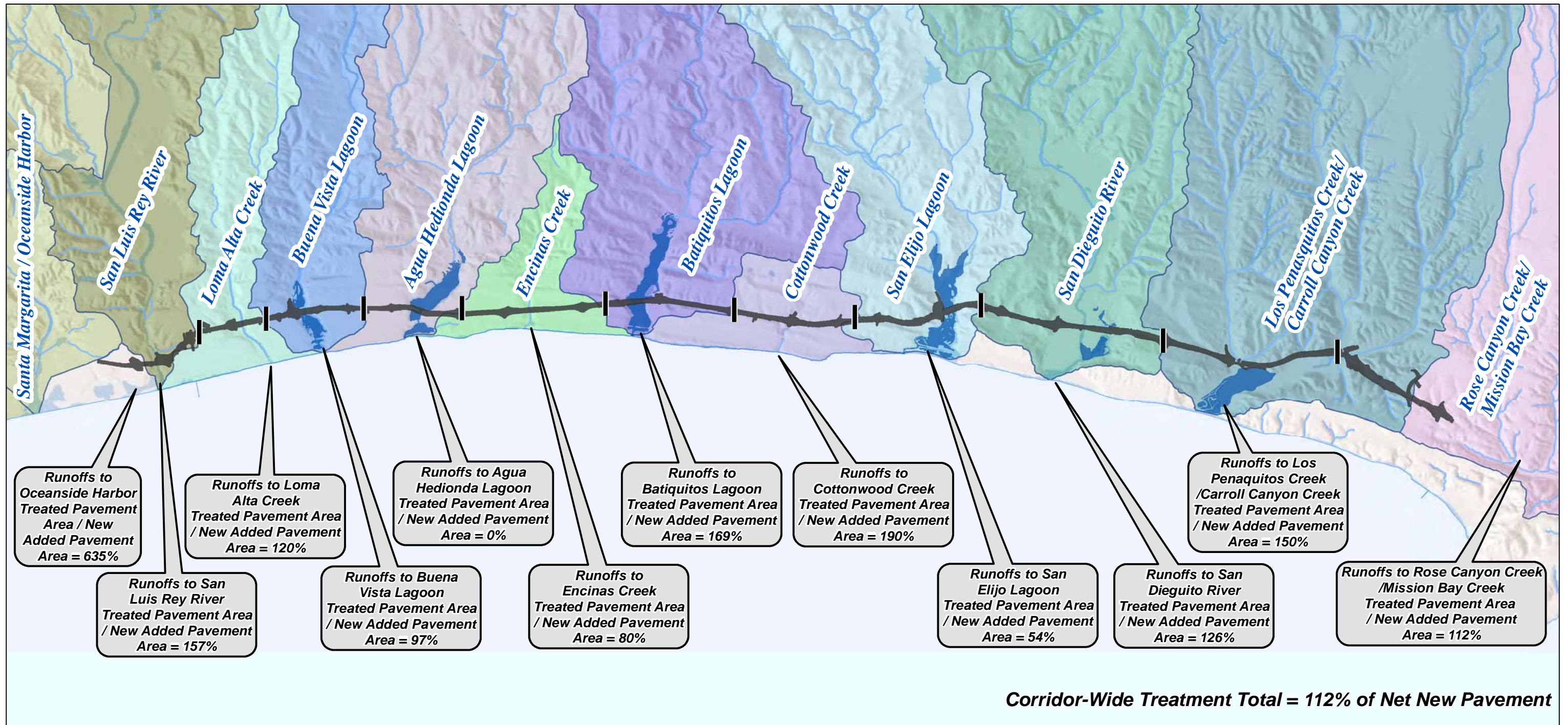


DATA SOURCES: Caltrans, California Coastal Commission, Local Jursidictions, SanGIS, SANDAG, USGS NHD 2010.

San Diego Regional Water Quality Control Board Basin Hydrological Units
North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.4-1A

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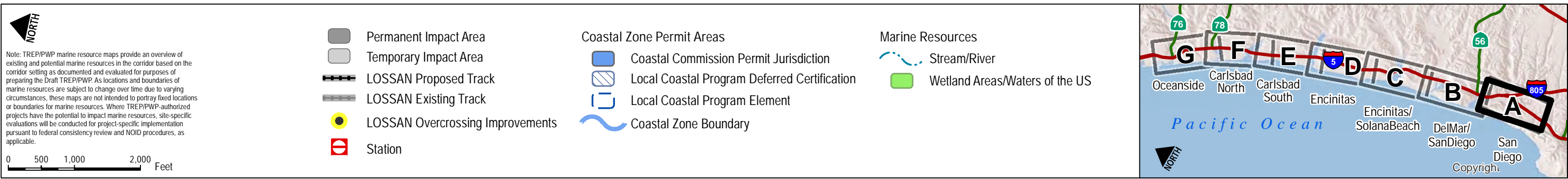
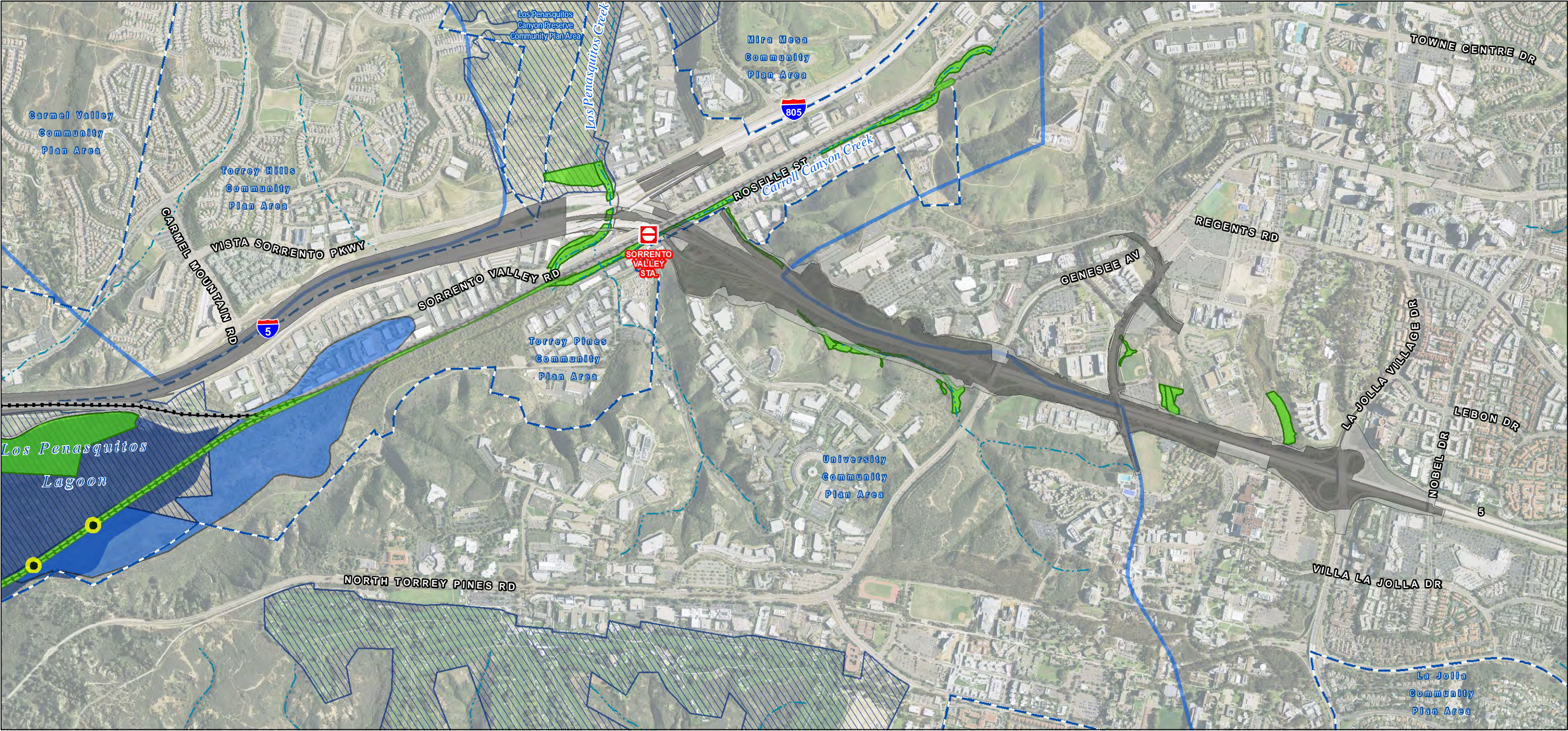
DATA SOURCES: USGS NHD 2012, USGS WBD 2012, Caltrans 2012

FIGURE 5.4-1B

Water Quality Treatment Areas

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

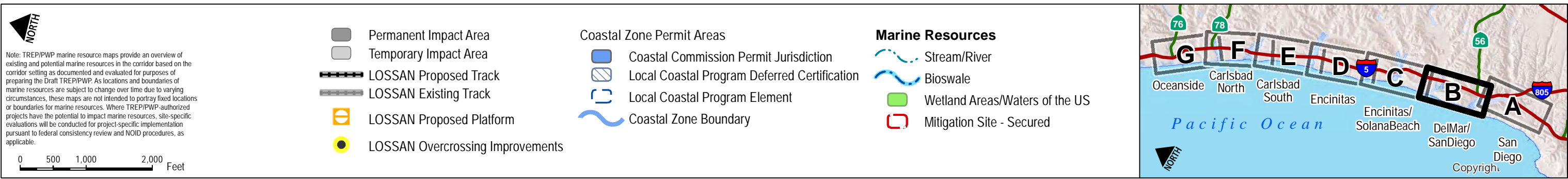
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FIGURE 5.4-2A
Marine Resources Map (City of San Diego)
North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

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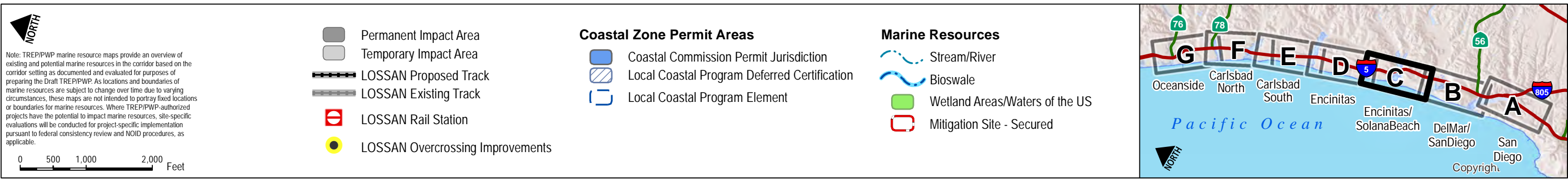
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FIGURE 5.4-2B
Marine Resources Map (City of Del Mar / San Diego)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

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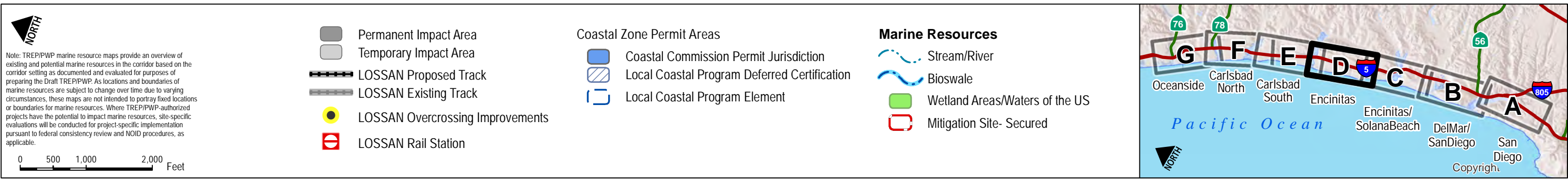
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FIGURE 5.4-2C
Marine Resources Map (City of Encinitas / Solana Beach)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

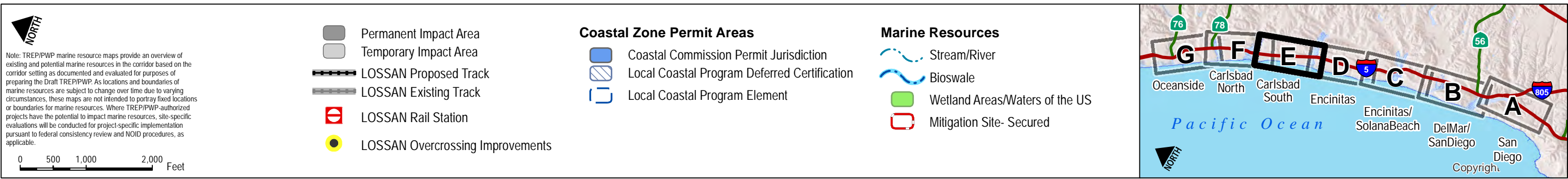
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FIGURE 5.4-2D
Marine Resources Map (City of Encinitas)
North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

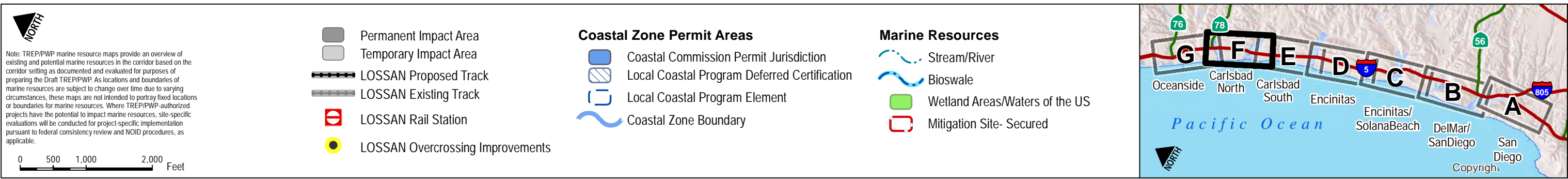
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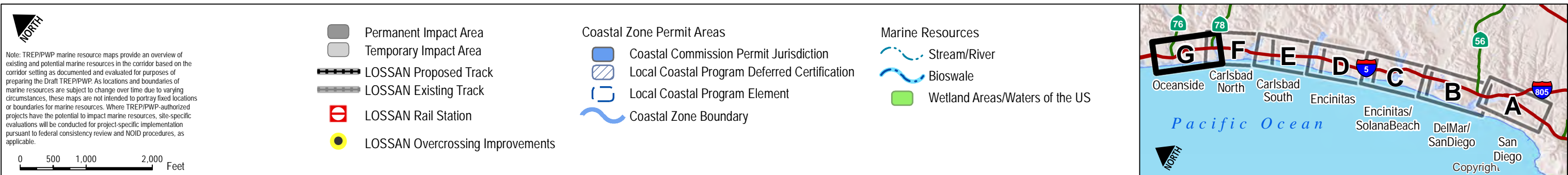
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FIGURE 5.4-2E
Marine Resources Map (City of Carlsbad [South])

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

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FIGURE 5.4-2G
Marine Resources Map (City of Oceanside)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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TABLE 5.4-1: BENEFICIAL USES (CORRIDOR LAGOONS / COASTAL SURFACE WATERS)

Water Body Name	Industrial Service Supply	Contact Recreation	Non-Contact Recreation	Commercial/ Sport Fishing	Preservation of Biological Habitats of Special Significance	Estuarine Habitat	Wildlife Habitat	Rare, Threatened or Endangered Species	Marine Habitat	Aquaculture	Migration of Aquatic Organisms	Spawning, Reproduction and/or Early Development	Warm Freshwater Habitat	Shellfish Harvesting
Los Peñasquitos Lagoon		+	+		+	+	+	+	+		+	+		+
San Dieguito Lagoon		+	+		+	+	+	+	+		+	+		
Batiquitos Lagoon		+	+		+	+	+	+	+		+	+		
San Elijo Lagoon		+	+		+	+	+	+	+		+	+		
Agua Hedionda Lagoon	+	+	+	+	+	+	+	+	+	+	+	+		+
Buena Vista Lagoon		+	+		+	X	+	+	+				+	
Loma Alta Slough		+	+			+	+	+	+					
Mouth of San Luis Rey River		+	+				+	+	+		+			
Oceanside Harbor	+	+	+	+			+	+	+		+	+		+

Source: I-5 NCC Project Draft EIR/EIS (Section 3-10), June 2010.

- +

Existing Beneficial Use
- *

Excepted from Municipal
- x

Potential Beneficial Use

TABLE 5.4-2: BENEFICIAL USES (INLAND SURFACE WATERS)

Water Body Name	Municipal/ Domestic Supply	Agricultural Supply	Industrial Service Supply	Contact Recreation	Non-Contact Recreation	Preservation of Biological Habitats of Special Significance	Warm Freshwater Habitat	Cold Freshwater Habitat	Wildlife Habitat	Rare, Threatened or Endangered Species	Spawning, Reproduction and/or Early Development
Carmel Creek	*	+	+	X	+		+		+		
Soledad Canyon Creek	*	+	+	X	+		+	+	+		
Carroll Canyon Creek	*	+	+	X	+		+	+	+	+	
Los Peñasquitos Creek	*	+	+	X	+	+	+		+		
San Dieguito River	*	X	X	+	+		+	+	+		+
Canyon del Las Encinas	*			X	+		+		+		
Loma Alta Creek	*			X	+		+		+		
Buena Vista Creek	*	+	+	+	+		+		+	+	
San Luis Rey River	*	+	+	+	+		+		+	+	

Source: I-5 NCC Project Draft EIR/EIS (Section 3-10), June 2010.

- +

Existing Beneficial Use
- *

Excepted from Municipal
- x

Potential Beneficial Use

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Restoration Efforts

Ongoing lagoon resource planning, restoration and management has been implemented at varying levels for the corridor's lagoons and will continue to be essential in ensuring that the many flood, water quality, habitat, and recreational benefits of these significant watershed features are maintained and enhanced. Los Peñasquitos Lagoon, Batiquitos Lagoon, and Agua Hedionda Lagoon have been the subjects of various types of periodic restoration efforts, including inlet maintenance to allow for tidal circulation, bridge lengthening and repairs to improve circulation, maintenance dredging, water quality monitoring, and wetland and upland habitat restoration.

Buena Vista Lagoon, which contains part of the Buena Vista Lagoon Ecological Reserve maintained by the California Department of Fish and Wildlife (CDFW), is in "Phase II" of a focused restoration effort. Phase II prepares the preliminary engineering and environmental documents that depict various potential restoration alternatives for the lagoon.

The San Elijo Lagoon is part of the San Elijo Lagoon Ecological Reserve, where a focused restoration effort is underway. The San Elijo Lagoon Restoration Project is evaluating alternatives to improve water quality of the lagoon through infrastructure improvements to promote tidal circulation. Improvements may include lagoon inlet enhancements through the lengthening of the bridge on South Coast Highway 101, and the lengthening of rail and highway facilities that cross the lagoon. Based on analysis conducted for the San Elijo Lagoon Restoration Project and the I-5 project, the bridges will be lengthened to optimize the circulation of water, thereby creating wetland habitat within the existing bridge footprint and facilitating the restoration of marsh habitat through improved hydraulic flows.

The San Dieguito Lagoon has benefited from the completion of a major restoration effort implemented by Southern California Edison. The San Diego Association of Governments (SANDAG) is working on expanding the extent of the restored coastal wetlands.

Irrespective of current restoration efforts, all of the corridor lagoons require ongoing management to address the effects of increased year-round freshwater input, accelerated sedimentation and water contamination, reduced tidal mixing, introduction of exotic species, revegetation of disturbed areas, and impacts on habitats and wildlife from adjacent development and recreational use.

Chapter 2 (Section 2.2.6.2) provides a description of each of the corridor lagoons and details the lagoons' ownership, general size, and associated watershed features, habitats, and past and pending planning and restoration efforts. Table 5.4-3 provides a summary of this information in addition to information regarding the status of long-term management, land uses, the surrounding transportation system, and various factors affecting lagoon system health.

5.4.1.3 Other Corridor Wetlands and Riparian Habitats

Wetland and riparian habitat areas are also found in a number of other coastal and inland waterways within the corridor's watersheds including Carroll Canyon Creek (Soledad Canyon Creek), Los Peñasquitos Creek, San Dieguito River, Carmel Creek, Cottonwood Creek/Moonlight Creek, Encinas Creek, Loma Alta Creek/Slough, Buena Vista Creek, and the San Luis Rey River. A number of wetland and riparian habitat types are associated with the various waterbodies identified in the corridor including southern riparian, southern riparian forest, southern cottonwood willow, riparian forest, and San Diego mesa hardpan vernal pool. Southern willow scrub, mulefat scrub, freshwater marsh, southern willow scrub/freshwater marsh, southern arroyo willow woodland, coastal brackish marsh, southern coastal salt marsh, salt marsh transition, arundo scrub, disturbed wetland, mud flat, salt flat, and open water.

Carroll Canyon Creek (Soledad Canyon Creek), Los Peñasquitos Creek, and Carmel Creek all drain the Los Peñasquitos watershed and ultimately discharge into the Pacific Ocean via Los Peñasquitos Lagoon. Carroll Canyon Creek originates southeast of the Miramar Reservoir, in the City of San Diego neighborhood of Scripps Miramar Ranch and feeds into Soledad Canyon Creek. Soledad Canyon Creek has been channelized through Sorrento Valley in a concrete-lined channel for approximately 0.5 miles and converges with Los Peñasquitos Creek, which flows in a natural channel until it reaches Los Peñasquitos Lagoon. Los Peñasquitos Creek drains Los Peñasquitos Canyon, which stretches east of Poway. The San Dieguito River drains the San Dieguito Hydrologic Unit. From the dam forming Lake Hodges, the San Dieguito River flows through the long and narrow San Dieguito River Park past Del Mar, and broadens into a tidal waterway and lagoon as it crosses under I-5 to empty into the Pacific Ocean at Solana Beach. Carmel Creek, fed by tributaries to the east, is located in San Diego just south of Carmel Valley Road and drains through a concrete box culvert under Sorrento Valley Road. These creeks include wetland and riparian areas, and convey flood flows and provide water quality benefits.

Cottonwood Creek and Moonlight Creek flow through an urbanized section of Encinitas. Cottonwood Creek is a small creek that flows intermittently above- and belowground through Encinitas between San Elijo and Batiquitos Lagoons. Cottonwood Creek is primarily channelized or underground near I-5; however, several drainages feed into Cottonwood Creek from the east to west side of I-5 where the outlet to the Pacific Ocean at Moonlight Beach has recently been restored. Restoration efforts have also included the creation of Cottonwood Creek Park west of I-5 where the creek channel has been restored to an aboveground channel between I-5 and the ocean. Cottonwood Creek does not provide substantial flood relief, water quality improvement, or wildlife habitat until reaching the newly restored channels in Cottonwood Creek Park. Moonlight Creek is a small tributary in Cottonwood Creek Park that runs parallel to and west of I-5. Moonlight Creek primarily conveys urban runoff from both sides of I-5 into Cottonwood Creek and supports some freshwater marsh habitat and southern willow scrub, providing habitat to riparian bird species and limited water quality and flood relief benefits.

Encinas Creek is part of the Encinas watershed, which is 3,434 acres in size within the larger Carlsbad Hydrologic Unit. The watershed extends inland from the coast 2.37 miles and the high elevation within the drainage is approximately 430 feet above mean sea level. The watershed begins as a small drainage in an industrial area and is immediately channelized. The creek continues through industrial and office parks associated with Palomar Airport until it reaches the lower valley area. It then makes its way to the Pacific Ocean after crossing I-5 and Pacific Highway.

Loma Alta Creek is a highly disturbed creek beginning in Vista and running through primarily urban areas in Oceanside. The creek flows parallel to Oceanside Boulevard through both natural and concrete-lined channels. After running under I-5 through a pipe, Loma Alta Creek runs into Loma Alta Slough, located north of Buccaneer Beach Park, before ultimately flowing into the Pacific Ocean. The Slough is considered a coastal estuarine wetland. Loma Alta Watershed is the northernmost watershed in the Carlsbad Hydrologic Unit. Loma Alta Creek provides some water quality filtration and conveys storm flows and urban runoff; however, these benefits are minimized by the highly disturbed nature of the Creek.

TABLE 5.4-3: LAGOON SUMMARY TABLE

	Los Peñasquitos	San Dieguito	San Elijo	Batiquitos	Agua Hedionda	Buena Vista
Lagoon Owner/Operator	<ul style="list-style-type: none"> State Parks City of San Diego NCTD Coastal Conservancy Los Peñasquitos Lagoon Foundation 	<ul style="list-style-type: none"> CDFW San Dieguito River Park Joint Powers Authority Southern California Edison County of San Diego City of San Diego 22nd Agricultural District NCTD Private 	<ul style="list-style-type: none"> CDFW County of San Diego San Elijo Lagoon Conservancy 	<ul style="list-style-type: none"> State Lands Commission CDFW Port of Los Angeles Batiquitos Foundation 	<ul style="list-style-type: none"> CDFW SDG&E Leases to YMCA City of Carlsbad Private 	<ul style="list-style-type: none"> CDFW City of Carlsbad City of Oceanside Buena Vista Lagoon Foundation NCTD Private
Size	565 acres	456 acres	491 acres	600 acres	400 acres	203 acres
Watershed Features	<ul style="list-style-type: none"> Carroll/Soledad Canyon Creek Los Peñasquitos Creek Carmel Creek 	<ul style="list-style-type: none"> San Dieguito River Drainages along I-5 	<ul style="list-style-type: none"> Escondido Creek San Elijo Creek 	<ul style="list-style-type: none"> San Marcos Encinitas Encinas Creeks 	<ul style="list-style-type: none"> Agua Hedionda Creek 	<ul style="list-style-type: none"> Buena Vista Creek
Habitat	<ul style="list-style-type: none"> Coastal salt marsh Estuarine Coastal/valley freshwater marsh Riparian scrub Beach Diegan coastal sage scrub Southern maritime chaparral Valley and foothill grasslands 	<ul style="list-style-type: none"> Open water Estuarine/palustrine flats Salt marsh Salt panne Brackish/freshwater marsh Coastal salt marsh Riparian scrub Mulefat scrub Coyote brush scrub Diegan coastal sage scrub 	<ul style="list-style-type: none"> Open water (estuarine and fresh) Sand/mudflats Coastal salt marsh Fresh/brackish marsh Riparian Diegan coastal sage scrub Southern maritime chaparral 	<ul style="list-style-type: none"> Open water Eelgrass Mud flats Coastal salt marsh Brackish emergent marsh Riparian Diegan coastal sage scrub 	<ul style="list-style-type: none"> Open water/subtidal Brackish/freshwater Mudflats Estuarine flats Salt marsh Riparian Diegan coastal sage scrub Mixed chaparral Grasslands Eelgrass 	<ul style="list-style-type: none"> Open water Estuarine Freshwater Coastal brackish and freshwater marsh Southern riparian scrub Eucalyptus woodland
Special-Status Species	<ul style="list-style-type: none"> Belding's savannah sparrow Western snowy plover (Critical Habitat) Light-footed clapper rail California gnatcatcher 	<ul style="list-style-type: none"> Belding's savannah sparrow Light-footed clapper rail Western snowy plover Critical Habitat) California least tern California gnatcatcher 	<ul style="list-style-type: none"> California least tern Belding's savannah sparrow California coastal gnatcatcher (Critical Habitat) Light-footed clapper rail Western snowy plover (critical habitat) 	<ul style="list-style-type: none"> Western snowy plover Belding's savannah sparrow California gnatcatcher California least tern Light-footed clapper rail No tidewater goby within I-5 Study Area 	<ul style="list-style-type: none"> Belding's savannah sparrow California least tern 	<ul style="list-style-type: none"> Belding's savannah sparrow Light-footed clapper rail Tidewater goby surveys near I-5, none found
Past & Present Restoration Efforts	<ul style="list-style-type: none"> Lagoon Enhancement Plan 1985 	<ul style="list-style-type: none"> SCE Restoration Initiated in 2006 	<ul style="list-style-type: none"> San Elijo Lagoon Restoration Project (SELRP) 	<ul style="list-style-type: none"> Lagoon Enhancement Project Port of Los Angeles/Long Beach 	<ul style="list-style-type: none"> Dredging and eelgrass planting Removal of toxic algae 	<ul style="list-style-type: none"> Buena Vista Lagoon Foundation Feasibility Study completed
Long-term Monitoring/Management	<ul style="list-style-type: none"> Southwest Wetlands Interpretive Association and Tijuana National Estuarine Research Reserve monitoring Lagoon outlet breaching Annual maintenance dredging 	<ul style="list-style-type: none"> Coastal Commission Monitoring of SONGS Restoration Project SCE maintenance dredging for open inlet 	<ul style="list-style-type: none"> San Elijo Lagoon Foundation maintenance and monitoring Maintenance dredging Invasive species control program Chemical/biological water quality monitoring to ensure adequate tidal mixing 	<ul style="list-style-type: none"> Port of Los Angeles 10 year Monitoring of Enhancement Project Maintenance dredging Reestablish eelgrass and native cord grass Monitor invasive plant species Monitor chemical, biological, and tidal improvements within basins after 1996 restoration project initiated 	<ul style="list-style-type: none"> Monitoring of toxic algae (Caulerpa) Maintenance dredging 	<ul style="list-style-type: none"> CDFW Ecological Reserve Monitoring/ Management Potential for new freshwater, saltwater or mixed regime with future restoration efforts Maintenance dredging

TABLE 5.4-3: LAGOON SUMMARY TABLE (CONTINUED)

	Los Peñasquitos	San Dieguito	San Elijo	Batiquitos	Agua Hedionda	Buena Vista
Land Use	<ul style="list-style-type: none">• Open Space• Utility corridors• Municipal infrastructure (stormwater outfalls & sewer lines)• Small-scale restoration sites.	<ul style="list-style-type: none">• Habitat Restoration• CDFW Ecological Reserve• JPA River Park• Horseback riding	<ul style="list-style-type: none">• Preserved wetland & upland areas• Contact and non-contact recreational uses• Ecological Reserve• Horseback riding	<ul style="list-style-type: none">• Ecological Reserve• Recreation (trails)• Interpretive Center (The Foundation)• Ag Production	<ul style="list-style-type: none">• Habitat Preservation• Commercial/Industrial (Encinas Power Plant desalination plant)• Recreation (YMCA camps, water sports, fishing)	<ul style="list-style-type: none">• Recreation• Fishing• Hiking• Wildlife viewing• Nature tours• Ecological Preservation
Transportation Facility Crossings	<ul style="list-style-type: none">• Railroad• I-5• Coast Hwy 101	<ul style="list-style-type: none">• Jimmy Durante Blvd• Coast Hwy 101• El Camino Real• I-5• Railroad	<ul style="list-style-type: none">• Railroad• Hwy 101• I-5	<ul style="list-style-type: none">• Coast Hwy 101• I-5• Railroad	<ul style="list-style-type: none">• Carlsbad Blvd/Coast Hwy• Railroad• I-5	<ul style="list-style-type: none">• Railroad• Carlsbad Blvd/Coast Hwy• I-5• El Camino Real
Lagoon System Concerns	<ul style="list-style-type: none">• Sedimentation/siltation• Excess freshwater inputs/ increased salinity• Lack of permanent tidal influence• Invasive plant species• Vector control• Impaired Waterbody (303d)	<ul style="list-style-type: none">• Sedimentation/siltation• Sensitive bird species/nesting island maintenance• Maintenance of open tidal inlet• Eelgrass• Potential Essential Fish Habitat (EFH)	<ul style="list-style-type: none">• Increased freshwater/ nutrient-rich inputs• Flooding/ vector control• Sedimentation/siltation• Reduced tidal prism/constrictions resulting in a transition from mudflat to subtidal habitat• Potential EFH	<ul style="list-style-type: none">• Increased sedimentation/siltation• Excessive nutrient loads from agricultural land uses• Invasive plant species• Potential EFH	<ul style="list-style-type: none">• Indicator Bacteria• Sedimentation Siltation• Potential EFH	<ul style="list-style-type: none">• Sedimentation/siltation• Sensitive bird species/ island maintenance

Buena Vista Creek is part of the Carlsbad watershed that drains to the Pacific Ocean via Buena Vista Lagoon. The creek experiences seasonal flows typical of most coastal drainages in San Diego County. However, artesian springs provide for some surface flow even during the summer dry season. During wet winter weather or flood events, surface flow increases significantly into Buena Vista Lagoon. Natural surface flows are augmented by urban and agricultural runoff. Most of the recreational uses are focused along the lower portions of Buena Vista Creek and around Buena Vista Lagoon, which is heavily used as a bird watching location. Sedimentation could pose a long-term threat to the freshwater marsh and open water mosaic that exist.

The San Luis Rey River is a significant resource and riparian feature within the corridor and is one of the few perennial rivers in San Diego County. The San Luis Rey River reach located within the corridor is a combination of open water habitat, freshwater marsh, arundo scrub, and riparian habitat that supports a variety of common and sensitive wildlife species. San Luis Rey River supports listed species, such as the tidewater goby, steelhead, and southern willow catcher, amongst others. San Luis Rey River also plays an important role in conveying storm flows, potential flood relief, and improving water quality from filtering from freshwater marsh species.

Beneficial Uses

All of the inland waterways provide the following beneficial uses (or have the potential to provide beneficial uses): agricultural supply, industrial services supply, contact and non-contact recreation, warm water habitat, and wildlife habitat. Exceptions are Encinas and Loma Alta Creeks, which are not designated for agricultural supply or industrial services supply. Additional beneficial uses include cold freshwater habitat for Soledad Canyon, Carroll Canyon Creek, and San Dieguito River. Beneficial use for rare, threatened, and endangered species is also assigned to Carroll Canyon Creek, Buena Vista Creek, and San Luis Rey River. Los Peñasquitos Creek is designated for preservation of biological habitats of special significance.

5.4.2 PWP/TREP Concerns

Environmental documentation and analysis prepared for the PWP/TREP rail and highway corridor improvements indicate that significant marine resources occur in the corridor, including coastal lagoons, rivers, streams, other wetland areas, and the Pacific Ocean, which could be affected by implementation of the proposed improvements. In addition, environmental documentation demonstrates that many of the corridor's significant marine resources, have experienced and will continue to experience varying degrees of ongoing degradation due to adjacent development stressors and the existing transportation facilities included in the PWP/TREP.

5.4.2.1 Existing Water Quality Deficiencies

Chapter 3A identifies resource deficiencies in the corridor related to water quality and discusses these deficiencies in the context of runoff from corridor urbanization, development and transportation facilities, current transportation facility treatment levels of runoff, the quality of water entering the corridor's waterbodies and the ocean, and impaired waterbodies. The corridor's coastal waterbodies have experienced decades of degradation from direct and indirect impacts of development, including the transportation facilities that cross these resources, which has negatively affected water quality that is essential for protecting coastal resources and maintaining water-oriented recreational use.

Corridor urbanization and development has cumulatively affected water quality as impermeable surfaces have increased and vegetative cover has decreased. This has resulted in significant increases in stormwater pollutant loads and runoff velocity and volume, contributing to excessive erosion and

sedimentation within corridor watersheds. Hydrology and water quality are also potentially affected in the coastal bluff areas of Del Mar along the rail facility where ongoing shoreline erosion problems caused by wave action require ongoing maintenance activities along or within the shoreline to ensure the facility is protected from failure.

The corridor transportation infrastructure generally conveys pollutants to surface waters, which are most often generated from roadways, parking lots, and disturbed landscapes. However, highway facilities comprise only a small portion of the land area (670 acres) in the NCC and are a relatively minor contributor to stormwater pollution. The following table lists the hydrologic areas and subareas that encompass the proposed NCC, and compares that area to existing I-5 NCC right-of-way. As indicated, the maximum tributary area and highway contribution to the hydrologic areas/subareas is less than two percent.

TABLE 5.4-4: EXISTING HIGHWAY CONTRIBUTION TO NCC SUB-WATERSHEDS

Watershed	Hydrologic Area (HA)/ Subarea (HSA) Name	HA/HSA Number	HA/HSA (Acres)	Existing I-5 Tributary Area (Acres)	Existing I-5 Contribution to HA/HSA (%)
Peñasquitos	Miramar HA	906.40	25,924	288	1.10
	Miramar Reservoir HA	906.10	32,594.8	332	1.02
San Dieguito	Rancho Santa Fe HSA	905.11	22,610.5	221	0.98
Carlsbad	San Elijo HSA	904.61	20,721.5	181	0.88
	Batiquitos HSA	904.51	17,819.4	330	1.85
	Encinas HA	904.40	2,991.4	47	1.56
	Los Monos HSA	904.31	11,904.4	95	0.8
	El Salto HSA	904.21	7,476.4	134	1.79
	Loma Alta HSA	904.10	5,199.6	40	0.78
San Luis Rey	Mission HSA	903.11	29,930	114	0.38
Santa Margarita	Lower Ysidora HSA	902.11	6,710	38	0.57

Source: I-5 NCC Water Quality Technical Memorandum, March 2013 (Appendix E of the PWP/TREP).

Potential pollutants from the roadway and slopes include sediment, nutrients (nitrogen and phosphorus) from native and ornamental vegetation, metals (copper, lead, and zinc), fertilizers, and

pesticides. Other than runoff from parking structures associated with the rail facilities, runoff from rail improvements is relatively minor because of limited impermeable surface area associated with rail lines.

The corridor contains a number of impaired water bodies that do not meet water quality standards (as defined by the Clean Water Act [CWA]), and therefore cannot support the beneficial uses for which the water body has been designated. Chapter 3A identifies impaired water bodies in the corridor (303(d) list), which include Los Peñasquitos Creek, Los Peñasquitos Lagoon, Soledad Canyon Creek, the Pacific Ocean at San Dieguito Lagoon, San Elijo Lagoon, Buena Vista Lagoon, Loma Alta Slough, the Pacific Ocean at the San Luis Rey River mouth, the San Luis Rey River and Oceanside Harbor. Inland waterways that are tributaries of, or discharge into, these 303(d) impaired waters may also be considered part of the 303(d) listed water bodies.

A number of impaired water bodies were given special status under the CWA for which the state is required to identify waters that will not achieve water quality standards after application of effluent limits. For these impaired water bodies, states are required to develop plans for water quality improvement. The plans consider each water body and pollutant for which water quality is considered impaired, and include load-based (as opposed to concentration-based) limits called total maximum daily loads (TMDL), which is the maximum amount of pollution (both point and non-point sources) that a water body can assimilate without violating state water-quality standards. For example, a TMDL for Los Peñasquitos Lagoon was adopted by the San Diego Regional Water Quality Control Board on June 13, 2012. Caltrans is listed as a responsible party on the TMDL, and North County Transit District is also a responsible party because it is enrolled in the Greater San Diego Phase II Municipal Separate Storm Sewer (MS4) Permit issued by the State Water Resources Control Board on February 5, 2013. The responsible parties for this TMDL are required to meet specific targets for restoration of salt marsh in the Los Peñasquitos Lagoon.

Chapter 3A identifies pollutants discharging with a load or a concentration that commonly exceed allowable standards and that are considered treatable by Caltrans' approved treatment BMPs, which are referred to as Targeted Design Constituents (TDCs). See Table II.2 within the *I-5 NCC Water Quality Technical Memorandum* (Appendix E of the PWP/TREP) for details on which 303(d) listed waterbodies will be potentially affected by implementation of transportation improvements. TDCs in the corridor include sediment, metals (total and dissolved zinc, lead, and copper), nitrogen, phosphorus, and general metals. Caltrans developed and implemented a BMP Retrofit Pilot Program to combat these TDCs that was finalized in January 2004 for several locations along the I-5 corridor. The pilot program for runoff in the corridor highway facility included detention devices at I-5 and SR 56, I-5 and Manchester Avenue, a wet basin at I-5 and La Costa Avenue, media filters at the La Costa Park & Ride and the SR-78 and I-5 Park & Ride, and a biofiltration system at I-5 and Palomar Airport Road. These facilities were able to treat about 7% (approximately 47 acres) of the total existing paved area in the NCC. The 7% treatment accounts for the identified pilot projects, as well as Treatment BMPs completed as part of previous construction projects within the corridor such as I-5/805 and I-5/Lomas Santa Fe. Consistent with federal and state law, as well as with the terms of its National Pollutant Discharge Elimination System (NPDES) permit, Caltrans also implemented maintenance BMPs that included preventative measures to ensure that ongoing maintenance activities be conducted in a manner that reduces the amount of pollutants discharged to surface waters via Caltrans stormwater drainage systems. Maintenance BMPs were implemented in accordance with the Storm Water Quality Handbook—Maintenance Staff Guide, which provides detailed instructions on applying approved stormwater maintenance BMPs to maintain facility operations and highway activities in a manner that provides maximum protection of water quality.

Table 5.4-5 provides a tabular reference to PPDG's Appendix E treatment BMP checklists T-1 to T-10 along with [Figure 2-3 Decision Process for Selecting Treatment BMPs at Specific Sites](#). For the selection of conceptual BMPs, the design team has prepared and preliminarily quantified Treatment BMP water quality flows, tributary areas and percent treatment as shown in Section 5.4.2.4 below.

TABLE 5.4-5: POLLUTANTS OF CONCERN FROM TYPICAL HIGHWAY RUNOFF AND APPLICABLE TREATMENT BMPs

	Biofiltration System	Infiltration Devices	Detention Devices	Dry Weather Flow Diversions ¹	Gross Solids Removal Devices	Multi-Chambered Treatment Train	Media Filters	Wet Basins	Traction Sand Traps
Total Suspended	✓	✓	✓	✓		✓	✓	✓	✓
Total Dissolved				✓					
Nutrients	✓ ⁴	✓	✓ ⁴	✓			✓ ²	✓ ³	
Pesticides		✓		✓					
Particulate Metals	✓	✓	✓	✓		✓	✓	✓	
Dissolved Metals	✓	✓		✓		✓	✓		
Pathogens		✓		✓				✓	
Litter		✓	✓	✓	✓	✓	✓	✓	
Biochemical Oxygen		✓		✓				✓	
Turbidity	✓	✓	✓	✓		✓	✓	✓	✓

Source: Pollutants of Concern from Typical Highway Runoff and Applicable Treatment BMPs (PPDG Table 2-2).
<http://www.dot.ca.gov/hq/oppd/stormwtr/ppdg/swdr2012/PPDG-May-2012.pdf>.

¹ Dry Weather Flow Diversions address non-stormwater flows only.

² Phosphorus and Nitrogen for the Austin Sand Filter; Phosphorus only for the Delaware Sand Filter.

³ Reductions observed for dry weather flow only.

⁴ Soil needs to have adequate infiltration capacity

Existing Lagoon Deficiencies

Chapter 3A also identifies resource deficiencies in the context of the corridor's lagoons and associated sensitive habitat areas. Corridor lagoons have historically experienced adverse impacts to water quality and to the varied habitat areas, plant, and wildlife species supported within and adjacent to the lagoons. The hydrology of the watersheds in the corridor has been directly altered by adjacent development and the existing highway and rail facilities, which have displaced watershed features including lagoon, river, stream, and drainage areas. In addition, realignment and/or channelization of inland waterways conveying stormwater through the watersheds to coastal water bodies have also resulted in significant modification to the hydrology of the lagoons within the corridor. The physical alterations of watershed features have resulted in a cumulative loss of wetland and riparian habitat areas that, in turn, has decreased the valuable biological function of these areas to naturally dissipate and filter sediment and pollutants in stormwater runoff prior to discharge to the lagoons and eventually the Pacific Ocean. In addition to direct displacement of habitat area resulting from adjacent

development and construction of the corridor transportation facilities, watershed alterations such as the diversion of freshwater from inland waterways, excess sedimentation and siltation, and, in some cases, reconfiguration of the lagoons' inlet at the ocean, have all contributed to degradation of lagoon resources. Development encroachment has also reduced the amount and quality of transitional and upland habitat areas that typically provide buffers between adjacent land uses and the habitats and species supported by the lagoons.

The health of the lagoons in the corridor is based, in large part, on the extent to which waters are free flowing or stagnant in each system. This health directly affects the quality of habitat provided for lagoon-dependent wildlife, as well as how well the lagoons function for passive recreational purposes (reflected in health of vegetation, lack of odor, etc.). The *I-5 NCC Project Supplemental Draft EIR/EIS* details the results of a number of studies undertaken by SANDAG/Caltrans to identify existing and proposed rail and highway bridge dimensions in context with known environmental concerns for each lagoon system, with analysis of the potential effects of the proposed bridge modifications on tidal circulation, flood flows and associated scour, sediment transport, sea level rise relative to freeboard, wildlife connectivity, channel protection features, and associated impacts on wildlife habitats and federal or state jurisdictional waters/wetlands. The analysis of each lagoon also addresses constraints presented by the Pacific Coast Highway 101 transportation corridor. The analyses confirm that existing rail and highway bridges at San Elijo, Batiquitos, and Buena Vista Lagoons were identified as potentially posing more substantial constrictions (relative to tidal circulation, flood flow, etc.), with a potential for optimization, and additional technical studies were undertaken to identify how the replacement bridges could be designed to optimize tidal and fluvial flows in these system. In addition, there are plans for large-scale restoration efforts at San Elijo and Buena Vista Lagoons where existing bridges could restrict the range of restoration alternatives under consideration for these lagoons.

5.4.2.2 Potential PWP/TREP Project Impacts

PWP/TREP concerns for protection and enhancement of marine resources relate to proposed project impacts that may occur from construction, operation, and maintenance of the rail and highway facilities, and community enhancement improvements, which include new and enhanced recreation facilities. The PWP/TREP improvement areas are located within and/or drain directly to a number of coastal waterbodies and proposed improvements that could individually or cumulatively result in short-term construction or long-term operational water quality and marine habitat impacts. Transportation improvements and facilities often generate sources of pollutants that are carried by runoff to adjacent waterbodies, thus affecting water quality and sensitive marine resources.

The proposed PWP/TREP improvements would result in changes to the project area land surface through grading and increased impervious surfaces, which could increase peak runoff rates, and volume and pollutant loads from pre-development levels.¹ PWP/TREP improvements would also require grading and landform modification that could disrupt and/or interfere with surface water flow and natural attenuation of runoff by drainage features, resulting in increased peak flood discharge, erosion, and sedimentation to receiving waterbodies. In addition, potential erosion and sedimentation impacts are of concern where existing rail improvements along Del Mar Bluffs require construction activities for the maintenance of existing shoreline protection devices. Implementation of the PWP/TREP improvements could also cause impacts to water quality due to increased runoff and erosion from grading and vegetation removal. Other construction related impacts may include

¹ *I-5 NCC Project Draft EIR/EIS* (Section 3-10), June 2010; *I-5 NCC Project Supplemental Draft EIR/EIS* (Chapter 3), August 2012; *LOSSAN Final Program EIR/EIS* (Section 3.12), September 2007.

accidental discharge and spill of construction debris and pollutants from construction equipment, demolition activities with bridge improvement and replacement projects, and with construction activities along the railway on Del Mar Bluffs.

However, without the proposed PWP/TREP infrastructure improvements, the corridor's water quality, and lagoon, wetland and riparian habitat areas will continue to degrade. The proposed transportation infrastructure improvements, when combined with the PWP/TREP Resource Enhancement and Mitigation Program (detailed in Chapter 6B), could significantly restore and enhance marine resources and thereby improve many of the existing deficiencies of the corridor's water quality, lagoon, wetland, and riparian habitat areas. Existing LOSSAN rail and I-5 highway transportation facilities contribute to degraded water quality and marine habitat due to previous transportation construction practices that displaced marine habitats, and which also limit opportunities for retrofitting facilities to improve water quality. Absent the proposed PWP/TREP facility improvements, opportunities to modify existing transportation infrastructure to improve existing deficiencies of water quality, lagoon, wetland, and riparian habitat resources would remain extremely limited and unlikely. As such, the PWP/TREP improvements are planned and designed to remedy impacts to water quality and marine resources caused by previous construction and/or ongoing operations of the existing transportation facilities to the extent feasible. Implementing the PWP/TREP would thereby facilitate enhancement and restoration of the biological productivity and quality of marine resources including coastal waters, lagoons, and streams.

5.4.2.3 LOSSAN Rail Corridor Impact Assessment

Proposed rail facility track improvements would not result in significant expansion of impermeable surfaces and thus would not contribute substantially to increased stormwater runoff. The majority of rail improvements would be contained within the existing right-of-way or in deep tunnels and, thus, would minimize the need for excessive grading and landform modification that could otherwise disrupt and/or interfere with surface water flow or result in increased peak flood discharge, erosion, and sedimentation to receiving waterbodies. Rail improvements include parking area expansion at stations and a new platform at Del Mar that would involve increased impervious surfaces and could contribute to increased runoff, erosion, and pollutant loads to receiving waterbodies; however, with the exception of the proposed platform at Del Mar, all stations now have, or are developing, vertical parking structures in already developed areas. It is expected that proposed parking resources would likely be met through additional parking levels in the existing structures; therefore, impervious surface at ground level would not increase substantially.

Potential hydrology and water quality impacts related to construction of rail improvements could result from ground-disturbing activities for double-tracking, at shafts, portals, grade separations and staging areas. Sources of stormwater pollution during construction could include equipment and vehicle leaks of oil, grease, fuel, etc., construction materials, and waste material. Though not specifically addressed in the Los Angeles-San Diego-San Luis Obispo (LOSSAN) Final Program EIR/EIS, but based on data presented in the I-5 NCC Project Draft EIR/EIS (June 2010), Essential Fish Habitat (EFH) could occur within the rail corridor in San Dieguito, Batiquitos, Agua Hedionda and San Elijo Lagoons. These possible EFHs could be impacted with any degradation in water quality and/or hydrology. Eelgrass beds grow subtidally and are important habitats for aquatic species and have specific regulations concerning impacts and mitigation. Subtidal portions of the lagoons within the study area were surveyed in 2006 for current eelgrass and possible invasive algae (i.e. *Caulerpa taxifolia*) distributions for purposes of identifying potential impacts. Eelgrass was observed in Batiquitos and Agua Hedionda Lagoons. Eelgrass habitat could be impacted by degraded water quality and hydrology.

As part of the conceptual design at the program level, the lead agencies have proposed, at a minimum, maintaining either the same in-water footprint or reducing the number of in-water columns compared to the existing rail corridor bridges; however, proposed rail improvements would likely result in unavoidable fill impacts to wetlands. Preliminary assessment indicates that approximately 7.45 acres of total wetland habitat within the rail corridor could be directly impacted by proposed rail improvements in the first three phases of the NCC Program Phasing Plan. Within Oceanside and Carlsbad, there would be approximately 0.63 acres of potential wetland impact due to proposed rail projects. Within Encinitas and Solana Beach, approximately 5.65 acres of wetlands are mapped within the proposed rail alignment options, while approximately 1.17 acres are mapped within the Del Mar and San Diego area.

An additional 11.8-12.6 acres of wetland impacts could occur with implementation of the two double-track rail projects in Del Mar and San Diego included in the vision (final) project phase, depending on the future tunnel alternative selected. Either tunnel option in the Del Mar area would involve deep tunneling that would avoid disturbance along the tunnel routes to most wetland resources, except potentially at portal areas, like through the CDFW Preserve in San Dieguito Lagoon. The Camino Del Mar tunnel option would involve double-tracking across the Los Peñasquitos and San Dieguito lagoons on existing or new rail bridges, which could be done without net increase of the in-water footprint of the rail infrastructure within the lagoons. Construction along the lagoon perimeters would have direct and indirect impacts on wetland areas during construction. There may be the opportunity to replace the existing bridge across Los Peñasquitos with a causeway structure that would increase the tidal flow and remove the embankment from the lagoons. This would require extensive in-water work, causing higher impacts during construction, but would result in a long-term beneficial impact to the lagoon, which would be determined in project-level analyses. The I-5 tunnel option would avoid crossing Los Peñasquitos Lagoon, but the design concept would include a new, elevated structure along the south edge of San Dieguito Lagoon, following the southern edge of San Dieguito Racetrack View Drive, which may result in potential new, temporary and permanent impacts on wetland resources. The I-5 tunnel option would allow for the removal of the existing Los Peñasquitos rail bridge structures in the future, which would have temporary impacts on the lagoon from in-water work to remove the existing structure but ultimately create better tidal circulation in the lagoon.

Table 5.4-6 provides a breakdown of potential rail corridor wetland impacts versus available mitigation credits according to the project phases (the full PWP/TREP Phasing Plan is presented in Chapter 6A).

Temporary Impacts

In all cases, temporary construction impacts from project activities in and around the lagoons could affect habitats associated with the lagoons. Potential impacts include in-water work for new infrastructure, possible removal of existing structures, turbidity, and increased sedimentation during construction; however, as discussed below, it is also anticipated that proposed bridge replacement projects over the lagoons and other coastal waterbodies could have a beneficial effect on hydrology and water quality by constructing new bridges that better convey flood waters, allow for improved tidal flushing, and thereby improve water quality and marine resources.

5.4.2.4 I-5 Highway Corridor Impact Assessment

Operational and construction activities for the proposed highway improvements could affect water quality and marine habitats. The *I-5 NCC Project Draft EIR/EIS* compares and analyzes existing and proposed additional pavement areas between the four proposed Build Alternatives, whereas the *I-5 NCC Project Supplemental Draft EIR/EIS* discusses in detail the effects of the Locally Preferred Alternative (LPA) on corridor water quality and marine habitats. A number of existing treatment BMPs are present within the project limits, including biofiltration swales, extended detention facilities, wet

basins, and media filters; with these facilities providing treatment for runoff from associated paved areas within the I-5 corridor. The percentage of runoff that is treated is approximately 7%. The LPA could modify local drainages and alter some of the existing treatment tributary areas. The existing and proposed amounts of impervious areas within the project limits were quantified based on average directional dimensions for general purpose lanes, with auxiliary lanes, median, and on- and off-ramps. The existing paved area within the I-5 corridor comprises approximately 670 acres, of which 7% is treated through BMPs. The LPA would result in approximately 214 acres of new paved area (for a combined paved area of 884 acres) with treatment to be provided for approximately 240 acres of the equivalent net new impervious area. This means that 112% of net new pavement (this is the equivalent of treating 100% of new pavement added, plus approximately 12 % of existing pavement), or 27% of the total combined pavement will be treated corridor-wide. See Table 5.4-7 for a breakdown of current and proposed new treated pavement by watershed area. While the increased impervious area may be considered significant in the context of the existing highway facility, the maximum Caltrans tributary area discharging to any of the hydrologic areas/subareas in the corridor would continue to be minimal (see Table 5.4-4).

In addition, pollutants from construction activities could be generated from construction materials as well as construction activities. Pollutants generated from construction materials could include vehicle fluids, asphaltic emulsions from paving activities, joint and curing compounds, concrete curing compounds, solvents and thinners, paint, sandblasting material, landscaping materials, treated lumber, PCC rubble, and general litter. Pollutants from construction activities could include clearing and grubbing, grading operations, soil import operations, sandblasting, landscaping, and utility excavation.

TABLE 5.4-6: PERMANENT WETLAND IMPACTS VS. MITIGATION (BY YEAR/PHASE)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Wetland Establishment (Acres)	Wetland Restoration (Acres)	Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Available No Net Loss Mitigation (Release 3 @ 10%)	Available No Net Loss Mitigation (Release 4 @ 10%)	Available No Net Loss Mitigation (Release 5 @ 25%)	Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)	
2010-2020	YEAR 2013											
	Oceanside Through Track (2013)	0	None underway	0	0	0						
	Poinsettia Station Improvements (2013)	0										
	TOTAL IMPACT (2013)	0	TOTAL AVAILABLE MITIGATION (2013)									0
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)						0					
	YEAR 2014											
	San Elijo Lagoon Double Track (2014)	4.47	Hallmark (Agua Hedionda)	4.37	0.97	1.31						
			Regional Lagoon Maintenance Program (Endowment Established; *10% Proposed for Release Upon Establishment, Contingency Pool project)	20.7	0	2.07*						
	TOTAL IMPACT (2014)	4.47	TOTAL AVAILABLE MITIGATION (2014)									3.38
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2013 + 2014 IMPACTS SUBTRACTED)						-1.09					
	YEAR 2015											
	2 HOV from Lomas Santa Fe to Union St, including San Elijo Bridge Replacement, Manchester DAR, bike paths/trails & ultimate grading (Phase 1A: 2015-2018)	0.53	Hallmark (Agua Hedionda)	Ongoing; year 1 monitoring				0.53				
	1 HOV from Union St to SR 78 (Phase 1B: 2015-2018)	0.79	Regional Lagoon Maintenance Program	Ongoing; credit released when adequate funds established in escrow account and/or contingencies required								
	CP Eastbrook to CP Shell Double Track (2015)	0.36	San Dieguito W19 (San Dieguito) (Release 1 only)*	47.3	0	7.1*						
	Carlsbad Village Double Track, includes Buena Vista Bridge Replacement (2015)	0.26										
	TOTAL IMPACT (2015)	1.94	MITIGATION RELEASED BY YEAR (2015)				7.1	0.53				
	TOTAL AVAILABLE MITIGATION (2015)						7.63					
	AVAILABLE MITIGATION SUBTOTAL (2014 ROLLOVER + 2015)						6.54					
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2015 IMPACTS SUBTRACTED)						4.6					
	YEARS 2016-2020											
	2 HOV from La Jolla Village Dr to I-5/I-805 merge, includes Voigt DAR & I-5 /I-805 HOV Flyover Connector (Phase 1C: 2017-2020)	0.13	Hallmark (Agua Hedionda)	Ongoing; year 2 monitoring					0.53			
	Advanced Batiquitos Lagoon Bridge Replacement (Phase 2D: 2018-2019)	3.62	Regional Lagoon Maintenance Program	Ongoing; credit released when adequate funds established in escrow account and/or contingencies required								
	Batiquitos Lagoon Double Track, includes Batiquitos Bridge Replacement (2016)	0.01	San Dieguito W19 (San Dieguito)	Ongoing; year 1 monitoring (Release 2 + Release 3)*				11.83*				
	Encinitas Station Parking	0										
	Solana Beach Station Parking	0										

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Wetland Establishment (Acres)	Wetland Restoration (Acres)	Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Available No Net Loss Mitigation (Release 3 @ 10%)	Available No Net Loss Mitigation (Release 4 @ 10%)	Available No Net Loss Mitigation (Release 5 @ 25%)	Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)
	San Dieguito Double Track and Platform, includes San Dieguito Bridge Replacement (2016)	2.35									
	TOTAL IMPACT (2016-2020)	6.11	MITIGATION RELEASED BY YEAR (2016-2020)				11.83	0.53			
	TOTAL AVAILABLE MITIGATION (2016-2020)							12.36			
	AVAILABLE MITIGATION SUBTOTAL (2015 ROLLOVER + 2016-2020)							16.96			
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2016-2020 IMPACTS SUBTRACTED)							10.85			
	INITIAL-TERM TOTAL IMPACT	12.52	INITIAL-TERM TOTAL MITIGATION								72.81
2021-2030	2 ML from I-5/I-805 to SR 56, including new Sorrento Valley Road bike/maintenance vehicle bridge, trails under I-5 at Carmel Creek, widening of I-5 at Carmel Creek, and trail under merge (Phase 2A: 2020-2022)	+0.41 (creation)	Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito) Regional Lagoon Maintenance Program	Ongoing	Full mitigation/sign-off anticipated by 2021						
	2 ML from SR 56 to Lomas Santa Fe Dr, including San Dieguito River Bridge Widening and bike paths/trails (Phase 2B: 2020-2025)	3.59									
	2 ML from Union St to Palomar Airport Rd (Phase 2C: 2025-2030)	1.33									
	Oceanside Station Parking	0									
	Carlsbad Village Station Parking	0									
	Carlsbad Poinsettia Station Parking	0									
	CP Moonlight to CP Swami Double Track	0									
	Del Mar Fairgrounds Special Event Platform	0									
	MID-TERM TOTAL IMPACT	4.51	MID-TERM TOTAL AVAILABLE MITIGATION							60.29	
	TOTAL MID-TERM ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										55.78
2031-2040	2-4 ML from Palomar Airport Rd to SR 76, includes Agua Hedionda & Buena Vista Lagoon Bridge Replacements (Phase 3A-3C: 2030-2035)	5.76	Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito) Regional Lagoon Maintenance Program	Ongoing	Full mitigation /sign-off anticipated by 2021						
	Braided Ramps from Roselle to Genesee (Phase 3D: 2030-2035)	1.11									
	LONG-TERM TOTAL IMPACT	6.87	LONG-TERM TOTAL AVAILABLE MITIGATION							55.78	
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										48.91
NCC TOTALS (ALL PHASES EXCLUDING VISION PHASE¹)		23.9	Sites identified above.	71.84	0.97	72.81					

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Wetland Establishment (Acres)	Wetland Restoration (Acres)	Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Available No Net Loss Mitigation (Release 3 @ 10%)	Available No Net Loss Mitigation (Release 4 @ 10%)	Available No Net Loss Mitigation (Release 5 @ 25%)	Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)						
2041-2050	Leucadia Blvd Grade Separation	0	Hallmark (Agua Hedionda)	Ongoing		Full mitigation /sign-off anticipated by 2021											
	Del Mar Tunnel -Camino Del Mar / Peñasquitos Double Track Option -I-5 / Peñasquitos Option	2.01-2.77	San Dieguito W19 (San Dieguito) Regional Lagoon Maintenance Program														
	Peñasquitos Double Track	9.87															
	I-5/SR 78	3.5															
	VISION PHASE¹ TOTAL IMPACT	15.38 – 16.14	VISION PHASE TOTAL AVAILABLE MITIGATION									48.91					
	TOTAL “ENHANCEMENT” FOLLOWING PROGRAM IMPLEMENTATION											32.77 – 33.53					

Note:

Phasing presented in this table is for general mitigation accounting purposes only. The reader is referred to Chapter 6A for the RTP-approved project phasing plan and maps.

1.
- “Vision” Phase projects are programmatic in nature, and currently scheduled for implementation in years 2041 to 2050. At a future date and prior to their implementation, project-specific information would be made available to further refine the impact estimates presented herein.

TABLE 5.4-7: SUMMARY OF WATERSHED CHARACTERISTICS AND I-5 NCC CONCEPTUAL TREATMENT BMPs

Hydrologic Unit (Watershed) Name	Hydrologic Area/Sub Area (Water Body) Name	303(d) Impaired Water Body	Beneficial Uses ¹	Constituents of Concern	TDCs	Sub-Watershed Name and Size (ac)	Existing I-5 Tributary Area (ac)	I-5 Contribution to Tributary Area (%)	Existing I-5 Pavement (ac)	Existing BMPs	Total Existing Treated Pavement (%)	New Pavement (ac)	Proposed Treatment BMPs	Total New Treated Pavement (Equiv.) (%)	Total Combined Treated Pavement (%)
Los Peñasquitos	Rose Creek	√	MDS*, ISx, CR+, NCR+, WFH+, WH+	Selenium & Toxicity	N/A ²	Miramar HA	288	1.1	11.7	None	0	8.7	Bioswales (3)	112	48
	Los Peñasquitos Creek	√	MDS*, AS+, IS+, CRx, NCR+, PBH+, WFH+, WH+	Total Dissolved Solids, Selenium, Toxicity, Total Nitrogen as N, Fecal Coliform, Enterococcus	Sediment, Nitrogen	Los Peñasquitos Creek/Carroll Canyon Creek (32594.8)	332	1.02%	182	Bioswales and Detention Basin	4	21	Bioswales (4)	150	16
	Los Peñasquitos Lagoon	√	CR+, NCR+, PBH+, EH+, WH+, RTE+, MH+, MAO+, SRE+, SH+	Sedimentation/ Siltation	Sedimentation/ Siltation										
	Carmel Creek		MDS*, AS+, IS+, CRx, NCR+, WFH+, WH+												
	Soledad Canyon Creek	√	MDS*, AS+, IS+, CRx, NCR+, WFH+, CFH+, WH+	Sediment Toxicity & Selenium	N/A ²										
	Carroll Canyon Creek		MDS*, AS+, IS+, CRx, NCR+, WFH+, CFH+, WH+, RTE+												
San Dieguito	San Dieguito Lagoon	√	CR+, NCR+, PBH+, EH+, WH+, RTE+, MH+, MAO+, SRE+	Total Coliform*	N/A ²	San Dieguito River (22,610.5)	221	0.98%	90	Bioswales and Detention Basin	27	29	Bioswales (10) and Detention Basin	126	31
	San Dieguito River (Mouth of)	√	MDS*, ASx, ISx, CR+, NCR+, WFH+, CFH+, WH+, SRE+	Indicator Bacteria (at Shoreline)	N/A ²										
Carlsbad	San Elijo Lagoon	√	CR+, NCR+, PBH+, EH+, WH+, RTE+, MH+, MAO+, SRE+	Indicator Bacteria & Sedimentation/ Siltation & Eutrophic	Sedimentation/ Siltation	San Elijo Lagoon (20,721.5)	181	0.88%	53	Bioswales and Detention Basin	13	39	Bioswales (6) First Flush flow diversion	54	23
	Cottonwood Creek	√	MUN+, AS*, CR*, NCR*, WH, WFH	DDT (Dichlorodiphenyltrichloroethane)	N/A ²	Cottonwood Creek	330	1.85%	43	None	0	20	Bioswales (12)	190	59
	Batiquitos Lagoon		CR+, NCR+, PBH+, EH+, WH+, RTE+, MH+, MAO+, SRE+						56	Wet Basin	7	21	Bioswales (5)	169	46
	Encinas Creek	√	MDS*, CRx, NCR+, WFH+, WH+	Toxicity & Selenium	N/A ²	Encinas Creek (2,991.4)	47	1.56%	60	Bioswales	7	22	Bioswales (5)	80	21
	Agua Hedionda Lagoon		IS+, CR+, NCR+, CSF+, PBH+, EH+, WH+, RTE+, MH+, AC+, MAO+, SRE+, SH+			Agua Hedionda Lagoon (11,904.4)	95	0.8%	45	None	0	16	None (ROW/ ESHA impacts)	0	0
	Agua Hedionda Creek	√		Total Dissolved Solids, Selenium, Toxicity, Total Nitrogen as N, Fecal Coliform, Enterococcus, Phosphorus, Manganese	Sediment, Nitrogen, Phosphorus										
	Buena Vista Lagoon	√	CR+, NCR+, PBH+,	Indicator Bacteria &	Sedimentation/	Buena Vista Lagoon	134	1.79%	43	None	0	12	Bioswales	97	21

Hydrologic Unit (Watershed) Name	Hydrologic Area/Sub Area (Water Body) Name	303(d) Impaired Water Body	Beneficial Uses ¹	Constituents of Concern	TDCs	Sub-Watershed Name and Size (ac)	Existing I-5 Tributary Area (ac)	I-5 Contribution to Tributary Area (%)	Existing I-5 Pavement (ac)	Existing BMPs	Total Existing Treated Pavement (%)	New Pavement (ac)	Proposed Treatment BMPs	Total New Treated Pavement (Equiv.) (%)	Total Combined Treated Pavement (%)
			EHx, WH+, RTE+, MH+, WFH+	Sedimentation/ Siltation & Nutrients	Siltation/ Nutrients	(7,476.4)							(3)		
	Buena Vista Creek	√	MDS*, AS+, IS+, CR+, NCR+, WFH+, WH+, RTE+	Selenium & Sediment Toxicity	N/A ²										
	Loma Alta Slough	√	CR+, NCR+, EH+, WH+, RTE+, MH+	Indicator Bacteria & Eutrophic	N/A ²	Loma Alta Creek (5,199.6)	40	0.78%	28	None	0	13	Bioswales (4)	120	38
	Loma Alta Creek	√	MDS*, CRx, NCR+, WFH+, WH+	Selenium & Toxicity	N/A ²										
San Luis Rey	San Luis Rey River (Mouth of)	√	CR+, NCR+, WH+, RTE+, MH+, MAO+	Enterococcus, Total Coliform	N/A ²	San Luis Rey River (29,930)	114	0.38%	46	None	0	12	Bioswales (9)	157	33
	San Luis Rey River	√	MDS*, AS+, IS+, CR+, NCR+, WFH+, WH+, RTE+	Chloride, Fecal Coliform, Phosphorus, Total Dissolved Solids, Total Nitrogen as N, Toxicity, Enterococcus	N/A ²										
Santa Margarita	Oceanside Harbor)	√	IS+, NAV+, CR+, NCR+, CSF+, WH+, RTE+, MAO+, MAR+, SRE+, SH+	Copper	Copper	Santa Margarita (6,710)	38	0.57%	11.7	None	0	1	Bioswales (2)	645	40

*Pacific Ocean Shoreline, San Dieguito HU, at San Dieguito Lagoon Mouth at San Dieguito River Beach

Sources: http://www.waterboards.ca.gov/tmdl/docs/303dlists2006/approved/r9_06_303d_reqtmdls.pdf
<http://www.stormwater.water-programs.com/wqpt/CoPM.asp?CO=SD&RTE=5>
I-5 NCC Project Draft EIR/EIS (Section 3-10), June 2010.
I-5 NCC Water Quality Technical Memorandum, March 2013 (Appendix E of the PWP/TREP)

Notes:
Note: All numbers identified are preliminary, have been rounded, and will be refined as design progresses.
¹ Beneficial Use acronyms defined as follows (see also Table 5.4-1 of PWP/TREP):

Corridor Lagoons/Coastal Surface Waters

+ = Existing Beneficial Use * = Excepted from Municipal x = Potential Beneficial Use

IS = Industrial Service Supply
CR = Contact Recreation
NCR = Non-Contact Recreation
CSF = Commercial/ Sport Fishing
PBH = Preservation of Biological Habitats of Special Significance
EH = Estuarine Habitat
WH = Wildlife Habitat

RTE = Rare, Threatened or Endangered Species
MH = Marine Habitat
AC = Aquaculture
MAO = Migration of Aquatic Organisms
SRE = Spawning, Reproduction and/or Early Development
WFH = Warm Freshwater Habitat
SH = Shellfish Harvesting

Inland Surface Waters

+ = Existing Beneficial Use * = Excepted from Municipal x = Potential Beneficial Use

MDS = Municipal/ Domestic Supply
AS = Agricultural Supply
IS = Industrial Service Supply
CR = Contact Recreation
NCR = Non-Contact Recreation
PBH = Preservation of Biological Habitats of Special Significance

WFH = Warm Freshwater Habitat
CFH = Cold Freshwater Habitat
WH = Wildlife Habitat
RTE = Rare, Threatened or Endangered Species
SRE = Spawning, Reproduction and/or Early Development

² Not determined to be a constituent found within the Caltrans stormwater runoff monitoring program.

TABLE 5.4-8A: SAN ELIJO HOV PROJECT-SPECIFIC STANDARD DESIGN TREATMENT BMPs

EXISTING			PROPOSED				POST CONSTRUCTION		POLISHING ¹			TOTAL	
EXISTING PAVEMENT (AC)	EXISTING PAVEMENT TREATED (AC)	EXISTING PAVEMENT TREATED (%)	NEW PAVEMENT (AC)	NEW PAVEMENT TREATED (AC)	NEW PAVEMENT TREATED BY POROUS PAVEMENT (AC)	NET NEW EQUIVALENT ² PAVEMENT TREATED (%)	POST CONSTRUCTION PAVEMENT (AC)	POST CONSTRUCTION PAVEMENT TREATED (%)	PAVEMENT TREATED BY POLISHING (AC)	NET NEW EQUIVALENT ² PAVEMENT TREATED BY POLISHING (%)	% TOTAL PAVEMENT TREATED BY POLISHING	TOTAL NET NEW EQUIVALENT ² PAVEMENT TREATED BY APPROVED BMPs & POLISHING (%)	TOTAL POST CONSTRUCTION PAVEMENT TREATED BY APPROVED BMPs & POLISHING (%)
56	7	13%	42	69	4.6	164%	98	70%	10	24%	10%	188%	81%

Notes:
¹ CONTRIBUTING DRAINAGE AREAS RECEIVING A BENEFIT TO WATER QUALITY VIA CONVEYANCE THROUGH VEGETATION (POLISHING).
² PERCENT TREATMENT RELATIVE TO NET NEW EQUIVALENT IMPERVIOUS AREA ADDED.

TABLE 5.4-8B: SAN ELIJO HOV PROJECT-SPECIFIC HEIGHTENED DESIGN TREATMENT BMPs (WITH 3 ADDITIONAL BIOSWALES)

EXISTING			PROPOSED				POST CONSTRUCTION		POLISHING ¹			TOTAL	
EXISTING PAVEMENT (AC)	EXISTING PAVEMENT TREATED (AC)	EXISTING PAVEMENT TREATED (%)	NEW PAVEMENT (AC)	NEW PAVEMENT TREATED (AC)	NEW PAVEMENT TREATED BY POROUS PAVEMENT (AC)	NET NEW EQUIVALENT ² PAVEMENT TREATED (%)	POST CONSTRUCTION PAVEMENT (AC)	POST CONSTRUCTION PAVEMENT TREATED (%)	PAVEMENT TREATED BY POLISHING (AC)	NET NEW EQUIVALENT ² PAVEMENT TREATED BY POLISHING (%)	% TOTAL PAVEMENT TREATED BY POLISHING	TOTAL NET NEW EQUIVALENT ² PAVEMENT TREATED BY APPROVED BMPs & POLISHING (%)	TOTAL POST CONSTRUCTION PAVEMENT TREATED BY APPROVED BMPs & POLISHING (%)
56	7	13%	42	88	4.6	210%	98	90%	0	0%	0%	210%	90%

Notes:
¹ CONTRIBUTING DRAINAGE AREAS RECEIVING A BENEFIT TO WATER QUALITY VIA CONVEYANCE THROUGH VEGETATION (POLISHING).
² PERCENT TREATMENT RELATIVE TO NET NEW EQUIVALENT IMPERVIOUS AREA ADDED.

Tables 5.4-8A and 5.4-8B provide an example of the project-specific treatment BMP analysis that will be completed as project design progresses and site-specific hydraulic data becomes available (i.e., at 30% Design and greater). As shown, siting of new and/or additional Treatment BMPs, that incorporate Low Impact Development (LID) principles, are based on contributing areas; however, the location of these BMPs may result in new or increased visual, additional ROW, ESHA and/or wetland impacts. The SWDR will document the appropriate Treatment BMPs selected after conducting a similar analysis as that demonstrated within Tables 5.4-8A and 5.4-8B.

PWP/TREP improvements over the corridor's lagoons would result in unavoidable impacts to wetlands because I-5 is an existing north/south transportation corridor that transects the east-west lagoon drainages. Wetland habitat impacts associated with the LPA include impacts at the six lagoons, as well as the San Luis Rey River, Loma Alta Creek, Encinas Creek, Cottonwood Creek, and numerous small lined and unlined drainage ditches that run parallel to I-5. All drainage ditches, arundo scrub, and salt marsh transition habitats have been included in the wetland habitat impact analysis for proposed highway improvements. The majority of the impacts to wetlands are associated with facility widening at the lagoons. The *I-5 NCC Project Draft EIR/EIS* (Section 3.17) analyzes and provides a comparison of potential coastal wetland impacts for the four proposed Build Alternatives, whereas the *I-5 NCC Project Supplemental Draft EIR/EIS* (Chapter 3) discusses in greater detail the specific effects of the LPA on corridor wetland habitats. Caltrans has determined that approximately 17.6 acres of coastal wetland habitat within the highway corridor could be directly impacted by proposed highway improvements. Temporary impacts to coastal wetlands are also identified in the *I-5 NCC Project Supplemental Draft EIR/EIS* and associated Draft Biological Assessment and could range up to approximately 13.5 acres, and depending on their severity and duration these temporary impacts could be considered permanent. Table 5.4-6 provides a breakdown of potential highway corridor permanent wetland impacts according to the project phases, but does not account for the temporary impacts.

The first phase of construction for the I-5 NCC Project would occur between 2010 and 2020 is broken into three different subprojects. Phase 1A would begin in 2014 and would include the grading for the ultimate widening of I-5 from just north of the Lomas Santa Fe interchange to the Union Street overcrossing in Encinitas. This phase would include replacement and lengthening of the new bridge over San Elijo Lagoon. The creation of wetland from lengthening of the lagoon bridge would result in a net creation of 0.21 acre of state jurisdictional wetland; however, there are some impacts to Cottonwood and Moonlight Creeks between Santa Fe and Union Street as a result of the widening of the freeway placement of bioswales and impacts from trails resulting in a net impact of 0.53 acre of wetland in Phase 1A. The disturbed drainage of Cottonwood Creek, southeast of I-5 and Encinitas Boulevard, would have impacts from the new trails and the bioswales northwest of Encinitas Boulevard will result in a few sliver impacts to wetlands. Other projects in the first phase include extending one high-occupancy vehicle (HOV) lane in the median in each direction from the Union Overcrossing to SR-78 and completion of the ultimate widening of I-5 between La Jolla Village Drive and the 5/805 flyover. The braided ramps between Roselle and Genesee are not part of Phase 1C. The median widening would have minimal impacts to the outside of I-5 and would not impact the lagoon wetlands. Phase 2 is broken into four projects. The replacement of the Batiquitos Bridge is identified separately, as it may be funded in the first phase to reduce staging impacts for bridge construction. Ultimate widening from the I-5 / I-805 merge to SR-56, from SR-56 to Lomas Santa Fe Drive, and from Union Street to Palomar Airport Road. Phase 3 would have the remainder of the widening projects to complete the corridor.

As described above, smaller wetland and riparian areas associated with the corridor's various streams and drainages would also be affected. Drainages feeding into Cottonwood Creek, Encinas Creek, and those parallel to I-5, north of Genesee Avenue, would have portions placed into culverts. Although these smaller drainages do not present the high quality habitat that the lagoons and San Luis Rey

River provide, the highway improvements would result in placing several of these small wetlands and riparian areas into culverts, which could eliminate potential for wildlife habitat, flood control, or water quality functions. Rock slope protection in the form of energy dissipaters at new or replacement culverts would be installed only where culvert outlet velocities are determined to be erosive during the design phase for the facilities and would be included in the relative drainage plans.

Additional indirect impacts to water quality and marine habitats could occur as a result of improved public use opportunities within and along sensitive marine resources. If not properly located, constructed and maintained, public use could result in erosion, litter accumulation, or other pollutant releases within and along marine resources that are located in public access and recreation facility areas.

5.4.3 PWP/TREP Opportunities, Policies, Design/Development Strategies and Implementation Measures

The proposed PWP/TREP provides an opportunity to implement a comprehensive, corridor-wide program to restore water quality and wetland habitat along the 30-mile NCC coastline that is recognized for a number of unique and significant marine and environmentally sensitive resource areas (ESHA). The coastal watersheds, lagoons, and upland areas in the corridor provide a range of diverse habitats and ecosystems that support a variety of plant and wildlife species. Due to the location of the proposed NCC improvements, the sensitive habitats traversed by the planned corridor improvements and the sensitive species living along the corridors, all impacts to coastal resources cannot be avoided. Implementation of a corridor-wide water quality enhancement program would help to restore, where feasible, watershed features previously displaced or altered by the existing transportation facilities, and would include transportation facility improvements incorporating current BMPs to reduce contaminant loads in stormwater, which would serve to restore and facilitate the long-term maintenance of water quality within the corridor's watersheds. The NCC Resource Enhancement and Mitigation Program (REMP), discussed further in the following section, has been developed to identify compensatory mitigation measures to address these unavoidable impacts, and to implement resource enhancement opportunities that exceed the benefits of standard compensatory mitigation programs.

In light of the inherent limitations to retrofit the existing facilities to address adverse impacts associated with polluted stormwater runoff, PWP/TREP improvements involve construction of new facilities and significant facility modifications which provides an opportunity to address this concern. The proposed PWP/TREP improvements would implement treatment BMPs for both the new and existing impervious pavement as each portion of the corridor project is designed to meet all the requirements of the Project Planning and Design Guide including implementing LID, Design Pollution Prevention, construction and approved Treatment BMPs. The project will be in compliance with the 2013 Caltrans Statewide Storm Water Permit issued by the State Water Resources Control Board. To further support water quality treatment within the corridor, Caltrans would implement a pilot program to assess the use of porous pavement at the park-and-ride at the San Elijo Multi-Use Facility (near Manchester Avenue) and enhanced vista point within the San Elijo Lagoon watershed. The functionality of the porous pavement at these locations would be assessed to help determine the feasibility of its use at other highway owned facilities in the corridor. The program of improvements would include analyzing each individual hydrologic area from a water quality perspective in relation to the impaired receiving water bodies. This is being done as SANDAG/Caltrans is an active member of several lagoon stakeholder groups throughout the corridor monitoring and eventually implementing measures to address the TMDL impairments identified by the San Diego RWQCB. Combined with these efforts, the PWP/TREP would

provide for a more comprehensive approach to analyze the hydrology of each individual hydrological area for BMP implementation thus improving water quality of the corridor.

Proposed treatment BMPs would include use of biofiltration swales, which are vegetated channels, typically configured as trapezoidal or v-shaped channels that receive and convey stormwater flows while meeting water quality criteria and other flow criteria. Pollutants are removed by filtration through the vegetation, sedimentation, adsorption to soil particles, and infiltration through the soil. Strips and swales are effective at trapping litter, Total Suspended Solids (soil particles), and particulate metals. In most cases, flow attenuation is also provided, thus biofiltration swales and strips can also be considered a low-impact development technique. Biofiltration strips and swales would be considered wherever site conditions and climate allow vegetation to be established and where flow velocities will not cause scour.

Proposed improvements include replacement of a number of bridge structures over waterbodies, which would have a beneficial effect on hydrology and water quality (see also Section 5.8 discussion of drainage and flooding). Implementation of improvements that modify existing bridge structures across lagoons, streams, and drainages would allow for improved tidal flushing and water conveyance in inland waterways thereby improving water quality and marine habitats. Efforts to minimize fill in corridor lagoons examined using retaining walls; however, the liquefied soils at the lagoons would require deep footings of over 82 feet and would be prohibitively expensive. As such, SANDAG/Caltrans evaluated potential restoration opportunities within each lagoon focused on 1) conventional habitat establishment and restoration through earthmoving activities; and 2) hydrodynamic restoration opportunities to improve the tidal inlets, increase the tidal prism, and reduce tidal muting through modifications to infrastructure features (e.g., bridges and channels) in the lagoons. SANDAG/Caltrans, in conjunction with a number of resource agencies, have identified opportunities to build longer bridges at San Elijo, Batiquitos and Buena Vista Lagoons, which would result in removing some of the existing fill at the lagoons. These potential improvements would result in substantial benefits to water quality and marine habitats by increasing overall water circulation in the lagoon, possibly facilitating a more natural process of tidal flushing and slowing freshwater flows from inland waterways that convey sediment and pollutants during significant rainfall events. This could reduce build-up of sedimentation and other pollutants within the lagoons, which substantially affects biological productivity and quality of coastal waters.

There may be the opportunity to replace the existing rail bridge across Los Peñasquitos with a partial causeway structure that would increase the tidal flow and remove the embankment from the lagoons, and the I-5 tunnel option could allow for the removal of the existing Los Peñasquitos rail bridge structures in the future. In addition, proposed rail options that would remove the existing rail corridor from coastal bluff areas in Del Mar would reduce long-term bluff erosion by eliminating active rail operations and the need for ongoing maintenance activities of the existing shoreline protection system along the bluffs. The feasibility and potential benefits and impacts of improvements would be determined in project-level analyses; however, as part of the conceptual design at the program level, the lead agencies have proposed, at a minimum, maintaining either the same in-water footprint or a smaller footprint than the existing rail corridor where improvements would cross coastal waterbodies.

5.4.3.1 PWP/TREP Lagoon, Wetland and Riparian Enhancement Opportunities

The REMP employs a combination of measures to mitigate for coastal resource impacts resulting from implementation of the NCC transportation improvements and community enhancement projects. The combined mitigation program approach recognizes the constrained, primarily built-out condition of the NCC which leaves few opportunities for land acquisition typically necessary to implement traditional,

ratio-based habitat mitigation efforts. Even fewer opportunities exist in the NCC for large-scale land acquisitions that could allow traditional ratio-based mitigation efforts to be focused in distinct areas with the goal of establishing large tracts of contiguous and diverse habitat areas within the corridor. However, the NCC is home to six major lagoon systems which represent some of southern California's most significant natural resource areas. These lagoon systems and upper watersheds provide large, contiguous habitat areas that support sensitive habitat for a variety of plant and wildlife species, and that provide water quality, flood control, groundwater recharge and recreation benefits. The NCC's lagoon systems and their habitats are biologically unique and cannot be replicated elsewhere. As such, opportunities to protect the NCC's lagoon systems from potential future degradation and to enhance and expand habitat within these systems requires comprehensive solutions with mitigation efforts focused less on ratio-based mitigation and more on ecosystem-wide enhancements. Given the unique ecological value of the NCC's lagoons, opportunities to improve the ecological function of the systems exceeds the benefits of pursuing only ratio-based mitigation efforts on the relatively small, fragmented and isolated land areas remaining in the NCC for such mitigation efforts.

The REMP, detailed in Chapter 6B, provides a unique corridor-wide opportunity to assess proposed transportation infrastructure and community enhancement improvements with varying constraints and opportunities. Such opportunities include facilitation of large-scale lagoon restoration efforts that include improved tidal circulation in the San Elijo, Batiquitos and Buena Vista Lagoon systems, preservation, and/or restoration via land purchase of upland habitat areas, and restoration of riparian habitat areas within inland waterways. Restoring tidal circulation in lagoon systems and enhancing riparian and upland habitat areas would significantly improve water quality and the ecological value of the lagoons, riparian systems, and adjacent upland areas to better support Environmentally Sensitive Habitat Areas (ESHAs), special-status species and wildlife. Table 5.4-6 identifies the potential rail and highway wetland impacts discussed in this section by project phase in conjunction with the corridor-wide wetland habitat mitigation and enhancement opportunities provided by the REMP, which is further detailed in Chapter 6B.

The REMP includes options for allocating funding from SANDAG's Environmental Mitigation Program for a variety of regionally significant mitigation, restoration, and enhancement opportunities. Mitigation parcel purchases have been based on their potential to protect and enhance lagoon watershed function and services, and meet no net loss of wetlands through establishment and restoration. Other mitigation parcels have been purchased for the purpose of preserving regionally significant resources. For regionally significant lagoon restoration and enhancement opportunities, endowments are planned to fund long-term resource maintenance needs and the development of a Scientific Advisory Committee is planned to advise the large-scale restoration projects. Design of bridge improvements, which inherently enhance lagoon system function and services, are also included in the REMP; however, funding for these enhancements would be provided through capital funds. The REMP approach to advancing habitat establishment, restoration, and preservation mitigation projects ahead of NCC project impacts, and designing bridge improvements to avoid and minimize project impacts aims to create greater benefits to coastal resources on a corridor-wide level than if the habitat mitigation were solely ratio-based and project specific.

Early establishment and restoration of habitat areas will serve to reduce typically required mitigation ratios for project impacts by eliminating impacts associated with temporal loss of wetland habitat functions and values. In addition, early acquisition and management of sites containing high value habitat for long-term preservation, and early phasing of transportation facility infrastructure that is specifically designed to avoid and minimize impacts, enhance lagoon system function and values, and facilitating large-scale lagoon restoration will further serve to mitigate projects impacts associated with both temporal loss of habitat values and temporary construction related impacts. REMP implementation

will increase the extent, value and success of natural resource protection, restoration and enhancement in the NCC. The REMP achieves this goal through developing and implementing a regional plan for the advanced acquisition, establishment, restoration, enhancement and preservation of the NCC's natural resources, infrastructure improvements designed to avoid and minimize impacts and enhance resources, and long-term resource management endowments.

In addition, large-scale restoration plans for San Elijo Lagoon and Buena Vista Lagoon are being developed by various stakeholder groups and the resource agencies. SANDAG and Caltrans have been working with the cities, resource agencies, and stakeholders to help move these restoration projects forward by assisting in planning and funding required technical and environmental studies. Furthermore, SANDAG/Caltrans funded numerous studies to analyze optimized I-5 bridge designs at the corridor lagoons intended to minimize tidal muting east of I-5. These enhanced bridge designs at San Elijo, Batiquitos and Buena Vista Lagoons will result in possible establishment and/or enhancement of wetland habitat and water quality benefits within the lagoons.

It is recognized that new opportunities for various types of resource improvements may become available in the corridor after adoption of the PWP/TREP, due to factors such as additional funding availability, completed habitat restoration plans, or land acquisition options. In addition, some mitigation opportunities which would promote large-scale ecological improvements to resources may be considered more critical for the region, while others which would contribute to enhancing a smaller area within the corridor may be considered less critical for achieving regional goals. Widespread improvements to natural resources in the NCC require a unique, comprehensive approach to resource enhancement with input from multiple regulatory agencies and stakeholders. These factors make it necessary to maintain flexibility when considering the most appropriate mitigation opportunity.

The REMP is the framework used to describe the available resource enhancement opportunities on a corridor-wide level based on these evolving factors. The REMP framework provides for supplementing the mitigation opportunities package when new opportunities arise, which could be authorized pursuant to future project-specific NOIDs for PWP projects, coastal development permits, or federal consistency review, as applicable (see also REMP Implementation Framework section in Chapter 6B).

Accounting of REMP project implementation, credit establishment and release, maintenance and monitoring will be tracked and reported pursuant to NOID submittals, future federal consistency review submittals, or coastal development permit submittals for all PWP/TREP projects to ensure the overall program implementation is consistent with approved impacts, and meets required mitigation and resource benefits identified in the PWP/TREP Phasing Plan. Each mitigation site will have its own funding and mitigation and monitoring plan with remedial measures in the event the site is not attaining its goals. If a site develops a fatal flaw that cannot be corrected onsite, SANDAG/Caltrans will identify and implement mitigation at another location. In most cases, problems on a mitigation site can be corrected onsite through additional grading, planting, weeding, or soil amendment. An advanced credit release program will be established for the NCC and will be drafted to mirror the U.S. Army Corps of Engineers' Advance Permittee Responsible Compensatory Mitigation standards where appropriate. This bank will follow the REMP's phasing and establish restoration milestones and credits. In addition, funding could be shifted between projects if a project proposed now is not carried forward for some reason. In addition, the PWP/TREP Implementation Framework ensures that all REMP projects are reviewed and monitored as part of the development review process for all other projects included in the PWP/TREP, regardless of the specific Coastal Commission approval process required for each REMP project. Wetland mitigation opportunities and other water quality improvements proposed within each waterbody potentially affected by the proposed improvements are described below. Several additional

mitigation opportunities are included within the REMP for offsetting impacts to upland habitat; see Chapter 6B for details regarding those opportunities.

5.4.3.2 PWP/TREP Policies

Caltrans and SANDAG would implement the following policies to ensure that proposed improvements are designed, implemented, and maintained to provide for maximum protection of marine resources.

Policy 5.4.1: NCC transportation facility and community enhancement projects shall be sited and designed so that marine resources are maintained, enhanced, and, where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance.

Policy 5.4.2: Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Policy 5.4.3: Coastal water quality shall be restored by minimizing wastewater discharges, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging wastewater reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural watercourses.

5.4.3.3 PWP/TREP Design/Development Strategies

The following design and development strategies provide guidance for designing and implementing specific PWP/TREP rail projects, and Caltrans/SANDAG shall utilize the following strategies for all projects subject to NOID procedures, consistent with the marine resources protection policies of PWP/TREP Policies 5.4.1, 5.4.2, and 5.4.3, amended LCPs, and the Coastal Act.

1. Development should be sited and designed to protect and, where feasible, restore natural hydrologic features such as groundwater recharge areas, natural stream corridors, floodplains, and wetlands. Key areas near lagoons should be designed with minimum lane and shoulder widths to avoid impacts to natural hydrologic components of the watershed.
2. Development should be designed and managed to maintain or enhance on-site infiltration of runoff where appropriate.
3. Runoff management should be incorporated early in site design planning integrating existing site characteristics that affect runoff (such as topography, drainage, vegetation, soil conditions, and infiltration properties) with strategies that minimize post-project runoff, control pollutant sources, and, where necessary, remove pollutants. Project-level analysis for potential water quality and marine habitat impacts of improvements should be conducted and subject to review during subsequent project-specific federal consistency review, NOID, or coastal development permit review, as specified in Chapter 6A, to assess and identify all potential permanent or temporary impacts to water quality and marine habitats and appropriate mitigation measures to ensure project consistency with Coastal Act policies 30230, 30231 and 30233. Project-level analysis should include the following technical studies:
 - Field surveys of potential surface water impacts to further analyze potential impacts on water quality and to seek required permits from the appropriate agencies.
 - Identification of potentially substantial alteration in water-flow and drainage patterns, including increased stormwater runoff, increased groundwater discharge or reduction of groundwater recharge. Project-specific studies should determine acceptable designs and construction techniques to minimize adverse impacts of increased sedimentation that would occur during in-

- water work in the lagoons and elsewhere. Potential minimization measures and timing windows should be developed in consultation with resource agencies and lagoon planning.
- Analysis of how the different alignment and design options would contribute to total additional impervious surface and the subsequent potential additional impacts on surface runoff. This analysis would also identify potential mitigation measures, including onsite retention facilities.
 - Delineation of waters and wetlands to determine the extent of U.S. Army Corps of Engineers, California Coastal Commission and CDFW jurisdiction, and consultation conducted with these agencies regarding appropriate mitigation.
 - Analysis of future sea level rise scenarios, and any design options for new bridge structures to reduce the potential for flooding.
4. Permit requirements as part of project-level review would include Storm Water Pollution Prevention Plans (SWPPP) and NPDES permits, and other applicable jurisdictional requirements. Under the requirements of the NPDES California Department of Transportation Statewide Storm Water Permit and the Construction General Permit, a SWPPP would be developed during construction and implemented to reduce pollutants in stormwater discharges and the potential for erosion and sedimentation. The SWPPP would include BMPs to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements, stormwater management, and channel dewatering for all stream and lake/lagoon crossings. Applicable NPDES permit requirements would be followed and BMPs, as required for new developments, would be implemented. These may include measures to provide permeable surfaces where feasible and to retain and treat stormwater onsite using catch basins and treatment (filtering) wetlands, especially in areas around existing stations if the areal extent of surface parking is expanded or at new stations where new parking surface is constructed. BMPs may include the following:
 - Practices to minimize the contact of construction materials, equipment, and maintenance supplies with stormwater
 - Practices to reduce erosion of exposed soil including soil stabilization, watering for dust control, perimeter silt fences, placement of rice straw bales, and sediment basins
 - Practices to maintain water quality including filtration, detention, and retention systems, constructed wetland systems, biofiltration / bioretention systems, grass buffer strips, ponding areas, organic mulch layers, planting soil beds, sand beds, or vegetated systems (biofilters) such as vegetated swales and grass strips designed to convey and treat either shallow flow (swales) or sheetflow (filter strips) runoff.
 5. A spill prevention and emergency response plan should be implemented to handle potential fuel or other spills for all construction.
 6. Impacts to lagoon, riparian or other isolated wetland habitats should be fully mitigated pursuant to the REMP detailed in Chapter 6B as it relates to no net loss of habitat, habitat preservation, and comprehensive lagoon restoration program mitigation.
 7. Options and benefits for coordinating rail and highway infrastructure construction plans in the lagoon areas should be analyzed for potential benefits to lagoon systems and feasibility for rail and highway project implementation.
 8. All vegetated stormwater basins, vegetated filter strips, vegetated swales, and other natural drainage features that may be installed per the PWP/TREP in wetlands may exhibit wetland or other habitat characteristics over time, however their primary function is for water quality filtration and treatment, flow control, and infiltration. As such, maintenance within these devices on a regular basis is expected and necessary to maintain their intended function, and is therefore allowed

pursuant to this PWP/TREP. These devices are not to be treated as wetlands including for purposes of Design/Development Strategy 11, and Implementation Measure 5.4.7.

9. A Water Quality Management Plan (WQMP) or Storm Water Data Report (SWDR) addressing post-construction BMPs will be prepared to protect coastal water quality. The WQMP or SWDR shall include, but not be limited to, final drainage plans showing the location and design of bioswales and other Treatment BMPs, along with supporting calculations/evidence that demonstrate the facilities are designed to treat, infiltrate or filter stormwater from each runoff event, up to and including the 85th percentile, 24-hour runoff event for volume-based BMPs, and/or the 85th percentile, 1-hour runoff event, with a factor of safety of 2X, for flow-based BMPs.
10. Low Impact Development (LID) strategies should be used preferentially, which emphasize an integrated system of decentralized, small-scale control measures to minimize alteration of the site's natural hydrologic conditions through infiltration, evapotranspiration, filtration, detention, and retention of runoff close to its source. Onsite retention Low Impact Development (LID) BMPs should be sized and designed to ensure onsite retention, without runoff, of the volume of runoff produced from a 24-hour, 85th percentile storm event.
11. The WQMP or SWDR shall prioritize the treatment of the newly created impervious areas. Where it is impractical to hydraulically separate runoff from the existing impervious area, the applicant shall provide treatment for newly created impervious areas and as much of the hydraulically inseparable flow as feasible, based on site conditions and constraints and consistent with the NPDES Permit. If it is not possible to separate the flows from newly created impervious areas from the existing impervious areas, the treatment BMPs shall be designed to treat as much of the hydraulically inseparable flow as feasible, and shall bypass or divert any excess around the BMP to prevent overloading the BMP or impairing its performance.
12. Existing impervious surface shall not be treated in lieu of newly created impervious surface unless it is infeasible to treat the newly added surface. Where it is infeasible or impractical to provide onsite treatment of stormwater runoff from the highway, the WQMP or SWDR shall document why it is impractical or infeasible to treat these areas.
13. Landscaping plans shall include only species native to southern California such that the proposed planted areas will be compatible with surrounding natural and manmade areas. No plant species listed as problematic and/or invasive by the California Native Plant Society (<http://www.CNPS.org/>), the California Invasive Plant Council (<http://www.cal-ipc.org/>), or as may be identified from time to time by the State of California shall be employed or allowed to naturalize or persist on the site. No plant species listed as a 'noxious weed' by the State of California or the U.S. Federal Government shall be utilized within the property
14. An evaluation of the development area should be conducted for all improvements proposed in areas where wetlands may occur and should be submitted with the project-specific NOID, federal consistency review or coastal development submittal. The evaluation should include any changed site conditions that could affect wetland values protected by the PWP/TREP. A technical wetland delineation should be completed in the proposed development area (i.e., the proposed development footprint and a surrounding 100-foot buffer area) pursuant to the wetland definition in Section 13577(b) of the Commission's Regulations (Title 14 of the California Code of Regulations). Should wetland areas be identified within 100 feet of the development area during this process that are not already considered in the PWP/TREP, all wetland resource protection measures included in this PWP/TREP should be applied to the newly identified wetland area. For any newly identified wetland area, an appropriate buffer/setback should be established, based upon site-specific conditions in accordance with Implementation Measure 5.4.7.

15. Where applicable, submittals for specific project implementation should include an evaluation of impacts and benefits of removal of existing earthen fill from lagoon crossing structures, and of design options for new structures that reduce the amount of fill required in lagoons. Opportunities to improve coastal hydrology/hydraulics in tidal lagoons utilizing specific construction methods or facility designs will be assessed for consistency with the lagoon optimization studies.
16. Development should be sited, designed, and managed to avoid adverse impacts from stormwater or dry weather runoff to Environmentally Sensitive Habitat Areas (ESHA).
17. The installation of pervious pavements at parking facilities/areas to hydraulically disconnect runoff between impervious pavements should be implemented where feasible.

5.4.3.4 Implementation Measures

Caltrans/SANDAG would utilize the following implementation measures for all projects subject to NOID procedures:

- **Implementation Measure 5.4.1:** Operational and construction BMPs shall be implemented for all maintenance and construction activities in accordance with the Statewide Storm Water Management Plan (SWMP) and the provisions of the NPDES Permit (Order 99-06-DWQ) and any permit reissuance thereof (e.g., Order 2012-0011-DWQ).
- **Implementation Measure 5.4.2:** Maintenance BMPs shall be implemented for all improvements to provide preventative measures to ensure that maintenance activities are conducted in a manner that reduces the amount of pollutants discharged to surface waters via Caltrans stormwater drainage systems. Maintenance BMPs shall be implemented for the life of the facility and include litter removal, toxics control, street sweeping, or other approved measures contained in the *Storm Water Quality Handbook—Maintenance Staff Guide*.
- **Implementation Measure 5.4.3:** Design Pollution Prevention BMPs shall be implemented for all improvements to prevent downstream erosion, to stabilize disturbed soil areas and maximize vegetated surfaces consistent with NPDES Permit standards. Design pollution prevention BMPs shall consider downstream effects related to potentially increased runoff and flow caused by proposed improvements and may include the following measures:
 - Preservation of Existing Vegetation
 - Concentrated Flow Conveyance Systems
 - Ditches, Berms, Dikes and Swales
 - Overside Drains
 - Flared Culvert End Sections
 - Outlet Protection/Velocity Dissipation Devices
 - Slope/Surface Protection Systems
 - Vegetated Surfaces
 - Hard Surfaces
 - Other Approved Measures

NOID submittals for proposed improvements shall identify the type and location of design pollution prevention BMPs to be implemented and maintained for specific project improvements consistent with NPDES Permit standards.

- **Implementation Measure 5.4.4:** Treatment BMPs shall be implemented for all improvements to prevent or minimize the long-term potential impacts from facilities or activities. Required treatment BMPs shall be limited to those determined to be technically and fiscally feasible (i.e., constructible,

maintainable, and effective at removing pollutants to the maximum extent practicable), which may include:

- Biofiltration Systems
- Infiltration Devices
- Wet Basins
- Detention Devices
- Dry Weather Flow Diversions
- Media Filters
- Gross Solid Removal Devices
- Other Caltrans-Approved Measures

NOID submittals for proposed improvements shall identify the type and location of treatment BMPs, and shall confirm the feasibility of identified treatment methods in relation to right-of-way limitations, environmental constraints or hydraulic capacity. Where treatment BMPs cannot be incorporated due to above-mentioned reasons, vegetation shall be maximized and every effort will be made to ensure the successful establishment of landscaping and erosion control throughout the project limits.

- **Implementation Measure 5.4.5:** Construction and phasing plans for improvements shall preserve the existing vegetation outside the work areas, stabilize slopes with vegetative cover comprised of native plant species and keep the total paved area to a minimum.
- **Implementation Measure 5.4.6:** Construction BMPs shall be implemented for all improvements to reduce pollutants in stormwater discharges and to eliminate non-stormwater discharges. Construction BMPs shall be implemented according to applicable BMP Manuals, and may include the following measures:
 - Temporary Soil Stabilization
 - Temporary Sediment Control
 - Wind Erosion Control
 - Tracking Control
 - Non-Storm Water Management
 - Waste Management and Materials Pollution Control

NOID submittals for proposed improvements shall include a construction phasing and staging plan that identifies the type and location of all construction BMPs to be implemented as part of project construction.

- **Implementation Measure 5.4.7:** Buffers/setbacks for wetlands delineated at the time of PWP/TREP certification shall be maintained as identified on Figure 5.4-2, unless reduced wetland buffers/setbacks are authorized pursuant to the NOID, Coastal Development Permit and/or Public Works Plan Amendment procedures contained in Chapter 6A. For any new wetlands identified and delineated pursuant to Design/Development Strategy 11, development shall be sited and designed to avoid and minimize wetland impacts, where possible, and appropriate buffers/setbacks provided based on a site-specific biological evaluation confirming the buffers/setbacks are adequate to avoid or minimize significant adverse impacts to wetland resources.
- **Implementation Measure 5.4.8:** Debris from the replacement of old bridges or construction of new bridges shall be contained, such that debris is not released into lagoons, rivers or other waterbodies.

- **Implementation Measure 5.4.9:** Appropriate BMPs shall be implemented to minimize erosion and sedimentation to lagoons, rivers or other waterbodies.
- **Implementation Measure 5.4.10:** Bioswales, detention basins or other Treatment BMPs shall be placed throughout the project limits to filter runoff prior to reaching wetlands and other waters of the U.S., as space is available and where feasible based on site-specific conditions.
- **Implementation Measure 5.4.11:** Fueling of construction equipment shall occur in designated areas at a distance no less than 100 feet from the lagoon, river, or other water bodies and associated plant communities to preclude adverse water quality impacts.
- **Implementation Measure 5.4.12:** NOID or coastal development permit submittals for wetland habitat establishment, restoration and/or preservation/enhancement plans proposed in accordance with the REMP detailed in Chapter 6B shall include the following information and materials:
 - Clearly stated objectives and goals for the wetland habitat establishment, restoration and/or preservation/enhancement plans.
 - Baseline data regarding the biological, physical, and chemical criteria for the establishment, restoration and/or preservation/enhancement site.
 - Documentation demonstrating the proposed wetland establishment, restoration and/or preservation/enhancement project will continue to function as a viable wetland over the long-term.
 - Technical detail in the project design including, at a minimum, an engineered grading plan and water control structures, methods for conserving or stockpiling topsoil, a planting program including removal of exotic species, a list of all species to be planted, sources of seeds and/or plants, timing of planting, plant locations and elevations on the mitigation site base map, and maintenance techniques.
 - Documentation of performance standards, which provide a mechanism for making adjustments to the establishment, restoration and/or preservation/enhancement site when it is determined through monitoring the enhancement or restoration techniques are not successful.
 - Description of management and maintenance requirements, and provisions for remediation should the need arise.
 - An implementation plan that demonstrates there is sufficient scientific expertise, supervision, and financial resources to carry out the proposed activities.
 - A monitoring program to be implemented after completion of the wetland establishment, restoration and/or enhancement project with appropriate provisions to ensure the project has successfully met the stated goals and objectives.
- **Implementation Measure 5.4.13:** Early pre-consultation with the CCC, and affected local jurisdiction upon request, shall occur at the earliest feasible time to provide for adequate review and comment periods to identify new and/or appropriate BMPs, if BMPs are determined infeasible pursuant to Implementation Measure 5.4.4 and/or cannot be incorporated within the existing highway or rail corridor rights-of-way, pending the following parameters can be met:
 - Completion of the project Geotechnical Report identifying the rate of infiltration.
 - Completion of at least 30% Design Plans.
 - Design features of the BMP do not create a safety hazard for the public or maintenance forces.
 - No impacts to wetlands or ESHA in the siting or implementation of the BMP would occur.
- **Implementation Measure 5.4.14:** Source Control Best Management Practices (BMPs) shall be used, which can be structural features or operational actions, in all development to control pollutant sources, minimize runoff, and preserve or improve existing water quality.

- **Implementation Measure 5.4.15:** If implementing Site Design, LID, and Source Control strategies is not sufficient to minimize pollutants in runoff from development and in turn protect coastal waters, Treatment BMPs sized for the appropriate design storm shall be used.
- **Implementation Measure 5.4.16:** The extent of new impervious surface area shall be minimized, and LID techniques shall be maximized and documented in the WPMP or SWDR.
- **Implementation Measure 5.4.17:** Stormwater outfalls shall be sited, designed, and managed to minimize the adverse impacts of discharging concentrated flows of stormwater or dry weather runoff into coastal waters, intertidal areas, beaches, bluffs, or stream banks through installation of runoff control/dissipater features where located and designed to convey and discharge runoff to waterways in a non-erosive manner.
- **Implementation Measure 5.4.18:** Development shall be sited, designed, and managed to preserve or enhance vegetation that provides water quality benefits such as transpiration, vegetative interception, pollutant uptake, and erosion control.
- **Implementation Measure 5.4.19:** All BMPs shall be inspected, maintained, operated, and managed to ensure water quality permit requirements are met for the life of the development.
- **Implementation Measure 5.4.20:** Reporting on BMP effectiveness shall be submitted annually to the CCC as part of the Caltrans Statewide SWMP monitoring plan report.

5.4.4 Coastal Act Consistency

Coastal Act Section 30230

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Coastal Act Section 30231

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams

Coastal Act Section 30233

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.

(4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(6) Restoration purposes.

(7) Nature study, aquaculture, or similar resource dependent activities.

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable long shore current systems.

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.

For the purposes of this section, "commercial fishing facilities in Bodega Bay" means that not less than 80 percent of all boating facilities proposed to be developed or improved, where such improvement would create additional berths in Bodega Bay, shall be designed and used for commercial fishing activities.

(d) Erosion control and flood control facilities constructed on water courses can impede the movement of sediment and nutrients which would otherwise be carried by storm runoff into coastal waters. To facilitate the continued delivery of these sediments to the littoral zone, whenever feasible, the material removed from these facilities may be placed at appropriate points on the shoreline in accordance with other applicable provisions of this division, where feasible mitigation measures have been provided to minimize adverse environmental effects. Aspects that shall be considered before issuing a coastal development permit for such purposes are the method of placement, time of year of placement, and sensitivity of the placement area.

Coastal Act Section 30236

Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the floodplain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.

5.4.4.1 PWP/TREP Wetland Fill and Allowable Uses

The existing location of the developed NCC rail and highway facilities requires that the PWP/TREP improvements occur in areas containing wetlands, and it is therefore infeasible to avoid all impacts to

wetland areas during construction of the proposed improvements. Section 5.10 evaluates the PWP/TREP improvements under the Coastal Act conflict-resolution provision (Section 30007.5). As detailed in Section 5.10, the proposed PWP/TREP could be found consistent with the Coastal Act through the conflict-resolution provision of Coastal Act Section 30007.5, when it is demonstrated that there are no feasible less-damaging alternatives for project components that would result in unavoidable impacts to wetland, and that feasible mitigation measures have been included in the PWP/TREP to minimize significant adverse environmental impacts.

Evaluation of Feasible Alternatives

Section 5.10, Coastal Act Policy Conflict Resolution, includes a programmatic analysis of project alternatives analyzed to address mobility deficiencies and enhance multi-modal access throughout the corridor. Based on this analysis, the program of rail, highway and community improvements included in the PWP/TREP provides the least environmentally damaging, feasible project alternative to avoid or reduce impacts to coastal resources, while implementing Coastal Act policies that mandate protection of coastal resources by 1) minimizing energy consumption and vehicle miles traveled, and protecting air quality (Section 30253); 2) concentrating new development in or adjacent to areas able to accommodate growth (Section 30250); 3) providing and enhancing transit and non-automobile circulation, and assuring that the potential for public transit is provided for high intensity uses (Section 30252); and 4) protecting and enhancing public access to recreational resources in the Coastal Zone (Sections 30210, 30211, 30212, 30212.5, 30213, 30214, 30223, 30252, and 30254). The proposed PWP/TREP improvements consist primarily of improvements to existing transportation facilities located in previously developed and disturbed areas within existing rail and highway right-of-way. Improvements or changes to the existing rail and highway facilities are generally expansions or reconfigurations of existing facilities or, where new rail alignment tunnel options are being considered, would occur primarily below ground; therefore, the proposed PWP/TREP rail and highway improvements would involve limited expansion or encroachment into wetlands and other sensitive habitat areas that might otherwise occur if new transportation infrastructure were to be constructed as separate and distinct facilities from the existing rail and highway right-of-way to address mobility deficiencies and enhance multi-modal access throughout the corridor.

In addition to the programmatic analysis of project alternatives discussed above and included in Section 5.10, a detailed, design-level alternatives analysis for proposed PWP/TREP rail and highway improvements that affect wetlands was conducted consistent with the Coastal Act Policy Conflict Resolution process to identify the least environmentally damaging alternative. Lagoon optimization studies were conducted for San Elijo, Batiquitos and Buena Vista Lagoons to identify the optimal length of bridges and channel design configurations to provide for improved hydraulic lift and facilitation of large-scale lagoon restoration efforts. Additional technical analysis and detailed design avoidance and minimization features for all corridor waterbodies potentially affected by the I-5 Project LPA are discussed at length in the *I-5 NCC Project Supplemental Draft EIR/EIS*. As discussed therein, to minimize impacts to all sensitive habitats, the slopes of the freeway 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 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 used to protect the existing abutments 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 bottom.

Potential impacts from auxiliary lanes would be minimized where possible, especially in the vicinity of the lagoons. Auxiliary lanes were only included in the project design where required to relieve traffic congestion and weaving issues between on- and off-ramps. For instance, potential impacts associated with a proposed auxiliary lane between La Costa Avenue and Poinsettia Avenue across Batiquitos Lagoon were avoided, based on elimination of this potential auxiliary lane when traffic analysis determined that it would not be required.

To avoid impacts to wetlands from fill associated with creation of 12-foot-wide bike/pedestrian paths, short retaining walls (6 feet or lower in height) would be used. Another impact minimization option being examined, particularly at Batiquitos Lagoon and Buena Vista Lagoon, would involve obtaining funds to replace these bridges in the first phase of construction (prior to construction of a proposed HOV lane in the median), instead of later in the construction process. This would reduce the overall bridge widths required for staging the bridge replacements, thus reducing wetland impacts by more than an acre at each lagoon. For Batiquitos Lagoon, Caltrans and SANDAG have agreed to advance the I-5 bridge crossing to the first phase; review of the feasibility of advancing the Buena Vista Lagoon I-5 bridge crossing remains underway. However, 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 impacts at this location.

Feasible project alternatives and avoidance and minimization measures for LOSSAN rail improvements potentially affecting wetlands are also addressed as part of the lagoon optimization studies at San Elijo, Batiquitos, and Buena Vista Lagoons, and would be determined in project-level analyses and during phased federal consistency review, as applicable, for other lagoon crossings.

Feasible Mitigation Measures

Section 5.4.3 and the following consistency analysis sections for proposed rail and highway improvements demonstrate that feasible mitigation measures have been included in the PWP/TREP as project design features, policies, design/development strategies, and/or implementation measures to minimize significant adverse environmental impacts.

5.4.4.2 PWP/TREP Consistency Analysis

PWP/TREP design and development strategies for proposed NCC improvements would ensure that marine resources are maintained, enhanced, and where feasible, restored. Project-level analysis for potential water quality and marine habitat impacts of proposed improvements would be conducted and subject to review during subsequent project-specific environmental and federal consistency review, as applicable, to assess and identify all potential permanent or temporary impacts to water quality and marine habitats and any additional mitigation measures needed to ensure project consistency with Coastal Act policies 30230, 30231 and 30233. Project-level analysis would include field surveys of potential surface water quality impacts; identification of potentially substantial alteration of in-water flow and drainage patterns (i.e., increased stormwater runoff, increased groundwater discharge or reduction of groundwater recharge); determination of acceptable designs and construction techniques that would minimize adverse impacts of increased sedimentation; analysis of additional impervious surface and increase in surface runoff for different alignment options; impacts and benefits of removal of existing earthen fill from lagoon crossing structures; new structure design options to improve coastal hydrology and hydrodynamics in tidal lagoons; and an analysis of future sea level rise scenarios. In addition, potential minimization and mitigation measures, as well as project construction schedules, would be developed in consultation with resource agencies and lagoon restoration efforts.

PWP/TREP policies and implementation measures require that improvements incorporate measures to minimize impacts to coastal waters. The measures include provisions for site design and planning and incorporation of BMPs designed to control the volume, velocity, and pollutant load of stormwater leaving the developed area. Critical to the successful function of post-construction BMPs in removing pollutants in stormwater to the maximum extent practicable is the application of appropriate design standards for sizing BMPs. The majority of runoff from proposed improvements would be generated from expanded highway facilities. A number of existing treatment BMPs are present within the project limits, including biofiltration swales and strips, extended detention facilities, wet basins, and media filters; with these facilities providing treatment for runoff from associated paved areas within the I-5 corridor. The percentage of runoff that is treated is approximately 7%. The LPA could modify drainage and alter some of the existing treatment tributary areas as it would result in approximately 214 acres of new paved area, with treatment to be provided for approximately 240 acres of the equivalent net new impervious area, representing a net total of 112% treatment throughout the corridor or 27 % of the total future paved surfaces within the I-5 corridor.

The PWP/TREP improvement program would implement treatment BMPs for the I-5 corridor to the maximum extent practicable. The program would include analyzing the entirety of the corridor from a water quality perspective in relation to the impaired receiving water bodies in the NCC and provide for a more comprehensive approach to analyze the hydrology of the entire project area for purposes of improving water quality. Treatment BMPs would consist of permanent measures to improve stormwater quality during the operation of the facility after completing construction. Approved treatment BMPs could include biofiltration systems, infiltration devices, detention devices, dry weather flow diversions, gross solid removal devices, media filters, and wet basins.

Construction BMPs would be implemented for all facility improvements that would reduce pollutants in stormwater discharges and eliminate non-stormwater discharges during the construction phase of the project. Under the requirements of the NPDES California Department of Transportation Statewide Storm Water Permit and the Construction General Permit, a SWPPP would be developed during construction and implemented to reduce pollutants in stormwater discharges and the potential for erosion and sedimentation. The SWPPP would include BMPs to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements and stormwater management for all stream and lagoon crossings. Soil disturbance during the construction phase will incorporate temporary BMPs in accordance with Construction General Permit and the NPDES permit to minimize erosion and sediment transport. Vegetation and other BMP techniques would be installed upon construction completion to maintain slope stability. Potential pollutants generated during construction phase activities, from stormwater and non-stormwater sources, would be addressed in the SWPPP as required by contract specification.

Furthermore, the proposed policies and implementation measures require implementation of treatment BMPs determined to be technically and fiscally feasible for all facility improvements that would prevent or minimize long-term potential impacts from facilities or activities. Where treatment BMPs could not be incorporated due to infeasibility, vegetation would be maximized and every effort would be made to ensure the successful establishment of landscaping and erosion control throughout the project limits.

In addition, design pollution prevention and Low Impact Development BMPs would be implemented for all facility improvements to prevent downstream erosion, which would stabilize disturbed soil areas and maximize vegetated surfaces. Potential design pollution prevention measures include preservation of existing vegetation, concentrated flow conveyance systems, and slope/surface protection systems. Maintenance BMP preventative measures would be implemented for all facility improvements to ensure that maintenance activities are conducted in a manner that reduces the amount of pollutants

discharged to surface waters via existing stormwater drainage systems. The policies and implementation measures also requires maintenance BMPs to be implemented for the life of the facility in accordance with the *Storm Water Quality Handbook–Maintenance Staff Guide*, which includes litter removal, toxics control, street sweeping, and other approved measures.

PWP/TREP policies also require submittal of construction phasing and staging plans with future project-specific NOIDs or other project-specific submittals (federal consistency review or coastal development permit) to ensure proposed construction activities do not significantly affect downstream site stability due to changes in the rate and volume of runoff, and sediment load potentially caused by modification of existing drainage patterns, or other potential hydraulic changes from waterbody encroachments, crossings or realignment. Construction and phasing plans for improvements would preserve the existing vegetation outside the work areas, stabilize slopes with vegetative cover, and keep the total paved area to a minimum. As such, the PWP/TREP includes a number of implementation measures utilizing a combination of erosion and sediment control BMPs to address both stormwater and non-stormwater discharges during construction activities. Additionally, construction methodologies that minimize impacts to adjacent wetland resources would be assessed and submitted with any future project-specific NOID submittal. The policies, design/development strategies, and implementation measures also require that options for coordinating rail and highway infrastructure construction plans in lagoon areas would be analyzed for potential benefits to lagoon systems and feasibility for rail and highway project implementation, pursuant to SB468.

Furthermore, as discussed in Section 5.4.5 and per the proposed policies, design and development strategies, and implementation measures, impacts to lagoon, riparian, or other isolated wetland habitats would be fully mitigated pursuant to the REMP detailed in Chapter 6B as it relates to no net loss of habitat through establishment, habitat enhancement, restoration/preservation, and comprehensive lagoon restoration and enhancement. Table 5.4-9 summarizes the proposed PWP/TREP improvements within each lagoon to ensure water quality and wetlands are enhanced beyond standard mitigation.

5.4.4.3 Coastal Act Consistency Analysis Summary

Implementation of a corridor-wide REMP could restore watershed features once lost by construction of the transportation facilities with upgraded bridges and reduced development footprint in coastal water bodies, and could restore channelized and armored portions of inland waterways and the shoreline at Del Mar Bluffs, where determined feasible. Proposed PWP/TREP improvements would potentially restore water quality and tidal circulation of lagoons, improve conveyance of stream flow and sediment transport from inland areas, facilitate passage of fish and other aquatic species, and restore natural shoreline processes thereby enhancing biological productivity of marine resources and water quality.

Benefits to water quality from the proposed rail improvements would also result from the reduction in vehicle miles traveled (VMT) on area highways that may occur with increased and improved rail service, as fewer roadway pollutants would be present in the surface runoff from the roadways. Reduction in VMT with the implementation of the rail improvements, when combined with the proposed highway improvements that would specifically target improving water quality on I-5, would reduce and better treat stormwater runoff from area highways, resulting in a beneficial impact to water quality throughout the corridor.

Based on available project and environmental data and the policies and implementation measures included herein, the proposed PWP/TREP highway improvements would protect and enhance water quality and marine habitats, and therefore the PWP/TREP is consistent with Sections 30230, 30231 and 30236 of the Coastal Act.

As demonstrated in the section and discussed in more detail in Section 5.10, there is no feasible, less environmentally damaging alternative that would address the mobility and coastal policy concerns of the corridor and avoid impacts to wetlands (Section 30233), and feasible avoidance, minimization and mitigation measures have been provided to minimize adverse environmental effects. Section 5.10 evaluates the PWP/TREP improvements under the Coastal Act's conflict-resolution provision (Section 30007.5). It concludes that denying or modifying the PWP/TREP would conflict with policies in Chapter 3 of the Coastal Act, and that even if the PWP/TREP conflicts with the Coastal Act's wetlands provisions, approving the PWP/TREP on balance is the most protective of significant coastal resources.

5.4.5 Local Coastal Program Consistency

For LOSSAN rail projects included in the PWP/TREP that improve the movement of freight, the local coastal program (LCP) policy consistency analysis provides guidance and background information for analyzing rail project consistency with Sections 30230, 30231, 30233, and 30236 of the Coastal Act, as appropriate and applicable (see Chapter 1 for additional discussion of LCP applicability to rail projects that may fall under the exclusive jurisdiction of the Surface Transportation Board). The corridor's LCP water quality, wetland, and stream channelization policies are summarized with brief city-specific consistency analyses below, which also integrate and supplement the above consistency analysis for Sections 30230, 30231, 30233, and 30236 of the Coastal Act.

5.4.5.1 Local Coastal Program Consistency Analysis Summary

Most of the corridor LCPs include policies that mirror, in part, the requirements of Sections 30230, 30231, 30233, and 30236 of the Coastal Act; however, the LCPs also include a variety of additional, detailed, and city-specific policies and development standards that address potential impacts associated with water quality, wetland resources and stream channelization. It should be noted that many of the City's LCP policies that address marine resources and water quality concerns are also relied upon to address natural hazards through grading, drainage, and stormwater runoff controls. As such, LCP policies that focus on grading, drainage, and stormwater runoff measures are also addressed in more detail in Section 5.8.

Common policy requirements for protection of marine resources within the NCC LCPs include:

- Limiting construction in floodplains and shoreline protection devices pursuant to Sections 30235 and 30236 of the Coastal Act.
- Avoiding grading and development on steep slopes, where feasible, and limiting the duration and timing of grading activities.
- Implementing drainage and stormwater runoff control plans to minimize site erosion.
- Minimizing grading and removal of vegetation.
- Revegetating graded and disturbed areas with native plant species to minimize erosion.
- Implementing drainage and stormwater runoff control plans to minimize site erosion and sedimentation, and to retain and treat stormwater runoff.
- Prohibiting fill of wetlands pursuant to Section 30233 of the Coastal Act.
- Prohibiting impacts to riparian habitat pursuant to the environmentally sensitive habitat area protection policies of the Coastal Act (Section 30240).
- Imposing setback (buffer) requirements from wetlands, streams and the shoreline.

TABLE 5.4-9: NCC LAGOON ENHANCEMENTS SUMMARY

Lagoon	Key Lagoon Features	PWP/TREP Project Component				
		Mitigation (REMP)	Bridge Enhancements	Bike/Pedestrian Trails	I-5 Water Quality/BMPs	Long-term Monitoring ¹
Los Peñasquitos	<ul style="list-style-type: none"> 565 acres Carroll/Soledad Canyon Creek Los Peñasquitos Creek Carmel Creek 	<ul style="list-style-type: none"> Deer Canyon II: Upland Establishment (14.6 ac) Lagoon Management Endowment for Inlet Maintenance 	<ul style="list-style-type: none"> I-5 Widened Only, not Replaced at Carmel Creek New flyover spanning Los Peñasquitos Creek New bike bridge at Carmel Creek Removal of culverts at Carmel Creek 	<ul style="list-style-type: none"> Peñasquitos Creek Trail Connection Carmel Valley Bicycle/Pedestrian Enhanced Trail Connection Old Sorrento Valley Road Bicycle/ Pedestrian Enhanced Trail Connections I-5 North Coast Bike Trail 	<ul style="list-style-type: none"> Bioswales (7) Detention Basin 	<ul style="list-style-type: none"> Lagoon Enhancement Plan Being Updated
San Dieguito	<ul style="list-style-type: none"> 456 acres San Dieguito River 	<ul style="list-style-type: none"> Dean Family Trust (Uplands): Upland Establishment (20.8 ac); Upland Preservation (1.5 ac) San Dieguito W19: Upland (9.6 ac) & Wetland (47.3 ac) Establishment; Upland (19.8 ac) Enhancement 	<ul style="list-style-type: none"> I-5 Widened Only, not Replaced 	<ul style="list-style-type: none"> Bicycle/Pedestrian Enhanced Trail and Bridge on West Side of I-5 Coast to Crest Trail Crossing I-5 North Coast Bike Trail 	<ul style="list-style-type: none"> Bioswales (10) Detention Basin Maintained 	<ul style="list-style-type: none"> SCE Restoration Initiated in 2006
San Elijo	<ul style="list-style-type: none"> 491 acres Escondido Creek San Elijo Creek 	<ul style="list-style-type: none"> Laser: Upland (4.1 ac) & Wetland (0.02 ac) Preservation San Elijo Lagoon Restoration Project (SELRP) Funding San Elijo Uplands (30 ac) 	<ul style="list-style-type: none"> I-5 Bridge Lengthened to 560 ft (from 340 ft) I-5 Channel Width Expanded to 265 ft (from 130 ft) LOSSAN Bridge Lengthened to 590 ft (under Alt 2A) 	<ul style="list-style-type: none"> Pedestrian Trailhead Pedestrian Enhanced Trail on Both Sides of I-5 With Bridge Connection to Manchester Avenue Segments of Coastal Rail Trail I-5 North Coast Bike Trail 	<ul style="list-style-type: none"> Bioswales (6) Detention Basin Maintained First Flush Flow Diversion 	<ul style="list-style-type: none"> SELRP
Batiquitos	<ul style="list-style-type: none"> 600 acres San Marcos Creek Encinas Creek 	<ul style="list-style-type: none"> La Costa: Upland Preservation (18.8 ac) Lagoon Management Endowment for Inlet Maintenance 	<ul style="list-style-type: none"> I-5 Bridge Lengthened to 282 ft (from 219 ft) I-5 Channel Width Expanded to 183.5 ft (from 106 ft) LOSSAN Bridge Lengthened to 350 ft (from 310 ft) LOSSAN Channel Width Expanded to 202 ft (from 162 ft) 	<ul style="list-style-type: none"> Bicycle/Pedestrian Enhanced Trail and Bridge on West Side of Lagoon Trail on Northeast Side of I-5 Segments of Coastal Rail Trail I-5 North Coast Bike Trail 	<ul style="list-style-type: none"> Bioswales (5) Wet Basin Maintained 	<ul style="list-style-type: none"> Lagoon Enhancement Project Port of Los Angeles/Long Beach
Agua Hedionda	<ul style="list-style-type: none"> 400 acres Agua Hedionda Creek 	<ul style="list-style-type: none"> Hallmark East and West: Upland (3.5 ac) & Wetland (4.37 ac) Establishment; Upland (6.6 ac) & Wetland (0.97 ac) Enhancement; Upland (1.8 ac) & Wetland (0.44 ac) Preservation 	<ul style="list-style-type: none"> Widened Only; Optimization Study Concluded Lengthening Not Highest/Best Use 	<ul style="list-style-type: none"> Bicycle/Pedestrian Enhanced Trail and Bridge on East Side of I-5 I-5 North Coast Bike Trail 	<ul style="list-style-type: none"> None; right-of-way and ESHA restrictions 	<ul style="list-style-type: none"> Dredging and Eelgrass Planting Removal of Toxic Algae
Buena Vista	<ul style="list-style-type: none"> 203 acres Buena Vista Creek 	<ul style="list-style-type: none"> Buena Vista Lagoon Restoration Project Funding 	<ul style="list-style-type: none"> I-5 Bridge Lengthened to 197 ft (from 102 feet) I-5 Channel Width Expanded to 105 feet (from 24 feet) 	<ul style="list-style-type: none"> I-5 North Coast Bike Trail 	<ul style="list-style-type: none"> Bioswales (3) 	<ul style="list-style-type: none"> Buena Vista Lagoon Foundation Feasibility Study completed

Note:

1. Long-term monitoring by other responsible agencies is either ongoing as part of current restoration efforts, or proposed as part of future restoration projects.

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These LCP policies are generally applied on a citywide basis in the respective jurisdictions, but in some instances are also applied to specifically address the many significant coastal waterbodies that are identified by the LCP within each city, including:

City of San Diego

- Los Peñasquitos Lagoon
- San Dieguito Lagoon
- San Dieguito River
- Los Peñasquitos Creek
- Carroll Canyon Creek
- Soledad Canyon
- Carmel Creek
- Crest Canyon

City of Del Mar

- Los Peñasquitos Lagoon
- San Dieguito Lagoon
- San Dieguito River
- Crest Canyon
- Del Mar Canyon

City of Encinitas

- San Elijo Lagoon
- Batiquitos Lagoon
- Encinitas Creek
- Escondido Creek
- El Camino Real Creek

City of Carlsbad

- Batiquitos Lagoon
- Buena Vista Lagoon
- Agua Hedionda Lagoon
- Encinas Creek
- San Marcos Creek
- Encinitas Creek

City of Oceanside

- Buena Vista Lagoon
- Buena Vista Creek
- San Luis Rey River
- Loma Alta Creek
- Oceanside Harbor

As discussed in detail in the Coastal Act policy consistency analysis above, PWP/TREP improvements could restore water quality and tidal circulation of lagoons, improve stream flow and sediment transport from inland areas, facilitate passage of fish and other aquatic species, and restore natural shoreline processes, thereby enhancing biological productivity of marine resources and water quality. Benefits to water quality from the proposed rail improvements could result also from the reduction in VMT on area highways that could occur with increased and improved rail service as fewer roadway pollutants would be present in the surface runoff from the roadways. Any reduction in VMT with the implementation of the rail Improvements, in conjunction with the proposed highway improvements that would specifically target improving water quality on I-5, would reduce and better treat the pollutant burden in stormwater runoff from area highways resulting in a beneficial impact to water quality throughout the corridor. PWP/TREP improvements would not result in channelization of coastal streams that would be inconsistent with Section 30236 of the Coastal Act. As such, the PWP/TREP is consistent with applicable LCP policies addressing marine resources and channelization of streams and therefore these policies would not need to be amended for implementation of the proposed transportation facility improvements.

In addition, all of the corridor LCPs include specific requirements for addressing stormwater runoff to ensure water quality is protected and, where feasible, is enhanced and restored, although the specific requirements vary between the individual LCPs, and/or within individual LCPs where the San Diego and Carlsbad LCPs include a number of specific LCP community plans or segments. The corridor LCPs collectively include the following range of policy requirements that address stormwater quality:

- Ensure zero increase in runoff by preparing an SWMP.
- If a project site is on or adjacent to sloping lands, drainage systems should be designed so that the peak rate of runoff for the 10-year-frequency storm event will not exceed the rate under undeveloped conditions.
- Assure that there will be no increase in the peak runoff rate from the fully developed site, and neither significantly increase nor contributes to downstream bank erosion and sedimentation.
- Increases in post-construction runoff and sediment above the 10-year storm frequency reconstruction condition, will be mitigated.
- No increase in the peak runoff rate from the fully developed site over the greatest discharge that would occur from the existing undeveloped site as a result of the intensity of rainfall expected during a 6-hour period once every 10 years.
- Assure no increase in peak runoff rate from the developed site over the greatest discharge expected from the existing undeveloped site as a result of a 10-year frequency storm.

Although the proposed PWP/TREP improvements have been sited and designed to minimize impacts to water quality, and would include a number of mitigation measures to protect and, where feasible, enhance and restore coastal water quality, it is unlikely that the proposed improvements could be implemented consistent with each specific City LCP policy requirement that addresses stormwater quality. As such, LCP policy requirements for San Diego and Carlsbad requiring specific stormwater treatment standards for new development present potential policy conflicts that may require amendment to ensure consistency of the PWP/TREP improvements with the certified LCPs.

SANDAG and Caltrans may seek amendments to the LCPs of San Diego, Del Mar, Encinitas, Carlsbad, and Oceanside to allow for conflict resolution under Section 30007.5 of the Coastal Act.

Section 5.10 evaluates the PWP/TREP improvements under the Coastal Act's conflict-resolution provision (Section 30007.5). The conflict-resolution analysis concludes that denying or modifying the PWP/TREP to avoid the wetland fill impacts discussed in this section would conflict with several other Chapter 3 policies of the Coastal Act should it be concluded that the PWP/TREP conflicts with the Coastal Act's wetlands provisions, approving the PWP/TREP on balance is the most protective of significant coastal resources.

Furthermore, all of the corridor LCPs include specific policies that require buffers from wetland and riparian habitat areas, and mitigation requirements where impacts to wetland and riparian areas are permitted. As with LCP policies addressing stormwater quality, the specific policy requirements for buffers and mitigation vary between the individual City LCPs, and/or within individual LCPs themselves, such as for San Diego and Carlsbad, which include a number of specific LCP community plans or segments. The corridor City LCPs collectively include a range of policy requirements that address wetland and riparian buffers and mitigation, some of which include buffer requirements without the option to adjust the buffers, and others that provide for minimum buffer requirements but allow for adjustment if certain criteria are met. Buffer areas for wetland habitats in the certified cities are generally required to be 100 feet, and pursuant to some policies, may be reduced to 50 feet or less if it is demonstrated that a smaller buffer would protect the resources of the wetland area based on site-specific information. LCP policies generally require riparian habitat buffers to be a minimum of 100–50 feet. Corridor LCP mitigation requirements generally include a 4:1 mitigation ratio for impacts to saltwater or freshwater wetland or marsh impacts, and a 3:1 mitigation ratio for riparian impacts, with some variation between the LCPs.

The existing location of the transportation facilities requires that the proposed projects occur in areas within and adjacent to the wetlands, riparian, and sensitive habitats; therefore, the project would not provide the minimum buffer requirements articulated in the corridor City LCPs. In addition, because the proposed REMP is intended to significantly enhance water quality and marine resources in the corridor by implementing a combination of traditional and non-traditional measures to mitigate coastal resource impacts and to enhance and restore resources beyond standard mitigation requirements, it is unlikely that the PWP/TREP improvements would meet the traditional mitigation ratio requirements for wetland and riparian habitat areas included in the corridor LCPs. As such, these LCP policy requirements for San Diego, Del Mar, Encinitas, Carlsbad, and Oceanside present potential policy conflicts that would require amendment to ensure consistency of the PWP/TREP improvements with the certified LCPs.

5.5 ENVIRONMENTALLY SENSITIVE HABITAT AREAS AND SPECIAL-STATUS SPECIES

This section examines how the PWP/TREP program of improvements would address potential project impacts to environmentally sensitive habitat areas (ESHAs)—specifically sensitive upland and wetland habitats and special-status plant and wildlife species—and how the PWP/TREP provides a unique opportunity to enhance these ESHAs in the North Coast Corridor (NCC). Taken together, the PWP/TREP improvements would:

- Propose bridge/culvert replacement and lengthening projects over specific lagoons and other coastal waterbodies to better convey flood waters and allow for improved tidal flushing, to reduce or minimize fill, and to minimize sedimentation and erosion, thereby improving water quality and the ecological value of the lagoons, riparian systems, and adjacent upland areas (as discussed in detail in Section 5.4).
- Implement a comprehensive, corridor-wide Resource Enhancement and Mitigation Program (REMP) to create (establish), restore, preserve and enhance sensitive upland and wetland habitat along the 30-mile NCC coastline, focusing on acquisition and preservation of properties that:
 - Contribute to protecting and enhancing lagoon system and watershed function and services by preserving key parcels with upland ESHAs that were proposed for development.
 - Improve ecosystem continuity through habitat connectivity between coastal wetlands and native uplands.
 - Provide buffers from surrounding urban development.
 - Allow for habitat migration under future sea level rise and climate change conditions.
 - Achieve no net loss of sensitive upland habitat through forward-looking establishment and restoration.
 - Support special-status plant and animal species.

5.5.1 Environmentally Sensitive Habitat Areas in the Corridor

The NCC is located in a region known to contain several ESHAs. The ESHAs most commonly observed within the corridor include coastal lagoons, coastal and inland waterways, smaller drainages supporting wetland/riparian habitats, isolated riparian/wetland habitats, and upland habitats, some of which have the potential to support special-status or sensitive plant and animal species and to provide wildlife corridors. Figure 5.5-1A to Figure 5.5-6B provide an overview of existing and potential sensitive resources in the corridor based on the corridor setting evaluated and documented for purposes of preparing the PWP/TREP. These figures illustrate the location of potential ESHAs, sensitive habitat, and special-status species known to potentially occur or were observed in the corridor. Table 5.5-3 and Table 5.5-4 list the special-status species known to potentially occur or were observed within the LOSSAN rail and I-5 highway improvement study areas and their expected location. Because the corridor's natural resources are subject to change during implementation of the PWP/TREP, the ESHA mapping included in the figures and descriptions of this section provide a baseline from which to evaluate potential project impacts to known (observed) and potential habitat areas and special-status plant and wildlife species. Due to the use of the lagoons and associated upland habitats within the corridor by numerous bird species that are considered migratory, not all sightings were mapped; however, many species of herons, egrets, and raptors were commonly observed in the study area and are included in the special-status species list at the end of this section. In addition to the sensitive resources discussed in this section, Section 5.4 addresses ESHAs associated with the corridor's lagoons, rivers, streams, smaller drainages, as well as isolated wetlands and riparian habitat areas.

5.5.1.1 LOSSAN Rail Corridor Resources

The study area for biological resources for the Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail improvements was defined in the *LOSSAN Final Program EIR/EIS* as 1,000 feet on each side of the centerline of the proposed alignment options (including station locations) in urban areas, and as 0.50 mile on each side of the centerline in sensitive areas, including the lagoons. The *LOSSAN Final Program EIR/EIS* is a program-level analysis of natural communities and species identified or potentially occurring within the study area and of impacts to these resources that could result from proposed rail improvements.

Native Upland Habitat

Six native upland habitat types are found within the LOSSAN rail corridor, which, based on site-specific evaluation, may be found to constitute ESHA as defined by Section 30107.5 of the Coastal Act. These habitats include coastal sage scrub, southern maritime chaparral, Torrey pine forest, oak woodland, southern dune scrub, and southern foredunes.

Special-Status Plants

According to the *LOSSAN Final Program EIR/EIS* and observation data provided by the San Diego Association of Governments (SANDAG), there are 25 special-status plant species potentially located within the LOSSAN rail corridor; 18 of the plant species are listed as Federal and/or State Endangered and/or California Native Plant Society (CNPS) List 1B. Per CNPS, the plants of List 1B are rare, threatened or endangered in California and elsewhere, and in addition, meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) and are eligible for state listing. There are four plant species listed as Federal and/or State Endangered: the Del Mar Manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*), the Orcutt's sunflower (*Chorizanthe orcuttiana*), the short-leaved dudleya (*Dudleya brevifolia*), and the San Diego button-celery (*Eryngium aristulatum* var. *parishii*). The other seven special-status plant species are CNPS List 2 or 3 species.

Special-Status Wildlife

According to the *LOSSAN Final Program EIR/EIS* and observation data provided by SANDAG, there are 39 special-status wildlife species potentially located within the LOSSAN rail corridor, 10 of which are listed as Federal and/or State Endangered including San Diego fairy shrimp (*Branchinecta sandiegonensis*), southwestern willow flycatcher (*Empidonax traillii eximius*), tidewater goby (*Eucyclogobius newberryi*), Belding's savannah sparrow (*Passerculus sandwichensis beldingi*), Pacific pocket mouse (*Perognathus longimembris pacificus*), light-footed clapper rail (*Rallus longirostris levipes*), California least tern (*Sterna antillarum browni*), Riverside fairy shrimp (*Streptocephalus woottoni*), least Bell's vireo (*Vireo bellii pusillus*), and Southern steelhead trout Southern Evolutionary Significant Unit (ESU) (*Oncorhynchus mykiss*). Table 5.5-4 lists special-status wildlife species known to potentially occur or were observed within the rail improvement study area and their expected location.

Wildlife Corridors. Large open areas, lagoons and surrounding park or reserve areas, and riparian areas in undeveloped areas are considered potential wildlife movement corridors in the LOSSAN rail corridor region. Additionally, smaller creeks and areas of disconnected habitat may provide connectivity (by acting as stepping stones for the regional movement of some avian species) or may provide resting areas for migratory species. Potential wildlife movement/migration corridors may include San Luis Rey River, Buena Vista Lagoon, Aqua Hedionda Lagoon, Batiquitos Lagoon, San Elijo Lagoon, San Dieguito River and Lagoon, Los Peñasquitos Lagoon, and Peñasquitos Creek and Canyon. Lagoon slopes may be important wildlife corridors for large and small mammals. Smaller creeks and linear

areas of narrow natural or semi-natural habitat may also function as a wildlife corridor and would be evaluated at the project level.

Critical Habitat. Designated critical habitat, as defined by the U.S. Fish and Wildlife Service (USFWS), may occur within the LOSSAN rail corridor study area for coastal California gnatcatcher, southwestern willow flycatcher, tidewater goby, Riverside fairy shrimp, San Diego fairy shrimp, and Spreading Navarretia. The USFWS data indicate that designated critical habitat occurs in the corridor as follows: tidewater goby and southwestern willow flycatcher critical habitat in the city of Oceanside; Riverside fairy shrimp, San Diego fairy shrimp and Spreading Navarretia critical habitat associated with vernal pools in the city of Carlsbad; and coastal California gnatcatcher critical habitat in the cities of Encinitas, Carlsbad, and Oceanside. Designated critical habitat for the western snowy plover also occurs within the Peñasquitos and Batiquitos Lagoons.

5.5.1.2 I-5 Highway Corridor Resources

Numerous studies have been conducted and reviewed in preparing the *I-5 NCC Project Draft EIR/EIS*, *Supplemental Draft EIR/EIS* and *Final Draft EIR/EIS*, including the I-5 NCC Project Natural Environment Study (NES) (June 2008); the Manchester Avenue/Interstate 5 Interchange Project NES Report (January 2004); I-5 Widening Project Pacific Pocket Mouse Habitat Analysis and Trapping Program, San Diego County, California (June 2003); and the I-5 Lagoons Marine Resource Investigation (June 2006).

Native Upland Habitat Areas

The following seven natural upland habitat types are found within the I-5 NCC and, based on site-specific evaluation, may be found to constitute ESHA as defined by Section 30107.5 of the Coastal Act:

- **Coastal sage scrub** occurs on cut-and-fill slopes primarily in the southern half of the study area around most of the lagoons and rivers. Coastal sage scrub within the study area is generally dominated by drought-deciduous species such as California sagebrush (*Artemisia californica*), flat-top buckwheat (*Eriogonum fasciculatum* var. *fasciculatum*), and California sunflower (*Encelia californica*) with scattered evergreen shrubs including lemonadeberry (*Rhus integrifolia*), and laurel sumac (*Malosma laurina*). The understory is diverse and includes a rich variety of annual forbs and annual and perennial grasses. In some areas, coastal sage scrub habitat could support a variety of rare plant and animal species (e.g., coastal California gnatcatcher) and is the current focus of conservation efforts by the State of California through Natural Community Conservation Planning, which includes, in San Diego County, the Multiple Species Conservation Program and Multiple Habitat Conservation Plan. The disturbed form of this habitat has less overall cover and, within the study area, has the same dominant species listed above with non-native annual grasses, and non-native broadleaf species such as Russian thistle (*Salsola tragus*), acacia (*Acacia* sp.), mustard (*Brassica* sp.), and horseweed (*Conyza canadensis*).
- **Maritime succulent scrub** occurs on dry, south-facing slopes and coastal bluffs from Torrey Pines to El Rosario, Baja California. Maritime succulent scrub is dominated by a combination of coastal sage scrub dominants mixed with succulents and cacti and some endemic species (e.g., Del Mar manzanita). Typical species found in this community include California sagebrush, Shaw's agave (*Agave shawii*), California sunflower, coast barrel cactus (*Ferocactus viridescens*), coastal prickly pear (*Opuntia littoralis*), and coastal cholla (*Cylindropuntia prolifera*). Maritime succulent scrub occurs primarily on the west side of I-5 near Batiquitos Lagoon in the city of Carlsbad. The slopes are dominated by California sagebrush, coastal cholla, coast barrel cactus, fishhook cactus (*Mammillaria dioica*), and California sunflower.

- **Coastal bluff scrub** is a plant community made up primarily of low, prostrate plants that are wind pruned by sea breezes. Dominant plants in this community are primarily woody or succulent. Species commonly found in this community include sea dahlia (*Coreopsis maritima*), live forever (*Dudleya* spp.), lemonadeberry, and prickly pear. Coastal bluff scrub occurs in a few locations on the slopes adjacent to I-5 north of San Elijo Lagoon.
- **Southern maritime chaparral** is dominated by wart-stemmed ceanothus (*Ceanothus verrucosus*) and thick-leave Eastwood's manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*). Other species found in this community include chamise (*Adenostoma fasciculata*), spicebush (*Cneordium dumosum*), summer holly (*Comarostaphylos diversifolia*), sea dahlia (*Coreopsis maritima*), Del Mar sand aster (*Lessingia filaginifolia* var. *filaginifolia*), toyon, Torrey pine (*Pinus torreyana*), Nuttall's scrub oak (*Quercus dumosa*), and laurel sumac. Elements of Diegan coastal sage scrub may be interspersed within this community. Southern maritime chaparral occurs in small patches within the study area. It mostly occurs outside of California Department of Transportation's (Caltrans) right-of-way. Its distribution within the project limits is patchy. It is found on the northbound and southbound freeway slopes at Del Mar Heights Road, on some areas outside the right-of-way on the southbound slopes south of San Elijo Lagoon, and on some smaller patches on the northbound slopes north of Manchester Avenue along northbound I-5. Some areas of southern maritime chaparral are disturbed and have large openings that are bare or vegetated with non-native species. Many of the disturbed areas occur along trails or near development. Non-native species found in disturbed southern maritime chaparral include African fountain grass (*Pennisetum setaceum*), Australian saltbush (*Atriplex semibaccata*), crystalline iceplant (*Mesembryanthemum* spp.), and ice plant (*Carpobrotus edulis*).
- **Coastal sage – chaparral scrub** is a mixture of the dominant species in coastal sage scrub and chaparral communities. Dominant plant species observed include chamise, coastal sagebrush, lilac (*Ceanothus* spp.), black sage, and poison oak (*Toxicodendron diversilobum*). Coastal sage–chaparral occurs on a slope east of Marine View Avenue and south of Loma Santa Fe exit and east of I-5.
- **Coast live oak woodland** consists primarily of coast live oak (*Quercus agrifolia*) and Engelmann oak (*Quercus englemannii*) with several associated understory species including poison oak, skunk brush (*Rhus trilobata*), scrub oak, and toyon. The herbaceous layer consists of western ragweed (*Ambrosia psilostachya*), Douglas mugwort (*Artemisia douglasiana*), foxtail chess (*Bromus madritensis* ssp. *rubens*), soft chess (*Bromus hordeaceus*), ripgut grass (*Bromus diandrus*) and slender wild oat (*Avena barbata*). Coast live oak woodland only occurs on the slopes above Jefferson Street south of Buena Vista Lagoon. The habitat comprises coast live oaks with non-native grasses in the understory.
- **Native grassland** in southern California is characterized by a moderate cover of native bunchgrasses with native forbs and is usually a smaller component of non-native grasses and broadleaf species. Native grassland in the study area is dominated by purple needlegrass (*Nassella pulchra*) with giant wild rye (*Leymus condensatus*) and blue wild rye (*Elymus glaucus*), with non-native grasses and forbs within the community. Native grassland occurs on both the northbound and southbound slopes of I-5 north of Genesee Avenue.

Native and Non-native Upland Habitat Areas

The following four upland native and non-native habitat types are found within the I-5 NCC and are not typically considered ESHA as defined by Section 30107.5 of the Coastal Act, unless site-specific evaluation finds that these areas 1) support special-status plants or animals or because of the presence of a particular habitat that supports such special-status species and 2) the area is easily disturbed or degraded by human activities:

- **Baccharis scrub** is a form of sage scrub dominated by coyote brush (*Baccharis pilularis*). This habitat is found in low-lying areas often adjacent to drainages. This community is found adjacent to the drainage north of Genesee Avenue in the city of San Diego. Disturbed Baccharis scrub is also found along this drainage and is dominated by coyote brush and invasive, non-native pampas grass (*Cortaderia* sp.) above the channel at the southern end of this drainage in San Diego. **Non-native grassland** consists of dense-to-sparse cover of non-native annual grasses, often associated with species of showy-flowered, native annual forbs, especially in years of high rainfall. This vegetation community is a disturbance-related community most often found in old fields or openings in native scrub habitats that occur on fine-textured, usually clay soils. These soils are moist or even waterlogged during the winter rainy season and very dry during the summer and fall. Typical grasses found within the study area include wild oat (*Avena* sp.), soft chess, African fountain grass, veldt grass (*Ehrharta calycina*), red brome, and ripgut grass. Invasive species such as fennel (*Foeniculum vulgare*) and mustard are often associated with this vegetative community as a lesser component. Non-native grassland occurs in various locations along the cut slopes throughout the corridor. Non-native grassland is often found where ornamental vegetation has been degraded or grasses such as African fountain grass were planted as ornamental vegetation.
- **Non-native woodland** is a community comprising non-native trees including eucalyptus (*Eucalyptus* spp.), pine trees (*Pinus* spp.), pepper trees (*Schinus* spp.), and others. This community is dominated by trees and does not include areas with a few trees interspersed with other herbaceous and shrubby plants. This habitat is generally dominated with eucalyptus groves along I-5. Non-native woodland is found on the fringes around the lagoons and in various areas throughout the corridor.
- **Disturbed Habitat** are any lands where agricultural practices, construction, or other land-clearing activities have altered the native vegetation; species composition and site conditions are not characteristic of the disturbed phase of one of the plant associations. Such habitat, which is dominated by non-native annuals and perennial broadleaf species, is typically found in vacant lots, roadsides, construction staging areas, and abandoned fields. Typical species found in this community include mustards, filaree (*Erodium* spp.), Russian thistle, tumbleweed (*Amaranthus albus*), sweet fennel, horseweed, crown daisy (*Chrysanthemum coronarium*), and often degraded broadleaf ornamental plants such as ice plant, acacia, and myoporum (*Myoporum laetum*).

Sensitive Plant Species

Twenty-four sensitive plant species potentially occur within the I-5 NCC, including 12 species that are listed as Federal and/or State Endangered or Threatened and CNPS List 1B, and 9 species that are listed as only CNPS List 1B. Of the 12 species, the San Diego thornmint (*Acanothomintha ilicifolia*), the coastal dunes milk-vetch (*Astragalus tener* var. *titii*), the Orcutt's spineflower (*Chorizanthe orcuttiana*), the San Diego button-celery (*Eryngium aristulatum* var. *parishii*), the willowy monardella (*Monardella linoides* ssp. *viminea*), the California orcutt grass (*Orcuttia californica*), and the San Diego Mesa mint (*Pogogyne abramsii*) are Federally Endangered and State Endangered. The San Diego button-celery (which is associated with clay bottom vernal pools) and the San Diego Mesa mint (which is restricted to vernal pools on mesa tops) are not expected to occur within the project area as there are no vernal pools within the study area. Two species are Federally Endangered: the Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*) and the San Diego ambrosia (*Ambrosia pumilla*). In the study area, approximately 70 Del Mar manzanita 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. San Diego ambrosia was not observed during any surveys conducted for the I-5 project, and there are no locations recorded in the California Natural Diversity Database (CNDDDB) within the study area. Two species, the Encinitas baccharis (*Baccharis vanessae*) and the thread-leaved brodiaea (*Brodiaea filifolia*) are Federally

Threatened and State Endangered. Encinitas baccharis is endemic to San Diego County, occurring locally in chaparral along the coast from Encinitas to Mira Mesa, but was not observed within the project area. The thread-leaved brodiaea, which is found in coastal sage scrub, cismontane woodland, valley and foothill grasslands, and in clay soils in vernal pools, was not observed during surveys conducted for the project. Based on analysis completed for the I-5 NCC Project DEIS/EIR, Table 5.5-1 identifies the sensitive plant species observed in the project area of effect.

TABLE 5.5-1: SENSITIVE PLANT SPECIES WITHIN HIGHWAY AREA OF EFFECT

Sensitive Plant Species	Numbers Observed
San Diego barrel cactus	7
Nuttall's scrub oak	5
Del Mar sand aster	694
Orcutt's pincushion	869
Sea dahlia	20
Southern tarplant	10
Torrey pine	10
Wart-stemmed ceanothus	4

Invasive Species

Several aggressive invasive species are found along the I-5 slopes and the areas within the wetland habitats, including varying amounts of pampas grass, ice plant, African fountain grass, Algerian sea lavender (*Limonium ramosissimum*), and annual species. Recently, African veldt grass and onion weed (*Asphodelus fistulosus*) have become problems as they spread along the right-of-way. African veldt grass has become a dominant species on the cut slope of I-5 (between Del Mar Heights Road and Birmingham Drive) and is also spreading into habitats around the lagoons.

Tamarisk, arundo, castor bean, and fennel are common invasive species within the wetland habitats within the corridor. There are groups working to control these species, particularly in the lagoons; however, they are persistent invasive species. Another non-native invasive species that has invaded aquatic systems is a toxic algae called *Caulerpa taxifolia*, which had a large infestation in Agua Hedionda Lagoon in 2000, which has since been eradicated. Although toxic algae is not present in Batiquitos Lagoon, the lagoon is considered "at-risk" due to its proximity to residential areas and previously identified infestations within Agua Hedionda Lagoon, the input of storm drains, and the presence of eelgrass, which indicates the presence of habitat that is also attractive to *Caulerpa*.

Wildlife Species

The I-5 NCC 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 Savannah sparrow. Many species of waterfowl, shorebirds, and marsh species can be found within 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 were 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*). There is limited riparian habitat in and around the lagoons; however, several creeks and the San Luis Rey River support many of these species within the project study area.

Coastal sage scrub and other upland habitats support a diverse group of reptiles, birds, and mammals especially around the lagoons. 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 one San Diego horned lizard (*Phrynosoma coronatum blainvilliei*). Commonly observed upland bird species include coastal California gnatcatcher, bushtit (*Psaltiriparus minimus*), wrenit (*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*).

There are nine threatened and endangered bird species potentially occurring within the I-5 highway project area. Two species—the light-footed clapper rail (*Rallus longirostris levipes*) and the California least tern (*Sterna antillarum browni*)—are listed as Federally Endangered, State Endangered, and California Fully Protected. The light-footed clapper rail were detected within 500 feet of I-5 in Buena Vista, San Elijo, and Batiquitos Lagoons (known to nest in cattails within the lagoon). Near Batiquitos Lagoon, light-footed clapper rail have been identified in the vicinity of I-5 to the northwest, north, and southeast. No clapper rails were observed in Los Peñasquitos Lagoon in the I-5 study area. The San Dieguito Ecological Reserve has a colony of California least tern managed by the California Department of Fish and Wildlife (CDFW), and four additional nesting sites have been constructed as a part of the San Onofre Generating Station (SONGS) mitigation site within this lagoon; San Elijo and Batiquitos Lagoons have known nesting areas and California least terns were observed foraging in these two lagoons in 2003. The breeding areas for the California least tern are outside of the grading limits; however, some foraging habitat may be affected during construction.

Two of the nine bird species—the least Bell's vireo (*Vireo bellii pusillus*) and the southwestern willow flycatcher (*Empidonax traillii extimus*)—are listed as Federally Endangered and State Endangered. The least Bell's vireo is migratory and nests in willows as well as a variety of other shrub and tree species. Two vireo territories were detected in the willow woodland east of I-5 near the San Dieguito River and were more than 426 feet and 738 feet from I-5; however, they were outside the main study area. Protocol surveys for least Bell's vireo along Moonlight Creek in Encinitas were negative in both 2003 and 2004. Least Bell's vireo were detected during California gnatcatcher protocol surveys in small patches of riparian habitat in Oceanside.

The southwestern willow flycatcher nesting is restricted to willow thickets in riparian woodland. This subspecies is found among trees or large shrubs throughout San Diego County. The local breeding population in San Diego County is now extremely small. Surveys for the southwestern willow flycatcher were completed in the riparian habitat in the San Luis Rey River, which is the only suitable habitat within the study area. Although a willow flycatcher was heard vocalizing during a wetland survey in the San Luis Rey River, subsequent surveys did not detect the willow flycatcher again. It is likely that the

detected bird was migrating through the area at the time; it could not be confirmed if it was a southwestern willow flycatcher or a migrant willow flycatcher. The San Elijo Lagoon Conservancy has records of migrant southwestern willow flycatchers at San Elijo Lagoon outside the study area.

Two of the nine species—the western snowy plover (*Charadrius alexandrinus nivosus*) and the coastal California gnatcatcher (*Poliophtila californica californica*)—are listed as Federally Threatened and CDFG Species of Special Concern. The western snowy plover forages on the dry sand of the upper beach and along the wet sand at the beach-surf interface. The snowy plover is known to occur in some of the coastal lagoons; however, according to focused surveys conducted throughout the corridor, there is no nesting area within the project footprint.¹ Some foraging habitat for this species may be affected by this project at Batiquitos and Agua Hedionda Lagoons. Critical habitat for the western snowy plover that will not be affected is located east of I-5 within the San Elijo Lagoon along the coast line at Batiquitos and Los Peñasquitos Lagoons, and potentially within the newly constructed nesting sites located in San Dieguito Lagoon. There is a large nesting area at Batiquitos Lagoon (east of I-5) that is used by both the endangered California least tern and the western snowy plover.² The coastal California gnatcatcher (in San Diego County) occurs in coastal lowlands generally below 1,968 feet and is a non-migratory obligate resident of coastal sage scrub. California gnatcatchers were generally found in the I-5 study area along the fill slopes and a few cut slopes adjacent to the San Dieguito, San Elijo, and Batiquitos Lagoons, and in a few adjacent canyons with coastal sage scrub habitat. There is a potential for gnatcatchers to occur near Los Peñasquitos and Agua Hedionda Lagoons; however, no point locations in close proximity to I-5 have been recorded for these species at Agua Hedionda Lagoon because of the lack of appropriate habitat near I-5.

The Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) is listed as State Endangered and is a resident to coastal salt marshes. Belding's savannah sparrows were found in San Dieguito, San Elijo, and Batiquitos Lagoons during the spring 2005 surveys within the I-5 study area, as well as the Buena Vista Lagoon during the CDFG surveys in 2005.³ Additional surveys were completed at San Dieguito Lagoon in 2006 that identified more Belding's savannah sparrows in the northeastern portion of the study area.⁴ Belding's savannah sparrows have been observed on the eastern side of I-5 near Batiquitos Lagoon. Belding's savannah sparrows also nest within Buena Vista Lagoon but are not found adjacent to I-5 due to the limited amount of appropriate habitat.⁵

The white-tailed kite (*Elanus caeruleus*)—a California Fully Protected (CFP) Species and State Species of Species Concern—was occasionally observed foraging over the study area, usually over the agricultural fields; however, no nest sites were observed or are known in the I-5 study area.

The Pacific pocket mouse (*Perognathus longimembris pacificus*) is the only rodent listed as a Federally Endangered and CDFG Species of Special Concern that potentially occurs within the I-5 highway project area. The Pacific pocket mouse is endemic to the southern California coast from Los Angeles County to the Mexico-San Diego border. The small rodent prefers fine-grain and sandy substrates in coastal sage scrub; however, in San Diego County they have also been found in open patches of ground surrounded by weeds. The highest-quality habitat was found near San Dieguito and San Elijo

¹ I-5 NCC Project Natural Environmental Study, June 2008.

² I-5 NCC Project Supplemental Draft EIR/EIS, August 2012.

³ I-5 NCC Project Natural Environmental Study, June 2008.

⁴ Zembal et al. 2006, as cited in I-5 NCC Project Natural Environmental Study, June 2008.

⁵ I-5 NCC Project Supplemental Draft EIR/EIS, August 2012.

Lagoons in 2003 (although no pocket mice were found via protocol live-trapping and are not expected within the project limits).⁶

There are two fish species potentially occurring within the project area listed as Federally Endangered and CDFG Species of Special Concern: the tidewater goby and the southern steelhead trout Southern Evolutionarily Significant Unit (ESU) (*Oncorhynchus mykiss*). The tidewater goby is endemic to coastal lagoons and lower stream reaches in brackish to fresh, slow moving to still, but not stagnant water. The tidewater goby is unlikely to occur in Los Peñasquitos Lagoon because of the lagoon size, the number of lagoon predators, and the distance from known populations of this fish. The tidewater goby is also unlikely to occur in the San Dieguito Lagoon because of the high flows in the river channel, the distance from the mouth of the estuary, and the large number of predators within the lagoon. In addition, monitoring of fish populations associated with the SONGS mitigation has not identified any tidewater goby. No tidewater gobies were observed during fisheries surveys in the I-5 highway study area at San Elijo, Batiquitos, and Agua Hedionda Lagoons; however, tidewater goby surveys are recommended by USFWS as there is a potential for them to occur within Batiquitos and Buena Vista Lagoons. Because of the tidal weir at Buena Vista Lagoon, the tidewater goby is not anticipated within this lagoon. Surveys in these lagoons in 2012 did not identify any tidewater goby within the I-5 highway study area. Tidewater goby were recently found within the San Luis Rey River near the mouth. Southern Steelhead Trout ESU are found in coastal drainages. In May 2007, a steelhead trout was reported by CDFG personnel in the lower San Luis Rey River. The new Pacific Street bridge has allowed for a permanent opening of the San Luis Rey River for easier access to the river by goby and steelhead trout.

The wandering skipper butterfly (*Panoquina errans*) uses salt grass (*Distichlis spicata*) as a host plant and can also be found in adjacent habitats such as coastal sage scrub. Wandering skipper butterflies were observed near the I-5 at San Dieguito, San Elijo, Batiquitos, and Buena Vista Lagoons.

Wildlife Corridors. Wildlife corridors connect large patches of natural open space that allow for the immigration and emigration of wildlife. Such movement assures the continual sharing of genetic information that helps maintain genetic diversity and reduces the probability of extinction through random events. For animals with a larger home range, such as mule deer (*Odocoileus hemionus*), coyotes (*Canis latrans*), and mountain lions (*Felis concolor*), 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. Within the study area, the lagoons and habitats surrounding the lagoons are considered important linkages for wildlife movement. During I-5 NCC surveys, mule deer and their signs were primarily observed west of I-5 near Genessee and along Carmel Valley leading to Peñasquitos Lagoon. Coyote scat was observed near all lagoons and in coastal sage scrub throughout the corridor. Although no mountain lion or bobcat scat or tracks were observed, they are known to occur in habitats around the lagoons. In addition to the lagoons, the San Luis Rey River is also a major wildlife corridor.

The Multiple Species Conservation Program names Peñasquitos Lagoon and San Dieguito Lagoon as key Biological Core and Linkage Areas, and they are identified in regional conservation plans as either preserved or an area targeted for conservation. The I-5 highway itself is a barrier to wildlife movement; however, the existing bridges over the lagoons do provide limited crossings on the abutments.

⁶ URS 2003, as cited in *I-5 NCC Project Natural Environmental Study*, June 2008.

Critical Habitat. Critical habitat for the least Bell's vireo, western snowy plover, southwestern willow flycatcher, tidewater goby, and the California gnatcatcher occurs within the I-5 highway study area. Critical habitat for the least Bell's vireo within the study area occurs along the San Luis Rey River near the I-5/SR-76 interchange. Critical habitat for the southwestern willow flycatcher is also proposed along the San Luis Rey River. Critical habitat for the tidewater goby within the study area occurs at Agua Hedionda Lagoon. Critical habitat for the California gnatcatcher occurs within coastal sage scrub around San Elijo Lagoon, Batiquitos Lagoon, Lawrence Canyon, and near the Center City Golf Course in Oceanside.

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." The 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 are protected by the Endangered Species Act. There are no Pacific salmon known to occur in Northern San Diego County.

The Pacific Coast Groundfish Fishery Management Plan covers more than 82 species of bottom-dwelling fish, including rockfish, flatfish, Pacific whiting, sole, and skate. The EFH for Pacific groundfish is defined as water and substrate along the entire Pacific coast line that is less than or equal to 11,480 feet deep shoreward to the mean high high water (MHHW) line. The coastal lagoons fall within this range. Therefore, Pacific groundfish have a potential to occur in San Dieguito, San Elijo, Batiquitos, Agua Hedionda Lagoons and possibly the San Luis Rey River within the study area. These coastal pelagic species also may inhabit Los Peñasquitos Lagoon; however, saltwater influence does not reach I-5 and project impacts on this lagoon would only be indirect. Pacific groundfish may occur within any of the deeper waters of the lagoons within the project area.

The coastal pelagic species group includes northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), Pacific mackerel (*Scomber japonicus*), and the 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 and possibly the San Luis Rey River within the study area. These coastal pelagic species also may inhabit Los Peñasquitos Lagoon; however, saltwater influence does not reach I-5 and project impacts on this lagoon would only be indirect. Coast pelagic fish species are most likely to occur in the open water at Batiquitos and Agua Hedionda Lagoons that are continuously open to the ocean.

The open water in all these lagoons (and potentially in the San Luis Rey River) provides EFH. Replacement and construction of the bridges in these lagoons and river may adversely affect EFH. The construction of new bridges pilings, fill placed along the abutments, and demolition of the bridges to be replaced could have direct impacts to EFH. Shading by the wider bridges and increased runoff from the wider roadway could also affect EFH. During construction of the bridges' false work some kind of work platform may be used, and this could have a temporary impact to EFH. Conservation measures to minimize these impacts are discussed in the following sections. Lengthening the bridges at San Elijo and Batiquitos Lagoons would increase EFH near the bridges, and would also allow for increased tidal range and fluvial transport and decreased residence times that would also benefit EFH.

5.5.2 PWP/TREP Concerns

Environmental documentation and analysis prepared for the PWP/TREP rail and highway corridor improvements indicate that ESHAs and special-status species are known to occur within the project

improvement areas that could be affected by implementation of the proposed rail and highway improvements. Many of the corridor's significant sensitive resources have experienced and may continue to experience varying degrees of ongoing degradation because of adjacent development and the existing transportation facilities addressed by the PWP/TREP.

5.5.2.1 Natural Resource Deficiencies

Chapter 3A identifies resource deficiencies in the corridor related to historic and ongoing degradation of environmentally sensitive habitats and species. While significant stands of native wetland and upland habitat areas have been preserved in and around the lagoons and other protected open space areas, corridor habitats have been adversely affected by the development of adjacent urban areas and transportation facilities, realignment and/or channelization of inland waterways, armoring of the shoreline, vegetation clearing and thinning for fire protection of adjacent development, and rapid spread of exotic plant materials that supplant native plant species.

As detailed in Section 5.4, the peripheries of corridor lagoons are particularly subject to habitat disturbance and degradation, most often resulting from development encroachment, intense recreational use, and lack of adequate upland habitat buffers. In the corridor, these impacts are demonstrated by areas of severely degraded habitat void of vegetation, areas of disturbed southern arroyo woodland, and salt marsh and coastal brackish marsh. These areas have suffered from excessive erosion and have become infested with non-native and invasive plant species. In addition, wetland and riparian habitats typically found in inland waterways have been severely degraded by previous realignment and channelization of the corridor streams and drainages by both transportation improvements and adjacent land development. Several of the small streams and drainages that have been channelized are void of permeable surface and vegetation while other areas that have not been channelized continue to support some disturbed southern willow scrub, mulefat scrub, freshwater marsh, southern arroyo woodland, and salt marsh/brackish marsh. As with the disturbed habitat areas around many lagoon peripheries, the NCC's smaller inland streams and drainages experience erosion and infestation of non-native and invasive plant species. Development encroachment adjacent to the NCC's lagoons and inland waterways has caused a chronic loss of transitional habitat and has reduced the overall biological diversity of the resource, severed connections between coastal waterbodies and upland habitat, and limited the ability of the resources to evolve in response to environmental conditions such as sea level rise. In addition, development encroachment has eliminated natural buffers that provide water-quality benefits and limit disturbance of wildlife from adjacent land uses.

Upland habitats—including coastal sage scrub, southern maritime chaparral, and native and non-native grassland—provide habitat for certain endangered and threatened plant and animal species and serve as important buffers and transitional habitat for the corridor lagoons and inland waterways. These upland areas also provide wildlife corridors that connect remaining coastal and inland habitat areas, which allows for wildlife movement. Urbanization has caused reductions in upland habitat, resulting in areas with large openings of bare earth or areas that are vegetated with non-native species. Many of the disturbed upland areas in the corridor occur along trails or adjacent to development. The existing transportation facilities act as barriers to east-west wildlife migration where lagoons, rivers, creeks, and the surrounding upland habitat would otherwise provide corridors for wildlife to cross between inland and coastal areas. Although many of the existing highway and rail bridges have steep, narrow abutments at lagoon crossings or channelized drainages that wildlife can utilize for crossing, the design of these facilities does not adequately facilitate or support their use as wildlife corridors.

5.5.2.2 Potential PWP/TREP Project Impacts

The ESHAs and special-status species are known to occur within the project improvement areas and could be affected by proposed grading, construction, and operational activities. The ESHAs in the corridor have been subject to disturbance as a result of development; thus, the remaining habitats within the corridor have become increasingly valuable as a resource. Further loss and degradation of these communities could occur if corridor projects located in areas of sensitivity are not properly designed, monitored, and managed during construction to avoid or mitigate potential impacts to the resource.

The PWP/TREP improvements located within or adjacent to ESHAs could result in impacts to ESHAs and special-status species as result of the following:

- Bridge improvements involving pilings and structural grade beams resulting in direct disruption and displacement of sensitive habitat and wetlands.
- Construction activities or long-term maintenance and operational activities for portions of the rail corridor located at or near coastal bluffs and associated shoreline protective features in the marine environment.
- Increased fill caused by rail- or highway-widening projects.
- Providing inadequate setbacks/buffers between development and areas containing ESHAs necessary to ensure adjacent land uses are developed and maintained compatible with the continuance of habitat areas.
- Short- and long-term construction activity impacts that could occur during important roosting, breeding, foraging, migrating, and nesting periods for special-status species or otherwise displace sensitive wildlife species.
- Potential adverse impacts to riparian habitat and marine resources from stream alterations, increased erosion, and contaminated storm runoff.
- Temporary lighting impacts during infrastructure construction that could alter or disrupt feeding, roosting, breeding, foraging, migrating, and nesting of wildlife and special-status species.
- Indirect shading impacts resulting in decreased light penetration in coastal waterbodies and loss of eelgrass.

However, without the proposed PWP/TREP infrastructure improvements, many of the corridor's wetland, riparian, and upland habitat areas will continue to degrade. The PWP/TREP REMP along with optimized lagoon bridge designs (detailed in Chapter 6B) could significantly restore and enhance natural resources in the corridor and thereby improve many of the existing deficiencies affecting the corridor's ESHAs and special-status species. As discussed in Section 5.4, the PWP/TREP would modify existing bridges to improve existing deficiencies of water quality, lagoon, wetland and riparian habitat resources, and wildlife corridors, which would otherwise remain extremely constrained and degraded. The optimized bridge designs at the corridor lagoons would maximize avoidance and minimization of impacts, reduce tidal muting, and restore/improve wildlife movement. These optimized bridge designs in concert with expanded channel dimensions allow for possible future establishment, restoration, and enhancement of tidal wetlands and improved water quality within the lagoons. In addition, implementation of the PWP/TREP REMP would result in strategically acquiring and preserving ESHAs and degraded habitat areas in conjunction with habitat restoration and establishment opportunities. In corridor lagoon areas, new or improved transitional habitat and buffer areas, restored riparian corridors, and preservation or restoration of habitat via the purchase of adjacent upland habitat would help address the habitat needs of special-status and wildlife species.

5.5.2.3 LOSSAN Rail Corridor Impact Assessment

The PWP/TREP improvements would result in unavoidable impacts to upland and wetland ESHAs as the LOSSAN rail facility is an existing north-south transportation corridor that transects the east-west lagoon systems and is adjacent to existing ESHAs. Proposed rail track improvements would be contained primarily within the existing right-of-way or in tunnels that would minimize the need for significant grading and landform modification that could otherwise disrupt or displace existing ESHAs; however, it is still possible that upland or wetland ESHAs could be located within the right-of-way. Rail improvements involving parking area expansion at stations would occur primarily in developed areas and are therefore not likely to result in substantial impacts to ESHAs; however, construction of a new platform at the Del Mar Fairgrounds could involve new development in the San Dieguito River Valley area and therefore could possibly affect adjacent sensitive resources.

Potential rail impacts to ESHAs could include permanent or temporary (and direct or indirect impacts) to ESHAs or special-status species (Figures 5.5-1A–5.5-6B). Direct impacts to ESHAs could include permanent displacement and removal of vegetation and habitat within the footprint of the physical improvements and would total up to 10.18 acres pending selection of the future Del Mar tunnel. Indirect operational impacts could include increased noise from trains (including horns), increased shading effects from elevated infrastructure over plant and wildlife habitat areas, and other indirect infrequent impacts associated with the operation of an additional railway line. These potential impacts would be assessed in detail at the project-level environmental review, as applicable, to better define their likelihood, extent, and severity.

Federal regulations set forth and define required railroad safety standards, which dictate maintenance activities within right-of-way that must occur on the railroad infrastructure. The contiguous linear track area, signal equipment areas, access roads, and parking areas are typically maintained to be free and clear of vegetation. Other maintenance activities may include inspections, replacement of ballast, ties or rails, turn-out or crossing repair, and structures and signal work. As such, infrastructure maintenance activities and inspections occurring within the railroad right-of-way almost exclusively occur within non-vegetated and disturbed areas. Sensitive areas between the road and the track are avoided when practicable. The majority of rail maintenance activities are performed directly on the track, some of which use machines that operate solely and exclusively on the track as well. Access from the road to the track typically is done in a non-sensitive location and material and equipment is then moved along the track to the work location. If work is performed at night, lighting is of relatively low power and is located in close proximity to the work area, focusing directly onto the track.

Temporary impacts would be those related to construction activities, including, but not limited to, construction access, material storage, excavation spoils handling areas, and staging areas. Potential impacts may include disturbance to or removal of habitat or sensitive plant species or vegetation communities, and wildlife displacement and disruption. In lagoon areas and bridge work across rivers and streams, construction may involve extensive in-water work, requiring the use of a barge or a dredge for sediment removal, if necessary. Bridge work could also include installation of coffer dams, dewatering within cofferdams and drilling to bedrock, placement of rebar cages, and pouring of concrete, resulting in potential turbidity and sedimentation impacts, disturbance or removal of underwater habitat features such as large rocks, boulders, or existing earthen fill, and vibration impacts to aquatic life from pile-driving activities. Temporary indirect impacts would include those resulting from construction-related noise (including construction equipment, haul trucks, and tunnel portal excavation activities), lighting during nighttime work, and other disruptions to or physical separation of habitat areas.

Upland Habitat

The PWP/TREP improvements would result in unavoidable impacts to potential ESHAs. Preliminary assessment indicates that approximately 10 acres of native upland habitat within the LOSSAN rail corridor would be directly affected by proposed rail improvements.

Plants

Generally, rail alignment options that involve tunneling would avoid most impacts to plant species because the construction activities and new facility improvements would occur below ground surface, thereby minimizing the potential for vegetation removal or indirect impacts. At-grade improvements (including trenching) would have the potential to disturb plant species through direct vegetation clearing or indirect temporary construction effects.

Construction could, in certain circumstances, also encourage the spread of noxious weeds or other exotic plant species. Seeds of non-native plants can adhere to tires of construction vehicles or contaminate fill that may need to be imported into the construction area. Trains themselves may also contribute to the spread of seeds of exotic plant species.

Wildlife

In the Oceanside to Carlsbad LOSSAN rail segment, CNDDDB records indicate special-status species are present, including, but not limited to, San Diego fairy shrimp, orange-throated whiptail, and California gnatcatcher. The USFWS data indicate that designated critical habitat for the San Diego fairy shrimp and Riverside fairy shrimp is present in the Carlsbad and could be affected. Wildlife using the San Luis Rey River as a movement corridor could be temporarily affected during construction. Coastal sage scrub habitat, which could be occupied by gnatcatchers in this segment, could also be affected. Double-tracking across Buena Vista Lagoon could also affect the light-footed clapper rail, which has been observed utilizing areas within the footprint of the proposed construction. Altogether, waters and associated wildlife habitat could be affected at the San Luis Rey River, Buena Vista and Batiquitos Lagoons, and surrounding open areas, particularly during construction near or in the waterways and lagoons.

In Encinitas and Solana Beach, CNDDDB records show the potential for Belding's savannah sparrow and clapper rail to be affected. Wildlife habitat (and possibly wildlife movement corridors) would temporarily be affected at the San Elijo Lagoon during construction in or around the lagoon. Coastal sage scrub habitat occupied by the California gnatcatcher could also be affected in this segment, with California gnatcatcher critical habitat adjacent to the rail corridor impacts areas in San Elijo Lagoon.

In Del Mar, high-quality coastal sage scrub supporting gnatcatchers could exist and may be fragmented where the Camino Del Mar tunnel option daylights at the south end of Del Mar and at the northern end of the I-5 tunnel. In addition, there are some areas of southern maritime chaparral mapped along the tunnel alignment. For either tunnel alignment option, wildlife habitat and possible wildlife movement corridors would be affected at the San Dieguito Lagoon and surrounding open areas and Los Peñasquitos Lagoon and Preserve. The CNDDDB records the potential for California least tern to be affected by the added track in the north portion of Del Mar. The USFWS indicates that western snowy plover critical habitat may be crossed by proposed track in the south of the Del Mar coastal segment.

Replacing and/or widening the bridges at San Dieguito, San Elijo, and Batiquitos Lagoons, as well as at the San Luis Rey River could adversely affect EFH. Shading from the wider bridges and increased runoff could have indirect impacts to EFH.

Generally, LOSSAN rail alignment options that involve tunneling would avoid most impacts to wildlife because of tunneling below the ground surface; however, at-grade improvements would disturb the ground surface, thus potentially resulting in temporary and possibly permanent impacts to resources. In addition, trenching for rail improvements could remove vegetation, which may also affect wildlife resources that depend on those plants. As such, the trench options for rail improvements would have a slightly higher potential for impacts to wildlife resources, as vegetation removal would be greater than at-grade options.

5.5.2.4 I-5 Highway Corridor Impact Assessment

The PWP/TREP improvements would result in unavoidable impacts to wetland and upland ESHAs as the I-5 highway facility is an existing north-south transportation corridor that transects the east-west lagoon systems and is adjacent to existing sensitive habitat areas. The majority of impacts to corridor ESHAs are associated with facility widening. The *I-5 NCC Project Draft EIR/EIS* analyzes and provides a comparison of potential ESHA and special-status species impacts for the four proposed Build Alternatives, whereas the *I-5 NCC Project Supplemental Draft EIR/EIS* (Chapter 3) discusses in greater detail the specific effects of the Locally Preferred Alternative on sensitive habitats and special-status species at the corridor's lagoon systems.

Upland Habitat

Permanent impacts to six sensitive upland habitat associations would occur as a result of implementing proposed highway improvement, including coastal sage scrub, disturbed coastal sage scrub, maritime succulent scrub, native grassland, southern maritime chaparral, disturbed southern maritime chaparral habitat. The greatest impact would be to disturbed coastal sage scrub on the cut slopes of the I-5 in the southern half of the project study area. It is estimated that impacts to native upland areas within the I-5 corridor only would be approximately 61.09 acres (Figures 5.5-1A–5.5-6B). Table 5.5-2: provides a breakdown of potential I-5 highway and LOSSAN rail corridor permanent upland impacts according to the project phases (the full PWP/TREP Phasing Plan is presented in Chapter 6A)..

Temporary construction impacts to sensitive, native upland areas are anticipated to occur in four habitats and would include potential impacts to coastal sage scrub, maritime succulent scrub, southern maritime chaparral, and native grassland.

Plants

Nine sensitive plant species could be affected by proposed highway corridor improvements: Del Mar sand aster, Del Mar Manzanita, coastal scrub oak, Orcutt's pincushion, sea dahlia, wart-stemmed ceanothus, coast barrel cactus, southern tarplant, and Torrey pine. The degree of impact depends on the amount and location of fill needed. Mitigation measures that establish the protocol to minimize the overall harm to these species include salvaging and replanting them off-site.

Construction of the proposed project would provide an opportunity to control the invasive species on the slopes of the project during ground-disturbing activities. Through careful handling of the soil and equipment that works the soil, the invasive plants within the impact area could be removed. Revegetating the slopes would require maintenance to keep the weed species from reinvading the new slopes. Partnerships with the lagoon foundations and land owners would be required to eradicate similar invasive species outside of the impact areas.

Wildlife

Twenty-one non-listed sensitive wildlife species are located within the highway corridor and could be affected by the project. Based on vegetation impacts, impacts to wildlife that depend on affected plant

species may include San Diego horned lizard, Coronado Island skink, orange-throated whiptail, rufous-crowned sparrow, raptors, loggerhead shrike, desert woodrat, and San Diego pocket mouse. Wildlife may also temporarily relocate during construction to avoid noise impacts and impacts associated with vegetation loss. Indirect impacts could result from increased ambient lighting, exposure to invasive species, habitat edge effects, and increased noise levels.

Listed species historically found within the project area that may be directly or indirectly impacted include the following species: Pacific pocket mouse, light-footed clapper rail, California least tern, western snowy plover, coastal California gnatcatcher, least Bell's vireo, Belding's savannah sparrow, southwestern willow flycatcher, tidewater goby, and the southern steelhead trout – Southern ESU.

Replacing and/or widening the bridges at San Dieguito, San Elijo, Batiquitos, and Agua Hedionda Lagoons, as well as at the San Luis Rey River could adversely affect the EFH. Shading from the wider bridges and increased runoff from the wider roadway could have indirect impacts to the EFH.

I-5 currently acts as an impediment for east to west movement for some wildlife. Each of the lagoons, rivers, and creeks and the surrounding upland habitat are potential corridors for wildlife to cross from east to west. Widening the freeway would not necessarily cut off these corridors; however, they could make existing crossings less attractive for use by wildlife. Studies have found that wildlife, especially large mammals, use wider wildlife crossings/corridors as the length of travel increases. Most of the existing lagoon bridges have steep, narrow abutments that are used by wildlife. The project provides opportunities for new bridges to be designed with a bench at the abutment to facilitate wildlife movement as well as use by hikers (who use the trails during the day), where determined appropriate by resource agencies. Although wildlife avoid people, wildlife generally use the trails under the bridges at night. Corridors at locations where bridges would not be replaced—San Dieguito and San Luis Rey—should not be further constrained due to large areas for movement and minimal increases to bridge width.

TABLE 5.5-2: PERMANENT UPLAND ESHA IMPACTS VS. MITIGATION (BY YEAR/PHASE)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Upland Habitat Establishment (Acres)	Upland Habitat Restoration (Acres)	Total Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Total Available No Net Loss Mitigation (Release 3 @ 10%)	Total Available No Net Loss Mitigation (Release 4 @ 10%)	Total Available No Net Loss Mitigation (Release 5 @ 25%)	Total Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)	
2010-2020	YEAR 2013											
	Oceanside Through Track (2013)	0	Deer Canyon II (Los Peñasquitos)	14	0	4.2						
	Poinsettia Station Improvements (2013)	0	Dean Family Trust (San Dieguito)	20.8	0	6.24						
	TOTAL IMPACT (2013)	0	TOTAL AVAILABLE MITIGATION (2013)			10.44						
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2013 IMPACTS SUBTRACTED)					10.44						
	YEAR 2014											
	San Elijo Lagoon Double Track, includes San Elijo Bridge Replacement (2014)	0	Deer Canyon II (Los Peñasquitos)	Ongoing; year 1 monitoring			1.4					
			Dean Family Trust (San Dieguito)	Ongoing; year 1 monitoring			2.08					
			Hallmark (Agua Hedionda)	3.5	6.6	3.03						
	TOTAL IMPACT (2014)	0	MITIGATION RELEASED BY YEAR (2014)			3.03	3.48					
	TOTAL AVAILABLE MITIGATION (2014)					6.51						
	AVAILABLE MITIGATION SUBTOTAL (2013 ROLLOVER + 2014)					16.95						
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2014 IMPACTS SUBTRACTED)					16.95						
	YEAR 2015											
	2 HOV from Lomas Santa Fe to Union St, including San Elijo Bridge Replacement, Manchester DAR, bike paths/trails & ultimate grading (Phase 1A: 2015-2018)	22.08	Deer Canyon II (Los Peñasquitos)	Ongoing; year 2 monitoring				1.4				
	1 HOV from Union St to SR 78 (Phase 1B: 2015-2018)	1.06	Dean Family Trust (San Dieguito)	Ongoing; year 2 monitoring				2.08				
	CP Eastbrook to CP Shell Double Track (2015)	0	Hallmark (Agua Hedionda)	Ongoing; year 1 monitoring			1.01					
	Carlsbad Village Double Track, includes Buena Vista Bridge Replacement (2015)	0										
	TOTAL IMPACT (2015)	23.14	MITIGATION RELEASED BY YEAR (2015)				1.01	3.48				
	TOTAL AVAILABLE MITIGATION (2015)					4.49						
	AVAILABLE MITIGATION SUBTOTAL (2014 ROLLOVER + 2015)					21.44						
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)					-1.7						
	YEAR 2016-2020											
	Advanced Batiquitos Lagoon Bridge Replacement (Phase 2D: 2018-2019)	8.8	Deer Canyon II (Los Peñasquitos)	Ongoing; year 3 monitoring				3.5				

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Upland Habitat Establishment (Acres)	Upland Habitat Restoration (Acres)	Total Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Total Available No Net Loss Mitigation (Release 3 @ 10%)	Total Available No Net Loss Mitigation (Release 4 @ 10%)	Total Available No Net Loss Mitigation (Release 5 @ 25%)	Total Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)		
	2 HOV from La Jolla Village Dr to I-5/I-805 merge, includes Voigt DAR & I-5 /I-805 HOV Flyover Connector (Phase 1C: 2017-2020)	0.57	Dean Family Trust (San Dieguito)	Ongoing; year 3 monitoring					5.2				
	Batiquitos Lagoon Double Track, includes Batiquitos Bridge Replacement (2016)	0.03	Hallmark (Agua Hedionda)	Ongoing; year 2 monitoring				1.01					
	Encinitas Station Parking	0	San Dieguito W19 (San Dieguito) (Release 1 anticipated 2016; Release 2 anticipated 2017)*	9.6	19.8	8.82*							
	Solana Beach Station Parking	0											
	San Dieguito Double Track and Platform , includes San Dieguito Bridge Replacement (2016)	0.01											
	TOTAL IMPACT (2016)	9.41	MITIGATION RELEASED BY YEAR (2016-2020)					8.82				1.01	5.2
	TOTAL AVAILABLE MITIGATION (2016-2020)											15.03	
	AVAILABLE MITIGATION SUBTOTAL (2015 ROLLOVER + 2016-2020)											13.33	
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)											3.92	
	INITIAL-TERM TOTAL IMPACT		32.55	INITIAL-TERM TOTAL MITIGATION								74.3	
2021-2030	2 ML from I-5/I-805 to SR 56, including new Sorrento Valley Road bike/maintenance vehicle bridge, trails under I-5 at Carmel Creek, widening of I-5 at Carmel Creek, and trail under merge (Phase 2A: 2020-2022)	0.99	Deer Canyon II (Los Peñasquitos) Dean Family Trust (San Dieguito) Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito)	Ongoing		Full mitigation /sign-off anticipated by 2021							
	2 ML from SR 56 to Lomas Santa Fe Dr, including San Dieguito River Bridge Widening and bike paths/trails (Phase 2B: 2020-2025)	20.6											
	2 ML from Union St to Palomar Airport Rd (Phase 2C: 2025-2030)	3.28											
	Oceanside Station Parking	0											
	Carlsbad Village Station Parking	0											
	Carlsbad Poinsettia Station Parking	0											
	CP Moonlight to CP Swami Double Track	0											
	MID-TERM TOTAL IMPACT		24.87	MID-TERM TOTAL AVAILABLE MITIGATION								41.75	
	TOTAL MID-TERM ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										16.88		

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Upland Habitat Establishment (Acres)	Upland Habitat Restoration (Acres)	Total Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Total Available No Net Loss Mitigation (Release 3 @ 10%)	Total Available No Net Loss Mitigation (Release 4 @ 10%)	Total Available No Net Loss Mitigation (Release 5 @ 25%)	Total Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)
2031-2040	2-4 ML from Palomar Airport Rd to SR 76, includes Agua Hedionda & Buena Vista Lagoon Bridge Replacements (Phase 3A-3C: 2030-2035)	0.77	Deer Canyon II (Los Peñasquitos) Dean Family Trust (San Dieguito) Hallmark (Agua Hedionda)	Ongoing		Full mitigation /sign-off anticipated by 2021					
	Braided Ramps from Roselle to Genesee (Phase 3D: 2030-2035)	5.57	San Dieguito W19 (San Dieguito)								
	LONG-TERM TOTAL IMPACT		6.34	LONG-TERM TOTAL AVAILABLE MITIGATION							16.88
	TOTAL LONG-TERM ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										10.54
NCC TOTALS (ALL PHASES EXCLUDING VISION PHASE¹)		63.76	Sites identified above.	27.1	47.2	74.3					
2041-2050	Leucadia Blvd Grade Separation	0	Deer Canyon II (Los Peñasquitos)	Ongoing		Full mitigation /sign-off anticipated by 2021					
	Del Mar Tunnel - Camino Del Mar / Peñasquitos Double Track Option - I-5 / Peñasquitos Option	0.03 - 10.13	Dean Family Trust (San Dieguito) Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito)								
	Peñasquitos Double Track	0									
	I-5/SR 78	0									
	VISION PHASE¹ TOTAL IMPACT		0.03 - 10.13	VISION PHASE TOTAL AVAILABLE MITIGATION							10.54
	TOTAL “ENHANCEMENT” FOLLOWING PROGRAM IMPLEMENTATION										0.41 - 10.51

Note:

1.
- "Vision" Phase projects are programmatic in nature, and currently scheduled for implementation in years 2041 to 2050. At a future date and prior to their implementation, project-specific information would be made available to further refine the impact estimates presented herein.

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Los Peñasquitos

Coastal California gnatcatchers were not observed within the vicinity of Los Peñasquitos Lagoon during protocol surveys, and no western snowy plover nesting areas or foraging habitat are present in the project impact footprint or vicinity; as such, no direct impacts to these species are anticipated. Belding's savannah sparrow and light-footed clapper rail occur in the lagoon west of the I-5/SR-56 interchange; however, no wetlands would be permanently affected and minimal construction would occur in the vicinity. All known clapper rail and Belding's savannah sparrow locations are more than 1,000 feet from the proposed Sorrento Valley Road bike bridge. Clapper rails have also been identified upstream of I-805 on Los Peñasquitos Creek; however, the proposed project would not affect the creek and known locations are approximately 480 feet from the anticipated work (as well as being on the east side of northbound I-5 and I-805 from the work to be done), and no effects to light-footed clapper rail are anticipated. There is some potential for the wandering skipper butterfly to be affected at Los Peñasquitos Lagoon.

In addition, there would be a connection from the trail proposed under I-5, which would enhance wildlife movement opportunities in the area. With this trail connection, wildlife would be able to move from the lagoon, under the bike/pedestrian bridge, and continue under the I-5 bridge into the Carmel Valley Restoration Enhancement Project trail. The 10-foot-wide bench encompassing the proposed bike/pedestrian trail on the southern abutment of the Carmel Creek bridge would not result in any impacts to existing wetlands or other sensitive resources. The northern abutment under I-5 would be left in its existing condition, with an 8-foot-wide bench for wildlife movement. No new indirect impacts to habitats or wildlife are anticipated.

There is a potential for noise/vibration impacts to fish and bird species as a result of pile driving during bridge false-work construction. Given the existence of existing transportation facilities, the minimal nature of changes in operations following project implementation, and the lack of identified sensitive species locations, potential indirect impacts to sensitive species resulting from increased lighting, exposure to invasive species, edge effects, and long-term increases in noise, etc. are expected to be negligible.

San Dieguito Lagoon

Salt marsh habitat that potentially supports the State-listed endangered Belding's savannah sparrow and coastal sage scrub that supports federally listed threatened coastal California gnatcatcher would be affected by widening I-5 at San Dieguito Lagoon. Although Belding's savannah sparrow occurs in the adjacent SONGS salt marsh habitat, none have been observed in the project impact footprint. Similarly, least tern and western snowy plover nesting areas are near I-5 but not within the anticipated impact footprint. Light-footed clapper rail were not observed within the project impact footprint or vicinity during protocol surveys. Portions of territories associated with four pairs of coastal California gnatcatcher and one single male may be affected due to construction of wider fill slopes. The wandering skipper butterfly occurs at San Dieguito Lagoon, and there is potential for it to be directly affected by the proposed project.

The enhanced bike/pedestrian trail and bridge at San Dieguito Lagoon will be constructed with a small (6 feet tall or less) retaining wall to minimize the footprint within sensitive habitats and wildlife corridors. No pets would be allowed except in accordance with local regulations allowing leashed pets on some portions of the trail. The trail would be fenced and signed to keep pedestrians on the improved areas and out of the sensitive habitats. Bicycles will be allowed only on the bike path portion of the trail and not on pedestrian-only connections that lead to the ecological preserves. Although use is anticipated to increase, indirect impacts are anticipated to be minimal because of the restricted access through

sensitive vegetation, including wetlands. Restricting access to a specific trail with fencing and signs will limit impacts to sensitive habitats while still allowing wildlife to utilize the trails as well. No night lighting will be used; some daylight lighting may be used for portions of trails under bridges as necessary for safety purposes.

Indirect impacts to sensitive species can result from increased lighting, increased exposure to invasive species, edge effects, and increased potential for pollution from runoff, as well as long-term increases in noise. I-5 is 10 lanes in width across San Dieguito Lagoon, and as such, nighttime lighting, increased access from invasive species, and habitat bisection that could result in edge effects have already occurred. The remainder of the corridor has experienced increased development that has further encroached on native habitats at the lagoon. The proposed project improvements would result in incremental increases to indirect effects already occurring. Indirect effects such as increased dust, lighting, invasive species, and noise would be minimized through conservation measures such as standard dust control measures during construction (e.g., watering and equipment speed/access restrictions); directional lighting; and/or native species for landscaping/revegetation efforts.

With respect to potential project operational noise, under existing conditions, noise in excess of 70 a-weight decibel (dBA) occurs over various amounts of wetland and upland habitats that either support, or have the potential to support, special-status bird species at coastal lagoons in the NCC. Although population numbers have undergone natural fluctuations over the years, these species continue to forage, nest, breed, and otherwise consistently occur within suitable habitat during the breeding season in areas subjected to a wide range of noise levels. Within the project vicinity, three species are specifically known: California least tern, Belding's savannah sparrow, and coastal California gnatcatcher. A majority of the documented locations of the Belding's savannah sparrows east of I-5 (6 of the total 10 locations) and coastal California gnatcatcher west of I-5 (8 of the total 11 locations), occur within the existing 66 dBA Leq noise contour. The Belding's savannah sparrow population west of I-5 occurs in between the existing 56 and 62 dBA Leq contours and is not subject to the relatively higher noise levels on the eastern side. This is due primarily to the distribution of suitable habitat and naturally sound-attenuating geographic features of the landscape.

A bike/pedestrian path is proposed on the western freeway slopes across San Dieguito Lagoon. The slopes south of the San Dieguito River Bridge are relatively large and the bike/pedestrian path would be cut into a large fill slope in this area. The slopes of the San Dieguito watershed are generally higher than other lagoons, and the bike/pedestrian path would be located as far from sensitive habitats as feasible. The bike/pedestrian path would be fenced and signed to keep users on the trail, and no turn outs would be provided for users to stop beside the lagoon. Although a new facility, indirect impacts from bicycle movement and proximity of people to the marsh are anticipated to be minimal because of the upslope location and the lack of opportunities to leave or stop along the trail.

San Elijo Lagoon

I-5 improvements would result in impacts to portions of four coastal California gnatcatcher territories, as well as habitat used by wandering skipper butterfly. The permanent area of effect would not affect Belding's savannah sparrow or light-footed clapper rail habitat. Temporary impact areas and construction noise, however, may have an adverse effect on these two species. Construction-noise impacts to wildlife (including fish and bird species) in San Elijo Lagoon also may occur because of pile driving during bridge falsework construction.

Although the proposed pedestrian crossing from Manchester Avenue would likely increase the use of the San Elijo Lagoon trails, the new bike/pedestrian and pedestrian paths would be fenced and signed to keep pedestrians on the improved areas and out of the sensitive lagoon habitats and wildlife

corridors; no pets would be allowed on bike/pedestrian paths. Connections to the suspended section of the bike/pedestrian path would occur within area already disturbed for bridge improvements. A 6-foot-high retaining wall would support a 12-foot-wide bike/pedestrian path within the same slope footprint (without an increase in direct impacts). The new bike/pedestrian path connections would be designed to prevent bicycle access (using bollards or a U-shaped design) to the pedestrian trails that directly access the ecological reserve. With the bike/pedestrian paths being fenced and maintained in accordance with a formal maintenance agreement with the City of Solana Beach, increased indirect impacts to the lagoon are not expected. In the vicinity of the lagoon, the bike/pedestrian path would be placed closer to I-5 to minimize indirect effects to sensitive salt marsh species.

Indirect impacts to sensitive species can result from increased lighting, increased exposure to invasive species, edge effects, and increased potential for pollution from runoff, as well as long-term increases in noise. The presence of the existing 10-lane freeway and development near the lagoon have resulted in an existing condition that includes nighttime lighting, the presence of invasive species, and bisection of habitats being part of the existing condition. Ambient noise levels measured in varying locations at San Elijo Lagoon were between 60 and 67 dBA. Future noise-level increases during the noisiest hour at most receptor points are projected to be 1 to 3 dBA with an increase in traffic-related noise over the entire lagoon of approximately 2 dBA. Noise at Receptor 5 in San Elijo Lagoon would decrease by 1 dBA because of the widening of I-5 closer to intervening topography and would result in roadway noise being somewhat attenuated or deflected by an abutting steep slope. This increase in overall noise may have an adverse effect on some wildlife species. Although population numbers have undergone natural fluctuations over the years, species have continued to consistently forage, nest, and breed within suitable habitat in areas subjected to a wide range of noise levels.

Batiquitos Lagoon

One pair of federal and state-listed light-footed clapper rail has been identified within the permanent impact footprint northeast of I-5. One additional pair has been identified in the temporary impact area. Portions of four territories of California gnatcatcher using existing cut slopes of I-5 also would be affected. Portions of the habitat of at least one pair and one individual of Belding's savannah sparrow would be permanently affected by the project. Nesting areas used by California least tern and western snowy plover are approximately 250 feet east of the project impact area. There would be no direct permanent impacts to these species; however, there would be potential noise impacts during construction.

The new bike/pedestrian and pedestrian paths at Batiquitos Lagoon would be fenced and signed to keep pedestrians on the improved areas and out of the sensitive lagoon habitats and wildlife corridors. No pets would be allowed on bike/pedestrian paths except in accordance with local regulations providing for leashed pets on certain portions of trails. A 6-foot-high retaining wall would support a bike/pedestrian path within the same slope footprint without an increase in direct impacts. The new bike/pedestrian path connections would be designed to prevent bicycle access (using bollards or a U-shaped design) to the pedestrian trails that directly access the ecological reserve. With the bike/pedestrian paths being fenced and maintained in accordance with a formal maintenance agreement with the City of Carlsbad, increased indirect impacts to the lagoon are not expected. In the vicinity of the lagoon, the bike/pedestrian path would be placed closer to I-5 to minimize indirect effects to sensitive habitats. No night lighting would be used on the trails; for safety purposes, some daylight lighting may be used for portions of trails under bridges.

Indirect impacts to sensitive species could result from increased lighting, increased exposure to invasive species, edge effects, and increased potential for pollution from runoff, as well as long-term increases in noise. The documented special-status species locations for Batiquitos Lagoon are all

relatively close to the I-5 corridor and are located within or adjacent to the existing 66 dBA Leq noise contour. In general, the future traffic noise is projected to be 2 dBA higher across the entire lagoon. As a result, the majority of the least tern nesting area east of I-5 would experience an increase of 2 dBA over existing conditions, which range from 58 to 64 dBA. Least terns nesting on the western end of the nesting area may be more likely to be adversely affected than those located further east. Overall, I-5 is eight lanes in width across the lagoon; combined with surrounding urban development, the lagoon is affected by nighttime lighting, invasive animal and plant species, and bisected habitats that could result in edge effects. The PWP/TREP I-5 NCC improvements would result in incremental increases to these indirect effects already affecting the habitat.

Agua Hedionda Lagoon

There are no known federally or state-listed threatened or endangered wildlife species within the I-5 construction footprint or proximity at Agua Hedionda Lagoon; therefore, associated direct impacts are not anticipated. Indirect impacts to habitats and sensitive species can result from increased lighting, increased exposure to invasive species, edge effects, and increased potential for pollution from runoff (including sediment/siltation), and long-term increases in noise. Similar to the other lagoons, project noise modeling indicates a projected I-5 highway-related noise increase of approximately 2 dBA over a majority of the lagoon, with some portions of the lagoon subject to an increase of up to 3 dBA. No known sightings of any of the special-status bird species addressed in this study have occurred at Agua Hedionda Lagoon, however, and indirect impacts to these species are not expected. In addition, I-5 is eight lanes in width across the lagoon, and combined with surrounding urban development, results in an existing condition that includes night lighting, invasive species, bisection of habitats, and generation/discharge of urban pollutants. There is also a potential for construction-related noise impacts to bird and fish species from pile driving during bridge footing construction at the abutments (the foundation upon which the bridge rests).

Some coastal sage scrub is located downslope on the southeastern slope of the proposed north/south bike/pedestrian path on the east side of Agua Hedionda Lagoon; however, no direct impacts to this area are anticipated. A short retaining wall would allow for bike/pedestrian path construction without additional impacts to the waters of the U.S./state wetland. While the proposed bike/pedestrian path could increase public use in this area, no associated indirect impacts are anticipated based on existing high levels of human use of the area by boaters, jet skiers, paddlers, and the like, as well as the general absence of sensitive habitats and species.

Buena Vista Lagoon

A portion of the territory of one pair of clapper rail may be temporarily affected during construction on the west side of the west- to southbound on-ramp from SR-78 to I-5.⁷ No tidewater gobies were detected in protocol sampling near I-5 at Buena Vista Lagoon in 2012. The lack of Belding savannah sparrow habitat within the I-5 construction footprint eliminates the potential for direct impact to this species. Biological resources affected by the replacement and widening of the bridge would include waters of the U.S. and state wetlands and habitat occupied by light-footed clapper rail.

Indirect impacts to sensitive species can result from increased lighting, increased exposure to invasive species, edge effects, and increased potential for pollution from runoff, as well as long-term increases in noise. I-5 is eight lanes in width across the lagoon, and combined with surrounding development, results in an existing condition that includes nighttime lighting, access from invasive species, and

⁷ I-5 NCC Project Supplemental Draft EIR/EIS and Final Draft EIR/EIS.

bisecting of habitats that could result in edge effects. With respect to indirect noise impacts, the anticipated future increase in traffic volumes on I-5 combined with the proposed wider footprint of the facility, would result in an increase of approximately 2 dBA across the lagoon; however, although population numbers have undergone natural fluctuations over the years, species have continued to consistently forage, nest, and breed, within suitable habitat in areas subjected to a wide range of noise levels (including noise in excess of 70 dBA). Regardless, most of the sensitive species are located a relatively long distance from the freeway, with a correspondingly lessened sensitivity to a 2 dBA increase in noise. Documented special-status bird species with known locations that could be affected include four locations of the light-footed clapper rail and eight locations of Belding's savannah sparrow. Although not expected to nest within the lagoon study area, other sensitive species whose habitat occurs within the lagoon habitat potentially affected by the increased traffic noise include the western snowy plover and California least tern. These species have been documented in the vicinity of the lagoon and may forage over the open water of the lagoon with an associated potential to be affected by increased noise.

5.5.3 PWP/TREP Opportunities, Policies, Design/Development Strategies and Implementation Measures

Proposed LOSSAN rail and I-5 highway improvements would potentially affect ESHAs and special-status species in the corridor; however, the majority of program improvements would occur within previously disturbed and developed areas within the existing rail and highway rights-of-way, and adjacent land areas. In this regard, the PWP/TREP program improvements minimize, to a large extent, potential impacts to ESHAs through design. Where facility improvements could adversely affect resources, mitigation measures would be implemented to avoid and minimize, to the extent feasible, those impacts to resources.

As described in Section 5.4, the proposed PWP/TREP provides a fundamentally unique opportunity to implement a comprehensive, corridor-wide program to restore ESHA and wetland habitat along the 30-mile NCC coastline. Implementation of the REMP could help to restore ESHA features lost by previous construction of adjacent development and uses and the transportation facilities. In addition, the proposed PWP/TREP REMP (detailed in Chapter 6B) would facilitate acquisition and restoration of upland and wetland habitat areas throughout the corridor, and facilitates major lagoon restoration programs that could improve tidal circulation and habitat diversity in the San Elijo and Buena Vista Lagoon systems. Restoring tidal circulation in lagoon systems would significantly improve water quality and the ecological value of the lagoons and adjacent areas to better support ESHAs, special-status species and wildlife. Table 5.5-3 and Table 5.5-4 identify potential upland ESHA impacts and creation, restoration and enhancement opportunities by project phase, as established by the PWP/TREP Implementation Plan Framework (Chapter 6A).

TABLE 5.5-3: SPECIAL-STATUS PLANT SPECIES (LOSSAN RAIL AND I-5 HIGHWAY STUDY AREA)

Scientific Name	Common Name	Special Status	Corridor Location	
			Rail	Highway
<i>Adolphia californica</i> Wats	California adolphia	CNPS List 2	San Elijo Lagoon, east of the San Elijo Lagoon Double Track, City of Encinitas.	Both sides of the slopes of I-5 near San Elijo Lagoon.
<i>Agave shawii</i>	Shaw's agave	CNPS List 2	San Elijo Lagoon, east of the San Elijo Lagoon Double Track, City of Encinitas.	N/A
<i>Ambrosia Pumilla</i>	San Diego ambrosia	CNPS List 1B FE	N/A	Closest recorded occurrence of this species is 2.5 mi east of I-5 along State Route 76 (SR 76).
<i>Arctostaphylos glandulosa</i> ssp. <i>crassifolia</i>	Del Mar Manzanita	CNPS List 1B FE	South and east of Del Mar Tunnel- I-5/Peñasquitos alignment, in the City of San Diego.	Approx. 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.
<i>Atriplex pacifica</i> Nelson	South coast saltscale	CNPS List 1B	N/A	Approx. 100 individuals were observed along a dirt road northwest of the I-5 Manchester interchange.
<i>Baccharis vanessae</i> Beauchamp	Encinitas baccharis	CNPS List 1B FT, SE	N/A	Closest known occurrence is approx. 1,230 ft east of the I-5 near Encinitas Blvd.
<i>Brodiaea filifolia</i>	thread-leaved brodiaea	CNPS List 1B FT, SE	N/A	Closest known location is approx. 1.86 mi east of I-5 near SR 78.
<i>Brodiaea orcuttii</i>	Orcutt's brodiaea	CNPS List 1B	South of Poinsettia Station in the City of Carlsbad.	N/A
<i>Ceanothus cyaneus</i>	Lakeside ceanothus	CNPS List 1B	Potentially occurs in study area in City of Del Mar.	N/A
<i>Ceanothus verrucosus</i>	Wart-stemmed ceanothus	CNPS List 2	San Dieguito Lagoon, east of Jimmy Durante Blvd, and north and east of Del Mar Tunnel- I-5/Peñasquitos alignment, in the cities of Del Mar and San Diego.	Occurs northeast of the I-5 Del Mar Heights Road interchange in San Diego, and east of the I-5 Birmingham Avenue interchange in Encinitas.
<i>Centromadia parryi</i> spp. <i>australis</i>	Southern tarplant	CNPS List 1B	N/A	Occurs along the dirt access road east of I-5 and north of the San Dieguito River.
<i>Centromadia pungens</i> ssp. <i>laevis</i>	Smooth tarplant	CNPS List 1B	Potentially occurs in study area near Camp Pendleton/City of Oceanside boundary.	N/A
<i>Chaenactis Glabriuscula</i> var. <i>orcuttiana</i>	Orcutt's pincushion	CNPS List 1B	Potentially occurs in study area in the cities of Encinitas and Carlsbad.	Approx. 4,700 individuals were observed within the study area around San Elijo Lagoon on both sides of I-5.

Status Key

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TABLE 5.5-3: SPECIAL-STATUS PLANT SPECIES (LOSSAN RAIL AND I-5 HIGHWAY STUDY AREA) (CONTINUED)

Scientific Name	Common Name	Special Status	Corridor Location	
			Rail	Highway
<i>Chorizanthe orcuttiana</i>	Orcutt's spineflower	CNPS List 1B FE, SE	Southwest of Los Peñasquitos Lagoon in the City of San Diego, and west of the Del Mar Tunnel-Camino Del Mar alignment, in the City of Del Mar.	N/A
<i>Orcuttia californica</i>	California orcutt grass	CNPS List 1B FE, SE	South of Poinsettia Station in the City of Carlsbad.	N/A
<i>Comarostaphylis diversiloba</i> <i>ssp. diversiloba</i>	Summer holly	CNPS List 1B	Northern border of San Elijo Lagoon in the City of Encinitas, and south of the Del Mar Tunnel-I-5/Peñasquitos alignment in the City of San Diego.	South of San Elijo Lagoon on the southbound slopes of I-5.
<i>Coreopsis maritime</i>	Sea dahlia	CNPS List 2	Southwest of Batiquitos Lagoon and west of the Batiquitos Lagoon Double Track, City of Carlsbad.	Approx. 389 individual plants were observed in the study area primarily north of Manchester Avenue on both sides of I-5.
<i>Corethrogyne filaginifolia</i> <i>var. llinifolia</i>	Del Mar sand aster	CNPS List 1B	Multiple locations within the cities of San Diego, Encinitas and Carlsbad around Batiquitos Lagoon.	Over 2,000 individual plants were observed within the study area between Del Mar Heights Road and Birmingham Avenue along the upper slopes on both sides of I-5.
<i>Corethrogyne filaginifolia</i> <i>var. incana</i>	San Diego sand aster	CNPS List 1B	Northern border of San Elijo Lagoon in the City of Encinitas.	N/A
<i>Dichondra occidentalis</i>	Western dichondra	CNPS List 4	Aqua Hedionda Lagoon, east of LOSSAN rail tracks, City of Carlsbad; and near the Encinitas Pedestrian Crossing at Santa Fe Dr, City of Encinitas.	N/A
<i>Dudleya brevifolia</i>	Short-leaved dudleya	CNPS List 1B SE	East of Del Mar Bluffs Stabilization Phase 3 and west of Del Mar Tunnel-Camino Del Mar alignment, City of Del Mar.	N/A
<i>Dudleya viscida</i>	Sticky dudleya	CNPS List 1B	Near San Luis Rey River north of the CP Eastbrook to CP Shell rail, City of Oceanside.	N/A
<i>Eryngium aristulatum</i> <i>var. parishii</i>	San Diego button-celery	CNPS List 1B FE, SE	Near Poinsettia Station in the City of Carlsbad.	Camp Pendleton, Carlsbad, San Marcos, Miramar Naval Air Station, Clairemont Mesa, and Otay Mesa. <i>No vernal pools in study area, so not expected to occur within project limits.</i>

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TABLE 5.5-3: SPECIAL-STATUS PLANT SPECIES (LOSSAN RAIL AND I-5 HIGHWAY STUDY AREA) (CONTINUED)

Scientific Name	Common Name	Special Status	Corridor Location	
			Rail	Highway
<i>Euphorbia misera</i>	Cliff spurge	CNPS List 2	Aqua Hedionda Lagoon, east of the 8-Carlsbad Double Track rail, City of Carlsbad.	N/A
<i>Ferocactus viridescens</i>	Coast barrel cactus	CNPS List 2	South and east of Del Mar Tunnel- I-5/Peñasquitos alignment, in the City of San Diego.	Found on slopes northwest of the I-5/Genesee interchange, on the slopes on both sides of I-5 near San Elijo Lagoon, and west of I-5 on the northern slopes of Batiquitos Lagoon.
<i>Harpagonella palmeri</i>	Palmer's grappling hook	CNPS List 2	San Elijo Lagoon, east of San Elijo Lagoon Double Track, City of Encinitas.	N/A
<i>Lotus nuttallianus</i>	Nuttall's lotus	CNPS List 1B	San Luis Rey River and near Oceanside Harbor in the City of Oceanside; south and west of Batiquitos Lagoon in the City of Carlsbad; and within San Elijo Lagoon in the City of Encinitas.	N/A
<i>Myosurus minimus ssp. apus</i>	Little mousetail	CNPS List 3	South of Poinsettia Station in the City of Carlsbad.	N/A
<i>Navarretia fossalis</i>	Moran/Spreading navarretia	CNPS List 1B FT	N/A	Occurred in relatively few of the San Diego County vernal pools. Found in Carlsbad, San Marcos, Ramona, and Otay Mesa. <i>Not expected to occur in the study area due to lack of suitable habitat.</i>
<i>Pinus torreyana ssp. Torreyana</i>	Pinaceae (Torrey Pine)	CNPS List 1B	West of I-5, north and south of the Del Mar Tunnel- I-5/Peñasquitos alignment, City of San Diego.	Planted Torrey pines along much of the I-5. Some near San Elijo Lagoon may be native occurrences.
<i>Quercus dumosa</i>	Nuttall's scrub oak	CNPS List 1B	Potential to occur within study area as part of the Miramar Tunnel alignment.	Observed at the top of the north and southbound slopes, just north of Del Mar Heights Road and on the upper slopes near San Elijo Lagoon.
<i>Suaeda esteroa</i>	Estuary seablite	CNPS List 1B	San Dieguito and Batiquitos Lagoon.	High salt marsh around San Dieguito, Batiquitos, and Agua Hedionda Lagoons.

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TABLE 5.5-4: SPECIAL-STATUS WILDLIFE SPECIES (LOSSAN RAIL AND I-5 HIGHWAY STUDY AREA)

Scientific Name	Common Name	Federal/State Status	Corridor Location	
			Rail	Highway
<i>Accipiter striatus</i>	Sharp-shinned hawk	SSC	N/A	Observed during general wildlife surveys.
<i>Accipiter cooperii</i>	Cooper's hawk	SSC	Observed east of I-5 and Del Mar Tunnel- I-5/Peñasquitos alignment, on the Dean Family Trust property, City of San Diego.	Observed during general wildlife surveys.
<i>Agelaius tricolor</i>	Tricolored blackbird	SSC	Observed within San Dieguito Lagoon in the City of San Diego, near its border with the City of Del Mar.	N/A
<i>Aimophila ruficeps canescens</i>	Rufous-crowned sparrow	SSC	Observed east of the Del Mar Tunnel- I-5/Peñasquitos alignment in the City of San Diego.	Observed during general wildlife surveys at San Dieguito Lagoon.
<i>Ardea herodias</i>	Great blue heron	SSC	Observed within San Luis Rey River in the City of Oceanside, and within San Dieguito Lagoon at the City of Del Mar/San Diego border.	Observed in lagoons during general wildlife surveys. Some nesting habitat may be present at San Elijo Lagoon.
<i>Asio otus</i>	Long-eared owl	SSC	Observed within San Elijo Lagoon, east of San Elijo Lagoon Double Track, City of Encinitas.	N/A
<i>Branchinecta sandiegonensis</i>	San Diego fairy shrimp	FE	Observed Near Poinsettia Station and near Palomar Airport Road, City of Carlsbad.	N/A
<i>Campylorhynchus brunneicapillus couesi</i>	Coastal cactus wren	SSC	Observed east of I-5 and Del Mar Tunnel- I-5/Peñasquitos alignment.	N/A

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 SR: State-listed as rare

CFP: State of California fully protected
 SP: State of California protected
 SSC: State of California (CDFG) Species of Concern
 BLM: Bureau of Land Management Sensitive Species

TABLE 5.5-4: SPECIAL-STATUS WILDLIFE SPECIES (LOSSAN RAIL AND I-5 HIGHWAY STUDY AREA) (CONTINUED)

Scientific Name	Common Name	Federal/State Status	Corridor Location	
			Rail	Highway
<i>Casmerodius albus</i>	Great egret	SSC	N/A	Observed in and around lagoons and associated upland habitat during general wildlife surveys.
<i>Charadrius alexandrinus nivosus</i>	Western snowy plover	FT, SSC	Observed near outlet of Batiquitos Lagoon to Pacific Ocean, west of the rail track, in the City of Carlsbad, and within the northwestern portion of Los Peñasquitos Lagoon, east and west of the rail corridor, in the City of San Diego.	Known to occur in some of the coastal lagoons; however, no nesting area within the project footprint. Some foraging habitat may be impacted at Batiquitos and Agua Hedionda Lagoons.
<i>Circus cyaneus</i>	Northern harrier	SSC	Observed near San Luis Rey River in the City of Oceanside, near the southwestern border of the San Dieguito River, and adjacent to the Del Mar Tunnel- I-5/Peñasquitos in the City of Del Mar.	Observed at San Dieguito Lagoon.
<i>Cnemidophorus hyperythrus</i>	Orange-throated whiptail	SSC, SP	Observed northeast of the northern terminus of Los Peñasquitos Lagoon in the City of Del Mar, and east of I-5 and Del Mar Tunnel- I-5/Peñasquitos alignment, on the Dean Family Trust property, in the City of San Diego.	Observed during general wildlife surveys in coastal sage scrub.
<i>Dendroica petechia</i>	Yellow warbler	SSC	Observed within San Luis Rey River Southern Coastal Salt Marsh between rail and highway corridors, City of Oceanside, and within San Elijo Lagoon, east of the San Elijo Double Track, City of Encinitas.	Observed during general wildlife surveys in riparian areas.

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TABLE 5.5-4: SPECIAL-STATUS WILDLIFE SPECIES (LOSSAN RAIL AND I-5 HIGHWAY STUDY AREA) (CONTINUED)

Scientific Name	Common Name	Federal/State Status	Corridor Location	
			Rail	Highway
<i>Elanus leucurus majusculus</i>	White-tailed kite	FP, SSC	Observed in San Dieguito Lagoon.	Observed foraging within the study area, generally over agricultural fields and at San Dieguito and San Elijo Lagoons during general wildlife surveys. No nest sites were observed.
<i>Empidonax traillii extrimus</i>	Migrant flycatcher	FE, SE	Migrant flycatchers observed within and near San Luis Rey River in the City of Oceanside.	Surveys within the San Luis Rey River riparian habitat did not detect the flycatcher. San Elijo Lagoon Conservancy has records of migrant flycatchers at the Lagoon outside the study area.
<i>Eremophila alpestris actia</i>	California horned lark	SSC	Observed within San Elijo Lagoon, east of the San Elijo Lagoon Double Track, in the City of Encinitas, and within San Dieguito River in the City of San Diego.	Present on revegetating slopes of the new Auxiliary lane on the northbound side of I-5, south of San Dieguito River.
<i>Eucyclogobius newberryi</i>	Tidewater goby	FE, SSC	Potentially occurs in study area in San Luis Rey River, Buena Vista and Agua Hedionda Lagoon.	Recorded in San Mateo Creek, San Onofre Creek, Las Pulgas Creek, Agua Hedionda, and Buena Vista Lagoons. Known to occur in the San Luis Rey. Surveys and habitat evaluations of the lagoons found no habitat or gobies near I-5.
<i>Eumeces skiltonianus interparietalis</i>	Coronado Island skink	SSC	Potentially occurs in study area south of Los Peñasquitos Lagoon.	At least one individual observed near the I-5/I-805 merge. Others potentially throughout the study area.
<i>Falco peregrinus</i>	Peregrine falcon	CFP	Observed near the Encinitas Pedestrian Crossing at Montgomery in the City of Encinitas; and within San Elijo Lagoon, east of the San Elijo Lagoon Double Track, in the City of Encinitas.	Observed near San Dieguito Lagoon

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TABLE 5.5-4: SPECIAL-STATUS WILDLIFE SPECIES (LOSSAN RAIL AND I-5 HIGHWAY STUDY AREA) (CONTINUED)

Scientific Name	Common Name	Federal/State Status	Corridor Location	
			Rail	Highway
<i>Felis concolor</i>	Mountain lion	CFP	Observed south of Los Peñasquitos Lagoon, west of the rail corridor, in the City of San Diego.	N/A
<i>Ixobrychus exilis</i>	Least bittern	SSC	N/A	Observed in the drainage parallel to I-5 near San Dieguito Lagoon, and in general wildlife surveys near San Elijo Lagoon..
<i>Lanius ludovicianus</i>	Loggerhead shrike	FSC, SSC	Observed within San Dieguito Lagoon in the City of San Diego, west of the I-5, northeast of the Del Mar Tunnel- I-5 Peñasquitos alignment.	Observed at the Racetrack View Mitigation Site west of I-5. High probability to occur in other areas based on historical location data and presence of suitable habitat within the study area.
<i>Larus californicus</i>	California gull	SSC	Observed within southern portion of the San Dieguito River in the City of Del Mar, near its border with the City of San Diego.	N/A
<i>Neotoma lepida intermedia</i>	San Diego desert woodrat	SSC	Potentially occurs in study area in the City of Del Mar.	Captured during trapping studies south of San Dieguito Lagoon.
<i>Numenius americanus</i>	Long-billed curlew	SSC	Observed within San Dieguito Lagoon in the City of Del Mar, near its border with the City of San Diego.	Observed during general wildlife surveys feeding in mudflats within the lagoons.
<i>Nycticorax nycticorax</i>	Black-crowned night heron	BLM Sensitive Special Animal	Observed within the San Luis Rey River, east of CP Eastbrook to CP Shell rail, City of Oceanside; and within San Dieguito Lagoon near the border of the City of San Diego and City of Del Mar.	Observed during general wildlife surveys in several of the lagoons.
<i>Oncorhynchus mykiss irideus</i>	Southern Steelhead Trout – Southern ESU	FE, SSC	N/A	In May 2007, a steelhead trout was reported by CDFG personnel in the lower San Luis Rey River.
<i>Pandion haliaetus</i>	Osprey	SSC	N/A	Observed at Batiquitos and San Dieguito Lagoons.

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TABLE 5.5-4: SPECIAL-STATUS WILDLIFE SPECIES (LOSSAN RAIL AND I-5 HIGHWAY STUDY AREA) (CONTINUED)

Scientific Name	Common Name	Federal/State Status	Corridor Location	
			Rail	Highway
<i>Passerculus sandwichensis beldingi</i>	Belding's savannah sparrow	SE	Observed within Los Peñasquitos Lagoon east of the Peñasquitos Double Track and west of the Del Mar Tunnel- I-5/Peñasquitos alignment in the City of San Diego, north of San Dieguito River in the City of Del Mar, and within San Dieguito Lagoon near the City of Del Mar/San Diego border.	In 2005, sparrows were found in San Dieguito, San Elijo, Batiquitos, and Buena Vista Lagoons. In 2006, additional surveys completed at San Dieguito identified more sparrows in the northeastern portion of the study area.
<i>Pelecanus erythrorhynchos</i>	American white pelican	SSC	Observed within Buena Vista Lagoon in the City of Carlsbad; and within San Elijo Lagoon, east of the San Elijo Lagoon Double Track, in the City of Encinitas.	Observed in San Elijo, Batiquitos, and Buena Vista Lagoons during general wildlife surveys.
<i>Perognathus fallax fallax</i>	Northwestern San Diego pocket mouse	SSC	Potentially occurs in study area in Los Peñasquitos Lagoon.	Captured during trapping studies on the slopes south of San Dieguito Lagoon, and around San Elijo Lagoon.
<i>Perognathus longimembris pacificus</i>	Pacific pocket mouse	FE, SSC	Observed south of the Del Mar Tunnel- I-5/Peñasquitos alignment and north of the alignment near the San Dieguito River in the City of San Diego.	In San Diego County, found in open patches of ground surrounded by weeds as well as sandy soils within coastal sage scrub habitat. <i>Based on protocol live-trapping results, no pocket mice are expected to occur within the project area..</i>
<i>Phalacrocorax auritus</i>	Double-crested cormorant	SSC	Observed near Buena Vista Lagoon in the City of Carlsbad; within San Dieguito Lagoon in the City of Del Mar, near its border with the City of San Diego; and within San Elijo Lagoon, east of the San Elijo Lagoon Double Track, in the City of Encinitas.	Observed foraging in lagoons during general wildlife surveys.

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TABLE 5.5-4: SPECIAL-STATUS WILDLIFE SPECIES (LOSSAN RAIL AND I-5 HIGHWAY STUDY AREA) (CONTINUED)

Scientific Name	Common Name	Federal/State Status	Corridor Location	
			Rail	Highway
<i>Phrynosoma coronatum blainvillei</i>	San Diego horned lizard	SSC	N/A	At least one individual caught near Del Mar Heights Road during small mammal trapping. More likely to occur within the study area.
<i>Plegadis chihi</i>	White-face ibis	SSC	Observed within San Dieguito Lagoon in the City of San Diego, near its border with the City of Del Mar.	N/A
<i>Polioptila californica californica</i>	Coastal California gnatcatcher	FT, SSC	Observed near the Los Peñasquitos Lagoon and Sorrento Valley Bridge Replacement in the cities of Del Mar and San Diego, and east of the Del Mar Tunnel- I-5/Peñasquitos alignment, on the Dean Family Trust property in the City of San Diego.	Found along the fill slopes of a few cut slopes adjacent to the lagoons and in a few adjacent canyons with coastal sage scrub habitat.
<i>Progne subis</i>	Purple martin	SSC	Observed within San Elijo Lagoon, east of the San Elijo Lagoon Double Track, in the City of Encinitas.	N/A
<i>Rallus longirostris levipes</i>	Light-footed clapper rail	CFP FE, SE	Observed near Buena Vista Lagoon in the City of Oceanside and City of Carlsbad, within San Elijo Lagoon, east of the San Elijo Lagoon Double Track, in the City of Encinitas, and within Los Peñasquitos Lagoon, east of the Peñasquitos Double Track and west Del Mar Tunnel- I-5/Peñasquitos alignment in the City of San Diego.	Detected within 500 ft of I-5 in Buena Vista and San Elijo Lagoons. Detected south of the survey area. Observed adjacent to the park and ride at La Costa and on the north shore of Batiquitos Lagoon.
<i>Rana draytonii</i>	California red-legged frog	FT	Observed east of the rail corridor, near Loma Alta Creek in the City of Oceanside.	N/A
<i>Riparia riparia</i>	Bank swallow	ST	Observed within San Elijo Lagoon, east of the San Elijo Lagoon Double Track, in the City of Encinitas.	Observed on eastern slopes of I-5 at San Dieguito Lagoon

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TABLE 5.5-4: SPECIAL-STATUS WILDLIFE SPECIES (LOSSAN RAIL AND I-5 HIGHWAY STUDY AREA) (CONTINUED)

Scientific Name	Common Name	Federal/State Status	Corridor Location	
			Rail	Highway
<i>Rynchops niger</i>	Black skimmer	SSC	Observed within San Dieguito Lagoon in the City of San Diego, near its border with the City of Del Mar.	N/A
<i>Sterna antillarum browni</i>	California least tern	CFP FE, SE	Observed south and west of Batiquitos Lagoon in the City of Carlsbad, within San Luis Rey River in the City of Oceanside, within San Dieguito Lagoon at the City of Del Mar; and, west of the San Dieguito Double Track and Platform, near the Del Mar Fairgrounds Special Event Platform, in the City of Del Mar.	Known nesting areas in San Elijo and Batiquitos Lagoons. Observed foraging in San Elijo and Batiquitos Lagoon within the study area in 2003.
<i>Sterna elegans</i>	Elegant tern	SSC	Observed within San Dieguito Lagoon in the City of Del Mar, near its border with the City of San Diego.	N/A
<i>Streptocephalus woottoni</i>	Riverside fairy shrimp	FE	Observed east of Poinsettia Station in the City of Carlsbad.	N/A
<i>Thamnophis hammondi</i>	Two-striped garter snake	SSC	N/A	Observed during general wildlife surveys near San Dieguito River.
<i>Vireo bellii pusillus</i>	Least Bell's vireo	FE, SE	Observed south of Los Peñasquitos Lagoon in the City of San Diego, north of San Elijo Lagoon, and west of the rail in the City of Carlsbad.	Two vireo territories were detected in the willow woodland east of I-5 near the San Dieguito River outside the study area. They were also detected in Oceanside in small patches of riparian habitat near the I-5.

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5.5.3.1 PWP/TREP Lagoon, Wetland, Riparian and Upland Enhancement Opportunities

The PWP/TREP includes a comprehensive REMP that has been developed to identify compensatory mitigation measures to address unavoidable ESHA impacts, and to implement resource enhancement opportunities that exceed the benefits of standard compensatory mitigation programs. The REMP employs a combination of measures to mitigate for ESHA impacts resulting from implementation of the NCC transportation improvements and community enhancement projects. In addition to the REMP projects and funding elements that will enhance and maintain ESHA associated with the NCC's coastal lagoons and inland waterways (as detailed in Section 5.4), the REMP includes upland habitat mitigation parcels purchased for the PWP/TREP program in consideration of the sites' contribution to protecting and enhancing NCC lagoon system and watershed functions and the sites' ability to meet no net loss of sensitive upland habitat through establishment, restoration, preservation, and to support special-status plant and animal species. In addition, the REMP approach to advancing habitat establishment, restoration and preservation mitigation projects ahead of NCC project impacts, and designing transportation facility infrastructure improvements to avoid and minimize project impacts, thereby inherently enhancing lagoon system function and services, where feasible, results in greater benefits to coastal resources on a corridor-wide level than if only ratio-based, project- and site-specific mitigation were employed.

The opportunities identified within this REMP, including early acquisition of sites containing high-value habitat for long-term preservation, will be phased ahead of or concurrent with unavoidable impacts from planned PWP/TREP transportation infrastructure and community enhancement projects. Implementing the REMP and individual compensatory mitigation sites in advance of unavoidable impacts will serve to reduce typically required mitigation ratios by reducing the uncertainty of location, type, and quantity of mitigation and by reducing temporal loss of habitat acreage, functions, and services from construction-related impacts. In addition, phasing transportation facility infrastructure at sensitive locations has been specifically designed to avoid and minimize impacts, protect existing lagoon system functions and services, and allow for future large-scale lagoon restoration projects.

The program would achieve no net loss of upland habitat to ensure that the quantity, variety, and range of coastal habitats in the corridor would not be diminished because of the proposed rail and highway improvements. The program also provides for habitat preservation, thereby facilitating the preservation of remaining upland resources in the corridor. Furthermore, as detailed in Section 5.4, the PWP/TREP would facilitate the implementation of comprehensive lagoon restoration efforts for San Elijo and Buena Vista Lagoons. In Batiquitos and Los Peñasquitos Lagoons, an endowment for long-term lagoon maintenance will also be provided as part of the REMP. Furthermore, all mitigation sites include funding for long-term maintenance and management efforts. These efforts would serve not only to substantially enhance and restore water quality and wetlands in the corridor, they would also serve to restore, enhance, and protect different habitat types (and special-status species supported by those habitats) within the lagoon ecosystems. While these restoration efforts would not focus on traditional in-kind habitat replacement mitigation ratios, the overall programs would result in the restoration and enhancement of an integrated ecosystem, providing habitat for fish, birds, and benthic organisms, which would adequately compensate for the loss of wetland and upland habitat that would occur from the PWP/TREP rail and highway improvements. Opportunities for upland, lagoon, wetland, and riparian resource enhancement have been reviewed in all the watersheds along the NCC. These opportunities are described in detail in Chapter 4, "Scope of Planned Improvements" and Chapter 6A, "Implementation."

Furthermore, the PWP/TREP would also provide a unique opportunity to improve the coastal bluff area in Del Mar by potentially removing the existing rail service from the bluff area and precluding further rail

construction along the bluffs. These future improvements could reduce development and maintenance activities on the bluff and shoreline and create an opportunity to remove existing shoreline protective devices, restore coastal bluff resources, and reduce long-term shoreline erosion impacts in the marine environment.

It is recognized that new opportunities for various types of resource improvements may become available in the corridor after adoption of the PWP/TREP, due to factors such as additional funding availability, completed habitat restoration plans, or land acquisition options. In addition, some mitigation opportunities that would promote large-scale ecological improvements to resources may be considered more critical for the region, while others that would contribute to enhancing a smaller area within the corridor may be considered less critical for achieving regional goals. Widespread improvements to natural resources in the NCC require a unique, comprehensive approach to resource enhancement with input from multiple regulatory agencies and stakeholders. These factors make it necessary to maintain flexibility when considering the most appropriate mitigation opportunity.

The REMP is the framework used to describe the available resource enhancement opportunities on a corridor-wide level based on these evolving factors. The REMP framework provides for supplementing the mitigation opportunities package when new opportunities arise, which could be authorized pursuant to future project-specific Notice of Impending Developments (NOIDs) for PWP projects, coastal development permits, or federal consistency review, as applicable (see also REMP Implementation Framework section in Chapter 6A).

Accounting of REMP project implementation, credit establishment, and release, maintenance and monitoring will be tracked and reported pursuant to NOID, future phased federal consistency or coastal development permit submittals for all PWP/TREP projects to ensure the overall program implementation is consistent with approved impacts and meets required mitigation and resource benefits identified in the PWP/TREP Phasing Plan. Chapter 6 of the PWP/TREP also requires that a report updating the status of all projects within the REMP be submitted to the California Coastal Commission annually for review. Each no net loss mitigation site will have its own funding and mitigation and monitoring plan (with remedial measures) in the event the site is not attaining its goals. If a site develops a fatal flaw that cannot be corrected on-site, SANDAG/Caltrans will identify and implement mitigation at another location. In most cases, problems on a mitigation site can be corrected on-site through additional grading, planting, weeding, or soil amendment. In addition, funding could be shifted between projects if a project proposed now is not carried forward. In addition, the PWP/TREP Implementation Framework ensures that all REMP projects are reviewed and monitored as part of the development review process for all other projects included in the PWP/TREP, regardless of the specific Coastal Commission approval process required for each REMP project.

Caltrans and SANDAG continue to seek appropriate parcels for restoration and/or preservation of native upland habitats for mitigation in coordination with the affected resource agencies; current identified opportunities are described in detail within Chapter 6A, "Implementation." SANDAG/Caltrans propose to complete mitigation in advance of project impacts, where feasible, and as approved by the resource agencies.

5.5.3.2 PWP/TREP Policies

Caltrans and SANDAG would implement the following policy to ensure that proposed improvements are designed, implemented, and maintained to provide for maximum protection of ESHAs and special-status species as identified in Figures 5.5-1A–5.5-6B.

Policy 5.5.1: Development of NCC transportation facility and community enhancement projects shall be sited and designed to ensure that ESHAs are protected against any significant disruption of habitat values. Development in areas adjacent to ESHAs shall be sited and designed to prevent impacts that would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

5.5.3.3 PWP/TREP Design/Development Strategies

The following design and development strategies provide guidance for siting and designing specific PWP/TREP rail projects, and Caltrans/SANDAG shall utilize the following strategies for all projects subject to NOID procedures, consistent with the ESHA and special-status species protection policies of PWP/TREP Policy 5.5.1, amended LCPs, and the Coastal Act.

1. Project-level analysis for potential impacts of new transportation improvements and associated community and resource enhancements improvements on ESHAs and special-status species should be conducted and subject to review during subsequent project-specific Federal Consistency, NOID, or Coastal Development Permit Reviews to assess and identify all potential permanent or temporary impacts to ESHAs and special-status species and appropriate mitigation measures to ensure project consistency with Coastal Act Section 30240.
2. Habitat Mitigation and Monitoring Plans (HMMP) will be prepared for mitigation areas and will specify the design and implementation of biological resources mitigation measures, including habitat replacement and revegetation, protection during construction, performance (growth) standards, maintenance criteria, and monitoring requirements. The REMP Working Group would review and approve draft HMMPs prior to NOID or coastal development permit submittal. The primary goal of an HMMP is to ensure the long-term perpetuation of the existing diversity of habitats in the project area and adjacent urban interface zones.
3. Impact reduction measures for sensitive coastal upland and wetland habitats should include construction monitoring and should fully mitigate impacts pursuant to the REMP detailed in Chapter 6B as it relates to no net loss of habitat, habitat preservation, and comprehensive lagoon restoration program mitigation.
4. Mitigation measures for sensitive vegetation communities and rare plants should include, but should not be limited to, preconstruction focused surveys, construction monitoring, relocation of plants, seed collection, plant propagation, and salvaging of plant species to a suitable mitigation site. Prior to construction, focused surveys should be conducted for sensitive plant species. Locations of sensitive plant species observed would be mapped on construction drawings. Research must be conducted on appropriate methods to use on a species-by-species basis. Some plant species may require transplantation, whereas others may germinate from seed, and still others may need to be propagated in a greenhouse prior to planting on an appropriate mitigation site.
5. During construction, specific measures for weed control should be developed to minimize or prevent the spread of weeds. Preventive measures during construction could include identifying areas with existing weed problems and controlling traffic moving out of those areas (e.g., cleaning of construction vehicles, limitations on movement of fill).
6. Mitigation measures for sensitive wildlife species may include, but not be limited to, preconstruction focused surveys, construction monitoring, and the restoration of suitable breeding and foraging habitat as established in the REMP. Prior to construction, focused surveys would be conducted for sensitive wildlife species, with locations of sensitive wildlife species observed mapped on construction drawings. Vegetation clearing prior to onset of construction impacts may be implemented to minimize the wildlife use of areas slated for construction, and thereby minimize

indirect and direct impacts to wildlife species. The clearing and grubbing of native wetland, riparian, and/or upland habitats would occur outside of the breeding seasons for nesting birds to avoid impacts to sensitive species. All native or sensitive habitats outside and adjacent to the permanent and temporary construction limits would be temporarily fenced during construction with orange plastic snow fence, orange silt fencing, or in areas of flowing water, with stakes and flagging. No personnel, equipment or debris would be allowed within these areas. Temporary construction fencing and markers would be maintained in good repair until the completion of each phase of project construction and removed upon completion of each project phase.

7. Wildlife crossings would be of a design, shape and size to be sufficiently attractive to encourage wildlife use. Overcrossings and undercrossings for wildlife would be appropriately vegetated to afford cover, fenced as needed to promote directional movement through the corridor, and other species requirements. Functional corridors would be established to provide connectivity to protected land zoned for uses that provide wildlife permeability.
8. To minimize impacts to migratory birds dependent on lagoons for stop over, resting, and foraging habitats along the Pacific flyway, PWP/TREP infrastructure construction activities should not occur in more than two lagoons at any one time.
9. A project-specific biological evaluation of the development area should be conducted for all improvements proposed in areas where ESHA and special status species may occur and should be submitted with the project-specific submittal package. The evaluation should include any changed site conditions that could affect ESHA values or special-status species protected by the PWP/TREP. A biological evaluation should be completed in the proposed development area (i.e., the proposed development footprint and a surrounding 100-foot buffer area). Should ESHAs and/or special-status species be identified during this process that are not already considered in the PWP/TREP, all ESHA and/or special-status species resource protection measures included in this PWP/TREP should be applied to the newly identified resources. For any newly identified ESHA, an appropriate buffer should be established, based on site-specific conditions in accordance with Implementation Measure 5.5.9.

5.5.3.4 Implementation Measures

Caltrans/SANDAG would utilize the following implementation measures for all projects, subject to NOID procedures:

- **Implementation Measure 5.5.1:** The following conservation measures shall be implemented during construction for all new transportation improvements and associated community and resource enhancements to minimize impacts to sensitive communities as identified in Figure 5.5-1A through Figure 5.5-6B:
 - All native habitats outside the permanent and temporary construction limits shall be temporarily fenced during construction with orange snow fence and no access will be allowed.
 - Cut slopes would be revegetated with native upland habitats with similar composition to those within the project limits. Fill slopes and areas adjacent to wetlands and drainages would be revegetated with appropriate native upland and wetland species. The revegetated areas would have temporary irrigation and be planted with native container plants and seeds selected by the biologist. There would be at least three years of plant establishment/maintenance on these slopes to control invasive weeds and ensure that the plants become established, and review of these revegetation efforts would be included in the REMP reports submitted to the Coastal Commission. Success criteria for plant establishment would be included in any revegetation plan submitted for cut slopes and areas of temporary impacts. Bioswales and detention basins

would be planted with appropriate native species as determined by the biologist and storm water personnel.

- Landscaping plans shall include only species native to southern California such that the proposed planted areas will be compatible with surrounding natural and manmade areas. No plant species listed as problematic or invasive by the California Native Plant Society (<http://www.CNPS.org/>), the California Invasive Plant Council (<http://www.cal-ipc.org/>), or as may be identified from time to time by the State of California shall be employed or allowed to naturalize or persist on the site. No plant species listed as a “noxious weed” by the State of California or the U.S. Federal Government shall be utilized within the property.
 - Any seeding of native upland habitats would be completed between October and February to ensure that the seed has proper conditions for germination.
 - Top soil from areas with coastal sage scrub, maritime succulent scrub, and maritime chaparral that do not have high weedy species would be stockpiled and used during the revegetation effort to aid in revegetating the slopes with native habitats.
 - All temporary impact areas would be revegetated and restored to pre-existing conditions.
- **Implementation Measure 5.5.2:** Seeds shall be collected or plants shall be salvaged to the extent practicable in the impact areas for all new transportation improvements and associated community and resource enhancement projects. Salvaged plants and seed shall be planted in mitigation sites, on revegetated new slopes, or in revegetated areas that were temporarily impacted.
 - **Implementation Measure 5.5.3:** All efforts shall be made to eradicate invasive plant species. During project construction, all invasive species included on National Invasive Species Management Plan, the State of California Noxious Weed List, and the California Invasive Plant Council's (Cal-IPC) Invasive Plant Inventory list found growing within the project right-of-way would be removed. Weed removal would be conducted within the project right-of-way at least once per year during the construction period. Revegetated slopes would be kept weed free to prevent any invasive weed species from reinvading the slopes. Measures shall be implemented to avoid the transporting, use and disposing of soils with invasive weed seeds, such as inspection and cleaning of construction equipment, use of eradication strategies, and washing all heavy equipment prior to entering any lagoon area, to minimize the spread of invasive weeds. All weedy vegetation removed during construction would be properly disposed of to prevent spread into areas outside of the construction area.
 - **Implementation Measure 5.5.4:** To minimize impacts to nesting migratory bird species, all native vegetation and non-native shrubs and trees within the impact areas shall be removed outside of the breeding season (February 15 to September 15), if possible. Otherwise, a qualified biologist shall thoroughly survey all vegetation prior to removal to ensure there are no nesting birds on-site. If nesting birds are identified on-site, vegetation removal shall be delayed and an appropriate buffer established, until the chicks have fledged or the nest has failed.
 - **Implementation Measure 5.5.5:** Future bridges shall be designed to be bat friendly.
 - **Implementation Measure 5.5.6:** Exclusion devices shall be installed on bridge drain holes and ledges during the non-breeding season (September 1 through February 15) to stop swallows, swifts, and any other birds or bats from nesting on or within bridges to be demolished.
 - **Implementation Measure 5.5.7:** Impacts to Del Mar Manzanita shall be mitigated by salvaging individual plants from the affected area and planting them in a compensatory mitigation site for the project.

- **Implementation Measure 5.5.8:** The following mitigation measures shall be implemented for all new transportation and associated community and resource enhancement projects to minimize impacts to wildlife species during construction.
 - A channel large enough to maintain hydrologic function/connectivity and for fish passage would be kept open throughout construction within the San Luis Rey River and all of the lagoons.
 - All pile driving near the lagoons would be completed outside the bird breeding season (February 15-September 15) to minimize construction noise impacts to bird species around the lagoons.
 - If pile-driving takes place in or adjacent to lagoon waters greater than 1 meter in depth, there shall be a hydroacoustic monitoring plan to avoid injury to fish from high levels of underwater sound. The plan shall include provisions for stopping pile driving if Caltrans dual criteria for injury to fish are exceeded.
 - During in-water bridge construction activities at all lagoons, 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.
 - 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 should be familiar with the habitats, plants, and wildlife of the project area, and maintain communications with the resident engineer, to ensure that issues relating to biological resources are appropriately and lawfully managed.
 - Detention basins would be placed in many of the loop ramps, and bioswales would be placed on many of the slopes to treat runoff from the freeway.
 - Lighting used at night for construction would be shielded away from ESHAs.
 - Dust generated by proposed operations would be controlled with BMPs.
- **Implementation Measure 5.5.9:** Buffers/setbacks for ESHAs delineated at the time of PWP/TREP certification shall be maintained, unless reduced ESHA buffers/setbacks are authorized pursuant to the NOID and/or Public Works Plan Amendment procedures contained in Chapter 6A. For any new ESHAs identified and delineated pursuant to Design/Development Strategy 9, development shall be sited and designed to minimize ESHAs impacts, appropriate buffers/setbacks provided based on a site-specific biological evaluation confirming the buffers/setbacks are adequate to avoid or minimize significant adverse impacts to ESHA.
- **Implementation Measure 5.5.10:** NOID or Coastal Development Permit submittals for native upland habitat establishment, restoration and/or enhancement plans proposed in accordance with the REMP detailed in Chapter 6B shall include the following information and materials:
 - Clearly stated objectives and goals for the habitat establishment, restoration and/or enhancement plans.
 - Baseline data regarding the biological, physical, and chemical criteria for the establishment, restoration and/or enhancement site.
 - Documentation demonstrating that the proposed establishment, restoration, or enhancement project will continue to function over the long term.
 - Technical detail in the project design including, at a minimum, an engineered grading plan and water control structures, methods for conserving or stockpiling topsoil, a planting program including removal of exotic species, a list of all species to be planted, sources of seeds or

plants, timing of planting, plant locations and elevations on the mitigation site base map, and maintenance techniques.

- Documentation of performance standards, which provide a mechanism for making adjustments to the establishment, restoration or enhancement site when it is determined through monitoring that the enhancement or restoration techniques are not successful.
- Description of management and maintenance requirements, and provisions for remediation should the need arise.
- An implementation plan that demonstrates there is sufficient scientific expertise, supervision, and financial resources to carry out the proposed activities.
- A monitoring program to be implemented for 5 to 10 years after completion of the habitat establishment, restoration or enhancement project with appropriate provisions to ensure the project has successfully met the stated goals and long-term objectives, such as a permanent restrictive covenant to be recorded over the mitigation area.

5.5.4 Coastal Act Consistency

Coastal Act Section 30240

Coastal Act Section 30240 provides for the protection of environmentally sensitive habitat areas of the coastal zone:

- a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.
- b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Section 30240 of the Coastal Act sets forth a strict limitation on the type of development and uses that are permitted to occur in ESHA, and requires that new development be compatible with the continuance of ESHA, and be sited and designed to prevent impacts that would significantly degrade ESHA.

5.5.4.1 PWP/TREP ESHA Impacts and Allowable Uses

Section 30240 of the Coastal Act mandates that only resource-dependent uses be allowed in ESHAs. As the existing location of the NCC rail and highway facilities requires that some PWP/TREP improvements occur in areas containing ESHAs, it is infeasible to avoid all impacts to ESHAs during construction of the proposed improvements. Thirteen (13) proposed PWP/TREP community enhancement projects that would improve public access to trails (i.e., community enhancements SD#1, SD#3, SB#2, EN#1, EN#3, EN#4, EN#6b, CB#1a, CB#2, CB#3, OC#1, OC#6, and OC#7; see Chapter 4 for details) and contemplated habitat restoration plans are considered resource-dependent uses and therefore are permitted uses in ESHAs; however, the majority of the PWP/TREP improvements consist of public facility improvements, which are not typically considered resource-dependent uses. As such, PWP/TREP improvements that do not consist exclusively of resource-dependent uses are inconsistent with the limited uses permitted in ESHAs as required by Section 30240 of the Coastal Act. The issue of PWP/TREP conflicts with Section 30240 of the Coastal Act is discussed further in this section under Coastal Act Consistency Analysis, and is evaluated in detail in Section 5.10, Coastal Act Policy Conflict Resolution. As detailed in Section 5.10, the proposed PWP/TREP could be found consistent with the

Coastal Act through the conflict-resolution provision of Coastal Act Section 30007.5, when it is demonstrated that there are no feasible less-damaging alternatives for project components that would result in unavoidable impacts to ESHA, and that feasible mitigation measures have been included in the PWP/TREP to minimize significant adverse environmental impacts.

Evaluation of Feasible Alternatives

Section 5.10, Coastal Act Policy Conflict Resolution analyzes program-level alternatives to address mobility deficiencies and enhance multimodal access throughout the corridor. Based on this analysis, the program of improvements included in the PWP/TREP provides the least environmentally damaging, feasible project alternative to avoid or reduce impacts to coastal resources, while implementing Coastal Act policies that mandate protection of coastal resources by 1) minimizing energy consumption and vehicle miles travelled, and protecting air quality (Section 30253); 2) concentrating new development in or adjacent to areas able to accommodate growth (Section 30250); 3) providing and enhancing transit and non-automobile circulation, and ensuring that the potential for public transit is provided for high-intensity uses (Section 30252); and 4) protecting and enhancing public access to recreational resources in the Coastal Zone (Sections 30210, 30211, 30212, 30212.5, 30213, 30223, and 30252). The proposed PWP/TREP improvements consist primarily of improvements to existing transportation facilities located in previously developed and disturbed areas within existing LOSSAN rail and I-5 highway right-of-way. Improvements or changes to the existing rail and highway facilities are generally expansions or reconfigurations of existing facilities or, where new rail alignment tunnel options are being considered, would occur primarily below ground; therefore, by design, the proposed PWP/TREP improvements would involve limited expansion or encroachment into wetlands and other sensitive habitat areas that might otherwise occur if new transportation infrastructure were to be constructed as separate and distinct facilities from the existing LOSSAN rail and I-5 highway right-of-way to address mobility deficiencies and enhance multimodal access throughout the corridor.

In addition to the programmatic analysis of project alternatives discussed previously and included in Section 5.10, detailed project alternatives analyses for proposed improvements for the PWP/TREP have been completed and are described in detail within the *I-5 NCC Project Supplemental Draft EIR/EIS* and *Final Draft EIR/EIS* and are reflected within the selection of the Locally Preferred Alternative.

In addition to the programmatic analysis of project alternatives discussed previously and included in Section 5.10, a detailed, design-level alternatives analysis for proposed PWP/TREP LOSSAN rail and I-5 highway improvements that affect upland ESHAs and associated special-status species was conducted consistent with the Coastal Act Policy Conflict Resolution process to identify the least environmentally damaging alternative. Lagoon optimization studies were conducted for San Elijo, Batiquitos, and Buena Vista Lagoons to identify the optimal length of bridges and channel design configurations to provide for improved hydraulic lift and facilitation of large-scale lagoon restoration efforts that would benefit a variety of sensitive habitats and special-status species. Additional technical analysis and detailed design avoidance and minimization features for all corridor waterbodies and adjacent upland areas supporting sensitive species potentially affected by the I-5 project's Locally Preferred Alternative are discussed at length in the *I-5 NCC Project Supplemental Draft EIR/EIS*. As discussed therein, to minimize impacts to all sensitive habitats, the slopes of the freeway 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 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 more than 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 used to protect the existing abutments and would also be used to protect the abutments of the proposed bridges. Because of the depth of bridge pilings, riprap is not required to armor the channel bottom.

As part of the proposed REMP, new and improved transitional habitat and buffer areas, restored riparian corridors, and preservation or restoration of habitat areas via the purchase of land areas adjacent to corridor lagoons would ensure that impacts from proposed improvements are mitigated corridor-wide. In addition, facilitation of comprehensive lagoon restoration through funding of major restoration efforts would address water quality improvements and habitat needs of special-status and wildlife species, and would achieve the overall goal of enhancing biodiversity and habitat value throughout the corridor. Bridge designs at the corridor lagoons were maximized for avoidance and minimization of impacts, to reduce tidal muting, and restore/improve wildlife movement. These optimized bridge designs in concert with expanded channel dimensions allow for possible future establishment, restoration, and enhancement of tidal wetlands and improved water quality within the lagoons.

Potential impacts from auxiliary lanes would be minimized where possible, especially in the vicinity of the lagoons. Auxiliary lanes were included in the project design only where required to relieve traffic congestion and weaving issues between on- and off-ramps. For instance, potential impacts associated with a proposed auxiliary lane between La Costa Avenue and Poinsettia Avenue across Batiquitos Lagoon were avoided (based on elimination of this potential auxiliary lane when traffic analysis determined that it would not be required).

To avoid impacts to wetlands from fill associated with creation of 12-foot-wide bike/pedestrian paths, short retaining walls (6 feet or lower in height) would be used. Another impact minimization option being examined (particularly at Batiquitos and Buena Vista Lagoons) would involve obtaining funds to replace these bridges in the first phase of construction (prior to construction of a proposed high-occupancy vehicle [HOV] lane in the median), instead of later in the construction process. This would reduce the overall bridge widths required for staging the bridge replacements, thus reducing wetland impacts by more than an acre at each lagoon. However, 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 impacts at this location.

Feasible project alternatives and avoidance and minimization measures for LOSSAN rail improvements potentially affecting wetlands are also addressed as part of the lagoon optimization studies at San Elijo, Batiquitos, and Buena Vista Lagoons, and would be determined in project-level analyses and during phased federal consistency review, as applicable, for other lagoon crossings.

Feasible Mitigation Measures

Section 5.5.4 and the following consistency analysis sections for proposed PWP/TREP improvements demonstrate that feasible mitigation measures have been included in the PWP/TREP as project design features, policies, design/development strategies, and/or implementation measures to minimize significant adverse environmental impacts.

5.5.4.2 PWP/TREP Consistency Analysis

The PWP/TREP provides that project-level analysis for potential impacts of public facility improvements on ESHAs and special-status species would be conducted and subject to review during subsequent project-specific federal consistency, NOID, or coastal development permit review, as applicable, to

assess and identify all potential permanent or temporary impacts to ESHAs and special-status species and appropriate mitigation measures to ensure project consistency with Coastal Act Section 30240.

Proposed PWP/TREP policies, design and development strategies, and implementation measures would serve to avoid (where feasible), minimize, and mitigate potential impacts to ESHAs and special-status species. Implementation of the design and development strategies would require the NCC transportation facility and community enhancement projects to be sited and designed to ensure that ESHAs are protected against any significant disruption of habitat values. Similarly, development in areas adjacent to ESHAs would be sited and designed to prevent impacts that would significantly degrade those areas, and would be compatible with the continuance of those habitat areas.

HMMPs would be prepared to specify the design and implementation of biological resources mitigation measures, including habitat replacement and revegetation, protection during construction, performance (growth) standards, maintenance criteria, and monitoring requirements to ensure the long-term viability of habitats in the project area. Mitigation strategies would address sensitive plant and wildlife species and may include preconstruction surveys, construction monitoring, relocation of plants or plant propagation, restoration of suitable breeding and foraging habitat, and consideration of wildlife corridors in design. To minimize potential impacts to sensitive communities during construction, implementation measures require that native habitats outside the construction limits be shown on project maps and access be prohibited. Furthermore, cut slopes would be revegetated with native upland habitats with similar composition to those within the project limits and any seeding of native upland habitats would be completed between October and February to ensure that the seed has proper conditions for germination. Temporary impact areas would be revegetated and restored to pre-existing conditions to reduce the permanent impact of short-term construction.

Additional measures would be employed during construction to minimize impacts to nesting migratory bird species and migratory birds dependent on lagoons. All native vegetation and non-native shrubs and trees within the impact areas would be removed outside of the breeding season (February 15 to September 15), if possible, and in instances where this would not be possible, consultation with the appropriate resource agencies would be conducted and biological monitors would be present on-site. Exclusion devices would be installed on bridge drain holes and ledges during the non-breeding season (September 1 through February 15) to stop swallows, swifts, and any other birds or bats from nesting on or within bridges to be demolished. To minimize impacts to migratory birds dependent on lagoons for stop over, resting, and foraging habitats along the Pacific flyway, PWP/TREP transportation improvement construction activities would not occur in more than two lagoons at any one time. When necessary, a qualified biologist would thoroughly survey all vegetation prior to removal to ensure there are no nesting birds on-site.

A qualified biologist would also be made available for both the preconstruction and construction phases to review grading plans, to address protection of sensitive biological resources, to monitor ongoing work and to minimize impacts to threatened and endangered species. Other measures implemented to minimize impacts to threatened and endangered species include maintaining adequate channel width of the San Luis Rey River and lagoons to maintain hydrologic function/connectivity and to facilitate fish passage; creating detention basins to treat runoff from the freeway; providing light shielding to protect ESHAs; and, restricting pile driving activity outside of the breeding season to reduce construction noise impacts to bird species around the lagoons. During in-water bridge construction activities at all lagoons, 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.

Implementation measures also require that a biological evaluation of the development area be conducted prior to each development project to evaluate any changed site conditions that could affect ESHAs or special-status species addressed by the PWP/TREP. The biological evaluation would analyze the proposed development area, which includes the proposed development footprint and a surrounding 100-foot buffer area. In the event ESHAs or special-status species are identified during this process that are not already considered in the PWP/TREP, all ESHA or special-status species resource protection measures included in this PWP/TREP would be applied to the newly identified resources.

In addition, PWP/TREP design and development strategies and implementation measures provide that potential impacts to ESHA be fully mitigated pursuant to the REMP detailed in Chapter 6B as it relates to no net loss of habitat, habitat preservation, and comprehensive lagoon restoration program mitigation. To further protect plant communities, specific mitigation measures for weed control may also be implemented, where applicable, to minimize or avoid the spread of weeds during construction and operation.

5.5.4.3 Coastal Act Consistency Analysis Summary

The proposed PWP/TREP improvements consist primarily of improvements to existing transportation facilities located in previously developed and disturbed areas within existing LOSSAN rail and I-5 highway rights-of-way. Improvements or changes to the existing rail and highway facilities are generally expansions or reconfigurations of existing facilities that involve minimal encroachment into adjacent areas and, as such, the majority of PWP/TREP facility improvements would not result in substantial impacts to adjacent ESHAs or special-status species. Nevertheless, impacts to ESHAs would be unavoidable given the locations of the existing LOSSAN rail and I-5 highway facilities that cross six coastal lagoons and upland habitat areas. As such, the proposed PWP/TREP raises Coastal Act issues relative to permitted uses in ESHAs.

The PWP/TREP includes a comprehensive REMP, described in Chapter 6B, which would serve to significantly enhance water quality, marine, and upland habitat resources—all of which would facilitate enhancement of ESHA and special-status species habitats throughout the corridor. The proposed program provides for advanced mitigation opportunities that would allow for habitat establishment or significant enhancement of degraded habitat prior to project implementation. This could result in eliminating a temporary loss in the amount of habitat in the corridor. In addition, the program provides for no net loss of habitat to ensure that the variety and range of significant coastal habitats in the corridor is not diminished because of the proposed PWP/TREP improvements. The program also provides for habitat preservation, thereby facilitating conservation of remaining sensitive habitats in the corridor. In addition, the PWP/TREP would facilitate the development and implementation of comprehensive lagoon restoration efforts for San Elijo and Buena Vista Lagoons. These efforts would serve to not only substantially enhance and restore water quality in the corridor, they would also restore, enhance, and protect different habitat types within the lagoon ecosystems. While these restoration efforts would not focus on traditional in-kind habitat replacement mitigation ratios, the overall programs would restore and ultimately enhance an integrated ecosystem that provides habitat for fish, birds, and benthic organisms, which would not only adequately compensate for the loss of ESHA that would occur from the PWP/TREP improvements, but would provide for enhancement of ESHA over the entire corridor.

5.5.5 Local Coastal Program Consistency

For LOSSAN rail projects included in the PWP/TREP that maintain or improve the movement of freight, passenger, or interstate rail service, the local coastal program (LCP) policy consistency analysis provides guidance and background information for analyzing rail project consistency with Section 30240 of the Coastal Act, as appropriate and applicable (see Section 1.1.3 for additional discussion of LCP applicability to rail projects that may fall under the exclusive jurisdiction of the Surface Transportation Board [STB]). All of the LCPs include policies that mirror, in part, the requirements of Coastal Act policies addressing impacts to ESHAs; however, the certified LCPs also include a range of additional, detailed and site-specific policies and development standards that address protection, enhancement and potential impacts to ESHAs and special-status species. The corridor's LCP water ESHA policies are summarized in the following section, and are followed by a brief LCP consistency summary that integrates and supplements the above consistency analysis for Section 30240 of the Coastal Act.

5.5.5.1 Local Coastal Program Consistency Analysis Summary

Included in all of the LCPs are policies that are consistent with Section 30240 of the Coastal Act. Specifically, this section states that ESHAs shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. Development in areas adjacent to ESHAs and parks and recreation areas shall be sited and designed to prevent impacts that would significantly degrade those areas and shall be compatible with the continuance of those habitat and recreation areas.

Each LCP has explicit policies or development standards that require the protection, avoidance, or minimization of effects to ESHAs. Common policies or development standards that reflect the protection of ESHAs throughout all of the jurisdictions' LCPs are:

- Minimizing grading and removal of vegetation.
- Revegetating graded and disturbed areas with native, drought tolerant plant species.
- Restriction or avoidance of grading and development on bluffs, canyons or steep slopes or slopes possessing ESHAs.
- Control of drainage and runoff to prevent siltation of ESHAs throughout construction and operation/maintenance of the project, development or improvement.
- Prohibiting impacts to ESHA pursuant to Section 30240 of the Coastal Act.
- Prohibiting impacts to wetland and riparian habitat pursuant to Section 30233 of the Coastal Act.
- Imposing setback (buffer) requirements from wetlands, streams, and the shoreline.
- Requiring mitigation of impacts to ESHA through either on- or off-site restoration activities.

These LCP policies are generally applied on a citywide basis in the respective jurisdictions, but in some instances are also applied to specifically address the many significant coastal resources that are identified by the LCP within each city.

City of San Diego

The City of San Diego LCP contains further and more specific ESHA protection policies in the North City Land Use Plan, in addition to each of the five individual Community Plans affected by the proposed PWP/TREP improvements.

North City Land Use Plan

- Canyons, with their riparian habitat, should remain as open space, and similar habitat areas in side canyons should also be protected.

Torrey Pines Community Plan

- Coastal lagoons and estuaries that are designated and zoned as open space shall remain undeveloped.
- Public access in areas of ESHAs shall be limited to low-intensity recreational, scientific, or educational use. Access shall be controlled or confined to designated trails or paths, and no access shall be approved that results in disruption of habitat.
- New development adjacent to and affecting biologically sensitive areas shall be responsible for the restoration and enhancement of that area. In particular, when mitigation areas are needed for public projects, the disturbed areas in Crest Canyon should be revegetated with coastal mixed chaparral and Torrey pines.
- Riparian vegetation in channels through the Sorrento Valley industrial area shall be preserved in its natural state in order to maintain its vital wildlife habitat value. When vegetation removal is necessary for flood control, the required state and federal permits shall be obtained.
- Preserve and enhance all open space and wildlife corridors especially those linking Los Peñasquitos Lagoon with Torrey Pines State Reserve Extension and the Carroll Canyon Creek Corridor.
- Crest Canyon shall be left in its natural state in order to preserve those biologically sensitive habitats identified within this park. A small portion of the parkland located adjacent to Del Mar Heights Road and Durango Drive should accommodate some limited passive park development.
- Construction or improvements of roadways adjacent to biologically sensitive areas or open space shall be designed to avoid impacts, especially in wetlands and wetland buffer areas. Protection of sensitive habitats through buffers, realignments and reduced development areas shall also be considered.
- All Torrey pine trees on public property should be preserved and protected.

University Community Plan

- Preserve the natural resources of the community through the appropriate designation and use of open space. Major topographic features and biological resources should be preserved as undeveloped open space.

Torrey Hills Community Plan

The policies below are cited and discussed by resource area:

- Individual projects should be designed to preserve natural topography, unique geologic formations and native vegetation to the fullest extent possible.
- Natural slopes containing native vegetation with a gradient of 25 percent or greater remaining undisturbed as a result of the hillside review process shall be placed in a permanent open space easement or deed restriction as a condition of development approval. The purpose of the open space designation shall be to protect native vegetation and visual resources of importance to the entire community.

Policies pertaining to ESHA in the Torrey Pines Community Plan include:

- Development in areas of sensitive vegetation, such as coastal sage scrub, shall be in accordance with the City's Resource Protection Ordinance as appropriate.
- Encroachments into areas of sensitive vegetation shall be as defined in the Resource Protection Ordinance, where it applies.
- To the extent applicable, all new development within the Coastal Zone shall be designed to be consistent with multi-species and multi-habitat preservation goals and requirements as established in the statewide Natural Communities Conservation Planning Program, shall comply with the City of San Diego Multiple Species Conservation Program Interim Habitat Loss Permit Process, or shall obtain an incidental take permit under Section 4d, Section 7 or Section 10a of the Endangered Species Act related to the California gnatcatcher. Compliance with these goals and requirements shall be implemented in consultation with the USFWS and CDFG.

North City Future Urbanizing Framework Plan

- No non-local native vegetation shall be allowed to be planted within these areas. Local native vegetation, if unavailable from on-site, can be obtained from sites with similar soils, slope, aspect, meso- or micro-climates as those on-site—preferably from nearby local sites within a 10-mile radius of the site.
- Areas of native habitat where low-impact forms of recreation can occur (such as trails), but which primarily function to provide distance and protection to the habitat protection area from lights, noise, activity, exotic plants and other potential forms of disturbance.

City of Del Mar

The City of Del Mar's LCP contains policies protective of sensitive lands such bluffs, slopes, canyons, downstream waterways and vegetation, and contains a Bluff, Slope and Canyon Overlay as well as a Lagoon Overlay. Applicable policies in the LCP are:

- No grading or construction activities shall be allowed on the face of a coastal bluff unless approved as part of a Shoreline Protective Permit or Setback Seawall Permit issued in accordance with the provisions of this Land Use Plan and when such activity on the bluff face has been minimized to the maximum extent feasible necessary to provide the authorized shoreline protection.
- Areas to be retained in their natural state pursuant to the coastal bluff regulations shall be subject to conditions to ensure the future protection of the designated area(s) from encroachment, disturbance or degradation. Said conditions shall include the recordation of an open space deed restriction or open space easement to ensure protection of the designated area and to serve notice to the property owner, subsequent owners, or interested parties of the restrictions in effect on such property.

City of Encinitas

The City of Encinitas references Section 30240(a) of the Coastal Act into its LCP, and contains various programwide policies to ensure the protection of ESHAs with its boundaries, in addition to a Special Study Overlay designation. In particular, the policies included in the LCP are:

- The Special Study Overlay designation shall be applied to lands that, because of their sensitive nature, should be developed only with consideration of specific constraints and features related to drainage courses, bluffs, slopes, geology and soils, biotic habitat, viewsheds and vistas, and cultural resources. Development within the overlay area shall be reviewed and approved in accordance with criteria and standards that protect coastal and inland resources.

- Significant natural features shall be preserved and incorporated into all development. Such features may include bluffs, rock outcroppings, natural drainage courses, wetland and riparian areas, steep topography, trees, and views.
- Ecological Resource/Open Space/Parks is a category intended to be applied to both active and passive parklands; lagoons; wetland habitat areas and their adjacent buffers; and other areas of significant environmental quality or public resource value. Lands in the Ecological Resource/Open Space/Parks category, other than public parks, and similar areas for active recreation, will be limited to uses and activities related to habitat enhancement; educational and scientific nature study; passive recreation that will have no significant adverse impact on habitat values; and, aquaculture having no significant adverse effect or negative visual impact on natural processes or scenic quality.
- Preserve the existence of present natural open spaces, slopes, bluffs, lagoon areas, and maintain the sense of spaciousness and semirural living within the I-5 View Corridor and within other view corridors, scenic highways and vista/view sheds as identified in the Resource Management Element.

City of Carlsbad

The City of Carlsbad incorporates Section 30240(a) of the Coastal Act into its LCP, and contains various program wide policies in addition to policies that are specific to individual properties and areas that are protective of ESHA. The Carlsbad Habitat Management Plan (HMP) is a comprehensive, citywide program to identify how the City, in cooperation with federal and state agencies, can preserve the diversity of habitat and protect sensitive biological resources within the city and the Coastal zone. Policies in the LCP that are applicable to the area affected by the proposed project include:

- Buffers to be provided between all preserved habitat areas and development and minimum buffer widths are as follows: 100 feet for wetlands; 50 feet for riparian areas; 20 feet for all other native habitats (coastal sage scrub, southern maritime chaparral, maritime succulent scrub, southern mixed chaparral, native grassland, oak woodland).
- A no net loss of upland habitat and at least a 1:1 mitigation ratio; more specifically, impacts to coastal sage scrub shall be mitigated at an overall ratio of 2:1, impacts to southern maritime chaparral or maritime succulent scrub shall be mitigated at an overall ratio of 3:1, with the establishment component satisfying one-third of the total obligation; and impacts to southern mixed chaparral, native grassland and oak woodland shall be mitigated at ratios of 1:1, 3:1, and 3:1, respectively.
- Hardline Preserve Boundaries to ensure that the future development is sited to preserve the maximum amount of ESHA within the Coastal Zone, and to establish viable habitat corridors and preserve areas.
- Properties constrained by ESHA in the Coastal Zone require that if more than 80 percent of the property by area is covered with ESHA, at least 75 percent of the property shall be conserved, or if the city, with the concurrences of the wildlife agencies and the Coastal Commission through an LCP amendment, approved a Hardline Preserve Boundary for any of the above-described properties as part of the HMP, then the amount of on-site preservation as identified in the Hardline Boundary shall apply.

City of Oceanside

The City of Oceanside's LCP contains policies protective of marine environments, wetlands, riparian corridors and ESHA. In specific, the LCP policies are:

- Prior to approving any developments on dry lands adjacent to Buena Vista Lagoon, the City shall consult the CDFG to ensure that adequate measures are provided to protect and enhance the lagoon's sensitive resources. Such measures shall include, where appropriate: a) Provision for adequate buffers between development and the lagoon; b) erection of barriers—such as fences—to prohibit access to sensitive portions of the lagoon; c) incorporation of native riparian plant species into project design to enhance habitat value; d) construction of informational signs/kiosks educating the public on the value of the lagoon; and e) listing the regulations for public use. Habitat restoration measures (such as removal of built up sediment) providing that such measures are approved by the CDFG.
- In the area between I-5 and Alvarado Street, the City shall prohibit encroachment of development beyond the bluff line of the lagoon.
- New development on the private, commercially zoned land fronting the eastern segment of the lagoon, south of Highway 78 shall be sensitive to the lagoon and its environment.
- It is the policy of the City to prohibit filling in Loma Alta Creek, and the removal of existing vegetation shall not be permitted in Loma Alta Creek except when essential for flood control purposes. In such instances, the City will obtain necessary clearances from the CDFG prior to commencing work.
- The City shall continue to cooperate with other agencies including the CDFG, the cities of Carlsbad and Vista through the Joint Powers Committee, USFWS, SANDAG, and the Regional Water Quality Control Board in seeking ways to lessen the current impacts on the lagoon. Siltation and water pollution are two such impacts that are particularly critical.
- Any development proposed in an undeveloped area within a distance of up to 500 feet from a sensitive habitat area will be considered adjacent to that habitat area and be required to implement the mitigation measures with respect to buffer zones, grading restriction and erosion control, landscaping barriers and noise as stipulated in the LCP's Standards for the Identification and Protection of Sensitive Habitats.

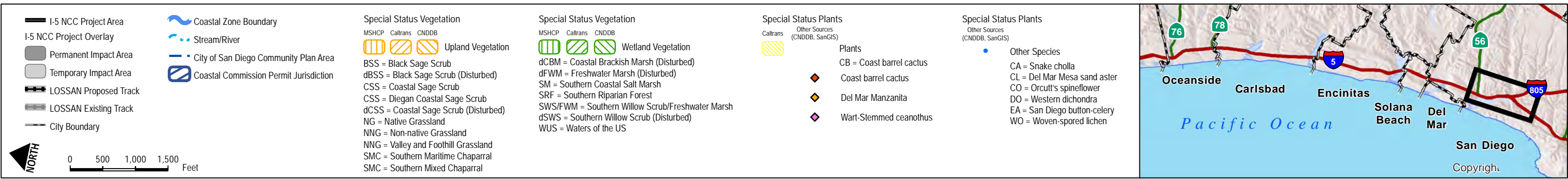
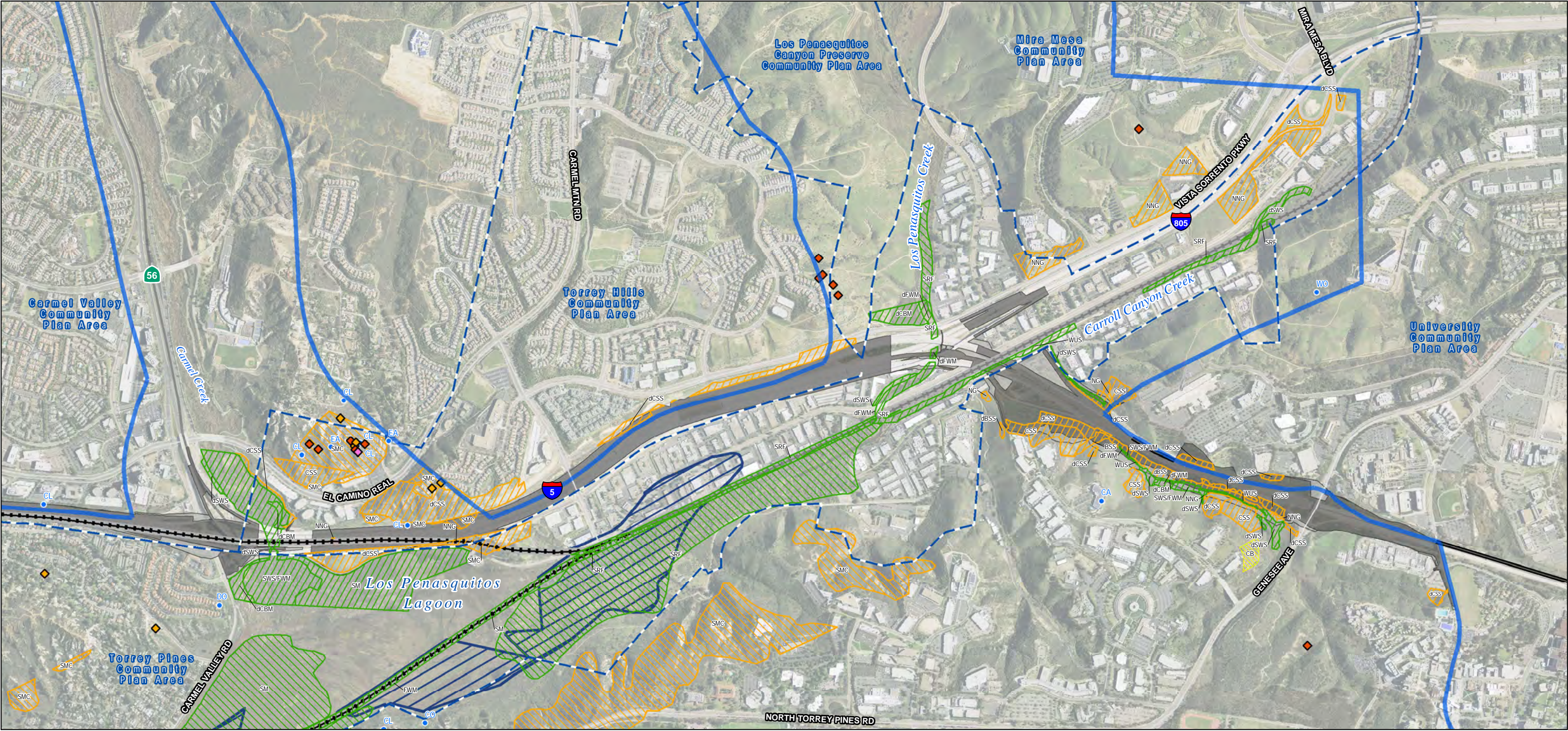
The San Luis Rey Specific Plan also contains policies that are protective of ESHAs, wetlands, and riparian resources, including:

- In order to protect the sensitive resources of the river area the City shall a) post signs at appropriate locations noting regulations on littering, off-road vehicles, use of firearms, and leash laws; b) encourage the CDFG to actively enforce the CDFG code in the river area; c) require property owners to remove debris from their properties when fire or health hazards exist; d) monitor future public use of the river area to identify areas of overuse (and if such areas are identified, take steps to restrict access commensurate with the carrying capacity of the resources); and e) continue police and code enforcement against litterers, trespassers, off-road vehicles, and other violators.
- Developers proposing projects in the San Luis Rey Specific Plan study area shall a) maintain adequate buffers surrounding sensitive habitat areas, using setbacks, fencing and/or vertical separation; and b) protect habitat for the endangered *Dudleya viscida*. Where habitat impacts are unavoidable, the developer shall transplant the species to a protected location.

Proposed PWP/TREP improvements would generally be designed and implemented consistent with the cities' ESHA protection policies; however, City LCP policies requiring that new development shall not intrude into open space areas and that all mature trees and other significant existing vegetation shall be protected present potential policy conflicts for the proposed PWP/TREP improvements where such impacts cannot be avoided.

In addition, all of the corridor LCPs include specific policies that require buffers from wetland and riparian habitat areas, and some of the LCPs further address buffers for upland sensitive habitats. In addition, the LCPs collectively require both specified and unspecified mitigation requirements where impacts to wetland, riparian, and sensitive upland habitat areas are permitted. The corridor LCPs collectively include a range of policy requirements that address buffers and mitigation requirements—some of which include buffer requirements without the option to adjust the buffers and others that provide for minimum buffer requirements but allow for adjustment if certain criteria are met. Buffer areas for wetland habitats in the certified cities are generally required to be 100 feet, and pursuant to some policies, may be reduced to 50 feet or less if it is demonstrated that a smaller buffer will protect the resources of the wetland area based on site-specific information. LCP policies generally require riparian habitat buffers to be a minimum of 100 to 50 feet, and that buffers from sensitive upland areas be a minimum of 20 feet, where applicable.

The existing location of the transportation facilities requires that the proposed projects occur in areas potentially containing ESHA; therefore the proposed PWP/TREP improvements would not provide the minimum buffer requirements articulated in the corridor LCPs. In addition, because the proposed REMP is intended to significantly enhance sensitive resources in the corridor by implementing a combination of traditional and non-traditional measures to mitigate coastal resource impacts and to enhance and restore resources beyond standard mitigation requirements, the PWP/TREP improvements would not meet all of the traditional mitigation requirements for ESHA where included in the corridor LCPs. As such, these LCP policy requirements for the cities of San Diego, Encinitas, Carlsbad, and Oceanside present potential policy conflicts for proposed highway and community enhancement projects, which require amendment to ensure consistency of the PWP/TREP improvements with the certified LCPs. As such, SANDAG and Caltrans will seek amendments to the LCPs of San Diego, Encinitas, Carlsbad, and Oceanside to allow for conflict resolution under Section 30007.5 of the Coastal Act. Section 5.10 evaluates the PWP/TREP improvements under the Coastal Act's conflict-resolution provision (Section 30007.5). The conflict resolution analysis concludes that denying or modifying the PWP/TREP to avoid the ESHA impacts discussed in this section would conflict with several other Chapter 3 policies of the Coastal Act, and thus, approval of the PWP/TREP on balance is the most protective of significant coastal resources.



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USFWS, Imagery: DigitalGlobe March 2008

The Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map are for planning and engineering study purposes only. Data are derived from multiple sources. The digital Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map have not been adopted by the Coastal Commission, and do not supersede the official versions certified by the Coastal Commission as may be amended from time to time.
Disclaimer: The State of California makes no representations or warranties regarding the accuracy or completeness of the files or the data from which they were derived. The State shall not be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of these Coastal Zone boundary, jurisdiction and Local Coastal Program files or the data from which they were derived. Because the Coastal Zone boundary, jurisdiction and Local Coastal Program data files are merely representational, they and the data from which they were derived are not binding and may be revised at any time.

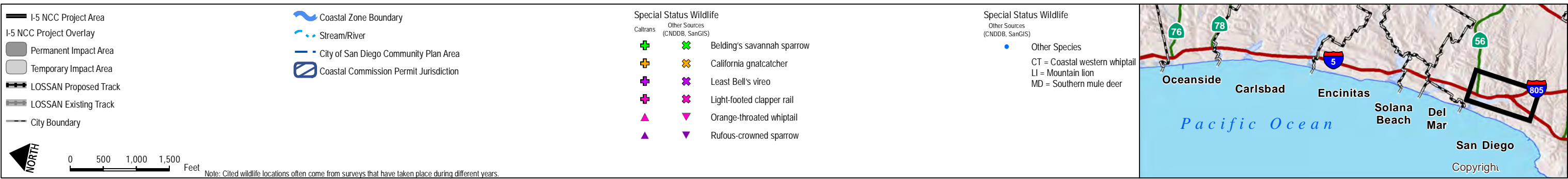
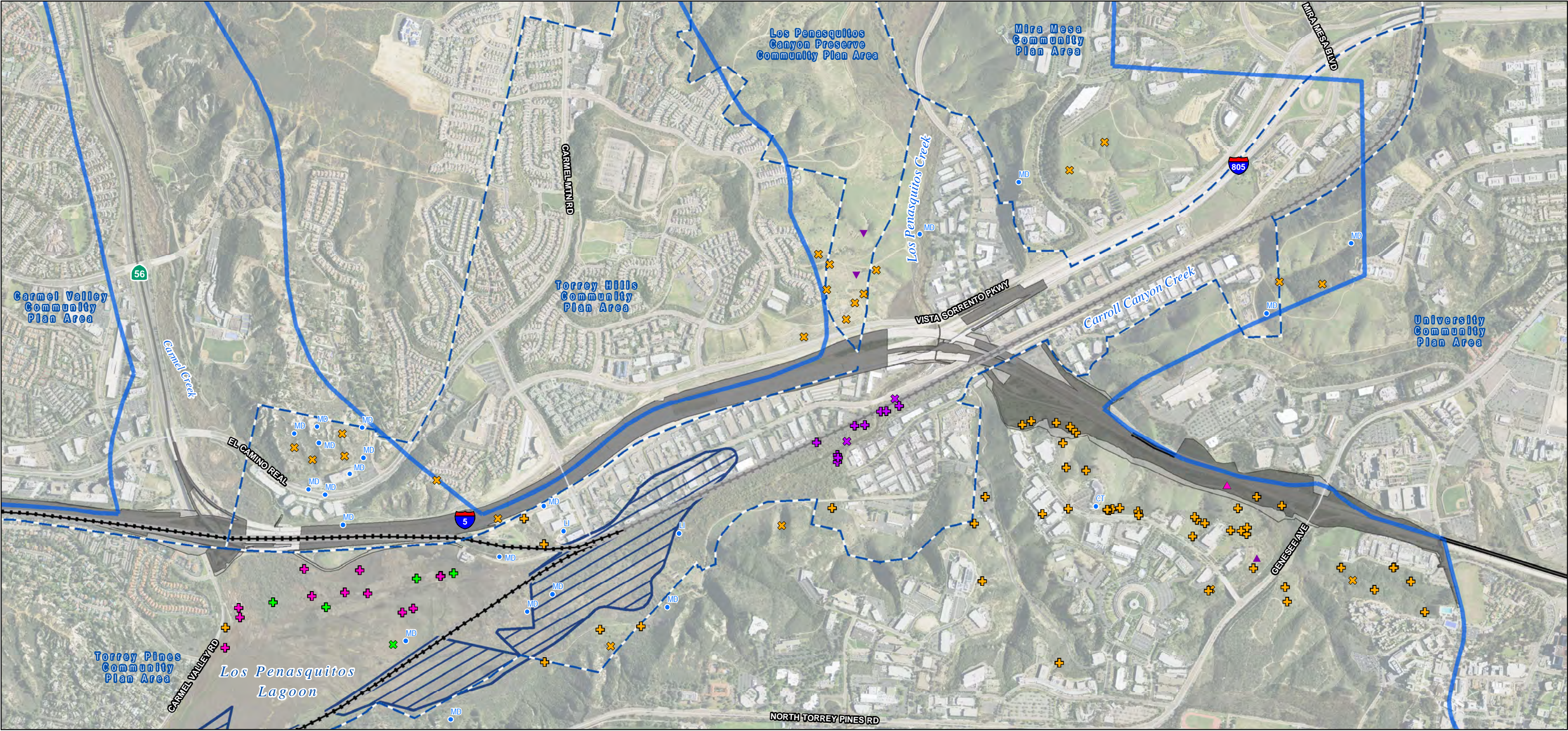
DRAFT Potential ESHA and Special Status Plant Species Detail Map (City of San Diego [South])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-1A

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USFWS, Imagery: DigitalGlobe March 2008

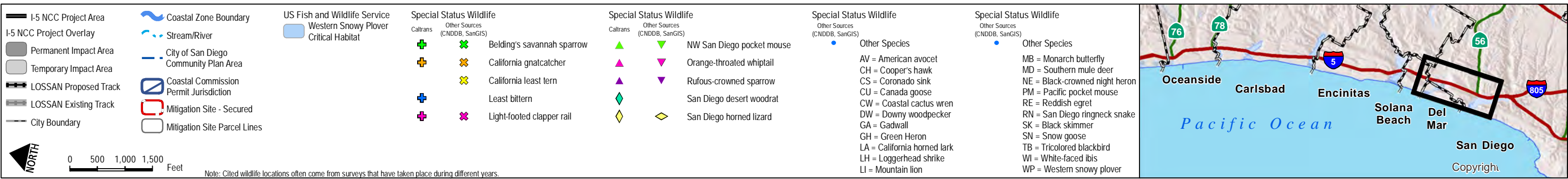
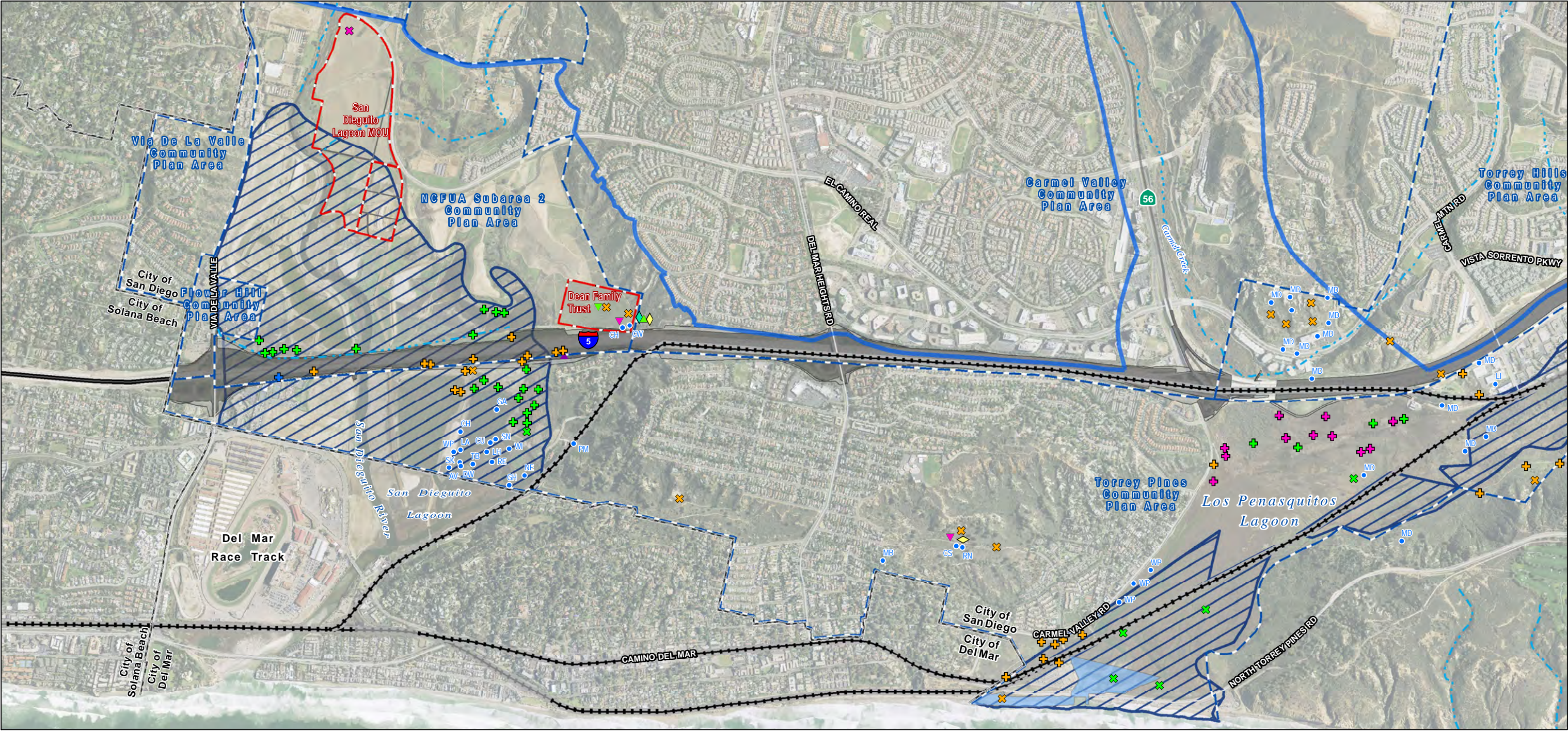
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DRAFT Potential ESHA and Special Status Wildlife Species Detail Map (City of San Diego [South])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-1C

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USFWS, Imagery: DigitalGlobe March 2008

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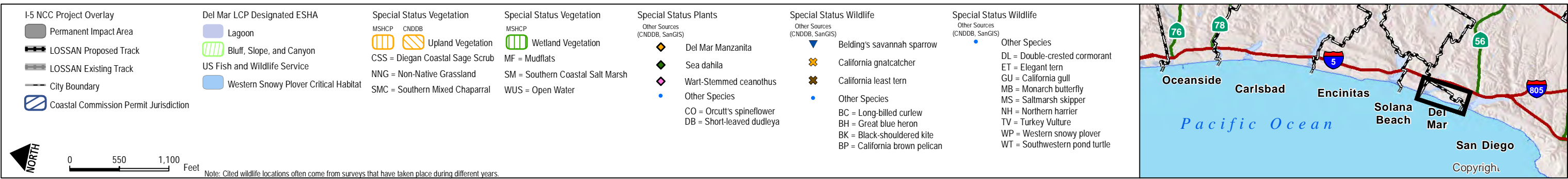
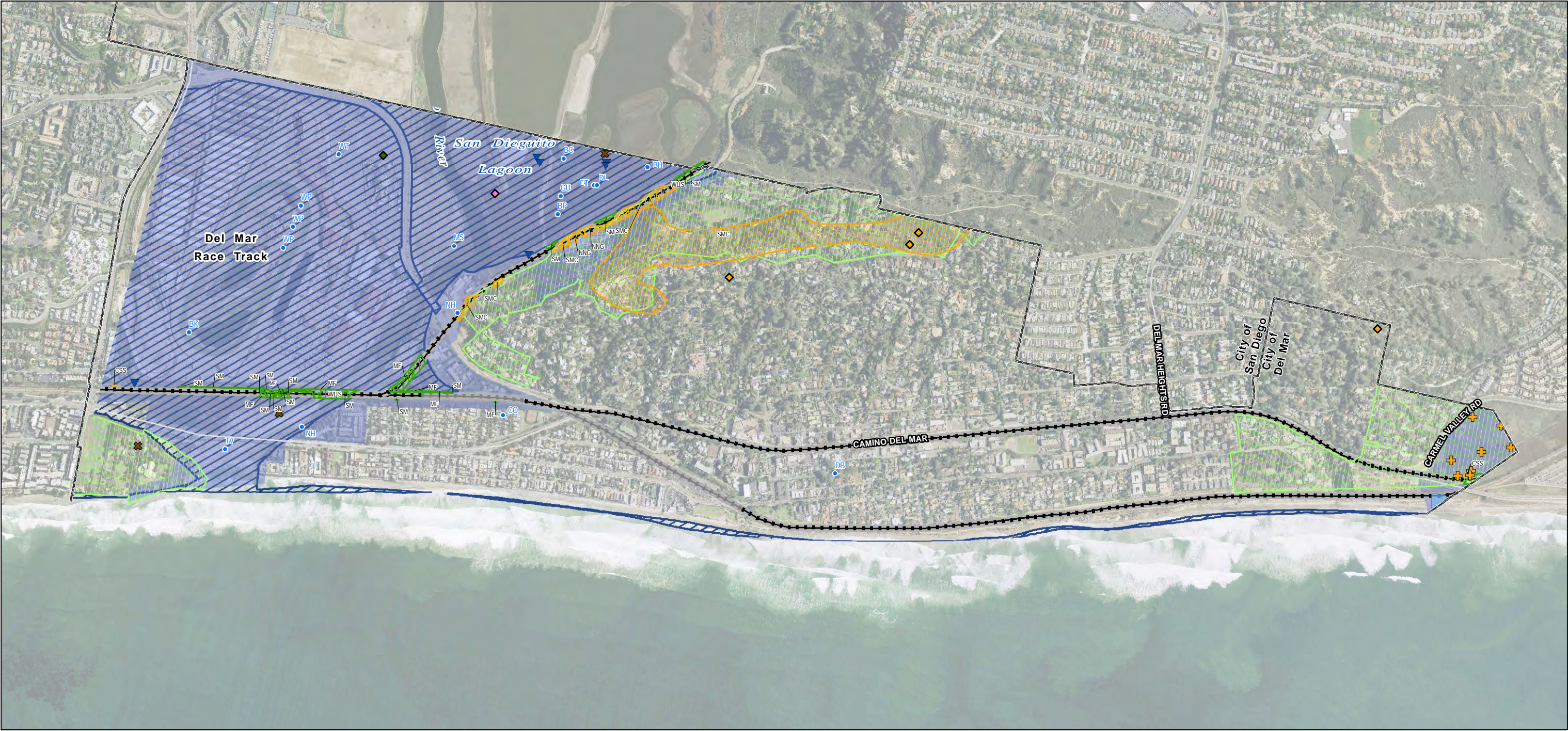
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DRAFT Potential ESHA and Special Status Wildlife Species Detail Map (City of San Diego [North])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-1D

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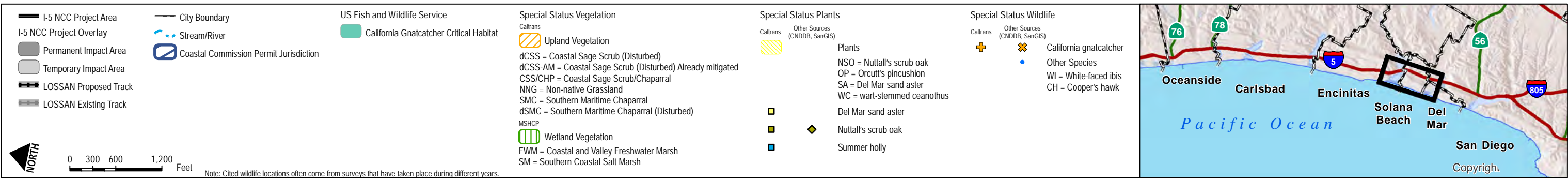
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FIGURE 5.5-2A

Potential ESHA and Special Status Species Detail Map (City of Del Mar)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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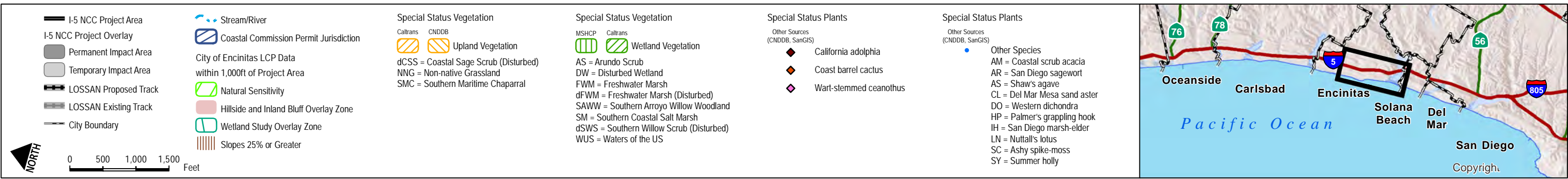
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FIGURE 5.5-3A

Potential ESHA and Special Status Species Detail Map (City of Solana Beach)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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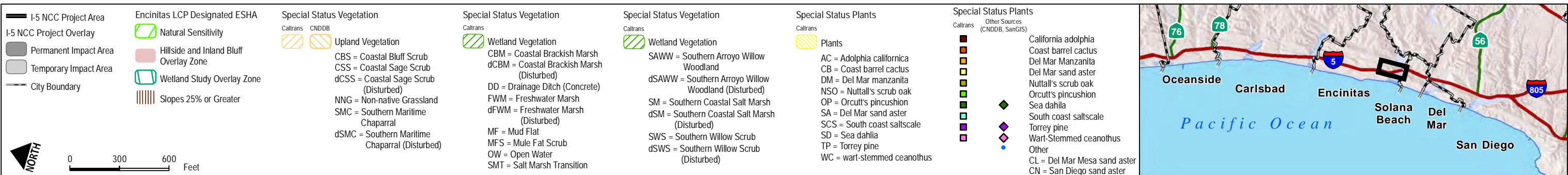
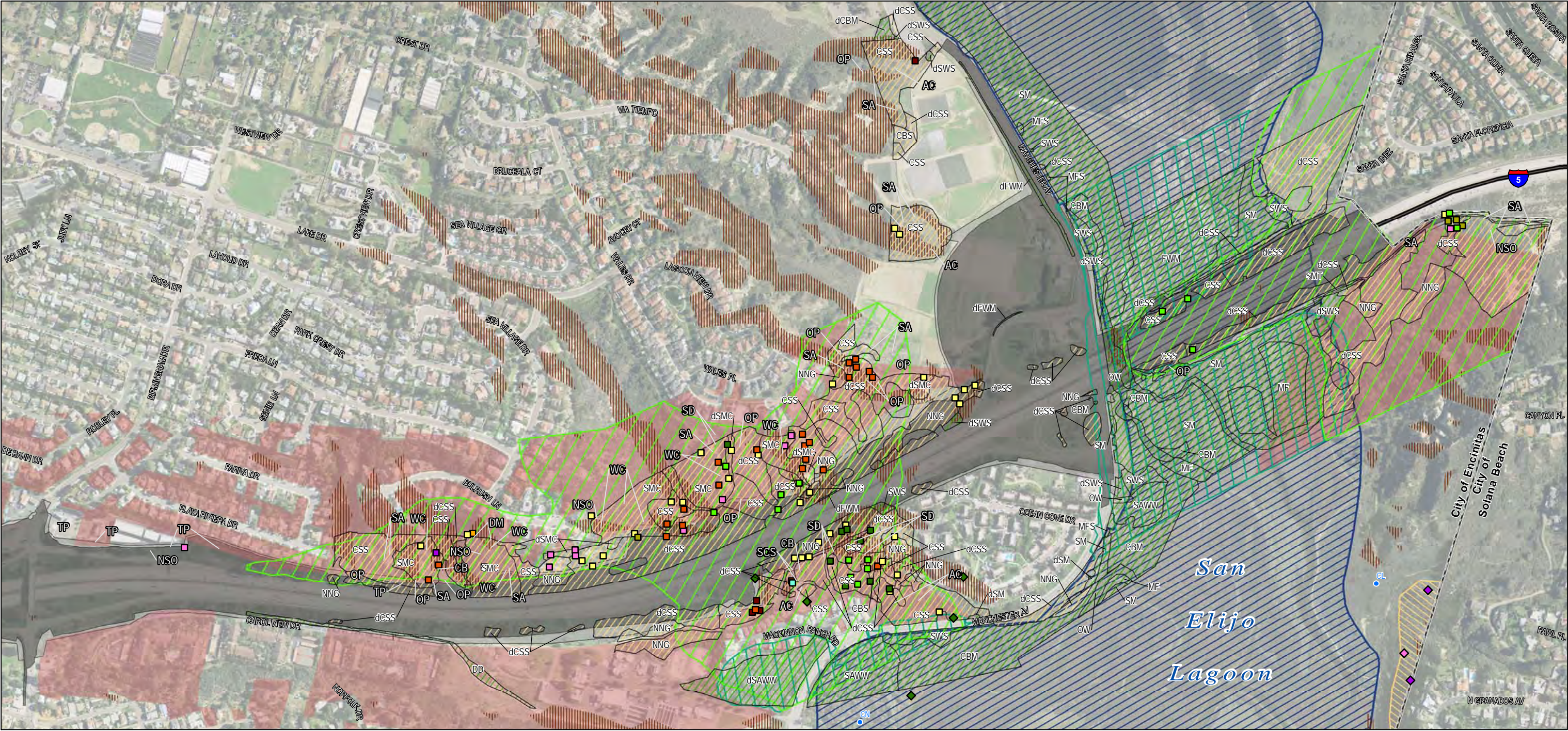
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DRAFT Potential ESHA and Special Status Plant Species Detail Map (City of Encinitas [South])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-4A

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, Imagery: DigitalGlobe March 2008

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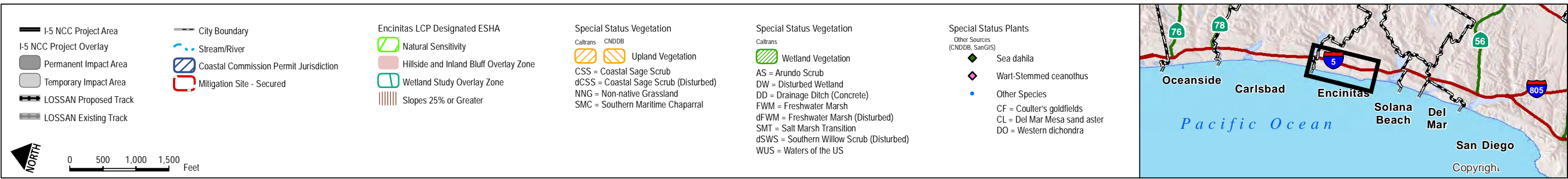
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DRAFT **Potential ESHA and Special Status Plant Species Detail Map (City of Encinitas [South])**

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-4B

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USFWS, Imagery: DigitalGlobe March 2008

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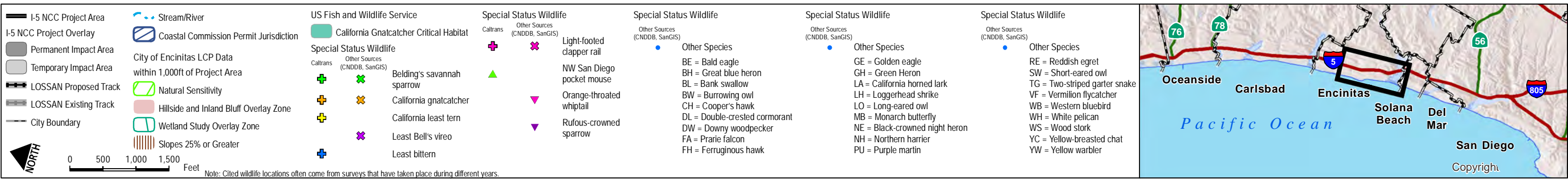
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Potential ESHA and Special Status Plant Species Detail Map (City of Encinitas [North])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-4C

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USFWS, Imagery: DigitalGlobe March 2008

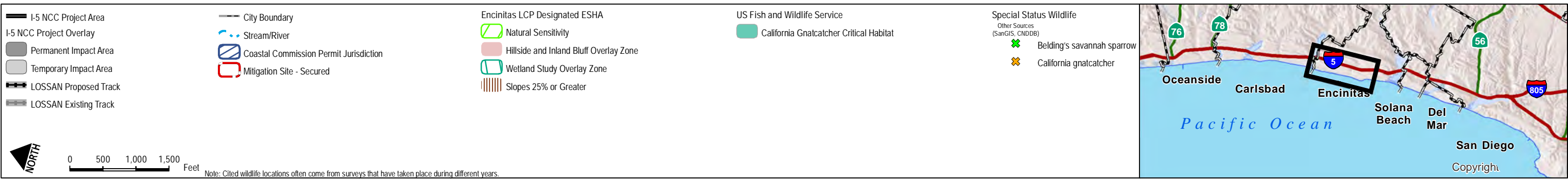
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DRAFT Potential ESHA and Special Status Wildlife Species Detail Map (City of Encinitas [South])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-4D

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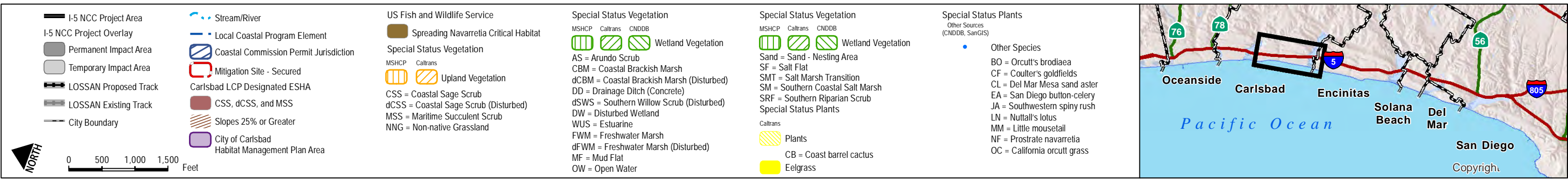
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DRAFT Potential ESHA and Special Status Wildlife Species Detail Map (City of Encinitas [North])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-4E

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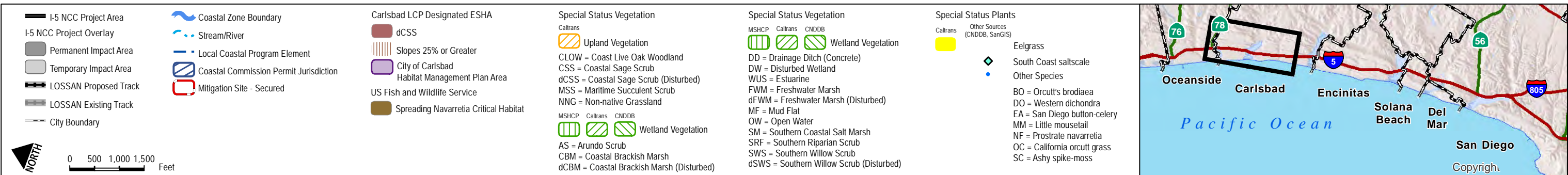
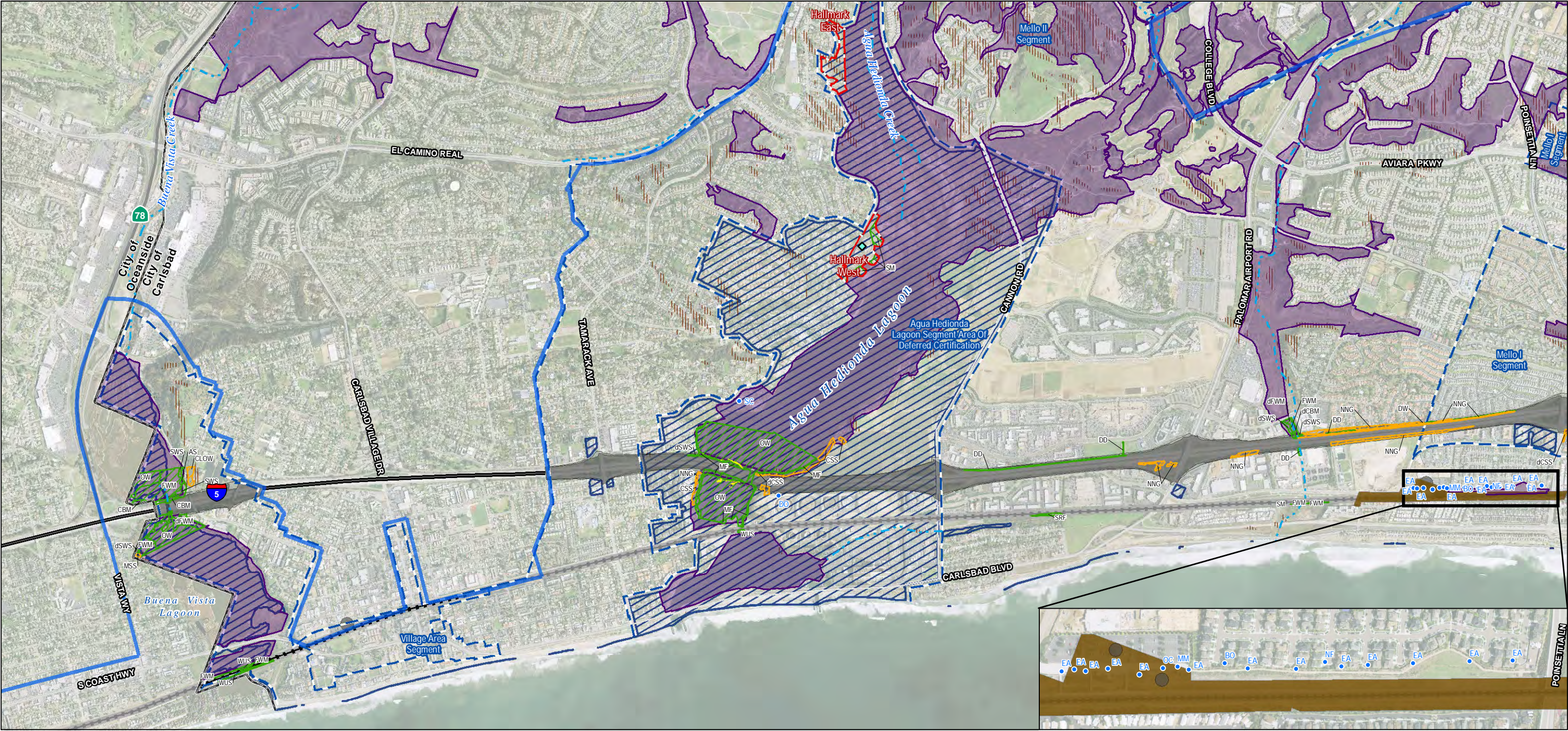
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Potential ESHA and Special Status Plant Species Detail Map (City of Carlsbad [South])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-5A

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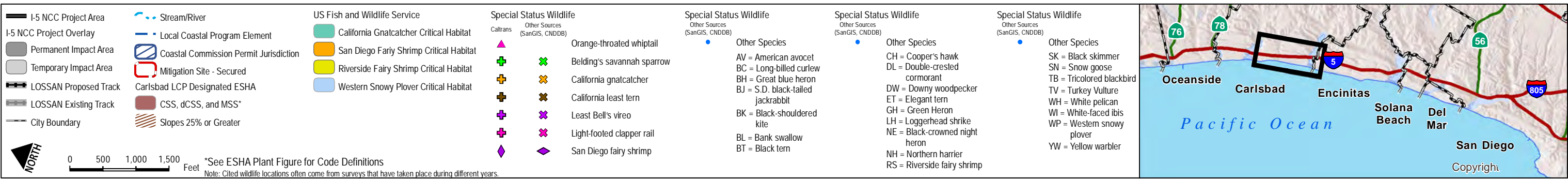
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Potential ESHA and Special Status Plant Species Detail Map (City of Carlsbad [North])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-5B

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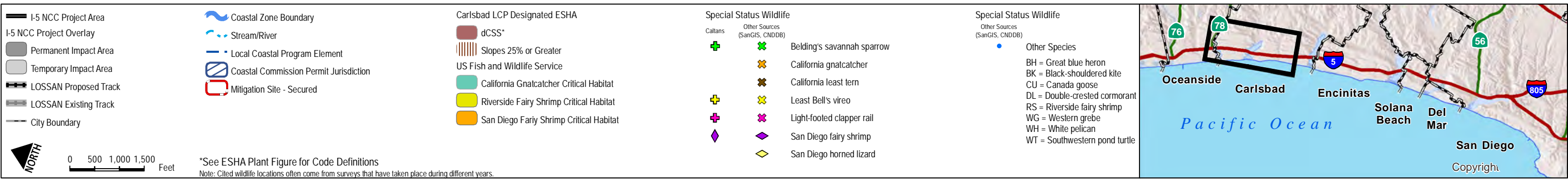
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DRAFT Potential ESHA and Special Status Wildlife Species Detail Map (City of Carlsbad [South])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-5C

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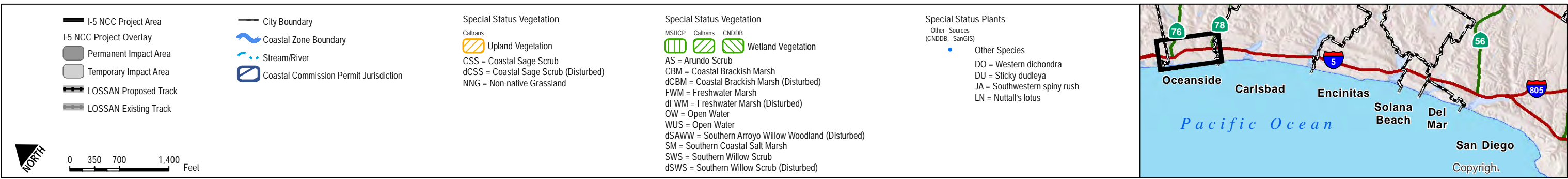
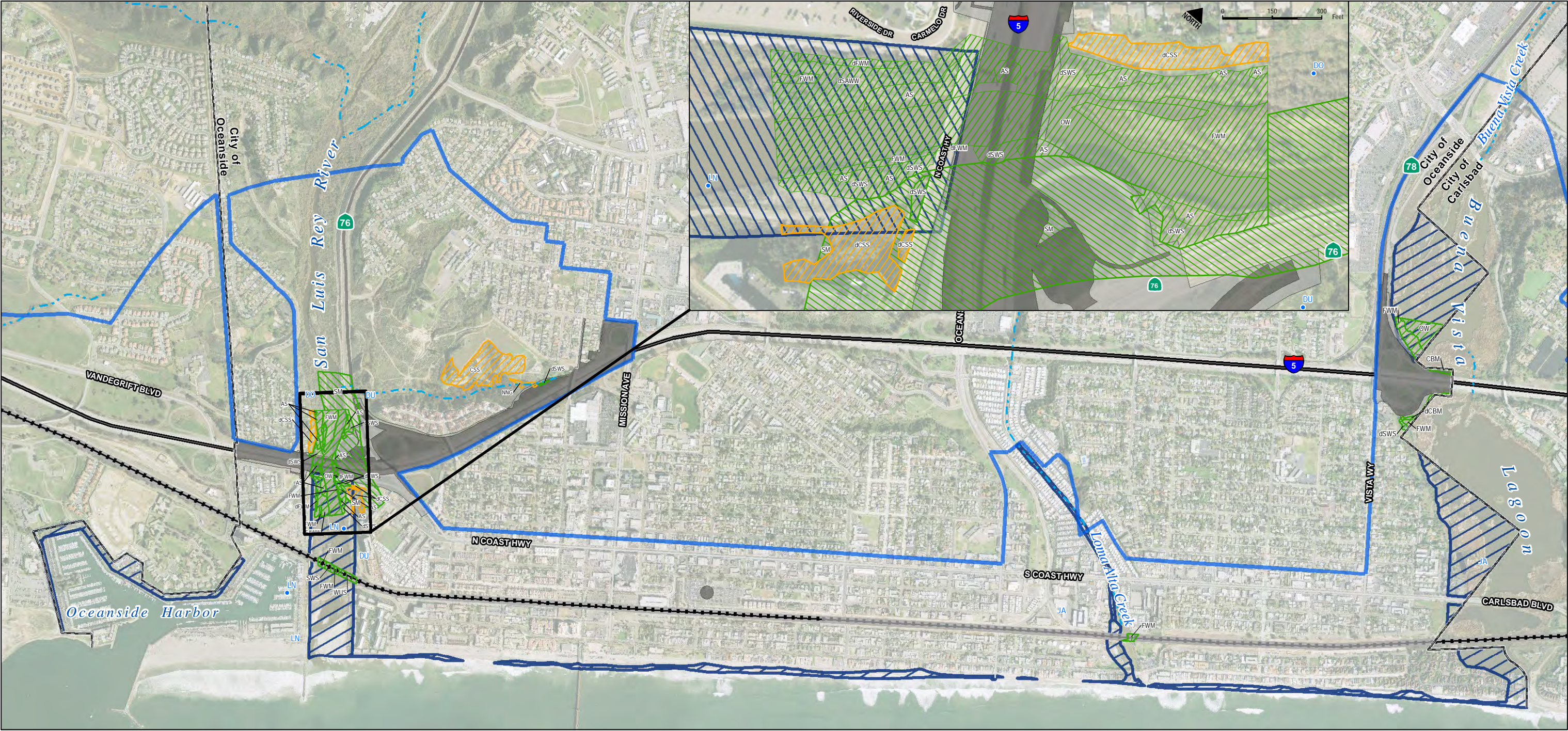
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DRAFT Potential ESHA and Special Status Wildlife Species Detail Map (City of Carlsbad [North])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-5D

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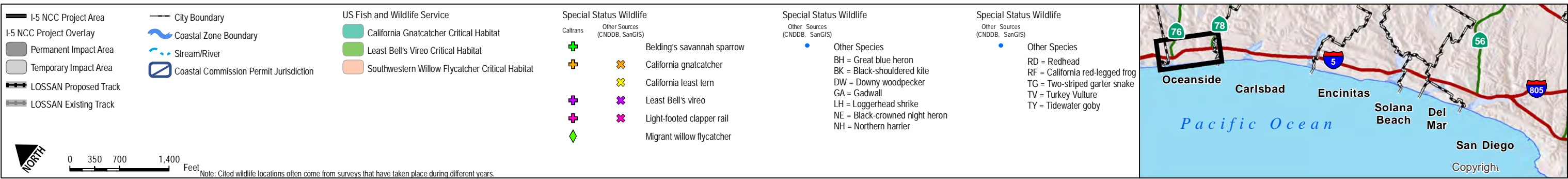
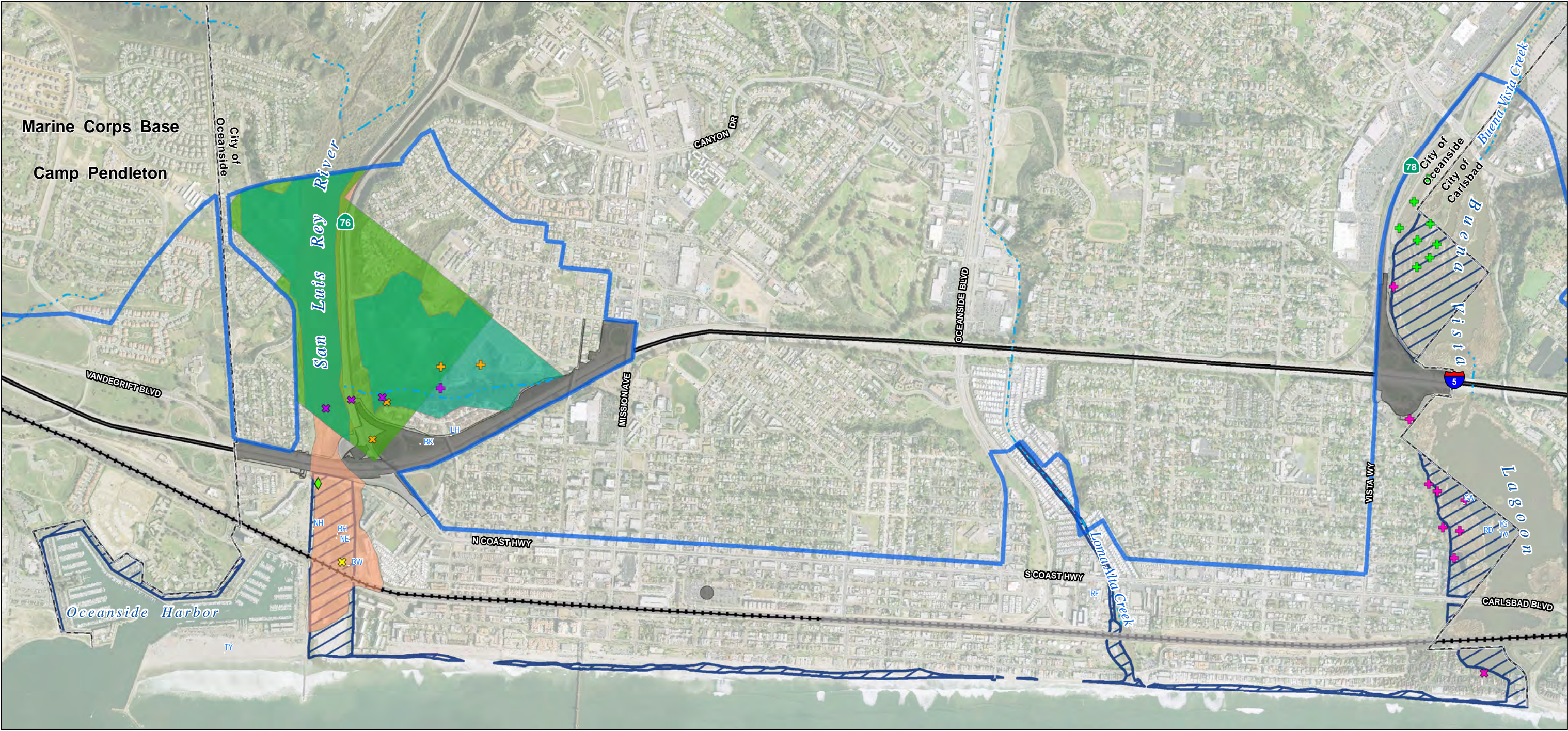
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Potential ESHA and Special Status Plant Species Detail Map (City of Oceanside)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-6A

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG. Imagery: DigitalGlobe March 2008

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Potential ESHA and Special Status Wildlife Species Detail Map (City of Oceanside)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

FIGURE 5.5-6B

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5.6 ARCHAEOLOGICAL AND PALEONTOLOGICAL RESOURCES

5.6.1 Archaeological and Paleontological Resources in the Corridor

The North Coast Corridor (NCC) is located in a region of sensitivity for archaeological and paleontological resources. The corridor is located in an area of San Diego County with the potential to include archaeology sites associated with the San Dieguito Complex (dating as far back as 8000 to 10000 years before present [B.P.]), and with the La Jolla Complex (generally dating between 3000 and 8000 B.P.), but with some evidence of continued occupation occurring between 1300 and 3000 B.P. Archaeological resources most commonly observed within these sites in the region include lithic scatters, milling stations, shell middens, and quarries. Late Period sites, dating between 200 to 1300 B.P., are less common in the corridor and are characterized by resources associated with a more sedentary settlement system, including habitation or village sites, and which have the potential to include midden, rock features, and, in some cases, human burials. In addition, as is with much of California, the corridor area is subject to complex, active geologic processes that have resulted in surface exposure of many rock units with high paleontological sensitivity. As such, the corridor also contains a rich geologic record.

5.6.1.1 LOSSAN Rail Corridor Resources

Archaeological Resources

Information regarding the locations of archaeological sites within the Area of Potential Effect (APE) of the rail improvement area was obtained from the California Historical Resources Information System (CHRIS) information centers. The Native American Heritage Commission (NAHC) was also consulted for a search of their Sacred Lands file and lists of Native American contacts,¹ with cultural resource specialist knowledge and background of regional prehistory used to supplement the record's search results. Native American contacts were sent letters providing information about the proposed project alternatives and requesting information about any traditional cultural properties that could be affected by the project. The study area for cultural resources for the LOSSAN rail corridor improvements was defined in the *LOSSAN Final Program EIR/EIS* (September 2007) in consultation with the State Historic Preservation Office (SHPO).² Traditional cultural properties were assessed on a presence/absence basis using record searches of CHRIS repositories for each alignment option.

The *LOSSAN Final Program EIR/EIS* indicates that 6 prehistoric³ and possibly as many as 14 historic archaeological sites⁴ (depending on the Del Mar tunnel option) are located within the APE for the rail improvements and, in some locations of the corridor, there is a high potential for unknown sites to occur, particularly where rail improvements would occur in proximity to the coast and coastal water bodies. No traditional cultural properties⁵ were identified in the APE of any of the alignment options by the NAHC or any Native American tribe.

¹ Consultation with the NAHC was also undertaken in the context of the statewide high-speed rail program, and was used in development of the *LOSSAN Final Program EIR/EIS*.

² The initiation of consultation with the SHPO was done in the context of the statewide high-speed rail program.

³ Prehistoric archaeological sites in California are places where Native Americans lived or carried out activities during the prehistoric period before 1769 AD. Prehistoric sites contain artifacts and subsistence remains, and they may contain human burials.

⁴ Historic archaeological sites in California are places where human activities were carried out during the historic period between 1769 AD and 50 years ago. Some of these sites may be the result of Native American activities during the historic period, but most are the result of Spanish, Mexican, or Anglo-American activities. Other sites may be the result of Asian and African American groups.

⁵ Traditional cultural properties are places associated with the cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community.

Paleontological Resources

Literature and institutional record's research and review of geologic maps and geographic data from the University of California Museum of Paleontology in Berkeley resulted in designating areas within the APE as having "high," "low," or "undetermined" paleontologic sensitivity. High sensitivity areas include sedimentary units with a high potential for containing significant nonrenewable paleontological resources, including units that contain a high density of recorded vertebrate fossil sites, have produced vertebrate fossil remains within the study area and/or vicinity, and are very likely to yield additional remains within the study area. Low sensitivity areas include rock units with no or a very low density of recorded resource localities, those that have produced little or no fossil remains within the study area and/or vicinity, and units not likely to yield any remains within the study area. Undetermined sensitivity areas include rock units with limited exposure(s) in the study area and that have been studied very little, and units in which there are no known recorded paleontological resource localities; however, in other areas, the same or a similar rock unit contains sufficient paleontological resource localities to suggest that exposures to disturbance of the unit within the rail right-of-way have potential to yield fossil remains.

The study area for paleontological resources for the LOSSAN rail corridor improvements was defined in *LOSSAN Final Program EIR/EIS* as 100 feet on each side of the centerline of proposed alignment options (including station locations), in both non-urban and urban areas. The study area for paleontological resources is limited to the area that would potentially be disturbed by earthwork construction activities.

The *LOSSAN Final Program EIR/EIS* indicates the paleontological sensitivity rating is high throughout the NCC. Geologic formations within the rail corridor that have the potential to include paleontological resources include:

- The Ardath Shale and Scripps Formation along the rail segments from Highway 52 to San Diego, with shark, ray, bony fish, marine microorganism and macroinvertebrate, rhinoceros, artiodactyl, brontothere, uinathere, crocodile, turtle, as well as wood fossils.
- The Delmar Formation in Del Mar and between the I-5/I-805 merge and Highway 52, with estuarine vertebrate and invertebrate, aquatic reptile, and rhinoceros fossils.
- The Torrey Sandstone from Encinitas to Solana Beach and Del Mar, with plant and marine invertebrate fossils.
- The Capistrano Formation from Camp Pendleton, Oceanside, and Carlsbad, with whale, walrus, sea cow, fur seal, sea bird, shark, ray, bony fish, and kelp fossils.
- The San Diego Formation along Highway 52 to San Diego, with shark, ray, bony fish, marine invertebrate, sea bird, walrus, fur seal, cow, whale, dolphin, terrestrial mammal, wood, and leaf fossils.
- The Lindavista Formation along I-5/I-805, with marine invertebrate, shark, and whale fossils.
- The Bay Point Formation along Highway 52 to San Diego, with shark, ray, bony fish, and mollusk fossils.
- Unnamed marine terrace deposits from Camp Pendleton through Encinitas and Solana Beach to the Santa Fe Depot in San Diego, with marine invertebrate, shark, ray, bony fish, and terrestrial mammal fossils.

5.6.1.2 I-5 Highway Corridor Resources

Archaeological Resources

Numerous studies were conducted and reviewed in preparing the *I-5 NCC Project Draft EIR/EIS* (June 2010), including archaeological and historic architecture field surveys to identify cultural resources; archaeological test excavations designed to determine the nature and significance of the sites within the APE; a geomorphic study to determine the potential for buried soils and cultural deposits to occur within the APE; data recovery plans for two sites that no longer will be adversely affected by the proposed improvements; and an Environmentally Sensitive Area (ESA) Action Plan designed to prevent direct or indirect impacts to cultural resources located adjacent to, but outside, project construction activities. In addition, numerous archival sources identified resources within the APE, including the CHRIS repository at San Diego State University, local historical societies, Native American tribes and individuals, historical maps and photographs, and discussions with long-time area residents. CHRIS is administered by the California Department of Parks and Recreation and includes all resources listed in the California Register of Historical Resources (CRHR); all resources in California listed or eligible for listing in the National Register of Historic Places (NRHP); and traditional cultural properties, including some Native American traditional cultural sites identified through consultation with the California Department of Parks and Recreation (Section 106 of National Historic Preservation Act), the SHPO, or the NAHC.

The APE for cultural resources within the highway improvement area was developed in consultation with the project archaeologist, project manager, and project engineers, with continuous input from design and other environmental functional units. The APE was established as the limits of future right-of-way for the roadway work, which considered potential affected areas, including proposed soundwall locations outside the right-of-way, biological mitigation sites, community enhancements and trails outside the right-of-way, and construction and utility easements.

A total of 32 archaeological sites were identified within or immediately adjacent to the APE for the highway improvement area. Of these, 14 archaeological sites are considered eligible for the NRHP/CRHR, and all fall outside the project's Area of Direct Impacts (ADI) and therefore would not be directly affected by the proposed project. As a result of project redesign and the selection of the Locally Preferred Alternative (8+4 with Buffer), two prehistoric archaeological sites, CA-SDI-12670 and CA-SDI-17928, will no longer be affected by soundwalls and have been removed from the APE. Remaining sites inside the APE for the highway improvements were deemed not eligible for the NRHP/CRHR for various reasons, including lack of cultural remains, no further research potential, and/or highly disturbed or displaced deposits. These conclusions are based on the results of archaeological investigations and Native American consultations.

Paleontological Resources

A paleontology study (*Paleontological Resource Assessment, I-5 NCC Project, Caltrans District 11, San Diego County, California*) was conducted for the highway improvements and identified the presence of geologic formations within the I-5 highway corridor that could contain important fossil remains within the project footprint. The following geologic formations within the I-5 highway corridor could include paleontological resources:

- The Delmar Formation from Sorrento Valley in the south to at least Batiquitos Lagoon in the north, and from the coast inland to La Costa and Rancho Santa Fe with well-preserved to poorly preserved remains of estuarine invertebrates (e.g., clams, oysters, and snails) and estuarine vertebrates (e.g., sharks, rays, and fishes). An extremely important locality at Swami's Point in

Encinitas has yielded well-preserved skull remains of aquatic reptiles (e.g., crocodile) and terrestrial mammals (e.g., tillodont and early rhinoceros).

- Torrey Sandstone Formation from Sorrento Valley in the south to Batiquitos Lagoon in the north, and from the coast inland to La Jolla Valley and Olivenhain with potentially important remains of fossil plants and marine invertebrates (e.g., clams, oysters, snails, and barnacles) and vertebrate fossil remains, including teeth of crocodiles, sharks, and rays.
- Ardath Shale Formation La Jolla, Pacific Beach, and Clairemont in the south to Carmel Valley in the north with marine microfossils, macroinvertebrates, and vertebrates (e.g., sharks, rays, and bony fish).
- Scripps Formation from Presidio Park in the south, north to Del Mar, and from Clairemont east to La Jolla Valley, with remains of marine organisms, including clams, snails, crabs, sharks, rays, and bony fishes, and remains of fossil reptiles (e.g., crocodile and turtle) and land mammals (e.g., uimathere, brontothere, rhinoceros, and artiodactyl).
- The Santiago Formation—containing three recognized members referred to as “A,” “B,” and “C”—occurs in the general area of Olivenhain and Cardiff-by-the-Sea, and collectively includes remains of turtles, snakes, lizards, crocodiles, birds, and mammals (e.g., opossums, insectivores, primates, rodents, brontotheres, tapirs, protoreodonts, rhinoceros, and uimathere) and various types of marine and estuarine mollusks.
- An unmapped formation of Oligocene age occurs in the exposed sedimentary rocks of the Santiago Formation and includes terrestrial mammal fossils.
- The San Onofre Breccia is an alluvial fan and nearshore marine rock unit (from Oceanside, north through the coastal portion of the Camp Pendleton Marine Corps Base) with remains of nearshore marine foraminifers and bivalve mollusks and mammals.
- The San Mateo Formation (from the San Luis Rey River Valley in Oceanside north through Camp Pendleton Marine Corps Base to San Mateo Point near San Clemente) contains fossils of marine vertebrates, including rays, sharks, bony fishes, sea birds, dolphins, sperm whale, baleen whales, sea cow, fur seals, walrus, and sea otter, marine invertebrates (e.g., clams, scallops, snails, and sea urchins), and terrestrial mammal remains (e.g., horse, camel, llama, and peccary) have been recovered from these deposits.
- The Lindavista Formation occurs over a large area (from the International Border north to San Clemente) and contains remains of nearshore marine invertebrates, including clams, scallops, snails, barnacles, and sand dollars, as well as sparse remains of sharks and baleen whales.
- The Bay Point Formation occurs along the coast (from the International Border to San Clemente) and contains remains of marine invertebrate fossils (e.g., mollusks, crustaceans, and echinoderms) as well as sparse remains of marine vertebrates (e.g., sharks, rays, and bony fish) and, in the non-alluvial deposits, includes concentrated fossil remains of terrestrial mammals (e.g., ground sloth, dire wolf, tapir, horse, deer, camel, mastodon, and mammoth).

5.6.2 PWP/TREP Concerns

Environmental documentation and analysis prepared for the PWP/TREP rail and highway corridor improvements indicate that there are known archaeological resources within the project improvement areas that could be affected by proposed grading and construction activities. As many archaeological resources have been disturbed by past development projects, the remaining sites within the corridor have become increasingly valuable resources. Further loss and degradation could occur if corridor projects located in areas of sensitivity are not properly designed, monitored, and managed during earth-moving activities and construction to avoid or mitigate potential impacts to the resource.

In California, fossils are considered a limited, nonrenewable, and highly sensitive scientific resource. Direct impacts to paleontological resources could occur when earthwork activities (e.g., mass grading operations) cut into geological deposits containing fossils, thereby directly damaging the resource, or exposing paleontological resources to potential indirect impacts (e.g., surficial erosion, uncontrolled specimen collection).

5.6.2.1 LOSSAN Rail Corridor Impact Assessment

Archaeological Resources

Approximately 6 prehistoric and possibly as many as 14 historic archaeological sites (depending on the Del Mar tunnel option) are located within the APE for the rail improvements, and in some locations of the corridor there is a high potential for unknown sites to occur, particularly where rail improvements would occur in proximity to the coast and coastal water bodies.

Generally, rail alignment options that involve tunneling would avoid most impacts to cultural resources because of the depth of the tunneling; however, at-grade improvements—including constructing new tracks and extended paved surfaces, and constructing transit stations and parking structures or lots—would disturb the ground surface, potentially resulting in impacts to resources. In addition, trenching for rail improvements would involve subsurface disturbance and therefore could increase the potential to encounter unknown archaeological sites. As such, the trench options for rail improvements would have a somewhat higher potential for impacts to archaeological resources than at-grade options.

Paleontological Resources

Potential impacts to paleontological resources from proposed rail improvements could occur during earthwork activities involving sensitive geologic formations that could damage paleontological resources directly, or expose fossils to long-term surface erosion and/or uncontrolled specimen collection.

5.6.2.2 I-5 Highway Corridor Impact Assessment

Archaeological Resources

Eleven archaeological sites have been identified in the highway corridor and are considered eligible for the NRHP/CRHR. All of these sites fall outside the project's ADI and therefore would not be directly affected by the proposed highway improvements. Implementation measures, identified in Section 5.6.3.3, that establish an ESA Action Plan would ensure that archaeological sites located outside the project's ADI would be protected from impacts.

Paleontological Resources

Impacts to paleontological resources could occur during earthwork activities involving sensitive geologic formations that could damage paleontological resources directly, or expose fossils to long-term surface erosion and/or uncontrolled specimen collection.

5.6.3 PWP/TREP Opportunities, Design/Development Strategies and Policies/Implementation Measures

While the proposed rail and highway improvements have the potential to affect sensitive archaeological and paleontological resources in the corridor, the majority of program improvements would occur within previously disturbed and developed areas of existing rail and highway rights-of-way and adjacent land uses. In this regard, the PWP/TREP program improvements have been designed to avoid and minimize, to a large extent, the potential for adverse effects to cultural resources.

5.6.3.1 PWP/TREP Policies

Caltrans and San Diego Association of Governments (SANDAG) would implement the following policy to ensure that proposed improvements are designed, implemented, and maintained to provide for maximum protection of archaeological and paleontological resources:

- **Policy 5.6.1:** New highway development, rail station and pedestrian crossings, and associated community and resource enhancement improvements shall strive to protect and minimize impacts to archaeological and paleontological resources. Where new development may potentially adversely impact archaeological or paleontological resources, appropriate mitigation measures, including the measures identified below, shall be required and implemented.

5.6.3.2 PWP/TREP Design/Development Strategies

The following design and development strategies provide guidance for designing and implementing specific PWP/TREP projects consistent with the archaeological and paleontological resources protection policies of the Coastal Act:

1. A qualified Native American monitor and archaeologist, or paleontologist, as applicable, should be present at all times during ground-disturbing activities occurring in areas of known or suspected archaeological and/or paleontological significance. Should previously unknown archaeological and/or paleontological resources be encountered during construction activities, all activity that could damage or destroy these resources should be temporarily suspended until qualified archaeologists and/or Native American representatives, or paleontologists, as applicable, have examined the site and mitigation measures have been developed that address impacts of the project on archaeological and/or paleontological resources. Development should incorporate measures to address issues and impacts identified through any archaeologist/paleontologist and/or Native American consultation.
2. The following should be considered as mitigation measures for potential impacts to eligible or listed archaeological sites as identified by the SHPO within the NCC:
 - Develop procedures for fieldwork, identifying, evaluating, and determining potential effects to cultural resources in consultation with the SHPO and Native American tribes. On-site monitoring should be incorporated in the fieldwork when sites are known or suspected of containing Native American human remains. All procedures should comply with federal and state statutes concerning burials.
 - Avoid impacts wherever feasible, and if not feasible, minimize scale of impact to the extent practical.
 - Cap or cover sensitive site before construction.
 - Provide data recovery where impacts would destroy or affect data of a potentially significant site.
3. Project-level analysis for potential archaeological resource impacts of new highway, rail station and pedestrian crossings, and associated community and resource enhancements improvements should be conducted pursuant to future environmental and phased federal consistency review, when applicable, and should include a field survey of the APE, review of geomorphological maps and relevant studies, and consultation with the SHPO and appropriate Native American tribes and individuals knowledgeable about the nature and locations of traditional cultural properties to assess the potential for corridor segments to contain significant archaeology sites within the APE.
4. The APE for new highway, rail station, and pedestrian crossings, and associated community and resource enhancements improvements should be defined as all areas that could include direct and

indirect impacts from construction, including locations of any construction easements and construction-related facilities (such as equipment staging areas, borrow and disposal areas, and access roads).

5. All identified archaeological resources should be evaluated using NRHP and CRHR eligibility criteria. Where applicable, evaluating archaeological sites should include preparing test plans for archaeological resources that contain regionally relevant research questions. Lead agencies should consult with the SHPO on test plans and determinations of eligibility for evaluated resources, and any required mitigation measures and reporting requirements.
6. A paleontological resource assessment program should be completed for future project-level environmental and phased federal consistency review, when applicable. The assessment program should include field reconnaissance to identify exposed paleontological resources and more precisely determine potential paleontological sensitivity for the project. In addition, a Paleontological Resources Treatment Plan should be prepared by a qualified paleontologist, which should address the treatment of paleontological resources discovered prior to and constructing improvements. Mitigation measures for paleontological resources should be developed and implemented at the project-level for proposed NCC improvements, and may include the following measures, where appropriate:
 - Workers' education on resources protection measures
 - Recovery of fossils identified during the field reconnaissance
 - Construction monitoring
 - Development of protocols for handling fossils discovered during construction, likely including temporary diversion of construction equipment so that the fossils could be recovered, identified, and prepared for dating, interpreting, and preserving at an established, permanent, accredited research facility.

5.6.3.3 Implementation Measures

Caltrans/SANDAG would utilize the following implementation measures for all projects subject to Notice of Impending Development (NOID) procedures:

- **Implementation Measure 5.6.1:** A qualified Native American monitor and qualified archaeologist, or paleontologist, as applicable, shall be present during ground-disturbing activities occurring in areas of known or suspected archaeological and/or paleontological significance as identified in the *I-5 NCC Project Draft EIR/EIS*, the *LOSSAN Final Program EIR/EIS*, and/or as listed within any affected local jurisdiction's LCP. If previously unknown archaeological and/or paleontological resources are encountered during construction, activities that can damage or destroy these resources shall be temporarily diverted to another location until a qualified archaeologist or paleontologist, as applicable, has examined the finds and determined the appropriate measures necessary to mitigate any potential adverse impacts. Development shall incorporate measures to address issues and impacts identified through any archaeologist/paleontologist and/or Native American consultation, which shall be detailed in all project NOID submittals, where applicable.
- **Implementation Measure 5.6.2:** An ESA Action Plan shall be developed and implemented by Caltrans/SANDAG for rail, highway, and community enhancement construction activities located in the vicinity of eligible archaeological sites identified in the *I-5 NCC Project Draft EIR/EIS*, the *LOSSAN Final Program EIR/EIS*, and/or as listed within any affected local jurisdiction's LCP to prevent direct or indirect impacts to cultural resources located adjacent to project construction activities. The ESA Action Plan shall identify the individuals involved and their roles and responsibilities for implementing the plan. Consistent with Implementation Measure 5.6.1, the

construction contract shall also contain language related to unanticipated discoveries should they be made during construction, including diverting activities away from such finds until an archaeologist can assess their nature and significance. If unanticipated discoveries should occur, the SHPO shall be contacted, and the Section 106 consultation process shall be reopened until a plan is developed to address either the preservation of the remains in place, or their proper removal and treatment. Appropriate Native American representatives shall be contacted to participate in this process.

- **Implementation Measure 5.6.3:** Should unanticipated human remains be discovered during construction activities, Caltrans/SANDAG shall implement all measures in compliance with State Health and Safety Code Section 7050.5 and Public Resources Code (PRC) Section 5097.98. All disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the county coroner, NAHC, and Caltrans District 11 Chief of the Environmental Analysis Branch (if discovered within Caltrans's jurisdictional boundaries) would be contacted, as applicable, who shall coordinate with the Native American most likely descendants (MLD) on the respectful treatment and disposition of the remains.
- **Implementation Measure 5.6.4:** A paleontological mitigation program shall be developed and implemented by Caltrans/SANDAG during construction activities in areas of paleontological sensitivity as identified in the *I-5 NCC Project Draft EIR/EIS*, the *LOSSAN Final Program EIR/EIS*, and/or as listed within any affected local jurisdiction's LCP and shall include the following measures:
 - **Monitoring:** A qualified principal paleontologist (M.S. or Ph.D. in paleontology or geology familiar with paleontological procedures and techniques) shall be present at pre-grading meetings to consult with grading and excavation contractors. A paleontological monitor, under the direction of the qualified principal paleontologist, shall be on-site to inspect cuts for fossils at all times during original grading involving sensitive geologic formations.
 - **Macrofossil/Microfossil Analysis:** When fossils are discovered, the paleontologist (or paleontological monitor) shall recover the fossil remains. Construction work in these areas shall be halted or diverted to allow recovery of fossil remains in a timely manner. Fossil remains collected during the monitoring and salvage portion of the mitigation program shall be cleaned, repaired, sorted, and cataloged.
 - **Report Preparation:** Prepared fossils, along with copies of all pertinent field notes, photos, and maps, shall be deposited in a scientific institution with paleontological collections. A Paleontological Resource Assessment Report shall be prepared by the San Diego Natural History Museum, which shall outline the results of the mitigation program.

5.6.4 Coastal Act Consistency

Coastal Act Section 30244 provides for protecting archaeological resources of the Coastal Zone:

Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

The Coastal Act requires that archaeological and paleontological resources in the Coastal Zone be protected from adverse impacts by applying reasonable mitigation measures. Section 30116 of the Coastal Act defines archaeological sites that are referenced in the California Coastline and Recreation Plan or as designated by the SHPO as sensitive coastal resources.

The majority of rail program improvements would be located in previously developed and disturbed areas within the existing right-of-way. As such, potential impacts to archaeological and paleontological resources would be at least partially mitigated by design in an otherwise highly sensitive region for cultural resources. In the case of the proposed highway improvements, the location of archaeological resources was determined early in the planning stages for the improvements, which allowed for project redesign to avoid the known resources in the corridor. The archaeological sites that initially were within the project's APE fell out as the project was redesigned to avoid them.

Approximately 6 prehistoric and possibly as many as 14 historic archaeological sites (depending on the Del Mar tunnel option) are located within the APE for the rail improvements and, in some locations of the corridor, there is a high potential for unknown sites to occur particularly where rail improvements would occur in proximity to the coast and coastal water bodies.

Rail alignment options that involve tunneling would generally avoid most impacts to cultural resources due to the depth of the tunneling; however, at-grade improvements would disturb the ground surface, potentially resulting in impacts to resources. In addition, trenching for rail improvements would involve subsurface disturbance and therefore could increase the potential to encounter unknown archaeological sites.

The at-grade and the trench options for rail improvements from Oceanside to Solana Beach would remain within the existing LOSSAN rail corridor alignment, thereby minimizing potential impacts to previously undisturbed resources; however, the *LOSSAN Final Program EIR/EIS* identifies a high-build alternative within these areas that includes approximately 2.5 miles of trenching through downtown Carlsbad and downtown Encinitas, which could affect archaeological resources given the subsurface disturbance associated with these improvements.

Within the area of Del Mar, two archaeological sites are recorded within the APE for the LOSSAN rail tunnel option under Camino del Mar, and given the proximity of the segment to the coast and San Dieguito River and Lagoon and to known sites in the area, there is an unknown but possibly high potential for prehistoric archaeological sites to occur in the improvement area. The I-5 highway corridor tunnel option within Del Mar would leave the LOSSAN rail corridor near the Del Mar Racetrack and turn inland, passing along the southern shore of San Dieguito Lagoon, and then proceed in a tunnel under I-5. Eight archaeological sites are recorded within the APE for this option. In addition, numerous prehistoric sites are known to exist along the shores and bluffs of San Dieguito Lagoon. Due to the proximity of this option to the lagoon and coast, there is an unknown, but possibly high potential for prehistoric archaeological sites to occur in the improvement area.

Both options in the Del Mar area would involve deep tunnels, which would avoid most impacts to cultural resources; however, the I-5 highway corridor tunnel option would require new at-grade and aerial rail infrastructure at the south end of San Dieguito Lagoon. As such, the I-5 highway corridor tunnel option would have a higher potential for impacts to unknown archaeological sites than the Camino del Mar tunnel option.

PWP/TREP implementation measures require that paleontological mitigation for proposed improvements would be carried out during the project's construction phase and consist of monitoring, macrofossil and microfossil analysis, and report preparation. ESAs for adjacent sites would be marked on construction contract plans and would be called out in the contract specifications. A letter would be sent to the resident engineer's file, along with a copy of the ESA Action Plan, which would identify the individuals involved, and their roles and responsibilities for implementing the plan. The construction contract would also contain provisions related to unanticipated discoveries, including diverting activities

away from resources until an archaeologist could assess their nature and significance. If unanticipated discoveries occurred, Section 106 consultation with the SHPO would be reopened.

If unanticipated human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities would cease in any area or nearby area suspected to overlie remains, and the county coroner would be contacted. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner would notify the NAHC, who would then notify the Native American MLD. If the remains were discovered during construction of a Caltrans project component, the person who discovered the remains would simultaneously contact the District 11 Chief of the Environmental Analysis Branch construction so that they could work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC Section 5097.98 would be followed, as applicable.

Additional design and development strategies to address potential impacts to archaeological resources would be evaluated for future project-specific improvement proposals pursuant to future environmental and phased federal consistency review, when applicable. These strategies could include, among other measures, developing procedures for fieldwork; identifying, evaluating and determining potential effects to cultural resources in consultation with the SHPO and Native American tribes; and on-site monitoring of fieldwork when sites are known or suspected of containing resources. Where archaeological sites are identified, impacts would be avoided, wherever feasible. If impacts cannot be avoided, the archaeological site would be evaluated using NRHP and CRHR eligibility criteria. Where applicable, evaluating archaeological sites would include preparing test plans for archaeological resources that contain regionally relevant research questions. The SHPO would be consulted on test plans and determinations of eligibility for evaluated resources and any required mitigation measures and reporting requirements.

Design and development strategies to address potential impacts to paleontological resources could include preparing a paleontological resource assessment program for project-level environmental analyses, where applicable. The assessment program would include field reconnaissance to identify exposed paleontological resources and more precisely determine potential paleontological sensitivity for the project. In addition, a Paleontological Resources Treatment Plan would be prepared by a qualified paleontologist to address the treatment of paleontological resources discovered prior to and during construction of proposed improvements. Mitigation measures for paleontological resources could include, as applicable, workers' education on resources protection measures, recovery of fossils identified during the field reconnaissance, construction monitoring, and development of protocols for handling fossils discovered during construction.

Based on available project and environmental data and the policies and implementation measures included herein, the proposed PWP/TREP improvements would protect archaeological and paleontological resources from substantial adverse impacts through sensitive site design and by applying reasonable mitigation measures, and therefore the PWP/TREP is consistent with Section 30244 of the Coastal Act.

5.6.5 Local Coastal Program Consistency

For LOSSAN rail projects included in the PWP/TREP that improve the movement of freight, the LCP policy consistency analysis provides guidance and background information for analyzing rail-project consistency with Section 30244 of the Coastal Act, as appropriate and applicable (see Chapter 1 for additional discussion of LCP applicability to rail projects that may fall under the exclusive jurisdiction of the Surface Transportation Board). The corridor's LCP archaeological and paleontological resource

policies are summarized with brief city-specific consistency analyses below, which also integrate and supplement the above consistency analysis for Sections 30244 of the Coastal Act.

5.6.5.1 Local Coastal Program Consistency Analysis Summary

The corridor LCPs include policies that mirror, in part, the requirements of Section 30244 of the Coastal Act, which requires that reasonable mitigation measures be required where new development would adversely affect archaeological or paleontological resources as identified by the SHPO. LCPs for San Diego, Encinitas, and Carlsbad include additional and specific policies and development standards that address potential impacts to cultural resources including, among others, requirements for site-specific surveys to determine resource occurrence, significance and eligibility, and implementation of preservation and/or impact mitigation programs to avoid or minimize impacts.

City of San Diego

The City of San Diego LCP contains resource protection policies that address archaeological and/or paleontological resources in the North City Land Use Plan and the Community Plans for Torrey Pines, University, and the North City Future Urbanizing Framework Plan. The LCP and these noted plan components include policies that are unique to this portion of the corridor:

- **North City Land Use Plan**
 - Sites considered by a project archaeologist to be of sufficient significance will be submitted to The City of San Diego for possible designation as City Historical Landmarks. Sites which are, in the opinion of the project archaeologist, eligible for nomination to the National Register of Historic Places, should be so nominated. These actions will become part of the conditions of project approval.
 - Significant archaeological resources located on-site should be preserved either intact underground by incorporating them into local dedicated open space areas or by providing for professional salvage operations. Preservation is usually preferable to salvage to the mitigation of impacts to archaeological resources by a project. Preservation permits future study of the resources with methods and techniques not yet developed, and may provide answers to questions which are yet to be raised. Salvage operations should include coordination between professional archaeologists, college or university classes, archaeological and historical societies, museums, and interested laymen capable of assisting in salvage work under the supervision of qualified professionals.
- **Torrey Pines Community Plan**
 - New development, both public and private, should incorporate site planning and design features that avoid or mitigate impacts to cultural resources. When sufficient plan flexibility does not permit avoiding construction on cultural resource sites, mitigation shall be designed in accordance with guidelines of the SHPO and the State of California NAHC.
- **University Community Plan**
 - Provide for the identification and recovery of significant paleontological resources.
 - Ensure the effective preservation and management of significant archaeological and historic resources.
 - Avoid destruction of native vegetation, wildlife habitats, geologic landmarks, or known archaeological resources.
- **North City Future Urbanizing Framework Plan (NCFUA)**
 - Create the environmental tier, an interconnected, viable system of natural open space that serves to protect and conserve cultural resources, flora, and fauna that occur in the NCFUA.

City of Encinitas

The City of Encinitas LCP designates a Special Study Overlay for Cultural/Historic Resources and includes the following policies to protect significant paleontological, historical, and archaeological resources:

- Make every effort to ensure significant scientific and cultural resources in the planning area are preserved for future generations.
- Require that paleontological, historical, and archaeological resources in the planning area are documented, preserved, or salvaged if threatened by new development.
- Survey to identify historic structures and archaeological/cultural sites...ensure action to ensure preservation.
- The presence, significance and protection of cultural/historic resources should be addressed through the city's environmental review processes and zoning regulations ... a system of screening development applications and building/demolition permits shall be implemented to avoid unintended loss of resources.

City of Carlsbad

The City of Carlsbad LCP incorporates Section 30244 of the Coastal Act and includes other policies that speak to preservation and mitigation for archaeological and paleontological resources. The LCP relies on the environmental impact review process to determine where development will adversely affect archaeological and paleontological resource and notes that site-specific review should also determine the most appropriate methods for mitigating impacts. In addition, several LCP Land Use Segments contain discussions of site-specific archaeological and paleontological resources and appropriate mitigation programs. For the West Batiquitos Lagoon/Sammis Properties Land Use Segment, the LCP provides that a program of preservation and/or impact mitigation regarding archaeological sites located on the affected area shall be completed prior to any development. The Agua Hedionda Land Use Plan similarly provides for development and implementation of site and resource-specific mitigation measures prior to any development based on available impact analyses within the area, and identifies a list of specific sites with archaeological or cultural resources. In addition, within the Mello II Land Use Segment, Policy 8-4 specifically discusses archaeological and paleontological resources, and refers to completion of appropriate environmental review and implementation of mitigation.

As discussed in detail in the Coastal Act policy consistency analysis above, PWP/TREP improvements would protect archaeological and paleontological resources from substantial adverse impacts through sensitive site design and by applying reasonable mitigation measures. As such, the archaeological and paleontological resource protection policies of the city LCPs noted above do not present potential policy conflicts for the proposed PWP/TREP improvements, and therefore these policies would not need to be amended to implement the proposed transportation facility improvements.

5.7 COASTAL VISUAL RESOURCES

5.7.1 Visual Resources in the Corridor

The North Coast Corridor (NCC) is the primary transportation link between two of the major metropolitan regions in California (Los Angeles and San Diego) and although the corridor has experienced a significant amount of urban growth, its scenic character has managed to persist as a unique coastal resource. Development densities within the NCC have remained low, for the most part, and large groupings of mature trees, large open space areas with significant natural resources, and the coastline are the primary coastal visual resources interspersed in the developed landscape. Much of the NCC's existing rail and highway system parallels the Pacific Ocean's coastline and, in many locations, the transportation facilities offer expansive views of the coastline, river valleys, coastal lagoons, beaches, and other upland scenic resources.

5.7.1.1 LOSSAN Rail Corridor Resources

The Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail corridor provides travelers with a variety of significant coastal views and distinct visual experiences, generally characterized as urban mixed use, suburban and coastal communities, natural open space areas, and expansive ocean and coastline environments.

Traveler Views

Given the proximity of the rail alignment to the shoreline, expansive views of the ocean and coastline are available along many portions of the NCC. This is particularly true in Del Mar where the rail corridor lies atop a coastal bluff (Figure 5.7-1B).

The rail corridor crosses five coastal lagoons and two river valleys, which represent some of the last wetlands of their kind in Southern California. These coastal waterbodies are coupled with expansive open space areas that offer visual relief from views of surrounding urban development and also serve as viewsheds, providing visual access to the ocean and inland foothills. These scenic coastal resources exist at the following locations (from south to north):

- Las Peñasquitos Lagoon in San Diego
- San Dieguito Lagoon/River Valley in Del Mar
- San Elijo Lagoon in Solana Beach and Encinitas
- Batiquitos Lagoon in Carlsbad
- Agua Hedionda Lagoon in Carlsbad
- Buena Vista Lagoon in Carlsbad and Oceanside
- San Luis Rey River in Oceanside

The rail corridor also traverses Torrey Pines State Beach and Reserve, offering travelers extensive views of the shoreline, natural landforms and open space areas, and coastal bluffs (Figure 5.7-1A and Figure 5.7-1B). In addition, along various portions of the rail facility, undeveloped and vegetated hillside terrain sustains the overall visual quality of the corridor.

Along the rail corridor, much of the developed area consists of coastal communities where the ocean and local beaches influence the visual setting of the area. Unlike many of the NCC inland areas east of the I-5 highway corridor, much of the developed areas adjacent to the rail corridor have retained a smaller, village-like character common of older, seaside communities.

Adjoining Views

The railway itself is a noted visual feature in some areas of the rail corridor when viewed from off-site locations, particularly where the railway traverses large open space areas such as the corridor's lagoons and the shoreline. In Del Mar, the railway—located on a narrow portion of the coastal bluffs where the existing tracks are set between the shoreline below and residences above—provides significant views of the coastline and is also visible by individuals recreating along this area of the coast.

Existing bridges over waterbodies tend to be the most notable visual feature of the railway since these structures typically occur in more open, undeveloped areas. The existing wooden trestle bridges restrict views through the bridge structure due to the large number of relatively closely spaced piles needed to support the bridge. As the railway lies adjacent to and crosses over several natural open space and recreation areas, it is visible to hikers, equestrians, and community park users to varying degrees, depending on the proximity of the alignment to open space and recreation areas accessible to the public. The railway is visible from various public areas within developed areas of the rail corridor, most notably at intersections with vehicle-, bike- and/or pedestrian-crossing locations. Stations occur among developed communities in the corridor and are generally compatible with the surrounding environment.

5.7.1.2 I-5 Highway Corridor Resources

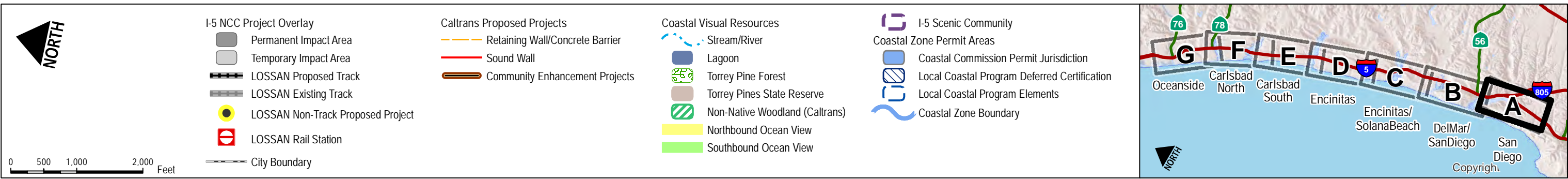
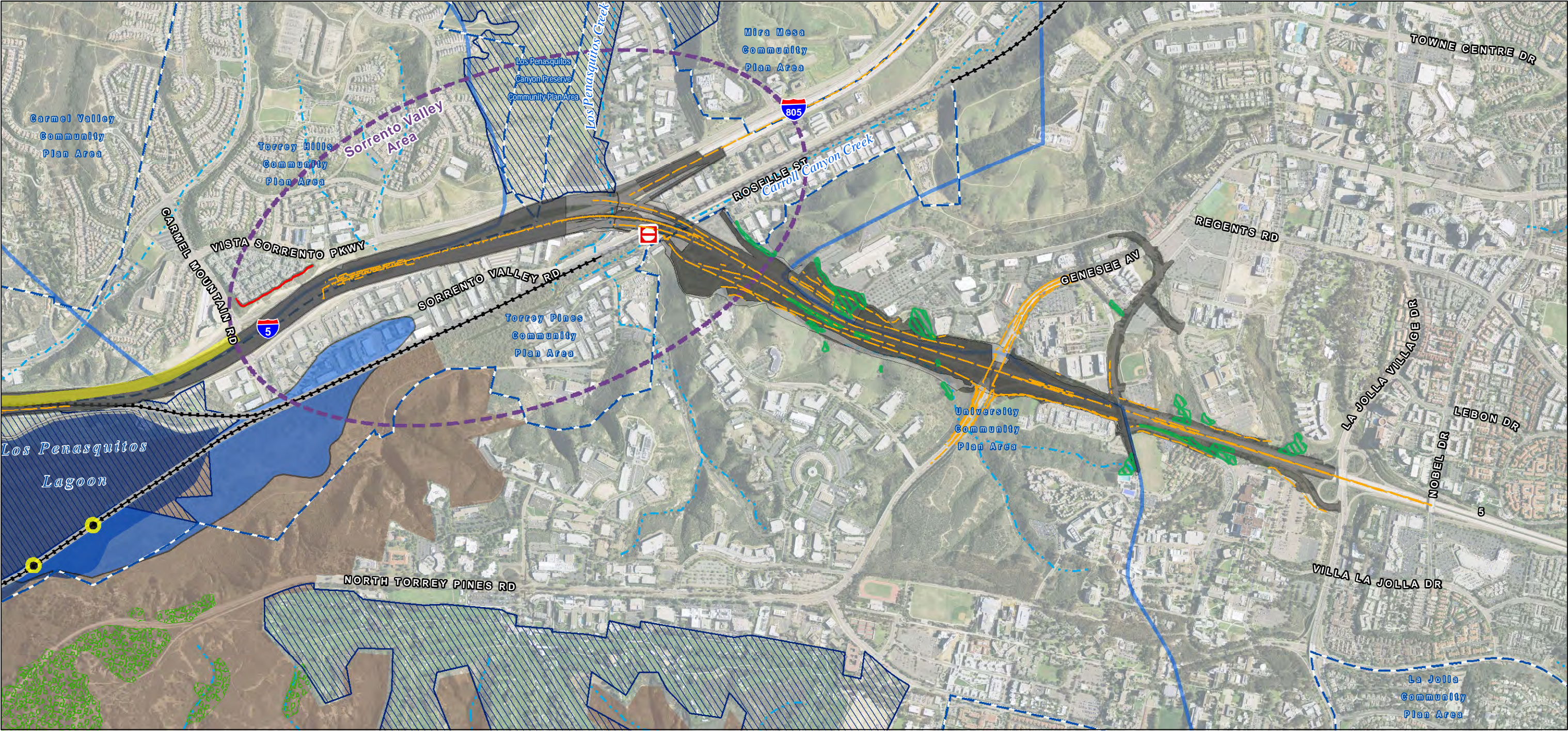
The I-5 highway corridor is part of the California Scenic Highway System and is eligible for designation as an Official Scenic Highway. Though located in a more inland area from the coast than the LOSSAN rail corridor, the I-5 highway corridor similarly provides travelers with a variety of significant coastal views. There are approximately 700,000 travelers per day on the I-5 highway, which serves as the primary northern gateway for visitors to the San Diego coastal area. Within the corridor viewshed, natural features such as the ocean, beaches, lagoons, coastal bluffs, canyons, agricultural fields, and natural upland areas are prominent given the quantity and type of visual resources experienced by traveling on an otherwise urban Southern California freeway.

The *I-5 NCC Project Draft EIR/EIS* (June 2010) and corresponding *I-5 NCC Project Design Guidelines* (Appendix C of the PWP/TREP) identifies the visual setting and features of the I-5 highway corridor in detail, including the variety of developed, rural, and natural features that occur, as well as the defining characteristics and visual quality of each feature. There are a number of significant and distinct coastal visual resources that occur along the corridor, in addition to the various natural and developed visual elements that contribute to the overall visual quality of I-5 in the NCC and the surrounding area.

Traveler Views

I-5 provides access to the ocean for hundreds of thousands of people each day, a visual resource rarely experienced while traveling on a major urban freeway. Ocean views from I-5 occur at the following locations:

- Northbound lanes between Carmel Mountain Road and SR-56 (Figure 5.7-1A and Figure 5.7-1B)
- Northbound lanes between Del Mar Heights Road and San Dieguito River Bridge (Figure 5.7-1B)
- Southbound lanes between Via de la Valle and Lomas Santa Fe (Figure 5.7-1B and Figure 5.7-1C)
- Northbound lanes between Lomas Santa Fe and Manchester Avenue (Figure 5.7-1C)
- Southbound lanes between Manchester Avenue and Birmingham Drive (Figure 5.7-1C)
- Vista Point adjacent to southbound lanes north of Manchester Avenue (Figure 5.7-1C)
- MacKinnon Avenue overcrossing (Figure 5.7-1C)
- All lanes at Encinitas Boulevard (Figure 5.7-1D)
- Southbound lanes between La Costa Avenue and Poinsettia Lane (Figure 5.7-1E)
- Southbound lanes at Oceanside Boulevard (Figure 5.7-1G)
- All lanes at the San Luis Rey River bridge (Figure 5.7-1G)



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

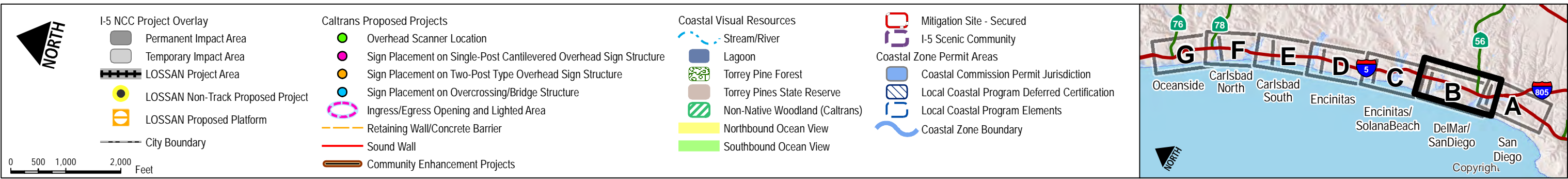
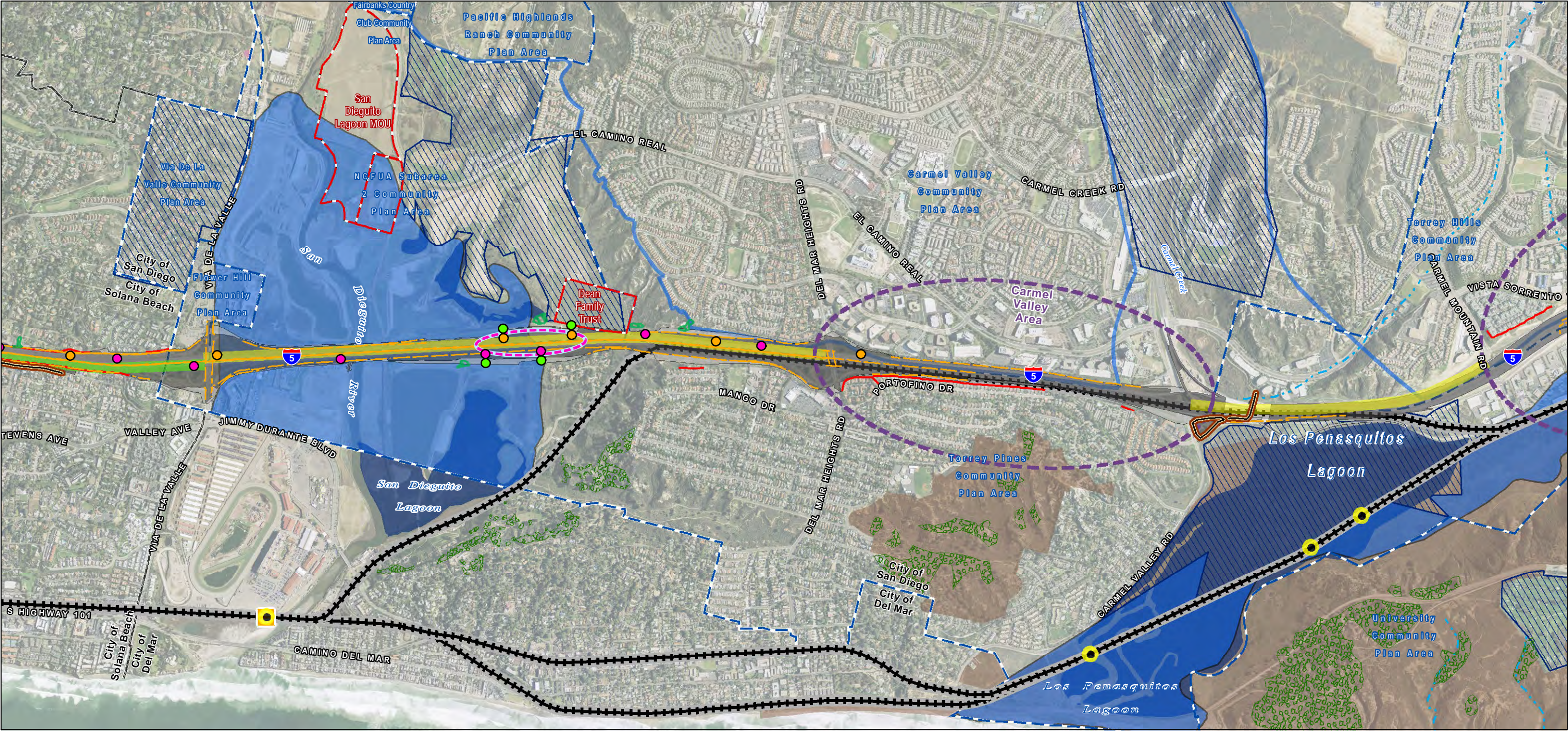
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FIGURE 5.7-1A
Visual Resources (City of San Diego)

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

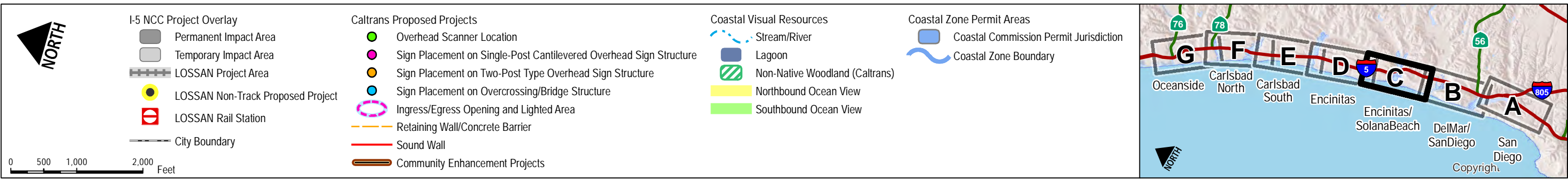
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FIGURE 5.7-1B
Visual Resources (City of Del Mar / San Diego)

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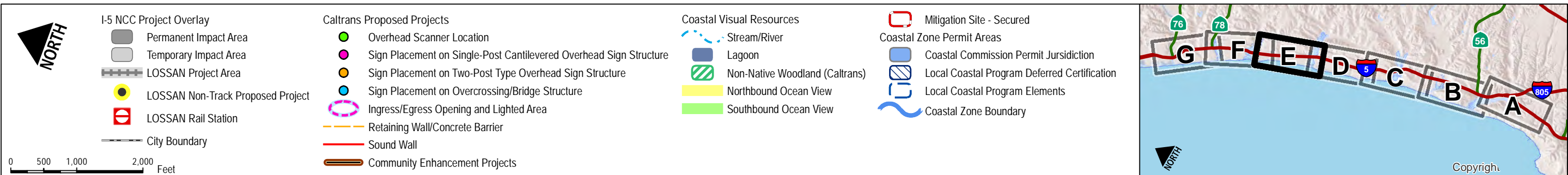
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FIGURE 5.7-1C
Visual Resources (City of Encinitas / Solana Beach)

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

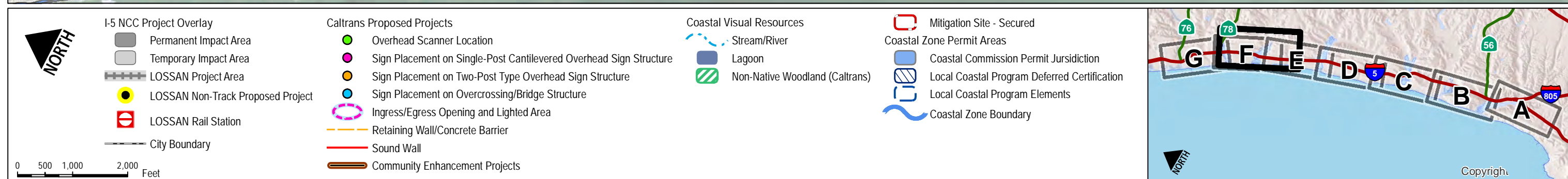
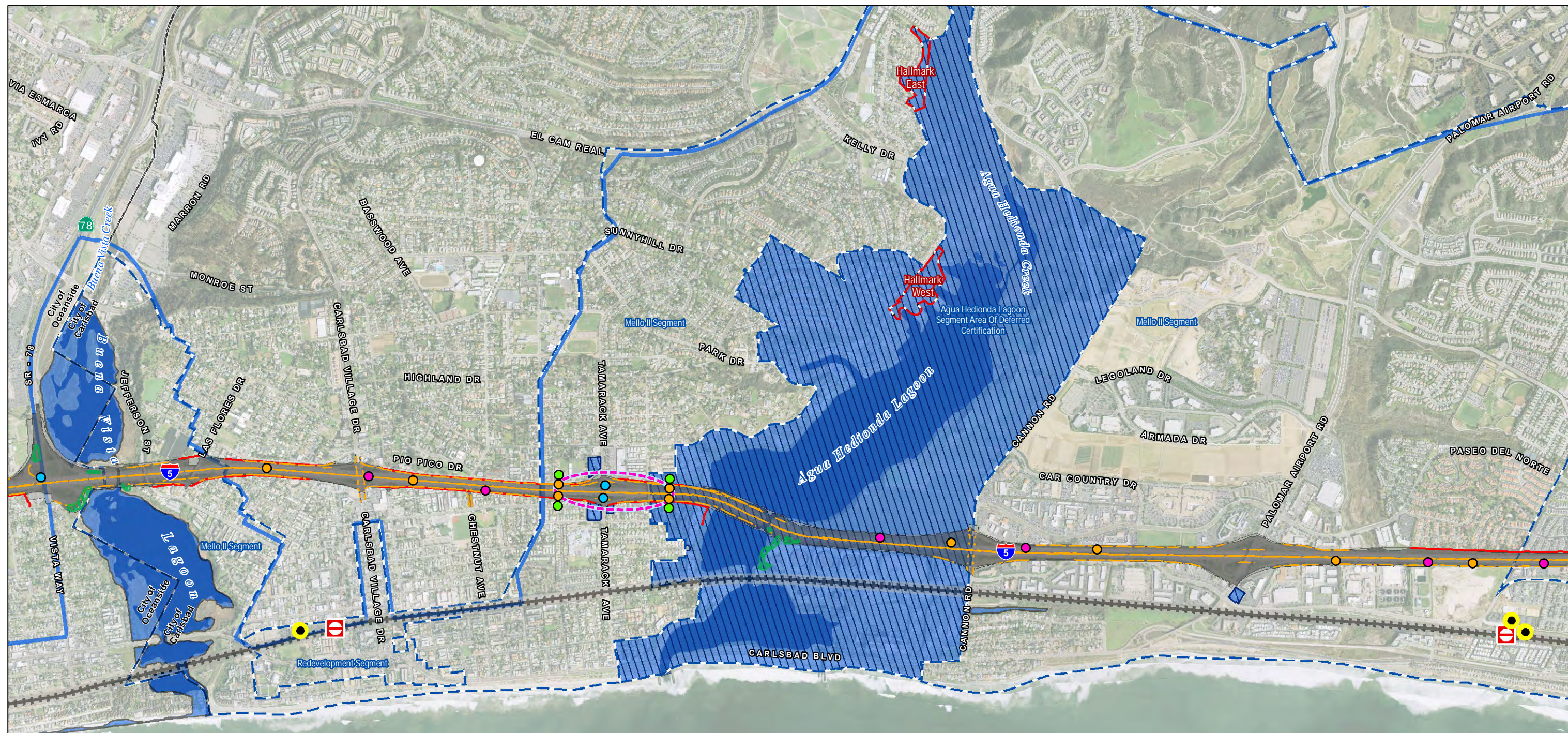
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FIGURE 5.7-1E
Visual Resources (City of Carlsbad [South])

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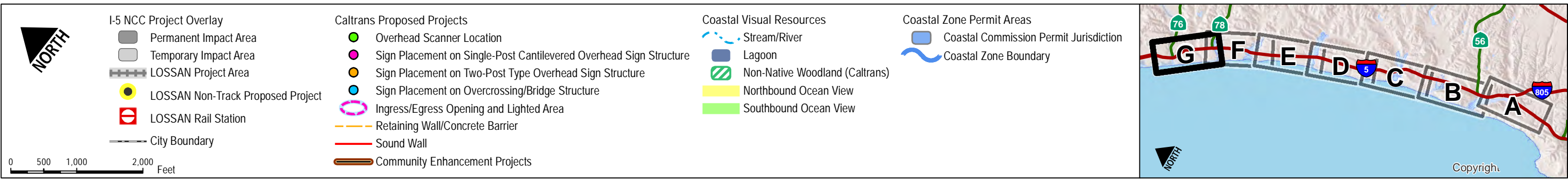
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FIGURE 5.7-1F

Visual Resources (City of Carlsbad [North])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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FIGURE 5.7-1G
Visual Resources (City of Oceanside)

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As with the LOSSAN rail corridor, the I-5 highway corridor crosses the NCC's five coastal lagoons and two river valleys at the following locations:

- Los Peñasquitos Lagoon in San Diego
- San Dieguito Lagoon/ River Valley in San Diego
- San Elijo Lagoon in Solana Beach and Encinitas
- Batiquitos Lagoon in Carlsbad
- Agua Hedionda Lagoon in Carlsbad
- Buena Vista Lagoon in Carlsbad and Oceanside
- San Luis Rey River in Oceanside

Torrey Pines State Reserve is visible from the Sorrento Valley and Carmel Valley areas of I-5 and is a visual resource consisting of varying natural topography and open space areas, including coastal bluffs at the headland of Las Peñasquitos Lagoon (Figure 5.7-1A and Figure 5.7-1B). Coastal bluffs are also found near coastal beaches, lagoons, and rivers at the following locations:

- Torrey Pines State Reserve
- Southern slopes of the San Dieguito River Valley
- Native slopes of the San Elijo Valley
- Native slopes adjacent to the northbound freeway lanes between Manchester Avenue and Birmingham Drive

Along various portions of the I-5 highway corridor, immediately adjacent undeveloped and vegetated hillside terrain (natural and manufactured slopes) provide a buffer between I-5 and adjacent land uses and sustain the overall visual quality by softening the appearance of I-5 and blocking or screening views to and from adjacent urban development. On both sides of I-5, mature trees provide vertical relief to the horizontal plane of the highway and also serve as a landscape buffer between the highway and adjacent areas. Additionally, the visual character of I-5 differs from that of standard highways due to the presence of large, flowering oleanders in the median that provide a green parkway in the center of the highway. Oleanders provide visual relief with a natural appearance and reduce the scale of the highway by half as the shrubs screen views of oncoming traffic; however, it is noted that in some areas, the mature oleanders may block potential ocean views for northbound travelers. Median oleanders are an I-5 feature unique to San Diego, extending from the Harbor Drive interchange in Oceanside to the San Dieguito River Bridge in San Diego, and again from the Genesee Drive interchange in San Diego past the southerly project limit.

While developed areas are not typically considered significant coastal visual resources, agricultural fields situated along I-5 (near Manchester Avenue in Encinitas and Cannon Road in Carlsbad) provide views of significant open space areas and combine with adjacent lagoons to provide relief from the visual patterns of urban development along the corridor. In addition, Del Mar Racetrack and Fairgrounds is located adjacent to the ocean and is visible from the highway in the San Dieguito River Valley and Solana Hills area. It is a prominent cultural feature in the corridor viewshed that provides orientation and identity unique to the area.

Development along the I-5 highway corridor consists of new, large-scale suburban development primarily located east of I-5, with older, small-scale beach communities located adjacent to and west of the highway. The *I-5 NCC Project Draft EIR/EIS* notes that the village-like character of the older communities of the Encinitas and Leucadia hillside neighborhoods that border the highway, may be

considered a scenic resource by local communities. The Encinitas and Leucadia hillside neighborhoods are visible from the highway between Encinitas Boulevard and La Costa Avenue (Figure 5.7-1D). While these developed areas do not present significant natural visual resources, the lower-density, relatively small-scale, and mature landscaping associated with the communities maintain a sense of openness in the developed landscape. The neighborhoods exemplify Encinitas' unique historical identity as a center of exotic horticulture with older homes built early in the 20th century on large parcels used as avocado groves, exotic plant nurseries, or commercial greenhouse space. Despite intense urban development that has occurred elsewhere along the coast, many of the original homes, large stands of tall trees, and some of the avocado groves, nurseries, and greenhouses in the neighborhoods remain.

Adjoining Views

I-5 is a dominant visual feature in some areas of the corridor when viewed from off-site locations, particularly elevated portions of the highway, including overcrossings and bridges over waterbodies. The highway is adjacent to five natural preserves, two open space parks, five community parks, one recreational area, and one golf course. As such, the highway is visible to hikers, equestrians, and community park users depending on the proximity of the highway to these open space and recreation areas. The highway is also visible to drivers, bicyclists, and pedestrians using local streets and sidewalks at interchanges, as well as travelers along residential frontage streets (such as Orpheus Avenue in Encinitas) that have direct views to the highway.

5.7.2 PWP/TREP Concerns

Environmental documentation and analysis prepared for the PWP/TREP highway and rail corridor improvements indicate that there are significant coastal visual resources within the NCC that could be affected by the proposed improvements. The proposed transportation facility improvements would include constructing new tracks and extended paved surfaces; constructing parking structures or lots, new or expanded bridges and bridge railings, direct access ramps (DARs), and rail tunnel portals; and would add new signage, sensors, signals, signal houses, fencing, cameras, and new retaining and soundwalls. New night lighting at proposed stations could also create or increase a visual impact if visible from nearby scenic beaches, scenic roads, parks, and trails.

Proposed improvements could affect public views of natural coastal features such as the Pacific Ocean, coastal river valleys and lagoons, coastal bluffs, open space, and cultural landscapes, and/or could result in a more urban aesthetic in some project areas. Project grading could remove or substantially alter natural landforms, landscaping, trees, and topography (berms, hills, etc.), thus decreasing the visual openness and semirural character of the corridor. In addition, proposed improvements that involve new and extended facilities could increase the visual mass and overall visibility of facilities from adjacent public viewing areas, and could result in public view obstruction to visual resources in the corridor. Project appearance has the potential to disrupt the experience of the natural environment as viewed by people visiting the natural preserves and open space areas near the transportation facilities.

In addition, existing, permitted shoreline protection devices for the LOSSAN rail corridor in the Del Mar bluffs area have altered the shoreline; however, previous Coastal Commission review of the shoreline protection system included project conditions to ensure that the structures were designed and treated so as to minimize alteration of natural landforms, to protect public views, and to be compatible with the surrounding area. Future stabilizing activities, which would expand these shoreline structures for continued operation of the rail facility, could result in impacts to the visual resource of the coastline if not properly designed and maintained.

5.7.2.1 LOSSAN Rail Corridor Impact Assessment

Proposed LOSSAN rail improvements would occur in areas of the corridor with significant coastal visual resources. Potential visual resource impacts of rail improvements could include long-term operational impacts and short-term construction impacts. Long-term visual impacts could result from constructing new, permanent structures, including track and station additions, such as new parking areas or increased parking structure height, tunnel portals and grade separations, and other appurtenant features such as fencing, signals and lighting. During construction, visual impacts could include the presence of construction equipment, the dismantling of old structures and erecting of new structures, light and glare impacts from nighttime construction, and visual contrast impacts from newly disturbed soils along the rail corridor.

Traveler Views

Proposed track improvements would include at- or below-grade facility improvements that would be consistent with existing facility improvements and the surrounding environment; however, trench and tunnel alignment options that would replace at-grade facilities could adversely affect passenger views to coastal visual resources since the transportation facility would be depressed or placed entirely below-grade, thus eliminating coastal views currently available on the at-grade facility. However, as discussed further in this section, trench and tunnel alignments would benefit overall visual resources in the corridor, particularly for adjoining views, given that existing at-grade facilities could be removed in some portions of the corridor, thus restoring the visual quality of these areas presently displaced by the at-grade facilities that are visible from surrounding areas. In addition, new replacement bridge structures over the lagoons and/or waterways could require raised soffit elevations to address potential for flooding or sea level rise concerns.

A new pedestrian and/or bicycle grade separation is proposed at Hillcrest Drive (Figure 5.7-1D) in Encinitas; additional grade separations have been approved/permitted outside of the PWP/TREP at Montgomery Avenue, Santa Fe Drive, and El Portal Street in Encinitas. In addition, a new automobile grade separation is proposed at Leucadia Boulevard in Encinitas, and two additional grade separations between surface streets and the LOSSAN corridor are planned in the San Diego Association of Government (SANDAG) 2050 RTP. The locations of those two grade separations have yet to be determined. Grade separations could create additional structural and visual mass where proposed along the corridor; however, these project features would be limited to distinct points within the existing right-of-way and therefore would be visible only momentarily to traveling passengers.

Station parking improvements would include adding new parking spaces and/or new parking structures for the Oceanside, Carlsbad Village, Carlsbad Poinsettia, Encinitas, and Solana Beach stations. Parking structure improvements could increase the structural mass of the stations as viewed by passengers. In addition, a new special-event platform at Del Mar Racetrack and Fairgrounds is proposed in the San Dieguito River Valley (Figure 5.7-1B), an area generally characterized by open space and the rural and cultural features of Del Mar Racetrack and Fairgrounds. Depending on the ultimate location and design of the Del Mar platform improvements, the improvements could be visible to rail travelers.

Temporary visual impacts to traveler views associated with construction activities adjacent to and visible from the operating rail line would generally include visual contrast impacts created by active construction sites, grading, and vegetation removal.

Adjoining Views

Throughout the LOSSAN rail corridor, the double-tracking at-grade improvements would have little visual impact to adjoining views as the facilities would be placed within the existing right-of-way and would be consistent with the existing environment and facility in those locations. Trench alignments would generally be less visible than at-grade alignments; however, where open trench sections would have to be fenced for security purposes, at-grade visual impacts to adjacent views looking to or across the right-of-way could occur absent appropriate fence location and design. Tunnel alignment options would generally have no impact on visual resources or area aesthetics as viewed from surrounding areas, except at portal locations, which would be visible at those distinct locations, and the I-5 highway corridor tunnel option could create new visual impacts along the south edge of San Dieguito Lagoon where an elevated rail structure could be constructed for a portion of the track.

Grade separations in Encinitas could introduce new structural and visual mass, which would be visible from surrounding areas and could obscure public views to near and distant viewsheds; however, the Hillcrest Drive and Leucadia Boulevard grade separations are designed as undercrossings, which would substantially minimize structural mass of the improvements and ensure that views across the facilities would be maintained.

Bridge replacements for the rail alignment would include bridges at San Luis Rey River, and Buena Vista, Baticuitos, San Elijo, San Dieguito, and Los Peñasquitos Lagoons (under some alternatives). All bridges would be double-tracked, and widening of bridge structures for double-tracking could increase the visual mass of the structures as viewed from surrounding areas; however, in some cases, such as at San Elijo Lagoon, bridge spans could be lengthened (depending on restoration plans for the lagoon) and some in-water bridge footprints may be reduced through use of fewer piles and/or further spaced pile bents compared to the current bridges.

Station parking improvements for the Oceanside, Carlsbad Village, Carlsbad Poinsettia, Encinitas, and Solana Beach stations could increase the scale, mass, and overall visibility of stations from surrounding areas. In addition, a new special-event platform at Del Mar Racetrack and Fairgrounds is proposed in the San Dieguito Valley, which would introduce a new facility in an area generally characterized by open space and the rural and cultural features of Del Mar Racetrack and Fairgrounds. These improvements, if not appropriately located and designed, could obscure public views to near or distant views of the coast, inland open space areas and hillsides, or could be incompatible with the aesthetics of surrounding areas.

As the majority of proposed rail improvements would be at- or below-grade and within the existing right-of-way, visual impacts associated with landform alteration of natural terrain as viewed from adjacent areas would generally be minimal; however, grade separations, station parking improvements, the new Del Mar Fairgrounds Special Event Platform, tunnel portals, and the I-5 highway corridor Del Mar tunnel option (which would include an elevated rail structure along the southern edge of San Dieguito Lagoon) would require some grading and removal of vegetation, and could result in landform alteration and associated impacts to scenic views. Furthermore, new replacement bridge structures over the lagoons and/or waterways could require raised soffit elevations to address potential for flooding or sea level rise concerns. In addition, expanding the existing shoreline protection system at Del Mar bluffs necessary to support the existing rail facility operations could result in landform alteration of the shoreline and associated impacts to the visual resource of the coastline.

Temporary visual impacts to adjoining views could also result from construction activities and would generally include visual contrast impacts created by active construction sites, grading, and vegetation removal.

5.7.2.2 I-5 Highway Corridor Impact Assessment

Traveler Views

I-5 highway corridor improvements could result in a range of traveler view impacts to distinct, coastal visual resources, and to the generally open visual quality of the corridor. Impacts to coastal visual resources would result primarily from constructing extended paved surfaces and additional highway structures (particularly overcrossings and DARs) and new retaining walls necessary to minimize the project footprint and associated grading and resource impacts. A series of visual simulations demonstrating existing conditions and potential changes from project implementation at key viewpoints along the I-5 corridor, which were identified in consultation with the California Coastal Commission, are included in Section 5.7.6. Photo-documentation of additional, existing vantages located throughout the NCC has also been conducted, and is included in Appendix B for further reference.

View impacts to the corridor's most significant coastal visual resources (specifically views to the ocean, coastline, lagoons, and river valleys) would be avoided or given that these resources are typically visible across the corridor's large waterbody crossings, which provide highly scenic coastal view corridors.

Constructing new DARs at Voigt Drive and Manchester Avenue could also affect coastal visual resources in the corridor as viewed by highway travelers due to introduction of new, large walls, ramp structures, widened local streets, and structural mass to the highway. DAR construction at Manchester Avenue could specifically result in the loss of visual open space associated with coastal agricultural areas adjacent to the highway (approximately 8.4 acres), which is across the roadway from San Elijo Lagoon (Figure 5.7-1c). However, to avoid and minimize visual open space impacts, the Manchester Avenue DAR was redesigned in consideration of the sensitive visual context of the area as a scenic gateway to Encinitas, and is currently proposed as a trenched access ramp and an undercrossing to maintain views of the surrounding hillsides, open spaces, and San Elijo Lagoon, and to reduce the footprint into the adjacent agricultural area associated with the facility and transit center. As a result of the Manchester DAR redesign, which had previously been proposed as a flyover structure, views of the nearby coastal visual resources in the area would not be blocked. As the Voigt Drive DAR would be located in a built environment, where an existing crossover exists, no sensitive coastal views would be affected.

The *I-5 NCC Project Draft EIR/EIS* evaluates, identifies, and depicts several other scenic views, consisting of open hillside terrain and developed areas unique to the corridor at key view sites that would be affected by proposed improvements in a number of locations. Highway travelers in both directions would lose some existing views to the Encinitas hillside neighborhood west of the highway between Encinitas Boulevard and Leucadia Boulevard.

Proposed highway improvements could also result in the I-5 highway corridor becoming a more urban facility in which the various scenic resources now available to the traveling public would become less accessible. Much of proposed highway widening would be contained within the existing right-of-way to minimize the facility's footprint, grading, and associated resource impacts, and therefore would require the use of retaining walls to limit encroachment of facility improvements into adjacent areas. Adding a number of retaining structures would introduce additional urban highway components to the corridor's overall visual character.

Though the proposed design minimizes the facility and grading footprint, the project would nonetheless displace existing terrain and landscaped roadside in some areas. Reduced areas for landscaping (due to space limitations for the widened facility, as well as the limitations of San Diego's coastal native tree

palette) could also affect the corridor's visual character by shifting the highway's visual balance from substantial landscaping and greenery to harder surfaces with sparser, native vegetation. The prominence of tall trees and extensive landscaping in the highway landscape would be reduced and could affect the parkway setting of the highway.

Additional impacts to coastal scenic views from the highway could occur from new highway appurtenances such as the Intelligent Transportation System (ITS) components, which would consist of electronic payment-collection equipment, overhead traffic sensors, changeable message signs to display Express Lane pricing and other relevant information, and between 15 and 20 closed circuit television (CCTV) cameras to view and help manage traffic, which, if not appropriately located, could obstruct or detract from views of coastal visual resources. These types of features would be concentrated at or near the DAR facilities at Voigt Drive and Manchester Avenue, and other major Express Lane ingress/egress points, and would be sited and/or designed to avoid impacts to coastal visual resources to the greatest extent feasible, such as avoidance of overhead signs within the lagoon crossings (Figure 5.7-1A through Figure 5.7-1G). The proposed Express Lanes signage—which includes overhead and pavement regulatory, directional, and guidance signs—are based on policies and directives outlined in the *California Manual on Uniform Traffic Control Devices* (MUTCD) 2012 Edition, the 2003 *High Occupancy Vehicles (HOV) Guidelines for Planning, Design and Operations* (amended by the Traffic Operations Policy Directive 11-02, dated April 2011), and the *California Highway Design Manual*. The proposed sign locations are preliminary and are subject to change during the Design Phase when all of the information for the placement of the signs is available. Every effort has been made to avoid placing signs in a motorist scenic view area, such as at lagoon crossings. Appendix B includes information and a preliminary study of layouts regarding the proposed locations of the required ITS elements. Furthermore, the design of standard overhead signage found throughout California, including on the parallel I-15 corridor, has been modified to reduce visual impacts within the NCC through avoidance of typical closed-box or truss structures. To further minimize the size of the signage elements on bridge overcrossings proposed throughout the corridor, site-specific designs would be provided and new signage and commuter pricing information technologies explored as part of future Notices of Impending Delivery (NOIDs).

Temporary visual impacts to traveler views associated with construction activities adjacent to and visible from the highway would generally include visual contrast impacts created by active construction sites, grading, and vegetation removal.

Adjoining Views

Proposed highway improvements would be contained, in large part, within the existing right-of-way or would be located directly adjacent and contiguous to the existing facility; however, extended and enlarged highway improvements could result in visual resource impacts associated with obstructing public views from adjacent public areas to significant coastal and inland visual resources.

Construction of new DARs at Voigt Drive and Manchester Avenue would add visual mass to the highway facility in those locations and, as discussed above, would result in expanding transportation structures into an agricultural area at Manchester Avenue that could affect public views of open space areas across from San Elijo Lagoon. To reduce potential impacts to views of open space at the Manchester Avenue DAR and transit center, the proposed DAR was redesigned from a large, flyover structure to a trenched access ramp and an undercrossing, and the transit center parking reduced to 150 spaces, thereby limiting the footprint extent into the adjacent agricultural fields. Additionally, landscape screening would be provided to reduce the expanse of built structure and for visual continuity to the surrounding hillsides and open space areas.

The highway's visual character from surrounding areas could be adversely affected at right-of-way edges where the project would bring the highway closer to recreational areas and community viewers. Existing landscaped buffers between the highway and adjacent land uses would be reduced in size (or removed altogether) and replaced with retaining walls and/or soundwalls in some locations. At highway interchanges, overcrossing and undercrossing structures (and some local streets) would be enlarged and could create an increased urban visual character. In particular, the visual experience of pedestrians and bicyclists could be affected with the introduction of walls and wider roadways; however, community enhancements (discussed further below and detailed in Section 5.3) such as the I-5 North Coast Bike Trail, widened sidewalks, street trees, pedestrian overcrossings, and other pedestrian amenities are proposed in coordination with the affected corridor cities to avoid or minimize these visual impacts. In many instances, the visual experience for pedestrians would be enhanced not only through provision of wider sidewalks and new amenities but also through provision of new access where there currently is none. Proposed stormwater detention basins and bioswales located within available highway right-of-way throughout the corridor may also introduce standard features such as maintenance vehicle roads, rock rip-rap slopes, concrete aprons and headwalls, standpipes, and chain-link fencing that could be incompatible with area aesthetics and could further reduce available landscape screen area.

Highway improvements could potentially result in visual impacts associated with landform alteration of natural terrain as viewed from adjacent areas. While the majority of proposed facility improvements would be contained within the existing right-of-way to minimize the facility and grading footprint and associated resource impacts, improvements would require adding retaining walls to limit encroachment of facility improvements to adjacent areas, thus displacing existing terrain and landscaped roadside areas visible from the surrounding area. Highway bridge improvements would not involve altering bluffs or cliffs but could require continued use of protective structures at piles and/or abutments.

Temporary visual impacts to adjoining views could also result from construction activities and would generally include visual contrast impacts created by active construction sites, grading and vegetation removal.

5.7.3 PWP/TREP Opportunities, Policies, Design/Development Strategies and Implementation Measures

While the proposed rail and highway improvements could affect coastal visual resources in the corridor, the majority of program improvements would occur within previously disturbed and developed areas of existing rail and highway right-of-way and adjacent urban land uses. The proposed rail and highway improvements would primarily consist of expansions and/or reconfigurations of existing facilities that minimize substantial encroachment into adjacent undeveloped, open space areas. The improvements, through appropriate application of site-sensitive design themes and concepts, as well as landscaping would be consistent with the visual character of the existing facilities and surrounding land uses.

5.7.3.1 Corridor Opportunities

Visual resource enhancement opportunities provided by the proposed rail improvements could include rail improvement options for trenching and tunneling through portions of the corridor that could allow for restoring open space areas presently displaced by portions of the existing facility, with an option of removing the rail service from the coastal bluffs in Del Mar and Los Peñasquitos Lagoon, which could reduce overall visibility of the rail facility and result in a beneficial impact to these coastal viewsheds. Removing the existing rail facility from Del Mar bluffs would further provide an opportunity to remove and restore the shoreline area currently occupied by shoreline protection devices, which were

permitted and are maintained to ensure stability of the bluff and support continued operation of the existing rail facility.

Additional opportunities for coastal visual resource enhancements include replacement of existing rail and highway bridge structures, which, due to their age, are relatively dense in form and mass and presently obscure views to the ocean and/or inland areas through the bridge support structures. Improvements that would replace and update bridge structures could open the viewshed in some of the lagoon areas with new bridge designs that would reduce support structures and, thus, reduce the visual mass of the structure and provide a more visually permeable design.

Opportunities to move existing utilities underground, where feasible, could further restore and enhance visual resources and reduce urbanized landscape/features along the corridor. Enhancement opportunities would also involve replacing existing facility lighting with updated, energy efficient lighting that is better directed to avoid/minimize visual impacts and nighttime glare.

In addition, the PWP/TREP includes a Resource Enhancement and Mitigation Program (discussed in more detail in Sections 5.4, 5.5, and Chapter 6B), which would involve acquisition and habitat preservation and enhancement of properties in the corridor that would be maintained as natural open space areas, thereby enhancing natural open space areas that would be visually accessible from travelers in the corridor and from surrounding areas.

Furthermore, PWP/TREP highway improvements have been evaluated and designed in conjunction with the *I-5 North Coast Community Enhancement Plan*, which includes community enhancement projects that could improve how the highway project interfaces with adjacent communities. These projects would also enhance communities along the I-5 highway corridor by incorporating context-sensitive design and public amenities, where feasible. The proposed community enhancement projects were identified and developed in close coordination with affected communities and included coordinating project development team meetings, developing preliminary design concepts, meeting with city officials and their staff, and developing the *I-5 NCC Project Design Guidelines* (Appendix C of the PWP/TREP).

Implementing community enhancement projects would depend on cooperation between members of the community, City officials, and the Caltrans design team. Pursuant to a cooperative agreement between Caltrans and the affected cities, Caltrans would construct the community enhancement projects throughout the I-5 corridor as part of highway construction, and maintenance agreements would be organized with each city, allowing future maintenance to become the responsibility of the local jurisdiction.

In addition to various improvements intended to improve public access and recreation, community enhancement projects include design elements that would directly improve visual resources along the corridor and integrate the multi-modal transportation improvements to minimize visual resource impacts. These design elements include, where proposed, enhanced landscape buffers between the highway, trails, parking areas and community streets; new and widened sidewalks; street tree plantings; slope and parkway plantings; the creation of pocket parks; and enhanced fencing, paving, and lighting. Community enhancement design concepts are discussed in more detail in Sections 4.4 and 5.3, and are described and depicted in the *I-5 North Coast Community Enhancement Plan*.

5.7.3.2 PWP/TREP Policies

Caltrans and SANDAG shall implement the following policy to ensure that proposed improvements are sited and designed to protect public views to significant coastal resources:

- **Policy 5.7.1:** Development of NCC transportation facility and community enhancement projects shall be sited and designed in a manner that protects, to the maximum extent feasible, public views to significant coastal resources, including views of the ocean and coastline, coastal lagoons and river valleys, and significant open space areas. New development shall be sited and designed to be compatible with existing development and surrounding areas such that the impacts of grading, operational activities and direct lighting on public views outside of the transportation facilities and community enhancement improvements are limited to the maximum extent feasible.

5.7.3.3 PWP/TREP Design/Development Strategies

The following design and development strategies provide guidance for siting and designing specific PWP/TREP rail projects, and Caltrans/SANDAG shall utilize the following strategies for all projects subject to NOID procedures, consistent with the coastal visual resources protection policies of PWP/TREP Policy 5.7.1, amended local coastal programs (LCPs), and the Coastal Act.

1. Development of transportation facility projects should be sited and designed such that the impacts of grading, operational activities and direct light on public views outside of the transportation facilities are limited to the maximum extent feasible.
2. Project-level analysis for potential visual resource impacts of transportation improvements should confirm that proposed improvements will minimize substantial impacts to coastal visual resources including public view corridors, community, and environmental aesthetics. Should project-level analysis find that previously unidentified, substantial permanent or temporary impacts to visual resources will result from proposed improvements, additional avoidance and mitigation measures to ensure project consistency with applicable Coastal Act visual resource policies should be identified during future, project-specific federal consistency review.
3. NOID and/or project-specific federal consistency review submittals for individual highway, rail, transit, and community enhancement projects should identify all potential visual resource impacts of project implementation, as addressed by Policy 5.7.1, and detail the type and location of visual mitigation elements included in the project. NOID submittals for highway projects shall include architectural and landscape mitigation requirements, as provided in Implementation Measure 5.7.1, as applicable, which avoid and/or minimize potential coastal visual resource impacts. NOID submittals including community enhancement projects should include the cooperative maintenance agreement with the affected city.
4. Appropriate types of fencing should be considered in the development of the final project designs and should include use of see-through bridge rails and visually permeable fencing, where appropriate, including consideration of noise impacts on wildlife, and low-profile safety barriers between pedestrian and transportation uses, where necessary and feasible.
5. Existing overhead utilities located near the I-5 highway and/or LOSSAN rail corridors requiring relocation due to widening or double tracking should be relocated underground where feasible, using standard engineering practices.
6. Design solutions should be considered in the development of the final project designs to integrate transportation infrastructure into existing landscapes and enhance project appearance to minimize visual impacts. Where feasible, design solutions may include, but not be limited to:
 - Grading should be designed to minimize landform alteration and removal of significant vegetation. Grading and ground disturbance should be the minimum necessary to construct proposed improvements.

- The design of proposed replacement bridges across the lagoons should be carefully evaluated for its mitigation potential for visual impacts, by providing reduced support structures as compared to the existing bridges.
- Where at-grade or depressed route segments pass through or along the edge of residential areas or heavily traveled roadways, landscape treatments such as trees, shrubs, and groundcover could be installed along the edge of the right-of-way to provide partial screening and to visually integrate the right-of-way into the surrounding context provided that the subject landscaping does not block existing public coastal views.
- Night lighting should be the minimum required for operations and safety. All lights should be hooded and directed to the area where the lighting is required to minimize excess shedding of waste light. New and replacement facility lighting should use updated, energy efficient lighting that is better directed to avoid/minimize visual impacts and nighttime glare.
- Areas that are disturbed by cut, fill or grading should be seeded or planted, such that these areas will blend with the surrounding vegetated areas. Landscaping plans should include only species native to Southern California such that the proposed planted areas will be compatible with surrounding natural and manmade areas. Native vegetation should be placed in appropriate locations and densities consistent with adjacent natural settings. Appropriate native species should also be used adjacent to developed and landscaped areas; however, steep areas of cut in rock may not be able to support plants.
- Review of local urban design plans and policies should be conducted to take into account local design objectives. The analyses should provide a basis for considering specific design measures that would modify the impacts of the project in ways that would make the project design more consistent with local urban design goals.

5.7.3.4 Implementation Measures

Caltrans/SANDAG shall utilize the following implementation measures for all projects subject to NOID procedures:

Implementation Measure 5.7.1: Visual resource mitigation elements for highway and community enhancement project impacts shall incorporate the following visual design features, as appropriate, for specific project features to ensure substantial visual resource impacts from project construction are avoided or minimized to the extent possible. NOID submittals shall detail the type and location of visual mitigation elements included in the project design in accordance with the approved *I-5 NCC Project Design Guidelines* (Appendix C of the PWP/TREP) and the information contained therein as a compilation of allowable design templates and landscaping for associated improvements including, but not limited to bridges, interchanges, retaining walls, etc., and shall include, as appropriate:

- **Sound Barriers**

- Soundwall setbacks, landscape buffers and/or planting pockets
- Soundwall articulated layout/varied profile
- Transparent soundwalls on private property
- Translucent soundwall panels on Caltrans property
- Architectural detailing

- **Retaining Walls**

- Retaining wall setbacks, landscape buffers and/or planting pockets
- Terrain-contoured retaining walls in cut sections

- Terraced retaining walls
- Mid-Slope retaining walls in cut sections
- Top-of-Slope retaining walls in fill sections
- Viaduct retaining walls
- Enhanced safety railings
- Architectural surface treatment
- Low Profile and See-Through Safety Barriers
- **Overcrossings, Bridges, Undercrossings and Direct Access Ramps**
 - Terrain-contoured walls with landscaped buffers and/or architectural treatment, where appropriate and feasible.
 - Enhanced slope paving (color, texture, materials, etc.).
 - See-through bridge rails, where appropriate including consideration of noise impacts on wildlife.
 - Enhanced sidewalks (patterns, color, textures, etc.).
 - Low profile safety barriers between pedestrian and vehicular traffic, where necessary and feasible.
 - Enhanced pedestrian lighting, fencing, railing, container trees, and other urban amenities, designed consistent with local design guidelines, where feasible and where the responsible local agency has requested them and agreed to maintain them in perpetuity.
- **Highway Interchanges**
 - Street trees, pedestrian lighting, landscaped parkways, enhanced sidewalk paving where feasible and where the responsible local agency has requested them and agreed to maintain them in perpetuity.
 - Urban design features such as benches, bollards, directional signage, and trash receptacles where feasible and where the responsible local agency has requested them and agreed to maintain them in perpetuity.
 - Bicycle facilities designed consistent with the San Diego Regional Bike Plan, applicable local standards, and local jurisdiction circulation element goals, wherever possible.
 - Enhanced interchange landscaping and entry features where feasible and where the responsible local agency has agreed to maintain them in perpetuity. Entry features shall be included as transitional visual elements into local communities where appropriate.
- **Highway Landscape** – Corridor landscaping designed consistent within the corridor and with the character of adjacent community landscape. At community gateway locations that are currently characterized by ornamental landscaping, highway landscaping with enhanced, native non-invasive, drought-tolerant trees, shrubs, and groundcover shall be installed. Throughout the remainder of the corridor, landscaping with native non-invasive, drought-tolerant trees and shrubs shall be planted.
 - Native landscaping provided in all areas adjacent to native habitat, designed in consultation with the district biologist, and irrigated utilizing reclaimed water wherever possible.
 - Highway planters for replacement planting within the highway facility at the edge of shoulder, between concrete median and separator barriers, or between barriers and walls wherever the available width allows.

- Median oleander preservation, replacement planting and maintenance. A median oleander replacement pilot project would be assessed concurrent with initial Express Lane construction to determine feasibility of use of native non-invasive trees and/or shrubs for maintenance and visual screening purposes.
- Manufactured slopes designed to support planting and irrigation (including grading techniques such as slope rounding, slope sculpting, and variable gradients to approximate the appearance of natural topography).
- **Local Frontage Roads** – In locations where highway widening brings traffic in close proximity to parallel local streets such as Ida Avenue in Solana Beach, Villa Cardiff Drive, Devonshire Drive, Orpheus Avenue, and Piraeus Street in Encinitas, Avenida Encinas in Carlsbad, and Brooks Street, Garfield Street, and Buena Street in Oceanside, landscape buffers shall be created between the highway and street, which may include elements such as street trees and shrubs, sidewalks, and solid screen walls with vines for access and graffiti control. Including some buffers may require local street widths to be adjusted. Implementing this measure is contingent on local agency approval and commitment to irrigate and maintain the landscape buffer in perpetuity. Landscaping plans should include only species native to Southern California such that the proposed planted areas will be compatible with surrounding natural and manmade areas. The use of non-native plants, or plants not native to southern California (vines and street trees would require concurrence with the Coastal Commission.
- **Lighting, Signage, and Miscellaneous Highway Appurtenances**
 - Lighting and signage pedestals placed at pilasters or incorporated in other architectural features, where possible.
 - Concrete lighting and signage pedestals designed such that vertical barrier transitions are not required.
 - Overhead sign structures shall be a visually unobtrusive color.
 - Signage with movable elements or self-illuminated features such as changeable message signs shall be excluded from viewsheds containing scenic resources, including at lagoon crossings, wherever feasible.
 - Bridge signage designed to be visually integrated with bridge architecture.
 - Electrical and signal equipment at ramp termini placed in visually unobtrusive locations.
 - Enhanced median barriers (color, texture, etc.).
 - Enhanced gore paving (color, materials, etc.).
 - Access control fencing placed in visually unobtrusive locations of interchanges and bridges where possible. It is recommended that the fencing be of special design and consist of enhanced materials where appropriate and maintained by the responsible local agency in perpetuity.
 - Future technologies related to lighting, signage, and miscellaneous highway appurtenances (e.g., ITS elements) shall be reviewed and incorporated, as feasible, within future project-specific NOID submittals.
- **Drainage and Water Quality Facilities**
 - Landscape screening of detention basins, where feasible.
 - Detention basins and bioswales designed to appear as natural landscape features such as dry streambeds or riparian pools.

- Subterranean drainage or planted geo-reinforced drainage surfaces alternatives to concrete drainages adjacent to residential areas, where appropriate and feasible.
- Concrete drainages, ditches and aprons located, designed, and colored to be unobtrusive in appearance.
- Rock slope protection consisting of aesthetically pleasing whole material of various sizes.
- Standpipes and other vertical appurtenances placed in unobtrusive locations, wherever feasible, and painted or stained an unobtrusive color.
- Plantable soft-surface or segmented hard-surface alternatives to concrete ditches and rock slope protection in all project areas visible to the public, where feasible.
- Pervious concrete used for interceptor ditches, inlet aprons, gutters, maintenance access roads, maintenance vehicle pullouts, and parking lots, where feasible.
- Maintenance access drives for drainage and water quality facilities located in unobtrusive areas away from local streets and consisting of inert materials or herbaceous groundcover that is visually compatible with the surrounding landscape.

Implementation Measure 5.7.2: Affected local jurisdiction(s) shall be provided the opportunity to participate in the review of final design plans for project-specific improvements located within their jurisdiction as part of future NOID submittals in accordance with the process and procedures specified in Chapter 6A of the PWP/TREP.

Implementation Measure 5.7.3: Early pre-consultation with the Coastal Commission, and affected local jurisdictions upon request, shall occur at the earliest feasible time when an adequate level of design detail is available (generally at 30% Design) to provide for adequate review and comment periods to identify and incorporate appropriate visual mitigation elements identified in Implementation Measure 5.7.1 and pursuant to the adopted *I-5 NCC Project Design Guidelines* (Appendix C of the PWP/TREP). Design of freeway project features shall be done in consultation with affected local agencies with the understanding that Caltrans policy and procedures regarding issues such as safety, operations, maintenance and cost will prevail.

5.7.4 Coastal Act Consistency

Coastal Act Section 30251 provides for the protection of scenic and visual resources of the Coastal Zone:

The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.

Coastal Act Section 30253(b) further provides that new development shall not require constructing protective devices that substantially alter natural landforms along bluffs and cliffs:

New development shall do all of the following:

- (b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require

the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

The proposed PWP/TREP improvements would consist primarily of improvements to existing transportation facilities located in previously developed and disturbed areas within existing rail and highway right-of-way. Improvements or changes to the existing rail and highway facilities would generally be expansions or reconfigurations of existing facilities involving limited expansion of vertical mass beyond what currently exists. As such, the majority of PWP/TREP facility improvements would not result in substantial visual contrasts or changes to the dominant, overall form characterizing the existing visual condition of the transportation corridors as viewed throughout the corridor. Where the program improvements could result in impacts to sensitive or key coastal visual resources, the PWP/TREP includes various policies, guidance strategies, and implementation measures to avoid or minimize potential impacts to significant coastal visual resources. Strategies and policies generally include evaluating and incorporating site-sensitive design and landscaping treatments into highway projects consistent with the proposed *I-5 NCC Project Design Guidelines* (Appendix C of the PWP/TREP), and minimizing grading, landform alteration, and vegetation removal, wherever feasible, to avoid or minimize visual resource impacts.

With the exception of potential tunnel alignments, all rail improvements would remain within or along the existing transportation corridor, which would substantially minimize the potential for adverse impacts to visual resources resulting from implementing the proposed track improvements. At-grade track improvements, including those requiring track raises, would have minimal to no impacts on public views to and along the ocean and shoreline, or to scenic inland areas for both traveler and adjoining views.

Proposed highway improvements would also be located, in large part, within the existing right-of-way directly adjacent and contiguous to the existing facility. Highway improvements are not expected to result in substantial visual resource impacts associated with obstructing public views from adjacent public areas to significant coastal and inland visual resources. The highway is located some distance from the shoreline where views of the ocean and coastline from surrounding public areas are already very distant. While the highway is an existing visual feature within the viewsheds of the lagoons and river valleys it crosses, improvements to the highway, which are linear in nature, would not be significant enough to substantially affect public views through these viewsheds to the coastline or inland foothills.

View impacts from proposed at-grade highway improvements to the corridor's most significant coastal visual resources, specifically views to the ocean, coastline, lagoons, and river valleys, would also be avoided or minimized. These resources are typically visible across or below the corridor's large lagoon and river bridges that provide visual access to these highly scenic view corridors. These view corridors would continue to be bridged and generally would not require large soundwalls or retaining walls that could obstruct existing views.

While at-grade rail track improvements would have the potential to increase the visibility of the facility within the right-of-way as viewed from on- and off-site locations due to expansion of the facilities, the increase in improvement area would be minor, incremental and would be at or below-grade consistent with the visual character of the existing facility and the surrounding environment. Trench alignments would generally be less visible than at-grade alignments; however, where open trench sections would have to be fenced for security purposes, at-grade visual impacts would need to be analyzed during project-level analysis to ensure fencing would be appropriately located and designed to avoid or minimize substantial impacts to visual resources.

Trench and tunnel alignment options that could replace at-grade facilities could, however, adversely affect passenger views to coastal visual resources as portions of the transportation facility would be depressed or placed entirely below-grade, thus eliminating coastal views currently available from the at-grade facility; however, trench and tunnel alignments would result in a beneficial impact to overall visual resources in the corridor by placing facilities below ground, thus eliminating visibility of structures from public viewsheds. In particular, rail improvements would include an option for removal of the rail service from the coastal bluffs in Del Mar and portions of Los Peñasquitos Lagoon, which would eliminate the rail facility from these locations, potentially allowing for restoration to the coastal viewshed in these highly scenic areas.

As described in other sections of this chapter, proposed tunnel alignment option alternatives, though not decided at this time, could result in substantial, beneficial impacts to a range of coastal resources, including coastal access and recreation, marine resources, environmentally sensitive habitat areas, and safety and stability. At-grade and trench alignments potentially function as barriers to, or cause conflict with, vehicle, bicycle and pedestrian traffic, and wildlife movement. In Del Mar, a tunnel option could remove the rail line from the Del Mar bluffs, which are susceptible to failure and unable to accommodate double-tracking due to the significant excavation, stabilization, and ongoing maintenance needs for existing shoreline protection devices, which could in turn affect shoreline processes, water quality, and sensitive habitats. Additionally, one tunnel option could run under I-5 before returning to grade along the southern bluffs of San Dieguito Lagoon, thus avoiding Los Peñasquitos Lagoon where the existing lagoon crossing structure would be removed from service. All tunnel options for Del Mar would reduce direct and indirect impacts to waterbodies and sensitive habitat areas (except at tunnel portals) as all surficial construction and operational impacts would be avoided.

Improvements to benefit visual resources associated with the Del Mar tunnel options would be most notable within the coastal scenic areas of the Del Mar bluffs, and potentially Torrey Pines State Beach and Reserve and Los Peñasquitos Lagoon. The Camino Del Mar tunnel option could remove the existing rail service from Del Mar bluffs, resulting in an improvement to area aesthetics and the coastal viewshed. While the two Camino Del Mar tunnel portals would have some visual impact, the impact would be within the urban environment and/or along the existing rail right-of-way and would not substantially alter existing aesthetics. The I-5 tunnel option would also remove the existing tracks from the Del Mar bluffs, and would remove the existing railway crossing in Torrey Pines State Beach and Reserve, and Las Peñasquitos Lagoon, improving views of the beaches, bluffs, and the lagoon. This tunnel option, however, could create new visual impacts along the south edge of San Dieguito Lagoon where an elevated rail structure would be constructed for a portion of the track. As with the Camino Del Mar tunnel options portals, the I-5 tunnel option portals would also have some visual impact; however, potential impacts would similarly occur along the existing rail right-of-way and would not substantially alter existing aesthetics of the area.

A pedestrian-grade separation is proposed for the Hillcrest Drive intersection along with an automobile grade separation at Leucadia Boulevard in Encinitas; two additional grade separations are identified within the 2050 RTP, but their location is yet unknown.¹ These crossings are currently designed as undercrossings, which would substantially minimize structural mass of the improvements and maintain views across the facilities; however, project-level analysis would be conducted to ensure potential designs avoid substantial impacts to visual resources.

¹ As discussed in Chapter 6A, these grade separations would be subject to additional project review once more project details become available.

Bridge replacements for the LOSSAN rail corridor would include bridges at San Luis Rey River, Buena Vista, Batiquitos, San Elijo, San Dieguito, and Los Peñasquitos Lagoons (under some alternatives). All bridges would be double-tracked and in some cases, such as at San Elijo Lagoon, bridge spans lengthened (depending on restoration plans for the lagoon), and the bridge footprint reduced due to changes in bridge design and construction materials, including replacing creosote piles with longer spans and concrete piles. Widening of bridge structures for double-tracking could increase the visual mass of the structures as viewed from surrounding areas; however, this potential visual impact could be offset by new, concrete bridge designs that would be smaller in scale with fewer support structures than the existing trestle bridges, thus allowing for a more visually permeable design. Proposed bridge replacements could improve visual resources of lagoon and river open space areas by removing the existing timber-trestle bridge support structures, which are relatively dense in form and mass and presently obstruct adjoining views to coastal and inland areas in these locations. This would restore views of the ocean through new bridge designs for travelers along I-5, and restore views to the ocean and inland foothills for people using adjacent open space areas.

Station parking improvements would include adding parking spaces and/or new parking structures for the Oceanside, Carlsbad Village, Carlsbad Poinsettia, Encinitas, and Solana Beach stations. These improvements would occur at existing stations in developed areas inland from the coastline and therefore are not likely to obscure significant traveler or adjoining views to the shoreline. A new platform at Del Mar Fairgrounds is proposed in the San Dieguito River Valley, which, although minimal in size and scale, would introduce a new transportation facility in an area generally characterized by open space and the rural and cultural features of Del Mar Racetrack and Fairgrounds. Potential impacts to significant coastal views and area aesthetics for travelers and adjoining views would be analyzed during project-level analysis to ensure the location and design of station and platform improvements protect coastal visual resources to the extent possible and to ensure overall compatibility with the visual resources of the area.

Existing, permitted shoreline protection devices for the rail corridor in the Del Mar area have altered the shoreline; however, previous Coastal Commission review of the shoreline protection system included project conditions and clarifications to ensure that the structures were designed and treated to protect natural landforms and visual resources. Future stabilizing activities would be subject to further Coastal Commission review to ensure that the structures were designed and treated to protect natural landforms and public views.

As the majority of proposed rail improvements would be at- or below-grade and within the existing right-of-way, visual impacts associated with landform alteration of natural terrain would generally be minimal throughout the majority of the corridor. However, grade separations, station parking improvements, the Del Mar Fairgrounds Special Event Platform, tunnel portals, and the future Los Peñasquitos bridge replacement and/or realignment options, pending the selection of the I-5 Del Mar tunnel option (which would include an elevated rail structure along the southern edge of San Dieguito Lagoon) would require some grading, potentially resulting in temporary landform alteration. Significant and highly visible landform alteration of natural terrain is not expected, however, given that the majority of these improvements would be largely limited to right-of-way areas or in tunnels, and would occur in existing developed and relatively level areas. Tunnel alignment options could result in additional beneficial visual improvements, except at portal locations, as they would avoid surficial construction and operational impacts that would otherwise be visible from surrounding areas.

Constructing new DARs at Voigt Drive and Manchester Avenue could also affect coastal visual resources in the corridor as viewed by highway travelers and from adjacent properties; however, the DAR proposed at Voigt Drive in San Diego would not result in substantial impacts to coastal visual

resources. The proposed DAR at Voigt Drive would be partially located within the Coastal Zone, but would also occur in a highly developed area with adjacent land uses consisting of the University of California, San Diego campus and other urban uses. Views from the highway and adjoining views would be affected by introducing large walls, ramp structures, and widened local streets; however, the DAR structure would not obscure a significant public viewshed, and the structure would not be incompatible with the urbanized landscape of the surrounding area.

Constructing a new DAR at Manchester Avenue would add visual mass to the facility and expand transportation facilities into adjacent agricultural areas, which would affect open areas viewed from both the highway and adjoining areas. DAR construction would result in loss of visual open space associated with agricultural areas adjacent to the highway at Manchester Avenue (approximately 8.4 acres), which are located across the street from San Elijo Lagoon.

Potential impacts to views of open space would be most notable at this Manchester Avenue DAR and San Elijo Multi-Use Facility, which would also include a new access road and parking for 150 cars (porous paving would be used to treat the water at the park-and-ride). The improvements would add structural mass to the existing highway facility and would result in a new parking facility located in a currently open agricultural area, which would reduce open space area associated with the agricultural area near San Elijo Lagoon; however, the scenic bluffs, hillside terrain, the upper agricultural fields located on the northbound slope, and the lagoon itself would remain undisturbed and visible from the highway and the majority of the surrounding area. The DAR and park-and-ride improvements were redesigned as a trenched ramp and an undercrossing to be situated below the level of the existing ground plane to minimize visibility of the improvements from the highway. Site amenities for transit users at Manchester Avenue would not involve constructing large, massive structures, but would include covered shelters with minor site amenities and enhancements, including pedestrian lighting, benches, litter receptacles, bollards, and bicycle racks. Landscaping and enhanced pedestrian paving would be an integral part of the transit center features.

The project alternative analysis for highway improvements potentially affecting coastal visual resources is part of the *I-5 NCC Project Draft EIR/EIS*. Additional design-level alternatives analysis, including detailed avoidance and minimization considerations, has been completed and is reflected within the selection of the Locally Preferred Alternative, as described in detail within the *I-5 NCC Project Supplemental Draft EIR/EIS* and *Final Draft EIR/EIS*. This design detail, including a reduced project footprint throughout the corridor and for the Manchester Avenue transit station and DAR, removal of the Cannon Road and Oceanside DARs, and other corridorwide lane reconfigurations and/or removals, reduces overall project impacts.

The *I-5 NCC Project Design Guidelines* (Appendix C of the PWP/TREP) include corridorwide and local design themes to preserve the natural and community visual characteristics of the existing corridor, and create a unifying visual thread. Common design features reflected within proposed implementation measures include the use of terrain-contoured retaining walls to minimize visual prominence and allow for increased landscape screening, use of natural contour grading wherever feasible, implementation of spatial buffers to reduce the urbanizing edge effect new built structures, preservation and enhancement of median plantings, and appropriate use of color for compatibility with local design themes.

The entire corridor was divided into three basic visual Theme Units, as detailed within the *I-5 NCC Project Design Guidelines* (Appendix C of the PWP/TREP). The Theme Units bear no relationship to political boundaries such as city limits, but are determined by the visual character of the landscape. The following existing characteristics were used as determinants to establish the Theme Units: natural landscape character (topography, bluffs, vegetation, color, etc.); visual character of adjacent land uses

(the degree of urban character); and proximity and nature of adjacent land uses. The three Theme Units are as follows:

- **Southern Bluff Theme Unit – La Jolla Village Drive in La Jolla to Poinsettia Lane in Carlsbad.** This portion of the corridor is perhaps best characterized by coastal bluffs of Torrey sandstone that buttress the coast as well as river valley slopes farther inland. The design of corridor retaining walls is meant to recall these iconic forms. The weathered, eroded quality of the bluffs will be reflected in architectural pilasters, rough surface textures, integral earth tones, and weathered steel ancillary materials. This earthen theme will be carried through to bridges and sound walls as well. Bridges will be composed of natural curved forms that harmonize with the rhythm of land and sea. In key locations, sound walls will use cast-in-place construction to enable an organic, free-form design.
- **Coastal Mesa Theme Unit – Poinsettia Lane in Carlsbad to State Route 78 in Oceanside.** North of Batiquitos Lagoon, upland topography shifts from rolling hill to expansive coastal mesa. Extensive commercial development and an older, tree lined, established urban village border the freeway on these flatlands. Between them, Agua Hedionda Lagoon and adjoining agricultural fields form a natural punctuation mark. Also punctuating the sky is the Encina power plant exhaust stack that has been an orienting feature for over fifty years. This vertical element combines with the coast highway, Carlsbad State Beach, and Carlsbad sea wall to form a visual signature of coastal Carlsbad. Design themes for this unit will be inspired by the area's confluence of natural and built forms displayed along the corridor and coast as well as the historical importance of floral agriculture in its development. Freeway architecture will continue the integral earth tone theme, but will transition from rougher to smoother textures with a curved wave motif seen in wall textures and bridge fencing.
- **Northern Urban Theme Unit – State Route 78 to Vandegrift Boulevard in Oceanside.** In this unit, coastal bluffs recede, and broad sand beaches lined with development are characteristic. In general, a more urban quality appears both on the coast and along the freeway corridor. The Strand, the Oceanside Pier, and Oceanside Harbor establish coastal character. This unit also is home to the most significant architecture in the corridor. Mission San Luis Rey inspired the works of Irving Gill, which in turn inspired Charles Moore's Oceanside Civic Center. All combine to form a rich architectural heritage and historical continuity. Freeway architecture will exhibit more tectonic forms than other units of the corridor consistent with the immediate context. Rectilinear forms, smoother surfaces, lighter colors, and refined ancillary materials such as ceramic tile and galvanized steel will distinguish this unit from the others.

The three design elements that are considered to have the greatest impact on the character of the corridor include the community gateways, the lagoon bridge crossings, and the retaining/sound walls; accordingly, design concepts have been prepared in the form of sketches, renderings and associated text within the *I-5 NCC Project Design Guidelines* (Appendix C of the PWP/TREP) to help illustrate the types of facility improvements anticipated within each design theme unit, and their connection and influence on the user experience.

The highway's visual character from surrounding areas could be adversely affected at right-of-way edges where the project would bring the highway closer to recreational areas and community viewers. Existing landscaped buffers between the highway and adjacent land uses would be reduced in size or removed altogether and replaced with retaining walls and/or soundwalls in some locations. At highway interchanges, overcrossing and undercrossing structures (and some local streets) would be enlarged and could create an increased urban visual character. In particular, the visual experience of pedestrians and bicyclists could be affected with the introduction of taller walls and wider roadways; however, construction of the I-5 North Coast Bike Trail would provide improved access to coastal and

inland visual resources. Proposed stormwater detention basins and bioswales would involve standard features such as maintenance vehicle roads, rock rip-rap slopes, concrete headwalls, standpipes, and chain-link fencing that could be incompatible with area aesthetics and could further reduce available landscape area. Community enhancement projects that include enhanced landscape buffers between the highway, trails, parking areas and community streets; new and widened sidewalks; street tree plantings; slope and parkway plantings; creation of pocket parks and community gardens; and enhanced fencing, paving and lighting are proposed in coordination with affected cities to avoid or minimize these visual impacts. Landscaping plans should include only species native to Southern California such that the proposed planted areas will be compatible with surrounding natural and manmade areas. The use of non-native plants, or native plants not native to southern California would require Coastal Commission approval.

Proposed highway improvements would generally result in a more hardened landscape along I-5 with additional road surface, access ramps, sound and retaining walls, and other urban features such as signage and lighting. Project improvements could affect travelers' views to adjacent landforms and developed areas unique to the corridor, and could remove areas of significant vegetation. PWP/TREP implementation measures require that project features such as terrain-contoured retaining walls, planting pockets, median landscaping, enhanced bridge design, specific bridge railing design, landscape buffer planting at the top of walls, and widened sidewalks and landscaped parkways be incorporated into the project to minimize impacts to coastal visual resources and to reflect the visual character and goals of each affected community.

Highway bridge improvements would not involve altering significant landforms such as bluffs or cliffs but could require continued use of protective structures at piles and/or abutments along the shoreline of coastal lagoons and streams; however, these improvements would only occur in shoreline areas already altered by existing bridge structures. In addition, proposed bridge replacements would replace existing lagoon bridges that have steep, narrow abutments with new bridges designed with a bench at the abutment to facilitate wildlife movement as well as use by hikers, which would also serve to soften the appearance of the shoreline where new bridge construction would be necessary. Where feasible, new replacement bridges would also be designed with fewer in-water columns as new technology and construction methods allow for longer span distances, thereby opening views under the bridges and across the lagoons.

The PWP/TREP includes guiding design and development strategies to minimize potential visual resource and aesthetic impacts, which would be evaluated during additional project-level analyses pursuant to future environmental and/or NOID, phased federal consistency review, or coastal development permit review when applicable. The design and development strategies generally include minimizing grading, landform alteration, and vegetation removal; providing landscape treatments such as trees, shrubs, and groundcover along the edge of the right-of-way to provide partial screening and to visually integrate the right-of-way into surrounding areas; addressing potential night-lighting impacts by limiting, shielding and directing lights to only that required for operations and safety; and implementing native revegetation efforts for areas disturbed by grading activities.

The design and development strategies further include reviewing and considering local design objectives (in consultation with local agencies) for developing specific design measures during project-level analyses to provide consistency, wherever feasible, with local urban design goals. These analyses would guide proposed station architecture, parking lots, lighting systems, and other features to blend with the surrounding landscape, which would reduce the visual impacts of the stations on their surroundings.

Implementation measures require that soundwalls be visually compatible with the surrounding community. Architectural detailing such as pilasters, wall caps, interesting block patterns, and offset wall layouts would be used to add visual interest and reduce the apparent height of the walls. Poured-in-place, integrally colored concrete construction techniques would be encouraged where visual consistency with retaining walls is desired. Enhanced surface materials such as mosaic tile and weathering steel would also be used where appropriate.

Implementation measures also provide for use of retaining walls that follow the contours. Where feasible, walls would be located at mid-slope to achieve visual compatibility with surrounding terrain and provide room at the base for a slope that contains landscape screening. Where site conditions are favorable, retaining walls would be divided into separate structures sufficiently offset from one another to create a planting area between the two. Retaining walls would also be located at mid-slope wherever possible in cut sections to provide a buffer area for landscape screening between the wall and the highway. In areas where insufficient space exists to include planting buffers between highway retaining walls and adjacent community features such as frontage roads, the use of viaduct retaining walls would be considered, which would cantilever the roadway to form a wall recess in which spatial articulation and planting can occur. In areas where retaining walls must be placed close to the traveled way, space would be reserved between the wall and the safety barrier to include a 1.5-m (5-foot)-wide planting pocket.

Implementation measures also require various architectural treatments and provide for the use of architectural features, textures, and integral concrete colors to mitigate the appearance of retaining wall surfaces. Walls would incorporate architectural features such as pilasters and caps to provide shadow lines, provide relief from monolithic appearance, and reduce their apparent scale. Enhanced surface materials such as mosaic tile and weathering steel would also be used where appropriate to meet community design goals.

Landscaping throughout the corridor following project implementation would be native non-invasive, drought-tolerant trees, shrubs, and groundcover. In less developed areas of the corridor, landscaping with native drought-tolerant trees and shrubs and hydroseeding would be planted, and areas adjacent to native habitat would require native landscaping designed in consultation with the Caltrans district biologist.

While the transportation improvements would change the overall visual character of the NCC, PWP/TREP implementation measures would substantially reduce potential impacts to visual resources. Example architectural treatments and landscaping for the I-5 highway corridor as implemented at the recently constructed Lomas Santa Fe Drive interchange are presented in Figure 5.7-2 and 5.7-3 and detailed sketches, renderings and text provided within the *I-5 NCC Project Design Guidelines* (Appendix C of the PWP/TREP).

While the visual character of the NCC would be affected by proposed PWP/TREP improvements, PWP/TREP implementation measures ensure that project design and development would minimize impacts to the visual quality of the corridor consistent with Section 30251 of the Coastal Act. In addition, view impacts to the corridor's most significant coastal visual resources, specifically views to the ocean, coastline, lagoons, and river valleys, would be avoided. Furthermore, implementation measures are included to ensure that low profile (e.g., Caltrans Type 60S) or see-through (e.g., Caltrans Type 80) safety barriers be used (where feasible and unless noise abatement is necessary for protected bird species) in areas where standard height barriers would diminish views of scenic resources from the highway.

Although incremental loss of open space areas directly adjacent to the highway could occur as a result of proposed facility widening and constructing two new DARs and the San Elijo Multi-Use Facility, these improvements would be located adjacent to, and contiguous with, the existing highway facility and the surrounding arterial network; therefore, impacts to visual open space would be limited to the periphery of the open space areas. PWP/TREP implementation measures provide for substantial community enhancement projects throughout the corridor pursuant to cooperative agreements with affected cities, which would enhance visual resources in adjacent communities, create new park and open space areas, and provide new physical and visual access to significant coastal resources via pedestrian and bike trail improvements. In addition, the Resource Enhancement and Mitigation Program of the PWP/TREP (as detailed in Chapter 6B) provides for acquiring and restoring properties within the corridor to enhance water quality, wetland, and upland habitat areas, which would also serve to restore and improve visual resources of natural areas. As such, PWP/TREP improvements and implementation measures would enhance open space and natural features and associated visual resources and, thus, would fully mitigate the incremental loss of open space areas adjacent to the highway due to facility widening and constructing DARs and the San Elijo Multi-Use Facility.

FIGURE 5.7-2: ARCHITECTURAL TREATMENT OF RETAINING WALLS ON LOMAS SANTA FE DRIVE (SOLANA BEACH)



Retaining walls at the Lomas Santa Fe Drive interchange in Solana Beach resemble the eroded sandstone bluffs that characterize this scenic coastal community. The natural wall treatments are further emphasized with the use of weathering steel accents and railings.

FIGURE 5.7-3: NATIVE ENHANCED LANDSCAPE TREATMENT



Native enhanced landscape features provide an opportunity for each community to create a unique entry experience along the I-5 with special native landscape plantings and design features.

The I-5 highway corridor program signage would generally include new changeable message signs for congestion-pricing and traffic updates. These types of features would be concentrated at or near the DAR facilities at Voigt Drive and Manchester Avenue, and other major Express Lane ingress/egress points, and would be sited or designed to avoid impacts to coastal visual resources to the greatest extent feasible, such as avoidance of overhead signs within the lagoon crossings. Furthermore, use of the standard overhead signage found throughout California, including on I-15, has been modified to reduce visual impacts within the NCC through avoidance of typical closed-box or truss structures. To further minimize the size of the signage elements on bridge overcrossings proposed throughout the corridor, site-specific designs would be provided, and new signage and commuter-pricing information technologies would be explored as part of future NOIDs. In addition, PWP/TREP improvements would provide an opportunity to replace existing facility lighting with updated, energy efficient lighting better directed to avoid or minimize visual impacts to adjacent areas and nighttime glare. PWP/TREP strategies require existing utilities be placed underground, where feasible, thereby enhancing visual resources and reducing urbanized landscape/features where feasible using standard engineering practices.

During construction of rail and highway improvements, visual impacts could include the presence of construction equipment, dismantling old structures and erecting new structures, light and glare impacts from nighttime construction work, and visual contrast impacts from newly disturbed soils along the rail corridor. These impacts would be temporary, with most occurring only during active construction periods along the corridor. Soil contrast impacts would last longer, but weathering of disturbed soils and revegetation would minimize the duration of these potential impacts. The PWP/TREP includes implementation measures within Section 5.4 that address water quality issues associated with construction staging and debris, disturbed soils, and timely revegetation/landscaping, which also address temporary construction impacts to visual resources.

5.7.4.1 Coastal Act Consistency Analysis Summary

Based on available project and environmental data, and the policies, design/development strategies and implementation measures included herein, the proposed PWP/TREP improvements would protect views to and along the ocean and scenic coastal areas, and would be visually compatible with the character of surrounding areas through employing sensitive site design, restoring and enhancing areas adjacent to and affected by corridor improvements, avoiding significant development encroachment into adjacent areas and landform alteration, and by applying measures to avoid and/or substantially reduce potential impacts to coastal visual resources; therefore, the PWP/TREP is consistent with Sections 30251 and 30253(b) of the Coastal Act.

5.7.5 Local Coastal Program Consistency

For LOSSAN rail projects included in the PWP/TREP that improve the movement of freight, the LCP policy consistency analysis provides guidance and background information for analyzing rail project consistency with Sections 30251 and 30253(b) of the Coastal Act, as appropriate and applicable (see Section 1.1.3 for additional discussion of LCP applicability to rail projects that may fall under the exclusive jurisdiction of the Surface Transportation Board). The corridor's LCP visual resource policies are summarized with brief city-specific consistency analyses below; which also integrate and supplement the above consistency analysis for Sections 30251 and 30253(b) of the Coastal Act.

5.7.5.1 Local Coastal Program Consistency Analysis Summary

All of the LCPs include policies that mirror, in part, the requirements of Sections 30251 and 30253(b) of the Coastal Act, which require that scenic and visual qualities of coastal areas be protected, that new

development be sited and designed to protect views to and along the ocean and scenic coastal areas, that natural land forms be minimally altered and be visually compatible with the character of surrounding areas, and that constructing protective devices that would substantially alter natural landforms along bluffs and cliffs not be required.

However, the certified LCPs also include a range of additional, detailed, and city-specific policies and development standards that address potential impacts to visual resources. Common policy requirements within the LCPs include:

- Minimizing grading and removal of vegetation.
- Revegetating graded and disturbed areas with native, drought-tolerant plant species.
- Moving utilities underground.
- Avoiding grading and development on steep slopes or unique topographic features, where feasible.
- Ensuring that new development is subordinate to the natural environment and that adequate buffers or transition zones (such as increased setbacks, landscaped barriers, greenbelts, open space, berms, and/or decorative walls) are provided between new development, and in some cases, particularly for transportation corridors, and adjacent open space and community areas.
- Protecting significant natural features including bluffs, rock outcroppings, natural drainage courses, wetland and riparian areas, steep topography, trees, and views, where feasible.
- Protecting views of the ocean, coastline and significant coastal resources.
- Protecting open space areas.
- Locating and designing site amenities such as fencing, retaining walls, signs, and lighting such that they do not obscure public viewsheds and are visually compatible with surrounding land uses.

City of San Diego

The City of San Diego LCP contains an extensive set of visual resource protection policies in the North City Land Use Plan, in addition to each of the five individual Community Plans affected by the proposed PWP/TREP improvements. The City's LCP includes several policies that address potential visual resource impacts associated with grading by requiring and/or recommending special grading techniques that minimize the appearance of substantial landform alteration (sculptured techniques, restoring previously graded or scarred hillsides, following natural contours, etc.). The LCP policies also focus heavily on buffer and landscape treatments to ensure development compatibility with existing land uses. The LCP, with its collective plan components, includes visual resource policies that are particularly unique to this portion of the corridor as follows:

- **North City Land Use Plan**
 - Encourage preserving Torrey Pine trees in private as well as public areas.
 - Encourage planting Torrey Pine trees in roadways and other landscaped areas.
 - Promote street tree planting and beautification programs. Existing street trees should be protected.
 - Prevent the destruction or removal of any tree, the trunk of which exceeds six inches in diameter, whether situated on public or private property. Where removal of any such tree is unavoidable under the circumstances (e.g., a diseased tree), adequate replacements should be required.

- **University Community Plan**

- Protect and take maximum advantage of the Torrey Pines Subarea's topography and unique natural vegetation.
- Ensuring that developments do not intrude into the designated open space areas.
- Preserving existing mature trees. When feasible, development should occur around and in between mature trees. If that is not feasible, consideration should be given to moving trees into temporary nurseries during construction. Transplanting is usually less expensive than buying new trees of equal size for the site.
- Planting trees in dense clusters to preserve and enhance the existing wooded character of this subarea.
- Preserve the natural finger canyons, which characterize the Miramar Subarea.
- Protect Rose and San Clemente canyons as natural regional resources, and preserve the open space character of the various finger canyons that traverse the subarea.

- **Torrey Pines Community Plan**

- Future development adjacent to the Torrey Pines Reserve Extension, San Dieguito Lagoon, and Crest Canyon areas shall provide for adequate buffer areas.
- Those disturbed areas of the Carroll Canyon Creek Corridor shall be revegetated and planted with a combination of native trees, primarily riparian woodlands species and native shrubs.
- All mature trees and other significant existing vegetation in this system (Carroll Canyon) shall be protected, including the riparian habitat located in the existing concrete-lined channels.
- The Plan recommends preserving Torrey Pines trees in private as well as public areas, and encourages planting Torrey Pines trees in roadways and other landscaped areas. Should Torrey Pines trees require removal, relocating or replacing the trees shall occur whenever feasible.

- **Torrey Hills Community Plan**

- Prohibit encroachment and impacts of adjacent development, both private and public, on areas designated open space.
- The visual impact of all hillside development shall be minimized, with buildings, retaining walls and other improvements approximating to the natural landforms.
- Plant materials placed on any ridges or edges shall reinforce its natural profile and character.
- Slopes that are visible from surrounding communities shall be treated to imitate the natural topography.
- The top and toe of manufactured slopes should be rounded to make a natural transition to pad areas.
- Where soils and geologic conditions permit, utilize variable slope ratios to aid in achieving a more natural topography.
- Decorative/enhanced paving should be used at major intersections, monuments and points of interest.
- Planting shall be designed in a manner that effectively enhances existing views or provides new view corridor opportunities into the open space corridor, major landforms or other visual amenities within the project.
- Within perimeter areas of development, landscaped buffers shall be provided to screen views of development from Los Peñasquitos Canyon Preserve.

- Landscaping in areas adjacent to Los Peñasquitos Canyon Preserve shall utilize native and/or drought-tolerant, non-invasive plant material.
- **North City Future Urbanizing Framework Plan**
 - Outside the compact communities, the street edge should be designed to retain existing natural features and limit site improvements to landscape elements.
 - Retain existing land forms, mature trees, and important rock outcroppings. The locations of driveways and utilities should avoid destroying important natural features.
 - Where streets cross the open space system, bridge structures should be used to cross canyons.
 - Minimize the use of sound attenuation walls by careful site planning that employs grade changes, berms and landscape elements to provide acoustical and visual privacy.
 - When sound attenuation walls must be used, they should not be visible from major arterial and collector streets. This may be accomplished by use of grade changes, berms and/or planted buffers between the wall and street, with a width of 50–100 feet recommended for the buffer.
 - Development adjacent to ridges and bluffs shall minimize visual impacts to these topographic features through setbacks and landscaping, especially near major canyons or valleys.
 - Structures located within the view of the park, if within 200 feet vertically and 50 feet horizontally of a ridgeline, shall be set back and be low in profile so as not to be visually prominent from the future park.

PWP/TREP improvements would protect views to and along the city's most significant viewsheds including Torrey Pines Reserve, San Dieguito Lagoon, and the large adjacent canyons in this area. In addition, with sensitive site design, and adherence to the policies, design and development strategies and implementation measures included in the PWP/TREP, rail and highway development would be compatible with adjacent developed and open space areas. In addition, community enhancement projects included in the PWP/TREP would provide opportunities, in cooperation with the City, to enhance visual access to the city's significant natural resources via improved trail facilities to and from Peñasquitos Creek and Lagoon.

Proposed highway improvements would generally be designed and implemented consistent with the City's visual resource protection policies; however, the City's LCP, with its collective Community Plan components require that new development not intrude into designated open space areas, as specified within the University Community Plan, and that all mature trees and other significant existing vegetation in Carroll Canyon be protected, as specified in the Torrey Pines Community Plan. In addition, the City's LCP prohibits encroachment and impacts of adjacent development, both private and public, on areas designated as open space within the Torrey Hills Community Plan. These visual resource policies do not include variance for special project features or circumstances. As such, although proposed highway improvements have been designed to limit encroachment into areas containing open space, mature trees, and significant vegetation, it is not feasible to completely avoid these resources as required by the City's LCP. As such, these policy requirements present potential conflicts that require amendment to ensure consistency of the PWP/TREP improvements with the certified LCP. SANDAG and Caltrans are seeking amendments to the City of San Diego LCP, for which the standard of review would be Sections 30251 and 30253(b) of the Coastal Act. As discussed in the Coastal Act consistency analysis above, the proposed improvements would be consistent with Sections 30251 and 30253(b) of the Coastal Act; therefore, if required, LCP amendments would provide for consistency of the PWP/TREP improvements with the City's LCP.

City of Del Mar

The City of Del Mar LCP includes policies that address visual resources associated with views to and along the shoreline, and, particularly the city's coastal bluffs, and views of wetland areas including Los Peñasquitos and San Dieguito Lagoons. In addition, the city's visual resource policies speak often to ensuring that new development preserves the small-town character of the community. The following policies provide guidance in analyzing potential visual resource issues associated with proposed rail improvements that fall under PWP requirements:

- Preserve Del Mar's fragile coastal bluffs as a visual resource and avoid the risks to life and property associated with bluff failure and shoreline erosion.
- The BSC (Bluff, Slope, and Canyon) Overlay Zone is designed...to preserve the scenic sandstone bluffs and related canyons and steep slopes, which characterize the area within the zone. These unique landforms provide visual relief and diversity within the city, and they define and separate neighborhoods and communities physically, thereby enhancing the overall quality of Del Mar's coastal environment.
- Enhance public improvements along appropriate bluff top areas, which provide significant scenic vistas when such improvements are not in conflict with bluff preservation policies. Improvements shall include installing benches for scenic viewing at the western terminus of 11th, 8th, and 4th Streets and along the upper bluff area south of Del Mar Canyon.
- Retain the bluff top areas west of the railroad right-of-way between the southern border of the city and 15th Street in an open space condition to provide panoramic ocean views; to provide lateral access along the coastal bluff top; and to preserve and protect the adjacent fragile and scenic bluffs.
- Preserve views of the Pacific Ocean from Camino Del Mar through applying scenic view easements and related view preservation restrictions.
- Preserve views of the Los Peñasquitos Lagoon and the Pacific Ocean from Carmel Valley Road through applying scenic view easements and related view preservation restrictions.
- Retain and enhance the views of San Dieguito Lagoon along Jimmy Durante Boulevard and San Dieguito Drive through applying scenic view easements and related view preservation restrictions.
- Park and open space systems should be protected from adjacent land uses that may infringe on scenic views.
- New or redevelopment projects within the Lagoon Overlay Zone shall include retaining the maximum amount of native vegetation on the site. Revegetation of sites within the Lagoon Overlay Zone shall include the use of non-invasive, drought-tolerant species native to the San Diego coastal region and which are compatible with adjacent wetland habitat species. Landscape plans including their associated berms, planters and fences shall also be designed to minimize the disruption of view corridors from public roadways and parks.
- The viewsheds of the San Dieguito and Los Peñasquitos Lagoons shall be preserved and protected through applying the following criteria into the design of new and redevelopment projects within the viewshed areas of the San Dieguito and Los Peñasquitos Lagoons, respectively.
 - Compatibility of design with the existing and desired character of the surrounding area;
 - Design of buildings to be subservient to the natural terrain; and
 - Considering views from the lagoon and the surrounding roadways in the landscape and structure design.

- The review of projects within the specified viewsheds shall be conditioned to ensure continued conformity with the criteria listed herein. Such conditions shall include but are not limited to recorded view corridor easements or restrictions.
- The improvement or establishment of alternative transportation modes shall be designed to protect sensitive resources and retain the small-town scenic qualities of Del Mar.

As discussed in detail in the Coastal Act consistency analysis above, some proposed rail improvements would provide the opportunity for overall enhancement and restoration of visual resources in the corridor by placing facilities below ground, thus eliminating visibility of right-of-way structures from public viewsheds in the coastal bluff area of Del Mar and portions of Los Peñasquitos Lagoon.

The proposed rail improvements as part of future, project-specific environmental and/or phased federal consistency reviews would reference and adhere to, as applicable, the policies, design and development strategies and implementation measures that protect views to and along the shoreline, Los Peñasquitos and San Dieguito Lagoons, and would ensure rail development compatibility with surrounding land uses within Del Mar. Guiding measures include minimization of grading, landform alteration and vegetation removal (in consideration of chosen alignment options), providing landscape treatments, and considering local design objectives, in consultation with local agencies, for developing specific design measures during project-level analyses to provide consistency, wherever feasible, with local urban design goals. These analyses would serve to guide proposed station architecture, parking lots, lighting systems, and other features to blend with the character of Del Mar.

The visual resource protection policies of the City of Del Mar LCP do not present potential policy conflicts for the proposed PWP/TREP improvements and therefore would not require that these policies be amended to implement the proposed transportation facility improvements.

City of Encinitas

The City of Encinitas LCP designates I-5 as a scenic highway and identifies a visual corridor on I-5 at San Elijo Lagoon. Unique to the City's LCP are policies that specifically address visual resources along the I-5 corridor that discourage urbanization and further include:

- Preserve the existence of present natural open spaces, slopes, bluffs, lagoon areas, and maintain the sense of spaciousness and semirural living within the I-5 View Corridor and within other view corridors, scenic highways and vista/view sheds as identified in the Resource Management Element.
- Discourage development that would infringe upon scenic views and vistas within the I-5 corridor.
- Where it is necessary to construct retaining or noise-attenuating walls along the I-5 corridor, they should be constructed with natural-appearing materials and generously landscaped with vines, trees, and shrubbery.

The City's LCP also addresses development along major arterials and includes policies to enhance, harmonize with, and not detract from the natural features of the surrounding area including the following:

- Design roads to enhance scenic areas.
- Promote and encourage roadside and median landscaping.
- The City will initiate and pursue the landscaping of appropriate median and parking areas with trees on all new and existing arterial streets.

- Type and physical characteristics of roadway should be compatible with natural character of corridor, and with the scenic highway function.

In addition, the City of Encinitas LCP includes special visual resource protection policies for the following vista points that provide views to coastal and inland viewsheds:

- Orpheus Street Park site
- Oak Crest Park site
- West end of "O" Street
- West end of "F" Street
- West end of "J" Street
- Leucadia Beach State Park
- West end of "I" Street
- Moonlight State Beach
- Swami's City Park
- Existing Vista Point on southbound 1-5
- Cardiff Beach State Park (south parking lot)

The City's visual resource policies speak often to ensuring that new development preserves the semirural character of the community. Additional policies included in the City's LCP address preserving natural features and mature trees to protect visual resources:

- Significant natural features shall be preserved and incorporated into all development. Such features may include bluffs, rock outcroppings, natural drainage courses, wetland and riparian areas, steep topography, trees, and views.
- Preserve the existence of present natural open spaces, slopes, bluffs, lagoon areas, and maintain the sense of spaciousness and semirural living within the I-5 view corridor and within other view corridors, scenic highways and vista/view sheds as identified in the Resource Management Element.
- The City will make every effort possible to preserve significant mature trees, vegetation, and wildlife habitat within the Planning Area.
- Mature trees shall not be removed or disturbed to provide public right-of-way improvements if such improvements can be deferred, redesigned, or eliminated. This policy is not meant to conflict with the establishment of riding/hiking trails and other natural resource paths for the public good, or with the preservation of views.
- The City will develop a program to preserve views that also preserves the appropriate vegetation and removes obstacles that affect views. Trees and vegetation, which are themselves part of the view quality along the public right-of-way, will be retained.

PWP/TREP improvements would protect views to and along the ocean and San Elijo Lagoon, and would not adversely affect the city's designated vista points that provide views to coastal and inland viewsheds. In addition, applying sensitive site design through adherence to the policies, design and development strategies and implementation measures included in the PWP/TREP, rail and highway development would be compatible with surrounding developed and open space areas within Encinitas. In addition, community enhancement projects included in the PWP/TREP would provide opportunities, in cooperation with the City, to enhance visual resources and create new scenic viewing areas by

constructing trail and sidewalk improvements that would provide continuity in physical and visual access to and around San Elijo Lagoon.

Proposed highway improvements would generally be designed and implemented consistent with the City's visual resource protection policies that specifically apply to I-5 and/or transportation facilities; however, the City's LCP requires that new development preserve and incorporate significant natural features, such as bluffs, rock outcroppings, natural drainage courses, wetland and riparian areas, steep topography, trees, and views. In addition, the City's LCP specifically states that "mature trees shall not be removed or disturbed to provide public right-of-way improvements if such improvements can be deferred, redesigned, or eliminated". Although proposed highway improvements have been designed to limit encroachment into areas containing natural drainage courses, wetland and riparian areas, steep topography and mature trees to the maximum extent feasible, it is not feasible to completely avoid these resources as required by the City's LCP policies. As such, these policy requirements present potential conflicts that require amendment to ensure consistency of the PWP/TREP improvements with the certified LCP. SANDAG and Caltrans are seeking amendments to the City of Encinitas LCP, for which the standard of review would be Sections 30251 and 30253(b) of the Coastal Act. As discussed in the Coastal Act consistency analysis above, the proposed improvements would be consistent with Sections 30251 and 30253(b) of the Coastal Act; therefore, if necessary, LCP amendments would provide for consistency of the PWP/TREP improvements with the City's LCP.

City of Carlsbad

The City of Carlsbad LCP incorporates Sections 30251 and 30252 of the Coastal Act into the LCP and recommends several actions to address visual resource issues within the City, including:

- Sign control
- Parking requirements
- Implementing the Scenic Preservation Overlay Zone of the City of Carlsbad on the Occidental Land, Inc. property and throughout the Agua Hedionda Land Use Planning area
- Preserving natural vegetation on steep slopes

The City's Scenic Preservation Overlay Zone is applied throughout the Carlsbad Coastal Zone, including the Agua Hedionda Land Use Planning area to assure the maintenance of existing views and panoramas. The LCP indicates that development should undergo individual review to determine if the proposed development will obstruct views or otherwise damage visual resources of the area by considering appropriate height limitations and see-through construction, and by minimizing alterations to topography.

The LCP identifies I-5 as a major coastal access route and notes that visual resources of property adjacent to I-5 are of particular concern. The LCP indicates that visual access to over more than 80% of the Carlsbad coastline is unobstructed because of public ownership and the LCP strictly prohibits public improvements that would obstruct visual access to the coastline.

The LCP also identifies Batiquitos Lagoon as an important visual resource and requires that the visual quality of the lagoon be protected by ensuring that new development provide for adequate setbacks, preservation of slope areas, preservation of lagoon and riparian habitats, enhancement of the lagoon environments, and controlled grading. In addition to these provisions, the LCP further notes that the following measures should be implemented to further address the scenic and visual character of Batiquitos Lagoon:

- La Costa Avenue should be established as scenic corridor pursuant to the City of Carlsbad General Plan Scenic Highway Element.
- Scenic corridor status shall be pursued for any public roadway to be established along a part or the entire lagoon north shore.
- Existing, mature, healthy vegetation, such as eucalyptus stands, shall be preserved where possible.
- Off-site signing along public roadways shall be prohibited.
- Viewpoints shall be established along the north and south shore areas (if and where environmentally sound and physically possible) to provide varied visual access to the lagoon.
- Development shall be clustered to preserve sensitive habitat areas and maintain the maximum amount of permanent open space feasible. At a minimum, the following policy shall regulate development in areas adjacent to the lagoon:
 - Existing mature trees shall be preserved.

PWP/TREP improvements would protect views to and along the ocean and other scenic coastal areas, including Buena Vista and Batiquitos Lagoon, and would ensure rail and highway development compatibility within the City of Carlsbad through sensitive site design, and by applying the policies, design and development strategies and implementation measures of the PWP/TREP to avoid and/or minimize potential visual resource impacts.

In addition to protecting existing visual resources in the city, community enhancement projects included in the PWP/TREP would provide opportunities, in cooperation with the City, to enhance visual resources and create new scenic viewing areas. A new trail facility would be constructed at Agua Hedionda Lagoon, which would greatly enhance viewing opportunities around the lagoon. Viewing opportunities at Batiquitos Lagoon would also be enhanced by adding new and/or improved trails, landscaping, and lighting.

However, the City's LCP requires that new development adjacent to Batiquitos Lagoon shall be regulated such that existing mature trees are preserved. While proposed highway improvements have been designed to limit encroachment into areas containing mature trees adjacent to Batiquitos Lagoon to the maximum extent feasible, it is not feasible to completely avoid removal of some nonnative woodland areas (generally consisting of eucalyptus, pine trees, and/or pepper trees) in this area. As such, this policy requirement presents a potential conflict that requires amendment to ensure consistency of the PWP/TREP improvements with the certified LCP. SANDAG and Caltrans are seeking amendments to the Carlsbad LCP, for which the standard of review would be Sections 30251 and 30253(b) of the Coastal Act. As discussed in the Coastal Act consistency analysis above, the proposed improvements would be consistent with Sections 30251 and 30253(b) of the Coastal Act and therefore, if necessary, LCP amendments would provide for consistency of the PWP/TREP improvements with the City's LCP.

City of Oceanside

The City of Oceanside LCP includes policies that address the San Luis Rey River as a significant visual resource and requires new development to be sited and planned in a manner that retains the aesthetic values of the environment and to include design themes that complement the natural setting and history of the area (rustic, Spanish or Early California Mission design). The LCP seeks to establish viewing opportunities of the river and regulate on-site signs that would detract from the visual quality of the area and cause excessive glare or annoyance to surrounding properties.

The City of Oceanside LCP also protects visual resources by maintaining existing view corridors through public rights-of-way. The LCP encourages development of viewing areas at the Pacific Street Linear Park, the Buena Vista Lagoon Fishing area (provided by Eaton Hill developers) and from the frontage road between Highway 78 and the inland portion of Buena Vista Lagoon, and identifies the city's visual orientation to the Pacific Ocean as a major identity factor for the City of Oceanside. The LCP further addresses protection of view corridors and overall visual resources through the following policies:

- Removing Obstructions
 - No fencing, signage, planting, or structures should be placed in a way that will obstruct a view corridor. (Maintain existing view corridors through public rights-of-way.)
 - Visibility of major destination and other orientation points should be enhanced through signage, planting and upgrading of site and structure design.
 - Proposed new development should consider surrounding views when designing building height.
- Framing/Directing Views
 - Fencing, signage, planting and structures shall be placed in a way that 'frame' a view and enhance it, directing the observer's eye to the view.
 - Street rights-of-way carried through to the water and views along the waterfront provide a desirable sense of contact with the water.
- Screening of Unpleasant Views
 - Trash bins, utility equipment, parking lots should be screened or softened by attractive fencing and/or planting.
 - Remove or obscure distracting, cluttering elements.

PWP/TREP improvements would protect views to and along the San Luis Rey River, the ocean and other scenic coastal areas, and would ensure rail and highway development compatibility within the City of Oceanside through sensitive site design, and by applying the policies, design and development strategies and implementation measures of the PWP/TREP to avoid and/or minimize potential visual resource impacts. In addition to protecting existing views to and along the San Luis Rey River, community enhancement projects included in the PWP/TREP would provide opportunities, in cooperation with the City, to enhance visual resources and create new scenic viewing areas along the river. These opportunities would include constructing a new parking area, trailhead staging area, and other support amenities that would support the existing San Luis Rey bike path; enhancing the existing underpass under I-5 at San Luis Rey Drive with pedestrian access improvements; improving lighting and plantings; and installing public artwork.

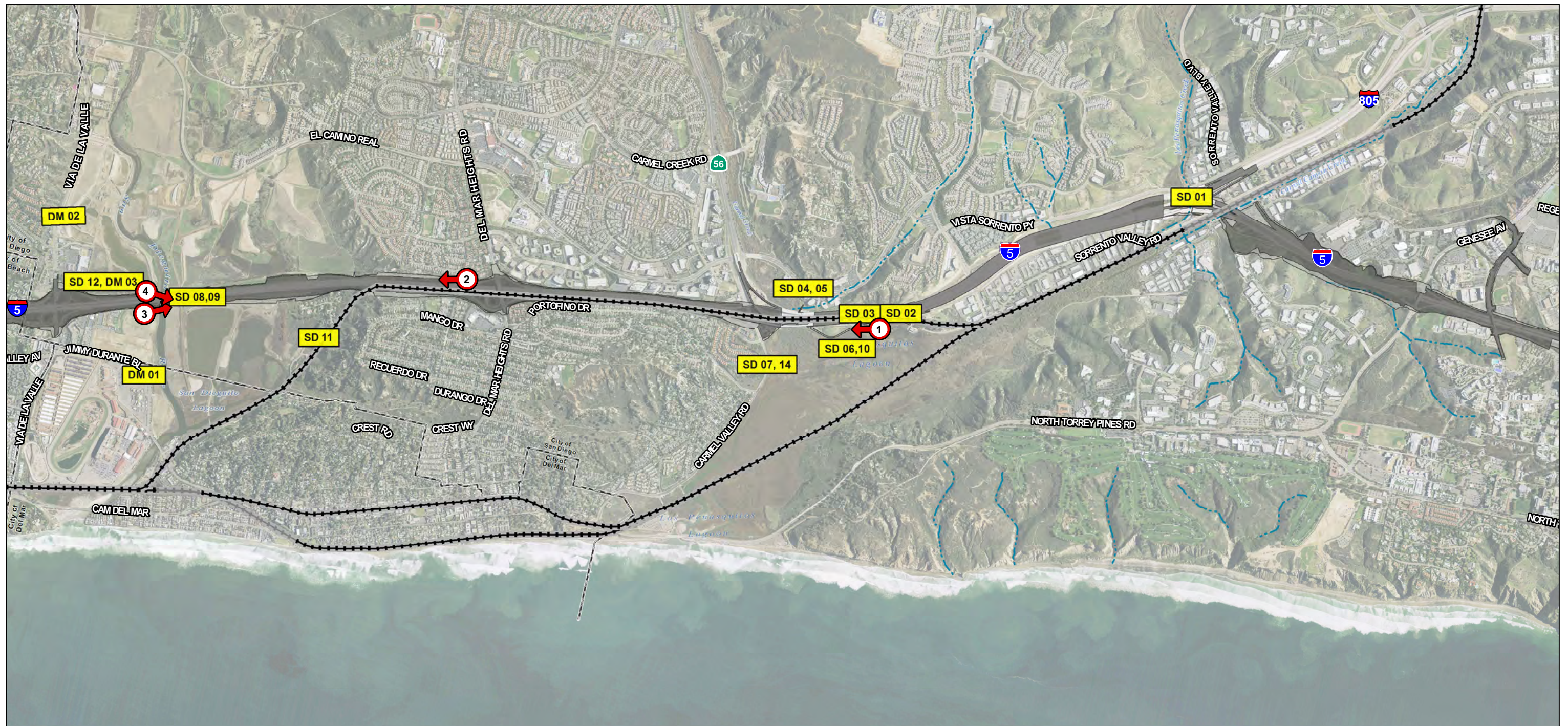
The visual resource protection policies of the City of Oceanside LCP do not present potential policy conflicts for the proposed PWP/TREP improvements; therefore, these policies would not need to be amended to implement the proposed transportation facility improvements.

5.7.6 Visual Simulations

A series of visual simulations demonstrating existing conditions and potential changes from project implementation at key viewpoints along the I-5 corridor are included in this section. Photo-documentation of additional, existing vantages located throughout the NCC has also been conducted and is included in Appendix B for further reference.

Figures 5.7-4A through 5.7-4F are key maps identifying the locations of each simulation within the NCC. The simulations begin with Figure 5.7-5A.

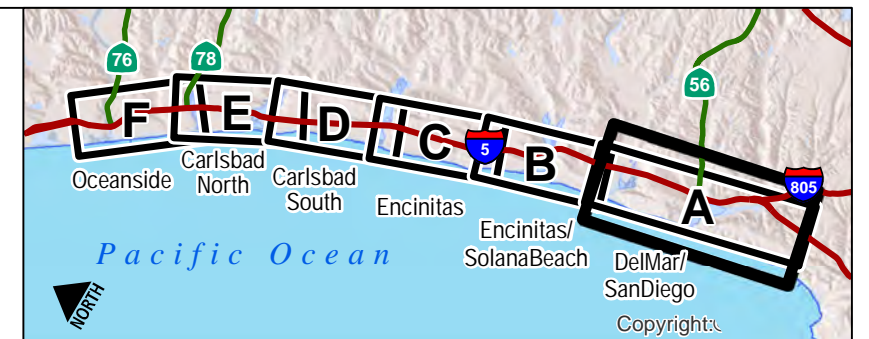
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0 500 1,000 2,000 Feet

- Photo Documentation Locations
- Photo Simulation Locations

- Permanent Impact Area
- Temporary Impact Area
- LOSSAN Proposed Track
- LOSSAN Existing Track
- Stream/River



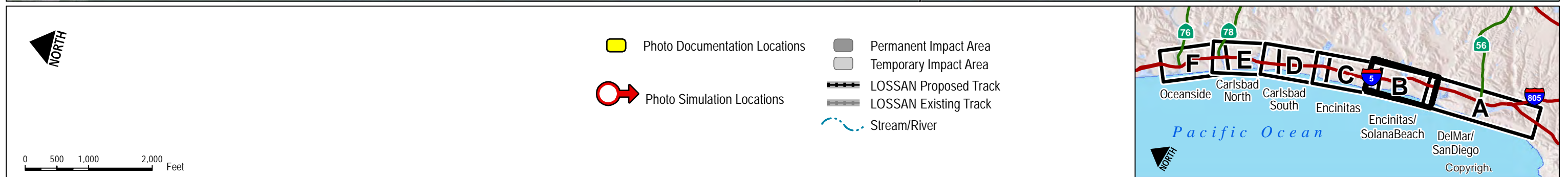
DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

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FIGURE 1A
3D Simulation Photo Key Map (City of Del Mar / San Diego)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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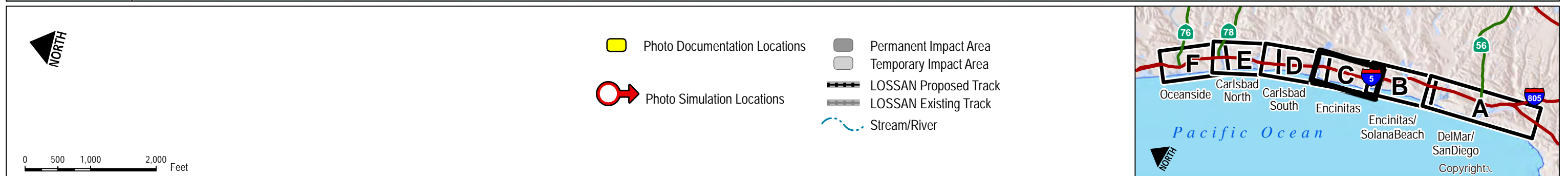
DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

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FIGURE 1B
3D Simulation Photo Key Map (City of Encinitas / Solana Beach)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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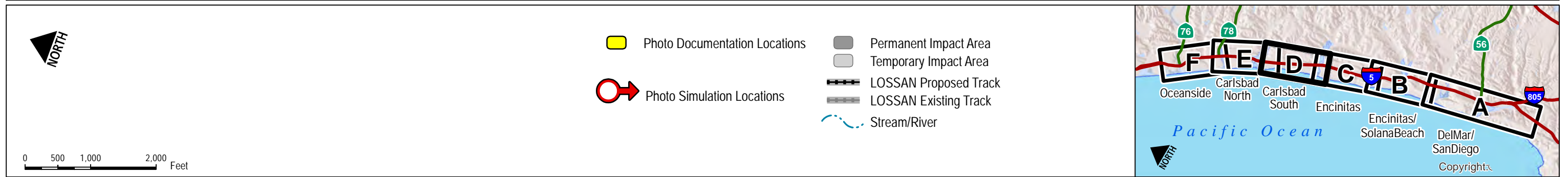
DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

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FIGURE 1C
3D Simulation Photo Key Map (City of Encinitas)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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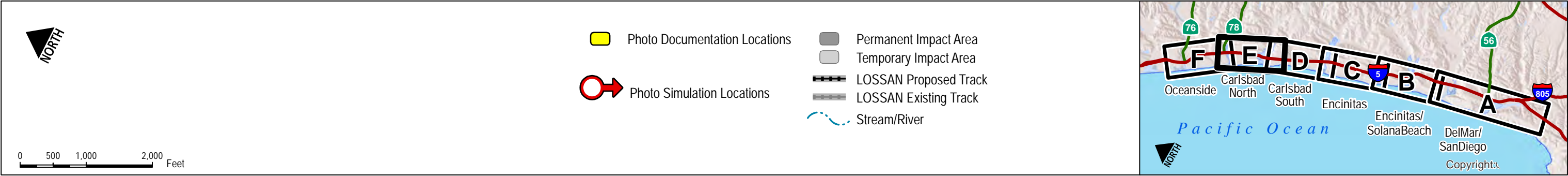
DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

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FIGURE 1D
3D Simulation Photo Key Map (City of Carlsbad [South])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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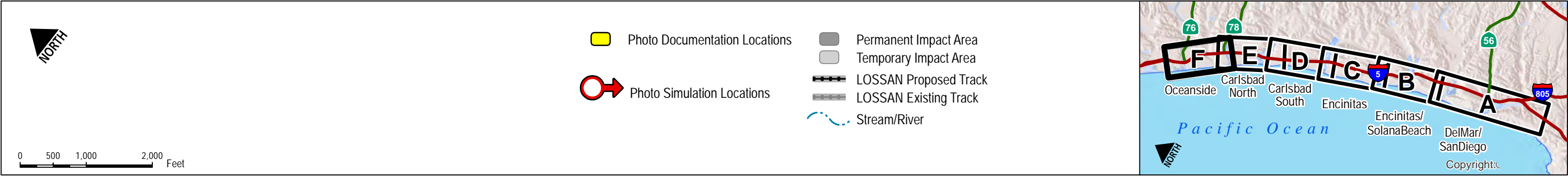
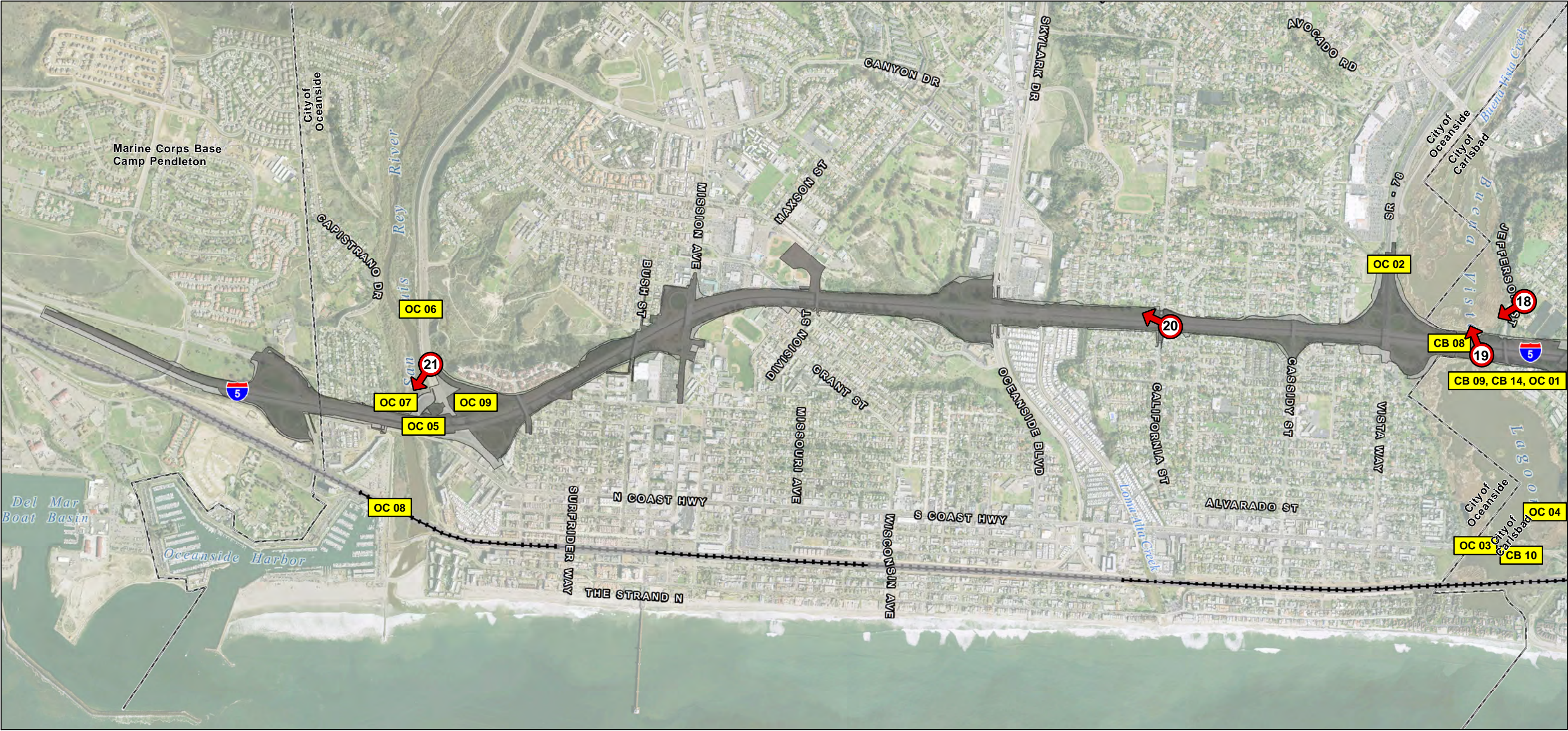


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FIGURE 1E
3D Simulation Photo Key Map (City of Carlsbad [North])

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, USGS NHD, Imagery: DigitalGlobe March 2008

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FIGURE 1F
3D Simulation Photo Key Map (City of Oceanside)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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FIGURE 5.7-5A

Sorrento Valley Road Pedestrian Trail (Existing View)

Planned Phase: 2021-2030

North Coast Corridor PWP/TREP

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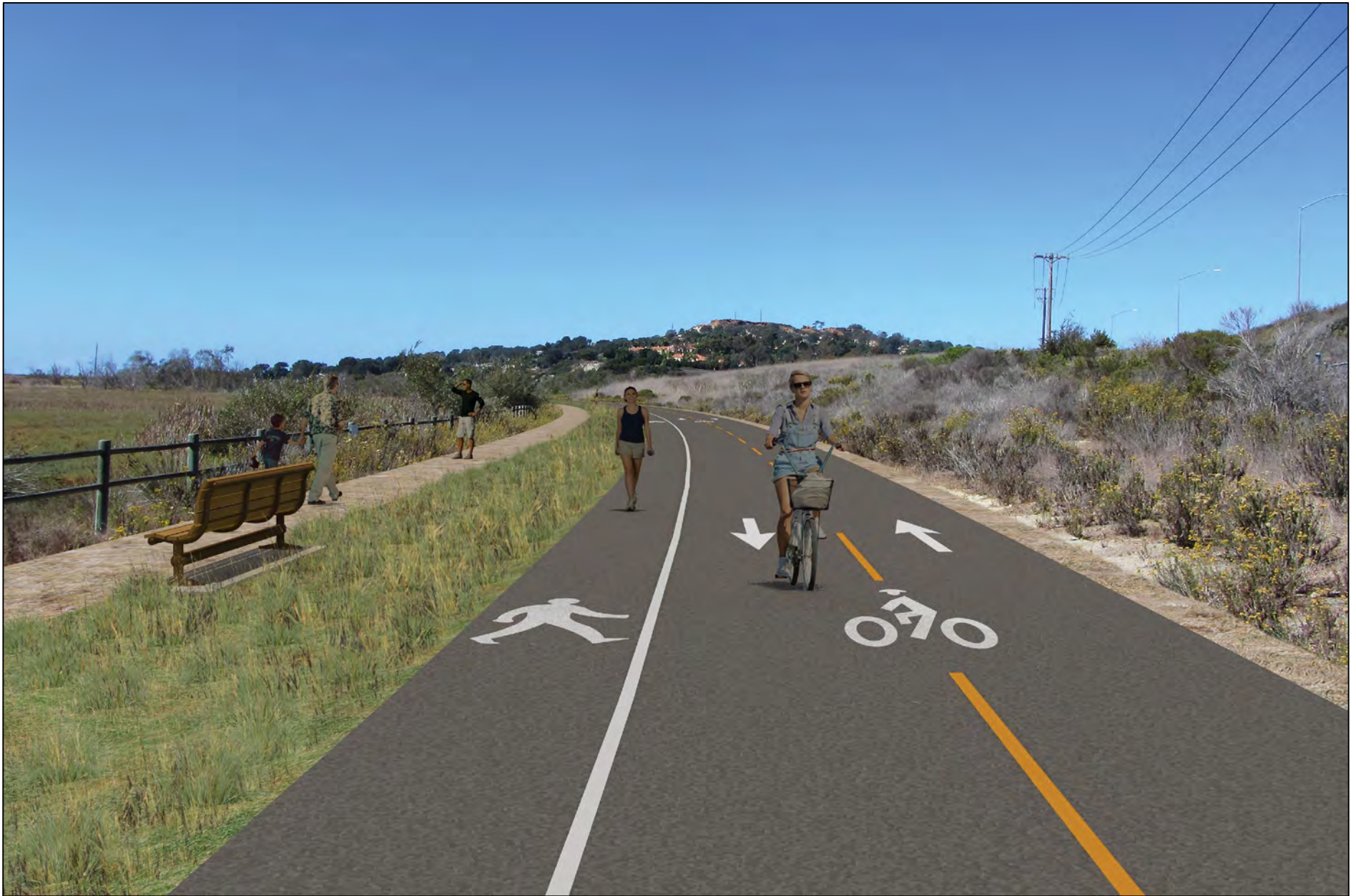


FIGURE 5.7-5B

Sorrento Valley Road Pedestrian Trail (3D Simulation)

Planned Phase: 2021-2030

North Coast Corridor PWP/TREP

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FIGURE 5.7-6A

Northbound I-5 - North of Del Mar Heights Road (Existing View)

Planned Phase: 2021-2030

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FIGURE 5.7-6B

Planned Phase: 2021-2030

Northbound I-5 - North of Del Mar Heights Road (3D Simulation)

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Planned Phase: 2021-2030

North Coast Corridor PWP/TREP

I-5 Del Mar Heights Pedestrian Trail (3D Simulation)

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FIGURE 5.7-7

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FIGURE 5.7-8A

San Dieguito River From Pedestrian Trail (Existing View)

Planned Phase: 2021-2030

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FIGURE 5.7-8B

San Dieguito River From Pedestrian Trail (3D Simulation)

Planned Phase: 2021-2030

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FIGURE 5.7-9A

Southbound I-5 at San Dieguito River (Existing View)

Planned Phase: 2021-2030

North Coast Corridor PWP/TREP

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FIGURE 5.7-9B

Planned Phase: 2021-2030

Southbound I-5 at San Dieguito River (3D Simulation)

North Coast Corridor PWP/TREP

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FIGURE 5.7-10A

Southbound I-5 Near Ida Avenue (Existing View)

Planned Phase: 2021-2030

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FIGURE 5.7-10B

Southbound I-5 Near Ida Avenue (3D Simulation)

Planned Phase: 2021-2030

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FIGURE 5.7-11A

Northbound I-5 at San Elijo Lagoon (Existing View)

Planned Phase: 2010-2020

North Coast Corridor PWP/TREP

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FIGURE 5.7-11B

Northbound I-5 at San Elijo Lagoon (3D Simulation)

Planned Phase: 2010-2020

North Coast Corridor PWP/TREP

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FIGURE 5.7-12A

Northbound View 2 of Sign 623 at San Elijo Lagoon (Existing View)

Planned Phase: 2010-2020

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FIGURE 5.7-13A

Northbound View 2 of Sign 623 at San Elijo Lagoon (3D Simulation)

Planned Phase: 2010-2020

North Coast Corridor PWP/TREP

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FIGURE 5.7-13A

Northbound View 1 of Sign 623 at San Elijo Lagoon (Existing View)

Planned Phase: 2010-2020

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FIGURE 5.7-13B

Northbound View 1 of Sign 623 at San Elijo Lagoon (3D Simulation)

Planned Phase: 2010-2020

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FIGURE 5.7-14A

San Elijo Lagoon from San Elijo Lagoon Trail (Existing View)

Planned Phase: 2021-2030

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FIGURE 5.7-14B

San Elijo Lagoon from San Elijo Lagoon Trail (3D Simulation)

Planned Phase: 2010-2020

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FIGURE 5.7-15

San Elijo Lagoon Pedestrian Trail (3D Simulation)

Planned Phase: 2010-2020

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FIGURE 5.7-16A

Westbound Manchester Avenue (Existing View)

Planned Phase: 2021-2030

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FIGURE 5.7-16B

Westbound Manchester Avenue (3D Simulation)

Planned Phase: 2010-2020

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FIGURE 5.7-17A

Southbound I-5 at Vista Point (Existing View)

Planned Phase: 2021-2030

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Planned Phase: 2021-2030

North Coast Corridor PWP/TREP

Southbound I-5 at Vista Point (3D Simulation)

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FIGURE 5.7-17B

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FIGURE 5.7-18A

Northbound I-5 South of Vista Point (Existing View)

Planned Phase: 2021-2030

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Planned Phase: 2021-2030

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Northbound I-5 South of Vista Point (3D Simulation)

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FIGURE 5.7-18B

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FIGURE 5.7-19A

Sign 643 - Southbound I-5 North of Vista Point (Existing View)

Planned Phase: 2021-2030

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FIGURE 5.7-19B

Sign 643 - Southbound I-5 North of Vista Point (3D Simulation)

Planned Phase: 2021-2030

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FIGURE 5.7-20A

Planned Phase: 2021-2030

Sign 631 - Southbound I-5 North of Manchester Avenue (Existing View)

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FIGURE 5.7-20B

Planned Phase: 2021-2030 **Sign 631 - Southbound I-5 North of Manchester Avenue (3D Simulation)**



FIGURE 5.7-21A

Planned Phase: 2021-2030

Southbound I-5 North of Union Street (Existing View)

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Planned Phase: 2021-2030

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Southbound I-5 North of Union Street (3D Simulation)

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FIGURE 5.7-21B

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FIGURE 5.7-22A

Batiquitos Navigator Circle (Existing View)

Planned Phase: 2021-2030

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FIGURE 5.7-22B

Batiquitos Navigator Circle (3D Simulation)

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FIGURE 5.7-23A

I-5 Southbound at Batiquitos Lagoon (Existing View)

Planned Phase: 2021-2030

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FIGURE 5.7-23B

I-5 Southbound at Batiquitos Lagoon (3D Simulation)

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FIGURE 5.7-24A

Batiquitos East Trail (Existing View)

Planned Phase: 2021-2030

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FIGURE 5.7-24B

Batiquitos East Trail (3D Simulation)

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Planned Phase: 2021-2030

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Agua Hedionda YMCA (Existing View)

FIGURE 5.7-25A

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FIGURE 5.7-25B

Agua Hedionda YMCA (3D Simulation)

Planned Phase: 2031-2040

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FIGURE 5.7-26A

Southbound I-5 at Agua Hedionda (Existing View)

Planned Phase: 2021-2030

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FIGURE 5.7-26B

Planned Phase: 2031-2040

Southbound I-5 at Agua Hedionda (3D Simulation)

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FIGURE 5.7-27A

Planned Phase: 2021-2030

Agua Hedionda East Trail at Hoover Street Terminus (Existing View)

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FIGURE 5.7-27B

Planned Phase: 2031-2040

Agua Hedionda East Trail at Hoover Street Terminus (3D Simulation)

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FIGURE 5.7-28A

Buena Vista Lagoon at Jefferson Street (Existing View)

Planned Phase: 2021-2030

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FIGURE 5.7-28B

Planned Phase: 2031-2040

Buena Vista Lagoon at Jefferson Street (3D Simulation)

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FIGURE 5.7-29A

Buena Vista Lagoon at Jefferson Street (Existing View)

Planned Phase: 2021-2030

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FIGURE 5.7-28B

Planned Phase: 2031-2040

Buena Vista Lagoon at Jefferson Street (3D Simulation)

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FIGURE 5.7-30A

Planned Phase: 2021-2030

California Street Bridge View 2 (Existing View)

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FIGURE 5.7-30B

Planned Phase: 2031-2040

California Street Bridge View 2 (3D Simulation)

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FIGURE 5.7-31A

San Luis Rey from SR-76 (Existing View)

Planned Phase: 2021-2030

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FIGURE 5.7-31B

San Luis Rey from SR-76 (3D Simulation)

Planned Phase: 2031-2040

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FIGURE 5.7-32A

Planned Phase: 2031-2040

Northbound I-5 South of Mission Avenue (Existing View)

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FIGURE 5.7-32B

Northbound I-5 South of Mission Avenue (3D Simulation)

Planned Phase: 2031-2040

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FIGURE 5.7-33A

Looking West along Eastbound Mission Avenue (3D Simulation)

Planned Phase: 2031-2040

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FIGURE 5.7-33B

Looking West along Eastbound Mission Avenue (3D Simulation)

Planned Phase: 2031-2040

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5.8 SITE STABILITY AND MANAGEMENT

5.8.1 Corridor Setting

The North Coast Corridor (NCC) parallels the Southern California coastline and is located in a region where transportation infrastructure is vulnerable to a variety of natural hazards, including threats from earthquakes, landslides, storm waves, and flooding. The coastal bluffs, beaches, lagoons, and steep hillsides within the corridor are particularly subject to erosion and potential instability due to heavy rains and, in the case of coastal bluffs, beaches, and lagoons, wave uprush associated with winter storms.

Transportation infrastructure must ensure the safety of its users in light of both natural and operational hazards. As travel demand grows, improving and maintaining safe rail and highway facilities will be an ongoing and important priority for the region; thus, proposed program improvements must be designed to assure stability and structural integrity. In addition, a key safety consideration for the PWP/TREP would focus on reducing or eliminating potential conflicts between and among people, automobiles, and trains. As discussed in more detail in Section 5.3, Public Access and Recreation, proposed PWP/TREP improvements would provide numerous new or upgraded rail and highway facility crossings to address and reduce potential conflicts between and among people, automobiles, and trains along the corridor, thereby facilitating safe coastal access and recreation opportunities in the corridor.

5.8.1.1 Geology, Soils, Seismicity, and Topography

The corridor's geology, soils, seismicity, and topography are documented in the *LOSSAN Final Program EIR/EIS* (September 2007) for the LOSSAN rail corridor improvements, and a Preliminary Geotechnical Report, prepared by the California Department of Transportation's (Caltrans) Office of Geotechnical Design South 2 (OGDS2) for the proposed NCC improvements, the findings of which are incorporated into the *I-5 NCC Project EIR/EIS* (October 2013). The Preliminary Geotechnical Report presents the results of initial archival research of pre-existing data, field reconnaissance, and preliminary analysis and recommendations for the proposed highway improvements.

Geology/Soils

The NCC traverses terrain comprising three predominate and repetitive geologic features: 1) through-cuts in relatively young marine terrace, sandstone, and shale formation; 2) artificial fills; and 3) unconsolidated lagoonal alluvium.

Natural and artificial cut slopes along the corridor are primarily composed of Torrey Sandstone and Delmar Formation. Torrey Sandstone is porous and permeable, and therefore susceptible to erosion. Delmar Formation is considered to be poorly bedded and indurated, consisting of sandy clay stone interbedded with medium- to coarse-grained gray sandstone; therefore, steep unprotected slopes are susceptible to erosion. These formations are generally capable of supporting large stable cut slopes at a 1:2-foot (vertical to horizontal) inclination and may support much steeper temporary excavations. The borrow soil derived from these units is generally well suited for use as engineered embankment fill.

The largest features of engineered artificial fill in the corridor occur where rail and freeway embankment fill has been placed at lagoon crossings. Numerous other, smaller fill areas exist elsewhere along the corridor. Highway fills have slopes at 1:2-foot (vertical to horizontal) inclination and appear to be performing well. Large areas of embankment settlement along the highway corridor have been observed and determined to be the result of settlement of the underlying alluvium.

Lagoonal Alluvium consists of lagoon sediments that are composed of weak, poorly consolidated, sand, silt, clay, and gravel with more consolidated soil at depth. These relatively weak soils may be subject to settlement and bearing capacity failure, as evidenced at the highway corridor where 6 to 9 feet of settlement of the finished embankment was recorded.

Seismicity

The seismicity of Southern California is dominated by the intersection of the north-northwest trending San Andreas Fault system and the east-west trending Transverse Ranges Fault system. The corridor is subject to ground shaking associated with earthquakes on faults of both these systems.

Major fault expressions near the corridor include the San Andreas, San Jacinto, Elsinore, and Rose Canyon Fault Zones. Additionally, a complex system of northwest trending faults offshore from San Diego, which includes the Coronado Banks and San Diego Trough Faults, are seismic sources that may cause minimal to moderate shaking in the corridor. The closest active major fault to the corridor facilities is the Newport Inglewood/Rose Canyon East Fault, which runs offshore in a northwest trend and then comes onshore in La Jolla, just south of the corridor, and runs to Mission Bay.

Earthquakes can cause soil liquefaction where loosely packed, saturated sediments come loose from the intense shaking of the earthquake. Seeps, springs, ephemeral streams, and perched water have been identified within the corridor, generally occurring at the toe of slopes and embankments, at the contact between permeable sandstone and impermeable shale, within cut-slope faces, at grade, and within canyons crossed or traversed by the rail and highway facilities. Therefore, it is anticipated that saturated older and younger alluvium deposits will underlie the proposed improvement areas, which are considered liquefiable from the surface to depths on the order of 50 to 60 feet. This includes alluvial deposits underlying the existing bridge structures and the embankment fills. Areas underlain by Quaternary terrace material as well as all bedrock units are not considered liquefiable due to their high density, clay content, age, and/or unsaturated conditions.

Topography

Landforms in the corridor are comprised of a series of uplifted and incised wave-cut terraces that parallel the coastline. East-west trending river valleys and drainages dissect the terraces and convey ephemeral streams and perennial rivers and streams west to the ocean. Terrace elevations are typically 328 feet or less, while stream and lagoon elevations are at, or slightly above, sea level. The lagoons and rivers in the corridor represent broad topographic lows that occur at semi-regular intervals along the corridor. These topographic lows are subject to tidal flow and episodic flooding arising from hinterland storm runoff. Steep topography in the corridor is commonly the result of landform incision by the generally westward flowing drainages, resulting in oversteepened slopes in some areas of the corridor. Steep slopes and bluffs resulting from beach side erosion and wave action occur adjacent to the LOSSAN rail corridor in Del Mar and Encinitas.

Existing rail and highway improvements traverse lagoons, marine terraces, small canyons, and drainages in a series of through-cuts and fill embankments. Natural slopes along the corridor demonstrate a maximum slope of approximately 1:3-foot (vertical to horizontal) inclination. Existing cut slopes are typically at 1:2-foot inclination (vertical to horizontal) and are up to 148 feet high. The cut slopes primarily expose Torrey Sandstone and are considered relatively stable.

5.8.1.2 Drainage and Flood Areas

Hydrologic resources of the corridor are documented in the *LOSSAN Final Program EIR/EIS* for the LOSSAN rail corridor improvements and Location Hydraulic Studies (February 2008/February 2009)

prepared for the *I-5 NCC Project Final EIR/EIS*, which incorporate the results of the Hydrologic Engineering Centers Rivers Analysis System (HEC-RAS).

The PWP/TREP improvement areas parallel the coastline throughout Northern San Diego County, residing entirely within the coastal region of the San Diego Basin and traversing surface streams and floodplains along with lagoons, small canyons, and drainages. The improvement areas cross four of the 11 hydrologic units (HU) within the San Diego Regional Water Quality Control Board (RWQCB) Basin. These HUs include San Luis Rey, Carlsbad, San Dieguito, and Los Peñasquitos. The corridor's surfaced hydrology is primarily influenced by five lagoons, five creeks, and the San Luis Rey River.

The San Luis Rey watershed is the largest of the four HUs within the corridor and is drained by the San Luis Rey River. The Carlsbad HU comprises seven sub-basins that include San Elijo Lagoon (Escondido Creek), Cottonwood Creek, Batiquitos Lagoon (San Marcos Creek), Encinas Creek, Agua Hedionda Lagoon (Agua Hedionda Creek), Buena Vista Lagoon (Buena Vista Creek), and Loma Alta Creek. The San Dieguito HU drains into the San Dieguito River. The corridor begins near the middle of the Los Peñasquitos HU and crosses Carroll Canyon Creek, Los Peñasquitos Creek, and Carmel Creek.

In addition to the large watershed features described above, the corridor includes several small drainages and culverts that convey minor year-round flows attributable to urban runoff and/or perched groundwater seepage. All of the significant hydrologic features in the corridor receive runoff from both natural and developed areas.

Floodplains are land next to a waterbody that becomes covered by water when the waterbody overflows its banks. The zone of interest for the analysis of hydrologic resources in this PWP/TREP evaluation is defined as a special flood hazard area or Zone A, which is the flood insurance rate zone that corresponds to the 100-year flood hazard area in the hydrologic resource study area.

Floodplains encompass floodways, which are the primary areas that convey flood flows. Typically, floodways are channels of a stream, including any adjacent areas such as lagoons, floodplains and smaller streams that must be generally kept free of encroachment so that the 100-year flood can be carried without substantial increases to flood heights. The area between the floodway and the 100-year floodplain boundary is referred to as the floodway fringe. According to guidelines established by the Federal Emergency Management Agency (FEMA), an increase in flood height in the floodway due to any encroachment in the floodway fringe areas may not exceed 12 inches, provided that hazardous velocities are not produced in the water body.

As delineated by FEMA, 100-year floodplains in the study area are associated with significant drainage channels, riparian areas, and lagoons. Significant surface waters noted along both the rail and highway corridors include floodplains of Soledad Canyon Creek, Los Peñasquitos Creek, San Dieguito Lagoon, San Elijo Lagoon, Batiquitos Lagoon, Agua Hedionda Lagoon, Buena Vista Lagoon, Loma Alta Creek, and San Luis Rey River. In addition, Carmel Creek, Cottonwood Creek, and Encinas Creek have been identified as significant water features for the highway facility.

5.8.1.3 Shoreline Erosion/Sea Level Rise

Through Del Mar, as well as a limited portion of Encinitas, existing and proposed LOSSAN rail corridor improvements occur along, and adjacent to, coastal bluffs and are therefore subject to shoreline/coastal bluff erosion and retreat. In addition, many of the rail and highway bridges cross waterbodies that may also be subject to shoreline erosion, particularly the corridor's lagoons and river systems. In general, shoreline erosion is controlled by a combination of marine, fluvial, and subaerial

erosion. Marine erosion results from the effects of the ocean and wave action along beaches and/or the base of coastal bluffs. Fluvial shoreline or bank erosion occurs internally at lagoons along waterways, and results from the force of running water in creeks, streams, and rivers. Subaerial erosion results from erosional influences that exist above the high-water line and includes erosion due to surface runoff, groundwater seepage, wind, pedestrian traffic, rodent activity, and slope instability.

Sea level rise has occurred on a global and local scale over the last century, and projections suggest that the rate might accelerate into future planning horizons. Because several of the NCC project elements are located within, or directly adjacent to, the marine environment, sea level rise considerations must be incorporated into project planning and design to determine the potential effects sea level rise may have on the infrastructure improvements, and/or how planning to accommodate sea level in project design may have potential secondary effects on the environment. Potential effects of sea level rise include increased shoreline erosion and scour, increased nearshore wave energy, flooding and reduced beach area, all of which can affect the longterm stability of the infrastructure located within, or directly adjacent to, the marine environment. In turn, projected sea level rise design considerations may have the potential to raise issues with wetlands encroachment, views, and right of way impacts.

In March 2013, the State of California, via the California Climate Action Team and Ocean Protection Council, established the latest sea level rise guidance, which was based on the latest and most relevant scientific study presented in the 2012 National Research Council study (NRC 2012). The latest state guidance is to consider a range in sea level rise of 0.13 feet to 0.98 feet between 2000 (Base Year) and 2030, 0.39 feet to 2.00 feet between 2000 and 2050, and 1.38 feet to 5.48 feet between 2000 and 2100. The guidance also recommends a site-specific risk analysis to determine the appropriate sea level rise projection for design considerations.

To assist in planning and designing of the NCC lagoon bridge crossings, the San Diego Association of Governments (SANDAG) and Caltrans prepared the San Diego Region Coastal Sea Level Rise Analysis (September 2013), included as Appendix D, which assesses potential drainage, tidal inundation and flooding impacts to NCC transportation infrastructure crossing various waterbodies throughout the corridor. The analysis summarizes and compiles all relevant state, federal and local guidance and provides recommendations for establishing planning and design criteria, and conducting risk assessment for the NCC bridges. Guidance for design water levels for the NCC bridge projects was provided across the full range of potential future mean sea levels in consideration of high ocean water levels both with and without fluvial floods (50-year and 100-year). High future water levels that combine the extreme flood event with sea level rise of 1.5 feet, 3.0 feet, and 5.5 feet are compared to existing and proposed rail and highway bridge elevations to assist in bridge design and risk assessment for each bridge.

5.8.1.4 Hazardous Wastes

The *LOSSAN Final Program EIR/EIS* for the rail corridor improvements cites the following available databases and information that were reviewed to identify the extent and nature of known hazardous materials/hazardous waste sites to assess potential hazardous materials risks:

- **Federal National Priorities List/Superfund:** This U.S. Environmental Protection Agency (EPA)-developed database lists sites that pose an immediate public health hazard, and where an immediate response to the hazard is necessary. These listings are also found in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) database, also known as CERCLIS (Title 42 U.S.C. Chapter 103).

- **State Priority List:** Sites listed in this Department of Toxic Substances Control and RWQCB database are priority sites that were compiled from Annual Workplan (AWP) and CAL-SITE databases, and sites where Preliminary Endangerment Assessments were conducted by the California Environmental Protection Agency. The AWP database lists contaminated sites authorized for cleanup under the Bond Expenditure Plan developed by the California Department of Public Health as a site-specific expenditure plan to support appropriating Hazardous Substance Cleanup Bond Act funds.
- **State of California Solid-Waste Landfills:** The landfill sites listed in this database generally have been identified by the state as accepting solid wastes. This database includes open, closed, and inactive solid-waste disposal facilities and transfer stations pursuant to the Solid Waste Management and Resource Recovery Act of 1972 and is maintained by the California Integrated Waste Management Board. The locations of the disposal facilities are primarily identified through permit applications and local enforcement agencies.

The following reports were prepared for the proposed highway improvements and are incorporated into the *I-5 NCC Project Final EIR/EIS*:

- *Site Investigation, Lead Investigation on Route 5 from Via de la Valle to Leucadia Boulevard, San Diego, Solana Beach, and Encinitas, California*, KP R57.9/R68.7 (PM R36.0/R42.7). Geocon Consultants, Inc., dated June 22, 2001.
- *Aerial Deposited Lead Investigation, Contract No. 43A0012, Task Order No. 11-07830K-VW, Route 5 Between Leucadia Boulevard and Brooks Street, San Diego County California*. PM 42.7/R51.2. KP R68.7/82.4. PSI, dated June 28, 2001.
- *Limited Phase II Environmental Site Assessment Interstate 5 Expansion, Del Mar Heights Road to Birmingham Drive, San Diego California*. November 15, 2005.
- *Phase II Environmental Site Assessment Interstate 5 Expansion, Birmingham Drive to Vandergrift Boulevard, San Diego California*. October 31, 2006.
- *Environmental Geodata [LOSSAN]*. Environmental Data Resources, Inc. (EDR). January 2003.

These reports evaluate the potential hazardous waste/material concerns within the project study area. These studies indicate that the following contaminants occur, or have the potential to occur within the highway project area:

- Aerially deposited lead
- Petroleum hydrocarbons
- Landfills
- Pesticides and herbicides
- Chemical spills
- Asbestos
- Lead
- Treated wood

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health, and land use. Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act of 1976, and the California

Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

5.8.2 PWP/TREP Concerns

5.8.2.1 Geology, Soils, Seismicity, and Topography

As the proposed PWP/TREP program would involve rail and highway improvements to existing facilities, safety and stability concerns associated with project implementation within the NCC would be similar to those that currently exist today. Environmental documentation and analysis prepared for the PWP/TREP rail and highway corridor improvements indicate that the study area would be subject to ground shaking and the possibility of liquefaction. Surface fault rupture, ground shaking, and seismically induced ground failure could result in substantial damage to structures. In addition, concerns include potential risk to public safety due to collapse or toppling of partially constructed or completed transportation facilities during strong earthquakes. Interruption of service due to failed infrastructure caused by ground rupture along active faults or ground motion during strong earthquakes could affect transportation facilities that are critical for emergency evacuation for the region, which is also subject to geologic, flood, tsunami, and fire hazards.

Earthquakes could also trigger landslides where slopes are prone to failure because of geologic conditions or because of modifications during construction. Slope instability could also occur naturally due to factors such as fracture patterns, soil saturation, steep slopes, or excessive erosion. PWP/TREP improvements that involve landform alteration, significant ground disturbance, and vegetation removal could create or contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area. Slope instability could cause severe damage to surface and near-surface improvements as well as risks to public safety; however, slope instability can generally be mitigated with planning and design.

5.8.2.2 Drainage and Flood Areas

Portions of the PWP/TREP study area are subject to flooding and other drainage concerns. As the proposed PWP/TREP program would involve rail and highway corridor improvements to existing facilities, potential safety and stability impacts associated with project implementation within the NCC would be similar to those that exist today. However, new rail and highway corridor improvements that encroach on floodplains could potentially reduce the flood-carrying capacity and increase flood elevations. In addition, existing and proposed waterbody crossings, particularly culvert crossings, if not properly designed may be subject to overtopping during high-flood events and/or due to debris reducing water conveyance, and, over the years, may be undercut by stream flow, eventually causing scouring around the structure undermining the foundation, and, thus, facilitating structural collapse.

5.8.2.3 Shoreline Erosion/Sea Level Rise

Portions of the PWP/TREP study area are subject to shoreline erosion. Through Del Mar, as well as a limited portion of Encinitas, existing and proposed rail corridor improvements would occur along and adjacent to coastal bluffs and therefore would be subject to shoreline/coastal bluff erosion and retreat. Portions of the rail corridor in Del Mar are protected by shoreline protective devices that are in need of ongoing repair and maintenance. In Encinitas, the rail improvement options would be located east of Pacific Coast Highway, which would provide an ample setback and buffer area between the alignment options and the coastal bluffs thereby ensuring that the rail facility would not be subject to potential site stability issues associated with bluff failure or shoreline erosion. In addition, many of the rail and highway facility bridges cross waterbodies that could also be subject to shoreline erosion, particularly

the corridor's lagoons and river systems where bridge abutments and/or piles may be located in areas subject to flooding, storm surge or wave action.

The character of the coastline is the result of various natural processes, one of which is rising sea levels due to global climate change, which is a growing concern among coastal communities. The rising sea level has the potential to expose the coastline to increased storm surge, wave uprush, and flooding, and could affect existing NCC improvements, particularly where the improvements would be near the shoreline or subject to tidal influences such as bluffs, beach areas, and lagoons. Rising water levels would have a direct impact on shoreline erosion, which, in turn, could undermine foundations and shoreline protection structures for rail facilities along the coastal bluffs of Del Mar and Encinitas and/or rail and highway bridge structures across lagoons.

Potential impacts associated with shoreline erosion, and the exacerbating effects of sea level rise on shoreline erosion, storm surge and flooding, can be mitigated by siting and designing the proposed rail and highway improvements in a manner that minimizes the frequency with which structures are subject to wave action, tidal inundation and flooding. Such siting and design options include minimizing development encroachment into drainage and flood areas as much as feasible, locating development as far landward as feasible from areas subject to shoreline erosion (particularly coastal bluffs and beaches), elevating bridge structures above drainage and flood areas, widening and deepening channels at facility crossings to allow for more flow through the lagoon, streams and drainage waterbodies, and, where avoiding development in areas subject to shoreline erosion, tidal inundation and flooding is infeasible, designing improvements to withstand significant storm events and erosion.

5.8.2.4 Hazardous Wastes

Environmental documentation and analysis prepared for the PWP/TREP rail and highway improvements indicate that portions of the study area contain hazardous wastes.

Worker health and safety and public safety are key issues when dealing with hazardous materials that could affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

In addition, potential chemical spills and other hazards from truck, auto, and train accidents could occur along the NCC, posing a risk to adjacent land uses. Furthermore, construction activities have the potential for hazardous materials' release, spill, or leakage from construction demolition of existing structures and/or from construction vehicles and equipment.

5.8.2.5 LOSSAN Rail Corridor Impact Assessment

Geology, Soils, Seismicity and Topography

The proximity of the rail corridor to active fault systems establishes the potential for the area to be affected by a major seismic event. In general, seismic activity in the study area could include strong ground motion, liquefaction, seismically induced settlement, and embankment spreading.

Active seismicity represents a key constraint on design and construction for proposed rail improvements, including existing and proposed station sites, proposed tunneling alternatives, and planning for potential train derailment during a peak event. Some of the alignment options would require special design, including additional structural ductility and redundancy to withstand severe ground shaking as well as the potential for liquefaction and/or other types of seismically induced ground failure.

Standard engineering practice requires that the stability of project soils be evaluated for an appropriate safety factor and soil conditions must meet minimum safety factors for both static and seismic cases. Available data indicates that soils susceptible to erosion are located in a number of areas along the rail corridor. Erosion potential is not expected to be a substantial construction or operation issue; however, without the appropriate engineering, on-site soils and/or seismic activity could adversely affect the structural project section, predispose slope faces to erosion, and/or compromise slope stability.

Potential slope stability problems are of particular concern along the coastal bluff areas in Del Mar. In addition, proposed improvements that would involve landform alteration, significant ground disturbance, and vegetation removal could potentially create or contribute to erosion, geologic instability, or destruction of the site or surrounding area.

Drainage and Flood Areas

Drainage and floodplain impacts for proposed rail improvements are expected to be low overall, as the majority of proposed improvements would be done within the established LOSSAN rail right-of-way and would be designed to accommodate floodplain functions. Many of the proposed rail improvements (e.g., San Dieguito Double-Track and Bridge Replacement, Sorrento Valley Double-Track) will elevate the track over existing drainage and flood areas to address drainage and flooding concerns. It is expected that crossings over the corridor's waterbodies would be spanned either by bridges or culverts or, in the case of Del Mar and University Town Center, by improvements involving deep tunnels that would avoid surface floodplains; however, the placement of structures along the shoreline and/or within the floodplain of a waterbody, if not designed to minimize fill and the alteration and channelization of shorelines and/or floodplains, could adversely affect the ability of the system to convey flood waters and/or could contribute to increased erosion.

Shoreline Erosion/Sea Level Rise

In Del Mar, the existing LOSSAN rail alignment is constructed across the top of the relatively flat mesa, generally at or near the elevation of the bluff top, 40 to 65 feet above sea level. This rail alignment and its associated riprap protection provide a buffer from wave action; thus, the coastal bluff is predominantly subject to subaerial (surface water and wind) erosional processes in this location. A number of remedial or stabilization measures exist along the railway in the Del Mar area, including older improvements along the coastal bluff face that are in need of ongoing repair and maintenance. Wooden and concrete seawalls along portions of the bluff are currently protecting portions of the base of the bluff against erosion due to typical wave impact; however, these walls are occasionally of insufficient height to block heavy storm surf and require periodic maintenance to remain effective.

Coastal bluff areas along the existing rail corridor in Del Mar have the potential for slope instability due to shoreline erosion and retreat. While proposed PWP/TREP improvements could have a beneficial impact to shoreline processes with an option to remove the existing rail corridor from the coastal bluff areas in Del Mar, discussed below, ongoing maintenance activities and the possibility of having to extend or expand the existing shoreline protection system in consideration of sea level rise to maintain the existing rail right-of-way could adversely affect the long-term stability of the shoreline and rail corridor due to additional landform alteration and/or erosional impacts caused by new or extended shoreline protection devices. Section 30235 of the Coastal Act provides, in part, that shoreline protection devices shall be permitted to protect existing structures or public beaches in danger from erosion, when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Consistent with previous Commission actions to approve installation and ongoing maintenance activities for the existing shoreline protection system at Del Mar Bluffs (CDP 06-01-081, CDP 06-96-156 and CC-048-04), future stabilization and maintenance activities for the shoreline protection system

will be required to further demonstrate that the improvements are necessary to protect the existing rail facility from bluff erosion, and that the improvements are the least environmentally damaging feasible alternative.

In addition, many of the rail bridges cross waterbodies that could also be subject to internal shoreline or bank erosion, particularly the corridor's lagoons and river systems. The placement of structures along the internal shorelines and/or within the floodplain of these waterbodies could cause excessive erosion and result in structural failure if not designed to minimize the alteration and channelization of shorelines and/or floodplains, and with full consideration of the potential for sea level rise to expose the corridor waterbodies to increased ocean water levels and flooding. As discussed above, siting and design options to mitigate for these potential adverse impacts include minimizing development encroachment into drainage and flood areas as much as feasible, locating development as far landward as feasible from areas subject to shoreline erosion (whether along the open coast or internal at lagoons), elevating bridge structures above drainage and flood areas, and, where avoiding development in areas subject to shoreline erosion, tidal inundation and flooding is infeasible, designing improvements to withstand significant storm events and long-term erosion.

Table 5.8-1 summarizes the NCC rail bridge risk assessment for the complete range of sea level rise scenarios assessed in the San Diego Region Coastal Sea Level Rise Analysis (September 2013), included as Appendix D of the PWP/TREP. As indicated in Table 5.8-1, it is anticipated that the PWP/TREP Phase 1 San Elijo Lagoon and Batiquitos Lagoon rail bridges would not be affected by sea level rise, with the exception of the San Elijo Lagoon bridge which would have some potential for short term flood risk to rail facility operations under the 36" and 66" sea level rise with fluvial flood scenario, and assuming the selected San Elijo Lagoon Restoration Project alternative does not include an option for a new lagoon inlet. Given the short duration of the potential flood risk (a matter of hours) it is anticipated that any risk to facility operations could be managed via storm monitoring and operational restrictions.

Given that final design of the rail bridge for San Elijo Lagoon is dependent on the selected alternative for the San Elijo Lagoon Restoration Project, additional site-specific risk analysis will be conducted to inform final design of the bridge and determine if the bridge may be designed to fully accommodate 1) worst-case scenario sea level rise projects, 2) the maximum amount of sea level rise projections feasible in conjunction with future adaptation, if constrained by competing economic and environmental impact factors, or 3) operational considerations necessary to address episodic, low-frequency operational constraints such as short-term (hours) bridge closures when freeboards are insufficient, if it is determined infeasible to accommodate sea level rise. Bridges to be built in subsequent phases will be reassessed in the future and, consistent with the Design/Development Strategies and Implementation Measures identified in Sections 5.8.3.3 and 5.8.3.4 below, such assessment will be done in the context of the best available science and guidance for future sea level rise projections available at that time.

TABLE 5.8-1: LOSSAN RAIL BRIDGE SEA LEVEL RISE (SLR) RISK ASSESSMENT

Waterbody/Bridge Location	Construction Timeline	Flood Risk Under Sea Level Rise Without Fluvial Flood	Flood Risk Under Current Sea Level With Fluvial Flood	Flood Risk Under Sea Level Rise With Fluvial Flood			Risk Assessment
		66" SLR	0" SLR	18" SLR	36" SLR	66" SLR	
San Dieguito River Bridge Replace & Double-Track (South Abutment)/MP 243.2	2021-2030	✓	✓	✓	✓	✓	Built in 1916. SLR is not expected to pose any risk to the proposed bridge.
San Dieguito River Bridge Replace & Double-Track (North Abutment)/MP 243	2021-2030	✓	✓	✓	✓	✓	Built in 1916. SLR is not expected to pose any risk to the proposed bridge.
San Elijo Lagoon Bridge Replacement & Double-Track (New Inlet Scenario)/MP 240.6	2010-2020	✓	✓	✓	✓	✓	SLR is not expected to pose any risk to the proposed bridge.
San Elijo Lagoon Bridge Replacement & Double-Track/MP 240.4	2010-2020	✓	✓	✓	✓	✓	Built in 1942. Short duration (a matter of hours) flood risk to rail facility remaining operational; flood risk can be managed via storm monitoring and operational restrictions.
Batiquitos Lagoon Bridge Replacement & Double-Track/MP 234.8	2010-2020	✓	✓	✓	✓	✓	SLR is not expected to pose any risk to the proposed bridge.
Buena Vista Lagoon Bridge Replacement Double-Track/MP 228.6	2010-2020	✓	✓	✓	✓	✓	Bridge currently under design but is expected to be designed such that SLR is not expected to pose any risk to the proposed bridge based on the March 2013 CO-CAT SLR values. Assuming a proposed soffit elevation similar to existing soffit elevation (a worst case design outcome), a short duration risk to the operation of the facility could be projected to occur during fluvial event and has been used in the presentation herein.
San Luis Rey River/MP 225.4	2010-2020	✓	✓	✓	✓	✓	SLR is not expected to pose any risk to the proposed bridge due to height of bridge.

Source: San Diego Region Coastal Sea Level Analysis, September 2013 (included as Appendix D of the PWP/TREP).

Blue indicates PWP/TREP Phase 1 bridge.

✓ No risk; projected water surface elevation below top of rail subgrade

✓ Short duration (matter of hours) risk to operation of transportation facility; projected water surface elevation above top of rail subgrade but below top of rail

✓ Short duration (matter of hours) risk to operation of transportation facility; projected water surface elevation above top of rail

Hazardous Wastes

The analysis contained within the *LOSSAN Final Program EIR/EIS* was limited to searches of standard databases listing known sites and did not incorporate information on other smaller sites that could contribute to risk on a local basis and would be studied at the project-specific level. Because neither site-specific investigations nor on-site fieldwork was performed, little information is available about the nature and severity of contamination at the sites identified, or the schedule or program for cleanup, if any, so the information in this section represents a “site-count” approximation and may not fully divulge potential risk levels. Finally, all of the rail improvement alignment options would be within or adjacent to existing rights-of-way, and these alignments have a land use history under which additional unknown contamination (e.g., spills or accidental releases) would be a possibility.

Proposed implementation of LOSSAN rail corridor improvements could result in the discovery of contaminated materials, such as creosote treated wood from LOSSAN bridge replacement. In addition, there is the potential for hazardous materials release into the environment during construction activities. As such, site-specific investigation and project-specific mitigation for future rail development activities would be necessary to adequately address potential impacts associated with hazardous wastes within the rail corridor improvement areas.

5.8.2.6 I-5 Highway Corridor Impact Assessment

Geology, Soils, Seismicity and Topography

The proximity of the highway project area to active fault systems establishes the potential for the area to be affected by a major seismic event, although ground-surface rupture is unlikely as there are no known active fault traces that cross the corridor. In general, seismic activity in the study area could include strong ground motion, liquefaction, seismically induced settlement, and embankment spreading, which could result in lateral spreading, cracking, slumping, or settlement of existing and proposed embankments causing structural failure. Caltrans Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans projects. The current policy is to use the anticipated Maximum Credible Earthquake (MCE) from young faults in and near California. The MCE is defined as the largest earthquake expected to occur on a fault over a particular period of time.

Caltrans’ standards require that the stability of project soils be evaluated for an appropriate safety factor and that soil conditions meet minimum safety factors for both static and seismic cases. Available data indicates that soils susceptible to erosion are located in a number of areas along the NCC. Most erosion potential could be controlled and contained through proper design, pollutant prevention plans, and mitigation. Erosion potential is not expected to be a substantial construction or operation issue; however, appropriate project-specific engineering must consider on-site soils and/or seismic activity that could adversely affect the structural project section, predispose slope faces to erosion, and/or compromise slope stability.

Drainage and Flood Areas

Drainage and floodplain impacts for proposed highway improvements are expected to be low, as the majority of proposed improvements would be done within the established highway corridor and proposed highway bridge crossings would not result in incompatible floodplain development. The *I-5 NCC Project Final EIR/EIS* includes a detailed impact assessment including the results of Location Hydraulic Studies performed for the following floodplains potentially affected by proposed highway improvements. FEMA Floodway/Floodplain ratings, existing and proposed highway bridge or culvert infrastructure improvements, and associated floodplain impacts for the corridor’s stream and rivers are identified in Table 5.8-2.

TABLE 5.8-2: STREAM/RIVER WATERBODIES AND FREEWAY CROSSINGS (I-5 HIGHWAY CORRIDOR)

Waterbody	City Location	FEMA Rating	Existing I-5 Crossing Type	Proposed I-5 Crossing Type	Water Surface Elevation Change
Cottonwood Creek	Encinitas	No FEMA Floodplain	Culvert	No Change	No Change
Encinas Creek	Carlsbad	No FEMA Floodplain	Culvert	Extend Culvert	0.22-foot Increase
Loma Alta Creek	Oceanside	FEMA Zone AE Floodway	Bridge	Widen Bridge	0.04-foot Increase
San Luis Rey River	Oceanside	FEMA Zone A99 Floodplain	Bridge	Widen Bridge	0.03-foot Increase

Source: I-5 NCC Project Final EIR/EIS (Section 3-9), October 2013.

The I-5 NCC Project Final EIR/EIS Location Hydraulic Studies for the corridor's stream and rivers conclude that 100-year flood events would continue to be contained within the existing floodplain boundaries at each crossing location in the corridor with the proposed highway improvements. Proposed bridge and culvert improvements would result in a slight increase in water surface elevation within the floodplain of the stream and river crossing locations; however, these increases are negligible (all less than 3 inches) and would not result in substantial impacts to on-site or off-site locations associated with drainage and flooding.

Shoreline Erosion/Sea Level Rise

Many of the highway bridges in the NCC cross waterbodies that could be subject to internal shoreline/bank erosion, particularly the corridor's lagoons and river systems. The placement of structures along the lagoon shorelines and/or within the floodplain of these waterbodies could experience undermining and structural failure if not designed to minimize the alteration and channelization of internal shorelines and/or floodplains, and with full consideration of the potential for sea level rise to expose the corridor waterbodies to increased ocean water levels and flooding. Siting and design options to mitigate for these potential adverse impacts have been evaluated in the I-5 NCC Project Final EIR/EIS and supporting technical studies to minimize development encroachment into drainage and flood areas as much as feasible, to elevate bridge structures above drainage and flood areas, and to design improvements to withstand significant storm events and erosion.

Table 5.8-3 summarizes the NCC I-5 bridge risk assessment for the complete range of sea level rise scenarios assessed in the San Diego Region Coastal Sea Level Rise Analysis (September 2013), included as Appendix D. As indicated in Table 5.8-3, it is anticipated that the PWP/TREP Phase 1 San Elijo Lagoon and Batiquitos Lagoon highway bridges would not be affected by sea level rise, with the exception of the Batiquitos Lagoon bridge which would have some potential for short term flood risk to the I-5 facility operations under the 66" sea level rise with fluvial flood scenario. Given the short-term, episodic, and low-frequency operational constraints posed by the risk, the risk would be managed via storm monitoring and operational restrictions, such as short-term (matter of hours) bridge closures should the freeboard insufficient. I-5 bridges to be built in subsequent phases will be reassessed in the future and, consistent with the Design/Development Strategies and Implementation Measures identified in Sections 5.8.3.3 and 5.8.3.4 below, such assessment will be done in the context of the best available science and guidance for future sea level rise projections available at that time.

To further address potential internal shoreline/bank and channel erosion and to ensure I-5 facilities are designed and constructed to minimize the alteration and channelization of shorelines and/or floodplains, Caltrans has determined that shoreline armoring at I-5 replacement bridge crossings would only occur on the slopes of bridge abutments. Any necessary rock slope protection would not encroach into the proposed channel dimensions as identified in the Lagoon Bridge Optimization Studies. Rock slope protection in the form of energy dissipaters at new or replacement culverts would be installed only where culvert outlet velocities are determined to be erosive during the design phase for the facilities and would be included in the relevant drainage plans.

TABLE 5.8-3: I-5 BRIDGE SEA LEVEL RISE (SLR) RISK ASSESSMENT

Waterbody/Bridge Location	Construction Timeline	Flood Risk Under Sea Level Rise Without Fluvial Flood	Flood Risk Under Current Sea Level With Fluvial Flood	Flood Risk Under Sea Level Rise With Fluvial Flood			Risk Assessment
		66" SLR	0" SLR	18" SLR	36" SLR	66" SLR	
Los Peñasquitos Creek Bridge Widening	2010-2020	✓	✓	✓	✓	✓	Built in 1970. Proposed bridge is upstream of tidal influence. SLR is not expected to pose any risk to the proposed bridge.
Carmel Creek Bridge Widening	2021-2030	✓	✓	✓	✓	✓	Project requires only nominal widening of existing bridge. Bridge profile set by existing 12 lane facility. SLR in the absence of a flood event is not expected to pose any risk to the proposed bridge. Under existing sea level the proposed bridge is expected to be at risk during flood events, which are of short duration. A flood occurring with higher sea levels is expected to pose some short duration risk to the proposed bridge. These risks will be managed via storm monitoring and operational restrictions.
Carmel Creek Bike Bridge (Culvert Replacement)	2021-2030	✓	✓	✓	✓	✓	As a Bike Bridge there is minimal risk associated with periodic closure during large storm events. SLR in the absence of a flood is not expected to pose any risk to the proposed bridge. Under existing sea level the proposed bridge is not expected to be at risk under a flood. A flood occurring with higher sea levels is expected to pose some short duration risk to the proposed bridge. This risk will be managed via storm monitoring and operational restrictions.
San Dieguito Lagoon Bridge Widening	2021-2030	✓	✓	✓	✓	✓	Built in 1964 and widened in 1994. Project requires nominal widening of existing bridge. Bridge profile set by existing 12-lane facility. SLR in the absence of a flood is not expected to pose any risk to the proposed bridge. Under existing sea level the proposed bridge is not expected to be at risk under a flood. A flood occurring with higher sea levels is expected to pose some short duration risk to the proposed bridge. This risk will be managed via storm monitoring and operational restrictions.

San Elijo Lagoon Bridge Replacement	2010–2020	✓	✓	✓	✓	✓	SLR is not expected to pose any risk to the proposed bridge.
Batiquitos Lagoon Bridge Replacement	2010–2020	✓	✓	✓	✓	✓	SLR in the absence of a flood is not expected to pose any risk to the proposed bridge. Under existing sea level the proposed bridge is not expected to be at risk under a flood. A flood occurring with higher sea levels is expected to pose some short duration risk to the proposed bridge. This risk will be managed via storm monitoring and operational restrictions.
Agua Hedionda Lagoon Bridge Replacement	2031–2040	✓	✓	✓	✓	✓	SLR in the absence of a flood event is not expected to pose any risk to the proposed bridge. Under existing sea level the proposed bridge is expected to be at risk during flood events, which are of short durations. A flood occurring with higher sea levels is expected to pose some short duration risk to the proposed bridge. These risks will be managed via storm monitoring and operational restrictions.
Buena Vista Lagoon Bridge Replacement	2031–2040	✓	✓	✓	✓	✓	SLR in the absence of a flood event is not expected to pose any risk to the proposed bridge. Under existing sea level the proposed bridge is expected to be at risk during flood events, which are of short durations. A flood occurring with higher sea levels is expected to pose some short duration risk to the proposed bridge. These risks will be managed via storm monitoring and operational restrictions.

Source: San Diego Region Coastal Sea Level Analysis, September 2013 (included as Appendix D of the PWP/TREP).

Blue indicates PWP/TREP Phase 1 bridge.

✓ No risk; projected water surface elevation below soffit by two feet or more

✓ Short duration (matter of hours) risk to operation of transportation facility; projected water surface elevation above bridge soffit elevation, but not impacting travel lanes

✓ Short duration (matter of hours) risk to operation of transportation facility; projected water surface elevation above soffit and potential short duration impact to travel lanes

Hazardous Wastes

Implementation of proposed highway improvements could result in the discovery or release of contaminated materials, primarily during construction activities. Soil along and adjacent to the shoulders of I-5 is generally non-hazardous with respect to Aerial Deposited Lead (ADL); however, if excess soil from the shoulders that contain ADL is exported, further characterization would be necessary to evaluate proper disposal criteria. Hazardous waste with respect to petroleum hydrocarbons concerns include service stations located at intersections. Petroleum hydrocarbons could be encountered in soil and groundwater at intersections during trenching to move utilities and during bridge reconstruction/widening at abutments and bents, particularly at Via de la Valle, Birmingham Drive, Brooks Street, Palomar Airport Road, Carlsbad Village Drive, and Mission Avenue. Caltrans would comply with the National Pollutant Discharge Elimination System (NPDES) permit for handling and disposing of groundwater for intersections, and further characterization for petroleum hydrocarbons, volatile organic compounds, or semi-volatile organic compounds as to the proper disposal.

Two landfills were identified within the project footprint: Olympus Street Landfill at the intersection of Piraeus Street and Olympus Street in Leucadia; and Maxson Street Landfill at Maxson Street in Oceanside. Olympus Street Landfill is a burn ash site and is occupied mostly by residential housing. Soil sampling at Olympus Street Landfill contained non-hazardous concentrations of lead within Caltrans right-of-way and adjacent properties. Maxson Street Landfill included municipal solid wastes now covered by a park, baseball fields, residential housing, a golf course, and retail businesses. Investigations within the existing Caltrans' right-of-way along Maxson Street Landfill did not encounter wastes associated with the landfill.

Nurseries and farmland occur along both sides of I-5 from the Manchester Avenue interchange to the Palomar Airport Road interchange. The shallow soils on and around these nurseries contain pesticides and herbicides; however, testing of soil for pesticides and herbicides indicates that soil containing these pesticides are not considered a hazardous waste.

Chemical spills from truck and auto accidents have historically occurred along I-5. These spills mainly consist of petroleum hydrocarbons, but other chemicals may be present. In addition, there is the potential for hazardous materials release into the environment during construction activities.

Asbestos could be found in bridge joint and piping material. These materials could pose a health hazard if workers are exposed to them during construction activities. Lead-based paint could have been used on metal guardrails, piping, or in structures to be demolished. If yellow paint or yellow thermal plastic paint is to be removed during construction activities, these materials could pose a health hazard if workers are exposed to them during construction activities. The wood guardrail posts and signposts on-site have been treated with creosote. If these posts were removed, a safety and health work practices plan must be submitted to the resident engineer prior to removal. The wood must then be handled and disposed in accordance with Caltrans' treated wood nonstandard special provision.

5.8.3 PWP/TREP Opportunities, Design/Development Strategies and Policies/Implementation Measures

Proposed rail and highway improvements would be located in areas potentially subject to various hazards as discussed above; however, public safety would be improved throughout the corridor as proposed rail and highway improvements would be designed and implemented according to current design practices to better withstand potential seismic, flooding, and erosional events. The corridor is

located in a seismically active area due to several nearby faults; however, proposed PWP/TREP improvements would serve to maintain or improve existing and future transportation facilities and operations in the corridor and provide facility compliance with current code requirements that ensure long-term, safe, and efficient operations. The proposed improvements would reduce risk to life and property in the NCC.

5.8.3.1 Corridor Opportunities

Proposed PWP/TREP improvements would involve rail and highway facility upgrade and replacement projects that would provide compliance with current design and code requirements, which would ensure long-term safety and stability for highway facilities and operations. Furthermore, I-5 has been identified as a Strategic Highway Network link, providing defense access, continuity, and emergency capabilities for movement of personnel and equipment in both peace and war times. Overall safety for users of the corridor (and for purposes of emergency evacuation and increased accessibility for emergency vehicles) would be improved with reduced congestion on the transportation facilities.

In addition to implementing rail and highway improvements to increase service and ridership and comply with current design and code requirements (which, in turn, would ensure long-term safety and stability for transportation facilities and operations), proposed bridge improvements have been designed in some locations to reduce existing fill areas and to minimize stream alterations at bridge abutments and pilings, where feasible. These proposed bridge improvements would result in increased and improved drainage across the facility and reduced erosion potential where bridge structures intersect with the waterbody. In particular, the proposed highway improvements would result in a beneficial impact to drainage and flooding where an existing culvert at Sorrento Valley Road would be removed, thus eliminating an existing constriction in Carmel Creek. Overall project benefits to floodplains and system hydrology (decreases in flood water surface elevation) are also anticipated for Batiquitos, Buena Vista, and San Elijo Lagoons with the bridge optimization designs planned for these waterbodies.

Furthermore, the proposed rail improvements would provide a unique opportunity to improve the coastal bluff area in Del Mar with an option to remove the existing rail service from the bluff area, thereby alleviating the need for ongoing maintenance of shoreline protection devices previously permitted to ensure stability of the bluffs and rail operations. Should the rail service be removed from the coastal bluffs in this area, there could be an additional opportunity to remove the existing shoreline protective system and restore the coastal bluff and thus reduce long-term shoreline erosion impacts associated with those shoreline structures.

5.8.3.2 PWP/TREP Policies

Caltrans and SANDAG would implement the following policy to ensure that proposed improvements are designed, implemented, and maintained to provide for maximum site stability and minimization of hazards:

- **Policy 5.8.1:** All highway, rail, bicycle and pedestrian projects, and community and resource enhancement improvements shall be designed and implemented to minimize risks to life and property in areas of high geologic, flood, and fire hazard, and to minimize risk associated with potential hazardous materials release or spillage. Site-specific project design should be based on the results of detailed (design-level) engineering geologic and geotechnical studies.

5.8.3.3 PWP/TREP Design/Development Strategies

The following design and development strategies provide guidance for designing and implementing specific PWP/TREP rail projects and Caltrans/SANDAG shall utilize the following strategies for all projects subject to NOID procedures, consistent with the site stability and management policies of PWP/TREP Policy 5.8.1, amended LCPs and the Coastal Act.

1. The requirements of the most current Standard Specifications for Caltrans and/or LOSSAN should be applied to all proposed improvements to ensure that geotechnically stable slopes are planned and created. Seismic design for the structures should be based on Seismic Design Criteria.
2. The potential for structural damage and resulting traffic hazard as a result of liquefaction should be mitigated through site-specific methods such as ground modification methods (soil densification) to prevent liquefaction, or structural design (e.g., deep foundations) to accommodate/ resist the liquefiable zones.
3. The appropriate technical personnel should be present during project construction of all improvements to observe cuts, foundation subgrade, and embankment subgrade to assure that all design-level provisions are enforced consistent with Caltrans Standard Plans and Specifications and SANDAG requirements. If unanticipated subsurface conditions are encountered, a geotechnical representative should be notified to make additional recommendations to the resident engineer, who in turn, would direct the contractor to comply with Caltrans Standard Plans and Specifications and SANDAG requirements. Instrumentation for measuring settlement or slope distress, and periodic surveying for ground movement should be included during construction in areas where the potential for ground movement or failure exists.
4. Project implementation should include Storm Water Pollution Prevention Plans (SWPPP) and NPDES permit requirements. A SWPPP should be developed and implemented during construction to reduce pollutants in storm water discharges and the potential for erosion and sedimentation. The SWPPP would include Best Management Practices (BMPs) to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements, stormwater management, and channel dewatering for all stream and lake/lagoon crossings. These may include measures to provide permeable surfaces where feasible and to retain and treat stormwater on-site using catch basins and treatment (filtering) wetlands, especially in areas around existing stations if the areal extent of surface parking is expanded or at new stations where new parking surface is constructed. Measures to manage the overall amount and quality of stormwater runoff to regional systems would be detailed as part of the SWPPP.
5. Where there is no practicable alternative to avoid construction in the floodplain, the footprint of facilities within the floodplain should be minimized to the extent feasible (e.g. by use of aerial structures or tunnels), and floodplains impacted by construction should be restored.
6. Shoreline armoring (internal to the lagoon) should only be allowed to protect existing, legal structures, or where necessary to protect replacement structures across waterbodies, that are proven to be in danger from erosion, and where proposed to improve fish and wildlife habitat only if: (a) less-environmentally damaging alternatives to armoring are not feasible (including relocation of endangered structures); (b) the armoring has been sited, designed, and accompanied by feasible measures to proportionately mitigate any unavoidable negative coastal resource impacts (on views, sand supply, public access, etc.). The limitations of this measure should not apply to minor runoff control/dissipater features where located and designed to convey and discharge runoff to waterways in a non-erosive manner.

7. As part of the future project-level analysis, all opportunities to minimize flooding risk and potential harm to or within the floodplain should be assessed and incorporated into project design as applicable.
8. Analysis of how proposed improvements would contribute to total additional impervious surface and the subsequent potential additional impacts on surface runoff should be conducted. This analysis should also identify potential mitigation measures to minimize runoff and thereby reduce erosion, including on-site bioswales and retention facilities.
9. All soils proposed for disturbance for improvements should be investigated for contamination and Phase I Environmental Site Assessments should be prepared when necessary. When indicated by project-level Phase I Environmental Site Assessments, a Phase II Environmental Site Assessments (e.g., hydrogeologic investigation) should be prepared to identify specific mitigation measures. The Phase II Environmental Site Assessments should be prepared in conformance with the ASTM Standards Related to the Phase II Environmental Site Assessment Process (E1903-01). Phase II Environmental Site Assessments mitigations should be implemented as appropriate.
10. The potential impact of local sea level rise associated with global climate change should be considered in the design and/ or refurbishment of all corridor infrastructure. NOID, federal consistency review and coastal development permit submittals for proposed transportation, bike and pedestrian improvements that may be subject to internal shoreline/bank erosion, tidal inundation and flooding, should include an analysis of improvement location and design in relation to projected future changes in sea level rise to ensure new development is located and designed to eliminate or minimize, to the maximum extent feasible, hazards associated with anticipated sea level rise over the expected design life of the structure (75 years).
11. The full range of projected sea level rise scenarios utilizing the best available science should be considered during project-specific alternative design analysis and, where feasible, projects should be designed to accommodate the highest sea level rise projections at 2100, or beyond 2100 if the anticipated design life of the structure extends beyond this date, consistent with the following planning, design, and risk assessment criteria:
 - **Design**
 - a. Incorporate consideration of the risks posed by sea level rise into all decisions regarding project elements potentially affected by sea level rise; for the purposes of planning, consider a range of sea level rise scenarios for the years 2050 (2 ft.) and 2100 (5.5 ft.) in order to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. Extrapolation of sea level rise projections beyond 2100 may eventually be necessary for bridges planned for replacement in future phases of the NCC Project to address their design lives.
 - b. Use the ranges provided by the agreed upon best available science, which as of the 2014 date of adoption of the PWP/TREP, is from the NRC.
 - c. For highway bridges the design life is 75 years.
 - d. For rail bridges the design life is 100 years.
 - e. The timeframe identified for a structure is important for sea level rise assessments and will affect the approach for assessing impacts. Up to the horizon year of 2050, there is better agreement among the various climate models for the amount of sea level rise that is likely to occur. After mid-century, projections of sea level rise become more uncertain, because the modeling results diverge and the sea level rise projections vary depending on multiple factors including the rates of glacial volume loss and reductions in greenhouse gas emissions. Therefore, for projects with timeframes beyond 2050, it is especially important

to consider adaptive capacity, impacts, and risk tolerance to guide decisions of whether to use low, medium, or high sea level rise projections.

- f. Assess potential impacts and vulnerability over a range of sea level rise projections, including analysis of the highest sea level rise values presented in the NRC document, or as presented by the best available science existing at the time of the project combined with site-specific alternatives analysis.
 - g. Based on the results of the alternatives analysis, the preliminary design should:
 - 1) Accommodate the maximum sea level rise projection of 5.5 feet by 2100 if feasible, or;
 - 2) Be designed with adaptation strategies for a sea level rise rate that is as high as can be accommodated; where feasible; if the maximum project cannot be accommodated, adaptive strategies should allow bridge structures and approaches to be raised in the future should the sea level rise projections occur; or
 - 3) Be designed according to site-specific analysis of local conditions and needs, environmental impacts, and risks involved with closing bridges for very short time periods on an infrequent basis; should facilities be at risk during certain frequency events, the facilities should be designed to ensure functionality once the event is over.
 - h. Design parameter decisions should consider and balance expenditure of public funds and environmental constraints, level of risk and potential consequences. Risk assessment should consider life expectancy of facility, construction timeframe, availability of alternative routes, and potential level of delay, evacuations/emergencies, and importance as interstate facility (see Caltrans guidelines).
 - i. Typically rail or highway bridges will be constructed on piles. Consequently, bridge columns will not be subject to flood or tsunami scour and therefore slope protection around the columns will not be required. Abutments however may require slope protection to address flood or tsunami scour. The specifics of the slope protection design should be site-specific and subject to projected scour velocities and final bridge design.
- **Site-Specific Design Sea Level Rise Analysis** – As the NCC project will be built over a 40-year period, for those bridges in the later phases of the PWP/TREP Phasing Plan (beyond Phase 1) the effect of sea level rise should be reassessed based on updated information from the NRC, or the best agreed upon available science, at the time of the project-specific Notice of Impending Delivery (NOID), Federal Consistency Certification, or Coastal Development Permit, and should include the following:
- a. Establish a range of future regional/local relative mean sea level change projections that is consistent with the latest scientific information on regional/local sea level, and land subsidence and uplift. This can be done by either updating this San Diego Region Coastal Sea Level Rise Analysis Report to the current scientific estimates, or following the steps listed below:
 - 1) Review the latest scientific literature on global/regional mean sea level rise to identify the most relevant scientific information for the project area.
 - 2) Review the latest governmental guidance related to global/regional mean sea level rise from federal, state, and local agencies with regulatory responsibilities for the project.

- 3) Establish a range of future global/regional mean sea level rise projections that is consistent with the most relevant scientific information and governmental agency guidance from Steps a and b above, respectively.
 - 4) Review the latest scientific literature on regional/local land subsidence and uplift to better assess how land elevations relative to sea level elevations may change over the life of the project.
- b. For bridges and embankments located far enough from the ocean such that ocean waves do not directly impact structures, the high water level to be used for design is controlled by the fluvial process. The high water level can be established by conducting fluvial hydraulic modeling using design storm events (e.g., 50-year and 100-year flows) at the upstream boundary and a high water level at the downstream boundary (e.g., MHHW or the 50-year ocean water level, or following design guidelines by Caltrans or Railroad agencies) which would either be the ocean or lagoon. This step should be repeated across the range of future regional/local, relative mean sea level change projections established under Step “a” above. This could be done by analyzing only the design condition if the only issue of concern for design is the design water level or it could entail analyzing the highest and lowest condition to bracket the full range of potential water levels that the project may experience in the future under higher mean sea level conditions. Intermediate conditions may be analyzed if such information would be useful for conducting optimization analyses for such issues as potential environmental impacts and economic considerations (e.g., Step “d” below).
 - c. For bridges and embankments located close enough to the ocean such that ocean waves may directly impact structures, the high water level to be used for design may need to be based on both fluvial or coastal processes. These structures are subject to both coastal and fluvial storm impacts and, therefore, the project design needs to consider both fluvial and coastal processes. The bridge design should use the higher of design water levels determined in these two independent processes.
 - 1) The Fluvial Process: Use procedures described in Step “b” above to determine the design water level under the fluvial process.
 - 2) The Coastal Process: The high design water level should include contributions from astronomical tide, barometric pressure, wave crest elevation, wave set-up, El Nino Southern Oscillation (ENSO), and Pacific Decadal Oscillation (PDO). Depending on the situation, wave run-up on the structure (e.g., embankment) may also need to be considered in establishing the extreme high ocean water level. This step should be repeated across the range of future regional/local, relative mean sea level change projections established under Step “a” above. This should be done by analyzing only the design conditions if the only issue of concern for design is the design water level, or it could entail analyzing the highest and lowest condition to bracket the full range of potential water levels that the project may experience in the future under higher mean sea level conditions. Intermediate conditions may be analyzed if such information would be useful for conducting optimization analyses for such issues as potential environmental impacts and economic considerations (e.g., cost-benefit analysis).
 - d. Conduct analyses to evaluate trade-offs related to bridge and embankment design. This would include consideration of environmental impacts (e.g., visual and habitat impacts), constructability, construction and maintenance costs, and economic (e.g., cost-benefit)

considerations. In addition, a risk assessment should be performed to determine the consequences of failing to address sea level rise adequately for a particular project and the potential impacts to public health and safety, public investments, and the environment. For example, the risk assessment could evaluate the consequences to fully accommodate the combined “worst possible case” scenario of the highest sea level rise condition in combination with a 100-year river or stream flood event. The actual duration of freeboard exceedance at bridges during such an event is likely to be very short, and the analysis should compare water levels with criteria other than bridge soffits, such as the ballast for the railroad and travel lanes for I-5 to determine actual effects to transportation operations. At this step, facility designs should consider whether to: 1) design a structure such that it is above the highest future projected water level; 2) design a structure such that it is above a lower future projected water level but allows for adaptive strategies to address higher future projected water levels; or 3) establish a design water surface elevation for use based on an acceptable risk assessment.

5.8.3.4 Implementation Measures

Caltrans/SANDAG would utilize the following implementation measures for all projects subject to NOID procedures:

- **Implementation Measure 5.8.1:** Grading and roadway work shall be performed in accordance with Caltrans Standard Plans and Specifications. Drainage for proposed improvements shall be constructed in accordance with the Caltrans Highway Design Manual and SANDAG requirements. Where groundwater is present, subsurface drainage devices shall be installed where necessary.
- **Implementation Measure 5.8.2:** Project affected areas within 100 feet of the blufftop edge shall be protected and enhanced through removal of non-natives and invasives and revegetation with native bluff species, where feasible.
- **Implementation Measure 5.8.3:** Caltrans Environmental Engineering and SANDAG shall be kept informed of parcel takes and changes in scope or design as further hazardous waste investigation may be necessary on individual parcels if acquired/ utilized. Since there are known chemical constituents present in soil and groundwater within the corridor, soil excavation activities shall be performed under the guidelines of a site-specific Soil Management Plan and Health and Safety Plan.
- **Implementation Measure 5.8.4:** The Department of Toxic Substances Control (DTSC) lead variance shall be followed for ADL soil excavated in the proposed improvement area. Soil excavated as a whole along the shoulders may be reused as clean material with regard to ADL, unless soil adjacent to the shoulder is segregated from the whole. The DTSC lead variance shall apply for segregated soil from the shoulder. Otherwise, the disposal of ADL soil to a Class I landfill shall be required. Handling or disposal of contaminated groundwater shall comply with NPDES permit requirements.
- **Implementation Measure 5.8.5:** Soils located in the immediate vicinity of service stations in the corridor shall be tested for petroleum hydrocarbons, volatile organic compounds, or semi-volatile organic compounds in order to evaluate the proper handling and/or disposal methods should such contaminants be discovered. Soil excavation activities shall be performed under the guidelines of a site-specific Soil Management Plan and Health and Safety Plan and handling or disposal of contaminated groundwater shall comply with NPDES permit requirements.
- **Implementation Measure 5.8.6:** Improvements and construction activities in the vicinity of the landfills shall be avoided to the extent feasible. If parcels are acquired at historic landfill locations

and/or if landfill deposits are encountered, soil excavation activities shall be performed under the guidelines of a site-specific Soil Management Plan and Health and Safety Plan and excavated soil shall be subject to further characterization to evaluate potential risk and proper disposal method consistent with Caltrans Standard Plans and Specifications.

- **Implementation Measure 5.8.7:** If soil from locations containing farmland and nurseries is exported or consider for re-use on-site, further characterization for pesticide/herbicides shall be conducted to evaluate potential risks and proper disposal method.
- **Implementation Measure 5.8.8:** Hazardous Materials Contingency Plans to address chemical spills along the NCC alignment shall be written into the construction contract to deal with hazardous waste issues consistent with Caltrans Standard Plans and Specifications and SANDAG requirements.
- **Implementation Measure 5.8.9:** Where wood guardrail posts, signposts, and/or railroad ties are to be removed/demolished during construction, a safety and health work practices plan shall be submitted to the resident engineer prior to removal. As necessary, wood shall be handled and disposed in accordance with the Caltrans' treated wood nonstandard special provision, including disposal at a composite-lined solid-waste landfill facility permitted to accept such wastes.
- **Implementation Measure 5.8.10:** Prior to demolition of any buildings or existing structures such as bridges for project construction, a survey for lead-based paint and asbestos-containing materials shall be prepared. Should lead-based paint and asbestos-containing materials be discovered, a safety and health work practices plan shall be submitted to the resident engineer prior to removal. All lead-based paint and asbestos-containing materials shall be handled and disposed in accordance with applicable Caltrans/SANDAG policies.
- **Implementation Measure 5.8.11:** A Site Management Program/Contingency Plan (SMP/CP) shall be prepared prior to construction/demolition of improvements to address known and potential hazardous material issues. All highway, rail station and pedestrian crossings, and community and resource enhancement improvement projects shall prepare and implement construction staging plans with designated areas to accommodate equipment and vehicles fueling a minimum of 50 feet away from waterbodies over paved or impervious surfaces, and any fuel or petroleum products used for project equipment and vehicles shall be stored a minimum of 50 feet from waterbodies and within the staging area paved or impervious surfaces. Equipment and vehicles shall be inspected daily for fuel or fluid leaks, and leaking equipment or vehicles shall be repaired or replaced immediately. The contractor shall have available at each staging area adequate spill containment equipment (e.g., absorbent materials, containment booms, etc.) to respond to potential fuel or oil spills or leaks from project-related vehicles and equipment.
- **Implementation Measure 5.8.12:** SANDAG and Caltrans acknowledge and agree: (i) that the site of the proposed project may be subject to hazards from seismic events, tsunamis, liquefaction, storms, floods, erosion, and toxic contaminants; (ii) to assume the risks to employees and assigns of Caltrans/SANDAG, including contractors and subcontractors and their officers, agents, and employees, and to the public utilizing the proposed project during and after construction, and to the property that is the subject of this permit of injury and/or damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense against such

claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.

5.8.4 Coastal Act Consistency

Coastal Act Section 30253 addresses the need to ensure long-term stability and structural integrity, minimize risk, and avoid landform-altering devices. Section 30253 provides, in applicable part:

Section 30253. New development shall:

(1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.

(2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

Section 30235. Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.

Coastal Act Section 30232 requires that hazardous spill risks be minimized and that appropriate containment and cleanup facilities and procedures be in place should spills accidentally occur.

Section 30232 states:

Section 30232. Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.

Coastal Act Section 30236 requires that modifications to rivers and stream incorporate feasibly mitigation measures, and limits development in such waterways to water supply and certain flood control projects, or for purposes of improving fish and wildlife habitat.

30236. Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the floodplain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.

5.8.4.1 Corridor Consistency Analysis

Geology, Soils, Seismicity, and Topography

Proposed corridor improvements would be designed and developed to avoid and minimize potential impacts associated with geologic hazards, unstable soils, seismicity, and topography, as demonstrated through environmental documentation and technical studies for the proposed improvements.

To avoid the risks associated with seismic hazards during construction of the proposed improvements, the PWP/TREP includes design/development strategies and implementation measures that direct appropriate technical personnel to be present during project construction of all improvements to observe cuts, foundation subgrade, and embankment subgrade to assure that all design-level provisions are enforced. If unanticipated subsurface conditions are encountered, the PWP/TREP requires that a geotechnical representative would be notified to make additional recommendations to the resident engineer, who in turn, would direct the contractor. To avoid these risks during rail development, future site-specific project LOSSAN design could be based on the results of detailed (design-level) engineering geologic and geotechnical studies and could include measures such as ground modification methods (soil densification) to prevent liquefaction, or structural design (e.g., deep foundations) to accommodate/ resist the liquefiable zones.

Site and soil stability would be addressed further through developing and implementing SWPPP and NPDES permit requirements. As the program improvements would be contained primarily within existing facility corridor and/or improvement areas, proposed improvements would avoid construction of undisturbed, and potentially unstable steep topography. Other potential impacts associated with topography, excessive erosion, and construction activities would be addressed with construction-phase BMP requirements, which would serve to minimize uncontrolled site runoff and erosion and ensure site stability, discussed in more detail in Section 5.4, Marine Resources: Water Quality and Wetlands.

It is unlikely that train derailment during a potential peak event could be mitigated by designing a track-wheel system capable of withstanding the ground motions in most of the project area. Existing train systems throughout California, including the existing service along the LOSSAN rail corridor, face the same challenge; however, a network of strong-motion instruments has been installed throughout California and additional monitoring stations are proposed. These stations provide ground-motion data that could be used with the rail instrumentation and controls system to temporarily shut down the LOSSAN rail operations during or after an earthquake. The system would then be inspected for damage due to ground motion and/or ground deformation and then returned to service when appropriate. This type of seismic protection is already used for many transit systems in seismically active areas and has been proven effective.

Drainage and Flooding

Potential impacts associated with drainage and flooding have been addressed, in large part, through design of corridor facilities, including both rail and highway bridge facilities.

As noted previously, many of the proposed rail improvements (e.g., San Dieguito Double-Track and Bridge Replacement, Sorrento Valley Double-Track) will elevate the track over existing drainage and flood areas to address drainage and flooding concerns. It is expected that crossings over the corridor's waterbodies would continue to include bridges or culverts or, in the case of Del Mar and University Town Center, by improvements involving deep tunnels that would avoid surface floodplains. To reduce potential flood hazards associated with new or upgraded rail and highway facility crossings, lagoon optimization studies were conducted to evaluate and determine the optimal crossing design. In addition, design and development strategies provide that future project-level analysis for proposed improvements would assess floodplain hydrology/hydraulics and evaluate the impacts of specific designs on water surface elevations, flood conveyance, and potential flooding risk. Where feasible, construction of facilities within floodplains would be avoided, or the footprint of facilities within the floodplain would be minimized.

Pursuant to Section 30236 of the Coastal Act, certain types of channelization projects and other developments resulting in the alteration of rivers and streams may be allowed when necessary for a required flood control project, where no other method for protecting existing structures in the floodplain is feasible, and where such protection is necessary for public safety or to protect existing development and only when such development incorporates the best mitigation measures feasible. The proposed improvements would not include new pipes, box culverts, or other structures that would result in significant alteration of natural stream courses or drainages. PWP/TREP improvements that would occupy areas within floodways (i.e., bridges) in the corridor potentially resulting in alteration of rivers and streams are permitted pursuant to Section 30236, as the improvements are necessary to upgrade and protect existing structures for continued public safety. Improvements would not create an unreasonable, unnecessary, undesirable, or dangerous impediment to the flow of floodwaters, and would be designed to minimize necessary stream alternations, and to provide new opportunities to improve stream flow and fish and wildlife habitat.

Environmental documentation and technical studies for proposed highway improvements concluded that highway improvements would have a negligible effect on drainage and floodplains in the corridor and would result in improved drainage and flood conveyance at Carmel Creek, Batiquitos, Buena Vista, and San Elijo Lagoons. Proposed highway improvements would not include construction of new pipes, box culverts, or underground channels that would adversely affect natural stream courses or cause drainage or floodplain impacts. Highway bridge improvements that would occupy areas within floodways in the corridor would be necessary to upgrade and protect existing or replacement crossing structures for continued public safety. Improvements would not create an unreasonable, unnecessary, undesirable, or dangerous impediment to the flow of floodwaters, and would be designed to minimize necessary stream alternations. Other than placing necessary bridge support structures (abutments and/or pilings) and extending existing culverts, proposed highway improvements would not involve the construction of new structures that would alter significant drainage patterns.

Shoreline Erosion/Sea Level Rise

Drainage and flooding impacts associated with the proposed NCC improvements would be negligible, which would in turn minimize potential adverse impacts associated with alteration and channelization of shorelines and/or floodplains and associated erosion. Other than necessary protection structures placed at the base of bridge support structures (abutments and/or pilings), proposed highway improvements would not involve the construction of new or expanded internal shoreline/bank protective devices that would alter natural landforms or shorelines and result in associated shoreline erosion. In locations where bridge structures would be replaced and lengthened (San Elijo, Batiquitos, and Buena Vista Lagoons) and where culvert removal is proposed at Carmel Creek, removal of existing bridge abutment and culvert structures would result in restoring a more natural shoreline at the facility crossing.

To ensure that necessary protection structures for bridge supports (abutments and/or pilings) are developed consistent with the Coastal Act, PWP/TREP design/development strategies require that internal shoreline/bank armoring be allowed only to protect existing legal structures, or where necessary for replacement structures across waterbodies that are proven to be in danger from erosion, and only if (a) less-environmentally damaging alternatives to armoring are not feasible (including relocation of endangered structures); and (b) the armoring has been sited, designed, and accompanied by feasible measures to mitigate any unavoidable negative coastal resource impacts (on views, sand supply, public access, etc.). The PWP/TREP further provides that policy limitations on shoreline

structures should not apply to minor runoff control/dissipater features where located and designed to convey and discharge runoff to waterways in a non-erosive manner.

The PWP/TREP includes rail improvement options in Encinitas that would be set back east of Pacific Coast Highway, thereby providing an ample buffer between the rail alignment and the coastal bluffs. The proposed rail improvements provide a unique opportunity to improve the coastal bluff area in Del Mar with an option to remove the existing rail service from the bluff area, thereby alleviating the need for ongoing maintenance of shoreline protection devices previously permitted to ensure stability of the bluffs and rail operations. Should the rail service be removed from the coastal bluffs in this area, there could be an additional opportunity to remove the existing shoreline protective system and restore the coastal bluff and thus reduce long-term shoreline erosion impacts associated with those shoreline structures; however, it is also recognized that there is a need for the existing, permitted shoreline protection system at the Del Mar Bluffs to protect the existing rail facility, and that this system could require maintenance to maintain site stability and rail operations in this area. It is also recognized that some shoreline alteration at bridge abutments and piles could be required where rail facility bridges cross waterbodies throughout the corridor.

In addition, SANDAG prepared the San Diego Region Coastal Sea Level Rise Analysis (Appendix D of the PWP/TREP), which assesses potential drainage and flooding impacts to transportation infrastructure crossing those waterbodies throughout the region potentially subject to sea level rise. The results of this study, when considered for planning and design of the PWP/TREP infrastructure improvements, ensure that both rail and highway facility crossings are considered together in terms of identifying design options and, where necessary, adaptive strategies, that address the possible long-term effects of sea level rise and related drainage, flooding and shoreline erosion impacts. As such, the proposed PWP/TREP bridge replacement projects are designed to accommodate the anticipated increase in mean sea level rise through the year 2100 through design and/or adaptive strategies, which would minimize structure exposure to increased ocean water levels and flooding.

In addition, PWP/TREP design/development strategies and implementation measures specify that submittals for proposed rail, highway, and community enhancement improvements that may be subject to internal shoreline/bank erosion, tidal inundation and flooding should include an analysis of improvement location and design in relation to projected future changes in sea level rise to ensure new development is located and designed to eliminate or minimize, to the maximum extent feasible, hazards associated with anticipated sea level rise over the expected design life of the structures (75 years). These design strategies and implementation measures would ensure that the proposed improvements are analyzed according to the best available scientific information throughout the course of the 40-year PWP/TREP program, and are thus located and designed to address potential hazards associated with the anticipated increase in mean sea level rise, based on the most current sea level rise projections and data available at the time of project implementation.

Hazardous Wastes

Proposed corridor improvements would be designed and developed to avoid and minimize potential impacts associated hazardous material release into the environment. Design and development strategies provide for implementation of Site Management Program/Contingency Plans (SMP/CP), when applicable, to address known and potential hazardous material issues, which could include contaminated soil and groundwater, lead-based paint, and asbestos-containing materials. The NCC PWP/TREP includes numerous implementation measures to ensure that potential on-site hazardous materials along the improvement areas be properly identified and that plans be developed for the handling and disposal of such materials in a safe and legal manner. To avoid and minimize hazardous

materials risks, soils proposed for disturbance for rail improvements would be investigated for contamination and Phase I and/ Phase II Environmental Site Assessments prepared, when necessary. Design and development strategies for future, project-specific improvements also include preparation and implementation of construction staging plans, which would require that construction refueling/staging occur in pre-designated areas away from waterbodies (a minimum of 50 feet away from waterbodies) and adequate spill containment equipment (e.g., absorbent materials, containment booms, etc.) to respond to potential fuel or oil spills or leaks from project-related vehicles and equipment. In addition, the PWP/TREP requires that equipment be inspected and maintained at regular intervals, and that appropriate cleanup facilities and procedures be in place should spills accidentally occur.

5.8.4.2 Coastal Act Consistency Analysis Summary

Based on available project and environmental data, and policies, strategies, and implementation measures included herein, the proposed PWP/TREP improvements would minimize risks to life and property in areas of high geologic hazards, assure project stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area, consistent with Section 30253 of the Coastal Act. PWP/TREP improvements would not result in construction of new shoreline protection structures that would substantially alter natural shoreline processes. Shoreline protection structures associated with the proposed improvements would be minor and would consist only of protection measures necessary to support existing and/or replacement facility crossings, where designed, to eliminate or minimize impacts to shoreline processes. As such, proposed PWP/TREP improvements are consistent with Section 30235 of the Coastal Act. Finally, the PWP/TREP would provide for protection against spillage of crude oil, gas, petroleum products, or hazardous substances and would require that effective containment and cleanup facilities and procedures be in place for accidental spills that could occur. The PWP/TREP is therefore also consistent with Section 30232 of the Coastal Act.

Assumption of Risk

The PWP/TREP NOID and phased Federal Consistency review processes, when applicable, will include appropriate, detailed environmental information and technical studies required to address issues associated with potential hazards in the corridor prior to project implementation to ensure consistency with Sections 30253, 30235 and 30232 of the Coastal Act; however, the proposed project would be subject to potential geologic and hazardous materials risks. Furthermore, the location of the proposed project would render it subject to the additional natural hazards posed by storms and floods, as would be true of any project constructed in this portion of the coast.

Although PWP/TREP policies, strategies, and implementation measures would be applied to specific NCC projects, which are anticipated to withstand the predictable hazards associated with development in the corridor, it is not possible to remove all risk associated with the uncertainties of natural hazards. Residual risks remain. For these reasons, even though Caltrans/SANDAG has and/or would minimize predictable risks by engineering the proposed project to avoid, mitigate, and/or withstand the impacts described above, a degree of risk from natural hazards would remain and could not be fully mitigated. To protect the Coastal Commission and its employees from liability for the hazards posed by the subject structures and project features designed and managed by Caltrans/SANDAG, the PWP/TREP provides that SANDAG/Caltrans acknowledge and accept these risks.

5.8.5 Local Coastal Program Consistency

The corridor's local coastal programs (LCPs) for natural hazards, shoreline protection, and hazardous materials policies are summarized with brief city-specific consistency analyses below, which also integrate and supplement the above consistency analysis for Sections 30253, 30235 and 30232 of the Coastal Act.

5.8.5.1 Local Coastal Program Consistency Analysis Summary

Most of the corridor LCPs include policies that mirror, in part, the requirements of Sections 30253, 30235 and 30232 of the Coastal Act; however, the LCPs for Del Mar, Encinitas, Carlsbad and Oceanside also include a variety of additional, detailed and city-specific policies and development standards that address potential impacts associated with natural hazards, shoreline development and protection and erosion and, to a lesser extent, hazardous materials. Common policy requirements within the NCC LCPs include:

- Requiring site-specific geologic and/or geotechnical studies to identify potential site hazards and appropriate mitigation measures.
- Limiting construction in floodplains and shoreline protection devices pursuant to Sections 30235 and 30236 of the Coastal Act.
- Imposing bluff setback requirements.
- Avoiding grading and development on steep slopes, where feasible, and limiting the duration and timing of grading activities.
- Implementing drainage and stormwater runoff control plans to minimize site erosion.
- Minimizing grading and removal of vegetation.
- Revegetating graded and disturbed areas with native, drought-tolerant plant species to minimize erosions.
- Implementing drainage and stormwater runoff control plans to minimize site erosion.

It should be noted that many of the City's LCP policies that address natural hazards through grading, drainage, and stormwater runoff controls are also relied upon to address marine resources and water quality concerns. As such, LCP policies that focus on grading, drainage, and stormwater runoff measures are also addressed in more detail in Section 5.4, Marine Resources.

City of San Diego

The City of San Diego LCP and the corridor's five individual Community Plans contain a comprehensive set of policies to address potential hazards very similar to those listed above as common policies within the NCC LCPs. While San Diego's LCP may vary to some degree in the details of its policy requirements, the most significant deviation in policies that address potential hazards from the other corridor LCPs relates primarily to restrictions on development encroachment onto steep slopes (25% or more grade); however, the Community Plans provide exemptions from this rule for major roads.

City of Del Mar

The City of Del Mar LCP includes policies that speak to requiring and implementing geotechnical and civil engineering studies and site-specific drainage, planting and irrigation systems to ensure site stability, in addition a number of policies that specifically address the city's fragile coastal bluffs and

lagoon floodplains. The following policies provide guidance in analyzing potential visual resource issues associated with proposed rail improvements:

- Review all proposed drainage and irrigation systems for their ability to control runoff and seepage into downstream areas and to ensure that no significant erosion or the associated siltation of downstream resources will occur.
 - For purposes of this Land Use Plan, “significant erosion” shall mean the likelihood of removal of soil or the cutting, scarring, or rilling of slopes, canyons, or bluff faces, or the silting of lower slopes brought about by runoff from surfaces during irrigation or from rainfall of an intensity and duration less than or equal to that of the 100-year period design storm.
- A minimum setback of 40 feet from the edge of the coastal bluff top shall be provided in the construction of all principal structures and all accessory structures, such as, but not limited to: pools, spas, storage sheds, gazebos and above grade decks or patios...No grading or construction activities shall be allowed on the face of a coastal bluff unless approved as part of a Shoreline Protective Permit or Setback Seawall Permit issued in accordance with the provisions of this Land Use Plan and when such activity on the bluff face has been minimized to the maximum extent feasible necessary to provide the authorized shoreline protection.
- Native and other drought-tolerant plant species shall be utilized in all new blufftop construction projects so as to minimize irrigation requirements and to reduce potential slide hazards due to over watering of the bluffs. The construction of irrigation systems shall be prohibited within 40 feet of the edge of the coastal bluff top. In review of new construction projects, the removal of existing irrigation systems within the 40-foot setback shall be required as a condition of development.
- Areas to be retained in their natural state pursuant to the coastal bluff regulations shall be subject to conditions to ensure the future protection of the designated area(s) from encroachment, disturbance or degradation. Said conditions shall include the recordation of an open space deed restriction or open space easement to assure protection of the designated area and to serve notice to the property owner, subsequent owners or interested parties of the restrictions in effect on such property.
- Enhance public safety within the San Dieguito River Floodway by:
 - Prohibiting the construction of permanent structures or the placement of fill on either a temporary or permanent basis within designated floodway (FW) areas.
 - Prohibiting uses in the floodway that would constitute an unreasonable, unnecessary, undesirable, or dangerous impediment to the flow of floodwaters, or that would cause a cumulative increase in the water surface elevation of the base flood or more than 1 foot at any point.
 - Requiring proposed development to be located so as to eliminate the need for protective devices such as seawalls, riprap, retaining walls, or other flood control devices.
- Ensure that the development of real property that is subject to floodwaters will not obstruct flood flow; will not create a hazard to life, health, safety, or the general welfare; will reduce the need for the construction of flood control facilities that would be required if unregulated development occurs; and will minimize the cost of flood insurance to Del Mar residents.

City of Encinitas

The City of Encinitas LCP includes policies that address flooding, drainage, site stability, shoreline/bluff development and hazardous materials impacts similar to Coastal Act policy requirements, and in some

cases provides specific development standards within designated overlays to achieve the LCP's policy goals:

- Development and grading or filling in drainage courses, floodways and floodplains shall be prohibited except as provided by Land Use Element Policy 8.2. Exceptions may also be made for development of circulation element roads; necessary water supply projects; flood control projects where no other method for protecting existing structures in the floodplain is feasible and where such protection is necessary for public safety or to protect existing development; developments where the primary function is the improvement of fish and wildlife habitat; and other vital public facilities, but only to the extent that no other feasible alternatives exist, and minimum disruption to the natural floodplain, floodway or drainage course is made. When flood/drainage improvements are warranted, require developers to mitigate flood hazards in those areas identified as being subject to periodic flooding prior to actual development.
- Restrict development in those areas where slope exceeds 25% as specified in the Hillside/Inland Bluff overlay zone regulations of the zoning code. Encroachment into slopes as detailed in the Hillside/Inland Bluff overlay may range from 0 percent to a maximum of 20 percent... upon the discretionary judgment that there is no feasible alternative siting or design that eliminates or substantially reduces the need for such encroachment, and it is found that the bulk and scale of the proposed structure has been minimized to the greatest extent feasible and such encroachment is necessary for minimum site development and that the maximum contiguous area of sensitive slopes shall be preserved. Within the Coastal Zone and for the purposes of this section, "encroachment" shall constitute any activity that involves grading, construction, placement of structures or materials, paving, removal of native vegetation including clear-cutting for brush management purposes, or other operations that would render the area incapable of supporting native vegetation or being used as wildlife habitat. Exceptions may also be made for development of circulation element roads, local public streets, or private roads and driveways, which are necessary for access to the more developable portions of a site on slopes of less than 25% grade, and other vital public facilities, but only to the extent that no other feasible alternatives exist, and minimum disruption to the natural slope is made.
- The City shall provide for the reduction of unnatural causes of bluff erosion, as detailed in the Zoning Code, by:
 - Requiring new structures and improvements to existing structures to be set back 25 feet from the inland blufftop edge, and 40 feet from coastal blufftop edge with exceptions to allow a minimum coastal blufftop setback of no less than 25 feet. For all development proposed on coastal blufftops, a site-specific geotechnical report shall be required. The report shall indicate that the coastal blufftop setback will not result in risk of foundation damage resulting from bluff erosion or retreat to the principal structure within its design life and with other engineering evidence to justify the coastal blufftop setback.
- Standards for the justification of preemptive erosion control devices and limits on location of shoreline devices shall be as detailed in the Zoning Code.
- Land uses involved in the production, storage, transportation, handling, or disposal of hazardous materials will be located a safe distance from land uses that may be adversely impacted by such activities.

City of Carlsbad

The City of Carlsbad LCP incorporates Section 30253 of the Coastal Act into the LCP and recommends several actions to address potential natural hazard, flooding and drainage, and shoreline

development issues within the city. In particular, the Carlsbad LCP focuses on grading restrictions and drainage requirements as a means of minimizing erosion and ensuring site stability:

- City's Grading Ordinance, Storm Water Ordinances, Standard Urban Storm Water Mitigation Plan (SUSMP), Master Drainage Plan, and the following additional requirements. The SUSMP, dated April 2003 and as amended, the Master Drainage Plan (1994) are hereby incorporated into the LCP by reference. Development must also comply with the requirements of the Jurisdictional Urban Runoff Management Program (JURMP) and the San Diego County Hydrology Manual to the extent that these requirements are not inconsistent with any policies of the LCP.
- Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. As a condition of Coastal Development Permit approval, permitted shoreline structures may be required to replenish the beach with imported sand. Provisions for the maintenance of any permitted seawalls shall be included as a condition of project approval.
- Any development proposal that affects steep slopes (25% inclination or greater) shall be required to prepare a slope map and analysis for the affected slopes. Steep slopes are identified on the PRC Toup maps. The slope mapping and analysis shall be prepared during the California Environmental Quality Act environmental review on a project-by-project basis and shall be required as a condition of a Coastal Development Permit.
- Slopes of 25% grade and over shall be preserved in their natural state, unless the application of this policy would preclude any reasonable use of the property, in which case an encroachment not to exceed 10% of the steep slope area over 25% grade may be permitted. This policy shall not apply to the construction of roads on the City's Circulation Element or the development of utility systems.
- Development shall continue to be restricted in 100-year floodplain areas. Continuing the policy of zoning 100-year floodplains as open space will permit natural drainage to occur without the need for flood control channels. No permanent structures or filling shall be permitted in the floodplain and only uses compatible with periodic flooding shall be allowed.

City of Oceanside

The City of Oceanside LCP includes policies that mirror the requirements of Sections 30253 and 30235 of the Coastal Act, and additional policies with an emphasis on development along and within the shoreline and San Luis Rey River area:

- Coastal bluff development shall be permitted if the design and setbacks are adequate to ensure stability for the expected design life of the development, and measures are taken to control runoff, foot traffic, irrigation, or other activities that could aggravate erosion problems.
- In order to protect life and property in the river area from flood hazards, the City shall:
 - Prevent encroachment of permanent structures into the floodway.
 - Allow only flood compatible uses and structures, per the Federal Flood Insurance Agency's regulations, within the 100-year floodplain.
 - Cooperate with Army Corps of Engineers to ensure completion of the flood control project, as proposed.

- To protect life and property in the river area from geologic hazards:
 - Stabilize or remove the vertical cut-slope in the northwestern corner of Lawrence Canyon, in conjunction with development of that site.
- Require new blufftop development in the river area to maintain an adequate setback from the bluff edge and, where necessary, erect barriers along the bluff to maintain public safety

Corridor LCP policies regarding site and soil stability for proposed rail and highway improvements would be addressed by the PWP/TREP through developing and implementing SWPPP and NPDES permit requirements. As the program improvements would be contained primarily within existing facility corridor and/or improvement areas, proposed improvements would minimize construction of undisturbed, and potentially unstable steep topography. Other potential impacts associated with topography, excessive erosion, and construction activities would be addressed with construction-phase BMP requirements, which would serve to minimize uncontrolled site runoff and erosion and ensure site stability.

Potential impacts associated with drainage and flooding would be addressed, in large part, through appropriate design of rail and highway facilities. As noted previously, many of the proposed rail improvements (e.g., San Dieguito Double-Track and Bridge Replacement, Sorrento Valley Double-Track) will elevate the track over existing drainage and flood areas to address drainage and flooding concerns. It is expected that crossings over the corridor's waterbodies would be spanned either by bridges or culverts or, in the case of Del Mar and University Town Center, by improvements involving deep tunnels that would avoid surface floodplains. Future project-level analysis for proposed rail improvements would assess floodplain hydrology/hydraulics and evaluate the impacts of specific designs on water surface elevations, flood conveyance, and potential flooding risk. Where feasible, construction of facilities within floodplains would be avoided, or the footprint of facilities within the floodplain would be minimized. Other than necessary protection structures placed at the base of bridge support structures (abutments and/or pilings), proposed highway improvements would not involve the construction of new or expanded shoreline protective devices that would alter natural landforms or shorelines and result in associated shoreline erosion. In cases where bridge structures would potentially be replaced and lengthened (San Elijo, Batiquitos, and Buena Vista Lagoons) and where culvert removal is proposed at Carmel Creek, removal of existing bridge abutment and culvert structures would result in restoring a more natural shoreline at the facility crossing.

Furthermore, environmental documentation and technical studies for proposed highway improvements concluded that highway improvements would have a negligible effect on drainage and floodplains in the corridor and would result in improved drainage and flood conveyance at Carmel Creek, Batiquitos, Buena Vista, and San Elijo Lagoons. The proposed bridge widening at the San Luis Rey River would widen the channel, and replace columns in their existing locations along the edge of the channel. Proposed highway improvements would not include construction of new pipes, box culverts, or underground channels that would adversely affect significant natural stream courses or cause drainage or floodplain impacts. Highway bridge improvements that would occupy areas within floodways in the corridor would be necessary to upgrade and protect existing or replacement crossing structures for continued public safety. Improvements would be designed to minimize necessary stream alterations. Other than placing necessary bridge support structures (abutments and/or pilings) and extending existing culverts, proposed highway improvements would not involve the construction of new structures that would alter drainage patterns.

Shoreline protection structures associated with the proposed improvements would be minor and would consist only of protection measures necessary to support existing and/or replacement facility crossings, where designed, to eliminate or minimize impacts to shoreline processes. It is recognized that there is a need for the existing, permitted shoreline protection system at the Del Mar Bluffs to protect the existing rail facility, and that this system could require maintenance to maintain site stability and rail operations in this area. It is also recognized that some shoreline alteration at bridge abutments and piles could be required where rail facility bridges cross waterbodies throughout the corridor. To ensure this development continues to be maintained and developed consistent with applicable LCP policies, the PWP/TREP specifies that shoreline armoring should only be allowed to protect existing, legal structures, or where necessary for replacement structures across waterbodies, that are proven to be in danger from erosion, and only if: (a) less-environmentally damaging alternatives to armoring are not feasible (including relocation of endangered structures); and (b) the armoring has been sited, designed, and accompanied by feasible measures to proportionately mitigate any unavoidable negative coastal resource impacts (on views, sand supply, public access, etc.).

The NCC PWP/TREP specifies that the potential impact of sea level rise associated with global climate change be considered in the design and/or refurbishment of all transportation corridor infrastructure. Caltrans and SANDAG have demonstrated that the proposed bridge replacement projects are designed to accommodate the anticipated increase in mean sea level rise through the year 2100, which would minimize the structures' exposure to increased storm surge, wave uprush, and flooding. The PWP/TREP further specifies that future project-specific rail, highway and community enhancement improvements that may be subject to shoreline erosion, tidal inundation and flooding should include an analysis of improvement location and design in relation to projected future changes in sea level rise to ensure new development is located and designed to eliminate or minimize, to the maximum extent feasible, hazards associated with anticipated sea level rise over the expected design life of the structures (75 years). These analyses would ensure that the proposed improvements are located and designed to address potential hazards associated with the anticipated increase in mean sea level rise, based on the most current sea level rise projections and data available at the time of project implementation.

In addition, the PWP/TREP calls for protection against the spillage of crude oil, gas, petroleum products, or hazardous substances, and that effective containment and cleanup facilities and procedures be in place for accidental spills that could occur during construction activities.

As discussed above, PWP/TREP improvements would minimize risks to life and property in areas of high geologic hazards, assure project and site stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of shoreline protective devices that would substantially alter natural landforms along bluffs and cliffs. As such, the PWP/TREP is consistent with applicable LCP policies addressing geology, soils, seismicity, topography, drainage and flooding, shoreline erosion, and hazardous wastes and, therefore, these policies would not need to be amended for implementation of the proposed transportation facility improvements.

6A IMPLEMENTATION

6A.1 INTRODUCTION

This chapter provides the PWP/TREP Implementation Framework, which coordinates the timing of rail, highway, transit, community and resource-enhancement project components to ensure highway improvements do not outpace other multimodal transportation improvements for the corridor, and that proposed transportation improvements do not outpace natural-resources restoration and enhancement.

The Implementation Framework includes a Phasing Plan (Section 6A.2.1) for proposed PWP/TREP improvements to ensure transportation improvements would be implemented to achieve a multimodal solution for regional transportation needs, and to ensure transportation improvements are implemented in conjunction with comprehensive restoration and enhancement plans for the region's unique natural resources. In addition, the Implementation Framework includes a Resource Enhancement and Mitigation Program (REMP, detailed in Chapter 6B), which utilizes a combination of traditional and non-traditional measures to mitigate coastal resource impacts of the proposed mobility improvements, particularly as it relates to enhancing marine and Environmentally Sensitive Habitat Area (ESHA) resources. The constrained, primarily developed North Coast Corridor (NCC) leaves few opportunities for large-scale land purchases for restoration opportunities that could enhance the corridor's natural resources, and the NCC's lagoon habitats are biologically unique and cannot be replicated elsewhere; thus, opportunities to enhance these habitats require comprehensive solutions with improvements focused on ecosystem-wide benefits. The PWP/TREP's innovative approach to mitigate impacts to natural resources in advance results in greater benefits to coastal resources on a corridor-wide level than if only ratio-based, project and site-specific mitigation were employed.

This chapter also describes the procedures the California Coastal Commission (Coastal Commission) will use to review and authorize specific projects included in the PWP/TREP. As detailed in Chapter 1, the Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail projects will be evaluated on a case-by-case basis to determine whether the Coastal Commission's review of those projects will be limited to the federal consistency review process only; therefore, the PWP/TREP includes a process for obtaining federal consistency for these identified rail projects, as detailed in Section 6A.4 (Federal Consistency Review Procedures). Similarly, rail projects that may be processed through the PWP (and conceptual highway, bike, and pedestrian enhancement components of the PWP) may be subject to future PWP amendment and Notice of Impending Developments (NOIDs) to ensure consistency with the approved PWP, or San Diego Association of Governments/California Department of Transportation (SANDAG/Caltrans) may choose (in consultation with the Coastal Commission) to submit a coastal development permit application to the appropriate permitting agency. All other improvements included in the PWP/TREP not located in areas of Coastal Commission retained permit jurisdiction must be found consistent with the PWP/TREP and all policies and implementation measures contained in Chapter 5, and are subject to the PWP procedures detailed in Sections 6A.5 (PWP Development Review Procedures). Procedural requirements for projects located in areas of Coastal Commission retained permit jurisdiction are located in Section 6A.6 (Coastal Development Permit [CDP] Review Procedures); for these projects, Chapter 3 of the Coastal Act will remain the standard of review, and Chapter 5 of the PWP/TREP will be used as guidance.

Together with the policies, design/development strategies, and implementation measures in Chapter 5, the phasing requirements of Chapter 6A will ensure that the PWP/TREP program of improvements is implemented consistent with applicable Coastal Act policies that address the following:

- Energy Conservation & Vehicle Miles Traveled
- Public Transit & Smart Growth

- Public Access & Recreation
- Marine Resources: Water Quality & Wetlands
- ESHAs & Special Status Species
- Archaeological & Paleontological Resources
- Visual Resources
- Site Stability & Management
- Agricultural Resources
- Conflict Resolution

6A.2 IMPLEMENTATION FRAMEWORK

6A.2.1 Phased Project Implementation

The PWP/TREP Phasing Plan includes Initial-Term (2010–2020), Mid-Term (2021–2030), Long-Term (2031–2040), and Vision (2041–2050) project phasing groups for proposed rail, highway, transit, community and resource enhancement projects (Table 6A-1 and Figure 6A-1A through Figure 6A-1D). The Phasing Plan is intended to provide the overall framework to ensure the project's implementation in an orderly, planned, and resource-protective manner, within which flexibility is retained while keeping these goals in mind.

The primary objectives of the Phasing Plan are as follows:

- **Ensure Multimodal Project Phasing:** Identify project phasing and implementation priorities for rail improvements, and track the progress of rail corridor project implementation in the context of all other PWP/TREP improvements (highway, transit, community and resource enhancement project implementation).

The Phasing Plan includes LOSSAN rail projects listed and grouped into Initial-, Mid-, and Long-Term projects and Unconstrained Vision projects according to the *San Diego – LOSSAN Corridor Project Prioritization Analysis* (July 2009). The Implementation Framework ensures the PWP/TREP transportation improvements will be implemented consistent with the region's commitment to pursue a multimodal solution for regional transportation needs.

- **Provide Flexibility for Project Implementation:** Provide for maximum flexibility in implementing all PWP/TREP improvements to accommodate opportunities and uncertainties in potential future funding availability and local, state, and federal political and policy decisions, while ensuring projects are implemented in a way that balances rail and highway improvements, and that community and resource enhancements are implemented prior to, or concurrent with, project implementation.

Provide for maximum flexibility in implementing resource enhancement projects pursuant to the REMP (Chapter 6B), while ensuring compliance with mitigation requirements for transportation projects and comprehensive enhancement of corridor resources.

- **Ensure Potential Resource Impacts & Benefits are Balanced:** Identify, quantify, and track, coastal resource opportunities/benefits and impacts of each Initial-Term, Mid-Term, and Long-Term project phase as detailed in Section 6B.2.1. (Performance Reporting). Integral coastal resource opportunities and benefits include:
 - Promotion of public transit and smart growth (energy conservation and air quality)
 - Improvements to public access and recreation
 - Protection/enhancement of water quality
 - Restoration, enhancement and/or preservation of wetlands
 - Restoration, enhancement and/or preservation of ESHAs.

TABLE 6A-1: PHASING PLAN

Phase	Project Phase Benefits	Highway	Bicycle & Pedestrian/ Community Enhancements	LOSSAN & Transit*	Environmental
2010-2020	<ul style="list-style-type: none">• 29.7 lane-miles of new HOV facilities• 2.6 miles of new rail double-tracking• 2.0 miles of new bike/ped facilities (1.3 miles of improved facilities)• 8 new bike/ped crossings (9 improved crossings)• 500+ acres environmentally improved• Capital investment:<ul style="list-style-type: none">– \$1,206 highway & environmental– \$259M rail & transit	<ul style="list-style-type: none">• 2 HOV lanes from Manchester Av to SR 78<ul style="list-style-type: none">– San Elijo Lagoon Bridge Replacement– Batiquitos Lagoon Bridge Replacement– Manchester Av DAR– San Elijo Multi-Use Facility	<u>Highway Adjacent</u> <ul style="list-style-type: none">• EN#1 Bike/Ped Trail on Both Sides of I-5 at San Elijo• EN#5A Encinitas Blvd Bike/Ped Enhancements• EN#2B Villa Cardiff & MacKinnon Bridge Enhancements• SB#3 Gateway Open Space Preservation Site• I-5 North Coast Bike Trail (<i>San Elijo segment</i>)	<ul style="list-style-type: none">• Eastbrook to Shell Double Track• Oceanside Through Track• Batiquitos Lagoon Double Track<ul style="list-style-type: none">– Batiquitos Bridge replacement• San Elijo Lagoon Double Track<ul style="list-style-type: none">– San Elijo Bridge replacement• Poinsettia Station Improvements	<ul style="list-style-type: none">• San Dieguito W19 Establishment Site• Hallmark (East & West) Establishment Site• Dean Family Trust Establishment Site• Batiquitos Bluffs Restoration & Preservation/Enhancement Site• Deer Canyon II Establishment Site• Laser Preservation/Enhancement Site• La Costa (Ayoub) Site Preservation & Enhancement• San Elijo Lagoon Preservation/Enhancement• Lagoon Mgmt/Endowment/Regional Dredging Program
		<ul style="list-style-type: none">• 2 HOV lanes from La Jolla Village Dr to I-5/I-805<ul style="list-style-type: none">– Voigt Dr DAR• I-5/I-805 HOV Connectors<ul style="list-style-type: none">– Peñasquitos Creek Bridge– Soledad Creek Bridge	<ul style="list-style-type: none">• Voigt Dr Overcrossing & Realignment Improvements		
			<u>LOSSAN Adjacent</u> <ul style="list-style-type: none">• Coastal Rail Trail (<i>Chesterfield Dr to G St</i>)• Coastal Rail Trail (<i>G St to Leucadia Blvd</i>)• Coastal Rail Trail (<i>Leucadia Blvd to La Costa Av</i>)		

TABLE 6A-1: PHASING PLAN (CONTINUED)

Phase	Project Phase Benefits	Highway	Bicycle & Pedestrian/ Community Enhancements	LOSSAN & Transit*	Environmental
2021-2030	<ul style="list-style-type: none">32.6 lane-miles of new HOV facilities4.6 miles of new rail double-tracking20.7 miles of new bike/ped facilities (15.7 miles of improved facilities)18 new bike/ped crossings (33 improved crossings)13 acres environmentally improvedCapital investment:<ul style="list-style-type: none">\$1,237M highway & environmental\$263M rail & transit	<ul style="list-style-type: none">2 Express Lanes from I-5/I-805 to SR 56<ul style="list-style-type: none">Carmel Creek Bridge WideningI-5/SR 56 Interchange Improvements	<u>Highway Adjacent</u> <ul style="list-style-type: none">SD#2A Carmel Valley Bike/Ped Trail ConnectionSD#2B Enhanced Park & Ride at Carmel Valley RdSD#2C Old Sorrento Valley Road Trail ConnectionsI-5 North Coast Bike Trail (<i>adjacent segments</i>)	<ul style="list-style-type: none">Moonlight to Swami Double TrackCarlsbad Village Double Track<ul style="list-style-type: none">Buena Vista Bridge replacementSan Dieguito Double Track and Platform<ul style="list-style-type: none">San Dieguito Bridge replacementDel Mar Fairgrounds Special Event PlatformDel Mar Bluffs Additional Stabilization	<ul style="list-style-type: none">Buena Vista Lagoon Preservation/Enhancement
		<ul style="list-style-type: none">2 Express Lanes from SR 56 to Manchester Av<ul style="list-style-type: none">San Dieguito River Bridge wideningDel Mar Local Gateway Feature at Via de la Valle	<ul style="list-style-type: none">SD#3 Bike/Ped Trail & Bridge on W Side of I-5 at San DieguitoSD#4 Ped Overpass Connection N of Del Mar Heights RdSB#1 Streetscape Enhancements on Ida AveSB#2 Ped Trailhead at Solana Hills DrI-5 North Coast Bike Trail (<i>adjacent segments</i>)Del Mar Heights Rd Overcrossing ImprovementsVia de la Valle Undercrossing ImprovementsLomas Santa Fe Dr Undercrossing ImprovementsManchester Ave Undercrossing Improvements		
		<ul style="list-style-type: none">2 Express Lanes from Manchester Av to Palomar Airport Road<ul style="list-style-type: none">Encinitas Local Gateway Feature at Encinitas Blvd	<ul style="list-style-type: none">EN#2A Park & Ride Enhancements at Birmingham DrEN#3 Hall Property Park Trail Connecting to Santa Fe DrEN#4 Trail Connecting Santa Fe Dr to Requeza StEN#5B Trail Connecting Requeza St to Encinitas BlvdEN#6A Union St Ped OverpassEN#6B Cottonwood Ck Park to Union St Trail ConnectionCB#1A Bike/Ped Trail & Bridge on W Side of BatiquitosCB#1B Park & Ride Enhancement at La Costa AveCB#2 Trail on NE Side of I-5 at Batiquitos LagoonI-5 North Coast Bike Trail (<i>adjacent segments</i>)Birmingham Dr Overcrossing ImprovementsSanta Fe Dr Undercrossing ImprovementsRequeza St Overcrossing ImprovementsEncinitas Blvd Undercrossing ImprovementsLeucadia Blvd Overcrossing ImprovementsLa Costa Ave Overcrossing ImprovementsPoinsettia Ln Overcrossing ImprovementsPalomar Airport Rd Overcrossing Improvements <u>LOSSAN Adjacent</u> <ul style="list-style-type: none">DM#1 Coast to Crest Trail LOSSAN CrossingCB#6 Chestnut Av LOSSAN Pedestrian CrossingHillcrest Dr LOSSAN Pedestrian CrossingCoastal Rail Trail (<i>Poinsettia Station to Palomar Airport Rd</i>)Coastal Rail Trail (<i>Palomar Airport Rd to Cannon Rd</i>)Coastal Rail Trail (<i>Cannon Rd to Tamarack Av</i>)		

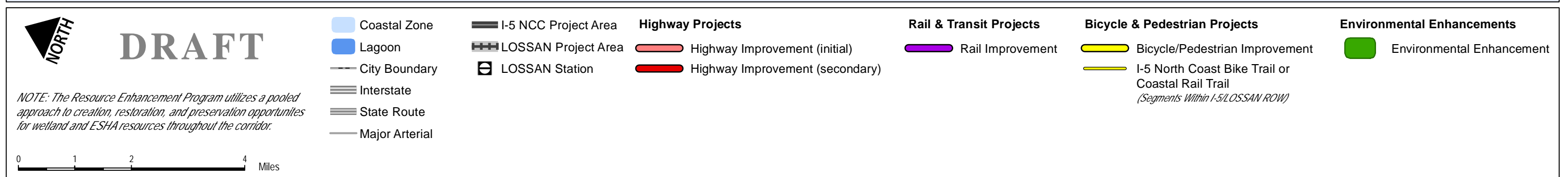
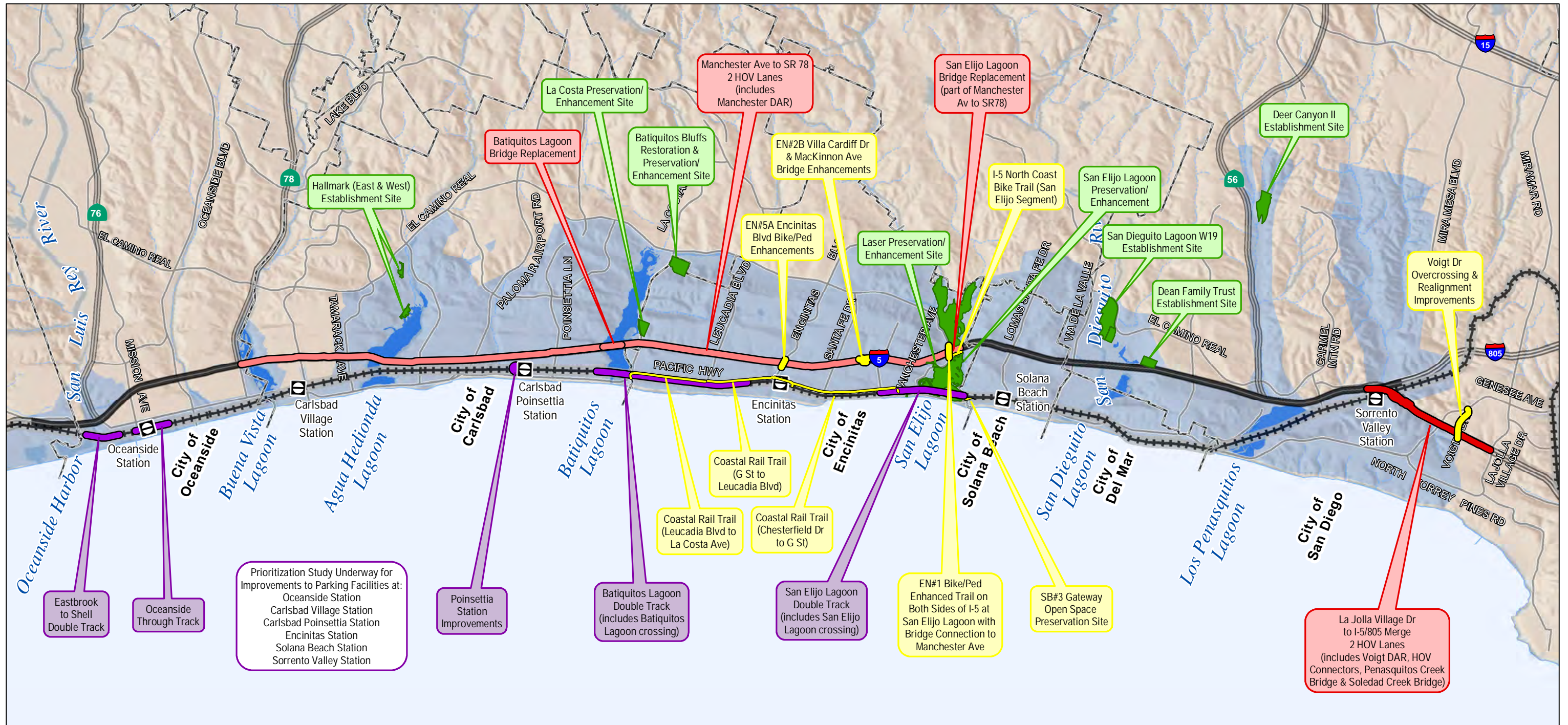
* Parking Improvements at Selected/Remaining LOSSAN Stations (Currently Under Prioritization Study)

TABLE 6A-1: PHASING PLAN (CONTINUED)

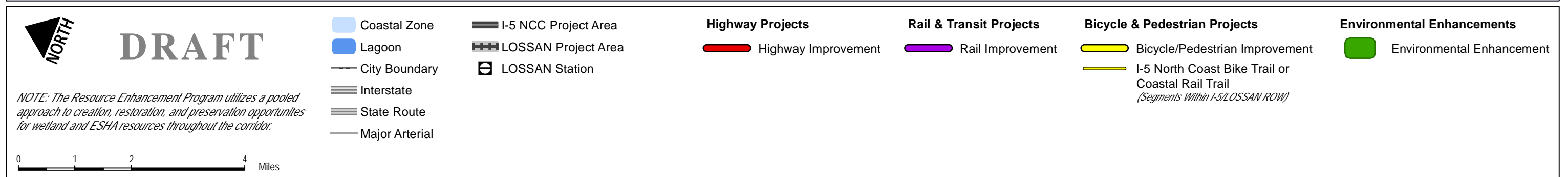
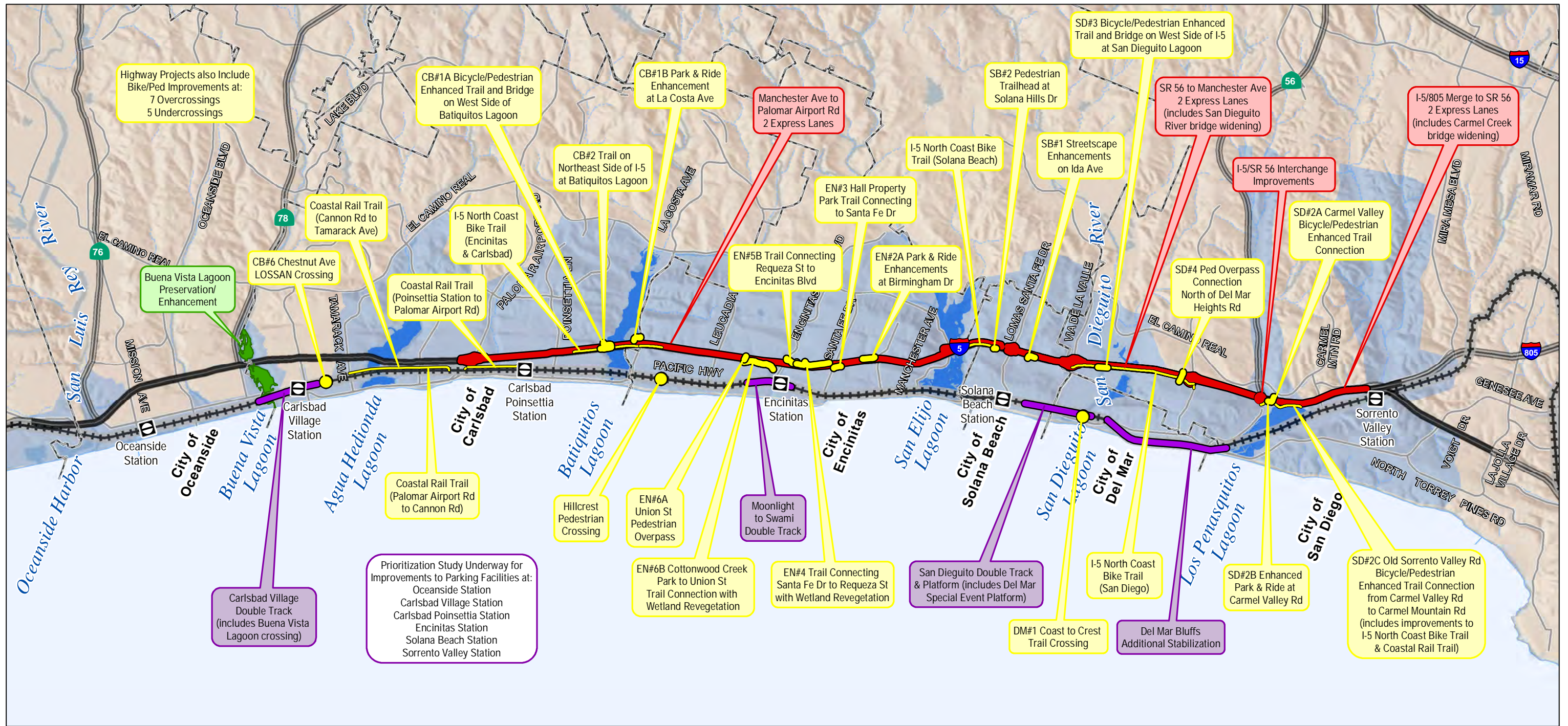
Phase	Project Phase Benefits	Highway	Bicycle & Pedestrian/ Community Enhancements	LOSSAN & Transit	Environmental
2031-2040	<ul style="list-style-type: none"> 21.1 lane-miles of new HOV facilities 5.6 miles of new bike/ped facilities (9.2 miles of improved facilities) 22 improved bike/ped crossings Capital investment: <ul style="list-style-type: none"> – \$831M highway & environmental – \$10M rail & transit 	<ul style="list-style-type: none"> 2 Express Lanes from Palomar Airport Rd to SR 78 <ul style="list-style-type: none"> – Buena Vista Lagoon Bridge Replacement – Agua Hedionda Lagoon Bridge Replacement – I-5/SR 78 Interchange Improvements 	<u>Highway Adjacent</u> <ul style="list-style-type: none"> CB#3 Bike/Ped Trail & Bridge on E Side of I-5 at Agua Hedionda CB#5 Chestnut Av I-5 Crossing Bike/Ped Improvements I-5 North Coast Bike Trail (<i>adjacent segments</i>) Cannon Rd Undercrossing Improvements Chinquapin Ave Undercrossing Improvements Tamarack Ave Overcrossing Improvements Carlsbad Village Dr Undercrossing Improvements Las Flores Dr Overcrossing Improvements Jefferson St Overcrossing Improvements 	<ul style="list-style-type: none"> Mid-City to Palomar Airport Road BRT 	<ul style="list-style-type: none"> <i>Continuation of environmental improvements above</i>
		<ul style="list-style-type: none"> 4 Express Lanes from SR 78 to Harbor Dr <ul style="list-style-type: none"> – San Luis Rey River Bridge Widening – Carlsbad Local Gateway Feature at Carlsbad Village Dr – Oceanside Local Gateway Feature at Mission Ave – Regional Gateway Feature at Harbor Dr 	<ul style="list-style-type: none"> OC#1 Pocket Park & Ped Path at California St OC#2 Oceanside Blvd Ped Streetscape Enhancement OC#3 Division St Bike/Ped Enhancements OC#4 Mission Ave Bike/Ped Enhancements OC#5 Bush St Bike/Ped Enhancements & Community Gardens OC#6 Community Open Space Park and/or Community Gardens OC#7 SR76 Underpass: New Parking & Trailhead OC#8 Ped Underpass Improvements N of San Luis Rey River OC#10 Harbor Dr/Camp Pen Bike/Ped Enhancements I-5 North Coast Bike Trail (<i>adjacent segments</i>) Cassidy St Overcrossing Improvements Brooks St Overcrossing Improvements Neptune Way Overcrossing Improvements 		
		<ul style="list-style-type: none"> Braided Ramps from Genesee Av to Sorrento Valley Rd 	<u>LOSSAN Adjacent</u> <ul style="list-style-type: none"> OC#12 Harbor Dr LOSSAN Crossing Bike/Ped Improvements 		
2041-2050	<ul style="list-style-type: none"> 1.7 miles of new rail double-tracking 3 rail-corridor grade separations Capital investment: <ul style="list-style-type: none"> – \$1,614M rail & transit 			<ul style="list-style-type: none"> Leucadia Blvd Grade Separation Del Mar Tunnel: <ul style="list-style-type: none"> – Camino Del Mar Alternative – I-5 / Peñasquitos Alternative Peñasquitos Double Track <ul style="list-style-type: none"> – Peñasquitos Bridge replacement (<i>Dependent upon Del Mar Tunnel Alternative</i>) Two Additional Roadway Grade Separations 	<ul style="list-style-type: none"> <i>Continuation of environmental improvements above</i>

Note: Naming convention used for consistency with maps and other chapters: SD=San Diego, SB=Solana Beach, EN=Encinitas, CB=Carlsbad, OC=Oceanside.

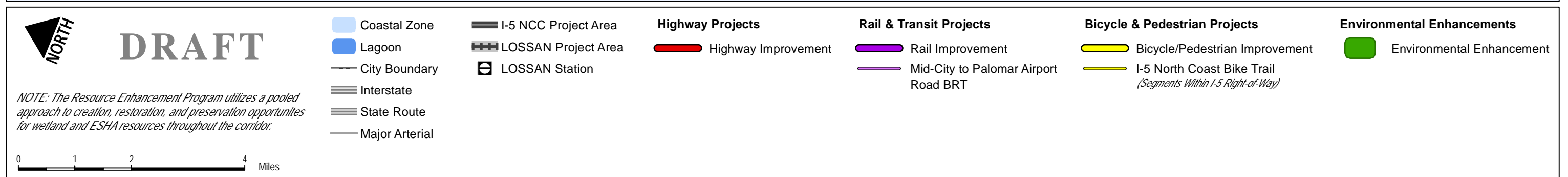
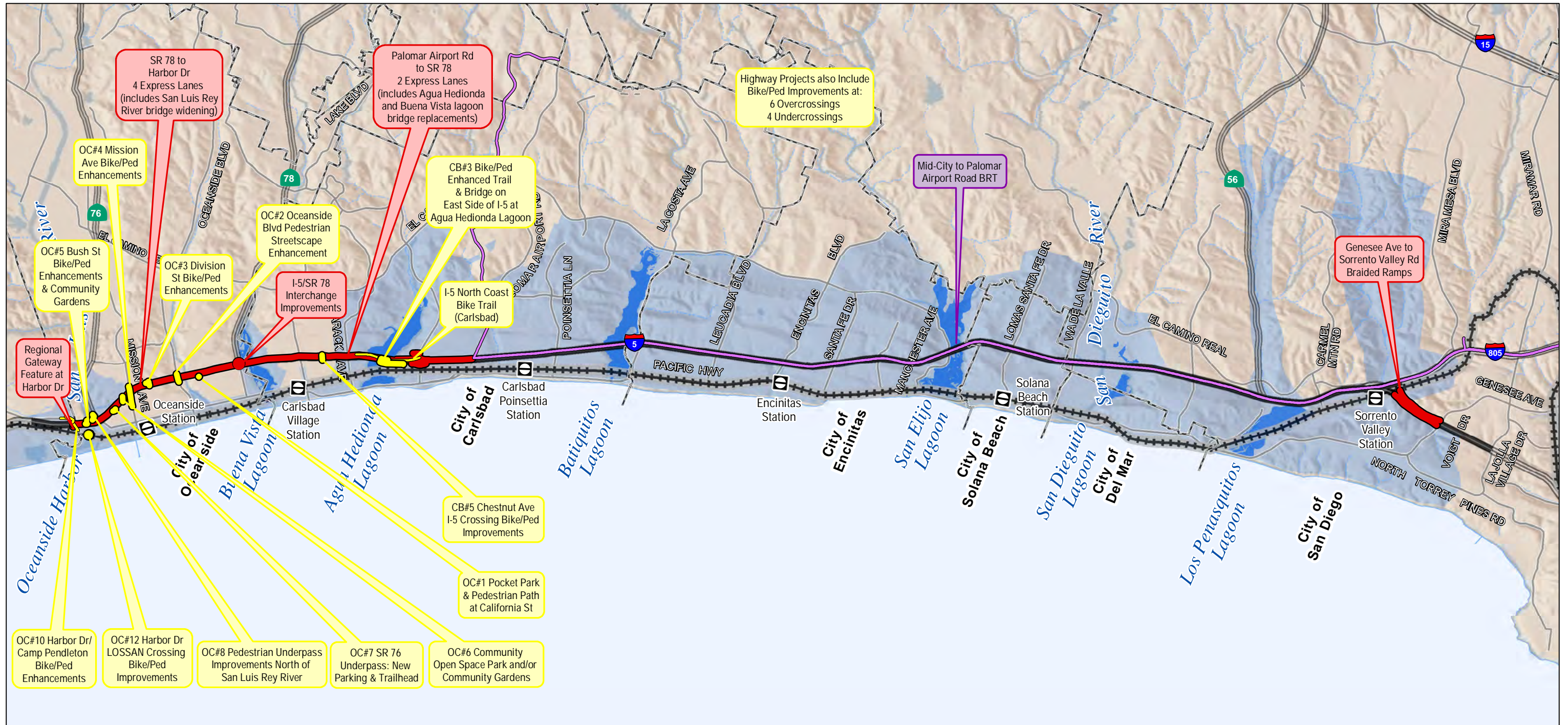
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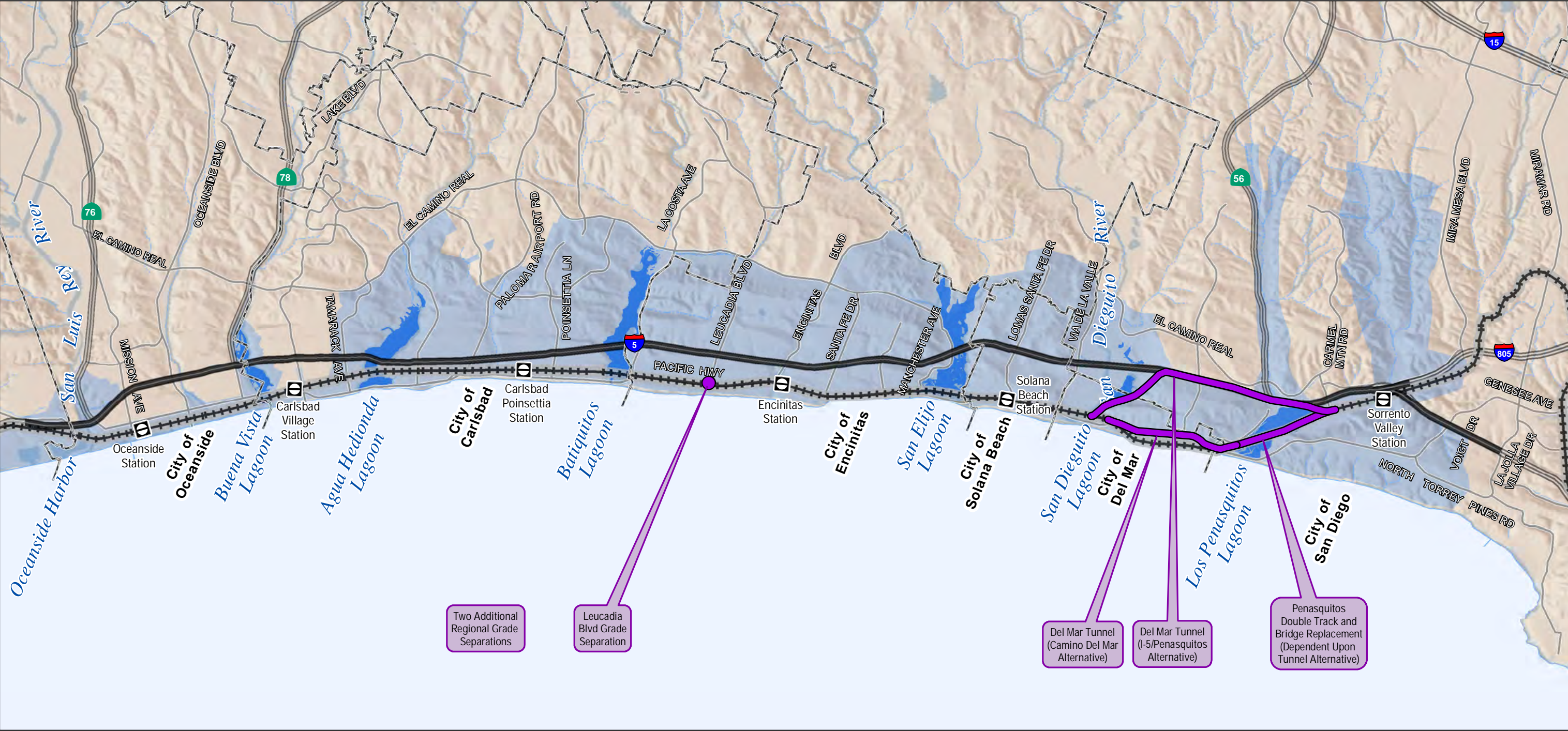
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NOTE: The Resource Enhancement Program utilizes a pooled approach to creation, restoration, and preservation opportunities for wetland and ESHA resources throughout the corridor.

0 1 2 4 Miles

<ul style="list-style-type: none">Coastal ZoneLagoonCity BoundaryInterstateState RouteMajor Arterial	<ul style="list-style-type: none">I-5 NCC Project AreaLOSSAN Project AreaLOSSAN Station	Highway Projects <ul style="list-style-type: none">Highway Improvement	Rail & Transit Projects <ul style="list-style-type: none">Rail Improvement	Bicycle & Pedestrian Projects <ul style="list-style-type: none">Bicycle/Pedestrian Improvement	Environmental Enhancements <ul style="list-style-type: none">Environmental Enhancement
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6A.2.1.1 Phasing Plan Factors

A range of priorities, constraints, and other factors shape the baseline phasing plan for the NCC consistent with the PWP/TREP phasing plan objectives. The primary phasing factors are the following:

- Available revenue and project cost (both capital and operations)
- Regional growth and transportation need
- Transportation system performance
- Minimization of construction impacts to the public and the environment
- Requirements of SB468
- Safety and rehabilitation needs
- Coastal access and promotion of alternative modes

Available Revenue and Project Costs

Fiscal constraints require projects to be accomplished gradually, as revenue becomes available. The stream of revenue from the regional *TransNet* sales tax, as well as the availability of state and federal funds, largely dictates how many projects the region can implement at any given time. Within these revenue constraints, individual project need, performance and benefits are evaluated to determine projects that will be the most effective for meeting plan objectives and that can be accomplished within the available funding at a given time. Capital funding for project construction is only one dimension of overall costs; many projects, especially transit, also require a commitment to provide operating funding in perpetuity. Operations cost, as well as maintenance costs, are therefore considered with capital cost within the phasing plan. In addition, many state and federal funds come with strict limitations on the types of activities for which they can be used. Most federal funds, for example, generally cannot be spent on operations and maintenance. Therefore, federal assistance available for a project's initial construction is also considered with available and reliable funding sources for operations and maintenance.

The *TransNet* ordinance does provide some operational funding for transit, and these future revenue projections are factored into the transit service plans contained in the SANDAG 2050 Regional Transportation Plan (2050 RTP) and the PWP/TREP phasing plan. In addition, single-occupancy vehicles (SOV) using the I-5 Express Lanes will provide revenue (via user fees paid with FasTrak transponders) that can be used to support corridor transit operations. In accordance with SB 468, revenues (in excess of administrative and operating costs) from paying SOV users will be used in the I-5 corridor for the improvement of high-occupancy vehicle (HOV) facilities and transit services.

Regional Growth and System Performance

The region's transportation needs and the performance of its transportation systems play heavily into the PWP/TREP phasing plan. As changes occur in the San Diego region and the North Coast Corridor—not just the continuation of growth, but also the evolution of local land use policy in conjunction with that growth—project phasing is designed to respond to these changes. Accordingly, the PWP/TREP phases projects in a manner that will both reduce congestion in the corridor and increase multimodal access to key corridor activity centers, including coastal resources. It is for this reason, for example, that a single HOV/Express Lane will be extended throughout the NCC before adding a second HOV/Express Lane in any location. This allows the program to respond to current congestion and access needs in a measured way, while leaving more significant expansions for later phases, when demand is projected to be even higher. By aligning project delivery with growth, the

phasing plan will allow the NCC to provide the best possible system performance to meet traveler demands.

Construction Impacts and SB 468

The phasing plan also seeks to minimize the impacts of construction, both to the public as well as to the environment. Community enhancement projects, for example, are aligned with the highway and rail projects that correspond to their locations, which will allow for concurrent construction and provide assurances that any existing facilities impacted by construction are immediately replaced and improved. This will create a synergy among projects that will reduce disruptions and minimize detrimental impacts to the lowest possible levels. In addition, SB 468 requires the NCC PWP/TREP phasing plan to phase lagoon bridge construction in a way that that minimizes construction impacts to the critical lagoon resources.

Safety and Rehabilitation

Safety and rehabilitation needs also influence the phasing plan. Early phase projects include replacement of several deteriorating LOSSAN bridges, improvements at several rail crossings to enhance safety for motorists, bicyclists and pedestrians, and operational safety improvements on I-5. These projects are given priority in the phasing plan to ensure the safety of all users of the transportation system. In addition, these safety enhancements are designed to be compatible with the ultimate plan for the corridor, thus minimizing the use of “throwaway” enhancements that would be superseded by future projects.

Coastal Access and Promotion of Alternative Modes

Improving access to, through and within the corridor is the overarching goal for the multimodal transportation program and phasing plan. The phasing plan is designed to increase coastal access, reduce congestion, and promote the use of transit and other non-automobile travel modes as efficiently and effectively as possible within the confines of companion factors such as funding availability, travel demand, growth, and transportation system performance. By placing the majority of rail projects in the first phase and promoting increased HOV travel on I-5, the phasing plan prioritizes projects that meet the overarching goals of improved multimodal transportation and coastal access. Prioritizing the completion of one HOV/Express Lane throughout the corridor before initiating construction of additional HOV/Express Lanes serves to encourage HOV travel as much as possible by completing the HOV network and responding incrementally to travel demand over time. Once demand swells enough to create congestion in the first HOV Lane, the incentive for HOV travel will diminish; it is at this point that the second Express Lanes will be constructed, which will reduce HOV congestion and therefore restore the HOV incentive.

6A.2.1.2 Process for Phased Implementation

This section identifies SANDAG/Caltrans phasing obligations for individual project components included in the PWP/TREP. The phasing plan combines rail, highway, transit, community and resource enhancement projects into project phases. The combination of projects in each phase has been designed to ensure that development of multimodal transportation options keeps pace with highway improvements. The specific phasing requirements are as follows:

1. **Ensure Multimodal Project Phasing:** SANDAG and Caltrans must complete all project phases in order—i.e., they must start with Initial-Term projects, move to Mid-Term projects and then on to Long-Term projects, except where project “shifts” between phases are allowed per the following section.

Individual rail, highway, transit, community and resource enhancement projects within an active project phase must be “complete” before SANDAG and Caltrans begin constructing highway projects in the next project phase.

A project phase will be considered “complete” with a NOID or Federal Consistency submittal demonstrating that construction/implementation of all rail, highway, transit, and community enhancement projects included in the phase has been initiated and any corresponding mitigation/enhancement requirements have been implemented and achieved performance standards pursuant to the REMP (Chapter 6B).

2. **Provide Flexibility for Project Implementation:** SANDAG and Caltrans retain sole discretion to determine what order to construct projects within a given phase. Some projects within an active project phase may be completed before others in the same phase start. Other projects in the same phase may be carried out in parallel.

Nothing shall preclude the ability of SANDAG to advance rail project implementation to earlier project phases as long as the corresponding Federal Consistency or CDP submittal demonstrates compliance with all mitigation and lagoon bridge project phasing requirements of the REMP (Chapter 6B).

SANDAG and Caltrans may “shift” individual highway, transit and associated community enhancement projects from one phase to another by demonstrating in the corresponding Federal Consistency or NOID submittal that the total mobility and coastal resource benefits (coastal access, resource restoration/enhancement, etc.) of the phase the project is entering exceed the cumulative impacts of that phase. Cumulative phase benefits and impacts will continue to be documented and updated per the process outlined in Section 6A.2.1.3 (Performance Reporting) and the REMP (Chapter 6B).

3. **Ensure Potential Resource Impacts & Benefits are Balanced:** SANDAG and Caltrans must keep track of the status, project phase benefits and/or impacts covered by this PWP/TREP and that are part of the REMP.

The Phasing Plan identifies and quantifies, where feasible, the mobility and coastal resource opportunities/benefits and impacts of each project phase. Pursuant to Section 6A.4 (Federal Consistency Review Procedures) and Section 6A.5 (PWP Development Review Procedures), Federal Consistency and NOID submittals for individual projects within an active phase must include information regarding the status of implementation of rail, highway, transit, community and resource enhancement projects included in the same project phase. Cumulative phase benefits and impacts will continue to be documented and updated per Federal Consistency and NOID submittals, as detailed in Section 6A.2.1.3 (Performance Reporting) and enumerated in Table 6A-2 and the REMP (Chapter 6B), which will provide a reporting mechanism for progress made toward achieving PWP/TREP implementation objectives and current data regarding project phase benefits and impacts from which to determine:

- That a project phase is “complete” for purposes of initiating the next project phase for highway and associated community enhancement projects
- A proposed development’s contribution to the cumulative mobility benefits of the project phase (public transit, bicycle, pedestrian, coastal access/recreation improvements)
- A proposed development’s contribution to cumulative project phase resource impacts, project phase mitigation requirements, and status of compliance with mitigation/enhancement requirements (as established and accounted for per the REMP, Chapter 6B)
- A proposed development’s contribution to cumulative project phase resource benefits (water quality, wetlands, ESHAs), overall progress of restoration and enhancement improvements in

the corridor and success of achieving the goals of the REMP (Chapter 6B), which may have project components and/or procedures not subject to PWP/NOID procedures (i.e., large-scale restoration and monitoring plans for San Elijo and Buena Vista Lagoons).

- The appropriateness of potential project shifts between phases as determined based on review of achieving the cumulative mobility benefits and mitigation requirements identified for each project phase and/or updated information relative to the Performance Measures included in the PWP/TREP Transportation Report Package and enumerated in Table 6A-2, and the REMP (Chapter 6B).

6A.2.1.3 Performance Reporting

The PWP/TREP includes ongoing monitoring to track progress toward meeting the goals outlined in the PWP/TREP and phasing plan. The indicators used in this ongoing monitoring will illustrate those areas in which the region appears to be moving in the right direction and those in which improvement is needed. These indicators provide the stakeholders with assurances that the program is being implemented in a timely and balanced manner. These indicators can also serve to assess if requested project-specific scope and/or schedule changes to future improvements in the program are consistent with commitments made in the PWP/TREP.

Reporting on the performance of PWP/TREP implementation recognizes that the success of the improvements goes beyond the initial capital investment. Performance reporting also assesses how the capital investment made in the corridor has resulted in tangible improvements to PWP/TREP objectives.

While capital improvements will be quantified and tracked, how those improvements ultimately result in changes to human behavior is harder to accurately forecast—especially given the impact of various external variables that SANDAG and Caltrans do not control. Consequently, the performance reporting and change process provides flexibility to react to factors outside of SANDAG and Caltrans control, while providing assurances that the coastal objectives commitments of the PWP/TREP are met over the length of the program.

The ultimate success of the NCC in meeting project objectives is not only a function of capital investment but also many external factors such as public acceptance, fuel prices and economic conditions that Caltrans and SANDAG do not control. Historically, many of these external factors are also very volatile over short time frames. For example, while the general economic health of California has been a very positive upward trend over the last 100 years, in any given year (or series of years) there are significant peaks and valleys. Consequently, despite a strong commitment to the NCC program by SANDAG and Caltrans, this commitment may not directly correspond to meeting specific transportation objectives in any given year. As an example, while the region can commit to adding additional track and trains, they cannot commit to the number of people riding those trains in any given future year.

TABLE 6A-2: NORTH COAST CORRIDOR TRANSPORTATION AND ENVIRONMENTAL PERFORMANCE MEASURES

Performance Measure	Definition
Coastal Access and Connectivity Improvements	
Number of Added Park-and-Ride Parking Spaces	The quantity of parking stalls added to park-and-ride facilities on I-5 (not at rail stations) in the NCC.
Number of Added Transit Station Parking Spaces	The quantity of parking stalls added to transit stations in the NCC.
Implementation of Complete Streets Multi-Modal Improvements on Coast Highway	Integration of Complete Streets concepts and designs, including enhanced pedestrian, bicycle and/or transit facilities.
Number of Peak Period and Daily Local Bus and Shuttle Trips to LOSSAN Corridor Stations	Number of scheduled peak-period and daily local bus and shuttle trips serving LOSSAN stations in the NCC.
Weekday Local Bus Passenger Ons/Offs at LOSSAN Stations	Number of weekday local bus boarding and alighting passengers at LOSSAN stations.
Miles of New/Improved Bicycle/Pedestrian Facilities	The length, measured in miles, of new, improved or upgraded bicycle paths/lanes and pedestrian paths/trails/sidewalks constructed in the NCC during the phase in question, including crossings of I-5 and LOSAN corridors.
Number of New/Improved Bicycle/Pedestrian Crossings of I-5/LOSSAN Corridors	The quantity of new or enhanced bicycle or pedestrian facilities constructed in the NCC that allow for the safe crossing of the I-5 corridor, the LOSSAN corridor, and lagoons.
Moving People, Not Vehicles (Mode Share)	
Number of Weekday/Weekend COASTER (Train) Trips	Number of scheduled peak-period, weekday and weekend COASTER trips in the NCC.
Number of Weekday/Weekend LOSSAN Passenger Train Trips (COASTER/Amtrak/Other)	Number of scheduled peak-period, weekday and weekend passenger train trips on COASTER/Amtrak/other in the LOSSAN corridor in the NCC.
Weekday/Annual COASTER Ridership	Number of boarding passengers on the COASTER commuter rail on a weekday/annual basis.
Weekday/Annual Total Passenger Train Ridership (COASTER/Amtrak/Other)	Number of total boarding passengers on the LOSSAN rail corridor (COASTER/Amtrak/Other) on a weekday/annual basis.
COASTER Seat Capacity Occupied	Percent of total seat capacity occupied on COASTER on a weekday or annual basis.
Daily Number of Commuter Bus (BRT) Trips	Daily number of scheduled BRT trips serving the NCC.
Number of Vanpools in NCC	Number of vanpools and carpools originating or ending in the NCC according to SANDAG's iCommute Vanpool/Carpool Program.
Daily Carpool and FastTrak Users on the I-5 HOV/Express Lanes	Number of annual passenger trips in carpools on the HOV/Express Lanes in the NCC (number of carpool vehicles multiplied by estimated occupancy).
Peak Period Mode Share (SOV, HOV, Transit) at Key Locations	Progress update on the region's goal of improving peak-period non-SOV mode share in the NCC from 2-3% to 10-15%.

TABLE 6A-2: NORTH COAST CORRIDOR TRANSPORTATION AND ENVIRONMENTAL PERFORMANCE MEASURES (CONTINUED)

Performance Measure	Definition
Level of Investment	
Miles of HOV/Express Lanes Added	The length, measured in lane-miles, of new HOV or Express Lane facilities constructed on I-5 in the NCC.
Miles of New LOSSAN Double Track	The length, measured in track-miles, of new track constructed on the LOSSAN corridor in the NCC that eliminates single-tracked sections or provides enhanced operational capacity.
Capital Transportation Investment: Transit	The amount of capital dollars invested in transit projects.
Capital Transportation Investment: HOV/Express Lanes	The amount of capital dollars invested in highway projects.
Programming and Expenditures of FastTrak Revenue	Accounting of I-5 Express Lanes revenue collected and expended.
Improving Efficiency and Managing Demand	
Transportation Demand Management Programs/Activities	Implementation of TDM programs and activities that support NCC mobility, access and education.
Transportation System Management Operations/Infrastructure	Implementation of TSM operational and infrastructure improvements that support NCC mobility and access.
Improvements Made Outside NCC that Improve Conditions within NCC	Infrastructure and operational investments and improvements that support the NCC mobility and access.
Coordinated Project Construction to Avoid/Minimize Impacts	Description of coordinated project construction activities that avoid/minimize impacts.
Facility Performance	
I-5 Travel Time (General Purpose and HOV/Express) (Peak/Off Peak)	Median corridor travel times on I-5.
I-5 General Purpose Lanes Reliability (Buffer Time)	Given historical congestion patterns, the time required for a traveler to guarantee 95% on-time arrival on a trip through the corridor.
Annual Hours of Traffic Delay (VHD) on I-5	The total hours of delay experienced by NCC drivers due to congestion, in the corridor.
COASTER Travel Time	Scheduled trip travel time for COASTER between Oceanside and Downtown San Diego.
COASTER/Amtrak On-Time Performance	Percent of COASTER and Amtrak trips on-time as reported by NCTD and Amtrak, respectively.
Vehicle Miles Traveled (VMT) on I-5	The total number of miles traveled in the corridor by all vehicles.
Number of Trucks on I-5/Percent of I-5 Traffic Comprised of Trucks	Number and/or percent of truck trips on I-5 in the NCC.
Number of Daily/Weekly/Annual Freight Trains	Number of daily, weekly, or annual freight trains operating in the NCC.
General Trends (Qualitative)	
NCC Population Growth (Number and Percent)	Number of people living in the NCC and percent change from previous report.
NCC Housing Growth (Number and Percent)	Number of housing units in the NCC and percent change from previous report.
NCC Employment Growth (Number and Percent)	Number of jobs in the NCC and percent change from previous report.
Regional Transportation and Funding Constraints and Opportunities	Description of regional transportation and funding strategies and policies that affect NCC.

It is also important to point out in addition to the capital investments addressed in the PWP/TREP, there are a number of other implementation strategies the region is pursuing to maximize the effectiveness of the capital investments within the corridor. These strategies demonstrate that the region's objectives are very much in alignment with the PWP/TREP goals of reducing the growth of vehicle miles traveled. However, the effectiveness of these strategies is very hard to accurately forecast. The strategies include:

- Analyzing the feasibility of a new commuter rail station in Camp Pendleton
- Developing corridor specific Transportation Demand Management (TDM) Strategies to facilitate continued travel behavior change once construction is complete influencing a sustained modal shift from SOVs
- Collaborating with the other Southern California regions to identify rail operational strategies (such as express trains and common ticketing) to reduce interregional rail travel times and improve rail competitiveness.

Goals of Performance Reporting: Given the above issues, NCC performance monitoring will:

- Provide assurances that the program sponsors are implementing the program in good faith, with due diligence and in a timely and balanced manner
- Recognize that long-term success in meeting program objectives requires a commitment that goes beyond the initial capital investment
- Provide flexibility to maintain balanced project delivery, despite inaccurate forecasts and/or external factors
- Recognize that program success cannot be defined by any one measure, but rather program performance should be analyzed as a group of measures over a multiyear period to demonstrate specific trends and needed areas of improvement
- Allow for flexibility to address the likely scenario that some outcomes may be underperforming at a given point in the program while others could be performing better than expected. Under this scenario the program should still be allowed to move forward as long as the measure of aggregate outcomes falls within an acceptable range
- Measure and report difficult to predict demand and usage information not as a threshold but as valuable information necessary to inform future decisions.

Transportation Report Package

The Transportation Report Package will be prepared to coincide with the monitoring reports SANDAG prepares for regularly updated regional transportation and growth plans and will be submitted to the Coastal Commission every 4 years in order to provide detail on improvements to the entire transportation system located within the NCC, as described in the PWP/TREP.

The package will include updates on capital improvements, an accounting of dollars invested, changes in transportation trends and information on other transportation strategies implemented through the corridor. In particular, the report will provide an overall picture of the progress made during the reporting period toward meeting the 30-year transportation goals expressed by the region within regional plans and the PWP/TREP. The report will consider a variety of factors to track overall enhancements to the transportation system within the corridor, particularly those necessary to ensure that positive steps toward improved connectivity and mass transit are developed to reduce vehicle miles traveled and energy usage as described in the PWP/TREP. The report will include both a

description of areas where measureable enhancements have been realized as well as areas where the results do not meet expectations, an analysis of the factors behind those results and potential adaptive management solutions for improvements, where necessary. Moreover, the report will provide a reassessment of land-use changes over time and identify new opportunities for improved transit services as a result of those changes. Specific factors to be reported are shown in Table 6-2 and will reflect performance in the following categories:

- Coastal Access and Connectivity Improvements
- Moving People, Not Vehicles (Mode Share)
- Level of Investment
- Improving Efficiency and Managing Demand
- Facility Performance
- General Trends (Qualitative)

If a comprehensive review of the above parameters does not display substantial gains in the access, connectivity, numbers of people moved via non-SOV travel modes, investment, efficiency, and performance, then independent analysis and adaptive management would be instituted to identify potential solutions that could further improve mobility and alternate transit opportunities that have not previously been identified or implemented through the PWP/TREP.

6A.2.1.4 Interpretation and Use of the PWP

As detailed in Chapter 1 and Section 6A.1 of the PWP/TREP, the LOSSAN rail projects included in the PWP/TREP will be evaluated on a case-by-case basis to determine whether the Coastal Commission's review of the projects will be limited to the federal consistency review process only. The standard of review for these rail projects will continue to be the Chapter 3 policies of the Coastal Act as applied during the federal consistency review process (Section 6A.4), and the Chapter 5 sections of the PWP/TREP will be utilized as guidance as a part of this review.

The Federal Consistency Certification provisions described in Section 6A.4 apply only to the future phased federal consistency review for LOSSAN rail projects as described previously, or as may otherwise be applicable for potential future PWP amendments related to approved highway, transit, and associated community and resource enhancement projects (as specified in Section 6A.4.2.5).

For the highway, transit, community, and resource enhancement projects subject to both federal consistency and PWP requirements, the PWP/TREP provides a coordinated document to obtain Federal Consistency Certification for these improvements, which will also receive approval from the Coastal Commission pursuant to the PWP/TREP review procedures described in Section 6A.5 and, therefore, will not require a separate, future consistency certification. These PWP/TREP projects shall be included within the scope of the specific projects contained in Chapter 4, shall be consistent with all policies and implementation measures contained in Chapters 5 and 6, and shall be subject to the PWP Development Review Procedures described in Section 6A.5 and/or the CDP review procedures described in Section 6A.6.

Table 6A-3 lists the proposed PWP/TREP LOSSAN rail and I-5 highway projects by project phase and identifies the coastal development review process that each project would be subject to (federal consistency review, PWP requirements, and/or CDP requirements). PWP/TREP community and resource enhancement improvements would be subject to PWP requirements—with the exception of projects located in areas of Coastal Commission retained permit jurisdiction, which would require separate CDPs—and would utilize the PWP/TREP as guidance and/or those conceptual projects that

SANDAG/Caltrans may choose (in consultation with the Coastal Commission) to submit a CDP application to the appropriate permitting agency.

TABLE 6A-3: PROJECT-SPECIFIC FEDERAL CONSISTENCY REVIEW AND/OR PWP OR CDP PROCEDURE REQUIREMENTS (PHASING PLAN)

Phase	Transportation Improvements	Federal Consistency (FC) and/or PWP or CDP Requirement ¹
Initial-Term	I-5 HIGHWAY	
	2 HOV lanes from Lomas Santa Fe to Union St, including San Elijo Bridge Replacement, Manchester DAR, bike paths/trails and ultimate grading (Phase 1A)	FC/PWP
	1 HOV lane from Union St to SR 78 (Phase 1B)	FC/PWP
	2 HOV lanes from La Jolla Village Dr to I-5/I-805 merge, includes Voigt DAR & I-5/I-805 HOV Flyover Connector (Phase 1C)	FC/PWP
	LOSSAN	
	CP Eastbrook to CP Shell Double Track	FC
	Oceanside Through Track	FC
	Carlsbad Village Double Track, includes Buena Vista Bridge Replacement	FC
	Batiquitos Lagoon Double Track, includes Batiquitos Bridge Replacement	FC
	Encinitas Station Parking	FC and PWP or CDP
	San Elijo Lagoon Double Track, includes San Elijo Lagoon Bridge Replacement	FC
	Solana Beach Station Parking	FC and PWP or CDP
	San Dieguito Double Track and Platform, includes San Dieguito Lagoon Bridge Replacement and Del Mar Fairgrounds Special Event Platform	FC
	Poinsettia Station Improvements	FC
Mid-Term	I-5 HIGHWAY	
	2 Express Lanes from I-5/I-805 to SR 56, including new Sorrento Valley Road bike/ maintenance vehicle bridge, trails under I-5 at Carmel Creek, widening of I-5 at Carmel Creek, and trail under merge (Phase 2A)	FC/PWP
	2 Express Lanes from SR 56 to Lomas Santa Fe Dr, including San Dieguito River Bridge Widening and bike paths/trails (Phase 2B)	FC/PWP
	2 Express Lanes from Union St to Palomar Airport Rd, including Batiquitos Lagoon Bridge Replacement (Phase 2C; if not advanced)	FC/PWP
	LOSSAN	
	Oceanside Station Parking	FC and PWP or CDP
	Carlsbad Village Station Parking	FC and PWP or CDP
	Carlsbad Poinsettia Station Parking	FC and PWP or CDP
	CP Moonlight to CP Swami Double Track	FC
Long-Term	I-5 HIGHWAY	
	2–4 Express Lanes from Palomar Airport Rd to SR 76, including Agua Hedionda & Buena Vista Lagoon Bridge Replacements (Phase 3A–3C)	FC/PWP
	Braided Ramps from Genesee Avenue to Sorrento Valley Road (Phase 3D)	FC/PWP
Vision	I-5 HIGHWAY	
	I-5/SR 78 Improvements	FC/PWP
	LOSSAN	
	Leucadia Blvd Grade Separation	FC
	Del Mar Tunnel – Camino Del Mar / Peñasquitos Double Track Option – I-5 / Peñasquitos Option	FC
	Peñasquitos Double Track Two Additional Roadway Grade Separations	FC FC and PWP or CDP

¹ The PWP/TREP itself serves as Coastal Commission concurrence with the consistency certification for the non-rail projects that are being approved under the PWP. Therefore, projects listed as requiring both a federal consistency certification and a PWP will not go through a separate consistency certification process.

6A.3 FEDERAL CONSISTENCY REVIEW PROCEDURES

The TREP component of the PWP/TREP functions as a master federal consistency certification to ensure the entire NCC program of rail, highway, transit, community, and resource enhancement projects are appropriately linked, phased and implemented consistent with applicable California's Coastal Management Program /Coastal Act policies. Given the PWP/TREP program-level of detail available to evaluate potential coastal resource impacts from rail improvement projects, it is anticipated that federal consistency review may need to be conducted in a phased manner for proposed rail improvements. As rail projects are further developed, additional federal consistency review would be conducted, as necessary, for the proposed PWP/TREP rail improvements that require federal permits, federal authorization, and/or federal funding. The standard of review in these cases would be the Coastal Act, with the affected local coastal program(s) (LCP) and the PWP/TREP providing guiding policy and/or background information. In addition, Federal Highway Administration, Federal Railroad Administration, Federal Transit Administration, U.S. Army Corp of Engineers and other federal agency procedures require the Coastal Commission's concurrence with consistency certification prior to finalizing any environmental impact statement and issuance of a Record of Decision for proposed PWP/TREP projects.

Furthermore, should modifications to highway, community and resource enhancement project design and/or changes within the project area create the potential for resource impacts not considered during federal consistency review for the PWP/TREP, additional federal consistency review may be required. In such instances, the PWP/TREP may be amended pursuant to Section 6A.7 of this chapter, and may potentially require phased or re-opening of the federal consistency review process.

6A.3.1 Federal Consistency Certification Submittal Contents

A Federal Consistency Certification submittal to the Coastal Commission for any individual PWP/TREP project, or package of projects, shall be clearly titled as such and shall, at a minimum, include the following information regarding the proposed development project or activity:

1. The project description and location, and identification and availability of associated national Environmental Policy Act/California Environmental Quality Act (NEPA/CEQA) documents, including relevant studies, reports, and technical materials included as part of, or supporting, the project environmental review and consistency certification.
2. Copy/ies of any applicable federal permit application/s and relevant material provided to the federal agency in support of the application/s and which is relevant to the Federal Consistency Certification.
3. A detailed description of the proposed project or activity, its associated facilities, the coastal effects, and any relevant project plans, mapping, data, technical studies, or other information sufficient to support the consistency certification.
4. An updated implementation Phasing Plan (Table 6A-1) and REMP Impact/Mitigation table (Table 6B-1), with information detailing the project/s consistency with the Phasing Plan requirements detailed in Section 6A.2.1 including details regarding:
 - i. The project phase in which the development is included
 - ii. The status of implementation of other rail, highway, transit, community and resource enhancement projects included in the same phase
 - iii. A brief summary of the project/s contribution to the mobility and resource benefits of the project phase

- iv. Description of any project-specific resource impacts and status of corresponding mitigation requirements for the project phase.
- v. A detailed discussion and justification for any proposed project shift between project phases as provided in the Phasing Plan (Table 6A-1), where applicable.
- 5. A description of the specific project/s consistency with the REMP, including evidence of review by the REMP Working Group confirming consistency with any mitigation and/or resource enhancement or protection requirements of the REMP, as applicable.
- 6. A detailed consistency certification (an evaluation that includes a set of findings relating to the coastal effects of the proposed project or activity with respect to Chapter 3 policies of the Coastal Act), which includes a statement that, *"The proposed activity complies with California's approved Coastal Zone Management Program and will be conducted in a manner consistent with such program."*
- 7. Where the consistency certification is contained in associated project NEPA/CEQA documentation, a cover letter identifying that the NEPA/CEQA document contains the analysis and where the analysis is included in the NEPA/CEQA document.

6A.3.2 Coastal Commission Review of Federal Consistency Certification

Unless there is mutual agreement to the contrary, SANDAG/Caltrans will arrange a meeting with the Executive Director of the Coastal Commission prior to submittal of a Federal Consistency Certification to allow time for pre-consultation on the proposed development or activity. SANDAG/Caltrans will notify the Executive Director of the Coastal Commission a minimum of 90-days prior to final approval of a federal action (i.e., a Record of Decision or Finding of No Significant Impact).

Upon formal submittal of a Federal Consistency Certification to the Executive Director, the Coastal Commission shall review the Federal Consistency Certification in accordance with the procedures set forth in Sections 6A.4.2.1–6A.4.2.5.

6A.3.2.1 Coastal Commission Acceptance/Process of Consistency Certification Waiver Request

- 1. Should SANDAG/Caltrans, or other project Lead Agency, determine a particular project activity is de minimis and would not affect coastal resources, and the Coastal Commission staff agrees, the agency/ies may request a waiver of the consistency certification requirement.
- 2. A consistency certification waiver request must contain a brief description of the proposed development or activity, the project or activity location, and the basis for the request, including an analysis of the proposed project or activity with applicable Chapter 3 policies, sufficient for the Coastal Commission to evaluate whether the project or activity would affect coastal resources.
- 3. Upon receipt of consistency certification waiver request and all applicable supporting information for a proposed development project, the Executive Director of the Coastal Commission shall review the submittal and notify SANDAG/Caltrans or other project Lead Agency that:
 - i. The subject consistency certification is waived
 - ii. Additional information is necessary to adequately review the consistency certification waiver request, and if additional information is deemed necessary, shall request such information from SANDAG/Caltrans or other project Lead Agency, or
 - iii. The subject consistency certification is not waived and a consistency certification for the proposed project or activity must be submitted for review by the Coastal Commission.

6A.3.2.2 Coastal Commission Acceptance/Processing of Consistency Certification

Within 30 days of receipt of the Federal Consistency Certification and all applicable supporting information for a proposed project or activity as described in Section 6A.4.1, the Executive Director of the Coastal Commission shall review the submittal and notify SANDAG/Caltrans or other project Lead Agency that additional information is necessary to adequately review the consistency certification, and if additional information is deemed necessary, shall request such information from SANDAG/Caltrans or other project Lead Agency and the federal permitting agency, or shall notify SANDAG/Caltrans or other project Lead Agency that the submittal is deemed complete and accepted processing.

1. The consistency certification will be deemed complete if the Executive Director does not respond within 30 days to the consistency certification submittal or to a submittal with additional information made in response to the Executive Director's request for such information.
2. The consistency certification will be deemed complete upon receipt and review of the Executive Director, within 30 days, of any additional information submitted in response to the Executive Director's request for such information unless it is determined by the Executive Director that the original informational needs requested have not been satisfied by the updated information submittal.
3. Once deemed complete, a staff report will be prepared and public notice provided for Coastal Commission action on the consistency certification within six months of the date the review period commenced.
 - i. If the Coastal Commission has not issued a decision on the consistency certification within three months of the date the consistency certification review period commenced, the Coastal Commission will notify SANDAG/Caltrans or other project Lead Agency and the federal permitting agency of the status of the matter and the basis for any further delay.
 - ii. Coastal Commission concurrence with the consistency certification can be conclusively presumed if the Coastal Commission has not acted within the six-month review period. The Coastal Commission's hearing deadline may be extended if, on or before the hearing deadline, SANDAG/Caltrans, or other project Lead Agency, and the Coastal Commission staff agree to a stay of the hearing deadline to allow Coastal Commission review to occur at a later hearing. An extension of the Coastal Commission's hearing deadline shall be for no more than six months from the original hearing deadline as established by the date the consistency certification was deemed complete.
4. The Coastal Commission will hold a public hearing and may take action to concur, conditionally concur with, or object to the consistency certification as described in Sections 6A.4.2.3 and 6A.4.2.4.

6A.3.2.3 Coastal Commission Concurrence with Consistency Certification

1. The Coastal Commission will hold a public hearing and may concur with the consistency certification, based on the project or activity's consistency with Chapter 3 policies of the Coastal Act.
2. The Coastal Commission may conditionally concur with a consistency certification. Such conditions must be based on the project or activity's consistency with Chapter 3 policies of the Coastal Act. Should SANDAG/Caltrans, or other project Lead Agency or the federal permitting agency, not agree with the conditions and/or does not modify the project or activity to incorporate the conditions, the Coastal Commission's conditional concurrence will be treated as an objection.
3. Conditional concurrences for federal license or permit and federal assistance activities that are treated as objections as described in the previous sentence are appealable to the Secretary of Commerce.

6A.3.2.4 Coastal Commission Objection to Consistency Certification

1. The Coastal Commission may object to a consistency certification by finding the information supplied is insufficient to enable the Coastal Commission to assess the activity for consistency with the Chapter 3 policies of the Coastal Act, in which case the Coastal Commission will identify the information and the reason it is necessary to assess consistency of the project or activity's consistency with applicable Chapter 3 policies of the Coastal Act.
2. The Coastal Commission may object to a consistency certification by finding the proposed project or activity is inconsistent with the Chapter 3 policies of the Coastal Act, in which case the Coastal Commission will identify alternative measures, where such measures exist, that would enable the Coastal Commission to find the project consistent with the Chapter 3 policies of the Coastal Act.
3. An applicant may appeal a Coastal Commission objection to its consistency certification to the Secretary of Commerce within 30 days of its receipt of notification of the Coastal Commission's objection..

6A.3.2.5 Consolidated Review of Consistency Certification and PWP Amendment

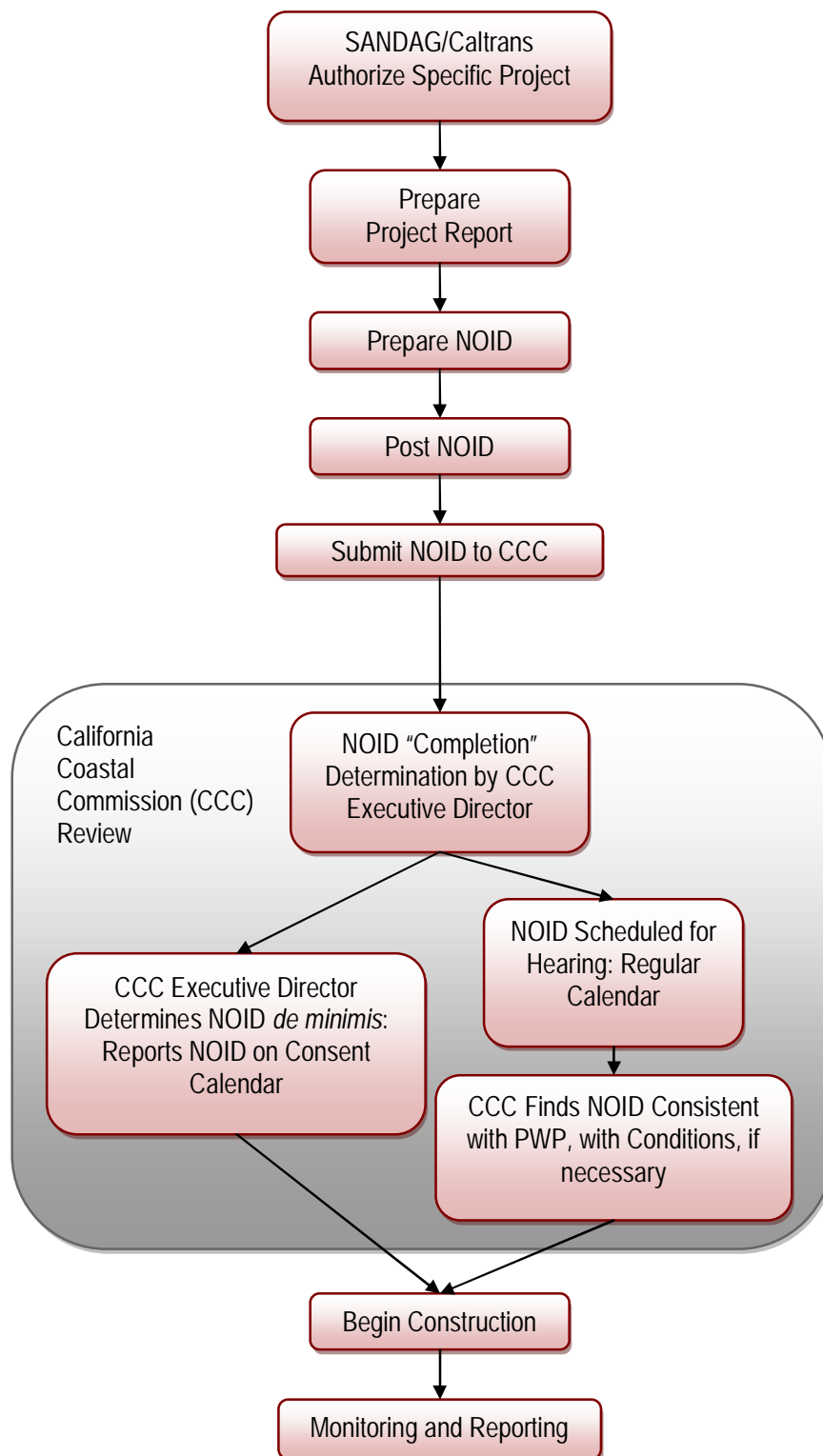
Wherever possible and as requested by SANDAG/Caltrans or other project Lead Agency, the Executive Director of the Coastal Commission may recommend to the Coastal Commission consolidated review of any consistency certification and associated application for a PWP Amendment and/or CDP where required for rail, highway, transit, community or resource enhancement projects included in the PWP/TREP.

6A.4 PWP DEVELOPMENT REVIEW PROCEDURES

All PWP/TREP improvements subject to PWP requirements shall be subject to the PWP Development Review Procedures described in this section. The following procedures and standards are applicable to all transportation, community, and resource enhancement improvements permitted in the PWP/TREP and subject to PWP requirements, except as provided for in Section 6A.5.6, Development Excluded from Project-Specific NOID Procedures. In addition, PWP/TREP rail improvements subject only to the federal consistency review procedures detailed in Section 6A.4, and those improvements located in areas of the Coastal Commission's permit jurisdiction and therefore subject to the CDP review procedures detailed in Section 6A.6, are not required to obtain a NOID prior to construction.

After the PWP/TREP has been approved by the Coastal Commission, any development proposed pursuant to the approved plan would be processed as a Specific Project. The NOID process for implementation of specific PWP projects is outlined in Figure 6-2.

FIGURE 6-2: NOTICE OF IMPENDING DEVELOPMENT (NOID) PROCESS



6A.4.1 Development Consistency

Development shall be deemed consistent with the PWP/TREP if it is found consistent with the following provisions of the PWP/TREP:

- The development is consistent with the scope of planned improvements detailed in Chapter 4.
- The development is consistent with the resource-specific policy and implementation measures included in Chapter 5.
- The development is consistent with the phasing and implementation requirements contained in Section 6A.2.

Figure 4-5 and Table 6A-1 (Implementation Framework) identify the type, location, and size of development permitted by this PWP/TREP. Development shall not be authorized unless it is of a type, location, and size contemplated by Chapter 4, and it is demonstrated project implementation is in compliance with all policies and implementation measures of Chapters 5 and 6B of the PWP/TREP, as applicable.

6A.4.2 NOID Contents

A NOID for any individual transportation, community or resource enhancement project shall be clearly titled as such, shall be submitted to the Executive Director of the Coastal Commission at least 30 working days before the beginning of construction, and shall, at a minimum, include the following information regarding the development project authorization:

1. The project description and location, including identification and availability of a project report (prepared pursuant to Section 6A.5.3) and information regarding where and when it is available for public review. Copies of associated lengthy and/or oversized studies, reports, and technical materials included as part of the project report shall be provided to the Executive Director, and to interested persons and agencies which specifically request these materials.
2. The expected date of commencement of construction;
3. The appropriate Caltrans and/or SANDAG contact person(s) and/or designated project manager and their contact information;
4. A list of recipients of the NOID.
5. Supporting information sufficient to allow the Executive Director to determine whether the proposed development project is consistent with the certified PWP/TREP shall accompany the NOID submitted to the Executive Director, and to persons and agencies requesting such information. At a minimum, the supporting information shall include:
 - A. Any final authorization documents from SANDAG/Caltrans (e.g., approval, resolutions, certifications, etc.) not included in the project report
 - B. A separate document that identifies all applicable project conditions, mitigations and implementation measures for the proposed development project
 - C. Copies of all correspondence received on the proposed development project; and
 - D. For the Executive Director only:
 - i. A mailing list with names and addresses for each of the persons and/or agencies provided with the NOID;
 - ii. One set of plain (i.e., unadorned with no return address) regular business size (9-inch by 4-inch) envelopes stamped with first class postage (metered postage is not acceptable)

addressed to all interested persons and agencies, for each Coastal Commission hearing on the matter (i.e., if there are multiple Coastal Commission hearings on the matter, then multiple envelop sets shall be provided as directed by the Executive Director); and,

- E. Evidence that the NOID has been posted pursuant to the parameters of Section 6A.5.4 (evidence might include a site plan with the notice locations noted and/or photos of the notice locations attached).

6A.4.3 Preparation of Project Reports

Except as provided in Sections 6A.5.6 and 6A.7, SANDAG/Caltrans shall prepare a project report to accompany the NOID submittal for each development project included in the PWP/TREP and subject to PWP requirements. SANDAG/Caltrans shall prepare a project report to demonstrate that the proposal satisfies the standards for development authorization set forth in this PWP/TREP. The Coastal Commission staff shall determine whether the submittal meets these requirements as discussed in Section 6A.5.5. At a minimum, the project report shall include:

1. A description of the proposed development that is: sufficient to understand its size, location, type, and intensity (including but not limited to site plans, grading plans, and elevations/renderings showing the proposed development, where applicable) sufficient to determine the development is contained in the PWP/TREP.
2. A consistency analysis of the proposed development with all applicable Chapter 5 policies and implementation measures, including any project feature alternatives analysis required pursuant to Chapter 5 Design/Development Strategies and/or Implementation Measures (i.e., water quality best management practices, visual treatment elements, etc.)
3. Updated implementation Phasing Plan Table (Table 6A-1) and REMP Impact/Mitigation Tables (Table 6B-1), with information detailing the project/s consistency with the Phasing Plan requirements detailed in Section 6A.2.1 including details regarding:
 - A. The project phase in which the development is included
 - B. The status of implementation of other rail, highway, transit, community and resource enhancement projects included in the same phase
 - C. A brief summary of the proposed development's contribution to the mobility and resource benefits of the project phase
 - D. Description of any project-specific resource impacts and status of corresponding mitigation requirements for the project phase.
 - E. A detailed discussion and justification for any proposed project shift between project phases as provided in the Phasing Plan (Table 6A-1).
4. A description of the specific project/s consistency with the REMP, including evidence of review by the REMP Working Group confirming consistency with any mitigation and/or resource enhancement or protection requirements of the REMP, as applicable.
5. Environmental documentation for the proposed development prepared pursuant to CEQA and/or NEPA.
6. All technical reports associated with the proposed development (such as biological reports, geotechnical reports, traffic analyses, etc.), including all reports, studies, and/or project-specific plans required pursuant to applicable Chapter 5 implementation measures.
7. The results, including supporting documentation, of consultation with persons and agencies interested in, with jurisdiction over, and/or affected by the proposed development, including

consultations with local, federal and state resource agencies (such as the United States Fish and Wildlife Service, California Department of Fish and Wildlife, Regional Water Quality Control Board, etc.)

8. All implementing mechanisms associated with the proposed development including, but not limited to, Cooperative Maintenance agreements with affected cities for community enhancement projects as detailed in Section 5.7 of Chapter 5, CEQA mitigation monitoring reports, legal documents, lease agreements, etc.
9. All correspondence received on the proposed development
10. Identification of a person (project manager, Resident Engineer) responsible for ensuring the proposed development is constructed to authorized specifications, that all terms and conditions of approval are met, and that any budget shortfalls which could affect these commitments are identified and brought to the attention of decision-makers; and
11. Findings:
 - A. The proposed development has been reviewed in compliance with the CEQA and/or NEPA, and all conditions and/or mitigation measures identified in those CEQA and/or NEPA documents have been incorporated as part of the proposed development;
 - B. The proposed development project advances the purpose of this PWP/TREP, as set forth in Chapter 3;
 - C. The proposed development has been reviewed by any affected local jurisdiction, resource and/or lagoon conservancy, and comments have been reviewed and considered.
 - D. The proposed development, as modified by any conditions and/or mitigation measures incorporated as part of the project, is contained in and is consistent with the certified PWP/TREP.

6A.4.4 NOID Posting Requirements

The NOID shall be posted in conspicuous locations at the proposed development site when the NOID is submitted pursuant to the procedures set forth in this section, and at least 30 working days before beginning of construction. The notices shall be subject to the following parameters:

1. Posted notices shall be sized and located in an area easily read by the public and as close to the proposed development site as is feasible.
2. Notices shall indicate that a NOID has been submitted to the Coastal Commission for proposed development and shall contain a general description of the nature of the proposed development.
3. Notices that may become illegible, and/or that fall to the ground or disappear must be replaced, and shall remain posted until the effective date of development authorization.

6A.4.5 Coastal Commission Review of NOID

SANDAG and Caltrans shall consult with the Executive Director of the Coastal Commission as early as possible in the planning of subsequent development projects contemplated by the PWP/TREP with the objective of facilitating the preparation of an informationally complete NOID submittal package and identifying issues of possible concern to the Coastal Commission in light of PWP/TREP policies. Such consultation shall occur during specific technical environmental reviews and prior to finalization of project designs, particularly if new technologies (e.g., improved water quality best management practices) may allow for greater protection of coastal resources than what was considered to be available at the time of the Coastal Commission's approval of the PWP/TREP. This early coordination

will also allow Coastal Commission staff to work with SANDAG and Caltrans to identify means to allow the NOID to be reviewed by the Coastal Commission at a Southern California Coastal Commission hearing.

A pre-NOID submittal consultation shall be scheduled with the Executive Director, as represented by the Deputy Director at the San Diego Coast office, at least 60 days prior to the anticipated NOID submittal, which shall include review of all draft items listed in Section 6A.5.2 and Section 6A.5.3 as part of the consultation. Coastal Commission staff shall provide written direction within two weeks of the consultation regarding the adequacy of the proposed submittal information to support the NOID for the Coastal Commission's subsequent review. SANDAG and Caltrans shall address this written response in a follow-up pre-NOID submittal consultation or as part of the final submittal package..

6A.4.5.1 Filing the NOID

Within 5 working days of receipt of the NOID and all applicable supporting information for a proposed development project (as described in Sections 6A.5.2 and 6A.5.3), the Executive Director shall review the submittal and shall determine whether the NOID is "complete," or whether additional information is necessary to determine if the proposed development project is consistent with the PWP/TREP, and if additional information is deemed necessary, shall request such information from the project manager.

1. The NOID shall be deemed "complete" if the Executive Director does not respond to the NOID or any subsequent information submittal within 5 working days following its receipt; the NOID shall be deemed "complete" on the 5th working day following the Executive Director's receipt of the NOID or to a submittal with additional information made in response to the Executive Director's request for such information.
2. The NOID shall be deemed "complete" when all necessary information requested for purposes of reviewing the proposed project's consistency with the PWP/TREP has been received by the Executive Director. In the event of disagreement concerning the need for additional information or the adequacy of information submitted to enable the Coastal Commission to analyze project consistency with the certified PWP/TREP, SANDAG/Caltrans may appeal the Executive Director's determination that additional information is needed to the Coastal Commission for resolution. The Executive Director shall schedule the matter for hearing and resolution at the next Coastal Commission meeting or as soon thereafter as practicable, but no later than 60 calendar days after the Executive Director's receipt of written appeal by SANDAG/Caltrans expressing disagreement with the Executive Director's determination that additional information is needed to analyze project consistency with the certified PWP/TREP. The appeal shall be scheduled and heard by the Coastal Commission in accordance with the procedures set forth in California Code of Regulations, Title 14 Section 13056(d). The Executive Director shall notify SANDAG/Caltrans, no later than 60 calendar days after the Executive Director's receipt of written appeal by SANDAG/Caltrans, of any change in the Executive Director's determination that additional information is necessary to analyze project consistency with the certified PWP/TREP as directed by the Coastal Commission.

6A.4.5.2 Coastal Commission Hearing Deadline

The Coastal Commission shall hold a hearing on the NOID no later than 30 (thirty) working days following the day the NOID is deemed "complete." If the Coastal Commission fails to act upon the NOID on or before the hearing deadline, the noticed development project shall be deemed consistent with the certified PWP/TREP. The hearing deadline may be extended if, on or before the hearing deadline, SANDAG/Caltrans waive the right to a hearing within 30 working days to allow Coastal Commission review to occur at a later hearing, and agrees to an extension to a date certain. An

extension of the Coastal Commission's hearing deadline shall be for no more than three months from the original hearing deadline as established by the date the NOID was deemed complete.

6A.4.5.3 Coastal Commission Review and Determination of Consistency with PWP/TREP

1. The Executive Director shall report, in writing to the Coastal Commission, the pendency of the proposed development project for which a NOID has been deemed complete. The Coastal Commission shall review the proposed development project at a scheduled public hearing prior to the hearing deadline.
2. If the Executive Director determines one or more proposed development projects are *de minimis* with respect to the purposes and provisions of the PWP/TREP, they may be scheduled for the Coastal Commission's review at one public hearing, during which all such items may be taken up as a single matter pursuant to procedures comparable to the Coastal Commission's consent calendar procedures (California Code Regulations, Title 14, Sections 13101 through 13103).
3. For all other proposed development projects, the Executive Director's report to the Coastal Commission shall include a description sufficient to allow the Coastal Commission to understand the location, nature, and extent of the proposed development, and a discussion and recommendation regarding the consistency of the proposed development project with the certified PWP/TREP. On or before the hearing deadline, the Coastal Commission, by a majority of its membership present, may take one of the following actions on a proposed development project:
 - A. Determine the proposed development project is consistent with the certified PWP/TREP, or
 - B. Determine the proposed development project is not consistent with the certified PWP/TREP and vote to impose conditions necessary to render the proposed development project consistent with the certified PWP/TREP. The Coastal Commission may also impose conditions necessary to render the proposed development project consistent with the certified PWP/TREP at the next scheduled hearing.
4. Following the Coastal Commission's action, the Executive Director shall inform SANDAG/Caltrans of the Coastal Commission's action and shall forward any conditions associated with the action. If the Coastal Commission has voted to impose condition/s necessary to render the project consistent with the PWP/TREP, development shall not be undertaken until the conditions have been incorporated into the project. The Coastal Commission review of a proposed development project shall be deemed complete on either:
 - A. The date of a Coastal Commission action determining the proposed development project is consistent with the PWP/TREP (with or without conditions to render it consistent); or
 - B. If the Coastal Commission has failed to take action on the proposed development project by the hearing deadline, the date of the hearing deadline.
5. Upon completion of the Coastal Commission's review, SANDAG/Caltrans may undertake the development project provided any conditions imposed by the Coastal Commission to render the development consistent with the PWP/TREP have been incorporated into the project.

6A.4.6 Development Excluded from Project-Specific PWP NOID Procedures

The categories of development identified in this section are excluded from the requirements of the PWP Development Review Procedures described in Sections 6A.5.1 to 6A.5.4, assuming the proposed activity will not have a risk of substantial adverse impact on public access, environmentally sensitive habitat area, wetlands, or public views to the ocean.

The categories of development covered by this section are as follows:

1. Maintenance dredging of existing navigation channels or moving dredged material from the channels to an area outside the Coastal Zone, pursuant to a permit from the United States Army Corps of Engineers.
2. Repair and maintenance activities specifically described in the document titled "Repair, Maintenance and Utility Hook-up Exclusions from Permit Requirements," adopted by the Coastal Commission on September 5, 1978.
3. Repair or maintenance activities that do not result in an addition to, or enlargement or expansion of, the object of those repair and maintenance activities provided the activity does not include:
 - A. Any method of repair or maintenance of a seawall, revetment, bluff retaining wall, breakwater, groin, culvert, outfall, or similar shoreline work that involves substantial alteration of the foundation of the structure being repaired or maintained placement of rip-rap or other solid material on a beach or in coastal waters, streams, estuaries, or wetlands, or on a shoreline protective work; replacement of 20 percent or more of the materials of an existing structure with materials of a different kind; or the presence of mechanized construction equipment or construction materials on any sand area, bluff, or ESHA, or within 20 feet of coastal waters or streams.
 - B. Any repair or maintenance to facilities, structures, or work located in an ESHA, any sand area, within 50 feet of the edge of a coastal bluff or ESHA, or within 20 feet of coastal waters or streams, that includes: (a) the placement or removal, whether temporary or permanent, of rip-rap, rocks, sand, other beach materials, or any other form of solid materials; and/or (b) the presence, whether temporary or permanent, of mechanized equipment or construction materials.
 - C. Any routine maintenance dredging or disposal of dredge materials that involves the dredging of 100,000 cubic yards or more within a 12-month period; the placement of dredged spoils of any quantity within an ESHA, on any sand area, within 50 feet of the edge of a coastal bluff or ESHA, or within 20 feet of coastal waters or streams; or the removal, sale, or disposal of dredged spoils of any quantity that would be suitable for beach nourishment in an area the Coastal Commission has declared by resolution to have a critically short sand supply that must be maintained for protection of structures, coastal access or public recreational use.
4. Installation, testing, and placement in service or the replacement of, any necessary utility connection between an existing service facility and any authorized development, including utility hook-up activities described in the document entitled "Repair, Maintenance and Utility Hook Up Exclusions from Permit Requirements," adopted by the Coastal Commission on September 5, 1978.
5. Development authorized by a CDP issued by the Coastal Commission prior to certification of this PWP/TREP.

6A.5 COASTAL DEVELOPMENT PERMIT REVIEW PROCEDURES

All PWP/TREP improvements located within areas of retained Coastal Commission permit jurisdiction (such as lagoon bridge replacements) and/or proposed to be implemented by another Lead Agency (such as lagoon restoration projects or certain pedestrian and bicycle improvements located outside of the Caltrans/SANDAG right-of-way) shall be subject to the Coastal Commission CDP review procedures described in this section.

6A.5.1 Coastal Development Permit Application Contents

A CDP application for any individual transportation, community or resource enhancement project included in the PWP/TREP shall be clearly indicated as such, shall comply with the submittal requirements as described in the Coastal Commission Regulations, and shall include the following information:

1. A description of the proposed development that is: sufficient to understand its size, location, type, and intensity including maps, plans, photographs, etc. Two (2) complete sets of project plans, drawn to scale, must be provided for the site plan(s), floor plans, elevations, grading/ drainage/ erosion control and landscape plans, as applicable. Note: If maps, plans, photographs or other exhibits are larger than 8 ½" x 11" then enough copies must be sent with the application to allow for the distribution to those persons on the Coastal Commission's mailing list and the Coastal Commission staff and commissioners.
2. A consistency analysis of the proposed development with all applicable Chapter 3 policies of the Coastal Act
3. Updated implementation Phasing Plan Table (Table 6A-1) and REMP Impact/Mitigation Tables (Table 6B-1), with information detailing the project/s consistency with the Phasing Plan requirements detailed in Section 6A.2.1 including details regarding:
 - A. The project phase in which the development is included
 - B. The status of implementation of other rail, highway, transit, community and resource enhancement projects included in the same phase
 - C. A brief summary of the proposed development's contribution to the mobility and resource benefits of the project phase
 - D. Description of any project-specific resource impacts and status of corresponding mitigation requirements for the project phase.
 - E. A detailed discussion and justification for any proposed project shift between project phases as provided in the Phasing Plan (Table 6A-1).
4. A description of the specific project/s consistency with the REMP, including evidence of review by the REMP Working Group confirming consistency with any mitigation and/or resource enhancement or protection requirements of the REMP, as applicable.
5. Two (2) copies of any environmental documents and/or technical reports prepared for the project, as applicable.
6. Description of feasible alternatives or mitigation measures, including implementation measures included in the approved PWP/TREP, to substantially lessen any significant adverse impact on the environment.
7. Description and documentation of legal interest in all the property upon which work would be performed.
8. Assessor's parcel map(s) showing the proposed development site and all adjacent properties within 100 feet of the property boundary, excluding adjacent roads.
9. Stamped envelopes (no postage meter) addressed to neighboring property owners and occupants, and other interested parties and a list of the same.
10. Project site vicinity map (copy of Thomas Bros. or other road map or U.S. Geological Survey quad map).
11. Dated signature attesting to the truth, completeness and accuracy of application.

12. Additional information may be requested by the Executive Director to file a complete application, as determined necessary to review the project for consistency with applicable Coastal Act policies (refer to Sample Technical Document/Addressing Coastal Policy Issues section above for commonly requested resource-specific application information). For additional details, see Title 14, Division 5.5, Chapter 5, Section 13053.5 of the California Code of Regulations.

6A.5.2 Coastal Development Permit Noticing Requirements

SANDAG/Caltrans shall provide a list of the addresses of all residences, property owners and occupants located within 100 feet of the perimeter of the real property of record on which the development is proposed, and shall provide a list of names and addresses of all persons known to be interested in the project. Along with the lists, SANDAG/Caltrans shall provide addressed, stamped envelopes with the words "Important. Public Hearing Notice." prominently placed on the front of the envelope. At the time the application is filed with the Coastal Commission, a notice of application for the proposed development permit shall be posted as close as possible to the proposed development site. A standardized posting notice shall be provided by Executive Director when the application is filed.

6A.5.3 Coastal Commission Review of the Application

SANDAG and Caltrans shall consult with the Executive Director of the Coastal Commission as early as possible in the planning of subsequent development projects contemplated by the PWP/TREP with the objective of facilitating the preparation of an informationally complete application package and identifying issues of possible concern to the Coastal Commission in light of Coastal Act and PWP/TREP policies. Such consultation shall occur during specific technical environmental reviews and prior to finalization of project designs, particularly if new technologies (e.g., improved water quality best management practices) may allow for greater protection of coastal resources than what was considered to be available at the time of the Coastal Commission's approval of the PWP/TREP. This early coordination will also allow Coastal Commission staff to work with SANDAG and Caltrans to identify means to allow the application to be reviewed by the Coastal Commission at a Southern California Coastal Commission hearing.

A pre-application submittal consultation shall be scheduled with the Executive Director, as represented by the Deputy Director at the San Diego Coast office, at least 60 days prior to the anticipated application submittal, which shall include review of all draft items listed in Section 6A.6.1 as part of the consultation. Coastal Commission staff shall provide written direction within two weeks of the consultation regarding the adequacy of the proposed submittal information to support the application for the Coastal Commission's subsequent review. SANDAG and Caltrans shall address this written response in a follow-up pre-application submittal consultation or as part of the final submittal package

6A.5.4 Filing the Application

1. Within 30 days of receipt of the application and all applicable supporting information for a proposed development project, the Executive Director shall review the submittal and shall determine whether the application is "complete," or whether additional information is necessary to determine if the proposed development project is consistent with the Chapter 3 policies of the Coastal Act, and if additional information is deemed necessary, shall request such information from the project manager.
2. After the application is deemed complete and filed, the Executive Director shall complete a staff report for the permit. The report shall contain the maps, plans, photographs, etc., of the proposed project, a summary of significant questions of fact, a summary of the project's consistency with

applicable Coastal Act policies, a copy or summary of public comments, a summary of the legal adequacy of the application and the staff's recommendation for approval, conditional approval or denial of the permit.

6A.5.5 Coastal Commission Hearing Deadline

The Coastal Commission shall hold a hearing on the CDP application no later than 180 days of the application being deemed "complete." If the Coastal Commission fails to act upon the CDP on or before the hearing deadline, the noticed development project shall be deemed approved. SANDAG/Caltrans may grant a one-time, 90-day extension to allow more time for the Coastal Commission to consider and act on the application during public hearing.

Within the application review time frames, SANDAG/Caltrans have a right to a single postponement request to allow more time for discussion and resolution of any outstanding issues associated with review of the application. The Coastal Commission may continue the public hearing on the application at any time, but must act on the application within the 180-day review period, or the extended 90-day review period if granted by the applicant.

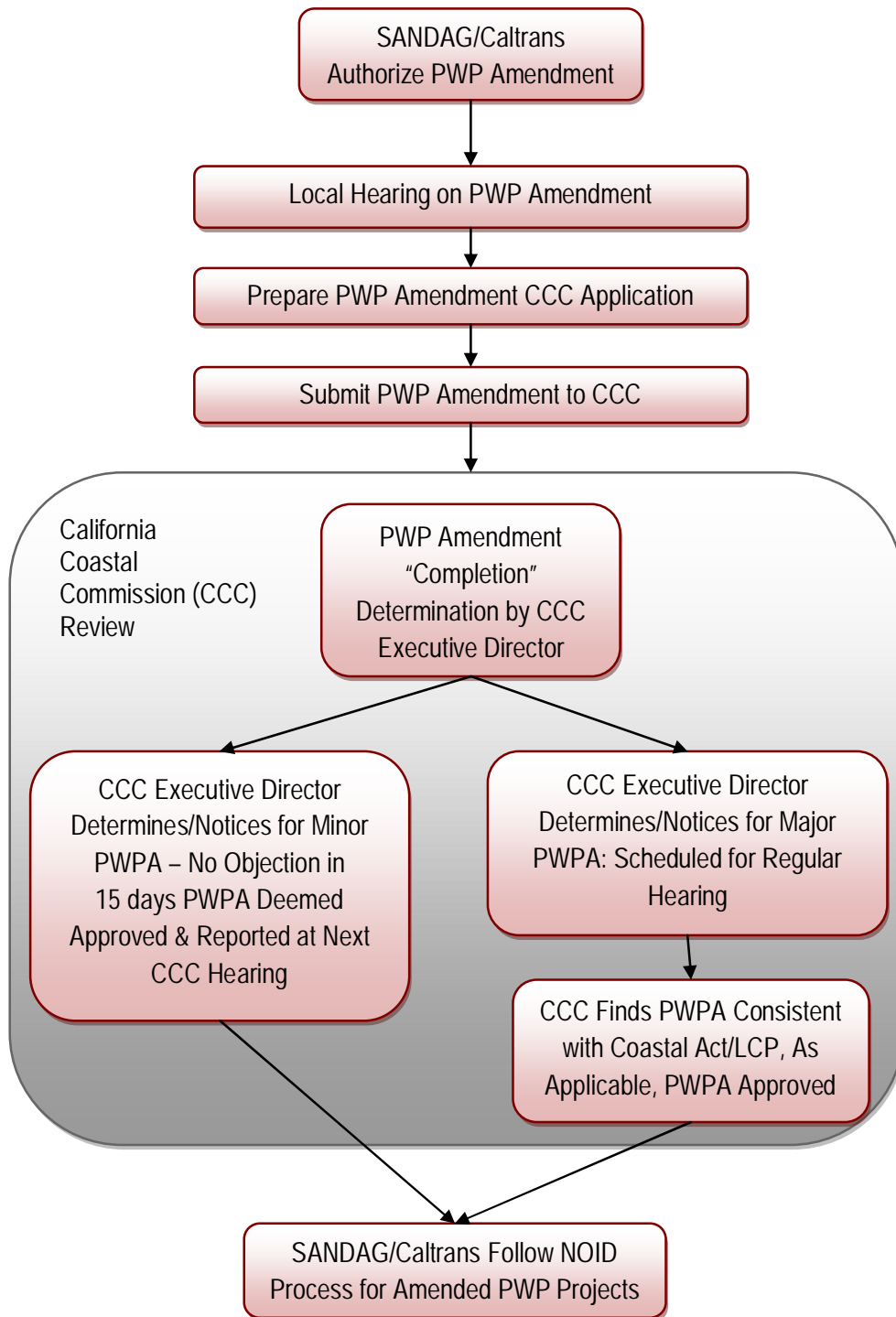
6A.6 AMENDMENT OF PWP/TREP PROJECT AUTHORIZATIONS

Development in the NCC highway and rail corridors which requires amendment for a project approved prior to PWP/TREP certification, and which is subject to coastal development requirements, shall be pursued through the appropriate authority having jurisdiction over such CDP.

Authorization for development that has been deemed consistent with the PWP/TREP by SANDAG/Caltrans and the Coastal Commission may be subsequently amended as necessary according to the following procedures and as set forth in California Code of Regulations, Title 14 Section 13365 Amendment of Public Works Plan. The PWP amendment process is illustrated in Figure 6-3.

Design modifications and/or changed site conditions (new or changed resources) which deviate from the scope and/or conditions documented in the approved PWP/TREP, but that do not result in significant new impacts to coastal resource, and/or result in impacts which are addressed with adopted PWP/TREP policies and implementation measures, will not require an amendment to the approved PWP/TREP and may be reviewed and implemented by the Coastal Commission according to the NOID procedures included in this Chapter. Such improvements may include, but not be limited to, addition and/or modification of project features which were anticipated in the PWP/TREP scope of improvements (such as new water quality treatment best management practices or aesthetic treatment features), as identified and evaluated during the Caltrans/SANDAG, city and Coastal Commission pre-consultation process and assuming such improvements do not result in coastal resource impacts not already addressed by PWP/TREP Design/Development Strategies and/or Implementations Measures.

FIGURE 6-3: PUBLIC WORKS PLAN AMENDMENT PROCESS



6A.6.1 Public Hearing at Local Level

Prior to the submission of an application for an amendment to the PWP, SANDAG/Caltrans shall demonstrate a public hearing at the local level has been held on the proposed amendment within a reasonable time prior to submission of the amendment application to the Coastal Commission. In determining the reasonableness of the time of the public hearing(s), the Executive Director shall consider the location, scope or size of the PWP project or activity subject to amendment, the progress of SANDAG/Caltrans toward obtaining all funding and governmental approvals for the amendment project or activity, and development of the PWP amendment. A steady progression of SANDAG/Caltrans toward development of the PWP amendment in this manner, after holding public hearings on the amendment, shall constitute evidence of the reasonableness of the time of the prior public hearing.

6A.6.2 Amendment Application Contents and Coastal Commission Review of Application

1. An application for an amendment to the PWP shall be submitted to the Executive Director of the Coastal Commission and shall contain sufficient information regarding the type, size, intensity and location of amended development activity intended to be undertaken pursuant to the PWP and/or any changes to PWP policies, standards or procedures to determine consistency with applicable policies of Chapter 3 of the Coastal Act and/or the certified LCP, including, but not limited to the following, where applicable:
 - A. The specific type of activity or activities proposed to be undertaken
 - B. The maximum and minimum intensity of activity or activities proposed to be undertaken (e.g., maximum traffic capacity of a road)
 - C. The maximum size of facilities proposed to be constructed pursuant to the plan (e.g., number of lanes of a road) and the proposed timetable for precise definition of all projects included in the plan and any phasing of development activity contemplated
 - D. The service area for the proposed activity or activities
 - E. The proposed method of financing the activity or activities including any direct or indirect means of obtaining or guaranteeing funds through the assessment or any other form of levy against lands located within the Coastal Zone and an estimate of the projected amount of revenues to be obtained from land or water areas located in the Coastal Zone over the useful life of the proposed development
 - F. Environmental analysis, reports, studies, maps, etc. prepared for the PWP amendment and relevant to the analysis of the PWP amendment's consistency with Chapter 3 policies of the Coastal Act and/or the certified LCP, as applicable.
 - G. The proposed location or alternative locations considered for any development activity or activities to be undertaken pursuant to the proposed plans.
 - H. The Executive Director of the Coastal Commission may require the submission of any additional information deemed necessary to determine consistency of the proposed amendment with Chapter 3 policies of the Coastal Act and/or the certified LCP, as applicable.
2. The Executive Director of the Coastal Commission shall deem a PWP amendment application complete at such time as the Executive Director determines the information required pursuant to this section has been received at the appropriate Coastal Commission office. Said review shall be completed within no later than five (5) working days after the date it is received in the district office of the Coastal Commission during normal business hours, unless there are unusual circumstances,

in which case said review shall be completed within no later than thirty (30) calendar days after the date it is received. Immediately upon making such determination, the Executive Director shall affix the date of filing to the application file and notify SANDAG/Caltrans of the application completeness determination.

3. In the event of disagreement concerning the need for additional information or the adequacy of information submitted to enable the Coastal Commission to analyze the PWP amendment for consistency with Chapter 3 of the Coastal Act or certified LCP, as applicable, SANDAG/Caltrans may appeal the Executive Director's determination that additional information is needed to the Coastal Commission for resolution. The Executive Director shall schedule the matter for hearing and resolution at the next Coastal Commission meeting or as soon thereafter as practicable, but no later than 60 calendar days after the Executive Director's receipt of written appeal by SANDAG/Caltrans expressing disagreement with the Executive Director's determination that additional information is needed to analyze the PWP amendment for consistency with Chapter 3 of the Coastal Act or certified LCP, as applicable. The appeal shall be scheduled and heard by the Coastal Commission in accordance with the procedures set forth California Code of Regulations, Title 14 Section 13056(d). The Executive Director shall notify SANDAG/Caltrans, no later than 60 calendar days after the Executive Director's receipt of written appeal by SANDAG/Caltrans, of any change in the Executive Director's determination that additional information is necessary to analyze project consistency with the certified PWP/TREP as directed by the Coastal Commission.
4. The Executive Director shall provide, make available to the public, or demonstrate the PWP amendment submittal materials have been available for public review, including environmental information on the amendment necessary to enable the Coastal Commission to determine the consistency of the amendment with the Chapter 3 policies of the Coastal Act and/or the certified LCP, as applicable. Where the Executive Director determines it is not feasible to distribute the PWP amendment submittal materials and/or relevant environmental information due to the size or volume of the documents, or because of the costs of such distribution, the Executive Director shall provide notice to interested persons of the location of the environmental documents which are available for review, and a list of those documents. The PWP amendment materials and relevant environmental information shall be distributed or made available to the public prior to public hearing on the plan, and the Coastal Commission shall provide the opportunity for public comment in response to the information prior to the close of the public hearing on the plan.

6A.6.3 Coastal Commission Rejection of Application for PWP Amendment

An application for an amendment to the PWP may be rejected if, in the opinion of the Executive Director of the Coastal Commission, the proposed PWP amendment would lessen or avoid the intended effect, or any conditions, of the certified PWP. The determination by the Executive Director to reject an amendment application shall be transmitted, in writing, to the applicant with an explanation of the reasons for such rejection.

6A.6.4 Coastal Commission Acceptance/Process of Application for Minor Amendment

Design modifications and/or changed site conditions which may substantially deviate from the scope and/or conditions documented in the approved PWP/TREP, but that do not result in significant new impacts, and/or result in impacts that are addressed with adopted PWP/TREP policies and implementation measures may be subject to a minor PWP amendment. Such improvements may include, but not be limited to, addition and/or modification of a project feature that is minor in nature (such as a new retaining wall, expanded recreational support facility, etc.) which were not anticipated in

the PWP/TREP scope of improvements and assuming such improvements do not result in coastal resource impacts not already addressed by PWP/TREP Design/Development Strategies and/or Implementations Measures.

Where an application for an amendment to a PWP is accepted, the Executive Director shall determine whether the proposed amendment is minor in nature. If the Executive Director determines the proposed amendment is minor in nature, notice of such determination shall be mailed to the Coastal Commission and to all parties the Executive Director knows or has reason to know may be interested in the amendment. If no written objection to the proposed amendment is received in the Coastal Commission office within fifteen (15) working days of the published notice, the proposed PWP amendment shall be deemed minor in nature, and shall be approved. The Executive Director shall notify the Coastal Commission of the approved minor PWP amendment at the next regular meeting of the Coastal Commission.

6A.6.5 Coastal Commission Acceptance/Process of Application for Major Amendment

Design modifications and/or changed site conditions which substantially deviate from the scope and/or conditions documented in the approved PWP/TREP, and that have the potential to result in significant new impacts not addressed with adopted PWP/TREP policies and implementation measures may be subject to a major PWP amendment. Such improvements may include, but not be limited to, addition and/or modification of a new project not anticipated in the PWP/TREP scope of improvements (such as a new highway or mitigation project) and assuming such improvements result in coastal resource impacts not already addressed by PWP/TREP Design/Development Strategies and/or Implementations Measures.

If the Executive Director determines the proposed PWP amendment is not minor, or if reasonable objection is made to the Executive Director's determination that the proposed PWP amendment is minor, or if the proposed amendment affects elements of the certified PWP adopted for purposes of protecting a coastal resource or coastal access, the amendment application will be processed as a regular amendment subject to the following procedures.

6A.6.6 Notice and Hearing Procedures for Major Amendment

1. The Executive Director shall provide notice, and prepare and make available a staff report for the Coastal Commission, SANDAG/Caltrans, any affected local government, any persons who participated in the Coastal Commission hearings for review of the public works plan, and any other persons known or thought to be interested in the proposed public works plan amendment of the acceptance of the amendment application.
2. The Coastal Commission shall hold a hearing on the proposed PWP amendment no later than sixty (60) calendar days following the day the PWP amendment application is deemed "complete." If the Coastal Commission fails to act upon the PWP amendment on or before the hearing deadline, the PWP amendment shall be deemed certified. The hearing deadline may be extended if, on or before the hearing deadline, the Coastal Commission extends for good cause the hearing deadline for a period not to exceed one year from the original hearing deadline as established by the date the PWP amendment application was deemed complete.

6A.6.6.1 Public Works Plan Amendment in Areas without a Certified LCP

1. Where PWP amendment review occurs prior to certification of a LCP, SANDAG/Caltrans may submit the PWP amendment to the Coastal Commission for review and certification. Approval of a PWP amendment by the Coastal Commission shall be accompanied by specific written findings that:
 2. The development is in conformity with Chapter 3 of the California Coastal
 3. That there are no feasible alternatives or feasible mitigation measures, as provided in CEQA, available that would substantially lessen any significant adverse impact that the proposed amendment may have on the environment.

6A.6.6.2 Public Works Plan Amendment in Areas with a Certified LCP

1. Where PWP amendment review follows certification of a LCP and if a proposed PWP amendment does not require an amendment to the LCP pursuant to Public Resources Code Section 30515, SANDAG/Caltrans may submit the PWP amendment to the Coastal Commission for review and certification. Coastal Commission review shall be undertaken only after consultation with the affected local government who may recommend modifications necessary for the proposed PWP amendment to adequately carry out the certified LCP.
 - A. At least 10 working days prior to the first public hearing on a proposed PWP amendment directly affecting a portion of the Coastal Zone for which a LCP has been certified by the Coastal Commission, the Executive Director of the Coastal Commission shall direct the Coastal Commission staff to consult with the affected local government with respect to the impact of the proposed PWP amendment on the Coastal Zone and on the certified LCP; the results of such consultation shall be reported to the Coastal Commission at the first public hearing on the proposed PWP amendment.
 - B. At least 5 working days prior to transmitting a written recommendation on the proposed PWP amendment to the Coastal Commission, the Executive Director shall request the affected local government(s) transmit to the Coastal Commission its determination as to whether the proposed PWP amendment is in conformity with the certified LCP in the jurisdiction(s) affected by the proposed PWP amendment.
 - C. The affected local government may, within its discretion, transmit its determination as to the conformity of the proposed PWP amendment with the LCP, in writing to the Coastal Commission prior to the Coastal Commission's vote on the proposed PWP amendment, and may include any recommended modifications of the proposed PWP amendment that would conform it to the LCP; a local government may also indicate any proposed amendments to its LCP that would be necessary to accommodate the proposed PWP amendment.
 - D. Approval of a PWP amendment by the Coastal Commission shall be accompanied by specific factual findings supporting the conclusion that the PWP amendment, as approved, is in conformity with the certified LCP in jurisdictions affected by the proposed public works plan amendment.

6A.6.7 Consolidated Review of PWP Amendment and Project-Specific NOID

If a proposed project intended to be undertaken pursuant to a PWP amendment is submitted to the Coastal Commission for a NOID concurrent with the submittal of a PWP amendment, the Coastal Commission shall review the project and the PWP amendment concurrently, and shall, if the project NOID is consistent with applicable Chapter 3 policies of the Coastal Act, approve the project as an

integral component of the PWP amendment. The Coastal Commission may require conditions, where necessary, to bring the project into conformance with the Coastal Act.

6A.7 EMERGENCY AUTHORIZATIONS

Definition of Emergency. For the purpose of this section, the term “emergency” means: A sudden unexpected occurrence demanding immediate action to prevent or mitigate loss or damage to life, health, property or essential public services.

6A.7.1 Emergency Development in Areas Outside of the Coastal Commission's Retained Jurisdiction

1. **SANDAG/Caltrans Director Authority:** Where immediate action by SANDAG/Caltrans is required to protect life and property within the PWP/TREP area from imminent danger, or to restore, repair, or maintain rail or freeway right-of-way, utilities, or services destroyed, damaged, or interrupted by natural disaster, serious accident, or in other cases of an emergency, the SANDAG/Caltrans director may authorize emergency development on PWP/TREP area outside of the Coastal Commission's permit jurisdiction area in compliance with this section. Emergency work within areas subject to the Coastal Commission's permit jurisdiction is addressed in Section 6A.7.1.
2. **Extreme Emergency Requiring Immediate Action:** If an emergency is so extreme it does not allow time for the written requests, authorizations, and coordination described in this section, SANDAG/Caltrans personnel or other authorized persons undertaking any emergency development shall adhere as closely as reasonably possible to the written request, authorization, and coordination portions of these procedures.
3. **Authorization of Emergency Development:** SANDAG/Caltrans may undertake emergency development in the PWP/TREP area if it is found that:
 - A. Immediate action by the SANDAG/Caltrans is required to protect life and property from imminent danger, or to restore, repair, or maintain university property, utilities, or services destroyed, damaged, or interrupted by natural disaster, serious accident, or in other cases of emergency;
 - B. The emergency requires action more quickly than could occur through the PWP/TREP normal development review procedures, and the emergency development can and will be completed within 30 days unless otherwise specified in the emergency authorization;
 - C. Public comment on the emergency development has been reviewed, if time allows;
 - D. SANDAG/Caltrans has coordinated with planning staff in the South Coast District office of Coastal Commission and/or the Executive Director pursuant to as much as feasible;
 - E. The emergency development proposed is the minimum necessary to address the emergency and, is the least environmentally damaging temporary alternative for addressing the emergency; and
 - F. The emergency development proposed would be consistent with the PWP/TREP as much as feasible and/or would not impede attainment of PWP/TREP requirements following completion of the emergency development.
4. **Notice of Emergency Development Authorization:** No later than 3 days of the occurrence of the disaster or the discovery of the danger, SANDAG/Caltrans shall provide the Executive Director of the Coastal Commission with at least telephone notice of the type and location of the emergency action taken. As soon as possible and no later than 7 days after the emergency, SANDAG/Caltrans

shall submit, for information purposes only, a written Notice of Emergency Development Authorization to the Executive Director.

5. Development authorized Pursuant to the Notice of Emergency Development Authorization:

Emergency development authorized pursuant to this Section is subject to the following conditions:

- A. Emergency development must be completed within 30 days and the development is considered temporary unless it is subsequently authorized through regular PWP/TREP or CDP review procedures, which review must commence within ninety (90) days of the emergency authorization. Issuance of an emergency authorization shall not constitute an entitlement to the erection of permanent development or structures
- B. Development authorized through the emergency process must be removed and the affected area restored if a development project authorization has not been received within one year of authorization of the emergency development. If not so authorized, the emergency development, or unauthorized portion thereof, shall be removed and the affected area restored.

6A.7.2 Emergency Development in Areas within the Coastal Commission's Permit Jurisdiction

1. In the event of an emergency necessitating emergency development on land on which the Coastal Commission retains permit jurisdiction the procedures of this subsection shall apply.
 - A. SANDAG/Caltrans shall apply for an emergency permit to the Executive Director, by letter if time allows, or by telephone or in person if time does not allow. All processing of the proposed emergency permit shall be in accordance with California Code of Regulations, Title 14 Sections 13136-13143.
 - B. Where immediate action by SANDAG/Caltrans is required to protect life and public property from imminent danger or to restore, repair, or maintain public works, utilities, or services damaged or interrupted by natural disaster or other emergency, the requirement for obtaining an emergency permit may be waived, in accordance with Section 30611 of the Coastal Act; provided that SANDAG/Caltrans shall comply with the requirements of Section 30611. SANDAG/Caltrans shall notify the Executive Director of the type and location of the emergency work within 3 days of the disaster or discovery of the danger, whichever comes first. This subsection does not authorize erection of any permanent structure valued at more than \$25,000. Within 7 days of taking action, SANDAG/Caltrans shall notify the Executive Director in writing of the reasons why the action was taken and provide verification of compliance with the expenditure limits. SANDAG/Caltrans submittal to the Executive Director shall be reported to the Coastal Commission and otherwise processed in accordance with California Code of Regulations, Title 14 Section 13144.

6A.8 MONITORING OF PWP/TREP DEVELOPMENT PROJECTS

The PWP/TREP development review procedures for project NOIDs and reporting requirements for the phasing plan and REMP contained in this Chapter will provide the vehicle to continuously track and evaluate PWP/TREP program and project implementation to ensure program benefits, including benefits to coastal access and coastal resources, are balanced with or exceed program impacts through the full 30 year planning period. To further monitor PWP/TREP program and project implementation, the PWP/TREP includes a monitoring and reporting program which will provide yearly assessment and summary of information and updates to the Implementation Framework to document projects and associated mitigation requirements completed, and to assess cumulative phase impacts,

benefits and available resource mitigation credits for future project and/or phase implementation. Should a circumstance arise where a yearly report determines unanticipated resource impacts have occurred or are greater than anticipated for any particular project phase identified in the PWP/TREP, SANDAG/Caltrans will be responsible for initiating additional projects pursuant to the appropriate procedures outlined in this Chapter to sufficiently balance program impacts and benefits, prior to initiating any development contained in a subsequent phase.

6A.8.1 PWP/TREP Monitoring and Reporting Program

The project manager and/or other SANDAG/Caltrans personnel assigned responsibility to implement and/or monitor authorized development projects shall prepare an annual PWP/TREP monitoring report, commencing with approval of the PWP/TREP by the Coastal Commission, which includes a cumulative and calendar year summary of:

1. Status of PWP/TREP-authorized development project implementation for the year (status of any associated authorizations, funding, construction timeline, etc.) and summary of compliance with any applicable implementation measures and/or conditions placed on the authorized NOID
2. Status and summary of compliance with conditions for any continuing obligations from project authorizations in previous years
3. Any emergency authorizations that occurred and summary of compliance with Section 6A.8
4. Any comments received on PWP/TREP implementation (project construction, condition compliance, etc.)
5. Preparation and/or submittal status of PWP/TREP phasing and/or REMP monitoring reports required pursuant to Sections 6A.2.1 and 6A.2.2 of this Chapter

The project manager or other responsible SANDAG/Caltrans personnel shall verify authorized project compliance with all applicable implementation measures and that all NOID conditions have been timely fulfilled. The project manager or other responsible SANDAG/Caltrans personnel shall update and maintain a current copy of the PWP/TREP Phasing Plan, prepared and implemented pursuant to Section 6A.2.1, as may be revised per the procedures contained in this chapter, and any other applicable documents and project plans demonstrating compliance with the PWP/TREP. SANDAG/Caltrans shall maintain a record of these annual monitoring reports and they shall be available for public review.

6A.9 PWP/TREP FUNDING PLANS

6A.9.1 Sources of Funding

With a diverse program of transportation, community and resource enhancement projects in the corridor, funding will come from a variety of sources including local, state, and federal governments. SANDAG and Caltrans will have primary responsibility for developing funding in order to ensure program implementation. While funding is certain to change over time, some of these funding grants and programs that may enable the implementation of this program are listed below.

6A.9.1.1 Local

- *TransNet* One-Half Percent Local Sales Tax Revenues
- Environmental Mitigation Program (EMP)

- Transportation Development Act (TDA)
- Local Street and Road Gas Tax Subventions
- Local Street and Road General Fund and Other Revenues
- Toll Road Funding – debt financing backed by future HOT/Express Lane revenues

6A.9.1.2 State

- State Transportation Improvement Program (STIP)
- State Transit Assistance (STA) Funds
- Proposition 1B Infrastructure Bonds
- Traffic Congestion Relief Program (TCRP) Funds
- State Highway Operations, and Preservation Program (SHOPP) and Maintenance and Operations Program Funds
- Future State/Federal Gas Tax or Equivalent Revenue Increases

6A.9.1.3 Federal

- Federal Transit Administration (FTA) Discretionary (Section 5309) Funds
- Federal Transit Administration (FTA) Formula (Section 5307 and 5309) Funds
- Surface Transportation Program (STP) Funds
- Congestion Mitigation and Air Quality (CMAQ) Funds
- Miscellaneous Federal/State/Private/Other Capital Revenues
- American Recovery and Reinvestment Act – Federal Stimulus Bill

5.9 AGRICULTURAL RESOURCES

5.9.1 Agricultural Resources in the Corridor

Agricultural resources in the North Coast Corridor (NCC) consist of various types of farmland as defined by the California Department of Conservation, Division of Land Resource Protection, and the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). They are accessed and mapped statewide on an ongoing and regular basis and are defined as follows:

- **Prime Farmland** is defined as land that has been used for irrigated agricultural production at some time during the four years prior to the Important Farmland Map date. In addition, Prime Farmland must also meet the physical and chemical criteria as determined by the NRCS.
- **Farmland of Statewide Importance** is land other than Prime Farmland that has a good combination of physical and chemical characteristics for the production of crops. It may have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.
- **Unique Farmland** is defined as land that does not meet the criteria for Prime Farmland or Farmland of Statewide Importance, but land that has been used for the production of specific high economic value crops at some time during the two update cycles prior to the mapping date. This land has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained, high quality and/or high yields of a specific crop when treated and managed according to certain farming methods.
- **Farmland of Local Importance** is categorized as land that is either producing crops, has the capability of producing crops, or is used for the production of confined livestock, and may be important to the local economy due to its productivity or value. Furthermore, other agricultural lands are designated as such if they are subject to Williamson Act contract or agriculture preserve.

In accordance with prime agricultural land standards per Coastal Act Section 30241, farmland within the Coastal Zone must meet any of the following in order to be defined as prime agricultural land: (1) soil classification (Class I or II soils as defined by the NRCS); (2) Storie Index Rating of 80 through 100; (3) ability to support livestock (at least one animal unit per acre as defined by the USDA); or (4) planted with fruit- or nut-bearing trees, vines, bushes, or crops that have a nonbearing period of fewer than five years and that will normally return during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than \$200 per acre. For purposes of this PWP/TREP analysis, the term “prime agricultural land” refers to those resources within the NCC that meet Coastal Act standards only.

Even if land does not meet the prime agricultural land definition pursuant to Coastal Act Section 30241, Section 30242 protects all other agricultural lands suitable for agricultural uses and prohibits their conversion to nonagricultural uses unless agricultural use is not feasible or conversion would preserve prime agricultural land or concentrate development in existing developed areas.

While there are larger tracts of land in northern San Diego County that support a significant agricultural economy and agricultural resources, overall, agricultural operations in San Diego County tend to be smaller than elsewhere in California. The trend in San Diego County is smaller farms or smaller acreages for production. In 1992, 65% of the farms in San Diego County were smaller than 9 acres,

which was significantly less than the statewide average farm size of 373 acres.¹ In 2008, that percentage had increased to 68%.² Agriculturalists in San Diego have specialized in producing agricultural products in a relatively urbanized area by growing high-dollar-value per-acre crops such as nursery and greenhouse crops. Within the corridor, the agricultural parcels are relatively isolated areas supporting agricultural activities that are, for the most part, surrounded by various urban uses and open space areas in keeping with the overall agricultural trend in the county. Agricultural lands in the corridor generally occur adjacent to lagoon areas and associated open space, and in various patches throughout the otherwise urban landscape.

A majority of agricultural lands in the corridor—particularly in Carlsbad, Encinitas, and Solana Beach—consist of nursery and greenhouse operations. These types of agriculture are relatively unaffected by typical urban/agricultural interface issues and encroachment. Because the cultivation occurs in structures and in pots not soils, it is the coastal climate that provides the resource and benefit to these types of agricultural commodities as opposed to cultivated land.

5.9.1.1 LOSSAN Rail Corridor Resources

The *LOSSAN Final Program EIR/EIS* (September 2007) for the LOSSAN rail corridor improvements indicates that there are some agricultural lands within the LOSSAN rail corridor near Oceanside, which include Prime Farmlands and Farmlands of Local Importance. A number of properties designated as Unique Farmland, and some lands that are not designated but are under active cultivation (greenhouses/nursery plants), are located adjacent to and east of the rail corridor in Encinitas, just south of Batiquitos Lagoon (Figure 5.9-1c). An additional site that is not designated but is also under active cultivation (greenhouses/nursery plants) is located adjacent to and west of the rail corridor in Carlsbad, south of Agua Hedionda Lagoon (Figure 5.9-1d).

5.9.1.2 I-5 Highway Corridor Resources

A Community Impact Assessment, dated October 2007, was used to prepare the *I-5 NCC Project Draft EIR/EIS* (June 2010) to identify existing agricultural resources and potential project impacts to agricultural resources. For the purposes of analyzing potential impacts to agricultural resources, the study area encompassed a 0.5-mile radius from the centerline of the existing I-5 highway, and agricultural resources were assessed for each of the cities. In addition, mapping and assessment of the underlying NRCS soil classifications, including Storie Index Rating was conducted to determine if any agricultural resource parcels potentially affected by the NCC Project also meet the Coastal Act standards for prime agricultural land (Table 5.9-1).

San Diego

A limited amount of agricultural activity occurs within San Diego, the majority of which is located within the northern and eastern parts of the city. The southernmost portion of a parcel used for agricultural production and designated as Farmland of Statewide Importance is located directly adjacent to and east of the highway, south of San Dieguito Lagoon in the North City Future Urbanizing Area Framework Plan area (Figure 5.9-1A). This parcel does not, however, meet the Coastal Act standards for prime agricultural land.

¹ *San Diego Agriculture: Not Your Average Farm*, County of San Diego.
http://www.sdcountry.ca.gov/reusable_components/images/awm/Docs/stats_sdagriculture.pdf.

² *San Diego County Crop Statistics and Annual Report*, 2008.

TABLE 5.9-1: COASTAL ACT AGRICULTURAL RESOURCE DESIGNATIONS AND PROJECT IMPACTS BY PARCEL

City	Parcel Description (Total Acreage)	Active Agriculture/ Irrigation	FMMP Farmland Type	Soil Classification ⁱ	Storie Index Rating ⁱⁱ	Totals by Soil Type (Acreage)	Livestock Grazing ⁱⁱⁱ	Fruit or Nut- Bearing Crops/Annual Gross Value per Acre ^{iv}	Surrounded by or on Periphery of Urban Uses ^v	Project Impact Totals
City of San Diego	N/A; No agricultural parcels located within I-5 or LOSSAN area of potential effect.									
City of Del Mar	N/A; No agricultural parcels located within I-5 or LOSSAN area of potential effect.									
City of Solana Beach	N/A; No agricultural parcels located within I-5 or LOSSAN area of potential effect.									
City of Encinitas	Manchester strawberry/ flower fields (30.5 acres)	Yes; cultivated strawberry/Asian vegetables	Prime Farmland, if irrigated	Class III CsC: Corralitos loamy sand, 2 to 5 percent slopes	61 (Grade 3)	30.5 acres	No	Potential	Bounded by residential uses to north and east, Manchester Ave and San Elijo Lagoon to south, and I-5 to west	8.4 acres
	Pacific Verde Nursery (3.5 acres)	Yes; greenhouse/ nursery	Unique Farmland	Class IV CfC: Chesterton fine sandy loam, 5 to 9 percent slopes	32 (Grade 4)	2.9 acres	No	No	East of and adjacent to I-5 at Union Street; other greenhouse/ nursery and residential uses to east, north and south	0.2 acre
				Class IV MIE: Marina loamy coarse sand, 9 to 30 percent slopes	45 (Grade 3)	0.05 acre	No	No		
				Unclassified	N/A	0.55 acre	N/A	N/A		
	Greenhouse (0.7 acre)	Yes; greenhouse	Urban	Class III CbC: Carlsbad gravelly loamy sand, 5 to 9 percent slopes	21 (Grade 4)	0.7 acre	No	Potential	Adjacent I-5 to east, west of Mackinnon Ave residential uses	No impact
	Greenhouse (0.7 acre)	Yes; greenhouse	Urban	Class IV MIE: Marina loamy coarse sand, 9 to 30 percent slopes	45 (Grade 3)	0.7 acre	No	No	East of and adjacent to I-5, north of Puebla St and Poinsettia Park residential uses	No impact
	Weidner's Gardens (0.91 acre)	Yes; greenhouse/ nursery	Unique Farmland	Class VI CID2: Cienega coarse sandy loam, 5 to 15 percent slopes, eroded	16 (Grade 5)	0.9 acre	No	No	Adjacent to the east side of I-5 and north of Leucadia Blvd	No impact
				Class IV MIE: Marina loamy coarse sand, 9 to 30 percent slopes	45 (Grade 3)	0.01 acre	No	No		
	Samia Rose Topiary (6.5 acres)	Yes; greenhouse/ nursery	Unique Farmland	Class VI CID2: Cienega coarse sandy loam, 5 to 15 percent slopes, eroded	16 (Grade 5)	6.5 acres	No	No	Adjacent to the east side of I-5 and north of Normandy Rd, and west of Urania Ave	No impact

TABLE 5.9-1: COASTAL ACT AGRICULTURAL RESOURCE DESIGNATIONS AND PROJECT IMPACTS BY PARCEL (CONTINUED)

City	Parcel Description (Total Acreage)	Active Agriculture/ Irrigation	FMMP Farmland Type	Soil Classification ⁱ	Storie Index Rating ⁱⁱ	Totals by Soil Type (Acreage)	Livestock Grazing ⁱⁱⁱ	Fruit or Nut- Bearing Crops ^{iv}	Surrounded by or on Periphery of Urban Uses ^v	Project Impact Totals
City of Carlsbad	South Agua Hedionda Ag Parcels (106.2 acres)	Yes; row crops	Prime Farmland, if irrigated; Farmland of Statewide Importance, and Unique Farmland	Class III <i>MIC: Marine loamy coarse sand, 2 to 9 percent slopes</i>	54 (Grade 3)	56.7 acres	No	Potential	South of Agua Hedionda Lagoon, bound by I-5 to the west, Cannon Road to the south, and open space to the east	2.3 acres
				Class VI <i>CbE: Carlsbad gravelly loamy sand, 15 to 30 percent slopes</i>	15 (Grade 5)	14.3 acres	No	No		
				Unclassified	N/A	35.2 acres	N/A	N/A		
	Greenhouse (1.4 acres)	Yes; greenhouse/ nursery	Urban	Class III <i>MIC: Marine loamy coarse sand, 2 to 9 percent slopes</i>	54 (Grade 3)	1.4 acres	No	Potential	West of and adjacent I-5, north of Carlsbad Village Dr and residential uses	No impact
	Greenhouse/ agricultural operations (5.1 acres)	Yes; greenhouse/ nursery	Unique Farmland	Class III <i>MIC: Marine loamy coarse sand, 2 to 9 percent slopes</i>	54 (Grade 3)	5.1 acres	No	Potential	East of and adjacent I-5, south of Jefferson St, and north of Las Flores Dr residential uses	No impact
City of Oceanside	N/A; No agricultural parcels located within I-5 or LOSSAN area of potential effect.									

Prime agricultural land standards per Coastal Act Section 30241:

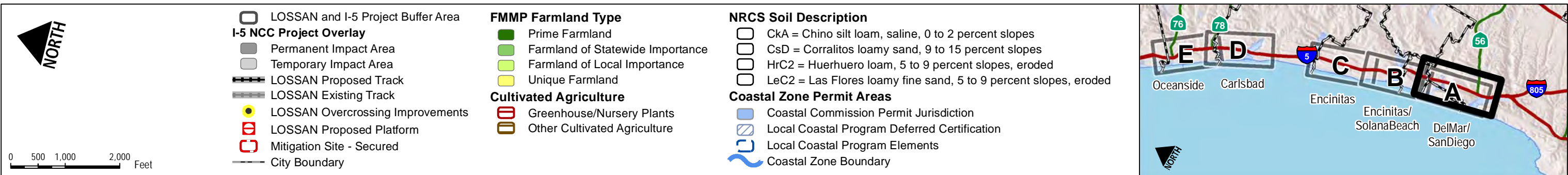
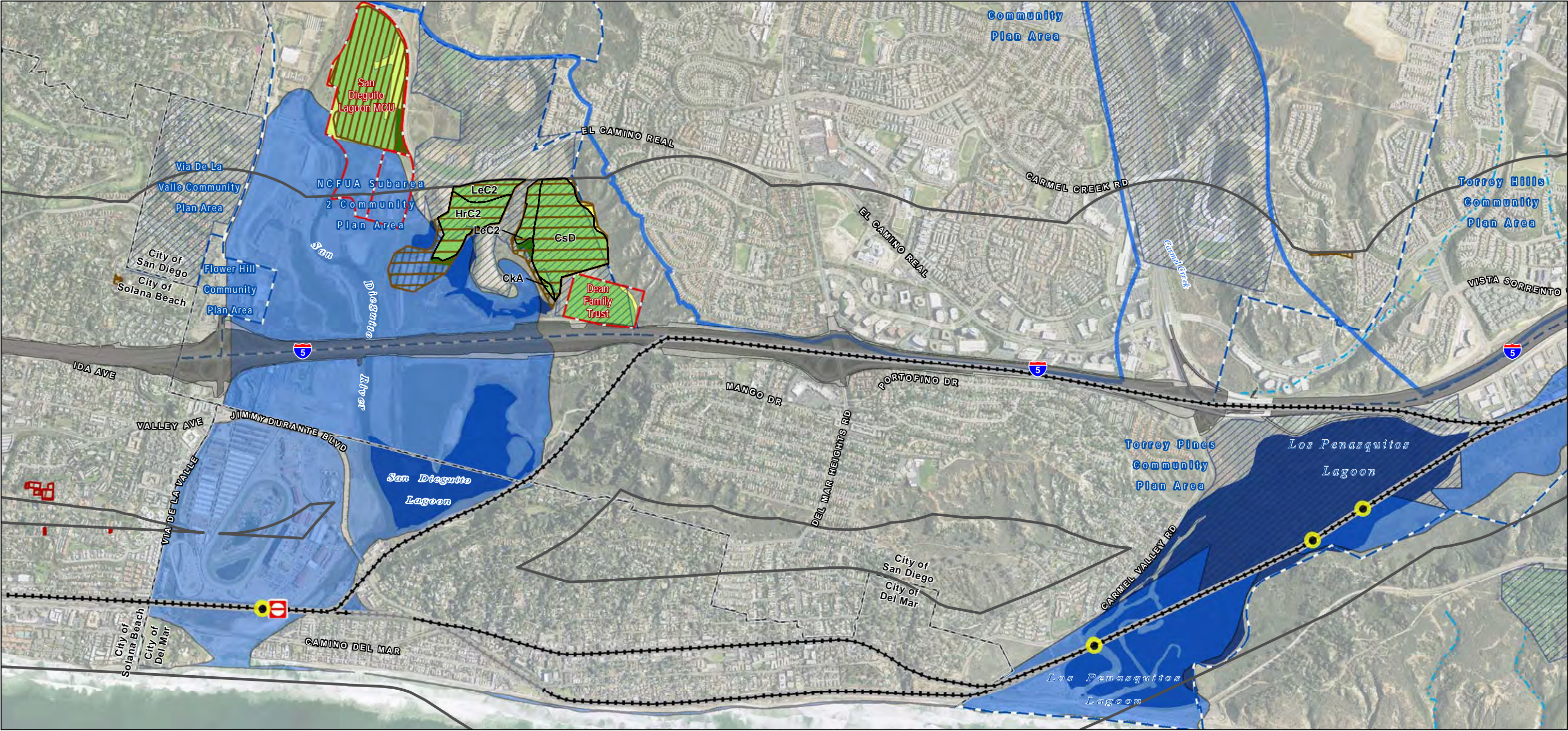
ⁱ Class I or Class II Soils, as defined by the Natural Resource Conservation Service. Soils with less than Class II would not be considered prime.

ⁱⁱ Land with a Storie Index Rating of 80 through 100: Storie Index Rating = [(Factor A/100) X (Factor B/100) X (Factor C/100) X Factor D/100) X 100], where Factor A = Soil Profile Group; Factor B = Surface Texture; Factor C = Slope; Factor D = Drainage, Alkalinity, Fertility, Acidity, Erosion and Microrelief. Land with a Storie Index Rating below 80 would not be considered prime. Source: Soil Survey of San Diego Area, CA, USDA Soil Conservation Service (December 1973).

ⁱⁱⁱ Land with the ability to support livestock used for the production of food and fiber with an annual carrying capacity equivalent to at least one animal unit per acre as defined by the United States Department of Agriculture is considered prime agricultural land pursuant to Coastal Act Section 30241. "Animal unit month" is defined by the USDA as the amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days; roughly 12,000 pounds of forage per year is required to satisfy this element of the prime agricultural land definition. Minimum parcel size 100 acres for grazing to sustain 1 cow/calf unit.

^{iv} Land planted with fruit- or nut-bearing trees, vines, bushes, or crops which have a nonbearing period of less than five years and which will normally return during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than \$200 per acre.

^v Even if land does not meet the prime agricultural land definition per Coastal Act Section 30241, Section 30242 of the Coastal Act applies to all agricultural lands on the urban-rural boundary and imposes limits on both agricultural development and conversions of agricultural uses to nonagricultural uses, regardless if the agricultural lands are prime, or lands suitable for agriculture.



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, California Dept Conservation, San Diego County, USDA 2003, Imagery: DigitalGlobe March 2008

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FIGURE 5.9-1A
Agricultural Resources (City of Del Mar / San Diego)

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Del Mar and Solana Beach

There are no designated agricultural lands in Del Mar and Solana Beach; however, Solana Beach has a very small amount of greenhouse and nursery agriculture (Figure 5.9-1B). None of these parcels meets the Coastal Act standards for prime agricultural land, although they are lands suitable for agricultural use and therefore subject to the protections in Coastal Act Section 30242. Though both of these cities once contributed to the agricultural production of the region, rapid growth has led to the subsequent development of these agricultural lands primarily for urban uses.

Encinitas

As compared to the other cities in the corridor, a relatively large amount of land within Encinitas is devoted to some form of agricultural use, some of which lie adjacent to the I-5 highway corridor. These lands include Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and lands subject to Williamson Act contract and agriculture preserve (Figure 5.9-1B and Figure 5.9-1C). The majority of agricultural uses within the city are in the form of nurseries or greenhouses, which are unaffected by the adjacent nonagricultural uses.

A parcel of active agricultural land designated as Prime Farmland, which is often cultivated with strawberries and flowers, is located east of I-5 at Manchester Avenue. Anderson's La Costa Nursery and West Coast Nurseries are designated as Unique Farmland, although the properties are designated for residential use,³ and are located south of Batiquitos Lagoon approximately 220 feet west of I-5 and north of La Costa Avenue. Weidners' Gardens and Samia Rose Topiary are also designated Unique Farmland and are located adjacent to and east of I-5 and north of Leucadia Boulevard. The Leucadia Nursery and Emerald M. Growers, both of which are designated as Unique Farmland, are located north of and adjacent to Leucadia Boulevard and east of I-5. Two Unique Farmland properties that house greenhouse and nursery operations (Florabunda and Pacific Verde Nursery) are located east of and adjacent to I-5 at Union Street. Paul Ecke Ranch, the world's largest poinsettia producer, consists of Unique, Prime, and Farmland of Statewide Importance, as well as lands under Williamson Act contract, and is located 0.25 mile east of I-5 south of Puebla Street. Sunshine Gardens, a nursery and greenhouse operation designated as Unique Farmland, is located 0.25 mile east of I-5 at Encinitas Boulevard. Three greenhouse operations located near the proposed project are not designated as Important Farmland. These include the Cal Pacific Orchid Farm west of I-5 on Orpheus Avenue, the Jungle Music Nursery located immediately west of I-5 on Ocean View Avenue, and a greenhouse located north of Puebla Street. Although many of these parcels are in active agricultural and/or greenhouse operations, most do not have underlying NRCS soil classifications; of the seven total parcels that do have associated soil and/or Storie Index ratings, none meet the Coastal Act standards for prime agricultural land, although they are lands suitable for agricultural use and therefore subject to the protections in Coastal Act Section 30242.

Carlsbad

A sizeable quantity of agricultural land also occurs within Carlsbad (Figure 5.9-1D). Two greenhouse and agricultural operations designated as Unique Farmland are located in north Carlsbad. A greenhouse and agricultural operation is located south of Buena Vista Lagoon, east of I-5 and south of Jefferson Street. The Miles Pacific Nursery, the second greenhouse and agricultural operation, is located approximately 0.4 mile east of I-5, north of Carlsbad Village Drive.

³ City of Encinitas, 1989.

Larger parcels of agricultural land in Carlsbad are located south of Agua Hedionda Lagoon. The Flower Fields (approximately 50 acres) is located 0.25 mile east of I-5 between Legoland and the Carlsbad Company Stores, and consists of the only property subject to Williamson Act contract in the city and is designated as Prime and Unique Farmland. A contiguous section of agricultural land is located south of Agua Hedionda Lagoon and bounded by I-5 to the west, Cannon Road to the south, and open space to the east. This portion of land is designated as Prime Farmland and Farmland of Statewide Importance and is used primarily for strawberries but also supports flower production. A parcel of Farmland of Local Importance, which houses greenhouses and some agricultural uses, is located adjacent to and west of I-5 along Avenida Encinas. However, none of these parcels meet the Coastal Act standards for prime agricultural land, although they are lands suitable for agricultural use and therefore subject to the protections in Coastal Act Section 30242.

Oceanside

There are no designated agricultural lands in the study area within Oceanside; however, inland of the NCC the entire northeast portion of the city is designated for agricultural uses (Figure 5.9-1E). The agriculture industry in Oceanside is valued at approximately \$12 million annually, which accounts for approximately 10% of San Diego County's agricultural output. Major crops within Oceanside, as well as the region, include tomatoes, avocados, citrus, and nursery stock.

5.9.2 PWP/TREP Concerns

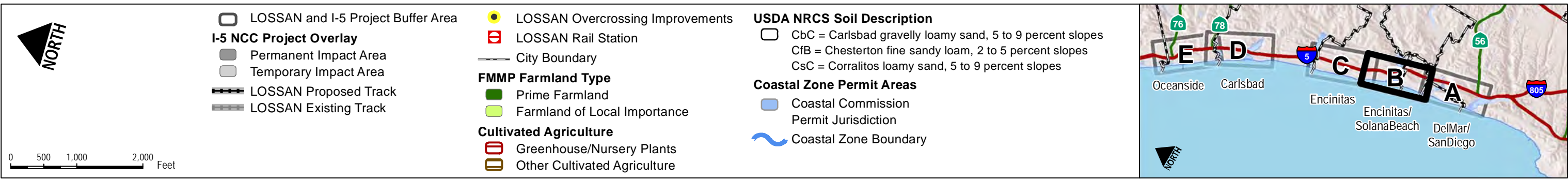
Environmental documentation and analysis prepared for the proposed LOSSAN rail and I-5 highway corridor improvements confirm that a number of agricultural lands supporting a variety of agricultural resources occur in the corridor and in areas potentially affected by the proposed improvements. Potential impacts of the proposed rail and highway improvements to agricultural resources could occur from direct displacement of agricultural lands or operations because of expanded or modified facility footprints or temporary displacement caused by construction/assembly and construction staging areas that may be proposed within an area used for agricultural production.

5.9.2.1 LOSSAN Rail Corridor Impact Assessment

Proposed rail improvements would occur adjacent to areas designated as Unique Farmland and Farmland of Local Importance in Encinitas and Carlsbad, respectively; however, in these areas, proposed rail improvements would occur within the existing rail corridor right-of-way and, therefore, impacts to the adjacent agricultural lands are not anticipated. Furthermore, none of these parcels meet the Coastal Act standards for prime agricultural land. However, temporary impacts to agricultural resources could result from temporary conversion of important agricultural lands or other temporary disruption of agricultural activities during construction because of construction/assembly and construction staging areas that may be proposed within an area used for agricultural production.

5.9.2.2 I-5 Highway Corridor Impact Assessment

Impacts to agricultural lands from proposed highway improvements would occur only in the cities of Encinitas and Carlsbad. The proposed highway improvements would affect approximately 10.9 total acres of Prime Farmland, non-Prime Farmland identified as Unique Farmland, and lands in agricultural production but not designated as Important Farmland. None of these parcels meet the Section 30241 Coastal Act standards for prime agricultural land as identified in Table 5.9-1, but most are in active agricultural production and therefore subject to the protections in Coastal Act Section 30242. The proposed highway improvements within San Diego, Del Mar, Solana Beach, and Oceanside would not result in encroachment or edge impacts along the existing I-5 highway corridor to designated or active agricultural lands. Therefore, the highway improvements would not adversely affect the productivity of nor preclude continued agricultural activities of agricultural lands in these cities.



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, California Dept Conservation, San Diego County, USDA 2003. Imagery: DigitalGlobe March 2008

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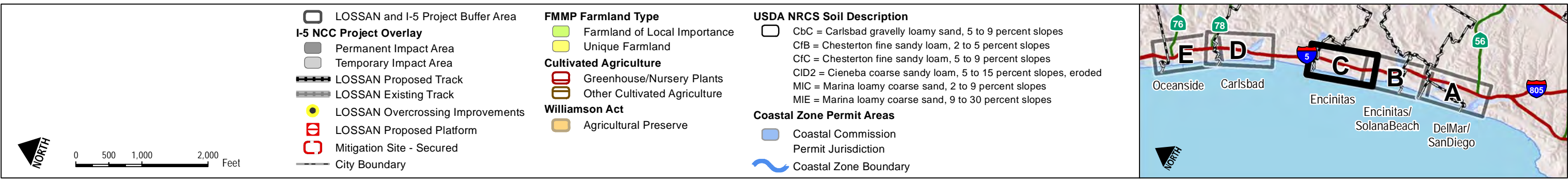
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FIGURE 5.9-1B

Agricultural Resources (City of Encinitas / Solana Beach)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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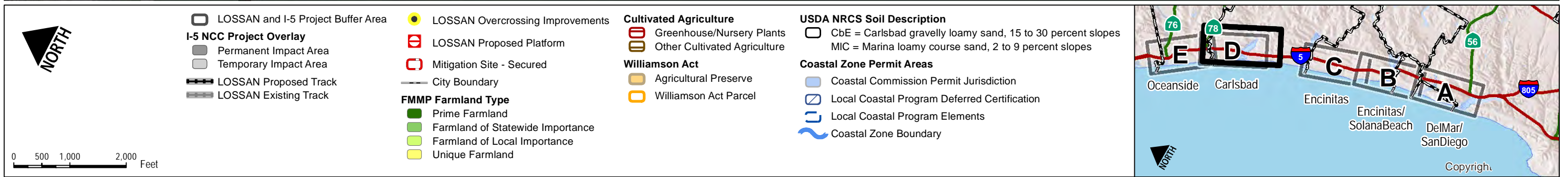
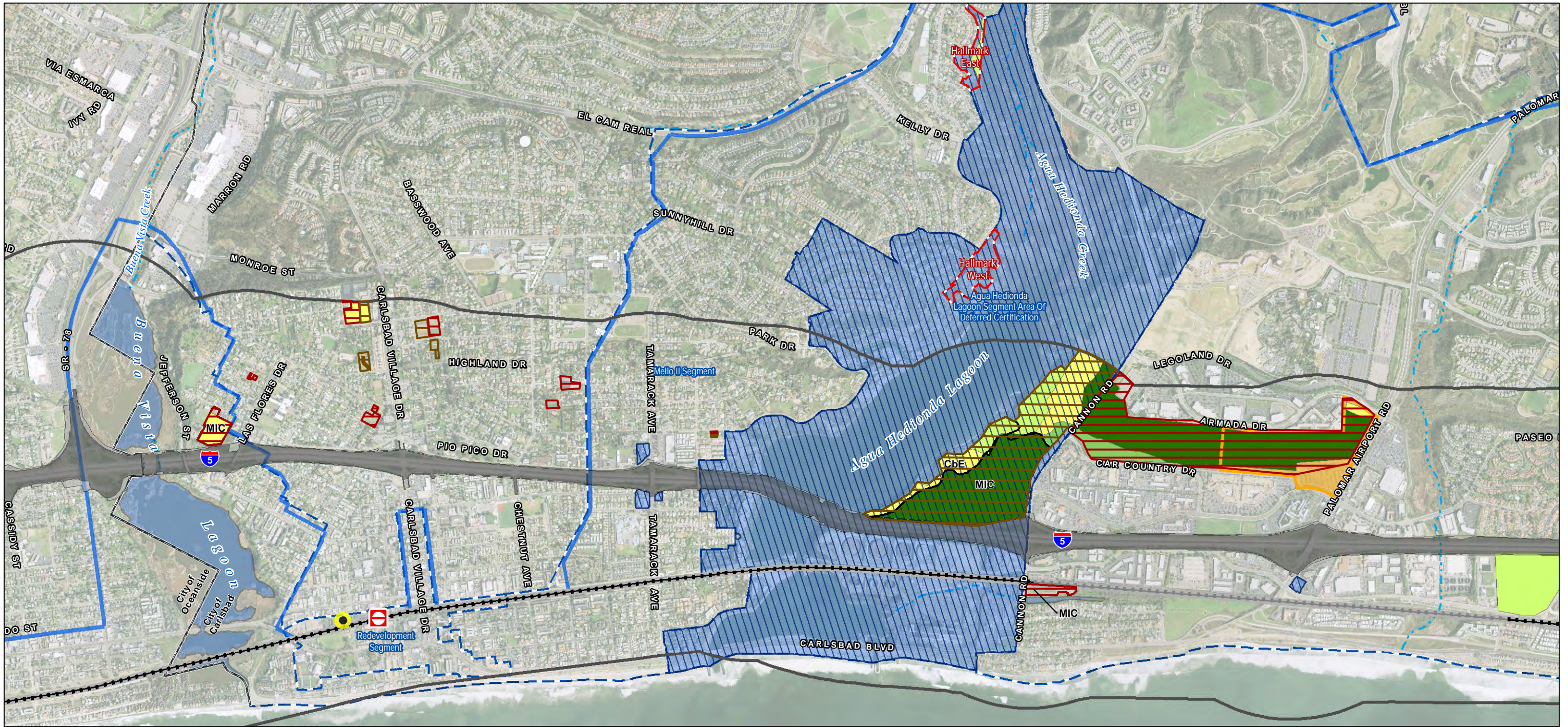
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FIGURE 5.9-1C
Agricultural Resources (City of Encinitas)

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, California Dept Conservation, San Diego County, USDA 2003. Imagery: DigitalGlobe March 2008

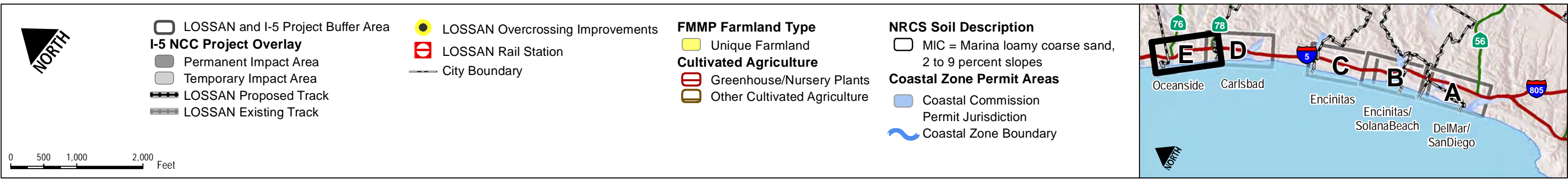
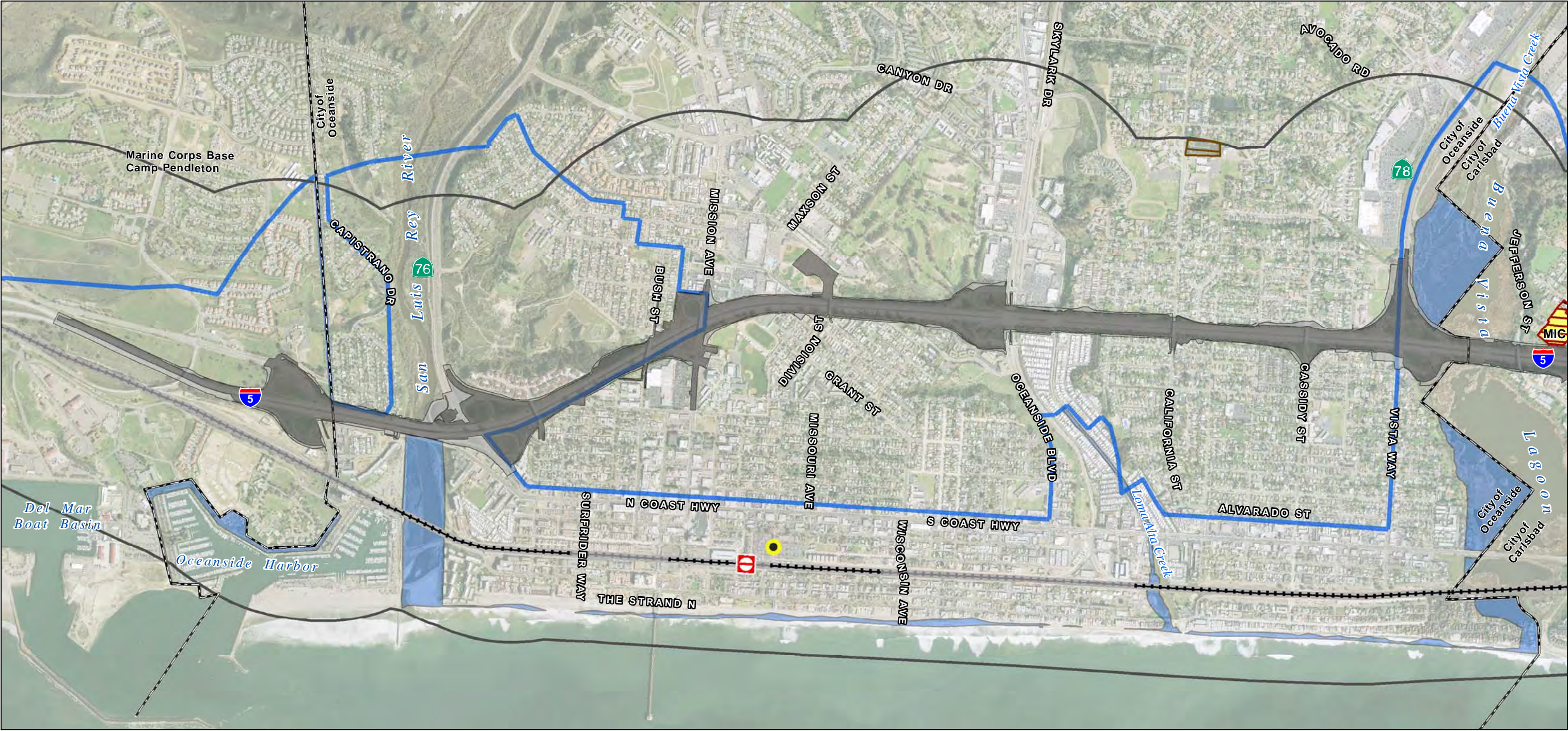
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FIGURE 5.9-1D
Agricultural Resources (City of Carlsbad)

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, California Dept Conservation, San Diego County, USDA 2003. Imagery: DigitalGlobe March 2008

The Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map are for planning and engineering study purposes only. Data are derived from multiple sources. The digital Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map have not been adopted by the Coastal Commission, and do not supersede the official versions certified by the Coastal Commission as may be amended from time to time.

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FIGURE 5.9-1E

Agricultural Resources (City of Oceanside)

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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Encinitas

The proposed highway improvements within Encinitas would include a new transit facility, park-and-ride and direct access ramp (DAR) at Manchester Avenue, which would affect active agricultural fields east of and adjacent to I-5. The proposed transit facilities would encroach into a 30.5-acre property designated as Prime Farmland that is actively farmed and often cultivated with strawberries and flowers. The proposed highway facilities would affect approximately 8.4 acres of the western portion of the Prime Farmland adjacent to I-5. To avoid and minimize potential impacts to agricultural land, the Locally Preferred Alternative for I-5 includes the smallest project footprint for the highway improvements, and the footprint of the new transit facility at Manchester Avenue is reduced to accommodate only about 150 parking spaces, and the DAR redesigned as an undercrossing, thereby reducing impacts from 18.5 to 8.4 acres. The remaining 22.1 acres, which are located on a more eastern slope of the parcel, could continue in agricultural production. Coordination between the San Diego Association of Governments (SANDAG), the California Department of Transportation (Caltrans), and the landowner are underway to determine the possibility of continuing agricultural operations or purchasing the property (or partial purchase) for habitat restoration purposes.

Proposed highway improvements would also affect approximately 0.2 acres along the western edge of Unique Farmland properties that house greenhouse and nursery operations (e.g., Pacific Verde Nursery), which are located east of, and adjacent to, I-5 at Union Street; however, the project encroachments would affect only the edge of the facilities and would not preclude agricultural activities in the greenhouse or nursery on the remainder of the parcel.

No other designated or active farmlands would be affected by the proposed project.

Carlsbad

The proposed highway improvements at Cannon Road would encroach into a 106.2-acre property that is actively farmed and often cultivated with strawberries and flowers. Proposed highway improvements would directly affect approximately 2.3 acres of these agricultural lands within Carlsbad, which are designated as Prime Farmland and Farmland of Statewide Importance, and are located south of Agua Hedionda Lagoon and bounded by I-5 to the west, Cannon Road to the south, and open space to the east; however, the impact would be linear along the western edge of the property and would not bisect or preclude continued agricultural operation of the remaining 103.9 acres. To avoid and minimize potential impacts to agricultural land, the Locally Preferred Alternative for I-5 includes the smallest project footprint for the highway improvements and eliminates the DAR previously proposed at Cannon Road, thereby reducing impacts to agricultural land within Carlsbad from 16 to 2.3 acres.. No other agricultural land or operations in Carlsbad would be affected by the project.

Temporary Construction Impacts

Temporary, construction-related impacts to agricultural resources throughout the corridor could result from conversion of important agricultural lands or other disruption of agricultural activities because of construction/assembly and construction staging areas that may be proposed within an area used for agricultural production.

Resource Enhancement and Mitigation Program Opportunities

Caltrans is pursuing opportunities to acquire properties in the corridor for purposes of implementing the Resource Enhancement and Mitigation Program (REMP; discussed in Chapter 6B) to help restore, enhance, and expand coastal wetlands, freshwater wetlands, and upland areas. As part of the PWP/TREP, the mitigation sites would be acquired and restored or preserved for purposes of habitat

enhancement or preservation to offset potential resource impacts of the proposed I-5 highway and LOSSAN rail improvements and, where feasible, to improve already degraded resources. Potential mitigation sites could include properties designated (currently or previously used) for agricultural purposes, which could adversely impact agricultural resources.

5.9.3 PWP/TREP Opportunities, Design/Development Strategies and Policies/Implementation Measures

5.9.3.1 Corridor Opportunities

Enhanced Pedestrian Overpass Connection on Bush Street. The PWP/TREP includes a community enhancement project in Oceanside that would connect the existing community gardens at Civic Center Drive and Witzel Street across an enhanced overpass and follow the freeway in a linear park to Mission Avenue. This project would extend existing, thriving community gardens and would join the communities separated by I-5 with a new sidewalk and widening of existing sidewalks, a paved trail from the east side of the bridge along the on-ramp to Buena Street, and new and improved lighting and landscaping.

5.9.3.2 PWP/TREP Policies

Caltrans and SANDAG would implement the following policy to ensure that proposed improvements are designed, implemented, and maintained to provide for maximum protection of agricultural resources as identified on Figures 5.9-1A-E:

- **Policy 5.9.1:** New multimodal transportation development and associated community enhancement and habitat restoration improvements shall avoid and minimize impacts to agricultural resources consistent with Sections 30241 and 30242 of the Coastal Act. Where new development may potentially convert agricultural uses to non-agricultural uses, appropriate mitigation measures shall be required and implemented.

5.9.3.3 PWP/TREP Design/Development Strategies

The following design and development strategies provide guidance for siting and designing specific PWP/TREP rail projects, and Caltrans/SANDAG shall utilize the following strategies for all projects subject to Notice of Impending Development (NOID) procedures, consistent with the agricultural resource protection policies of PWP/TREP Policy 5.9.1, amended local coastal programs (LCPs) and the Coastal Act:

- For projects that result in potential impacts to Prime coastal agricultural resources or active coastal agricultural lands (determined by the Coastal Commission pursuant to project-specific environmental review and NOID, federal-consistency, or coastal development permit review, as applicable), appropriate site-specific mitigation measures would be implemented. Mitigation measures would preserve and enhance coastal agricultural resources within the NCC Coastal Zone and could include developing and implementing a program or projects that encourage “urban agriculture.” Types of urban agriculture could include farm-to-fork restaurants; buy local; farm-to-grocery store; vertical farming; farmers’ markets; innovative approaches to “urban agriculture” that help to create a demonstration project; or re-tooling existing agricultural operations to allow for vertical farming, innovative approaches to farming, or substantial reduction in water usage.

5.9.3.4 Implementation Measures

Caltrans/SANDAG shall utilize the following implementation measures for all projects subject to NOID procedures:

- **Implementation Measure 5.9.1:** Permanent impacts to active coastal agricultural land, or land suitable for agriculture shall be mitigated on a site-specific basis, utilizing a tiered approach. The first tier for implementation includes project-specific mitigation to be located within the affected jurisdiction, and could include specific activities such as acquiring, enhancing, or restoring other nonagricultural lands for agricultural use within the Coastal Zone. For opportunities that result in the conversion of nonagricultural lands to agricultural uses, any required remediation activities would be completed in compliance with county, federal, and other applicable standards for hazardous materials. As part of this first tier of projects, public outreach would be implemented to engage the surrounding neighborhood(s) throughout the implementation process.

The second tier for implementation would be for establishing school or community gardens within the affected jurisdiction within the Coastal Zone.

Should a specific mitigation project within the affected jurisdiction not be feasible (tier 1), or a higher priority opportunity within the Coastal Zone not be available (tier 2), the third tier shall be implemented, which includes payment of an Agricultural Resource Impact Mitigation Fee, pursuant to an approved in-lieu fee program covering coastal agricultural resources. The fee would be based on net acreage of affected coastal agricultural lands and reflect the approximate cost of preserving equivalent coastal agricultural lands elsewhere in the NCC Coastal Zone. If the City of Carlsbad's existing Agricultural Conversion Mitigation Fee program is able to be utilized, fund money would be dispersed according to the program's own priorities. Mitigation fees would be handled by Caltrans/SANDAG and/or the affected jurisdiction if within a currently approved in-lieu fee program, and would be expended in the following order of priority:

- Purchase of agricultural lands and/or agricultural improvements that will aid in continuing agricultural production within the NCC Coastal Zone.
 - Committing to specific activities that support "urban agriculture," such as farm-to-school programs, farm-to-fork restaurants, buy local, farm-to-grocery stores, vertical farming, farmers' markets, innovative approaches to "urban agriculture" that help to create a demonstration project, re-tooling existing agricultural operations to allow for vertical farming, innovative approaches to farming, or substantial reduction in water usage, or endowments to programs of study in agricultural sciences in the NCC Coastal Zone.
 - If determined feasible and desirable by the County of San Diego, coordinating with the county to establish a fund to offset loss of Williamson Act subvention funds from the state for 2009/2010, which would be used to assist the county in supporting agricultural resources and offsetting the lack of state subvention funds in 2009/2010 for the Williamson Act.
- **Implementation Measure 5.9.2:** Construction staging and phasing plans shall be prepared and submitted with each NOID for all transportation improvement and associated community enhancement projects included in the PWP/TREP and shall include information that specifies and quantifies any agricultural resource areas that may be impacted by temporary project construction activities. Temporary impacts to agricultural resources due to construction/assembly and construction staging areas, including temporary conversion of agricultural lands or other temporary disruption of agricultural activities, shall be fully mitigated by returning any affected area to pre-existing agricultural use after project construction is completed. Temporary impacts to agricultural resources due to construction/assembly and construction staging areas shall not cause long-term reduction in

productivity or conversion of the subject lands to nonagricultural use, which would result in a significant economic loss to the county's agricultural economy. Analysis of temporary impacts from construction activities shall be conducted for each NOID submittal in order to determine any loss of income or agricultural production incurred as a result of the proposed construction activities, and appropriate mitigation/compensation shall be applied in the event that impacts are identified.

- **Implementation Measure 5.9.3:** Plans for habitat restoration on properties supporting existing agricultural uses shall be prepared and submitted with the applicable NOID for restoration activities, and shall include information that specifies and quantifies any important agricultural resource areas that may be impacted by restoration activities. If determined by the Coastal Commission that restoration activities would adversely affect prime agricultural land, as defined by and in accordance with Coastal Act standards for prime agricultural land, or land suitable for agriculture, such impacts shall be fully mitigated pursuant to Implementation Measure 5.9.1.
- **Implementation Measure 5.9.4:** An economic feasibility study shall be conducted for any proposed specific project that would result in permanent impacts to agricultural resources in order to determine whether or not continued agricultural production would be possible after the project-related impacts have occurred.

5.9.4 Coastal Act Consistency

Coastal Act Section 30241

The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the area's agricultural economy, and conflicts shall be minimized between agricultural and urban land uses through all of the following:

(a) By establishing stable boundaries separating urban and rural areas including, where necessary, clearly defined buffer areas to minimize conflicts between agricultural and urban uses.

(b) By limiting conversions of agricultural lands around the periphery of urban areas to the lands where the viability of existing agricultural use is already severely limited by conflicts with urban uses or where the conversion of lands would complete a logical and viable neighborhood and contribute to the establishment of a stable limit to urban development.

(c) By permitting the conversion of agricultural land surrounded by urban uses where the conversion of the land would be consistent with Section 30250.

(d) By developing available lands not suited for agriculture prior to the conversion of agricultural lands.

(e) By assuring that public service and facility expansions and nonagricultural development do not impair agricultural viability, either through increased assessment costs or degraded air and water quality.

(f) Assuring that all divisions of prime agricultural lands, except those conversions pursuant to subdivision (b) of this section, and all development adjacent to the prime agricultural lands shall not diminish the productivity of such prime agricultural lands.

Coastal Act Section 30241.5

(a) If the viability of existing agricultural uses is an issue pursuant to subdivision (b) of Section 30241 as to any local coastal program or amendment to any certified local coastal program

submitted for review and approval under this division, the determination of “viability” shall include, but not be limited to, consideration of an economic feasibility evaluation containing at least both of the following elements:

- (1) An analysis of the gross revenue from the agricultural products grown in the area for the five years immediately preceding the date of the filing of a proposed local coastal program or an amendment to any local coastal program.
- (2) An analysis of the operational expenses, excluding the cost of land, associated with the production of the agricultural products grown in the area for the five years immediately preceding the date of the filing of a proposed local coastal program or an amendment to any local coastal program.

For purposes of this subdivision, “area” means a geographic area of sufficient size to provide an accurate evaluation of the economic feasibility of agricultural uses for those lands included in the local coastal program or in the proposed amendment to a certified local coastal program.

(b) The economic feasibility evaluation required by subdivision (a) shall be submitted to the commission, by the local government, as part of its submittal of a local coastal program or an amendment to any local coastal program. If the local government determines that it does not have the staff with the necessary expertise to conduct the economic feasibility evaluation, the evaluation may be conducted under agreement with the local government by a consultant selected jointly by local government and the executive director of the commission.

Coastal Act Section 30242

All other lands suitable for agricultural use shall not be converted to nonagricultural uses unless: (1) continued or renewed agricultural use is not feasible, or (2) such conversion would preserve prime agricultural land or concentrate development consistent with Section 30250. Any such permitted conversion shall be compatible with continued agricultural use on surrounding lands.

Coastal Act Section 30250

(a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land divisions, other than leases for agricultural uses, outside existing developed areas shall be permitted only where 50 percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size of surrounding parcels.

(b) Where feasible, new hazardous industrial development shall be located away from existing developed areas.

(c) Visitor-serving facilities that cannot feasibly be located in existing developed areas shall be located in existing isolated developments or at selected points of attraction for visitors.

Sections 30241 of the Coastal Act requires that the maximum amount of prime agricultural land be maintained in agricultural production and that conflicts between urban and agricultural land uses be minimized through means such as, but not limited to: establishing stable urban-rural boundaries, limiting conversion of agricultural lands around the periphery of urban areas to those lands where the viability of existing agricultural use is already severely limited, permitting the conversion of agricultural land surrounded by urban uses where the conversion of the land would be consistent with Section 30250,

assuring that public service and facility expansions do not impair agricultural viability, either through increased assessment costs or degraded air and water quality, and assuring that development adjacent to prime agricultural lands does not diminish the productivity of those lands. In addition, Section 30242 of the Coastal Act protects non-prime agricultural lands from conversion to nonagricultural use unless continued agricultural use is not feasible, or the conversion would preserve prime agricultural land or concentrate development consistent with Section 30250. Any permitted conversion of agricultural land is required to be compatible with continued agricultural use on surrounding lands.

5.9.4.1 PWP/TREP Agricultural Resource Impacts

Proposed transportation improvements would result in impacts to agricultural resources as described above. As the existing location of the NCC rail and highway facilities requires that some PWP/TREP improvements occur in areas directly adjacent to or within agricultural lands and/or operations, it is infeasible to avoid all impacts to agricultural resources during construction of the proposed improvements. However, although none of the identified agricultural parcels meet the Coastal Act standards for prime agricultural land as identified in Table 5.9-1, Coastal Act Section 30242 protects all other lands suitable for agriculture and prohibits their conversion to nonagricultural uses unless agricultural use is not feasible or conversion would preserve prime agricultural land or concentrate development in existing developed areas.

As discussed in Section 5.2, most of the NCC is considered nearly fully developed with urban uses, with only 5% of the land area remaining potentially developable within the six NCC cities. Within Carlsbad and Encinitas, where the NCC PWP/TREP projects would result in impacts to agricultural lands protected pursuant to Coastal Act Section 30242, remaining developable land consists of only 6% and 7% of the cities' total land area, respectively. As such, all of the PWP/TREP improvements would be located within an urban corridor and would be immediately adjacent to and contiguous with the existing transportation facilities in close proximity to existing developed areas. As discussed in Section 5.2, these improvements would serve to concentrate future development within the urban corridor by supporting Smart Growth. However, the proposed PWP/TREP improvements would nonetheless convert portions of lands used for agriculture and would result in impacts potentially inconsistent with Section 30242 of the Coastal Act.

As detailed in Section 5.10, although the proposed PWP/TREP is potentially inconsistent with Section 30242 of the Coastal Act, the PWP/TREP can be found consistent with the Coastal Act through the conflict resolution provision of Coastal Act Section 30007.5 by demonstrating, among other things, that no other feasible, less-damaging alternative exists for project components that would result in unavoidable impacts to agricultural resources. Furthermore, feasible mitigation measures must be identified in the PWP/TREP to minimize substantial adverse impacts to agricultural resources.

Evaluation of Feasible Alternatives

Section 5.10, Coastal Act Policy Conflict Resolution, includes an analysis of project alternatives proposed to address mobility deficiencies and enhance multimodal access throughout the corridor, including design-level considerations for those facilities resulting in linear agricultural resources impacts. Based on this analysis, the program of rail and highway improvements included in the PWP/TREP provides the least environmentally damaging, feasible project alternative to avoid or reduce impacts to coastal resources. The proposed PWP/TREP improvements would consist primarily of improvements to existing transportation facilities located in previously developed and disturbed areas within existing rail and highway right-of-way. Improvements or changes to transportation facilities would generally be expansions or reconfigurations of existing facilities. Therefore, by design, the proposed PWP/TREP improvements would involve limited expansion or encroachment into adjacent agricultural resource areas while

accommodating existing and future travel demand within the NCC's existing LOSSAN and I-5 transportation corridors. By accommodating existing and future travel demand within the NCC's existing, primary transportation corridors, the PWP/TREP would serve to limit potential impacts to agricultural uses that might otherwise occur if new transportation infrastructure were to be constructed as separate and distinct facilities from the existing rail or highway right-of-way, or other arterial roads expanded outside of the main transportation corridors, to address mobility deficiencies and enhanced multimodal access throughout the corridor.

Proposed rail improvements would occur adjacent to areas designated as Unique Farmland and Farmland of Local Importance in Encinitas and Carlsbad, respectively; however, in these areas, proposed rail improvements would occur within the existing rail corridor right-of-way and therefore impacts to the agricultural lands are not anticipated. In addition, rail facilities are typically considered compatible land uses with agricultural areas given that there are relatively few sensitive receptors associated with agricultural uses that could be exposed to facility noise and vibration. While the existing and proposed transportation facilities constitute developed land uses, the transportation facilities do not in and of themselves consist of land uses that define or otherwise influence adjacent land uses, and therefore the proposed improvements would not create a conflict between agricultural and transportation land uses. Therefore, the LOSSAN rail corridor improvements would have no impact on Prime Farmland or any permanent impact on other agricultural land or resources. Though impacts to agricultural resources are not anticipated for rail improvements, feasible project alternatives for rail improvements potentially affecting agricultural resources would be determined in project-level analyses and during phased federal-consistency review, as applicable.

The project alternative analysis for highway improvements potentially affecting agricultural resources is part of the *I-5 NCC Project Draft EIR/EIS*. Additional design-level alternatives analysis, including detailed avoidance and minimization considerations, has been completed and is reflected within the selection of the Locally Preferred Alternative, as described in detail within the *I-5 NCC Project Supplemental Draft EIR/EIS*. This design detail, including a reduced project footprint throughout the corridor and for the Manchester Avenue DAR, park-and-ride and transit facility (San Elijo Multi-Use Facility), removal of the Cannon Road DAR, and other corridor-wide auxiliary lane reconfigurations and/or removals, reduces overall project impacts to agricultural lands from 34.5 acres previously identified to 10.9 acres. Proposed highway improvements have been designed to avoid all previously identified impacts to agricultural lands in the City of San Diego, to reduce potential project impacts from 18.5 to 8.6 acres in Encinitas, and to reduce potential project impacts from 16 to 2.3 acres in Carlsbad.

Temporary impacts to agricultural resources could also result from conversion of important agricultural lands or other disruption of agricultural activities during construction due to construction/assembly and construction staging areas that may be proposed within an area used for agricultural production.

Feasible Mitigation Measures

Section 5.9.3, described previously, and the following consistency analyses for proposed rail and highway improvements demonstrate that mitigation measures are required by the PWP/TREP as project design features and/or policies and implementation measures to minimize all potential impacts to agricultural resources. Where new development could adversely affect agricultural resources, appropriate mitigation measures shall be required and implemented. This provision would ensure project consistency with applicable agricultural resource protection policies should previously unidentified permanent or temporary project impacts to agricultural resources be determined during any future project-specific review processes.

Potential transportation improvement impacts to agricultural resources would be avoided to the maximum extent feasible through project design, which would ensure the amount of right-of-way required for improvements would be the minimum amount of land required to fulfill the purpose and need of the project, as well as meet operational requirements of the facilities. Wherever possible, the proposed project would follow within the existing rail and I-5 highway corridor alignments to avoid and/or minimize impacts to farmland and agricultural lands, which would result in avoidance or only minimal encroachment along the edges of agricultural lands located directly adjacent to the existing facilities. As such, the majority of proposed project encroachments onto lands containing agricultural resources would not substantially displace agricultural resources or disrupt or preclude continued agricultural operations of the properties.

According to the San Diego County Farm Bureau, the county has 312,766 acres of farmland. The Agricultural Commissioner's Office reports that the total number of acres of agriculture in the San Diego County Coastal Zone is 955 acres. Proposed PWP/TREP highway improvements would directly, cumulatively affect approximately 10.9 acres of Prime Farmland, non-Prime Farmland identified as Unique Farmland, and other lands in agricultural production but not designated as Important Farmland. This represents about 1% of the total amount of agricultural land in the San Diego County Coastal Zone.

Although the proposed highway improvements would result in permanent impacts to 10.9 acres of farmland, given the linear nature of the improvements, the majority of impacts would be contained to only four total agricultural parcels located in areas directly adjacent to the existing highway, and therefore the majority of project impacts would not substantially displace agricultural resources or disrupt or preclude continued agricultural operations of the affected properties. The incremental encroachment impacts on agricultural lands from proposed highway improvements would not result in substantial impacts to agricultural resources where the majority of agricultural production in the corridor already occurs on small, isolated lands in a relatively urbanized area. In addition, while the proposed highway improvements would directly affect agricultural resources in the corridor, the impacts would be minor when compared to the total amount of agricultural resources in the San Diego County Coastal Zone.

The most significant impacts are to agricultural lands adjacent to the highway that would be affected at Manchester Avenue in Encinitas (approximately 8.4 acres) and at Cannon Road in Carlsbad (approximately 2.3 acres). Pursuant to the Agricultural Viability Analysis (Appendix F) conducted for the affected agricultural lands, potential impacts would not compromise the ability for the remaining 22.1 and 103.9 acres of land unaffected at the Manchester Avenue and Cannon Road locations, respectively, to remain in agricultural production. However, , as discussed in more detail in Section 5.2 (Public Transit and Smart Growth), the proposed improvements and associated impacts would be necessary to concentrate and maintain anticipated development growth within and/or contiguous to the existing developed corridor. By maintaining and, where feasible, improving the existing public transportation system within the corridor, new development would be concentrated and supported in an area of existing and adequate public services, which in turn would limit development sprawl into undeveloped areas. Any growth that would occur in the NCC would be supported by the proposed infrastructure improvements, would be infill or redevelopment, and would serve to replace growth that could otherwise occur at the urban fringe or beyond, resulting in development pressure on rural lands. Furthermore, with implementation of the proposed PWP/TREP implementation measures, the project would create or preserve significant agricultural resources in other areas of the corridor and/or county. As such, the proposed PWP/TREP improvements, in conjunction with applicable agricultural implementation measures, would limit conversion of agricultural lands to isolated areas within the urban corridor (and to areas located directly adjacent to the highway and/or rail facilities), and would serve to accommodate

anticipated development in the urban corridor and thus maintain a stable urban/rural boundary while creating or preserving significant agricultural resources within the county.

Implementation Measure 5.9.1 of the PWP/TREP provides that unavoidable impacts to active coastal agricultural lands within the cities of Encinitas and Carlsbad are to be mitigated pursuant to a tiered approach, with the highest priority being implementation of a project-specific mitigation such as acquiring, enhancing or restoring other lands for agricultural use and/or establishing a school or community garden within the affected jurisdiction. The next priority would be for payment of an in-lieu fee under an approved Agricultural Conversion Mitigation Fee program, such as that implemented within the City of Carlsbad.

The Agricultural Conversion Mitigation Fee program included in Carlsbad's Local Coastal Program (LCP), certified by the Coastal Commission in 1996 (and amended in 2000, 2002, 2003, 2006, and 2010), applies only to agricultural impacts within the Mello II Land Use Segment, but could be expanded to the Agua Hedionda Lagoon Land Use Segment, where PWP/TREP impacts would occur, as part of their ongoing LCP Amendment certification efforts with the Coastal Commission. For impacts within the City of Encinitas, should implementation of a tier one project-specific mitigation not be feasible, development of an Agricultural Conversion Mitigation Fee program modeled after the City of Carlsbad's program would be conducted. The purpose and intent of an Agricultural Resource Impact Mitigation Fee program would be to contribute to additional efforts to support and maintain agricultural lands and practices within the NCC Coastal Zone, such as:

- Purchasing agricultural lands or improving agriculture in ways that would aid in continuing agricultural production within the NCC Coastal Zone.
- Committing to specific activities that support "urban agriculture," such as farm to school programs, farm-to-fork restaurants, buy local, farm-to-grocery stores, vertical farming, farmers markets, innovative approaches to "urban agriculture" that help to create a demonstration project, re-tooling existing agricultural operations to allow for vertical farming, innovative approaches to farming, or substantial reduction in water usage, and/or endowments to programs of study in agricultural sciences in the NCC Coastal Zone.
- If determined feasible and desirable by the County of San Diego, coordinating with the county to establish a fund that would be used to assist the county in supporting agricultural resources and offsetting the lack of state subvention funds in 2009/2010 for the Williamson Act.

The PWP/TREP would provide new opportunities to preserve and maintain a variety of agricultural resources and activities in the corridor by instigating proposed implementation measures and community enhancement features. The opportunities would range from supporting efforts to preserve large agricultural lands or operations to extending or providing new community gardens as is being proposed for the community enhancement project in Oceanside (Enhanced Pedestrian Overpass Connection on Bush Street). It should be noted that with the fiscal constraints on the state's budget, the subvention funds provided to counties (and cities) through the state for parcels under the Williamson Act program were reduced to a one-time, pro-rata amount. With this in mind, the PWP/TREP Agricultural Resource Impact Mitigation Fee could provide an opportunity to establish a fund to offset loss of Williamson Act subvention funds from the state.

Temporary impacts on agricultural resources could result from temporary conversion of agricultural lands or other temporary disruption of agricultural activities during construction because of construction/assembly and construction staging areas that may be proposed within an area used for agricultural production. Pursuant to Implementation Measure 5.9.2 of the PWP/TREP, however, any temporarily affected agricultural areas or operations would be fully returned to pre-existing agricultural

use after project construction is completed—without long-term reduction in productivity or conversion of the subject lands to nonagricultural use that could result in a significant economic loss to the county's agricultural economy. Potential loss of income or agricultural production from temporary construction-related impacts would require appropriate mitigation.

In addition, Caltrans has acquired properties in the corridor for implementing the REMP to restore, enhance, and expand coastal wetlands, freshwater wetlands, and upland areas in the NCC. As part of the PWP/TREP, the mitigation sites would be restored or preserved for habitat enhancement or preservation to offset potential resource impacts of the proposed LOSSAN rail and I-5 highway improvements and, where feasible, to improve already degraded resources. Potential mitigation sites could include properties designated (currently or previously used) for agricultural purposes, which could affect agricultural resources. Implementation Measure 5.9.3 of the PWP/TREP requires that plans for habitat restoration on properties supporting existing agricultural uses be prepared and submitted with the applicable NOID for restoration activities, and that the plans would include information that specifies and quantifies any lands suitable for agriculture that could be adversely affected by restoration activities. Should it be determined by the Coastal Commission that proposed restoration activities would adversely affect lands suitable for agriculture, Implementation Measure 5.9.3 requires that impacts to agricultural land be fully mitigated pursuant to Implementation Measure 5.9.1 of the PWP/TREP.

Based on available project and environmental data and the policies and implementation measures included herein, the proposed improvements would be implemented such that the maximum amount of agricultural land in the corridor would be maintained in agricultural production and conflicts between urban and agricultural land uses would be minimized. While the existing and proposed transportation facilities constitute developed land uses, the transportation facilities do not in and of themselves consist of land uses that define or otherwise influence adjacent land uses, and therefore the proposed improvements would not create a conflict between agricultural and transportation land uses. In addition, where facility improvements could adversely affect agricultural resources, policies and implementation measures would be applied (as identified in this section) to ensure the impacts would be avoided or minimized, and that impacts would be adequately mitigated such that the improvements would not result in substantial impacts to agricultural resources.

5.9.4.2 Coastal Act Consistency Analysis Summary

While proposed LOSSAN rail improvements could affect adjacent agricultural resources in the corridor, the majority of program improvements would occur within the existing facility rights-of-way. In this regard, proposed rail improvements would avoid, to a large extent, potential impacts to agricultural resources through design.

Where proposed I-5 highway improvements would result in unavoidable impacts to adjacent agricultural resources, the long-term viability of the affected agricultural resources and operation would not be affected. All permanent impacts to agriculture would be mitigated pursuant to the proposed tiered agricultural mitigation program within the coastal zone.

Furthermore, proposed improvements that would directly affect agricultural resources are necessary to maintain a critical coastal access corridor and public service while concentrating and maintaining anticipated development within and/or contiguous with the existing developed facility. In addition to maintaining the primary coastal access corridors in the NCC, the proposed improvements are critical to goods movement, which has a direct effect on the viability of agricultural operations in the region and the state. The majority of agricultural commodities in California are transported from farms to markets via ground transportation; thus, the ability to transport local agricultural commodities to large markets through

vital arteries such as the I-5 is also critical to preservation and continued viability of agricultural operations in the NCC, throughout the region, and beyond. Moreover, close proximity of transportation corridors to agricultural areas reduces costs associated with transporting commodities, and the reliability of these arteries is necessary to ensure delivery and equitable distribution of commodities and commensurate compensation to producers.

5.9.5 Local Coastal Program Consistency

5.9.5.1 Local Coastal Program Consistency Analysis Summary

Certified LCPs for Encinitas and Carlsbad include policies that mirror, in part, the requirements of Sections 30241 and 30242 of the Coastal Act that speak to preserving Prime Farmland and agricultural production. Where PWP/TREP improvements would affect agricultural resources, the corridor LCPs include a variety of policies to implement the requirements of Sections 30241 and 30242 of the Coastal Act. Because there is no potential for impacts to agricultural lands located within the cities of San Diego, Del Mar, Solana Beach, or Oceanside, no LCP policy conflicts would occur. The following summary discussion thus focuses on the certified policies of the cities of Encinitas and Carlsbad LCPs.

City of Encinitas

The City of Encinitas LCP designates a Special Study Overlay for Agricultural Land and includes the following policies to protect agricultural resources within the city and its sphere of influence:

- Preserve and promote the right to produce unique horticultural crops and community gardens.
- Encourage preserving “prime” agriculture lands within its sphere of influence.
- The Ecke Holdings, et al., are within the City of Encinitas’ Coastal Zone sphere of influence ... The City recognizes this land as “prime” agriculture suitability and as such, designates it for long-term preservation as “Agriculture/Open Space Preserve.”
- Plan for compatible land uses within and adjacent to recreation areas, natural preserves, and agricultural areas.

The proposed highway improvements within Encinitas would, for the most part, result in only minimal encroachment and edge impacts along the existing I-5 highway corridor to three agricultural properties for a total of 8.6 acres. These impacts would be restricted to the edge of the agricultural lands and would not adversely affect the productivity of the sites nor would the proposed improvements preclude continued agricultural activities on the sites; however, proposed highway improvements would result in the loss of approximately 8.4 acres of agricultural land at Manchester Avenue, which according to the Agricultural Viability Analysis conducted for the subject parcel(s), would not affect the ability for continued agricultural use of the property. Although the three parcels potentially affected by the highway improvements do not meet the Coastal Act’s standards for prime agricultural land, because the city’s LCP speaks to preserving and promoting the right to produce unique horticultural crops, a potential policy conflict occurs, requiring amendment to ensure consistency of the PWP/TREP improvements with the certified LCP.

As such, SANDAG and Caltrans will seek amendments to the City of Encinitas LCP, for which the standard of review would be Section 30242 of the Coastal Act. Should the PWP/TREP be found inconsistent with Section 30242 of the Coastal Act, the LCP amendment process may further allow the PWP/TREP to be analyzed for conflict resolution under Section 30007.5 of the Coastal Act. Section 5.10 evaluates the PWP/TREP improvements under the Coastal Act’s conflict resolution provision (Section 30007.5). The conflict resolution analysis concludes that denying or modifying the PWP/TREP to avoid

the impacts to agricultural resources discussed in this section would conflict with several other Chapter 3 policies of the Coastal Act and, approving the PWP/TREP is, on balance, the most protective of significant coastal resources. Thus, the Coastal Commission could potentially rely on the conflict resolution provisions of the Coastal Act when considering an LCP Amendment that would allow this development in Encinitas.

City of Carlsbad

The City of Carlsbad LCP includes an extensive set of policies that address preserving and converting agricultural lands, and mitigating conversion of such lands when permitted pursuant to the LCP. As discussed in the Coastal Act consistency analysis above, the majority of agricultural resource impacts from the proposed improvement would be linear in nature and would result in minor, incremental encroachment into adjacent agricultural lands that would not adversely affect the agricultural productivity or operations of those lands. Proposed highway improvements would only affect approximately 2.3 acres of Prime and Unique Farmland at Cannon Road. The location of this impact would occur in the Agua Hedionda Lagoon planning area of the city, which is the only uncertified segment of the City's certified LCP. As such, the Coastal Commission retains permit jurisdiction in this area with the standard of review for the proposed improvements being the Chapter 3 policies of the Coastal Act; however, the policies contained within the certified Land Use Plan component of the Agua Hedionda Lagoon segment can be used as guidance. The Agua Hedionda Land Use Plan includes agricultural policies that state conversion of any agricultural property must be consistent with the policies of the Coastal Act, as well as site-specific policies for south shore agricultural lands. The PWP/TREP proposes implementation of either a project-specific agricultural mitigation project, such as acquiring, enhancing, or restoring other lands for agricultural use and/or establishing a school or community garden, or payment of an in-lieu fee to the City's certified Agricultural Conversion Mitigation Fee program to offset any impacts to coastal agricultural resources. Although the City's LCP does not extend to the Agua Hedionda Lagoon planning area, the City is looking into processing an LCP Amendment to allow for such, which would be applicable to offsetting PWP/TREP impacts. A previous LCP Amendment application, known as the Cannon Road Agricultural/Open Space Zone Amendment, was originally submitted to the Coastal Commission for review in August 2011 but has since been withdrawn. The City anticipates resubmitting this amendment to the Coastal Commission, but the timing of the resubmittal has not yet been determined. Until such time that the City's LCP Amendment is certified, the Chapter 3 policies of the Coastal Act will remain the standard of review for this portion of the City's Coastal Zone; therefore, the PWP/TREP improvements do not result in a policy conflict with the City's certified LCP.

6B RESOURCE ENHANCEMENT AND MITIGATION PROGRAM

6B.1 INTRODUCTION

The North Coast Corridor (NCC) includes approximately 30 miles of coastline that is recognized for a number of unique and significant marine and environmentally sensitive habitat areas (ESHA). The Public Works Plan (PWP)/Transportation Restoration Enhancement Program (TREP) planning area has been delineated as the Coastal Zone boundary to the east with the Pacific Ocean as the western boundary, and extending from La Jolla Village Drive in San Diego as the southern boundary to Harbor Drive in Oceanside/Camp Pendleton Marine Corps Base as the northern boundary (Figure 6B-6-1). The coastal watersheds, lagoons, and upland areas in the corridor provide a range of diverse habitats and ecosystems that support a variety of plant and wildlife species. Due to the location of the proposed PWP/TREP improvements, the sensitive habitats traversed by the planned corridor improvements, and the sensitive species living along the corridors, all impacts to coastal resources cannot be avoided. The San Diego Association of Governments (SANDAG) and the California Department of Transportation (Caltrans) have coordinated with the regulatory and resource agencies for many years through the I-5 NCC Project environmental review processes, as well as applicable permit processes for each agency with jurisdictional oversight over resources within the PWP/TREP planning area. The PWP/TREP Resource Enhancement and Mitigation Program (REMP) has been developed to identify compensatory mitigation opportunities to address these unavoidable impacts, and to implement projects that benefit existing natural resources, which exceed standard ratio-based compensatory mitigation programs. The PWP/TREP planning area has been defined as the Service Area for compensatory mitigation opportunities needed to offset impacts associated with approved PWP/TREP transportation infrastructure and community enhancement¹ projects.

6B.1.1 Definitions

Compensatory mitigation is defined by the U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA) as the “restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved” (2008).

Throughout this chapter, the term “enhancement” serves different purposes as it pertains to the regulatory needs of the California Coastal Commission (Coastal Commission) and the USACE. In regards to the Coastal Commission process, enhancement is used in a broad sense akin to resource improvement or benefit. This includes compensatory mitigation projects that would result in varying levels of functional lift to the coastal resources located within the NCC and includes large-scale lagoon-enhancement restoration projects, endowments for lagoon inlet maintenance, and preservation of high quality habitat from the threat of future development.

The following terms are used throughout the chapter but are defined differently for the USACE:

- **Wetland** is defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes and includes those

¹ Throughout this chapter, the term “community enhancements” refers to the suite of bicycle, trail, park, and other pedestrian amenities included within the larger list of PWP/TREP specific projects.

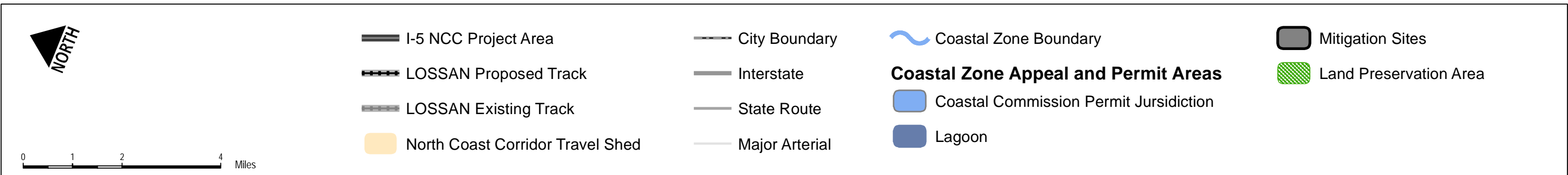
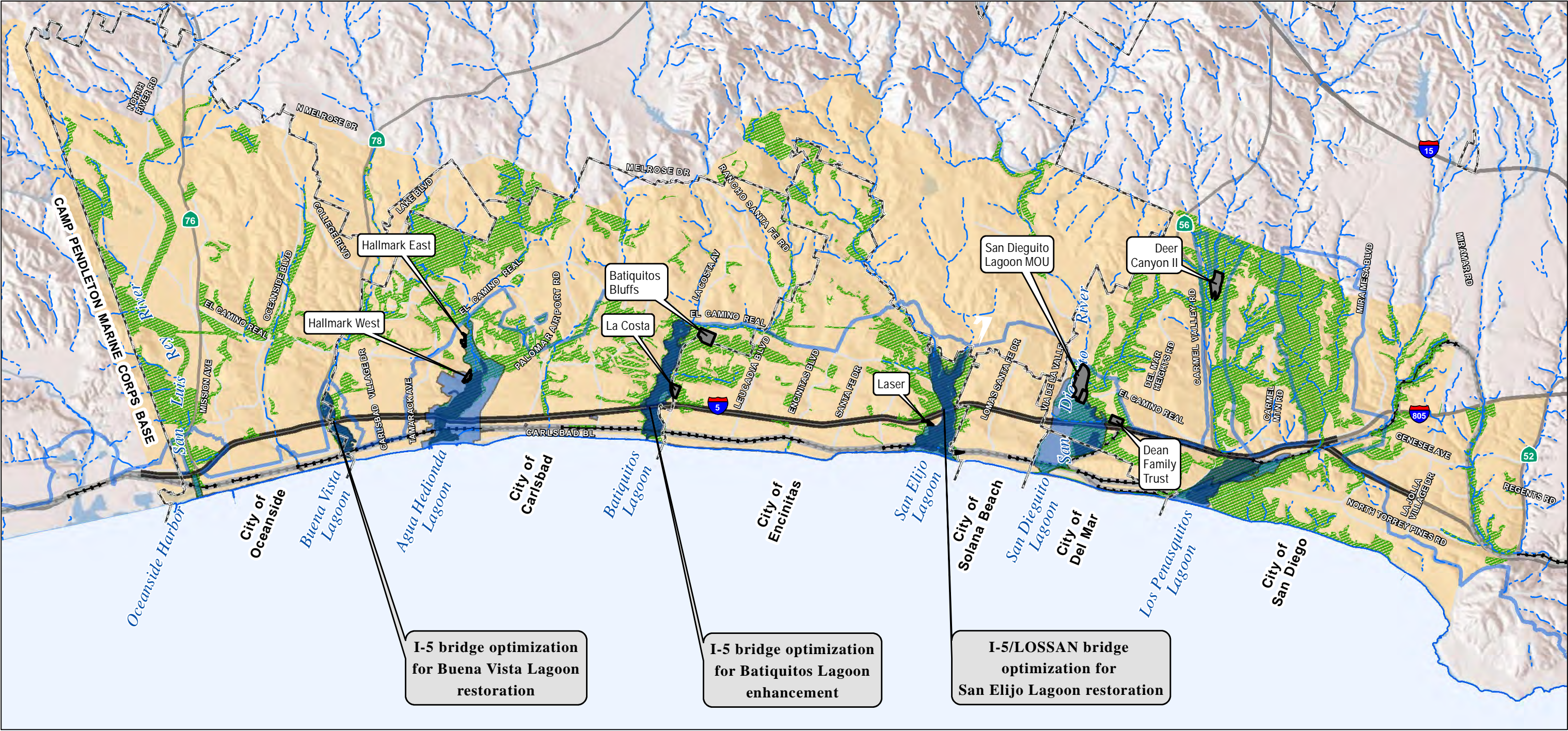
types of wetlands where vegetation is lacking and soil is poorly developed or lacking as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentration of salts or other substances in the substrate. The **upland** limit of a wetland is defined as (A) the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover, (B) the boundary between soil that is predominantly hydric and soil that is predominantly non hydric, or (C) in the case of wetlands without vegetation or soils, the boundary between land this is flooded or saturated at some time during years of normal precipitation, and land that is not.

For the purposes of the USACE and EPA, the following definitions of compensatory mitigation approaches are being utilized in the REMP:

- **Establishment (creation):** Manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area and functions.
- **Restoration:** For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories:
 - ❖ **Re-establishment:** Manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.
 - ❖ **Rehabilitation:** Manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing the natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.
- **Enhancement:** Manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

For other resource agencies, the following definitions apply for **upland** habitat mitigation:

- **Establishment** in uplands is the manipulation of the physical, chemical, or biological characteristics of a site with no existing native habitat to create native habitat. This generally requires grading and planting, or could be extensive clearing, removal of thatch, weeding and planting.
- **Restoration** is the manipulation of the physical, chemical, or biological characteristics of degraded upland habitats to a native habitat through extensive clearing, exotic control, and planting.
- **Enhancement** is the manipulation of the physical, chemical, or biological characteristics that results in improvements to degraded native habitats through weeding and some seeding.



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

FIGURE 6B-1

Resource Enhancement Program Overview

North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

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The proposed REMP employs a combination of measures to mitigate for coastal resource impacts resulting from implementation of the PWP/TREP transportation infrastructure and community enhancement projects. The constrained, primarily built-out condition of the NCC leaves few opportunities for land acquisition typically necessary to implement traditional, ratio-based compensatory mitigation. However, the NCC is home to six major lagoon systems, which represent some of southern California's most significant natural resource areas. These lagoon systems, associated upland habitat, and riparian wetland interface and their contributing watersheds provide large, contiguous areas that support sensitive habitats for a variety of plant and wildlife species, and that provide water quality, flood control, groundwater recharge, and recreational benefits. The NCC's lagoon systems and their habitats are biologically unique and cannot be replicated. As such, the REMP focuses on opportunities to protect the NCC's lagoon systems from potential future degradation and to expand, restore, and/or enhance habitat within these systems. This approach requires comprehensive solutions with efforts focused on ecosystemwide enhancements, including preservation, restoration, and long-term management. The REMP approach to evaluating and implementing compensatory mitigation projects at the regional scale and in advance of PWP/TREP project impacts, and designing lagoon bridges to avoid and minimize project impacts, results in greater benefits to coastal resources throughout the corridor than if only ratio-based, and project- and site-specific compensatory mitigation were employed.

The REMP includes options for allocating funds from SANDAG's Environmental Mitigation Program (EMP) for a variety of regionally significant mitigation opportunities, including the establishment, restoration (re-establishment or rehabilitation), enhancement, preservation, and long-term management of coastal wetlands and adjacent riparian areas, other transitional habitats, and upland habitat areas. These mitigation activities include the following"

- Acquisition of habitat parcels for the REMP because of the sites' contribution to protecting and enhancing NCC lagoon system and watershed functions and services and meeting no net loss requirements through establishment and restoration
- Acquisition, preservation, and if necessary, enhancement, of parcels which contribute to regionally significant resources, including upland habitat areas
- Planning and implementation of regionally significant lagoon restoration projects
- Providing long-term non wasting endowments for two regionally significant lagoons to fill funding gaps for maintenance and management activities
- Funding a Scientific Advisory Committee to provide technical support for the design, implementation, and monitoring of the suite of mitigation activities described in this REMP (see Figure 6B-6-1).

The design of bridges that cross lagoons have been evaluated through intensive hydraulic and sediment transport analyses to allow for full tidal exchange, to restore/improve wildlife movement, and to maximize the avoidance and minimization of direct and indirect impacts of the I-5 widening project as required by the resource and regulatory agencies. These optimized bridges and increased lagoon-channel cross-sectional areas protect existing tidal lagoon system functions and services and do not constrain future options for restoring tidal flows to lagoons that are currently restricted. The optimized bridge lengths and channel configurations are included in the REMP; however, funding for these enhancements would be provided through capital expenditures.

6B.1.2 Program Overview

For the Coastal Commission, the REMP provides for mitigation planning and implementation through the NCC PWP/TREP process to effectively mitigate NCC project impacts in a manner that addresses regionally significant resource needs. For the USACE, the REMP is being utilized as a Planning Level Compensatory Mitigation Plan for permitting individual projects within the NCC that are authorized to use one of the described compensatory mitigation sites. In addition, the REMP is being utilized to guide the development of detailed site-specific Habitat Mitigation and Monitoring Plans (HMMPs) for each of the compensatory mitigation sites in order to support permittee-responsible advance mitigation. For the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), and the San Diego Regional Water Quality Control Board (RWQCB), the REMP is being utilized as the overall compensatory mitigation package for the covered projects. However, pursuant to each agency's jurisdictional authority and purview, agency-specific permits or consultations may result in additional requirements or procedures to be followed for project impacts and mitigation sites. Overall, the REMP provides the planning and implementation framework to ensure that the most-valuable, high-quality compensatory mitigation opportunities in the NCC are identified, secured, and prioritized for implementation in a manner that cost-effectively utilizes available mitigation funding to maximize benefits to the natural resources with the NCC.

6B.1.3 Funding

The *TransNet* Extension Ordinance approved by the San Diego voters in November 2004 established an EMP for the advancement of mitigation for resource impacts associated with regional and local transportation projects. The REMP is structured to support the region's efforts to develop a comprehensive regional mitigation strategy utilizing the *TransNet* EMP, to be implemented as an integrated element of the PWP/TREP Implementation Plan and to be utilized by the resource and regulatory agencies in permitting transportation projects within the NCC. The REMP prioritizes expenditure of EMP funds on a corridorwide level, with an emphasis on establishment, restoration, enhancement, and preservation, and improving the ecological functions and services of sensitive NCC habitats in advance of impacts through funding systemwide restoration plans, endowments, and a Scientific Advisory Committee.

6B.1.4 Working Group

The PWP/TREP includes the formation of a REMP Working Group that would include SANDAG, Caltrans and resource and regulatory agency personnel directly involved in permitting of transportation projects, including but not limited to the USFWS, USACE, EPA, NMFS, CDFW, California Wildlife Conservation Board, RWQCB, Coastal Conservancy, and the Coastal Commission. The Working Group will provide oversight and advisory assistance for purposes of prioritizing compensatory mitigation timing and implementation, developing and reviewing of the site-specific HMMPs, and ensuring that specific REMP requirements are achieved. The Working Group will also prioritize and coordinate disbursement of REMP funds for the San Elijo or Buena Vista Lagoon Restoration Projects. The Working Group may advise SANDAG and Caltrans on potential resource benefits of new compensatory mitigation opportunities that may be determined necessary as contingency measures and/or warranting consideration for incorporation into the REMP given their unique value.

6B.2 GOALS AND PROCESS OVERVIEW

6B.2.1 Goals

The overall goal of the REMP is **to enhance and restore the biodiversity and habitat functions and services of critical ecological coastal resources within the NCC as compensatory mitigation in advance of unavoidable impacts associated with planned PWP/TREP transportation projects and community enhancement projects.** This goal is being achieved through the following:

- The acquisition of habitat mitigation parcels for the NCC program in consideration of the sites' contributions to protecting and enhancing NCC lagoon system and watershed functions and services and meeting no net loss requirements through establishment and restoration.
- The acquisition, preservation, and if necessary, the enhancement of parcels which contribute to regionally significant resources, including upland habitat areas.
- Planning and implementation of regionally significant lagoon restoration projects.
- Providing long-term nonwasting endowments for two regionally significant lagoons to fill funding gaps for maintenance and management activities.
- Funding a Scientific Advisory Committee to provide technical support during the design, implementation, and monitoring of the suite of mitigation activities described in this REMP.

All compensatory mitigation sites include long-term nonwasting endowments to fund management in perpetuity. Funding for projects included within the REMP is directed to those sites identified as addressing the most critical ecological needs in the NCC while respecting the project phasing, the mitigation needs identified in the PWP/TREP, anticipated compensatory mitigation requirements by regulatory agencies, and the voter-adopted *TransNet* Expenditure Plan's EMP budget for the NCC. The resource mitigation program is intended to be flexible and adapt to future changes in opportunities, while promoting mitigation in advance of impacts.

The opportunities identified within this REMP, including early acquisition of sites containing high-value habitat for long-term preservation, will be phased ahead of or concurrent with unavoidable impacts from planned PWP/TREP transportation infrastructure and community enhancement projects. Implementing the REMP and individual compensatory mitigation sites in advance of unavoidable impacts will serve to reduce typically required mitigation ratios by reducing the uncertainty of location, type, and quantity of mitigation and reducing temporal loss of habitat acreage, functions, and services from construction-related impacts. In addition, phasing transportation facility infrastructure at sensitive locations has been specifically designed to avoid and minimize impacts, protect existing lagoon system functions and services, and allow for future large-scale lagoon restoration projects.

6B.2.2 Stakeholder and Agency Participation

REMP opportunities and asset evaluations were identified and developed in coordination with various NCC natural resource stakeholders and resource and regulatory agencies. In consultation with these entities, SANDAG and Caltrans have identified several categories of mitigation opportunities (described in the following section), as well as a variety of resource protection options to address regionally significant needs. In some cases, the opportunity to implement site-specific compensatory mitigation efforts has already been secured via land acquisition of suitable restoration sites.

In coordination with stakeholder groups and resource and regulatory agencies, SANDAG and Caltrans have identified two large-scale lagoon restoration and enhancement projects (San Elijo and Buena Vista

lagoons) and one large-scale lagoon establishment project (San Dieguito W-19 property). Technical studies and environmental documents for these projects are being developed and the various stakeholder groups and resource and regulatory agencies are considering implementation of these projects, depending on the alternative chosen, for compensatory mitigation for the NCC transportation projects. SANDAG and Caltrans have been assisting through participation in project planning and provision of funds for technical and environmental studies. In coordination with resource and regulatory agencies, SANDAG and Caltrans funded hydraulic and sediment transport studies to analyze I-5 and Los Angeles-San Diego-San Luis Obispo (LOSSAN) bridge designs at the corridor lagoons to maximize avoidance and minimization of impacts, reduce tidal muting, and restore/improve wildlife movement. These optimized bridge designs in concert with expanded channel dimensions allow for possible future establishment, restoration, and enhancement of tidal wetlands and improved water quality within the lagoons.

6B.2.3 Resource Impacts and Mitigation Opportunities

Table 6B-11 includes the total anticipated permanent impacts resulting from the NCC transportation infrastructure and community enhancement projects to be authorized by the PWP/TREP under the Coastal Act and other regulatory permit mechanisms, such as Clean Water Act Sections 401 and 404 and/or Rivers and Harbors Act Section 10 permit authorization. Table 6B-11 also includes a summary of the compensatory mitigation opportunities (and cost estimates) by type and acreage in order to satisfy regulatory agency permitting requirements. To ensure impacts can be adequately mitigated in advance and to provide contingency mitigation, the mitigation opportunities have been categorized into three “pools.” Combined, these compensatory mitigation opportunities are expected to enhance regionally significant resources beyond traditional project-by-project ratio-based mitigation requirements. In addition, the REMP includes funding for formation of an independent Scientific Advisory Committee made up of scientists charged with providing scientific technical support through the design, implementation, and monitoring of the suite of compensatory mitigation activities described in the REMP.

TABLE 6B-1: PWP/TREP PROJECT IMPACTS AND MITIGATION OPPORTUNITIES SUMMARY

COMPENSATORY MITIGATION OPPORTUNITIES (BY WATERSHED)			COASTAL WETLAND ACRES ESTABLISHED	COASTAL WETLAND ACRES RESTORED	COASTAL WETLAND ACRES PRESERVED/ENHANCED	TOTAL IMPACTS (LOSSAN & I-5) ¹	NO-NET- LOSS WETLAND BALANCE ²	UPLAND HABITAT ACRES ESTABLISHED	UPLAND HABITAT ACRES RESTORED	UPLAND HABITAT ACRES PRESERVED/ENHANCED	TOTAL IMPACTS (LOSSAN & I-5) ¹	NO-NET- LOSS UPLAND BALANCE ²	COST ESTIMATE (INCL. RIGHT-OF- WAY & CONSTRUCTION COSTS) ³
ESTABLISHMENT (NO NET LOSS) – NO NET LOSS POOL													
Los Peñasquitos		Deer Canyon II						14					\$1,600,000.00
San Dieguito		Dean Family Trust							20.8				\$2,650,000.00
		San Dieguito W19	47.3					9.6	19.8				\$48,600,000.00
Batiquitos		Batiquitos Bluffs		2.5					3.7				TBD ⁴
Agua Hedionda		Hallmark (East and West)	4.37	0.97					3.5	6.6			\$9,600,000.00
Corridor Wide Establishment (No Net Loss) Sub Total			51.67	3.47					27.1	50.9			\$62,450,000.00
RESTORATION, ENHANCEMENT, & PRESERVATION – “ENHANCEMENT” POOL													
San Dieguito		Dean Family Trust								1.5			Costs identified, above.
San Elijo		Laser		0.02						4.1			\$1,610,000.00
Batiquitos		La Costa							18.8	\$1,430,000.00			
		Batiquitos Bluffs						39.9	TBD ⁴				
Agua Hedionda		Hallmark (East and West)		0.44						1.8			Costs identified, above.
San Elijo Lagoon Restoration Project													\$90,000,000.00 ⁵
Buena Vista Lagoon Restoration Project													
Corridor Wide Preservation & Enhancement Sub Total					0.46					66.1			\$93,040,000.00
BRIDGE OPTIMIZATION													
Batiquitos I-5 Bridge Lengthening			Included for project avoidance and minimization purposes.										\$8,000,000.00
San Elijo I-5 Bridge Lengthening													\$16,000,000.00
San Elijo LOSSAN Bridge Lengthening (Assumes San Elijo Lagoon Restoration Project Alt 2A)													\$25,100,000.00
Buena Vista I-5 Bridge Lengthening													\$7,000,000.00
Bridge Optimization Sub Total													\$56,100,000.00
LAGOON MANAGEMENT ENDOWMENTS – CONTINGENCY POOL													
Regional Lagoon Maintenance Program		Batiquitos – \$9.50/ cy [est.] Peñasquitos – \$3.90/ cy [actual]	20.7*										\$10,000,000.00
Corridor Wide Lagoon Management Endowments Subtotal			20.7*							\$10,000,000.00			
Corridorwide Project Impact vs. Habitat Establishment, Preservation, Enhancement & Lagoon Management Endowment Totals			72.37	3.47	0.46			39.28 – 40.04	35.8 – 36.56	27.1			50.9
PROJECT PRIORITIZATION/ LAGOON MANAGEMENT TECHNICAL SUPPORT ⁶													
Scientific Advisory Committee			Included to ensure mitigation site success.										\$1,000,000.00
Technical Support Subtotal													\$1,000,000.00

NOTES:

* Caltrans and SANDAG find that establishing an endowment should either be credited 20.7 acres based on hydraulic improvement and habitat creation as a result of maintaining the lagoon mouths at Batiquitos and Los Peñasquitos Lagoons, or it is understood that this endowment would address any potential no-net-loss deficits between credit release and when impacts would occur, as well as any temporal impacts.

¹ Corridorwide impacts identified for the I-5 Locally Preferred Alternative (8+4 with Buffer) combined with LOSSAN Project impacts. See Tables 6B-5 and 6B-6 for detailed project impacts by phase.

² No-net-loss balance totals for purposes of Coastal Commission mitigation do not include preservation acreage.

³ Costs are preliminary and identified for all opportunities, including those to be funded by Environmental Mitigation Program (EMP) (i.e., No-Net-Loss Pool, Enhancement Pool, Lagoon Management Endowments, and Technical Support) or Capital funds (i.e., Bridge Optimization).

⁴ Contingent upon a willing seller and reasonable cost.

⁵ These restoration planning efforts are in process, and final cost estimates are not available at this time. However, it is acknowledged that at least one large-scale lagoon restoration project will be funded in full through the REMP.

⁶ A REMP Working Group to include resource and regulatory agencies will be formed to evaluate, prioritize, and oversee the implementation of the potential compensatory mitigation sites identified in this REMP.

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6B.2.3.1 Temporary Impacts

Temporary impacts to natural resources (e.g., vegetation clearing, access road construction, staging, diversions, etc.) will occur to enable access and construction at PWP/TREP transportation infrastructure and community enhancement project sites. For purposes of adequately addressing potential temporary impacts, disturbances resulting in impacts to natural resources lasting more than 12 months are defined as long-term temporary impacts and must be mitigated beyond same-site restoration. An estimate of long-term temporary impacts associated with implementation of the NCC infrastructure projects is provided in Table 6B-22. The LOSSAN temporary impacts are reflected within the permanent impact estimates for the rail improvements, based on use of a conservative 50-foot-from-centerline footprint within the rail right-of-way.

TABLE 6B-2: LONG-TERM TEMPORARY IMPACTS FOR THE I-5 NCC PROJECT

Habitat Type	Long-term Temporary Impacts* (acres)
Sensitive Upland Habitats	
Baccharis scrub	0.14
Baccharis scrub (disturbed)	1.01
Coastal sage scrub	4.06
Coastal sage scrub (disturbed)	9.20
Maritime succulent scrub	0.22
Native grassland	0.15
Southern maritime chaparral	0.47
Southern maritime chaparral (disturbed)	1.37
Total Temporary Upland Impacts	16.62
Wetland and Riparian Habitats	
Arundo scrub	0.21
Coastal brackish marsh	0.58
Coastal brackish marsh (disturbed)	1.54
Drainage ditch	0.66
Disturbed wetland	0.73
Freshwater marsh	1.36
Freshwater marsh (disturbed)	0.38
Mudflat	0.44
Mulefat scrub	0.00
Open water	2.69
Salt flat	0.04
Coastal salt marsh	2.33
Salt marsh transition	0.21
Southern willow scrub	0.15
Southern willow scrub (disturbed)	1.38
Southern willow scrub/freshwater marsh	0.80
Tidal riprap at bridge abutments	0.03
Waters of the US. (unvegetated channel)	0.08
Total Temporary Impacts to Aquatic Habitats	13.59

* All temporary impacts likely longer than 12 months, impacts to open water may consist of a barge anchored in area.

Long-term temporary impact areas will be returned to preconstruction elevations and contours and revegetated with appropriate native species. Unless restricted due to weather, re-establishing elevations and contours should occur within one month following construction. Revegetation with native species will commence within three months after restoration of preconstruction elevations and contours and be completed within one growing season. If revegetation cannot start due to seasonal considerations, exposed earth surfaces will be stabilized immediately with jute netting, straw matting, or other applicable best management practices to minimize any interim erosion. Restoration plans for all long-term temporary impact areas over 0.5 acre will be prepared for approval by resource and regulatory agencies.

Compensatory mitigation for these long-term temporary impacts to uplands would include either revegetation with native species of other nonnative habitat temporary impact areas (at a 1:1 ratio of replacement to impacts) or the preservation of high-quality native habitat under the threat of development (a 2:1 ratio of preservation to impacts). The suite of activities proposed in the “enhancement pool” listed previously in Table 6B-11 and described below, would be used to mitigate any additional compensatory mitigation requirements for long-term temporary impacts to wetlands and other aquatic habitats. Nearly all construction activities will require access and staging for greater than 12 months; therefore, most temporary impacts addressed through this REMP will be considered long-term temporary impacts. Short-term temporary impacts, or impacts lasting less than 12 months in duration that do not have significant impacts to native habitats or wildlife, will be restored to pre-existing conditions (contours and vegetated condition) immediately following construction.

The “enhancement pool” of opportunities includes large-scale habitat restoration and enhancement projects, as well as preservation of high quality upland habitats. The “enhancement pool” will mitigate for long-term temporary impacts by ensuring long-term protection of natural resources in advance of construction impacts at the regional (NCC project area) scale. See additional discussion in section 6B.4, below.

6B.2.3.2 “No-Net-Loss Pool” – Establishment and Restoration (Re-establishment and Rehabilitation)

The no-net-loss pool of opportunities includes compensatory mitigation sites that have significant establishment and/or restoration components, and would generally result in a net gain in habitat area and/or functions and services. This net gain would directly offset permanent wetland and/or upland ESHA impacts at a 1:1 ratio, provided that the subject mitigation plans are implemented and performing at identified standards ahead of construction impacts associated with PWP/TREP transportation infrastructure and community enhancement projects.

For waters of the U.S., waters of the state, or other aquatic habitats, establishment is the manipulation of the physical, chemical, or biological characteristics to create an aquatic resource that did not previously exist at an upland site resulting in a gain in aquatic resource area and functions. For both wetland and upland habitats, restoration involves the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded resource. Restoration efforts result in a gain in habitat function and habitat area. For the purpose of tracking net gains in aquatic resource area, the USACE and the EPA divide restoration activities into two categories: re-establishment and rehabilitation.

Each establishment or restoration opportunity included in the REMP has a detailed Mitigation Site Assessment (MSA) that describes existing site conditions and potential opportunities for establishment or significant restoration available on the site. MSAs can be located in Appendix H.

6B.2.3.3 “Enhancement Pool” – Restoration, Enhancement, & Preservation

The preservation and enhancement pool of compensatory mitigation opportunities includes sites where permanent preservation of existing and/or potentially enhanced habitat can be achieved. It also includes large-scale lagoon restoration activities intended to improve corridorwide lagoon system function and services and would serve to mitigate indirect impacts, temporal, and long-term temporary impacts resulting from PWP/TREP transportation infrastructure project and community enhancement project impacts, given the resulting benefits to wetland and other aquatic habitats and upland resources, water quality, tidal range, flood control, groundwater recharge, plant and wildlife habitat, and recreation.

Habitat Preservation. Additional PWP/TREP project impact mitigation will be fulfilled by acquisition of parcels containing high-quality upland ESHA, wetland or other aquatic resources, or parcels where enhancement of habitat can occur within the NCC Coastal Zone area, which can be permanently preserved. Habitat preservation would mitigate temporal resource losses and long-term temporary impacts resulting from PWP/TREP project impacts by ensuring long-term preservation of upland ESHA, wetland, or other aquatic resources in advance of construction impacts occurring.

Lagoon Restoration. In recognition of the unique opportunities and value of comprehensive lagoon restoration activities for corridor lagoons, the REMP includes large-scale lagoon ecosystem restoration and enhancement mitigation opportunities, which will result in significant ecological lifts to the San Elijo Lagoon and/or Buena Vista Lagoon systems. The mitigation opportunity includes funding a large-scale lagoon restoration program in full for either San Elijo or Buena Vista Lagoons, which would be in addition to funds already contributed to previous and ongoing planning and technical evaluation activities necessary to facilitate and implement these lagoon restoration programs. Large-scale lagoon restoration in either San Elijo or Buena Vista Lagoons may include, but is not limited to, enhancement and restoration (both types) of wetland and other aquatic resources in the associated lagoons.

In the context of the regional lagoon systems of the NCC and their proximity to the ocean, the intent of the large-scale lagoon restoration funding is to improve the ecological health and hydrological connectivity and to enhance critical coastal resources and habitats. Potential San Elijo and Buena Vista Lagoons' restoration will be eligible for inclusion in the REMP, provided it results in a restored coastal wetland ecosystem that is in alignment with regulatory agency and resource needs in the NCC (and impacts caused by the PWP/TREP transportation project improvements). The REMP measures that contribute to large-scale lagoon restoration opportunities, including funding and critical transportation infrastructure improvements, will be considered a substantial mitigation element for all PWP/TREP project impacts (including temporary long-term impacts) given the resulting wide range of benefits to sensitive habitat for plant and wildlife species, tidal range, water quality, flood control, groundwater recharge, and recreation.

6B.2.3.4 “Contingency Pool” – Endowments and Restoration Infrastructure

The “Contingency Pool” of opportunities is provided to ensure that there are no mitigation (no-net-loss) deficits that could not be adequately addressed in advance of project impacts. Ideally, the Contingency Pool would not be required because impacts would be avoided by careful site planning, implementation, monitoring and management of the sites in the “No-Net-Loss Pool” and “Enhancement Pool.” However, the Contingency Pool can be used for no-net-loss purposes to address any unforeseen circumstance, such as delays in achieving ecological performance standards at mitigation sites within the “No-Net-Loss Pool” or PWP/TREP project impacts occurring prior to release of adequate compensatory mitigation credits.

Lagoon Management Endowments. The REMP includes an endowment component that is intended to increase the capacity for long-term management of the Batiquitos and Los Peñasquitos Lagoons and support stewardship of these resources in perpetuity. This includes, but may not be limited to, funding for maintenance of lagoon inlets and channels deemed necessary to sustain tidal and fluvial flows and reduce sedimentation within these lagoon systems. To ensure that endowment funding is effectively managed, a Long-Term Management Plan indicating the ecological priorities and associated endowment contributions would be created, reviewed, and approved by the resource agencies and the lagoon manager. The Long-Term Management Plan would be created in association with the lagoon manager and be a living document, reflecting current conditions and needs of the lagoon ecosystem. Development of a Long-Term Management Plan for use of the funds at Batiquitos and Los Peñasquitos Lagoons would identify specific tasks covered by the proposed endowment, and would support establishment of long-term goals to ensure appropriate triggers (e.g., likely annually for Los Peñasquitos, every 3 years for Batiquitos, or imminent closure of the lagoon mouth) for when dredging activities would occur and funds would be released. Performance evaluation of the endowment would be evaluated at the end of the first phase of the PWP/TREP Implementation Phasing Plan (approximately 10 years) to ensure that adequate financial resources are in place to cover activities in perpetuity.

Absent the need for financial supplementation to ensure stability, the lagoon management endowments are to be considered supplemental to the enhancement component of the REMP. This endowment would not be applied to the other no-net-loss mitigation, enhancement, and preservation projects included in this REMP, as funding for those sites already reflect a separate, site-specific long-term management endowment in their project costs.

Lagoon Restoration. As discussed previously, the REMP measures that contribute to large-scale lagoon restoration opportunities are considered a substantial mitigation element for all PWP/TREP project impacts. Enhancement efforts within San Elijo and/or Buena Vista Lagoons that may result in a change from current upland or freshwater dominated conditions to tidally influenced habitats may also be used for contingency mitigation, as necessary. Design alternatives for the environmental review of these large-scale lagoon restorations are ongoing, so specific acreage amounts are not presently available. The determination of acreage amounts for these potential future habitat changes that would qualify for contingency mitigation credit, as well as performance standards to measure and monitor the success of the restoration efforts, would occur pursuant to future Notice of Impending Development (NOID) or Coastal Development Permit (CDP) submittals and in discussions with the REMP Working Group.

Other Contingency Opportunities. Modifications to Coast Highway, possibly including replacement of the culverts with a bridge or larger culverts, or other NCC transportation infrastructure currently representing a significant constraint to a lagoon system, could be considered by the Working Group in the future to offset potential no-net-loss deficits, as needed. However, these facilities are not within the LOSSAN or I-5 right-of-way and therefore are not included in the scope of PWP/TREP improvements.

6B.2.3.5 Bridge Optimization

Bridge optimization projects are specifically funded through capital expenditures and are designed to avoid and minimize project impacts and protect existing lagoon system functions and services. At several crossings, the optimized bridges will also allow for large-scale lagoon restoration projects that are needed as compensatory mitigation within the “Enhancement Pool.” Bridge optimization projects involve lengthening lagoon bridges and expanding lagoon channel dimensions along the I-5 highway

and LOSSAN rail corridors to improve existing tidal and fluvial flows, which will enhance wetland habitats, water quality within the lagoons, and wildlife movement.

6B.2.3.6 Lagoon Management Technical Support

Scientific Advisory Committee. The REMP provides funding for a Scientific Advisory Committee made up of independent scientists. The committee will provide technical advice, as necessary, regarding the design, implementation, and monitoring of mitigation projects described in this REMP. Funding for the committee would cover the time, expenses, and materials needed by scientists to complete their tasks. The committee will be directed by the REMP Working Group and will oversee the development or modification of ecological performance standards, monitoring methodology (techniques and timing), and actual monitoring of site performance. The REMP Working Group will recommend adaptive management measures to ensure site success and review monitoring reports, as necessary.

6B.3 EVALUATION FRAMEWORK

SANDAG and Caltrans have developed a suite of REMP evaluation classifications to assist in matching the various mitigation opportunities identified for the PWP/TREP with the type and/or level of impact and timing of implementation.

The list below defines the criteria used to assess the various types of mitigation opportunities available to meet the needs of the PWP/TREP. The mitigation opportunity assets have been broken down into categories to clearly demarcate and define the suite of opportunities that are available to mitigate for the various types of impacts that are expected with implementation of the PWP/TREP transportation infrastructure and community enhancement projects. Table 6B-44 lists each REMP opportunity by site name, outlines the type of associated mitigation anticipated on-site, and identifies the evaluated assets that are provided by that particular opportunity.

6B.3.1 Mitigation Types

- **Opportunities that are “shovel ready.”** A project is considered “shovel ready” if the site has been secured, purchased, or is in escrow, and planning, design and permitting are underway.
- **Opportunities with strong stakeholder support.** Mitigation projects that have stakeholder support are those that have a willing landowner, are supported by elected officials and community members, and have funding or expressed support from other stakeholders potentially affected by the proposed actions.
- **Opportunities that provide significant watershed-focused ecosystem improvements.** Within the watersheds of the NCC, several watershed-focused mitigation opportunities exist. These projects serve to substantially restore, enhance, and protect different habitat types within the lagoon watershed where the impacts occur. Such projects improve the habitat and functions typically provided by the affected aquatic resource.
- **Opportunities with high ecological benefit for a given cost.**
- **Opportunities with guaranteed funding for long-term maintenance and management.**
- **Opportunities that provide a unique value, which would not likely be available or would be more costly in the future (e.g., a lost opportunity).** Several mitigation projects extinguish development potential through preservation efforts and/or conservation easements post-mitigation implementation efforts thereby preserving the unique habitat values that persist on the site.

Table 6B--33 lists the proposed suite of mitigation opportunities and their associated REMP funding and capital costs. Table 6B-44 and Table 6B--33 aim to depict the differences in opportunities, exhibiting those that sustain a stronger nexus for meeting the most critical ecological needs while respecting the phasing requirements for transportation project development identified in the PWP/TREP, and greater feasibility and flexibility for timely resource mitigation project implementation.

TABLE 6B-3: MITIGATION PROJECTS AND ESTIMATED FUNDING ALLOCATIONS

Mitigation Site	Funding (Millions \$2012) ²	Capital Cost (Millions \$2012)
No-Net-Loss Pool		
San Dieguito W19 Restoration Site	\$48.6 ³	—
Hallmark East and West Mitigation Site	\$9.6	—
Batiquitos Bluffs Mitigation Site	TBD ⁴	—
Dean Parcel Mitigation Site	\$2.65	—
Deer Canyon II Mitigation Site	\$1.6	—
<i>Subtotal</i>	<i>\$4.25</i>	<i>—</i>
Enhancement Pool		
Laser Parcel Preservation Site	\$1.61	—
La Costa Parcel Preservation Site	\$1.43	—
San Elijo Lagoon Restoration Project	\$90.0 ⁵	—
Buena Vista Lagoon Restoration Project		—
<i>Subtotal</i>	<i>\$903.04</i>	<i>—</i>
Bridge Optimization		
Batiquitos I-5 Bridge Lengthening	--	\$8.0
San Elijo I-5 Bridge Lengthening	--	\$16.0
San Elijo LOSSAN Bridge Lengthening Assumes SELRP Alt 2A	--	\$25.1
Buena Vista I-5 Bridge Lengthening	--	\$7.0
<i>Subtotal</i>	<i>--</i>	<i>\$56.1</i>
Contingency Pool		
Lagoon Management/Endowment for Los Peñasquitos & Batiquitos Lagoons	\$10.0	—
<i>Subtotal</i>	<i>\$10.0</i>	<i>—</i>
Lagoon Management Technical Support⁶		
Scientific Advisory Committee	\$1.0	—
<i>Subtotal</i>	<i>\$1.0</i>	<i>—</i>
PROGRAM TOTAL	\$166.49	\$56.1

² All compensatory mitigation projects include funding for long-term maintenance and management.

³ This cost could be increased if Southern California Edison (SCE) requires SANDAG to pay for a portion of lagoon mouth maintenance activities, although SCE received acreage of credit for keeping the lagoon mouth open.

⁴ Contingent upon willing seller, and reasonable price.

⁵ These restoration planning efforts are in process, and final cost estimates are not available at this time. However, at least one large-scale lagoon restoration at Buena Vista Lagoon or San Elijo Lagoon will be funded in full through the REMP provided that it results in a restored coastal wetland ecosystem that is in alignment with regulatory agency and resource needs in the NCC (and impacts caused by the NCC program of improvements).

⁶ An interagency advisory committee will be formed to evaluate, prioritize, and oversee the implementation of mitigation (establishment (no net loss), restoration, and preservation/enhancement) projects.

TABLE 6B-4: ASSESSMENT OF POTENTIAL MITIGATION PROJECTS

Mitigation Site	Mitigation Type				Mitigation Status					
	No-Net Loss Establishment & Re-Establishment	Restoration (Rehabilitation)	Preservation & Enhancement	Hydraulic Lift	"Shovel Ready"	Stakeholder Support	Watershed-Focused Ecosystem Enhancement	High Ecological Benefit to Cost Ratio	Long-term Maintenance & Management	Provides a Unique Value or Opportunity
Establishment / No Net Loss – No-Net-Loss Pool										
San Dieguito Lagoon W19	Upland (9.6 ac Re-Establishment wetland (47.3 ac) establishment		Upland (19.8) enhancement		Site secured and planning underway	SANDAG/CT/resource agencies in discussions to move forward with conceptual plans	Provides connectivity to adjacent lagoon system enhancement efforts (SONGS)	76.7 ac establishment (wetland & upland) & enhancement at approx. \$634K per ac	SANDAG/CT will provide management endowment to be managed by San Dieguito JPA	Supports ongoing enhancement efforts & improves tidal function
Hallmark (East/West)	Upland (3.5 ac) & wetland (4.37 ac) establishment	Upland (6.6 ac) & wetland (0.97 ac) restoration	Upland (1.8 ac) & wetland (0.44 ac) preservation		Sites purchased and planning underway; I-5 NCC Project EIR/EIS underway	SANDAG/CT/resource agencies in discussions to move forward with conceptual plans	Provides connectivity to adjacent lagoon system	17.68 ac establishment, enhancement & preservation (upland & wetland) at approx. \$543K per ac	SANDAG/CT will provide management endowment	Extinguishes development potential near Agua Hedionda & preserves high quality habitat
Dean Family Trust		Upland restoration (20.8 ac)	Upland preservation (1.5 ac)		Site purchased and planning underway; I-5 NCC Project EIR/EIS underway	SANDAG/CT/resource agencies in discussions to move forward with conceptual plans	Provides connectivity to adjacent lagoon system enhancement efforts (SONGS)	22.3 ac establishment & preservation (upland) at approx. \$119K per ac	SANDAG/CT will provide management endowment	Extinguishes development potential near San Dieguito & preserves high quality habitat
Batiquitos Bluffs		Upland (3.7 ac) & wetland (2.5 ac) restoration	Upland preservation (39.9 ac)		Site contingent on willing seller; planning underway	SANDAG/CT/resource agencies in discussions to move forward with conceptual plans	Provides connectivity to adjacent lagoon system	46.1 ac restoration (upland & wetland) & preservation (upland) with a cost ratio TBD.	SANDAG/CT will provide management endowment	Extinguishes development potential near Batiquitos & preserves high quality habitat
Deer Canyon II	Upland re-establishment (14 ac)				Site in escrow for purchase and planning underway	SANDAG/CT/resource agencies in discussions to move forward with conceptual plans	Provides connectivity to adjacent Pardee/Deer Canyon enhancement efforts in Peñasquitos watershed	14 ac establishment (upland) at approx. \$110K per ac	SANDAG/CT will provide management endowment after site is restored and turned over to City of San Diego	Expands establishment of uplands in the Carmel Creek drainage of the Peñasquitos watershed & supports ongoing enhancement efforts
Restoration & Preservation/Enhancement – Enhancement Pool										
Laser			Upland (4.1 ac) & wetland (0.02) preservation		Site purchased; I-5 NCC Project EIR/EIS underway	SANDAG/CT/resource agencies in discussions to move forward with long-term management	Provides connectivity to adjacent lagoon system and future enhancement efforts (SELRP)	4.12 ac preservation (upland & wetland) at approx. \$322K per ac	SANDAG/CT will provide management endowment to San Elijo Lagoon Conservancy for management	Extinguishes development potential near San Elijo & preserves high quality habitat
La Costa			Upland preservation (18.8 ac)		Site purchased; I-5 NCC Project EIR/EIS underway	SANDAG/CT/resource agencies in discussions to move forward with long-term management	Provides connectivity to adjacent lagoon system and ongoing enhancement/ maintenance efforts	18.8 ac preservation (upland) at 6-17pprox.. \$72K per ac	SANDAG/CT will provide management endowment	Extinguishes development potential near Batiquitos & preserves high quality habitat
San Elijo Lagoon Restoration Project (SELRP)		Offers large-scale upland and wetland establishment & enhancement at San Elijo Lagoon			Environmental permit review processes underway (pending selection of alternative)	Strong support associated with SELRP	Facilitates system-wide improvements associated with SELRP	Pending selection of alternative & approval of conceptual plans by resource agencies	SANDAG/CT will provide management endowment as part of SELRP	Supports ongoing enhancement efforts & provides new hydraulic connections and halts loss of mudflat habitat
Buena Vista Lagoon Restoration Project		Offers large-scale wetland establishment & enhancement at Buena Vista Lagoon			Environmental permit review processes underway (pending selection of alternative)	Strong support associated with BVLRP	Facilitates system-wide improvements (pending selection of alternative)	Pending selection of alternative & approval of conceptual plans by agencies	SANDAG/CT will provide management endowment as part of BVLRP	Supports ongoing enhancement efforts

TABLE 6B-4: ASSESSMENT OF POTENTIAL MITIGATION PROJECTS (CONTINUED)

Mitigation Site	Mitigation Type				Mitigation Status					
	No-Net Loss Establishment & Re-Establishment	Restoration (Rehabilitation)	Preservation & Enhancement	Hydraulic Lift	"Shovel Ready"	Stakeholder Support	Watershed-Focused Ecosystem Enhancement	High Ecological Benefit to Cost Ratio	Long-term Maintenance & Management	Provides a Unique Value or Opportunity
Bridge Optimization										
Batiquitos I-5 Bridge Lengthening				Meets optimization goals for lagoon	Optimization study complete; I-5 NCC Project EIR/EIS underway	Strong support among resource agencies & lagoon foundations	Provides new intertidal habitat, reduces tidal muting/lag times & reduces historic wetland fill	Based on current and ongoing maintenance & dredging programs	SANDAG/CT will provide management endowment to support ongoing maintenance	Supports ongoing enhancement efforts & provides new hydraulic connections
San Elijo I-5 Bridge Lengthening (See Lagoon Restoration Above)	Supports establishment efforts within San Elijo through increasing hydrology east of I-5	Supports enhancement efforts within San Elijo through increasing hydrology east of I-5		Meets optimization goals for lagoon restoration alternatives	Optimization study complete; I-5 NCC Project EIR/EIS and SELRP EIR/EIS underway	Strong support among resource agencies & lagoon foundations	Facilitates SELRP, reduces tidal muting/lag times & reduces historic wetland fill	Pending selection of SELRP alternative; proposed bridge length same for all alternatives	SANDAG/CT will provide management endowment to support ongoing maintenance	Supports ongoing enhancement efforts & provides new hydraulic connections
San Elijo LOSSAN Bridge Lengthening (Assumes SELRP Alt 2A)	Supports establishment efforts within San Elijo through increasing hydrology	Supports enhancement efforts within San Elijo through increasing hydrology		Meets optimization goals for lagoon restoration alternatives	Optimization study complete; SELRP EIR/EIS underway	Strong support among resource agencies & lagoon foundations	Facilitates SELRP, reduces tidal muting/lag times & reduces historic wetland fill	Pending selection of SELRP alternative	SANDAG/CT will provide management endowment to support ongoing maintenance	Supports ongoing enhancement efforts & provides new hydraulic connections
Buena Vista I-5 Bridge Lengthening				Meets optimization goals for potential future enhancement project alternatives	Optimization study complete; I-5 NCC Project EIR/EIS underway	Strong support among resource agencies	Facilitates Buena Vista Lagoon enhancement and fluvial flows			Supports potential future lagoon enhancement efforts
Lagoon Management Endowments – Contingency Pool										
Lagoon Management/ Endowment for Los Peñasquitos and Batiquitos Lagoons		Offers restoration and enhancement through inlet maintenance/ dredging in accordance with agency requirements		Meets optimization goals for lagoons for long-term maintenance and enhancement	An endowment account and an oversight committee to be established	Strong support among resource agencies & lagoon foundations	Facilitates system-wide improvements through ongoing maintenance	Based on current and ongoing maintenance & dredging programs	SANDAG/CT will provide management endowment to support ongoing maintenance	Supports ongoing enhancement efforts & provides continued funding to assure uninterrupted hydraulic connections

6B.3.2 Potential Mitigation Opportunities

It is recognized that new opportunities for various types of resource improvements may become available in the corridor after approval of the PWP/TREP and authorization by other resource and regulatory agencies, due to factors such as additional funding availability, completed habitat restoration plans, or land acquisition options. In addition, some mitigation opportunities that would promote large-scale resource protection may be considered more critical for the region, while others that would contribute to improving a smaller area within the corridor may be considered less necessary for achieving regional goals. Widespread improvements to natural resources in the NCC require a unique, comprehensive approach with input from multiple resource and regulatory agencies and stakeholders. These factors make it necessary to maintain flexibility when considering the most appropriate mitigation opportunities.

The REMP is the framework used to describe the corridorwide compensatory mitigation opportunities available at this time. The REMP framework provides flexibility for supplementing the mitigation opportunities package when new opportunities arise, which could be authorized by amending the REMP to include new mitigation opportunities associated with future Coastal Commission approvals (project-specific NOIDS, CDPs or federal consistency review as applicable) and for authorization by other resource and regulatory agencies (see Section 6B.3.3, below).

6B.3.3 Implementation Framework

The REMP Implementation Framework includes, as an integral element of the PWP/TREP Implementation Phasing Plan, advance compensatory mitigation to ensure no net loss of resource functions and services at any time within the NCC by avoiding temporal losses during construction activities. In addition, implementation of multiple transportation projects requires consideration of their synergy with other planned improvements in the corridor. For example, replacement of the I-5 highway bridge at San Elijo Lagoon should be installed concurrently with the replacement of the LOSSAN rail bridge at the new inlet, if needed, and with implementation of the San Elijo Lagoon Restoration Project, to avoid unnecessary impacts in the lagoon, limit temporary impacts by sharing access and staging areas, and better ensure restoration project success.

The REMP Implementation Framework is designed to achieve the overall goal of the REMP to enhance and restore the biodiversity and habitat functions and services of critical ecological coastal resources within the NCC as compensatory mitigation in advance of unavoidable impacts associated with planned transportation and community enhancement projects by focusing on meeting six primary objectives:

- To provide a Planning Level Compensatory Mitigation Plan to facilitate the review and authorization of individual PWP/TREP projects by regulatory agencies that have maximized avoidance and minimized resource functions and services.
- To provide a framework for developing site-specific HMMPs and Long Term Management Plans (LTMPs) for each REMP mitigation project (except HMMPs are not required for pure preservation projects, as discussed later in this chapter).
- To provide phasing that appropriately balances PWP/TREP transportation infrastructure and community enhancement project impacts with compensatory mitigation projects that achieve no net loss of natural resource acreage or functions and services within the NCC at any time.
- To initiate implementation of the identified mitigation opportunities immediately upon REMP approval to achieve advance mitigation.

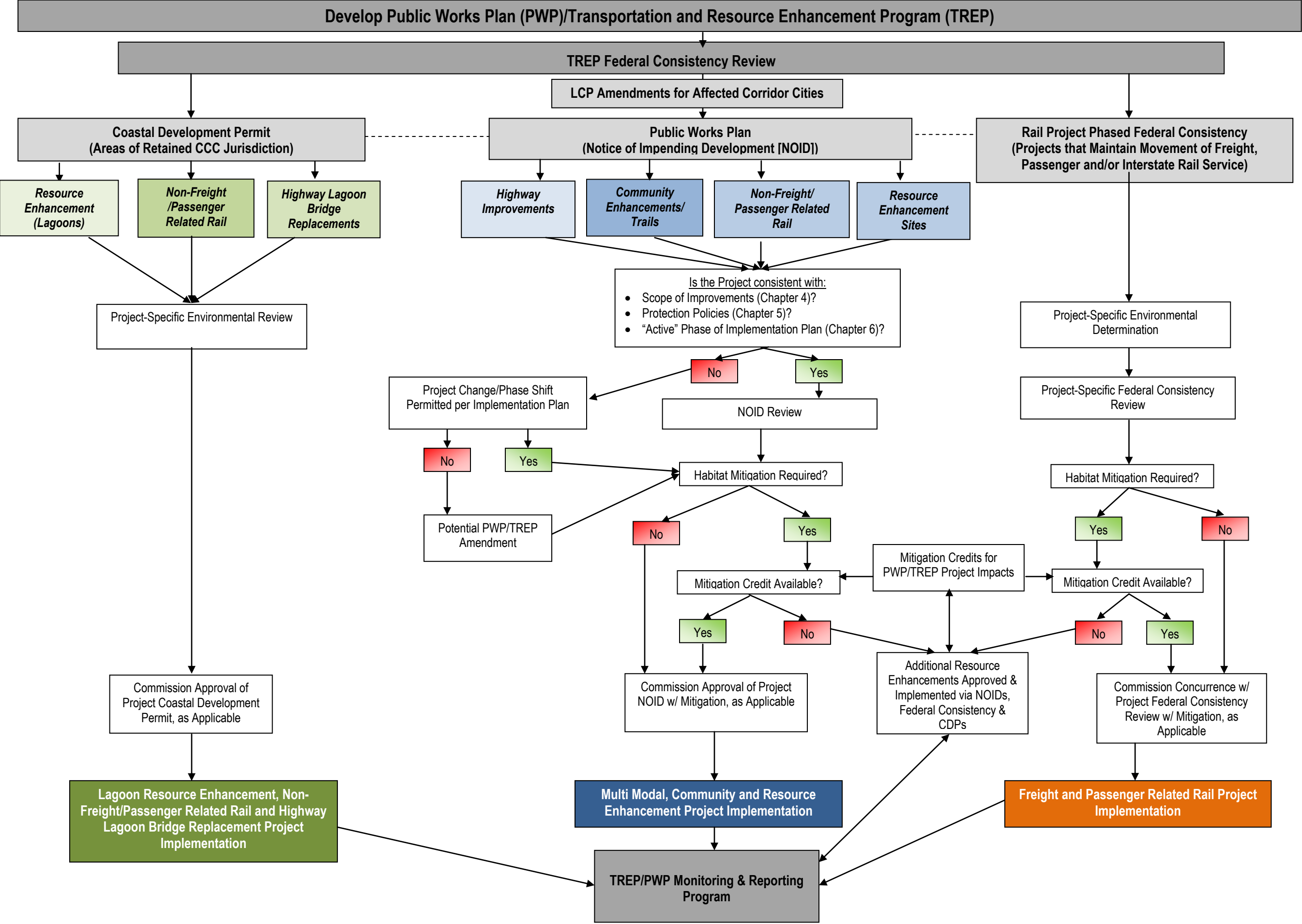
- To establish a track record of effective project implementation and stewardship.
- To provide the basis for monitoring and adaptive management that will inform the long-term implementation of the REMP and the effectiveness of specific infrastructure improvements and mitigation efforts.

Tables 6B-5 and 6B-6 identify the PWP/TREP Implementation Phasing Plan for transportation infrastructure and community enhancement project impacts and corresponding compensatory mitigation. The Implementation Phasing Plan was developed to allow for resource credits to be available in advance of each phase of the PWP/TREP projects. As described previously, each phase of PWP/TREP projects and associated mitigation will be submitted to the applicable agencies for their review and approval as part of their permit processes. The agencies would issue authorizations to proceed prior to final PWP/TREP project submittal to the Coastal Commission for approval as a part of a NOID, CDP, or federal consistency review submittal (see Figure 6B-2 for a summary overview of the Coastal Commission approval processes). Overall PWP/TREP project impact and REMP accounting will be tracked with a single-credit ledger that tracks project implementation timing, permanent and temporary impacts, and credit establishment and release. Post-construction reports would be submitted to resource and regulatory agencies for every authorized PWP/TREP project to include as-build reports, final delineation of permanent and temporary impacts, and a summary of the initial activities required to restore temporary impact areas. The PWP/TREP credit ledger will be updated according to the final post-project construction reports. The accounting system will ensure that the overall program implementation is consistent with approved impacts, and that it meets required compensatory mitigation requirements and overall resource benefits within the NCC.

Compensatory mitigation site maintenance and monitoring will be tracked and reported pursuant to final, site-specific HMMPs and annual site monitoring reports submitted to the REMP Working Group and resource and regulatory agencies as appropriate to ensure that the overall program implementation is consistent with agency-approved impacts and that it meets the required mitigation and resource benefits identified in the PWP/TREP Implementation Phasing Plan. Each compensatory mitigation site will have independent funding and an HMMP. If recommendations for adaptive management and remedial measures are made by the restoration or resource manager, or by the REMP Working Group, they will occur within the first appropriate season following recommendation, thus ensuring REMP compensatory mitigation sites meet established performance standards. In most cases, problems on a mitigation site can be corrected through additional grading, planting, weeding, or soil amendment. However, if a site develops a fatal flaw that cannot be corrected on-site, SANDAG and Caltrans (with consultation and direction from the REMP Working Group and resource and regulatory agencies, as appropriate) will coordinate to identify and implement alternate mitigation.

In addition, the PWP/TREP Implementation Phasing Plan ensures that all PWP/TREP compensatory mitigation projects are reviewed and monitored as a part of the development review process for all transportation infrastructure and community enhancement projects included in the PWP/TREP, regardless of the specific Coastal Commission approval process required for each REMP project. The PWP/TREP Implementation Phasing Plan also includes a monitoring and reporting program that will provide a yearly “checklist”-type assessment and summary of information and updates to the Implementation Phasing Plan framework in order to document projects and associated mitigation requirements completed, and to assess cumulative PWP/TREP phase impacts, benefits and available resource mitigation credits for future project and/or phase implementation as identified in the compensatory mitigation credit ledger. This annual report will be submitted to the REMP Working Group and the Scientific Advisory Committee for large-scale no-net-loss wetland mitigation and restoration projects, as defined in approved site-specific HMMPs, for review and written approval.

FIGURE 6B-2: TREP, PWP/NOID, AND CDP COASTAL COMMISSION APPROVAL PROCESS



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6B.4 CREDIT ESTABLISHMENT AND RELEASE

A compensatory mitigation “credit” is a unit of measure (e.g., an acre, linear foot, functional or conditional measure or other suitable metric) representing the accrual or attainment of aquatic or terrestrial area and functions at a mitigation site. The REMP credits will be further defined in the site-specific HMMPs by the mitigation type (establishment, re-establishment, rehabilitation, enhancement, or preservation), the resource type (nonwetland waters of the U.S., wetlands waters of the U.S., aquatic resource buffer (i.e., riparian and uplands), and habitat type (tidal wetlands, freshwater wetlands, riparian, sage scrub, etc.).

Mitigation credit availability is based on the timing of site-specific HMMP approval, mitigation project implementation, and attainment of specific site protections and project performance criteria. The REMP coordinates with the larger PWP/TREP Implementation Phasing Plan to ensure mitigation credits are available when PWP/TREP projects are implemented to ensure resource protections are in advance to the maximum extent possible, while achieving a balance of transportation infrastructure and community enhancement projects in each phase. Under these procedures, a percentage of mitigation credits will be released at the time the final site-specific HMMP and LTMPs (draft and/or final) are approved by resource and regulatory agencies and both site protections and funding mechanisms are secured. Additional percentages of mitigation credits will be released after site grading and planting is complete (as-builts), and interim performance standards are achieved. If PWP/TREP projects were scheduled to occur in advance of release of adequate mitigation credits (i.e., a mitigation credit deficit would result from project implementation that could not be fully covered by the contingency mitigation credit available from the lagoon management/endowments), traditional mitigation ratios would be triggered and applied as follows: 2:1 (mitigation to impact) for uplands and 4:1 (mitigation to impact) for wetlands. See the specific credit release schedules described below.

The following credit release is for **pure preservation mitigation sites** (for Coastal Commission purposes to be utilized as mitigation for temporal losses associated with long-term temporary impacts; an HMMP is not required for a pure preservation mitigation site):

- **Release 1:** 25% of the total anticipated waters of the U.S., state wetland, transitional habitat, and upland habitat credits upon resource and regulatory agency approval of the site for compensatory mitigation, written proof the site was purchased in full, and submission of a Draft LTMP.
- **Release 2:** 25% of the total anticipated waters of the U.S., state wetland, transitional habitat, and upland habitat credits (50% cumulative total) upon resource and regulatory agency approval of the Final LTMP and draft site protection mechanism.
- **Final Release:** 50% of the total anticipated waters of the U.S., state wetland, transitional habitat, and upland habitat credits (100% cumulative total) upon identification of the resource and regulatory agency-approved land manager and 100% of the Endowment Fund has been provided. If an agency-approved land manager has not been determined at the time of the Final Release, Caltrans will assume the role of land manager in perpetuity or until such time as an agency-approved land manager can be determined. Release 2 is a prerequisite for the Final Release.

The following credit release is for **tidal wetland compensatory mitigation sites** based on a 10-year monitoring schedule (for Coastal Commission purposes to be utilized for permanent impacts to wetland resources):

- **Release 1:** 15% of the total anticipated waters of the U.S. and state wetland credits upon resource and regulatory agency approval of the final HMMP, final LTMP, draft site protection mechanism, and 100% of the Endowment Fund.
- **Release 2:** Up to an additional 15% of the total anticipated waters of the U.S. and state wetland credits (30% cumulative total) when construction and plantings are completed and as-built drawings have been reviewed by resource and regulatory agencies and approved by the USACE and Coastal Commission in writing. Release 1 is a prerequisite for Release 2.
- **Release 3:** Up to an additional 10% of the total anticipated waters of the U.S. and state wetland credits (40% cumulative total) when the Third Year Performance Standards have been attained, as documented in an annual monitoring report. Release 2 is a prerequisite for Release 3.
- **Release 4:** Up to an additional 10% of the total anticipated waters of the U.S. and state wetland credits (50% cumulative total) when the Fifth Year Performance Standards have been attained as documented in an annual monitoring report. Release 3 is a prerequisite for Release 4.
- **Release 5:** Up to an additional 25% of the total anticipated waters of the U.S. and state wetland credits (75% cumulative total) when the Seventh Year Performance Standards have been attained as documented in an annual monitoring report and a waters of the U.S. and the state jurisdictional determination and delineation has been submitted. Release 4 is a prerequisite for Release 5.
- **Final Release:** Up to an additional 25% of waters of the U.S. and state wetland credits (100% cumulative total) when:
 - The Final Monitoring Report as required by the final HMMP has been submitted.
 - Final Performance Standards have been attained.
 - Any required remedial actions are completed and deemed successful.
 - Any additional performance standards required as a result of required remedial actions have been attained.
 - The site has been successfully transferred to the resource and regulatory agency-approved long-term manager.

If an agency-approved long-term land manager has not been determined at the time of the Final Release, Caltrans will assume the role of land manager in perpetuity or until such time as an agency-approved land manager can be determined. Release 5 is a prerequisite for the Final Release.

The following credit release is for all **upland and nontidal wetland and other aquatic resource** compensatory mitigation sites (for Coastal Commission purposes to be utilized for permanent impacts to upland habitats):

- **Release 1:** 15% of the total anticipated waters of the U.S. and state upland credits upon resource and regulatory agency approval of the final HMMP, final LTMP, draft site protection mechanism, and 100% of the Endowment Fund.
- **Release 2:** Up to an additional 15% of the total anticipated waters of the U.S. and state upland credits (30% cumulative total) when as-built drawings have been reviewed by resource and regulatory agencies and approved by the USACE and Coastal Commission in writing. Release 1 is a prerequisite for Release 2.
- **Release 3:** Up to an additional 10% of the total anticipated waters of the U.S. and state upland credits (40% cumulative total) when the Second Year Performance Standards have been attained as documented in an annual monitoring report. Release 2 is a prerequisite for Release 3.

- **Release 4:** Up to an additional 10% of the total anticipated waters of the U.S. and state upland credits (50% cumulative total) when the Third Year Performance Standards have been attained as documented in an annual monitoring report. Release 3 is a prerequisite for Release 4.
- **Release 5:** Up to an additional 25% of the total anticipated waters of the U.S. and state upland credits (75% cumulative total) when the Fourth Year Performance Standards have been attained as documented in an annual monitoring report, and a waters of the U.S. and the state jurisdictional determination and delineation for wetland mitigation sites have been submitted. Release 4 is a prerequisite for Release 5.
- **Final Release:** Up to an additional 25% of waters of the U.S. and state upland credits (100% cumulative total) when:
 - The Final Monitoring Report as required by the final HMMP has been submitted.
 - Final Performance Standards have been attained.
 - Any required remedial actions are completed and deemed successful.
 - Any additional performance standards required as a result of required remedial actions have been attained.
 - A resource and regulatory agency-approved long-term manager has been identified.

If an agency-approved land manager has not been determined at the time of the Final Release, Caltrans will assume the role of land manager in perpetuity or until such time as an agency-approved land manager can be determined. Release 5 is a prerequisite for the Final Release.

6B.4.1 Ecological Performance Standards

Ecological performance standards are benchmarks to be used as indicators of the relative progress towards achieving site-specific habitat establishment, restoration, and enhancement goals and ecosystem types. Performance standards will be developed for each compensatory mitigation site and provided in the site-specific HMMPs for review and approval by the REMP Working Group and resource and regulatory agencies, as appropriate. Performance standards will be developed for a 10-year monitoring schedule for tidal wetlands and a 5-year monitoring schedule for all upland habitats and other aquatic resource types.

The interim performance standards will be based on realistic benchmarks anticipated based on the design of the site, reference site data, and best professional judgment of experts in the field of restoration for the specific ecosystem. Reference sites will be used where appropriate and will be within close proximity or adjacent to the compensatory mitigation site unless otherwise justified (i.e., lagoons) and represent the physical, hydrological, and biological functions or conditions anticipated for the mitigation site. The REMP Working Group, as needed for significant wetlands or uplands no-net-loss mitigation sites, shall select appropriate reference site locations. Performance standards will either be fixed standards or relative standards compared to the selected reference sites. One or more performance standards will be developed in each of five categories: Physical, Hydrology, Water Quality, Flora, and Fauna unless otherwise approved by the REMP Working Group and resource and regulatory agencies, as appropriate. Performance standards will be assessed based on the results of quantitative and qualitative sampling.

Performance standards must be assigned with the intent to provide resource and regulatory agencies with a high level of confidence that, once performance standards are achieved, the restored habitat is providing the desired ecological functions and will be self-sustainable under a long-term management

program. Once the mitigation areas are established, restored, and/or enhanced, a comparative analysis of pre- and post-mitigation site conditions will demonstrate the improvements in ecological functions. Reference sites will be utilized and will be monitored pre- and post-construction of the mitigation site to account for regional trends in the habitat type. Continued success of the restored habitat, without supplemental irrigation or significant remedial actions, must be demonstrated for three consecutive years prior to regulatory agency sign-off and release of the final credits.

Caltrans and SANDAG will be fully responsible for any failure to meet assigned performance standards. The REMP Working Group can modify performance standards based on site conditions if modified performance standards are equal to or superior to the originally approved standards. If approved performance standards are not achieved, the REMP Working Group shall prescribe remedial measures with guidance from the Scientific Advisory Committee, which shall be immediately implemented by the permittee. If Caltrans and SANDAG do not agree that remediation is necessary, the matter may be set for hearing and disposition by the Coastal Commission.

In measuring the performance of **wetland or other aquatic compensatory mitigation sites**, the following physical and biological standards will be utilized as appropriate. The following list includes all performance standards available for inclusion within each individual HMMP. The Biological Opinion issued by the USFWS already identifies specific information that must be contained in each HMMP, and other conditions may be identified in permits issued by other agencies. The REMP Working Group will determine what suite of the described performance standards will be utilized as a component of the final HMMP review process.

- **Topography.** The wetland/and or aquatic habitat will not undergo major topographic degradation (such as excessive erosion or sedimentation) and will maintain a specified final wetland acreage amount.
- **Water Quality.** Water quality variables (to be specified) will be similar to reference wetlands or aquatic habitat.
- **Tidal Prism.** The designed tidal prism will be maintained, and tidal flushing will not be interrupted.
- **Habitat Areas.** The area of different habitats will not vary by more than 10% from the area indicated in the final HMMP.
- **Biological Communities.** Community composition and the total densities and number of species of fish, macroinvertebrates and birds will be similar to that in similar habitats in the reference wetlands.
- **Vegetation.** The proportion of total vegetative cover and open space and plant species diversity in the marsh will be similar to those proportions and diversity found in the reference sites. The percentage cover of algae will be similar to the percent cover found in the reference sites.
- ***Spartina* Canopy Architecture.** The restored wetland will have a canopy architecture that is similar in distribution to the reference sites, with an equivalent proportion of stems over 3 feet tall.
- **Reproductive Success.** Certain plant species, as specified in the HMMP, will have demonstrated reproduction at least once in three years.
- **Food Chain Support.** The food chain support provided to birds will be similar to that provided by the reference sites, as determined by feeding activity of the birds.
- **Exotics.** The important functions of the wetland will not be impaired by exotic species, including 0 percent coverage will be maintained for California Invasive Plant Council's "Invasive Plant Inventory" species, and no more than 5 percent coverage for other exotic/weed species.

In measuring the performance of **upland habitat mitigation sites**, the following physical and biological standards will be utilized. The following list includes all performance standards available for inclusion within each individual HMMP. The Biological Opinion issued by the USFWS already identifies specific information that must be contained in each HMMP, and other conditions may be identified in permits issued by other agencies. The REMP Working Group will determine what suite of the described performance standards shall be utilized as a component of the final HMMP review process.

- **Vegetation Cover.** The proportion of total vegetative cover of shrubs, subshrubs, herbaceous and open space in the upland habitat will be similar to those proportions found in the reference sites.
- **Species Diversity.** Community composition and species diversity for both perennial and annual plant species will be similar to that in similar upland habitats found in the reference sites.
- **Exotics** The important functions of the upland habitat will not be impaired by exotic species, including 0 percent coverage will be maintained for California Invasive Plant Council's "Invasive Plant Inventory" species, and no more than 5 percent coverage for other exotic/weed species.

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TABLE 6B-5: PERMANENT WETLAND IMPACTS VS. NO-NET-LOSS MITIGATION (BY YEAR/PHASE)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Wetland Establishment	Wetland Restoration	Available No- Net-Loss Mitigation	Available No- Net-Loss Mitigation	Available No- Net-Loss Mitigation	Available No- Net-Loss Mitigation	Available No- Net-Loss Mitigation	Total Mitigation (Acres)			
				(Acres)	(Acres)	(Releases 1 & 2 @ 30%)	(Release 3 @ 10%)	(Release 4 @ 10%)	(Release 5 @ 25%)	(Final @ 25%)				
2010-2020	YEAR 2013													
	Oceanside Through Track (2013)	0	None underway	0	0	0								
	Poinsettia Station Improvements (2013)	0												
	TOTAL IMPACT (2013)	0	TOTAL AVAILABLE MITIGATION (2013)										0	
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)					0								
	YEAR 2014													
	San Elijo Lagoon Double Track, includes San Elijo Bridge Replacement (2014)	4.47	Hallmark (Agua Hedionda)	4.37	0.97	1.31								
			Regional Lagoon Maintenance Program (Endowment Established: *10% Proposed for Release Upon Establishment, Contingency Pool project)	20.7	0	2.07*								
	TOTAL IMPACT (2014)	4.47	TOTAL AVAILABLE MITIGATION (2014)										3.38	
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2013 + 2014 IMPACTS SUBTRACTED)					-1.09								
	YEAR 2015													
	2 HOV lanes from Lomas Santa Fe to Union St, including San Elijo Bridge Replacement, Manchester direct access ramp (DAR), bike paths/trails & ultimate grading (Phase 1A: 2015-2018)	0.53	Hallmark (Agua Hedionda)	Ongoing; year 1 monitoring			0.53							
	1 HOV lane from Union St to SR 78 (Phase 1B: 2015-2018)	0.79	Regional Lagoon Maintenance Program	Ongoing; credit released when adequate funds established in escrow account and/or contingencies required										
	CP Eastbrook to CP Shell Double Track (2015)	0.36	San Dieguito W19 (San Dieguito) (Release 1 only)*	47.3	0	7.1*								
	Carlsbad Village Double Track, includes Buena Vista Bridge Replacement (2015)	0.26												
	TOTAL IMPACT (2015)	1.94	MITIGATION RELEASED BY YEAR (2015)				7.1						0.53	
	TOTAL AVAILABLE MITIGATION (2015)						7.63							
	AVAILABLE MITIGATION SUBTOTAL (2014 ROLLOVER + 2015)						6.54							
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2015 IMPACTS SUBTRACTED)						4.6							

TABLE 6B-5: PERMANENT WETLAND IMPACTS VS. NO-NET-LOSS MITIGATION (CONTINUED)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Wetland Establishment	Wetland Restoration	Available No- Net-Loss Mitigation	Available No- Net-Loss Mitigation	Available No- Net-Loss Mitigation	Available No- Net-Loss Mitigation	Available No- Net-Loss Mitigation	Total Mitigation (Acres)
				(Acres)	(Acres)	(Releases 1 & 2 @ 30%)	(Release 3 @ 10%)	(Release 4 @ 10%)	(Release 5 @ 25%)	(Final @ 25%)	
2010-2020 (continued)	YEARS 2016-2020										
	2 HOV lanes from La Jolla Village Dr to I-5/I-805 merge, includes Voigt DAR & I-5 /I-805 HOV Flyover Connector (Phase 1C: 2017-2020)	0.13	Hallmark (Agua Hedionda)	Ongoing; year 2 monitoring				0.53			
	Advanced Batiquitos Lagoon Bridge Replacement (Phase 2D: 2018-2019)	3.62	Regional Lagoon Maintenance Program	Ongoing; credit released when adequate funds established in escrow account and/or contingencies required							
	Batiquitos Lagoon Double Track, includes Batiquitos Bridge Replacement (2016)	0.01	San Dieguito W19 (San Dieguito)	Ongoing; year 1 monitoring (Release 2 + Release 3)*			11.83*				
	Encinitas Station Parking	0									
	Solana Beach Station Parking	0									
	San Dieguito Double Track and Platform, includes San Dieguito Bridge Replacement (2016)	2.35									
	TOTAL IMPACT (2016-2020)	6.11	MITIGATION RELEASED BY YEAR (2016-2020)				11.83	0.53			
	TOTAL AVAILABLE MITIGATION (2016-2020)							12.36			
	AVAILABLE MITIGATION SUBTOTAL (2015 ROLLOVER + 2016-2020)							16.96			
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2016-2020 IMPACTS SUBTRACTED)							10.85			
	INITIAL-TERM TOTAL IMPACT	12.52	INITIAL-TERM TOTAL MITIGATION							72.81	

TABLE 6B-5: PERMANENT WETLAND IMPACTS VS. NO-NET-LOSS MITIGATION (CONTINUED)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Wetland Establishment (Acres)	Wetland Restoration (Acres)	Available No- Net-Loss Mitigation (Releases 1 & 2 @ 30%)	Available No- Net-Loss Mitigation (Release 3 @ 10%)	Available No- Net-Loss Mitigation (Release 4 @ 10%)	Available No- Net-Loss Mitigation (Release 5 @ 25%)	Available No- Net-Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)
2021-2030	2 Managed Lanes (ML) from I-5/I-805 to SR 56, including new Sorrento Valley Road bike/maintenance vehicle bridge, trails under I-5 at Carmel Creek, widening of I-5 at Carmel Creek, and trail under merge (Phase 2A: 2020-2022)	+0.41 (creation)	Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito) Regional Lagoon Maintenance Program	Ongoing	Full mitigation/sign-off anticipated by 2021						
	2 ML from SR 56 to Lomas Santa Fe Dr, including San Dieguito River Bridge Widening and bike paths/trails (Phase 2B: 2020-2025)	3.59									
	2 ML from Union St to Palomar Airport Rd (Phase 2C: 2025-2030)	1.33									
	Oceanside Station Parking	0									
	Carlsbad Village Station Parking	0									
	Carlsbad Poinsettia Station Parking	0									
	CP Moonlight to CP Swami Double Track	0									
	MID-TERM TOTAL IMPACT	4.51	MID-TERM TOTAL AVAILABLE MITIGATION								60.29
	TOTAL MID-TERM ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										55.78
2031-2040	2-4 ML from Palomar Airport Rd to SR 76, includes Agua Hedionda & Buena Vista Lagoon Bridge Replacements (Phase 3A-3C: 2030-2035)	5.76	Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito) Regional Lagoon Maintenance Program	Ongoing	Full mitigation /sign-off anticipated by 2021						
	Braided Ramps from Roselle to Genesee (Phase 3D: 2030-2035)	1.11									
	LONG-TERM TOTAL IMPACT	6.87	LONG-TERM TOTAL AVAILABLE MITIGATION								55.78
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										48.91
NCC TOTALS (ALL PHASES EXCLUDING VISION PHASE¹)		23.9	Sites identified above.	71.84	0.97	72.81					

TABLE 6B-5: PERMANENT WETLAND IMPACTS VS. NO-NET-LOSS MITIGATION (CONTINUED)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Wetland Establishment (Acres)	Wetland Restoration (Acres)	Available No- Net-Loss Mitigation (Releases 1 & 2 @ 30%)	Available No- Net-Loss Mitigation (Release 3 @ 10%)	Available No- Net-Loss Mitigation (Release 4 @ 10%)	Available No- Net-Loss Mitigation (Release 5 @ 25%)	Available No- Net-Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)
2041-2050	Leucadia Blvd Grade Separation	0	Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito) Regional Lagoon Maintenance Program	Ongoing		Full mitigation /sign-off anticipated by 2021					
	Del Mar Tunnel - Camino Del Mar / Peñasquitos Double Track Option - I-5 / Peñasquitos Option	2.01-2.77									
	Peñasquitos Double Track	9.87									
	I-5/SR 78	3.5									
	VISION PHASE ¹ TOTAL IMPACT		15.38 – 16.14	VISION PHASE TOTAL AVAILABLE MITIGATION							48.91
	TOTAL “ENHANCEMENT” FOLLOWING PROGRAM IMPLEMENTATION										32.77 – 33.53

Notes:
Phasing presented in this table is for general mitigation accounting purposes only. The reader is referred to Chapter 6A for the RTP-approved project phasing plan and maps.
“Vision” Phase projects are programmatic in nature, and currently scheduled for implementation in years 2041 to 2050. At a future date and prior to their implementation, project-specific information would be made available to further refine the impact estimates presented herein.

TABLE 6B-6: PERMANENT UPLAND HABITAT IMPACTS VS. NO-NET-LOSS MITIGATION (BY YEAR/PHASE)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Upland Habitat Establishment (Acres)	Upland Habitat Restoration (Acres)	Total Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Total Available No Net Loss Mitigation (Release 3 @ 10%)	Total Available No Net Loss Mitigation (Release 4 @ 10%)	Total Available No Net Loss Mitigation (Release 5 @ 25%)	Total Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)
2010-2020	YEAR 2013										
	Oceanside Through Track (2013)	0	Deer Canyon II (Los Peñasquitos)	14	0	4.2					
	Poinsettia Station Improvements (2013)	0	Dean Family Trust (San Dieguito)	20.8	0	6.24					
	TOTAL IMPACT (2013)	0	TOTAL AVAILABLE MITIGATION (2013)			10.44					
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2013 IMPACTS SUBTRACTED)					10.44					
	YEAR 2014										
	San Elijo Lagoon Double Track, includes San Elijo Bridge Replacement (2014)	0	Deer Canyon II (Los Peñasquitos)	Ongoing; year 1 monitoring			1.4				
			Dean Family Trust (San Dieguito)	Ongoing; year 1 monitoring			2.08				
			Hallmark (Agua Hedionda)	3.5	6.6	3.03					
	TOTAL IMPACT (2014)	0	MITIGATION RELEASED BY YEAR (2014)			3.03	3.48				
	TOTAL AVAILABLE MITIGATION (2014)						6.51				
	AVAILABLE MITIGATION SUBTOTAL (2013 ROLLOVER + 2014)						16.95				
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2014 IMPACTS SUBTRACTED)						16.95				
	YEAR 2015										
	2 HOV lanes from Lomas Santa Fe to Union St, including San Elijo Bridge Replacement, Manchester DAR, bike paths/trails & ultimate grading (Phase 1A: 2015-2018)	22.08	Deer Canyon II (Los Peñasquitos)	Ongoing; year 2 monitoring				1.4			
	1 HOV lane from Union St to SR 78 (Phase 1B: 2015-2018)	1.06	Dean Family Trust (San Dieguito)	Ongoing; year 2 monitoring				2.08			
	CP Eastbrook to CP Shell Double Track (2015)	0	Hallmark (Agua Hedionda)	Ongoing; year 1 monitoring			1.01				
	Carlsbad Village Double Track, includes Buena Vista Bridge Replacement (2015)	0									
	TOTAL IMPACT (2015)	23.14	MITIGATION RELEASED BY YEAR (2015)				1.01	3.48			
	TOTAL AVAILABLE MITIGATION (2015)						4.49				
	AVAILABLE MITIGATION SUBTOTAL (2014 ROLLOVER + 2015)						21.44				
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)						-1.7				

TABLE 6B-6: PERMANENT UPLAND HABITAT IMPACTS VS. NO-NET-LOSS MITIGATION (BY YEAR/PHASE) (CONTINUED)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Upland Habitat Establishment (Acres)	Upland Habitat Restoration (Acres)	Total Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Total Available No Net Loss Mitigation (Release 3 @ 10%)	Total Available No Net Loss Mitigation (Release 4 @ 10%)	Total Available No Net Loss Mitigation (Release 5 @ 25%)	Total Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)	
2010-2020 (continued)	YEAR 2016-2020											
	Advanced Batiquitos Lagoon Bridge Replacement (Phase 2D: 2018-2019)	8.8	Deer Canyon II (Los Peñasquitos)	Ongoing; year 3 monitoring					3.5			
	2 HOV lanes from La Jolla Village Dr to I-5/I-805 merge, includes Voigt DAR & I-5 /I-805 HOV Flyover Connector (Phase 1C: 2017-2020)	0.57	Dean Family Trust (San Dieguito)	Ongoing; year 3 monitoring					5.2			
	Batiquitos Lagoon Double Track, includes Batiquitos Bridge Replacement (2016)	0.03	Hallmark (Agua Hedionda)	Ongoing; year 2 monitoring			1.01					
	Encinitas Station Parking	0	San Dieguito W19 (San Dieguito) (Release 1 anticipated 2016; Release 2 anticipated 2017)*	9.6	19.8	8.82*						
	Solana Beach Station Parking	0										
	San Dieguito Bridge Double Track and Platform , includes San Dieguito Bridge Replacement (2016)	0.01										
	TOTAL IMPACT (2016)	9.41	MITIGATION RELEASED BY YEAR (2016-2020)			8.82		1.01	5.2			
	TOTAL AVAILABLE MITIGATION (2016-2020)											15.03
	AVAILABLE MITIGATION SUBTOTAL (2015 ROLLOVER + 2016-2020)											13.33
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)											3.92
	INITIAL-TERM TOTAL IMPACT		32.55	INITIAL-TERM TOTAL MITIGATION								74.3
2021-2030	2 Managed Lanes (ML) from I-5/I-805 to SR 56, including new Sorrento Valley Road bike/maintenance vehicle bridge, trails under I-5 at Carmel Creek, widening of I-5 at Carmel Creek, and trail under merge (Phase 2A: 2020-2022)	0.99	Deer Canyon II (Los Peñasquitos) Dean Family Trust (San Dieguito) Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito)	Ongoing		Full mitigation /sign-off anticipated by 2021						
	2 ML from SR 56 to Lomas Santa Fe Dr, including San Dieguito River Bridge Widening and bike paths/trails (Phase 2B: 2020-2025)	20.6										
	2 ML from Union St to Palomar Airport Rd (Phase 2C: 2025-2030)	3.28										
	Oceanside Station Parking	0										
	Carlsbad Village Station Parking	0										
	Carlsbad Poinsettia Station Parking	0										
	CP Moonlight to CP Swami Double Track	0										
	MID-TERM TOTAL IMPACT		24.87	MID-TERM TOTAL AVAILABLE MITIGATION								41.75
	TOTAL MID-TERM ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										16.88	

TABLE 6B-6: PERMANENT UPLAND HABITAT IMPACTS VS. NO-NET-LOSS MITIGATION (BY YEAR/PHASE) (CONTINUED)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Upland Habitat Establishment (Acres)	Upland Habitat Restoration (Acres)	Total Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Total Available No Net Loss Mitigation (Release 3 @ 10%)	Total Available No Net Loss Mitigation (Release 4 @ 10%)	Total Available No Net Loss Mitigation (Release 5 @ 25%)	Total Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)
2031-2040	2-4 ML from Palomar Airport Rd to SR 76, includes Agua Hedionda & Buena Vista Lagoon Bridge Replacements (Phase 3A-3C: 2030-2035)	0.77	Deer Canyon II (Los Peñasquitos) Dean Family Trust (San Dieguito)	Ongoing		Full mitigation/sign-off anticipated by 2021					
	Construct Braided Ramps from Roselle to Genesee (Phase 3D: 2030-2035)	5.57	Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito)								
	LONG-TERM TOTAL IMPACT	6.34	LONG-TERM TOTAL AVAILABLE MITIGATION								16.88
	TOTAL LONG-TERM ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										10.54
NCC TOTALS (ALL PHASES EXCLUDING VISION PHASE ¹)		63.76	Sites identified above.	27.1	47.2	74.3					
2041-2050	Leucadia Blvd Grade Separation	0	Deer Canyon II (Los Peñasquitos) Dean Family Trust (San Dieguito) Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito)	Ongoing		Full mitigation/sign-off anticipated by 2021					
	Del Mar Tunnel - Camino Del Mar / Peñasquitos Double Track Option - I-5 / Peñasquitos Option	0.03 – 10.13									
	Peñasquitos Double Track	0									
	I-5/SR 78	0									
	VISION PHASE ¹ TOTAL IMPACT	0.03 – 10.13	VISION PHASE TOTAL AVAILABLE MITIGATION								10.54
	TOTAL “ENHANCEMENT” FOLLOWING PROGRAM IMPLEMENTATION										0.41 – 10.51

Notes:
Phasing presented in this table is for general mitigation accounting purposes only. The reader is referred to Chapter 6A for the RTP-approved project phasing plan and maps.
“Vision” Phase projects are programmatic in nature, and currently scheduled for implementation in years 2041 to 2050. At a future date and prior to their implementation, project-specific information would be made available to further refine the impact estimates presented herein.

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6B.4.2 Habitat Establishment and Restoration

Mitigation credits available for no-net-loss compensatory mitigation are based on the number of acres available for each established (created) or restored habitat type on the proposed mitigation sites, and are to be finalized pursuant to final site-specific HMMPs to be reviewed through subsequent agency reviews, and final PWP/TREP project submittals to the Coastal Commission (NOIDs, CDPs, or federal consistency submittals, as applicable). The REMP includes a performance-based crediting and release system to ensure mitigation credits can be available for PWP/TREP project impact mitigation at incremental and measurable stages. The performance-based crediting and release system will ensure that resource establishment/restoration/enhancement activities occur in advance of transportation infrastructure and community enhancement impacts to the maximum extent possible, while achieving a balance of transportation infrastructure and community enhancement projects in each phase. Under these procedures, a percentage of mitigation credits will be released at the time the final site-specific HMMP and LTMPs (draft and/or final) are approved by resource and regulatory agencies and site protections and funding mechanism is secured. Additional percentages of mitigation credits will be released after site grading and planting is complete (as-builts) and when annual performance standards, identified in the HMMP, have been successfully met on an annual basis.

6B.4.3 Habitat Preservation/Enhancement

Long-term temporary (>12 months) impact areas will be revegetated and returned to pre-existing conditions or better at a 1:1 ratio. Short-term temporary construction-related impact areas will be returned to pre-existing conditions (grades and vegetated condition). Mitigation credits for the temporal loss of habitat from long-term temporary impacts are based, in part, on acquisition of parcels containing existing high-value habitat areas within the coastal zone area and where permanent preservation of habitat is ensured. Compensatory mitigation for these long-term temporary impacts to uplands would include either revegetation with native habitat of other nonnative temporary impact areas (at a 1:1 ratio of replacement to impacts) or the preservation of high-quality habitat under the threat of development (a 2:1 ratio of preservation to impacts). The suite of activities proposed in the “Enhancement Pool” listed previously would be used to mitigate any additional compensatory mitigation requirements for long-term temporary impacts to wetlands. The credits will be finalized pursuant to final HMMPs to be reviewed through subsequent NOID, CDP or federal consistency submittals, as applicable, and the credits released for mitigation once the sites are deeded to an approved local land management agency that is acceptable to the resource and regulatory agencies. Habitat preservation credits will mitigate for long-term temporary impacts resulting from PWP/TREP project impacts by ensuring long-term preservation of upland ESHA and/or wetland and other aquatic resources in advance of construction impacts occurring.

6B.4.4 Lagoon Restoration

Additional mitigation credits available for no-net-loss compensatory mitigation for permanent and temporary wetland and other aquatic habitat impacts are based on the number of acres potentially available for wetland and other aquatic habitat re-establishment as part of the San Elijo Lagoon and Buena Vista Lagoon Restoration Projects. The mitigation credits available to compensate for impacts to wetlands, other waters, and riparian habitat will be finalized pursuant to final restoration plans for San Elijo Lagoon and/or Buena Vista Lagoon, to be reviewed through subsequent CDPs and the federal consistency review process. These wetland and other aquatic habitat mitigation credits will be released through the performance-based crediting and release system identified above to ensure mitigation

credits can be available for PWP/TREP project impact mitigation at incremental and measurable stages.

In addition to establishing credits for compensatory mitigation for permanent and temporary wetland and other aquatic impacts, the REMP projects will also facilitate and achieve ecological lift of corridor lagoon systems through the identified large-scale restoration plans. Therefore, the lagoon restoration projects included in the REMP are considered appropriate for mitigating PWP/TREP project impacts. The ecological lift that will occur as a result of implementing one of these large-scale lagoon restoration plans will serve as additional mitigation for all PWP/TREP project impacts, including long-term temporary impacts, shading impacts, and indirect and potential temporal wetland and other aquatic habitat impacts.

6B.4.5 Bridge Optimization (Achieving Hydraulic Lift in Lagoons)

REMP projects involving lagoon bridge lengthening and lagoon channel dimension expansion through optimized designs will result in benefits to wetland resources, water quality, tidal range, flood control, groundwater recharge and recreation. Lagoon optimization studies were completed for San Elijo, Batiquitos, and Buena Vista Lagoons to inform the design of the I-5 and LOSSAN railroad bridges and lagoon channel dimensions to optimize tidal flow, fluvial flow, and sediment transport. Optimized bridge lengths and lagoon channel dimensions were also identified for Coast Highway and inlets within San Elijo and Buena Vista Lagoons to maximize system benefits. The studies conclude that constructing longer bridges and/or deeper channels at these lagoon locations will improve water quality, increase the quality of coastal wetland habitat, increase tidal range, decrease flood impacts, and improve the overall health and function of the lagoon systems. These REMP projects are not subject to a specific credit calculation; however, because optimized bridge lengths have been identified as necessary for the success of proposed lagoon restoration projects at San Elijo and Buena Vista Lagoons, and construction of identified optimized bridges is intended to specifically avoid and minimize impacts and enhance coastal resources and will result in a significant additional cost to the PWP/TREP program, they are a contributing enhancement element for all PWP/TREP project impacts. These REMP projects will offset water quality, shading, and eel grass impacts, and potential temporal impacts associated with areas impacted by temporary construction activities.

6B.4.6 Lagoon Management/Endowments – Contingency Mitigation Credit

The resource agencies have indicated that an endowment for dredging to maintain the openings at the mouths of Batiquitos and Los Peñasquitos Lagoons is an important resource protection measure within the NCC. Ten million dollars has been determined to be adequate to maintain these lagoon mouths in perpetuity if set aside in a nonwasting endowment with a reasonable rate of return (approximately 5% annually). Development of LTMPs for use of the funds at Batiquitos and Los Peñasquitos Lagoons would identify specific tasks covered by the proposed endowment, and would support establishment of long-term goals to ensure appropriate triggers for dredging activities such that adequate funds are released from the endowment at appropriate times. A performance evaluation of the endowment would also occur at the end of the first phase of the PWP/TREP Implementation Phasing Plan (approximately 10 years) to ensure adequate financial contingencies are in place to cover activities in perpetuity. It is anticipated that the \$10 million endowment would need to accrue interest for at least 1 year prior to use of funds.

Los Peñasquitos Lagoon has 25 years of maintenance dredging operation information, and the numbers have remained relatively consistent with a cost of approximately \$150,000 per year for the project.

Batiquitos Lagoon has more varied costs for its maintenance over the last 15 years (see Table 6B-77). The CDFW identified that mobilization and demobilization were not included in the overall cost and that the 1998 and 1999 costs were anomalies. If those two years are removed, the average annual cost per year was \$308,854. Of note, Batiquitos Lagoon also has a \$5.5 million dollar endowment for maintenance, which is not generating enough interest (1%) because of how the state invests the monies.

TABLE 6B-7: COSTS FOR PREVIOUS DREDGING PROJECTS AT BATIQUITOS LAGOON

Cycle	Mobilizations	Disposal Locations	Volume (cy)	Cost-not including Mobilization/ Demobilization (\$)	Mobilization/ Demobilization (\$)	Total Cost (\$)
98/99	1	South Ponto	10,562	98,187	75,000	173,187
99/00	1	South Ponto	4,268	21,910	75,000	96,910
00/01	2	South Ponto, W2	50,374	322,877	75,000	397,877
02/04	2	W1, E2 and E3	77,378	1,165,582	150,000	1,315,582
06/07	1	North and South Ponto	65,574	342,784	150,000	492,784
11/12	1	South Ponto	112,000	1,050,000	450,000	1,500,000
Annual Average Cost			22,868	214,381	69,643	284,024
Average Cost from 2000-2012			25,444	240,104	68,750	308,854

If \$350,000 annual cost for maintenance dredging is assumed for Batiquitos Lagoon and \$150,000 annual cost for maintenance dredging of Los Peñasquitos Lagoon, there should be adequate funds, \$500,000 annually, from a nonwasting endowment originally established with a \$10 million fund.

SANDAG proposes to work with a community investment foundation to establish an endowment that will generate on average \$500,000 a year. The endowment will be nonwasting and only the interest will be available for use. The REMP Working Group will meet annually to discuss the interest generated over the year and the distribution of any funds from the accumulated interest.

Caltrans and SANDAG will work with resource and regulatory agencies to establishment compensatory mitigation credits for this endowment to help offset PWP/TREP project impacts. The following is an estimation of potential credits for maintenance of the lagoon mouths, similar to the 35 acres allotted to the San Onofre Generating Station (SONGS) mitigation for maintenance of the San Dieguito Lagoon mouth.

Batiquitos Lagoon comprises approximately 581 acres of coastal wetlands, with approximately 107 acres in the central basin, 450 acres in the eastern basin and the remainder (24 acres) in the western basin. Based on modeling of tidal ranges of the shoaled versus dredged condition in each basin, there will be an increase in tidal range between 1 and 9 percent. When the percentage increase in tidal range in each basin is multiplied by the acreage in each basin, there is a change of 0.24 acres in the western basin, 6.42 acres in the central basin, and 40.5 acres in the western basin. The total percentage change is equal to 47.2 acres immediately following a dredging event, but the benefits will be reduced as the sediments redeposit and mute the tides until the next cycle. Once dredging is completed,

sediment will again begin to settle out in the lagoon inlet. Over time this sediment will accumulate until significant shoaling requires that another dredging be initiated (approximately 3 years for Batiquitos Lagoon). To adjust for the muting that occurs during the 3 years between dredging events, the percentage change will be reduced by one-third (see Table 6B-88). Therefore, the amount of credit available for the Batiquitos Lagoon endowment would be 15.7 acres. SANDAG and Caltrans propose that funding an endowment for lagoon mouth maintenance at Batiquitos Lagoon should qualify for credit, or it should be agreed that it will serve as contingency credits for any deficits of credit release between beginning construction of the wetland mitigation sites and impacts from the LOSSAN and I-5 PWP/TREP projects, as necessary.

TABLE 6B-8: BATIQUITOS LAGOON TIDAL RANGE PERCENTAGE CHANGE FOLLOWING A DREDGING EVENT

Basin	Tidal Range						
	Acreage	Existing Shoaled (ft)	Existing Dredged (Ft)	Difference (ft)	Percent Change	0.33 Percent Change	0.33 Percent Change* (Acres)
West Basin (WB2)	24	7.15	7.24	0.09	0.01	0.003	0.07
Central Basin (CB2)	107	6.8	7.23	0.43	0.06	0.02	2.14
East Basin (EB1)	450	6.47	7.12	0.65	0.09	0.03	13.5

* Acreage X Percent Change = Percent Change in Acres

Los Peñasquitos Lagoon is located along the northwest border of San Diego, just south of Del Mar. There are approximately 463 acres of tidal wetlands within the lagoon, and it extends inland approximately 2.04 miles. One of the major issues facing the lagoon is the rate of increased sedimentation from the alteration of the existing tidal prism (with the construction of the railroad bridge) and the urbanization of the watershed. Additionally, due to the increase in freshwater runoff from landscaping, wastewater treatment and hardpan (cement lining), far more freshwater and associated sediment enters the lagoon year-round than it did historically, causing sedimentation and the salt marsh to convert to freshwater marsh. Because of these issues, the lagoon mouth began to close seasonally. This can reduce the health of an estuary by limiting the amount of sediment it can remove from the system and causes significant changes in salinity levels. Evaporation reduces the amount of water within the closed lagoon and increases the concentration of salt, which can rise to lethal levels for many of the organisms that live within the water and mudflats of the lagoon, and thereby affect the entire area's food web. In an effort to mitigate for this, the Los Peñasquitos Lagoon Enhancement Plan was developed in 1985 by the Coastal Commission. Adaptive management included monitoring of the lagoon water quality and of the mechanical opening of the mouth of the lagoon before water quality became poor enough to kill organisms (PERL 2004)⁷.

Future restoration activities for the Los Peñasquitos Lagoon have focused on reducing sediment to the system, curtailing freshwater input, and maintaining the opening of the lagoon mouth. Therefore, maintenance of the Los Peñasquitos Lagoon mouth has been identified as a compensatory mitigation opportunity within the REMP. There are no modeling data for Los Peñasquitos Lagoon; however, since the mouth closes completely, the tidal range is eliminated at certain times of the year. A 4.6-acre credit

⁷ Pacific Estuarine Research Laboratory, The Physical, Chemical and Biological Monitoring of Los Peñasquitos Lagoon, 1987-2004.

would result if a 1 percent benefit (least benefit seen at Batiquitos) is assumed to the tidal wetlands of the lagoon.

Maintenance of the mouths of both of these lagoons is important to estuary functions and services. Quantifying the benefits of the maintenance is a difficult thing to do. However, with some lag time between the sign-off on all wetland mitigation sites and some first-phase impacts to the lagoons, Caltrans and SANDAG propose that establishing the \$10 million endowment either should be granted compensatory mitigation credit, or it should be agreed to that it will serve as contingency credits for any deficits of credit release between beginning construction of the wetland mitigation sites and impacts from the LOSSAN and I-5 NCC projects, as necessary. SANDAG and Caltrans also propose that 10 percent of this mitigation credit (0.46 acre for Los Peñasquitos Lagoon and 1.57 acres for Batiquitos Lagoon of the respective 4.6 and 15.7 acres identified previously) would be available upon establishment of the endowment and the funding strategy. The remaining balance of the available credits for each lagoon would be available when the interest of the endowment exceeds \$500,000, and when the first dredging activities have been completed at each lagoon system.

6B.5 MITIGATION PHASING

Advance resource enhancement activities are assigned specific no-net-loss mitigation credits based on the type of habitat established and/or restored from implementation of individual REMP projects, and/or for establishing the endowment for maintenance activities that sustain lagoon functions and services. Once established, mitigation credits are available to mitigate any PWP/TREP transportation infrastructure and/or community enhancement project impacts included in an active phase of the PWP/TREP Implementation Phasing Plan (i.e., 2010–2020, 2021–2030, 2031–2040, or 2041–2050). Where habitat mitigation credit exceeds the cumulative project impacts of any particular project phase, habitat mitigation credit would be made available to mitigate impacts associated with project implementation of the following phases.

Advance resource enhancement activities also include projects that provide enhancement and/or preservation of sensitive coastal resources, and facilitate and achieve ecological lift of corridor lagoon systems, specifically large-scale restoration plans for San Elijo and Buena Vista Lagoons, and hydraulic lift associated with bridge optimization projects for San Elijo, Batiquitos, and Buena Vista Lagoons. The San Elijo Lagoon and Buena Vista Lagoon Restoration Plans would potentially establish a specific amount of wetland/other aquatic habitat mitigation credits dependent on the final alternative design selected. The REMP projects that would facilitate and achieve ecological/hydraulic lift of corridor lagoon systems through large-scale restoration plans are generally not subject to a specific credit calculation by the Coastal Commission, but nevertheless will result in significant enhancement of corridor resources and are considered appropriate for mitigating PWP/TREP project impacts. The USACE will determine specific compensatory mitigation credits based on acreage and functional lift for San Elijo Lagoon and Buena Vista Lagoon Restoration Projects if the final restoration alternatives chosen by the REMP Working Group meet the standards set forth by the USACE and EPA in the 2008 Wetlands Compensatory Mitigation Rule (Mitigation Rule).

6B.6 HABITAT MITIGATION AND MONITORING PLANS

Site-specific HMMPs are required for all REMP compensatory mitigation sites, with the exception of purely preservation sites, whereas LTMPs are required for all mitigation sites. The MSAs (see Appendix H) have been developed for resource and agency approval prior to developing detailed HMMPs and associated grading, planting, irrigation and other implementation plans, as appropriate. The HMMPs will be developed in compliance with the USACE and EPA Mitigation Rule, but also

include sections and supplemental documents that will allow for use of the 2012 Advance Permittee-Responsible Mitigation Guide⁸ or comparable approaches by the USACE Los Angeles District and meet Coastal Commission and other resource agency permitting needs. These HMMPs will include the information agreed upon in this REMP for determination of a Service Area (the NCC), defining the number and type of credits and methodology used to determine crediting, a credit release schedule based on performance standards, a credit ledger to track PWP/TREP project implementation, and the projected permanent and temporary impacts from PWP/TREP transportation infrastructure and community enhancement projects intended to be mitigated by the compensatory mitigation site.

Each site-specific HMMP will include an itemized cost estimate for implementing the mitigation site activities. In accordance with 33 CFR §332.3(n) of the Mitigation Rule, prior to initiating impacts for each PWP/TREP project phase, the permittee(s) will post financial assurance ("financial assurance") in an amount and form approved by the USACE and other agencies as appropriate. The cost estimate will be the basis for providing the required financial assurance until the site achieves its ecological performance standards and other site protection requirements have been achieved. The financial assurance amount will include the estimated cost for replacement mitigation, including costs for land acquisition, planning and engineering, legal fees, mobilization, construction, monitoring, maintenance, and adaptive management for the required 5- to 10-year short-term monitoring period and a 20% contingency. The purpose of this financial assurance is to guarantee the successful implementation, maintenance, and monitoring of the wetland and nonwetland waters preservation, establishment, restoration, and enhancement work. The financial assurance may be in the form of a performance bond, irrevocable letter of credit, or escrow agreement.

A draft LTMP will be prepared along with a final HMMP for each mitigation site for review and approval by the resource and regulatory agencies. Per 33 CFR §332.4 (c)(11) of the Mitigation Rule, the LTMP will be based on the habitats approved in the final site-specific HMMP and developed to ensure the long-term sustainability of the site, describing how the compensatory mitigation site will be managed and monitored after performance standards have been achieved and mitigation credits have been released. The LTMP will include a description of the baseline environmental conditions of the site, protection, signage, and other management and monitoring activities anticipated to maintain the current ecological condition (preservation only) or projected ecological condition (establishment, restoration, and enhancement sites) and the estimated cost of implementing the annual maintenance and management activities set forth in the LTMP. The LTMP will include a description of the long-term site protection mechanism, the financing mechanism, and the proposed third-party responsible for LTMP. The final LTMP must be updated and approved by the resource and regulatory agencies prior to the final credit release for each compensatory mitigation site. This allows for modification of the management needs and associated financing mechanism, as necessary, if compensatory mitigation site needs are different from those originally anticipated prior to implementation and short-term monitoring period.

Once secured, mitigation credits for preservation-only sites will be formalized with the development and approval of a final LTMP, which includes all the information as described above.

Long-term protection mechanisms must be described in the final HMMP and are required for every REMP compensatory mitigation site. The long-term protection mechanism must be provided for review and approval by the applicable agencies prior to implementation of the final HMMP. Protection mechanisms can include a conservation easement, restrictive covenant, or other regulatory agency-

⁸ Interagency Regulatory Guide, Advance Permittee-Responsible Mitigation by U.S. Army Corps of Engineers Seattle District, Department of Ecology State of Washington, and Washington Department of Fish and Wildlife, December 2012, Ecology Publication no. 12-06-015

approved mechanism. The mechanism must ensure that the permittee, its successors, and assigns, are required to protect and maintain the compensatory mitigation site in perpetuity. The conservation mechanism will preclude establishment of fuel modification zones, additional road crossings or outfalls, paved or unpaved public trails beyond what is approved in the final HMMP and LTMP, maintenance access roads, and/or future easements. The conservation mechanism must provide for the long-term management of the compensatory mitigation site. Written approval (by letter or e-mail) from all applicable agencies of the final conservation mechanism must be received prior to it being executed and recorded. A recorded copy of the mechanism must be provided to the USACE and Coastal Commission prior to mitigation credit release, release of final mitigation obligations, and release of the financial assurance.

The HMMPs will formalize how the habitat establishment, restoration, and enhancement activities proposed for each of the compensatory mitigation sites conform to the REMP. Each site-specific HMMP will be submitted to the REMP Working Group for review and approval to ensure fulfillment of requirements with agency permits and consultations prior to any formal submittal to the USACE and Coastal Commission (the Coastal Commission's submittal process is further detailed in Chapter 6A of the PWP/TREP).

The MSAs serve to formalize how the habitat establishment, restoration, enhancement and/or preservation activities proposed for each of the compensatory mitigation sites conform to the REMP goals and criteria described previously. The MSAs also provide preliminary information to estimate mitigation credits available for each project and to assist in the preparation of final HMMPs that will be subject to further review through subsequent Coastal Commission review (NOIDs, CDPs or federal consistency submittals, as applicable). Initial MSAs for the current package of REMP compensatory mitigation opportunities are included in Appendix H. These will be used to develop final site-specific HMMPs. The MSAs include the following preliminary information, as applicable:

- Overall Mitigation Goals and Objectives
- Mitigation Site Service Area and Credits
- Baseline Conditions
 - Historic and Current Ecological Context
 - Drainage and Hydrology
 - Soils
 - Vegetation (Including Existing Vegetation Map)
 - Wildlife
 - Prior and Current Land Use
 - Existing Utilities/Infrastructure/Easements
 - Site Contaminants
- Mitigation Program
 - Schedule
 - Hydrology
 - Topographic Modification
 - Soils
 - Target Plant Communities
 - Supportive Measures
 - Performance Standards

- Adaptive Management Plan
- Cost Estimate and Financial Assurances
- Site Protection Instrument
- Long-Term Management Plan
- Additional Studies Required
- Required Permits/Approvals

6B.7 PROGRAM PHASING

The REMP is an integral component of the PWP/TREP Implementation Phasing Plan, in which stakeholders and resource and regulatory agencies can track the progress and success of the PWP/TREP. The Implementation Phasing Plan reflects the regional priorities relative to identifying resource protection opportunities and implementing REMP projects that address the most significant natural resource needs of the NCC, while respecting the phasing requirements for transportation infrastructure and community enhancement project development further specified in the PWP/TREP. Consistent with Senate Bill 468 (Kehoe), the REMP and the larger PWP/TREP Implementation Phasing Plan collectively provide the framework for the region to allocate *TransNet* EMP funds for regional habitat acquisition, management, and monitoring activities based on the estimated economic benefits derived from permitting and approval efficiencies accomplished through the NCC PWP/TREP process. The funding will be released by SANDAG in phases based on the proportion of PWP/TREP projects that have been issued NOIDs, CDPs and/or federal consistency reviews, as applicable.

The PWP/TREP Implementation Phasing Plan includes specific measures to ensure that REMP projects will be implemented prior to, or concurrent with, PWP/TREP transportation infrastructure and community enhancement projects according to the approved phasing plan. The USACE and Coastal Commission submittals (NOIDs, CDPs and/or federal consistency review, as applicable) for transportation infrastructure and community enhancement projects provide the primary mechanism for the regulatory agencies to continuously ensure adequate compensatory mitigation is provided by PWP/TREP phase. Chapter 6A, Implementation requires Coastal Commission submittals (NOIDs, CDPs and/or federal consistency review, as applicable) to provide the following project details (among others) before a submittal will be filed as complete and reviewed by the Coastal Commission for consistency with the approved PWP/TREP:

- The expected date of commencement of construction.
- A description of the proposed development that is sufficient to understand its size, location, type, and intensity (including but not limited to site plans, grading plans, and elevations/renderings showing the proposed development, where applicable) sufficient to determine the development is contained in the PWP/TREP.
- A discussion of the proposed development consistency with the PWP/TREP Implementation Phasing Plan detailed in Section 6A.2.1 including details regarding the following:
 - The project phase in which the development is included.
 - The status of implementation of other rail, highway, community and resource enhancement projects included in the same phase.
 - A brief summary of the proposed development's contribution to the mobility and resource benefits of the project phase.
 - Description of any project-specific resource impacts and status of corresponding mitigation requirements for the project phase.

- A detailed discussion and justification for any proposed project shift between project phases as provided in the Implementation Phasing Plan.
- Environmental documentation for the proposed development prepared pursuant to California Environmental Quality Act (CEQA) and/or NEPA.
- All technical reports associated with the proposed development (such as biological reports, geotechnical reports, traffic analyses, etc.), including all reports, studies, and/or project-specific plans required pursuant to applicable Chapter 5 implementation measures.
- The results, including supporting documentation, of consultation with persons and agencies interested in, with jurisdiction over, and/or affected by the proposed development, including consultations with federal and state resource agencies (such as the USFW, CDFW, RWQCB, etc.)
- All implementing mechanisms associated with the proposed development including, but not limited to Cooperative Maintenance agreements with affected cities for Community Enhancement Projects, CEQA mitigation monitoring reports, legal documents, lease agreements, etc.

6B.8 SUPPLEMENTING REMP OPPORTUNITIES – MITIGATION CONTINGENCIES AND FUTURE OPPORTUNITIES

In the event that there are permanent or temporary impacts to resources beyond those authorized by resource and regulatory agencies either on a whole or by phase, available mitigation credits will be used or additional compensatory mitigation opportunities from the suite in this REMP will be utilized. In the unlikely event a previously identified compensatory mitigation opportunity is no longer feasible or available, SANDAG and Caltrans will be responsible for identifying and advancing additional projects through the REMP Working Group and applicable resource and regulatory agencies to amend the REMP and obtain permit modifications if necessary, pursuant to 1) the applicable NOID and/or PWP amendment procedures outlined in Chapter 6A of the PWP/TREP; 2) the CDP review process; and/or 3) the federal consistency certification process. The REMP allows for the flexibility necessary to sufficiently balance program impacts and benefits prior to initiating PWP/TREP transportation and community infrastructure projects by phase. Compensatory mitigation opportunities and funding can be moved between phases to account for shortfalls as necessary. Also, if needed, new compensatory mitigation sites can be added to the REMP in consultation with stakeholders and resource and regulatory agencies, if the site has been identified as meeting the category and evaluation criteria identified in the REMP and funds are available.

