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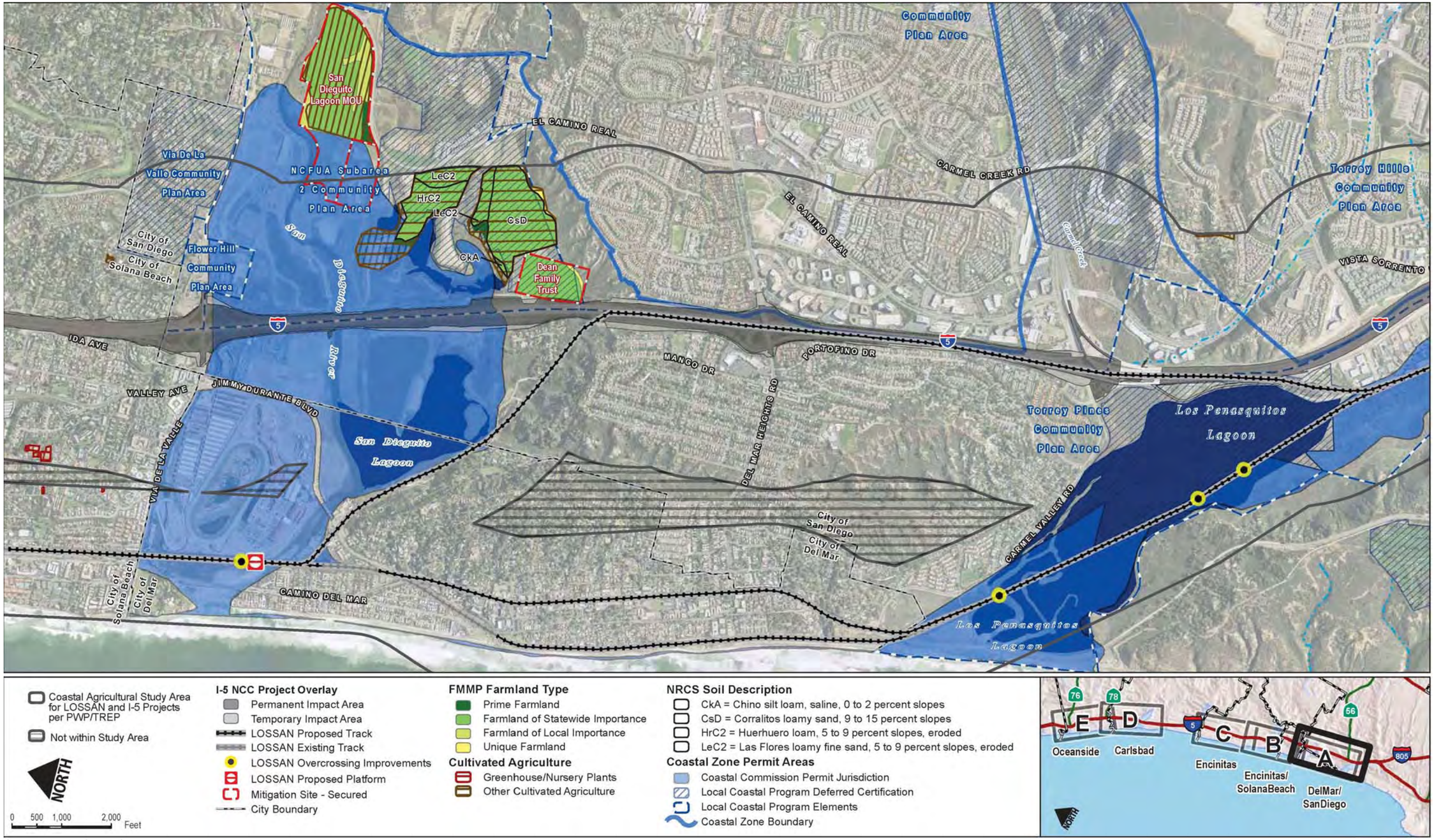
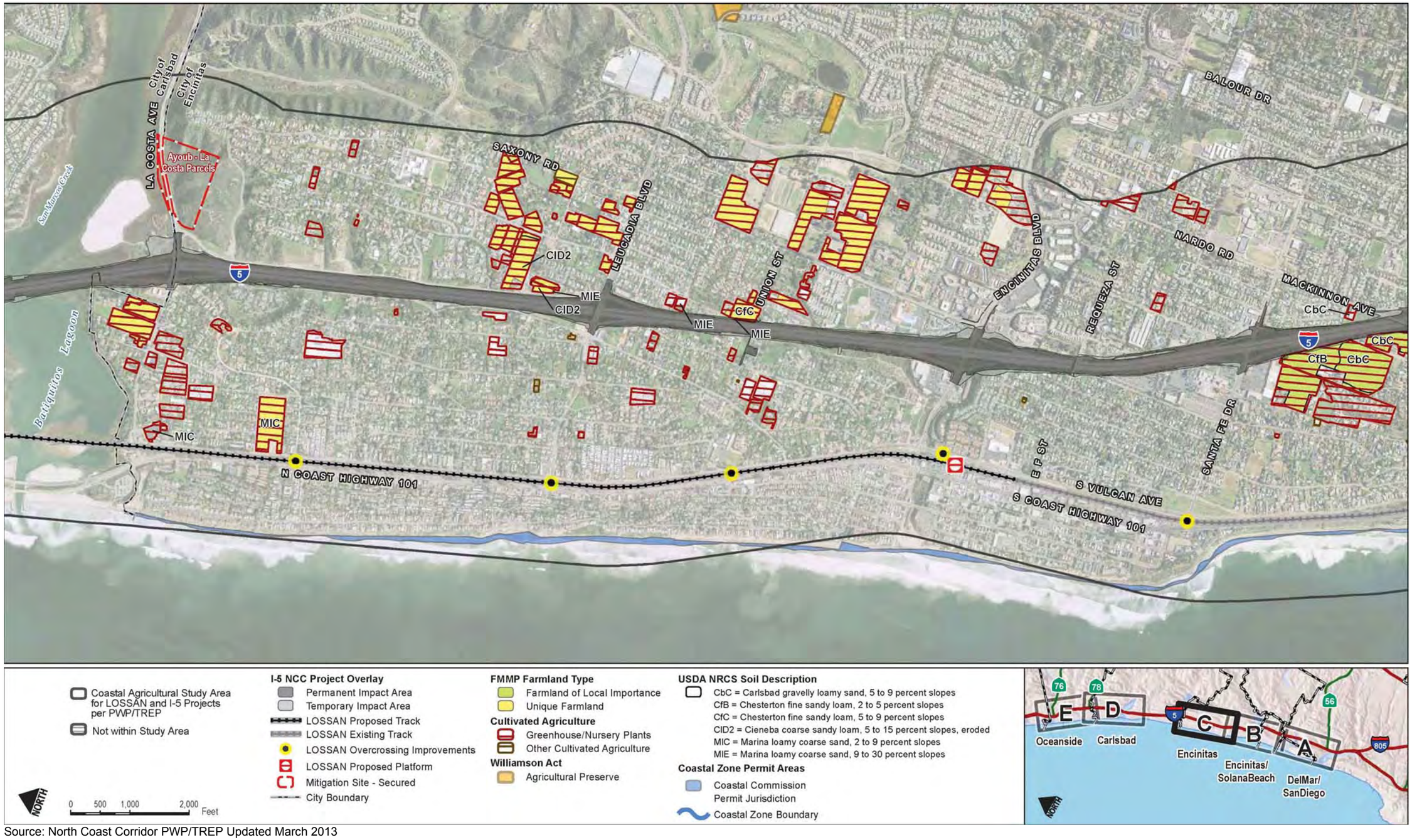


Source: North Coast Corridor PWP/TREP Updated March 2013

Figure 3-3.2a: Coastal Agricultural Resources (Cities of Del Mar / San Diego)

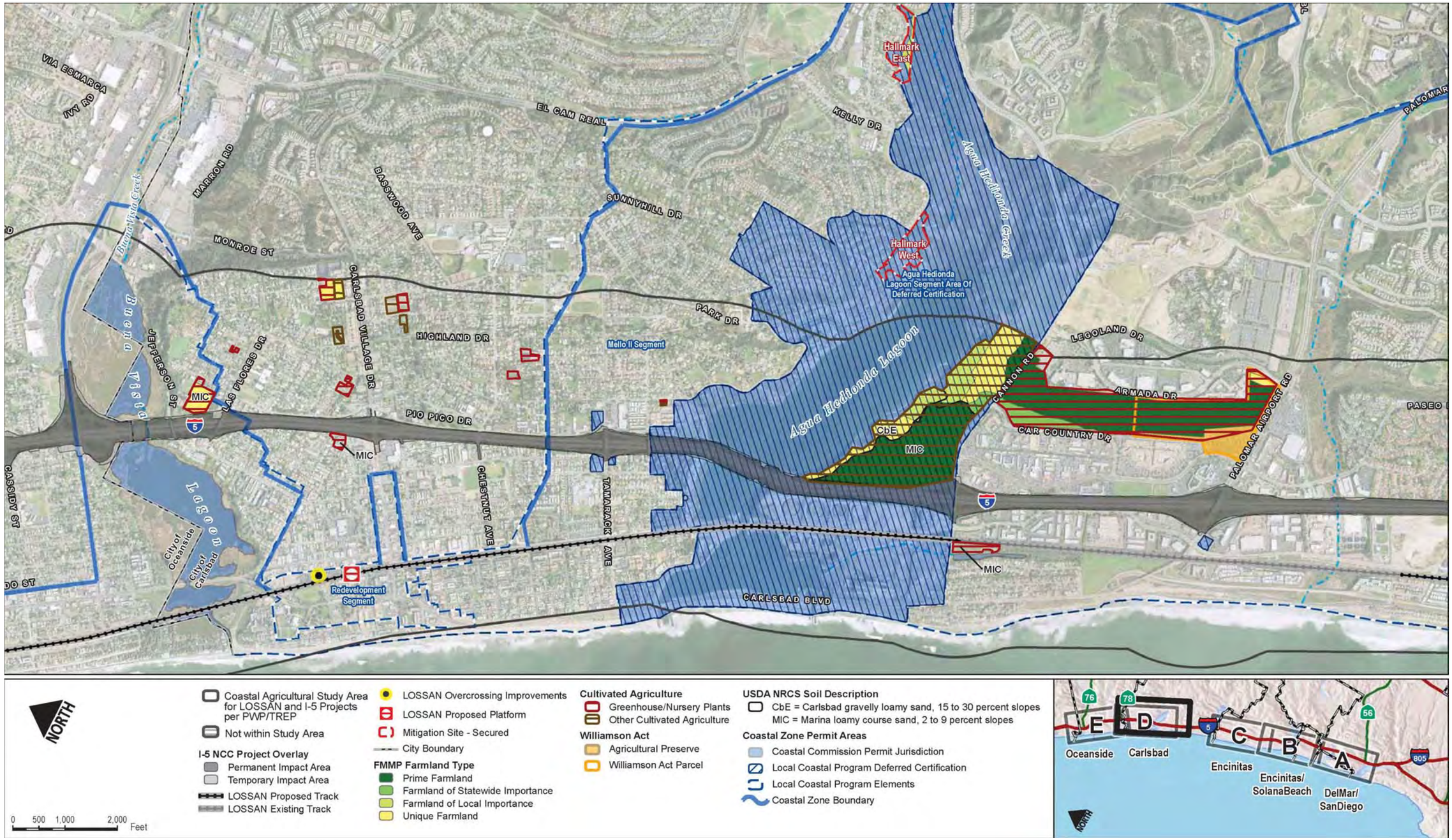
Source: North Coast Corridor PWP/TREP Updated March 2013

Figure 3-3.2b: Coastal Agricultural Resources (Cities of Encinitas / Solana Beach)



Source: North Coast Corridor PWP/TREP Updated March 2013

Figure 3-3.2c: Coastal Agricultural Resources (City of Encinitas)



Source: North Coast Corridor PWP/TREP Updated March 2013

Figure 3-3.2d: Coastal Agricultural Resources (City of Carlsbad)

Source: North Coast Corridor PWP/TREP Updated March 2013

Figure 3-3.2e: Coastal Agricultural Resources (City of Oceanside)

3.4 Community Impacts

This section is based largely on the October 2007 CIA, as amended, and June 2008 Barrio Carlsbad Community Cohesion Report, separate technical studies that were prepared for the proposed project and are incorporated by reference, as well as updates to census data based on the 2010 Census. This section discusses whether the proposed project would have impacts to communities and includes:

- Community Character and Cohesion
- Relocations and Real Property Acquisition
- Environmental Justice

The 8+4 Buffer alternative has been refined since the Draft EIR/EIS was publically circulated in 2010. This alternative was presented as the locally preferred alternative (LPA) in the August 2012 Supplemental Draft EIR/EIS, and has now been identified as the Preferred Alternative. The refined 8+4 Buffer alternative has the least amount of impact of any build alternative and also meets purpose and need.

3.4.1 Community Character and Cohesion

3.4.1.1 Regulatory Setting

NEPA established that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings [42 USC 4331(b)(2)]. FHWA in its implementation of NEPA [23 USC 109(h)] directs that final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as, destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Under CEQA, an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

3.4.1.2 Affected Environment

Due to the linear nature of the proposed project, which traverses six municipalities, the CIA established a study area in which community character traits were analyzed. The CIA study area includes in whole or in part the municipalities of San Diego, Del Mar, Solana Beach, Encinitas, Carlsbad, and Oceanside. Within each of these municipalities, distinct communities exist. The CIA used available census information and field visits to document community character qualities within the study area, and to develop a community profile. Cohesive communities have been regularly linked to certain social characteristics, including high ratios of owner-occupied single-family residences, frequent interpersonal contact, ethnic homogeneity, and shared goals. Neighborhoods with residential stability (i.e., length of tenure) are also

indicative of areas with high community cohesion. The continued relationship between residents, neighbors, and the community typically enhance levels of cohesion within a community. For those areas with high proportions of minority residents and/or cultural homogeneity (explored in this section through an analysis of linguistic isolation), relatively high levels of community cohesion can result from a shared ethnic and/or cultural background.

The CIA study area is composed of a highly urbanized part of northern San Diego County, generally characterized by its coastal location, ethnic diversity, established neighborhoods, resident and visitor-serving commercial centers and activities, and preserves associated with coastal lagoons.

City of San Diego

San Diego is the largest city in the CIA study area. The portion of the City within the study area itself is composed of a number of communities, including La Jolla, University, Torrey Pines, Torrey Hills, and Carmel Valley. While land use within each of these communities is discussed in detail in *Section 3.1* of this EIR/EIS, a brief summary of community land uses is included here. Primary land uses in the portion of the City within the CIA study area are residential, commercial, and industrial, with some land occupied by UCSD. Within the San Diego segment of the CIA study area, the northern reach is primarily residential and open space, while the southern segment has primarily residential and commercial/industrial uses.

Located west of I-5, La Jolla is the southernmost community in the CIA study area and is bounded by the University community to the north and Pacific Beach to the south along the Pacific Ocean. La Jolla is characterized by stable neighborhoods with high proportions of owner-occupied single-family homes and long-term owners and residents. The areas southwest of La Jolla Village Drive also have some of the highest proportions of senior citizens for the San Diego CIA study area. The high level of senior citizens is considered an indication of strong community cohesion since they are often long-standing residents in the area, generally engage in community planning and civic activities, and represent a higher owner occupancy rate.

The University community is located between Torrey Pines and La Jolla and is primarily composed of the UCSD campus and Medical Center, with residential, parks and open space, commercial, and industrial uses. Portions of the community have a relatively high proportion of Asian language speakers. Due to their common language and culture, this type of population characteristic can enhance community cohesion. UCSD is a central destination in the area for students, instructors, and employees in the University community. The campus shared by local residents also contributes to high community cohesion.

Torrey Pines is located west of I-5, with Del Mar to the northwest and Los Peñasquitos Lagoon along the south. It is primarily composed of parks and open space (42 percent), with residential uses north of Carmel Valley Road and industrial and commercial uses near Genesee Avenue. This area generally has a high proportion of owner-occupied homes and long residency tenures, and access to shared recreational areas contributes to the cohesion within the community.

Torrey Hills is located east of I-5 between Carmel Valley and Los Peñasquitos Creek and consists largely of the open space of Los Peñasquitos Canyon Preserve. Access to shared recreational areas enhances cohesion within the community.

Carmel Valley is a master planned community bordered by Carmel Valley Road on the north, I-5 on the west, and Los Peñasquitos Canyon Preserve on the south. It has designated residential areas and job centers along with parks and open space, commercial, public service, and public utility buildings. The Carmel Valley community has a high proportion of owner-occupied homes and certain sections of the area have long-standing residents.

Del Mar

Del Mar is the smallest city in the CIA study area, although it is not directly impacted by the project. Del Mar is composed of mostly high-end residential areas, which can range from large estates to multi-family residential units. The commercial land uses in Del Mar are generally concentrated along Camino Del Mar, an area known as "Del Mar Center." This area serves tourists and residents alike and is a focal point of the community.

Del Mar encompasses a number of stable neighborhoods with high owner occupancy and tenure. East of Camino Del Mar also has the highest proportion of senior citizens in Del Mar and is considered an area of high community cohesion.

Solana Beach

Solana Beach, one of the smallest municipalities in the CIA study area, is almost entirely developed with residential and commercial land uses. Residential developments range from large estates to high-density multi-family housing. Commercial uses are along major transportation corridors including Highway 101, Cedros Avenue, Lomas Santa Fe Drive, and Stevens Avenue. Solana Beach has no officially designated neighborhoods within the City but is generally divided by Lomas Santa Fe Drive, running east to west, and I-5, running north to south.

The Cedros Design District is an unofficial neighborhood in Solana Beach, located on Cedros Avenue between Via de la Valle and Lomas Santa Fe Drive. The area is home to approximately 85 shops and has a distinctly artistic character. It is an area of Solana Beach that has attracted residents with a common interest in design and shared goals within the neighborhood.

Eden Gardens is another unofficial neighborhood and is known to tourists for its specialty restaurants featuring Mexican cuisine. It is one of the oldest residential areas in Solana Beach, located southwest of Lomas Santa Fe Drive and adjacent to I-5, and was a community formed by Mexican farmers originally known as La Colonia. Eden Gardens is composed of predominantly Spanish speakers and has a high level of community cohesion because of residents who share language and cultural backgrounds.

There are two specific plans that cover portions of Solana Beach, including the Highway 101 Corridor Specific Plan and the City of Solana Beach Eden Gardens Master Streetscape Plan of 1995). The Highway 101 Corridor Specific Plan stretches along Highway 101 through the entire city, including some target revitalization areas east and west of the highway.

New developments in Solana Beach on the west side of I-5 have increased the number of residents who own homes in the neighborhood. Areas east of I-5 generally have higher proportions of senior citizens, and these areas generally also reflect continued association in their neighborhoods and elevated levels of community cohesion. Residents in northern Solana Beach have generally resided in the area for longer periods of time.

Encinitas

Encinitas is the fourth most populous city in the study area and is composed of five distinct communities: Leucadia, Old Encinitas, Cardiff, New Encinitas, and Olivenhain. Leucadia, Old Encinitas, and Cardiff are located entirely within the project study area. Boundaries of the defined neighborhood areas generally follow major intersections and thoroughfares. These neighborhoods are largely residential, with other land uses being commercial, open space, and some agriculture mainly in the form of greenhouses. Historically, the economy of Encinitas was based upon agriculture, with poinsettias and other flowers and nursery crops, and avocados as the primary crops. The coastal area of Encinitas is characterized by a casual village atmosphere with an emphasis on surfing and the coastal lifestyle. Generally, Encinitas has a high proportion of residents who own their homes. Along the coastline, residents have lived in their houses for many years, contributing to community cohesion. Senior citizens are present throughout the Encinitas study area, particularly east of I-5. These are cohesive communities that have residential stability associated with long ownership tenures.

Cardiff is mostly composed of single-family and multi-family residential buildings. There are also a few public service and public utility buildings, scattered commercial buildings, some agricultural lands, and two industrial buildings. Cardiff Reef and the small Cardiff business district are focal points within the community. This area also has an important agricultural history, with greenhouses and agricultural land interspersed with residential uses. Cardiff generally has long-term residents, particularly along the coast.

Leucadia is bordered by Batiquitos Lagoon to the north, the beachfront to the west, and El Camino Real to the east. It contains Encinitas Ranch, which is mostly parks and open space, golf courses, and single-family residential development. The remainder of Leucadia is mostly single-family and multi-family residential buildings, with some agriculture and scattered commercial buildings. Many of the families have resided in Leucadia for a long time and have created connections with neighbors and the community itself.

Old Encinitas is bordered by Santa Fe Drive on the south, Crest Drive on the east, and the beachfront on the west. It is generally more urbanized, with several public utility buildings, some small industrial buildings, and a strip of commercial buildings near the beachfront. The remainder of the Old Encinitas community is made up of single-family and multi-family residential buildings, many of which are occupied by residents who have lived in the area for extended periods of time. A portion of Old Encinitas has a high proportion of Spanish language speakers, and their shared culture is indicative of high community cohesion.

A portion of New Encinitas is within the CIA study area. The area extends from Manchester Avenue on the south to Olivenhain Road to the north and Crest Drive to the west. The land use within this area is mixed-use consisting of residential, commercial, vacant/undeveloped, and parks and open space. There are a few industrial buildings as well. The portion of New Encinitas within the CIA study area has a high level of resident-owned homes. The residents in this area share a common interest in maintaining a high quality of life, and this shared goal is conducive to strong community cohesion.

Carlsbad

Carlsbad is third-largest city in the CIA study area by land area. Largely urbanized, Carlsbad is composed of large residential areas and some commercial centers interspersed with large open space areas and agricultural fields. Currently, Carlsbad continues to support agriculture and

resort tourism but also has developed a diverse economic portfolio that includes a large golf equipment manufacturing sector, as well as a large number of biomedical and multimedia companies (Carlsbad Chamber of Commerce 2005). Agriculture remains important to the economy, and the Flower Fields located east of I-5 are a major tourist attraction. Other attractions include Legoland, La Costa Spa and Resort, a large shopping mall, and the Carlsbad Company Stores. Due to residential development restrictions, land around the McClellan-Palomar Airport has become a commercial and industrial center. In addition, the beaches are consistently a popular destination.

Unofficially defined specific areas also exist, including the Barrio, Mariners Point, and Promenade-La Costa. The Barrio is a center for the Hispanic community. It is thought to be the first settled neighborhood in Carlsbad in the 1920s and one of the oldest neighborhoods in Carlsbad. The Barrio is the site of the City's Centro de Información, a Spanish division of the Carlsbad City Library. A portion of the Barrio has residents with the longest residency tenure, along with large groups of Spanish speakers and owner-occupied homes in Carlsbad. The area of the Barrio is generally considered west of I-5 to Washington Street and between Carlsbad Village Drive and Tamarack Avenue, as seen on *Figures 2-2.3, Sheets 54* and *55.*

Mariners Point is in the Southwest Quadrant of the City and is a residential area with parks and open space, and small pockets of commercial, industrial, and public services. Promenade-La Costa also is in the Southwest Quadrant of the City and is characterized by golf courses, parks and open space, and single-family residential units. Along the coast, these areas have residents that have lived in the area for quite some time. Many residents are senior citizens and these areas generally reflect residents that continue to be engaged with their neighbors and the local area, demonstrating a high level of community cohesion.

Oceanside

Oceanside is second to San Diego in both land area and population of those municipalities within the CIA study area. Oceanside has some of the most established residential areas in the CIA study area and is one of the oldest of the six municipalities discussed in this document. Currently, the western portions of Oceanside are relatively urbanized, while the eastern portions are relatively rural, which is also true of Carlsbad. The City of Oceanside General Plan (2002) identifies 17 neighborhoods within the City. The neighborhoods within the study area include Townsite, South Oceanside, East Side Capistrano, Loma Alta, and Fire Mountain. Boundaries of the defined neighborhood areas generally follow census tract boundaries.

Townsite is west of I-5, bordered by Oceanside Boulevard on the south and MCB Camp Pendleton on the north. It is generally composed of a mix of single-family and multi-family residential units, and many of the families in this area are long-term residents. There are a small number of offices and store front properties, and a few scattered public service buildings, schools, industrial buildings, community commercial buildings, and commercial recreation buildings.

South Oceanside is located west of I-5, with Oceanside Boulevard on the north and Carlsbad on the south. It is primarily composed of single-family residential units with a school and scattered multi-family residential units, parks and open space, industrial buildings, neighborhood shopping, store front properties, and a commercial recreational building. Many residents in portions of South Oceanside have long residency tenure.

East Side Capistrano is east of I-5 with MCB Camp Pendleton on the north and Mission Avenue on the south. It is a mix of single-family residential and multi-family residential units, parks and open space, and schools. There are scattered regional commercial buildings, store front properties, and industrial buildings. East Side Capistrano has the highest percentage of non-English speakers and also has areas of the longest residency tenure in Oceanside. The residents in these minority areas may or may not have similar languages, but when contrasted with the majority of Oceanside citizens are considered to be their own community. Their shared experiences as minority residents are linked to high levels of community cohesion, particularly as many families have lived in the area for a long time.

Loma Alta is east of I-5 between Mission Avenue and Oceanside Boulevard, bordered by El Camino Real to the east. It is primarily composed of commercial recreational property with a mix of neighborhood shopping, community commercial, single-family and multi-family residential units, a school, offices, and industrial development. It has a high proportion of owner-occupied homes, as well as a small amount of parks and open space.

Fire Mountain is located east of I-5 between Oceanside Boulevard and Carlsbad, with El Camino Real as its eastern border. It is primarily composed of single-family residential units and includes a high proportion of senior citizens. There is a roughly even mix of community commercial property, industrial buildings, schools, and neighborhood shopping, with a small amount of office property as well as parks and recreational property. Many families in this area own their own homes and have lived in the area for a long time.

Unofficially defined specific areas also exist, such as the Eastside (part of East Side Capistrano) and Crown Heights (part of Townsite). Eastside is bordered by I-5 to the west, Mission Avenue to the south, the San Luis Rey River to the north, and North Canyon Drive to the east. The area is predominantly Hispanic and is bordered by I-5 on the east, Horne Street on the west, Center Avenue on the north, and Minnesota Avenue on the south. Crown Heights has been characterized as "Oceanside's most densely populated and lowest-income neighborhood" (San Diego Union Tribune 2004). This area has the highest minority percentage, population over 65, housing density, and population density (U.S. Bureau of the Census 2000) within Oceanside.

3.4.1.3 Environmental Consequences

The proposed project would not worsen existing conditions with respect to community character or cohesion, with the exception of the 10+4 Barrier alternative in the community of Barrio Carlsbad. These impacts are described in detail below. Overall, the project is anticipated to improve existing community character and cohesion by incorporating various design features into the project. Additionally, community enhancement features, if implemented, would further improve and facilitate connectivity between communities east and west of I-5 that were bisected when I-5 was originally constructed. All design features and candidate enhancement opportunities are common to all build alternatives, and for the purpose identifying the consequences of the proposed action, are included in the following discussion.

Construction-Related Impacts

Construction-related impacts to communities in the vicinity of the proposed project would potentially include periodic vehicular and pedestrian access disruptions, increased noise, dust generation, reduced visual quality, and economic impacts. Construction activities also would

potentially result in disruptions to residents, businesses, and commuters in the vicinity. Lane closures throughout construction areas are anticipated. Access to various intersections may include temporary stoppages, reduced lane widths, reduced speed, rough surfaces, or locations where there is a need for detours around localized construction activities. Where possible, closures requiring extended periods of time would be completed in the evening, early morning, and other appropriate times when traffic volumes would likely be lower. Any disruptions and impacts related to construction activities would be temporary.

10+4 Barrier

City of San Diego

The proposed project would include community enhancement features in four general locations within the City of San Diego, including: a trail connection at Los Peñasquitos Creek: pedestrian and bicycle trail connections at Carmel Valley Road and Old Sorrento Valley Road, as well as an enhanced park and ride at Carmel Valley Road; a pedestrian and bicycle enhanced trail and bridge at San Dieguito Lagoon; and a pedestrian overpass connection north of Del Mar Heights Road. The trail elements would be segments of the proposed NC Bike Trail, as described in *Section 2.3*, *I-5 North Coast Regional and Community Enhancement Projects,* of this Final EIR/EIS. In addition to the reconfigured interchanges, overpasses, and underpasses (all of which would be constructed with pedestrian and bicycle facilities) the proposed community enhancement features, if implemented, would increase connectivity between neighborhoods east and west of I-5 and provide residents with the ability to reach community facilities with greater ease, thereby positively affecting their quality of life.

Implementation of the 10+4 Barrier alternative in San Diego would not result in any substantial land use impacts that would affect adjacent communities. No residential or business properties would be directly affected within the community. The visual perspective of the proposed project would potentially be altered from nearby communities as discussed in *Section 3.7, Visual/Aesthetics*. However, the increased roadway surfaces and landform modification would be within a developed urban area. Overall, because the project would not adversely affect uses within recreational facilities, and would enhance access within the community, the implementation of new project features is not expected to have an adverse effect on community character.

Impacts to community cohesion from operation of the proposed project in San Diego are likely to be positive. Overall, this alternative would result in increased access and flow to and from residential and business communities in San Diego. Additionally, the four community enhancement features would improve pedestrian circulation between communities east and west of I-5.

Del Mar

Del Mar differs from other municipalities in the CIA study area because the proposed project does not directly traverse the City. As such, many features associated with the proposed project (e.g., soundwalls, community enhancement features, increased traffic volumes, possible noise increases) are not expected to directly affect Del Mar residents. However, residents of Del Mar, specifically those who live east of Camino Del Mar, could be affected by changes to existing access and circulation.

Many Del Mar residents leave the City daily for work, school, or errands and would benefit directly from increased capacity on I-5. Improvements to overcrossings, undercrossings, and

interchanges in the surrounding municipalities would also improve circulation for those living in Del Mar. These improvements have the possibility of increasing connectivity between neighborhoods in Del Mar with those outside of the municipal boundaries.

Because the project does not pass through Del Mar, no direct impacts to local businesses or residences are anticipated. Peripheral improvements to traffic and circulation could benefit the local economy. While the City of Del Mar is only two square mi in size, residents could benefit from the proposed community enhancement features in adjacent communities. *Section 3.7* looks at partial views at the Del Mar Heights Road Interchange and identifies moderately high adverse visual impacts. However, the increased roadway surfaces and landform modification would be within a developed urban area. Overall, because the project would not affect uses within recreational facilities, and would enhance access within the community, the implementation of new project features is not expected to have an adverse effect on community character or cohesion.

Solana Beach

A positive impact to community cohesion in Solana Beach would be the construction of the community enhancement features. If implemented these features include the construction of a trailhead at Solana Hills Drive (also a part of the NC Bike Trail) and streetscape enhancements on Ida Avenue. The streetscape enhancements along Ida Avenue would greatly improve the aesthetic quality along this stretch of road, which would be visually affected by a large retaining wall. The proposed new trailhead at Solana Hills Drive for the San Elijo Lagoon Ecological Reserve would be a beneficial impact to community character. According to *Section 3.7*, there would be some moderately high to adverse impacts to visual quality depending on the key view. However, the increased roadway surfaces and landform modification would be within a developed urban area and would not adversely affect community character or cohesion. In addition to the reconfigured interchanges, overcrossings, and undercrossings (all of which would be constructed with pedestrian and bicycle facilities), the proposed community enhancement features, if implemented, would greatly increase connectivity between neighborhoods and provide citizens with the ability to reach community facilities with greater ease.

The proposed project would allow for more efficient vehicular access to Solana Beach businesses by improving traffic circulation and making businesses easier to visit. The additional lanes of this alternative may allow for slightly faster public service response times. The implementation of community enhancement features would allow for easier pedestrian and bicycle access to local businesses. While the 10+4 Barrier alternative would likely affect existing office and street parking and relocation impacts may occur as described in *Section 3.7*, the project would be located in an urban area and would enhance overall access within the community. Therefore, the implementation of new project features is not expected to have an adverse effect on community character or cohesion.

Encinitas

Within Encinitas, community cohesion would be improved with the construction of community enhancement features. If implemented, these features would include a pedestrian bridge and trail at Manchester Avenue and park and ride enhancements at Birmingham Drive; improvements to Villa Cardiff Drive and MacKinnon Bridge; a trail connecting Hall Property Park Trail to Santa Fe Drive; a trail connecting Santa Fe Drive to Requeza Street; a trail connecting Requeza Street to Encinitas Boulevard; a pedestrian overpass and trail connection at Union Street; and a trail connection from Cottonwood Creek Park to Union Street. Most of the trail

elements would be segments of the proposed NC Bike Trail, as described in *Section 2.3* of this Final EIR/EIS. In addition to the reconfigured interchanges, overpasses, and underpasses (all of which would be constructed with pedestrian and bicycle facilities), the proposed community enhancement features would greatly increase connectivity between neighborhoods both east and west of I-5 and provide citizens with the ability to reach community facilities on both sides of the freeway with greater ease.

The pedestrian overpass at Union Street would serve to connect two neighborhoods on either side of I-5 that were historically divided decades ago by the initial construction of the freeway. The new connection at Union Street would allow the neighborhoods on either side of the freeway to interact and strengthen community cohesion in the area.

The access improvements to the highway and surface streets would benefit local businesses by decreasing long wait times to travel on surface streets through the areas and reducing congestion to and from I-5. Overall, because the project would not affect uses within recreational facilities, and would enhance access within the community, and due to the urban nature of the impact area, the implementation of new project features is not expected to have an adverse effect on community character or cohesion.

Carlsbad

The displacement of residents associated with the 10+4 Barrier alternative in northern Carlsbad would occur in an area identified as exhibiting traits of elevated community cohesion—namely, a relatively high concentration of linguistically isolated Spanish-speaking households, as well as a high proportion of minority populations. This social contact and interdependency is established in a range of places throughout the barrio, including Lola's, St. Patrick's Church, on the fields of Pine Park and Holiday Park, the Boys and Girls Club, Jefferson Elementary School, the Centro de Información, the Carlsbad Senior Center, and the neighborhood clinic. As a substantial number of Barrio Carlsbad residents work within the immediate area, other businesses provide context for interaction as even the most simple transaction may involve people who live in close proximity. This interaction is fueled by the walkable nature of the community and its short distance to shops, restaurants, and the beach.

As discussed in *Section 3.4.2* and *Table 3.4.1,* below, relocating displaced residents may be difficult as the availability of apartments within Carlsbad with similar rental rates is not adequate for relocating 47 units. If relocation is not feasible in Carlsbad and families are relocated outside of the community, this may adversely impact community cohesion in the area. Proposed streetscape enhancements along Chestnut Avenue are located in proximity to the displaced units and would improve visual cohesion through the construction of an aesthetically pleasing pedestrian space. The loss of up to 47 families from the community, however, may still adversely affect cohesion in the immediate area.

If implemented, the community enhancement features (the proposed pedestrian and bike trails at the west side of Batiquitos Lagoon and at the east side of Agua Hedionda Lagoon) would enhance pedestrian access to important community recreational facilities. Both of these trails would be segments of the proposed NC Bike Trail, as described in *Section 2.3* of this Final EIR/EIS. In addition to the reconfigured interchanges, overpasses, and underpasses (all of which would be constructed with pedestrian and bicycle facilities), the proposed community enhancement features would greatly increase connectivity between neighborhoods and provide citizens with the ability to access community facilities both east and west of I-5 with greater ease

and safety. It also would result in the removal of some parking on Pio Pico Drive, but would not affect the recreational facilities within Holiday Park. Generally, impacts to community cohesion from operation of the proposed project in Carlsbad are likely to be positive. Due to the urban nature of the impact area, the implementation of new project features is not expected to cause an adverse effect to community character. However, for the Barrio Carlsbad community in northern Carlsbad involving the potential to displace the 47-unit apartment complex, community cohesion may be adversely affected. The refined 8+4 Buffer alternative (Preferred Alternative) would not impact this community. *Figure 3-4.1* (located at the back of this section) shows the differences between the four build alternatives on an aerial photo of this area.

Oceanside

Perhaps the greatest beneficial impact to community cohesion within Oceanside would be construction of the community enhancement features, which includes construction of a pocket park and pedestrian trail at California Street; bike and pedestrian streetscape enhancements along Oceanside Boulevard; enhancements to the Division Street overpass; an enhanced bike and pedestrian overpass connection on Mission Avenue (which would connect to Oceanside High School); an enhanced bike and pedestrian overpass connection on Bush Street; community open space park and gardens near Horne Street; construction of SR-76 pedestrian underpass improvements at the San Luis Rey River; and pedestrian and bike enhancements at Harbor Drive/Camp Pendleton (the latter of which would also be part of the NC Bike Trail, as described in *Section 2.3* of this Final EIR/EIS). Most of the community enhancement features, if implemented, would occur in areas with high minority populations, which tend to have high levels of community cohesion. In addition to the reconfigured interchanges, overpasses, and underpasses (all of which would be constructed with pedestrian and bicycle facilities), the proposed community enhancement features would increase connectivity between neighborhoods and provide citizens with the ability to reach and enjoy community facilities on both sides of the freeway with greater ease. Public monuments, such as the regional gateway feature at Harbor Drive constructed as part of project design, and streetscape enhancements, could potentially instill a sense of pride in nearby communities and enhance community cohesion.

Improved access efficiency to the highways and surface streets would positively impact businesses throughout the City. The project is not expected to have an adverse effect on community character or cohesion. It would not affect uses within recreational facilities and would enhance access within the community, and due to the urban nature of the impact area, the implementation of new project features.

10+4 Buffer

While the 10+4 Buffer alternative would impact slightly less area, the CIA study area for the municipalities remains the same since community cohesion and character are issues that are analyzed at a community-wide scale. The impacts for this alternative are similar to those described in the 10+4 Barrier alternative, except for the community of Carlsbad. This alternative would not affect the 47-unit apartment building in Carlsbad, identified within a cohesive community, and therefore would not result in an adverse effect to community cohesion.

As discussed in *Section 3.4.2*, below, residential units and businesses would be impacted to varying degrees. Economic activity is expected to improve in the area due to improved access efficiency and circulation. Impacts to San Dieguito River Park and San Elijo Lagoon, and minor impacts to Batiquitos, Agua Hedionda, and Buena Vista lagoons, would occur. Parking adjacent to (but not within) Holiday Park would be acquired. Overall, because the project would not

affect uses within recreational facilities, and would enhance access within the community, and due to the urban nature of the impact area, the implementation of new project features is not expected to have an adverse effect on community character or cohesion.

8+4 Barrier

The impacts to community character and cohesion for this project alternative are similar to the 10+4 Barrier alternative. This alternative would impact 10 units of the 47-unit apartment building in Barrio Carlsbad. Since there are adequate relocation opportunities in this area, implementation of the project is not expected to have an adverse effect on community character or cohesion.

8+4 Buffer (Preferred Alternative)

The impacts to community character and cohesion for this project alternative are similar to the 10+4 Buffer alternative. The overall right-of-way required for the project is less than that discussed under the 10+4 Buffer alternative, but because community character and cohesion are analyzed at a community scale, the differences in impacts are not discernible. This alternative would not affect the 47-unit apartment building in Carlsbad, identified within a cohesive community, and therefore would not result in an adverse effect to community cohesion.

No Build Alternative

The No Build alternative would not result in construction along the I-5 corridor as proposed in the build alternatives. Existing congestion on this segment of I-5 would further intensify impacts to the community as traffic is forecasted to increase in the coming years. The positive effects to community character and cohesion as a result of the community enhancement features would not be implemented by Caltrans, but could be constructed by others. The No Build alternative would further intensify impacts to the community as traffic is forecasted to increase in the coming years.

3.4.1.4 Avoidance, Minimization, and/or Mitigation Measures

Caltrans is aware of the unique nature of the proposed project with six distinct municipalities, as well as the San Diego County region as a whole, affected by improvements to I-5. To avoid and/or minimize impacts to community character and cohesion, the proposed project has been designed with input from the community. Since 2003, Caltrans has conducted and participated in a number of community outreach meetings with the general public entities, and interested stakeholders in a comprehensive effort to gather input and comments from the surrounding communities.

The following measures would be incorporated into the project design to minimize potential impacts to the community during construction and operation of the proposed project.

- Landscape and streetscape improvements would be provided in affected areas, where possible, and would be consistent with the visual atmosphere, historic architecture, and native vegetation in the area.

- Reconfiguration of interchanges, overcrossings, and undercrossings along the project corridor would improve pedestrian and bicycle facilities, provide linkages, and allow for improvements to public transit. Most notably, project features would serve to improve and facilitate connectivity between communities east and west of I-5 in locations that have been previously bisected by the freeway.

In addition to the measures mentioned above, measures specified in other issue areas of this Final EIR/EIS may also serve to minimize impacts to the community. Such issue areas with additional measures include, but are not limited to noise abatement (*Section 3.15*), traffic and transportation (*Section 3.6*), and visual/aesthetics (*Section 3.7*).

The proposed community enhancement opportunities would expand on the measures mentioned above, and would be implemented only upon agreement with each local agency regarding maintenance in perpetuity.

As discussed throughout this document, ongoing efforts to minimize potential project footprint also are part of the project. The refined 8+4 Buffer alternative has now been identified as the Preferred Alternative. This alternative has the smallest footprint of any evaluated alternative, and would have the least effect on community character and cohesion.

Construction-Related Measures

The following measures would help to minimize impacts to communities during construction activities:

- TMP would be prepared to minimize traffic delays and closures through the use of various traffic handling practices
- Public awareness program would be developed to inform the public of upcoming detours and construction schedules
- Traffic impacts around schools would be noted in the TMP
- Equipment would have sound-control devices to minimize noise, and other specifications to turn off idling equipment and installing temporary acoustic barriers around stationary construction noise sources would be implemented
- Construction equipment and truck staging and maintenance areas would be located as far as feasible and nominally downwind of schools, active recreation areas, and other communities of high-population density
- In the event any hazardous materials are located within the vicinity of any Oceanside Unified School District school, including but not limited to the Oceanside High School, Caltrans shall immediately notify the District and provide an explanation of the remediation measures to address the discovery of any hazardous materials during the construction of the project
- The project would implement Caltrans' Standard Specifications related to temporary dust and emissions, as well as noise control

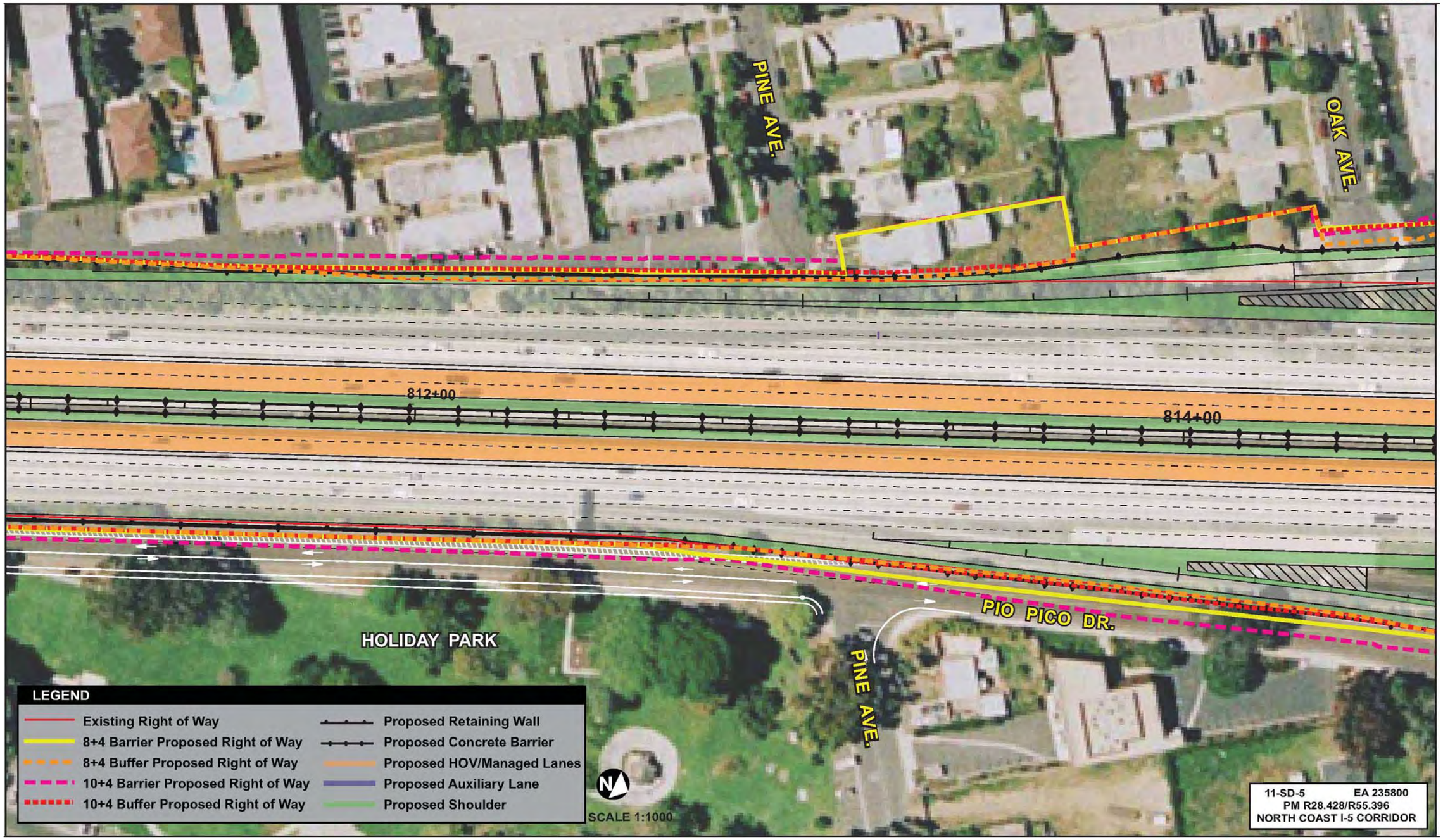


Figure 3-4.1: Build Alternatives Right-of-Way Comparison: South of Carlsbad Village Drive

3.4.2 Relocations and Real Property Acquisition

3.4.2.1 Regulatory Setting

Caltrans' Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and 49 CFR Part 24. The purpose of RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. A summary of the RAP is located in Appendix C.

All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 USC 2000d et seq.). Please see Appendix B for a copy of Caltrans' Title VI Policy Statement.

3.4.2.2 Affected Environment

This section is based on the project Draft Relocation Impact Report (DRIR) and Final Relocation Impact Study (FRIS 2013), separate technical studies that were prepared for the proposed project and are incorporated by reference. This section also is based upon the CIA, as amended, and Barrio Carlsbad Community Cohesion Report, June 2008, also incorporated by reference. The proposed project traverses a highly urbanized portion of northwest San Diego County. The majority of land surrounding the proposed project is considered to be developed with urban uses with a few vacant developable parcels of land remaining in the immediate vicinity of I-5. The proposed project traverses five municipalities, beginning with San Diego at the southern end of the proposed project and ending with Oceanside at the project's northern terminus. However, relocation impacts could only occur in Solana Beach, Encinitas, Carlsbad, and Oceanside. Consequently, a brief discussion of the land uses surrounding the proposed project is provided for these four municipalities.

Land uses in the portion of Solana Beach within the area of direct impacts are mainly a mixture of single-family and multi-family residential developments, as well as commercial, light industrial, office, school, and open space land uses. Residential uses are located throughout the direct impact area with single-family residential developments to the north and south, and multi-family residential developments along Lomas Santa Fe Drive as well as in the southern part of the City. Land uses within Encinitas surrounding the proposed project are residential, commercial, office uses, schools, agricultural land, and open space. Residential is the dominant land use, with each residential area serviced by neighborhood and mixed-use shopping areas, schools, and parks.

Land uses within Carlsbad surrounding the proposed project are primarily a mixture of residential, commercial, industrial, agriculture, and public services. The central portion of Carlsbad, between Agua Hedionda Lagoon and Poinsettia Lane, is composed primarily of open space, industrial, and commercial uses, while the portions of Carlsbad to the north and south of this area primarily feature residential uses. Land uses within Oceanside surrounding the proposed project are primarily a mixture of single-family and multi-family residential areas, as well as general and community commercial centers, open space, and light industrial uses. The majority of the land surrounding the proposed project is developed and urban in nature.

3.4.2.3 Environmental Consequences

As described above, implementation of the four build alternatives could result in displacements in four municipalities: Solana Beach, Encinitas, Carlsbad, and Oceanside. A discussion of the displacements for each project alternative is provided below. These displacements would be in accordance with Title VIII of the Civil Rights Act of 1968, also known as the Fair Housing Act.

10+4 Barrier

Relocation impacts associated with the 10+4 Barrier alternative are shown in *Table 3.4.1*. As described in the DRIR, no impacts to any residential or business properties within the San Diego portion of the alignment and no business relocation impacts would occur in Solana Beach with the 10+4 Barrier alternative. Similarly, no residential or business displacements would occur within Del Mar, as the I-5 alignment does not actually pass through the city limits.

Table 3.4.1: Relocation Associated with the10+4 Barrier Alternative

Relocated Units	Solana Beach	Encinitas	Carlsbad	Oceanside	Total
Single-Family Residence (SFR)	0	2 SFRs	10 SFRs	13 SFRs	25
Duplex/Triplex (Multi-Res)	0	0	1 Triplex (3 units)	1 Duplex and 1 Triplex (5 units)	8
Apartments/Condos (Multi-Res) 4 or more	6	0	47 units	26 units	79
Total Residential Units	6	2	60	44	112
Businesses	0	1	9	3	13

The 10+4 Barrier alternative would result in the displacement of six condominiums in Solana Beach within the Eden Gardens community. Additionally, the 10+4 Barrier alternative would result in the displacement of two single-family residences in Old Encinitas and one commercial business in Leucadia. Adequate relocation opportunities were identified in the DRIR for these residential and business displacements. As discussed in detail in the DRIR, residents and businesses displaced as the result of a given project are potentially eligible to be compensated in accordance with the Uniform Relocation Assistance Act of 1970, as amended.

The 10+4 Barrier alternative would displace 10 single-family homes, a 47-unit apartment complex, and one triplex within Carlsbad, as seen in *Figure 3-4.1*, which shows the differences between the four build alternatives. These residences are located north of Agua Hedionda Lagoon, directly adjacent to the freeway. Adequate relocation opportunities have been determined to exist for the single-family residences and triplex, but there may be some difficulty finding adequate relocation resources for the 47-unit apartment complex. The apartment complex is composed of 47 two-bedroom units, and lies within a cohesive community. With rents estimated at $1,050 a month, it is unlikely that current residents would be able to relocate in Carlsbad and maintain similar rents. The DRIR suggests that Caltrans may need to utilize the State's relocation program or Last Resort Housing (LRH) Program payments to relocate those displaced.

In addition to residential displacements, nine commercial businesses in northern Carlsbad could require relocation as part of the 10+4 Barrier alternative. The DRIR identified adequate

relocation opportunities for the majority of these businesses. Residents and businesses displaced as the result of a given project are potentially eligible to be compensated in accordance with the Uniform Relocation Assistance Act of 1970, as amended.

The 10+4 Barrier alternative would displace 13 single-family and 31 multi-family units in Oceanside. Nine of the single-family units are located in South Oceanside, with 3 single-family units and 31 multi-family units located in Townsite, and 1 single-family unit in East Side Capistrano. One of the single-family residential units in South Oceanside displaced by the 10+4 Barrier alternative is an eight-bedroom home. Due to the lack of equivalent housing in the Oceanside area, as described in the DRIR, relocation of this residence could require utilization of the State's relocation program or LRH Program. Adequate relocation opportunities exist for the remaining residences, as identified in the DRIR.

Three businesses in Loma Alta would require relocation within Oceanside. While adequate relocation opportunities exist for two of these sites, it may be difficult to identify an appropriate relocation site for a specialty sports business that focuses on scuba training and currently has an on-site pool. Residents and businesses displaced as the result of a given project are potentially eligible to be compensated in accordance with the Uniform Relocation Assistance Act of 1970, as amended.

Caltrans' RAP and State's relocation program would be implemented to ensure adequate treatment for those directly impacted by the 10+4 Barrier alternative. Therefore, relocation impacts are not anticipated to be adverse.

10+4 Buffer

Relocation impacts associated with the 10+4 Buffer alternative are shown in *Table 3.4.2*. As described in the DRIR, the 10+4 Buffer alternative would not result in any residential or business displacements within the San Diego portion of the alignment and no adverse relocation impacts would occur. Similarly, no residential or business displacements would occur within Del Mar or Solana Beach, and no adverse relocation effects would occur.

Table 3.4.2: Relocation Associated with the10+4 Buffer Alternative

Relocated Units	Solana Beach	Encinitas	Carlsbad	Oceanside	Total
Single-Family Residence (SFR)	0	1 SFR	8 SFRs	13 SFRs	22
Duplex/Triplex (Multi-Res)	0	0	0	1 Duplex and 1 Triplex (5 units)	5
Apartments/Condos (Multi-Res) 4 or more	0	0	0	26 units	26
Total Residential Units	0	1	8	44	53
Businesses	0	0	7	3	10

The 10+4 Buffer alternative would result in the displacement of one single-family residence in Old Encinitas. Adequate relocation opportunities were identified in the DRIR for the residential displacement. As discussed in detail in the DRIR, residents and businesses displaced as the result of a given project are potentially eligible to be compensated in accordance with the Uniform Relocation Assistance Act of 1970, as amended.

The 10+4 Buffer alternative would displace eight single-family residences in Carlsbad. Adequate relocation opportunities have been determined to exist for these single-family residences in the DRIR. The 10+4 Buffer alternative would also displace seven of the nine commercial businesses in northern Carlsbad displaced by the 10+4 Barrier alternative. The DRIR has identified adequate relocation opportunities for the majority of these businesses. It may be difficult to locate an appropriate relocation site for the gas and automotive service station, however, due to the requirement of finding a site that allows those services to occur. Residents and businesses displaced as the result of a given project are potentially eligible to be compensated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

Relocation impacts within Oceanside would be identical to those identified for the 10+4 Barrier alternative, consisting of 13 single-family residences, 31 multi-family residences, and three businesses. While adequate relocation opportunities exist for the majority of these displacements, it may be difficult to identify an appropriate relocation site for the eight-bedroom home and the specialty sports business that focuses on scuba training, and currently has an on-site pool. Due to the lack of equivalent housing in the Oceanside area, as described in the DRIR, relocation of this residence could require utilization of the State's relocation program or LHR Program. Both residents and businesses displaced as the result of a given project are potentially eligible to be compensated in accordance with the Uniform Relocation Assistance Act of 1970, as amended.

Caltrans' relocation program would be implemented to ensure adequate treatment for those directly impacted by the 10+4 Buffer alternative. Therefore, relocation impacts are not anticipated to be adverse.

8+4 Barrier

Relocation impacts associated with the 8+4 Barrier alternative are shown in *Table 3.4.3*. As described in the DRIR, the 8+4 Barrier alternative would not result in any residential or business displacements within the San Diego portion of the alignment and no adverse relocation impacts would occur. Similarly, no residential or business displacements would occur within Del Mar or Solana Beach, and no adverse relocation effects would occur.

Table 3.4.3: Relocation Associated with the 8+4 Barrier Alternative

Relocated Units	Solana Beach	Encinitas	Carlsbad	Oceanside	Total
Single-Family Residence (SFR)	0	1 SFR	9 SFRs	13 SFRs	23
Duplex/Triplex (Multi-Res)	0	0	1 Triplex (3 units)	1 Duplex and 1 Triplex (5 units)	8
Apartments/Condos (Multi-Res) 4 or more	0	0	10 units	26 units	36
Total Residential Units	0	1	22	44	67
Businesses	0	1	7	3	11

The 8+4 Barrier alternative would result in the displacement of one single-family residence in Old Encinitas and one commercial business in Leucadia. Adequate relocation opportunities were identified in the DRIR for the residential and business displacements. As discussed in detail in the DRIR, residents and businesses displaced as the result of a given project are

potentially eligible to be compensated in accordance with the Uniform Relocation Assistance Act of 1970, as amended.

The 8+4 Barrier alternative would also displace the 10 units within a 47-unit apartment complex, a triplex, and 9 single-family residences in Carlsbad. The apartment complex is composed of 47 two-bedroom units, and is within the Barrio Carlsbad community. The DRIR identified that adequate relocation opportunities were available in Barrio Carlsbad for the 10 units of the apartment complex. The DRIR suggests that Caltrans may need to utilize the State's relocation program or LRH Program payments to relocate those displaced.

The 8+4 Barrier alternative also would displace seven of the nine commercial businesses in northern Carlsbad displaced by the 10+4 Barrier alternative. The DRIR has identified adequate relocation opportunities for the majority of these businesses. Residents and businesses displaced as the result of a given project are potentially eligible to be compensated in accordance with the Uniform Relocation Assistance Act of 1970, as amended.

Relocation impacts within Oceanside would be identical to those identified for the 10+4 Barrier alternative, consisting of 13 single-family residences, 31 multi-family residences, and 3 businesses. While adequate relocation opportunities exist for the majority of these displacements, it may be difficult to identify an appropriate relocation site for the eight-bedroom home and the specialty sports business that focuses on scuba training and currently has an on-site pool. Due to the lack of equivalent housing in the Oceanside area, as described in the DRIR, relocation of this residence could require utilization of the State's relocation program or LRH Program. Both residents and businesses displaced as the result of a given project are potentially eligible to be compensated in accordance with the Uniform Relocation Assistance Act of 1970, as amended.

Caltrans' RAP and State's relocation program would be implemented to ensure adequate treatment for those directly impacted by the 8+4 Barrier alternative. Therefore, relocation impacts are not anticipated to be adverse.

8+4 Buffer (Preferred Alternative)

Relocation impacts associated with the 8+4 Buffer alternative and refined 8+4 Buffer alternative are shown in *Tables 3.4.4a and 3.4.4b*. The relocation impacts for the 8+4 Buffer alternative from the Draft EIR/EIS are included here for reference and comparison with the other build alternatives. As described in the FRIS, the refined 8+4 Buffer alternative would not result in any residential or business displacements within the San Diego or Solana Beach portions of the alignment and no adverse relocation impacts would occur.

Table 3.4.4a: DRIS - Relocation Associated with the 8+4 Buffer Alternative

Relocated Units	Solana Beach	Encinitas	Carlsbad	Oceanside	Total
Single-Family Residence (SFR)	0	0	3 SFRs	13 SFRs	16
Duplex/Triplex (Multi-Res)	0	0	1 Triplex (3 units)	1 Duplex and 1 Triplex (5 units)0	8
Apartments/Condos (Multi-Res) 4 or more	0	0	0	26units	26
Total Residential Units	0	0	6	44	50
Businesses	0	0	7	3	10

Table 3.4.4b: FRIS - Relocation Associated with the 8+4 Buffer Alternative (Preferred Alternative)

Relocated Units	Solana Beach	Encinitas	Carlsbad	Oceanside	Total
Single-Family Residence (SFR)	0	2 SFRs	1 SFRs	5 SFRs	8
Duplex/Triplex (Multi-Res)	0	0	0	1 2-unit duplex 0	2
Apartments/Condos (Multi-Res) 4 or more	0	0	0	1 10-unit	10
Total Residential Units	0	2	1	17	20
Businesses	0	0	7	0	7

The 8+4 Buffer alternative identified potential relocations for two single-family residences in Encinitas, one single-family residence in Carlsbad, and five single-family residences in Oceanside. There are also one duplex (2 units) and one apartment/condominium complex (10units) identified for relocation in Oceanside, totaling 12 units. Adequate relocation opportunities were determined to exist for these single-family and multi-family residences. The 8+4 Buffer alternative also would displace seven commercial businesses in Oceanside. The FRIS identified adequate relocation opportunities for the majority of these businesses. Residents and businesses displaced as the result of a given project are potentially eligible to be compensated in accordance with the Uniform Relocation Assistance Act of 1970, as amended. Anticipated property relocations are shown in *Table 3.4.5* for the 8+4 Buffer alternative (Preferred Alternative).

In Oceanside, it may be difficult to identify an appropriate relocation site for an eight-bedroom home (which is more than the average number of bedrooms in a single-family home) and a cocktail lounge (in terms of timing relative to transfer of this specific business license to another location). It is also unknown at this time whether any of the displacees have special needs that might require special handling.

Due to the lack of equivalent housing in the Oceanside area, as described in the FRIS, relocation of this residence could require utilization of the State's relocation program or LRH Program. Both residents and businesses displaced as the result of a given project are potentially eligible to be compensated in accordance with the Uniform Relocation Assistance Act of 1970, as amended. Having sufficient lead time to assist in replacement sites for continuation of business is expected to greatly enhance the efforts to find appropriate replacement sites for these businesses.

Table 3.4.5: Potential Relocations Associated with the 8+4 Buffer Alternative (Preferred Alternative)

Assessor Parcel Number	Land Use
261-210-21	2 Single-Family Residence
204-111-01	Single-Family Residence
203-320-31	Business/Commercial
153-242-28	Single-Family Residence
153-154-24	Single-Family Residence
153-154-26	Single-Family Residence
150-245-11	Multi-Family Residence
150-245-12	Single-Family Residence
150-245-02	Multi-Family Residence
148-064-14	Single-Family Residence

Caltrans' RAP relocation program would be implemented to ensure adequate treatment for those directly impacted by the 8+4 Buffer alternative. Therefore, relocation impacts are not anticipated to be adverse.

3.4.2.4 Avoidance, Minimization, and/or Mitigation Measures

The proposed project has been designed to minimize impacts, where possible, by taking the reduced amounts of right-of-way and limiting the grading footprint in order to minimize impacts to existing structures while still meeting project objectives. The DRIR concluded that adequate relocation resources existed for the majority of displacees. Additionally, displacees that may face difficulty finding suitable relocation resources would be eligible for assistance from Caltrans through the State's relocation program or LRH Program options, including LRH payments.

As discussed throughout this document, ongoing efforts to minimize potential project footprint also are part of the project. The refined 8+4 Buffer alternative is identified as the Preferred Alternative. This alternative has been evaluated in the FRIS. It has the smallest footprint of any evaluated alternative, and would have the least effect on relocations.

3.4.3 Environmental Justice

3.4.3.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by President Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and/or low-income populations to the greatest extent practicable and permitted by law.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in this project. Caltrans' commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, signed by the Director, which can be found in Appendix B of this document.

Populations are defined as "minority" using U.S. Census racial and ethnic categorizations. Utilizing U.S. Census 2000 data, minority individuals are defined as all persons other than "white, non-Hispanic" in origin.

Persons living with income below poverty are identified as "low-income," utilizing the annual statistical poverty thresholds established by the U.S. Bureau of the Census. The U.S. Bureau of the Census estimated that the nationwide weighted-average poverty level for a family of four in 2006 (the most recent year for which data are available) to be $20,614. Department of Health and Human Services (HHS), which maintains its own, simplified poverty guidelines, estimated the poverty level in 2007 for a family of four in California to be $20,650. For the analysis presented in this document, however, U.S. Bureau of the Census thresholds for 1999 (used for the 2000 tabulation) would be used. The weighted-average poverty threshold for a family of

four in California in 1999 was $17,029.[1] In practical terms, it is not likely that low-income population patterns in the study area have shifted dramatically since the 2000 census.

3.4.3.2 Affected Environment

This section is based largely upon the 2007 CIA, as amended, and Barrio Carlsbad Community Cohesion Report, June 2008, in addition to the I-5 North Coast Managed Lanes Value Pricing Study from La Jolla Village Drive to Vandegrift Boulevard, Concept Plan Volumes I and II, April 2006, separate technical studies that were prepared for the proposed project and are incorporated by reference. This analysis of potential Environmental Justice impacts identifies whether minority or low-income populations exist within the area potentially affected by the proposed project. It uses U.S. Census data for the year 2000 and identifies those block groups that have higher proportions of minority and/or low-income populations. A minority and/or low-income population may be present in an area if the proportion of the populations in the area of interest are "meaningfully greater" than that of the general population, or where the proportion exceeds 50 percent of the total population. For the purposes of this analysis, minority and/or low-income populations of individual census block groups (a subunit of a census tract) were compared against the general population of the municipalities as a whole, and the larger region (San Diego County). A meaningfully greater proportion is twice that of the municipality as a whole or the larger region of San Diego County, whichever was less (CEQ's guidance document, Environmental Justice Guidance under the National Environmental Protection Act, December 1997). In either of these cases, these block group minority and/or low-income populations are then considered populations subject to EO 12898. Environmental and community impacts are then analyzed to determine whether those low-income and/or minority populations are disproportionately affected by the proposed project. *Figures 3-4.2* and *3-4.3* illustrate the racial and ethnic composition of potentially affected census block groups within each jurisdiction in the CIA study area, and *Tables 3.4.6* (found at the end of this section)*, 3.4.7,* and *3.4.8,* below, provide a comparison with each jurisdiction as a whole and the County of San Diego.

Minority Populations in the Study Area

City of San Diego

There are a total of 33 block groups in the San Diego portion of the CIA study area, and the proportions of total minority populations ranged from 8.8 percent to 50.4 percent. The entirety of San Diego within the CIA study area has a total minority percentage of 34.1 percent, as shown in *Table 3.4.6*. The block group that had the highest total minority percentages was 83.43.1. While this block group had a minority population percentage only 12 percent higher than the overall total minority percentage for the City of San Diego (45.0 percent), this block group did exhibit a total minority percentage over 50 percent and, therefore, is considered an area of potential Environmental Justice concern. As illustrated in *Figure 3-4.3*, this block group

[1] While the use of the two, more recent, poverty levels may be preferable, their use is not tenable for a number of reasons. First, the application of HHS guidelines to U.S. Bureau of Census data would result in inaccurate numbers of people living in poverty due to the subtle differences in their respective tabulation methodologies. Second, the more recently collected U.S. Bureau of the Census data (i.e., the American Community Survey) are not detailed enough to determine proportions of people living below poverty within the narrowly defined study area; 2000 data are the most comprehensive, most complete, and most customizable dataset available for all six municipalities within the study area and San Diego County. Third, U.S. Bureau of the Census 2000 data are used throughout this report to analyze socioeconomic conditions, and their use in this section creates an internal consistency for the document.

is located east of I-5 and west of Genesee Avenue, along Regents Road. No other populations within San Diego are of concern with respect to Environmental Justice.

Del Mar

As of 2000, the proportions of total minority populations ranged from 7.4 percent to 10.1 percent in census block groups for Del Mar. When taken as a whole, Del Mar had a total minority percentage of 9.1 percent, as summarized in *Table 3.4.6*. There are a total of four block groups within Del Mar, none of which have a meaningfully greater minority population than the population of the City as a whole. Therefore, Del Mar is not considered to contain minority populations within the meaning of this analysis.

Solana Beach

A total of 13 block groups are located in Solana Beach. The proportions of total minority populations ranged from 4.6 percent to 63.0 percent in census block groups within the Solana Beach portion of the CIA study area. The entirety of the CIA study area located in and around Solana Beach had a total minority percentage of 19.9 percent as outlined in *Table 3.4.6*. Those block groups having the highest total minority percentages were 173.04.1 and 173.04.4, at 63.0 and 56.1 percent, respectively. The total minority percentage for Solana Beach is 21.0 percent. As illustrated in *Figure 3-4.3*, 173.04.1 is located adjacent to and west of I-5, between Lomas Santa Fe Drive and Via de la Valle. Block group 173.04.4 is located west of Coast Highway 101, adjacent to the Pacific Coast, and is more than 0.5 mi from I-5. Therefore, two block groups exhibited a total minority percentage meaningfully greater within Solana Beach.

Encinitas

A total of 35 block groups are located in Encinitas. The proportions of total minority populations ranged from 9.6 percent to 57.7 percent within the Encinitas portion of the CIA study area. The entirety of Encinitas within the CIA study area had a total minority percentage of 23.3 percent as shown in *Table 3.4.6*. Block groups having the highest total minority percentages were 174.04.1, 175.02.3, 176.03.2, and 177.01.5. As illustrated in *Figure 3-4.2*, three of these block groups are located adjacent to the proposed project. Two block groups are located both north and south of Lomas Santa Fe Drive. Block group 176.03.2 is located east of I-5, between Leucadia Boulevard to the north and Encinitas Boulevard to the south. Block group 177.01.5 is located less than 0.5 mi west of I-5. Therefore, four block groups exhibited a total minority percentage meaningfully greater within Encinitas.

Carlsbad

Carlsbad contains a total of 25 block groups. The proportions of total minority populations ranged from 6.6 percent to 74.3 percent in census block groups within the Carlsbad portion of the CIA study area. As summarized in *Table 3.4.6*, the entirety of Carlsbad within the CIA study area had a total minority percentage of 23.4 percent. The total minority percentage for Carlsbad is 19.5 percent. As illustrated in *Figure 3-4.2*, these block groups are located adjacent to the proposed project, west of I-5, with Buena Vista Lagoon to the north and Tamarack Avenue to the south. Block groups 179.00.3, 179.00.4, and 179.00.2 are located less than 0.5 mi from I-5. These three block groups exhibit a total minority percentage meaningfully greater within Carlsbad.

Oceanside

The proportions of total minority populations ranged from 17.1 percent to 95.2 percent in census block groups within the Oceanside portion of the CIA study area. As shown in *Table 3.4.6*, the entirety of Oceanside within the CIA study area had a total minority percentage of 53.9 percent.

Of the 36 block groups, 17 were considered to contain meaningfully greater minority populations, including 182.00.1, 182.00.2, 184.00.1, 184.00.2, 184.00.3, 184.00.4, 185.09.1, 185.09.2, 185.09.3, 185.09.4, 185.10.2, 185.11.1, 185.11.4, 186.01.1, 186.03.1, 186.03.2, and 186.03.3. As illustrated in *Figure 3-4.2*, these block groups are generally located on both the west and east sides of the proposed project, from the northern boundary of Oceanside, to Oceanside Boulevard. Block groups 185.09.3, 185.09.4, 185.10.2, 185.11.1, 185.11.4, and 186.03.1 are located more than 0.5 mi from I-5. These 17 block groups exhibit total minority percentages meaningfully greater within Oceanside.

Minority Populations in the Project Area (updated with Census 2010 data)

Census 2010 data have become available since circulation of the Draft EIR/EIS. The analysis using Census 2000 included block group level data; however, due to the new methodology used in Census 2010 (using a substantially smaller sample size), it was determined that 2010 census tract data would provide better accuracy for purposes of this analysis. Census tracts that directly border I-5 were used for the discussion below (a discussion on the City of Del Mar is thus omitted). *Table 3.4.7* provides a comparison with each jurisdiction as a whole and the County of San Diego.

City of San Diego

The City of San Diego census tracts adjacent to this corridor have a minority population ranging from 17.5 to 67.3 percent, compared to 54.9 percent for the City of San Diego itself. Those census tracts having the highest total minority percentages were 83.63, 83.46, 83.41, 83.39, and 83.05 at 67.3, 55.4, 55.3, 54.7, and 58.5 percent, respectively. These tracts show a high Asian population, and may reflect the demographics of the UCSD campus, which is located in the near vicinity. The high (22 percent) Asian population discussed in the Draft EIR/EIS for this study area (which is a subset of these census tracts) is consistent with the Census 2010 data, as shown in *Table 3.4.7*.

Solana Beach

The City of Solana Beach census tracts located adjacent to this corridor have a minority population ranging from 14.3 to 33.2 percent, compared with 22.7 percent itself. The census tract having the highest total minority percentage was 173.04. This census tract is also known as Eden Gardens or La Colonia, a neighborhood that is composed of predominantly Spanish speakers and has a high level of community cohesion because of residents who share language and cultural backgrounds. This is discussed in more detail in *Section 3.4.1.2*. The high (13.6 percent) Hispanic population discussed in the Draft EIR/EIS for this study area (which is a subset of these census tracts) is consistent with the Census 2010 data, as shown in *Table 3.4.7*.

Encinitas

The City of Encinitas census tracts located adjacent to this corridor have a minority population ranging from 13.2 to 41.4 percent, compared to 21.2 percent for the City of Encinitas itself. The census tract having the highest total minority percentage was 175.02. This census tract is Hispanic. The high (17.3 percent) Hispanic population discussed in the Draft EIR/EIS for this study area (which is a subset of these census tracts) is consistent with the Census 2010 data, as shown in *Table 3.4.7*.

Carlsbad

The City of Carlsbad census tracts located adjacent to this corridor have a minority population ranging from 17.1 to 43.1 percent, compared to 17.2 percent for the City of Carlsbad itself. The census tract having the highest total minority percentage was 179.00. This census tract is

Hispanic, and was identified in the Draft EIR/EIS and further analyzed in the Barrio Carlsbad Community Cohesion Report (June 2008). The high (16.0 percent) Hispanic population discussed in the draft environmental document for this study area (which is a subset of these census tracts) is consistent with the Census 2010 data, as shown in *Table 3.4.7*.

Oceanside

The City of Oceanside census tracts located adjacent to this corridor have a minority population ranging from 29.6 to 76.2 percent, compared with 34.8 percent for the City of Oceanside itself. The census tract having the highest total minority percentage was 186.03. This census tract is Hispanic, and was identified in the Draft EIR/EIS. The high (42.0 percent) Hispanic population discussed in the draft environmental document for this study area (which is a subset of these census tracts) is consistent with the Census 2010 data, as shown in *Table 3.4.7*.

Table 3.4.7: Income, Poverty Level, and Minority Information for Project Area (updated with Census 2010 Data)

Geographic Area/Census Tracts (CT)	Median Household Income (2009 current dollars)	% of Individuals below the Poverty Level	% Minority
City of San Diego	**$61,118**	**14.6%**	**54.9%**
CT 83.64	$62,500	25.2%	45.6%
CT 83.63	$55,858	28.9%	67.3%
CT 83.62	$70,132	19.4%	35.2%
CT 83.61	$53,071	55.1%	40.1%
CT 83.46	$133,045	5.0%	55.4%
CT 83.43	$45,317	30.9%	57.6%
CT 83.41	$60,421	35.0%	55.3%
CT 83.39	$73,793	35.3%	54.7%
CT 83.33	$138,225	3.1%	42.3%
CT 83.29	$89,023	16.5%	37.2%
CT 83.27	$115,823	5.6%	30.5%
CT 83.24	$140,046	2.8%	17.5%
CT 83.13	$121,057	1.5%	21.7%
CT 83.12	$142,553	5.2%	18.2%
CT 83.05	$37,759	32.5%	58.5%
City of Solana Beach	**$91,139**	**7.7%**	**22.7%**
CT 173.06	$126,364	1.9%	14.3%
CT 173.05	$94,472	2.6%	14.4%
CT 173.04	$70,139	9.3%	33.2%
CT 173.03	$119,462	11.5%	15.3%
City of Encinitas	**$84,894**	**8.7%**	21.2%
CT 177.01	$79,830	14.0%	24.2%
CT 176.03	$89,980	12.8%	27.9%
CT 176.01	$97,586	7.9%	13.2%
CT 175.02	$67,005	9.2%	41.4%
CT 175.01	$71,925	5.6%	14.3%
CT 174.04	$86,120	6.0%	23.2%
CT 174.01	$88,000	8.5%	14.1%

Table 3.4.7 (cont.): Income, Poverty Level, and Minority Information for Project Area (updated with Census 2010 Data)

Geographic Area/Census Tracts (CT)	Median Household Income (2009 current dollars)	% of Individuals below the Poverty Level	% Minority
City of Carlsbad	**$79,303**	**8.4%**	**17.2%**
CT 179.00	$46,408	19.4%	43.1%
CT 178.13	$88,147	4.9%	17.1%
CT 178.11	$84,970	3.8%	22.3%
CT 178.10	$81,537	7.1%	19.2%
CT 178.09	$78,672	18.6%	21.4%
CT 178.08	$112,866	3.4%	18.2%
CT 178.01	$61,987	6.5%	23.9%
City of Oceanside	**$62,958**	**10.9%**	**34.8%**
CT 186.03	$45,701	15.1%	76.2%
CT 186.01	$85,311	4.5%	46.9%
CT 185.09	$40,263	27.0%	71.4%
CT 185.04	$79,600	11.1%	32.6%
CT 184.00	$40,841	11.4%	51.3%
CT 182.00	$36,618	29.1%	63.3%
CT 181.00	$66,277	9.8%	29.6%
County of San Diego	**$44,772**	**13.0%**	**35.9%**

Low-Income Populations in the Study Area

Table 3.4.8 illustrates economic indicators including the median household income, per capita income, and proportion of individuals living below the poverty threshold within the CIA study area of San Diego, the City of San Diego, and San Diego County in 1999.

City of San Diego

The proportions of people living in poverty ranged from 0.0 percent to 40.4 percent in census block groups within the CIA study area for the City of San Diego. The entirety of San Diego within the CIA study area had a proportion of individuals living in poverty of 10.9 percent. Of the 33 block groups in San Diego, 3 had a meaningfully greater number of individuals living below the poverty level, including 83.39.1, 83.41.1, and 83.43.2. The total minority percentage for the City of San Diego County is 12.4 percent. As illustrated in *Figure 3-4.3*, block group 83.39.1 encompasses a large area and contains within it much of the land adjacent to I-805 and I-5 to the west, from Carmel Valley to Miramar Road. Block group 83.41.1 is located at the southeast corner of the intersection of I-5 and La Jolla Village Drive. Block group 83.43.2 is located west of Genesee Avenue at the extreme southern end of the CIA study area and is more than 0.5 mi from I-5. It should be noted that block groups 83.15.5 and 83.15.6 both also demonstrated large proportions of people living in poverty; however, they are not considered meaningfully greater. Therefore, a total of three block groups exhibit meaningfully greater populations living in poverty within San Diego.

Table 3.4.8: Study Area Population Below the Poverty Level (1999)

Geographic Area/ Block Group	Median Household Income	Per Capita Income	Percent Below Poverty Line	Number Below Poverty Line	Total Population
Study Area within San Diego	$28,821 - $130,539	$7,046 - $78,142	10.9%	7,539	69,232
City of San Diego	$45,733	$23,609	14.6%	172,527	1,181,612
Study Area within Del Mar	$77,174 - $102,426	$36,660 - $90,243	8.7%	383	4,389
City of Del Mar	$81,001	$62,425	8.7%	383	4,389
Study Area within Solana Beach	$31,250 - $189,629	$20,577 - $76,182	6.4%	916	14,353
City of Solana Beach	$71,774	$48,547	6.7%	856	12,793
Study Area within Encinitas	$31,675 - $101,476	$13,470 - $53,113	9.0%	3,805	42,352
City of Encinitas	$63,954	$34,336	7.3%	4,220	57,590
Study Area within Carlsbad	$24,569 - $128,197	$11,082 - $79,743	7.3%	2,972	40,989
City of Carlsbad	$65,145	$34,863	5.9%	4,576	77,217
Study Area within Oceanside	$15,159 - $77,307	$8,117 - $40,875	19.3%	9,707	50,182
City of Oceanside	$46,301	$20,329	11.6%	18,492	159,599
San Diego County	$47,067	$22,926	12.4%	338,399	2,722,408

Source: U.S. Bureau of the Census 2000

Del Mar

The proportions of individuals living in poverty ranged from 1.2 percent to 13.1 percent in census block groups for Del Mar. When taken as a whole, Del Mar had a proportion of individuals living in poverty of 8.7 percent. Of the four block groups in Del Mar, none had a meaningfully greater proportion of people living in poverty than the general population of the City as a whole. Therefore, the CIA study area within Del Mar and the City of Del Mar are not considered to contain any low-income populations within the meaning of this analysis.

Solana Beach

The proportions of individuals who were living in poverty ranged from 1.3 percent to 27.9 percent in census block groups for Solana Beach. The entirety of Solana Beach, including the neighboring block group largely located in San Diego County, had a proportion of people living in poverty of 6.4 percent.

Of the 13 block groups in Solana Beach, those having the highest proportions of people living below the poverty level were 173.04.1 and 173.04.4. As illustrated in *Figure 3-4.3*, block group 173.04.1 is located adjacent to the west side of I-5, with Lomas Santa Fe Drive forming the northern border, and Via de la Valle to the south. Block group 173.04.4 is located west of Coast Highway 101 and south of Lomas Santa Fe Drive. These two block groups exhibit meaningfully greater populations living below poverty levels compared to Solana Beach as a whole.

Encinitas

The proportions of individuals living in poverty range from 0.0 percent to 27.2 percent in census block groups for Encinitas. The entirety of Encinitas within the CIA study area had a proportion of

individuals living below poverty of 9.0 percent. Of the 35 block groups in Encinitas, 175.01.1, 175.02.3, 177.01.3, and 177.01.4 exhibited percentages over twice as high as the proportion for the City of Encinitas (7.3 percent). As illustrated in *Figure 3-4.2*, three of these four block groups are not adjacent to the proposed project and are located more than 0.5 mi west of I-5. Of these, block groups 175.01.1 and 177.01.4 are along the coast, generally west of Vulcan Avenue. Only block group 175.02.3 is adjacent to the proposed project, located at the northeast corner of the Santa Fe Drive entrance to I-5. These four block groups exhibit meaningfully greater populations living below poverty levels within Encinitas when compared with the City as a whole.

Carlsbad

The proportions of individuals living in poverty range from 0.7 percent to 40.2 percent in census block groups for Carlsbad. The entirety of Carlsbad within the CIA study area had a proportion of individuals living below poverty of 7.3 percent. Those block groups having the highest proportions of individuals living below the poverty threshold were 179.00.2, 179.00.3, and 180.00.2. These block groups exhibited percentages over twice as high as the proportion for the City of Carlsbad (5.9 percent). As illustrated in *Figure 3-4.2*, the three block groups that exhibited high proportions are located in the northern portion of Carlsbad. Two block groups, 179.00.2 and 179.00.3, are located adjacent to the proposed project to the west, on either side of Carlsbad Village Drive. The third block group, 180.00.2, is located directly east of Carlsbad Boulevard and directly south of Carlsbad Village Drive.

These three block groups exhibit meaningfully greater populations living in poverty within Carlsbad when compared to the City as a whole are considered to be of potential Environmental Justice concern if impacted.

Oceanside

The Oceanside study area showed 19.3 percent of the population lived below the poverty level. Those block groups with the highest proportions of individuals were 182.00.1, 182.00.2, 182.00.4, 182.00.5, 184.00.1, 184.00.4, 185.09.1, 186.03.2, and 186.03.3. These block groups are largely concentrated in the northern part of Oceanside, bounded by the San Luis Rey River and Oceanside Boulevard. As illustrated in *Figure 3-4.2,* seven of the block groups are directly adjacent to the proposed project. Two block groups are located farther to the west, near Coast Highway 101. It should be noted, however, that block group 185.11.1 has a relatively large proportion of individuals living in poverty (22 percent) when compared with other block groups. Therefore, nine block groups exhibited meaningfully greater populations living below poverty levels within Oceanside.

Low Income Populations in the Project Area (updated with Census 2010 data)

Census 2010 data have become available since the circulation of the Draft EIR/EIS. The analysis using Census 2000 included block group level data; however, due to the new methodology used in Census 2010 (using a substantially smaller sample size), it was determined that 2010 census tract data would provide better accuracy for purposes of this analysis. Census tracts that directly border I-5 were used for the discussion below (a discussion on the City of Del Mar is thus omitted). Data for this section were derived from the U.S. Census Bureau's American Community Survey, for the year 2011. *Table 3.4.7* provides a comparison with each jurisdiction as a whole and the County of San Diego.

Table 3.4.7 illustrates economic indicators including the median household income and proportion of individuals living below the poverty threshold within census tracts that directly

border I-5: the Cities of Oceanside, Carlsbad, Encinitas, Solana Beach, and San Diego, as well as San Diego County.

City of San Diego

The proportions of people living in poverty ranged from 1.5 to 55.1 percent in census tracts adjacent to I-5. Of the 15 census tracts analyzed in San Diego, 7 had a meaningfully greater number of individuals living below the poverty level, including 83.64, 83.63, 83.61, 83.43, 83.41, 83.39, and 83.05 with poverty levels of 25.2, 28.9, 55.1, 30.9, 35.0, 35.3, and 32.5 percent, respectively. This is compared with the total percentage of individuals living in poverty for the City of San Diego (14.6 percent) and the San Diego region (13.0 percent).

Solana Beach

The proportions of individuals who were living in poverty ranged from 1.9 to 11.5 percent. Of the four census tracts analyzed in Solana Beach, those having the highest proportions of people living below the poverty level were 173.03 and 173.04, with poverty levels of 11.5 percent and 9.3 percent, compared with Solana Beach as a whole, which has 7.7 percent of individuals living in poverty.

Encinitas

The proportions of individuals living in poverty ranged from 5.6 to 14.0 percent. Of the seven census tracts analyzed in Encinitas, 177.01, 176.03, and 175.02 exhibited percentages higher (at 14.0, 12.8, and 9.2 percent, respectively) than the overall proportion for the City of Encinitas (8.7 percent).

Carlsbad

The proportions of individuals living in poverty ranged from 3.4 to 19.4 percent. The census tract having the highest proportion of individuals living below the poverty threshold was 179.00. At 19.4 percent, this tract exhibited a percentage twice as high as the proportion for the City of Carlsbad (8.4 percent). Census Tract 179.00 is located west of, and adjacent to, the proposed project, on the south side of Carlsbad Village Drive. It exhibits a meaningfully greater population living in poverty within Carlsbad when compared with the City as a whole and is considered to be of potential Environmental Justice concern if impacted.

Oceanside

The proportions of individuals living in poverty ranged from 4.5 to 29.1 percent. Those census tracts with the highest proportions of individuals were 185.09 and 182.00. These census tracts are largely concentrated in the northern part of Oceanside, bounded by the San Luis Rey River and Oceanside Boulevard. It should be noted, however, that these census tracts have a relatively large proportion of individuals living in poverty when compared with the City of Oceanside as a whole (10.9 percent).

Minority and/or Low Income Populations in the Study Area

While Environmental Justice does not specifically call for the analysis of block groups that share both high proportions of minorities in addition to a high percentage of people living in poverty (the presence of one or the other is sufficient to be included in analysis), the inclusion of a short description can help identify particularly sensitive neighborhoods and areas.

There are several locations in the CIA study area that contain both meaningfully greater minority and low-income populations. Meaningfully greater minority and/or low-income populations are both present in 12 block groups within the project study area. As illustrated in *Figures 3-4.2* and *3-4.3*, all but one of these block groups are directly adjacent to the proposed project, with the majority of block groups present in the northern part of Oceanside. San Diego has no block groups that have both a high proportion of total minorities and individuals living in poverty within them, while Solana Beach, Encinitas, and Carlsbad have two, one, and two block groups, respectively, within their boundaries that have meaningfully greater low-income and/or minority populations within both analytical categories. Seven block groups in Oceanside have both a high proportion of total minorities and individuals living in poverty, generally located north of Oceanside Boulevard adjacent to the freeway.

The Census Bureau's Fact Finder Estimates for 2011 show a total of 11 census tracts adjacent to I-5 that have meaningfully greater minority and/or low-income populations. San Diego has three census tracts that have both a high proportion of total minorities and individuals living in poverty within them, while Solana Beach, Encinitas, and Carlsbad have one, three, and one, respectively. Three census tracts within Oceanside have both a high proportion of total minorities and individuals living in poverty.

3.4.3.3 Environmental Consequences

As discussed throughout the document, the proposed project would increase capacity and improve or maintain traffic flow through five municipalities. Interchanges, overcrossings, and undercrossings along the I-5 North Coast Corridor would be reconfigured and renovated in most cases to allow for improved vehicular flow. A number of community enhancement features, if implemented, would create and/or improve pedestrian or bicycle corridors, connect pedestrian or bicycle routes with public transit centers, enhance connectivity across I-5, and create trailheads and other recreational opportunities. The proposed HOV/Managed Lanes project would have adverse visual impacts as described in *Section 3.7.* These impacts are not localized, but occur throughout the project corridor.

In total, there are 12 block groups that have populations of meaningfully greater populations of minority and/or low-income individuals, based on the 2000 census data. The project design for the proposed alternatives reflects the minimum amount of roadway along the existing I-5 alignment required to meet the purpose and need of the project. While every effort was taken to minimize the incursion and displacement of residents, impacts would disproportionately affect a minority population in the project area under the 10+4 Barrier alternative. The impacts associated with construction and operation of the proposed project are generally not isolated to communities or areas with minority and/or low-income populations and are present along the entirety of the proposed project through communities and areas that exhibit a wide demographic range. Potential temporary construction-related impacts to public transportation facilities would be minimized through the implementation of a TMP and are not considered measurably worse in areas with low-income and/or minority populations, nor are these impacts expected to be experienced to a greater degree by minority populations and/or low-income populations.

Operational impacts also are generally not expected to be experienced to a greater degree by minority and/or low-income populations. Additionally, impacts related to the construction and operation of the proposed project within areas with minority and/or low-income populations do not have a magnifying effect on conditions already present in those communities.

The proposed project would have some beneficial effects, particularly as it encompasses a range of community enhancement features that if implemented would create more efficient connections between neighborhoods both east and west of I-5, and provide greater access to recreational areas. As described above, impacts associated with the project would also affect communities along the corridor in similar ways and is generally not anticipated to disproportionately impact low-income and/or minority populations. However, specific encroachments required through right-of-way expansion along the corridor may affect isolated low-income and/or minority populations. Specific differences between each of the alternatives are described below.

Value Pricing

As discussed in *Chapter 2, Project Alternatives*, this project proposes a Value Pricing Program, where excess capacity in the Managed Lanes would be sold to SOVs, allowing SOVs to use the lanes for all build alternatives. The Value Pricing program would implement tolls for SOV users. This proposed program was assessed for potential environmental justice impacts. In April 2006, an I-5 Managed Lanes Value Pricing Study was prepared. This planning study was one of various parallel investigations involving an examination of the environmental, design, and traffic benefits and impacts associated with the proposed project, which is partially funded under the countywide TransNet transportation program. Goals and objectives associated with this project include the ability to manage some of the added roadway capacity along I-5 to ensure that mobility to all stakeholders can be assured. Based on regional and State transportation policies, use of the Managed Lanes is given highest priority to transit and other HOVs (vanpools and carpools) so as to promote moving more people in fewer vehicles. However, much if not all of this project would have available capacity for all potential users, at least during its early years of operation. To accommodate these users, value pricing is being considered as a means of managing demand so as to allow all potential stakeholders to equitability benefit.

Tolling as a traffic management tool is considered in conjunction with access controls and eligibility to achieve real-time demand management of the HOV/Managed Lanes during varying operating conditions. Access would be restricted to designated locations, including openings to adjacent general purpose freeway lanes and DARs connecting to transit facilities and local streets. In keeping with regional policy that requires maintenance of a high level of service on HOV and Managed Lanes in San Diego, there would be a requirement to maintain this high level of service, defined as Level of Service (LOS) C or better, at all times. This equates to about 1,650 vehicles per lane per hour, or 1,300 vehicles per hour directionally. Regionally, HOVs carrying two or more persons are allowed free use of Managed Lanes.

The goal from the I-5 North Coast Managed Lanes Value Pricing Study Community Outreach Program was to accurately gauge public reactions to and support for a variety of value pricing and lane management options under consideration on I-5 north of the City of San Diego. The importance of understanding early in the planning process what design, pricing, and operations elements were favorably and unfavorably received by the public ultimately helped to shape the final recommendation of the study. This included four distinct methods for gathering and gauging public opinion:

- Stakeholder Interviews, November and December 2004
- Focus Groups, Set #1 November 2004 and Set # 2 May 2005
- Intercept Interviews, February 2005
- Telephone Surveys, February 2005

Stakeholder Interviews documented key leader attitudes and opinions about the value-pricing component of the project. Topics covered in the interviews included:

- Current traffic conditions on I-5
- Experience with, and attitudes about, I-15 Express Lanes
- Operational issues associated with Managed Lanes on the I-5 Corridor
- Willingness to pay for Managed Lanes
- Use of toll revenues
- Pros and cons regarding pricing strategies proposed for I-5
- Environmental and fairness concerns
- Ideas for other public outreach and market research

The Stakeholder Interviews most frequently identified the following benefits of the project:

- Managed Lanes with value pricing would provide an effective new alternative for moving people on I-5, and decrease travel time for transit and HOV users
- New capacity would ease burdens on the main lanes, including trucks, which may be excluded from the lanes themselves
- Project would marginally reduce air pollution
- The lanes would preserve right-of-way for future high-capacity transit
- Project would improve quality of life by providing people with dependable trip times
- The lanes would maximize corridor capacity

Focus group participants were selected to balance age, gender, and employment levels, and screened for those who used I-5 three or more days per week; the first group of participants appeared to be more likely to commute longer distances to work on a daily basis. The second group had a higher proportion of participants that worked at home or close to their home, and used the freeway for shorter distance trips. Initial reactions to the project were mixed in both groups. Some felt that the addition of Managed Lanes to I-5 was a positive proposal, while others felt the project was not fair or the best use of space or funds. The focus groups identified the following:

- There was no clear preference voiced by either group for direct access ramps or slip access and egress points. A wide range of perspectives was provided, but it appears that in general, focus group participants currently do not have enough information to have a strong preference for either one. Some think that DARs are safer and easier because they do not require crossing lanes. Others think that slip access ramps are safer and easier because they could be more frequent, and there is less of an issue about getting up to speed to enter the Managed Lanes. Participants generally felt that DARs did not justify traveling further or paying a higher toll. The results from this discussion favor providing DARs at the heaviest volume intersections and slip access in-between at lower volume access/egress points.

- For shorter distance travelers, there was no clear preference for fixed or variable tolls. However, a majority of the longer distance travelers in the second group preferred variable tolling, and appeared to be more in touch with the concept of using tolls to maintain free flow conditions in the Managed Lanes.

- Both groups agreed that the toll price and method of calculation must be clear enough for travelers to easily understand it and for people to feel comfortable using the lanes.

Participants also recommended posting the time savings that would be achieved if they used the Managed Lanes.

- The groups generally agreed that free or drastically reduced tolls are necessary to effectively motivate the formation of carpools and vanpools. Focus group participants generally are against raising the number of carpool occupants from two to three, saying that establishing a carpool is already difficult. Participants in both focus groups mentioned concerns about fairness and affordability of the toll lanes to all freeway users. The project is more likely to be positively received if it is presented as HOV lanes that would be available to SOVs that are willing to pay, so that the new lanes would be used to maximize capacity while maintaining free flow conditions.

- The way the toll is communicated also could be presented as being reduced when lanes are not at full capacity, rather than increased as needed to maintain free flow conditions. This focuses on the positive aspect of reducing costs when possible, rather than the negative aspect of increasing costs to reduce demand for the Managed Lanes.

- The participants that are long-distance travelers appear to better understand and support the concept of congestion-based variable tolling. They are likely to both support and be heavier users of the system. The short-distance travelers (which appear to be at least half of all I-5 users) are not as likely to see a clear benefit for the new facility. Clear communications that show how the facility is designed to encourage car/vanpooling (and even Coaster and express bus service), and to pull as much traffic as possible off of the general purpose lanes would generate a more positive perspective among this large constituency. The difference in group composition may have been a factor in the differences in discussion between the two groups. Some participants in both focus groups mentioned concerns about fairness and affordability of the toll lanes to all freeway users.

The intercept surveys were conducted onboard the Coaster, express bus service, and at park and ride lots to capture alternative mode commuters. Thirty-four of the intercept survey respondents believe that a fee schedule set by time of day would encourage carpooling, while only 26 percent believe varying fees by traffic conditions would encourage carpooling. A fee schedule set by time of day would encourage transit usage, according to 39 percent of the respondents, while 26 percent of respondents believe fees that vary with traffic conditions would encourage transit usage.

In the telephone surveys, 52 percent of the respondents feel that variable tolling is not an equitable way to control congestion. However, 56 percent of respondents feel that fixed tolls are fair and equitable. Non-Caucasians are more likely to support the proposed project and are more in support of a fixed-versus-variable toll than the average. Although low-income respondents are somewhat more likely than general users to support the express lane project, they are more supportive of using closures rather than raising tolls to control flow. They are also more likely to say only general purpose lanes should be built.

Based on the above study findings regarding proposed HOV/Managed Lanes with the inclusion of the value pricing program; the surveys indicate that the project would not cause disproportionately high and adverse effects on any minority and/or low-income populations as discussed in EO 12898. In addition, the travel time resulting from the build alternatives would be beneficial to users of both managed and general purpose lanes.

10+4 Barrier

The 10+4 Barrier alternative would result in the displacement of six residential units in a Solana Beach neighborhood that is composed in part of block groups containing populations of Environmental Justice concern (both minority populations and low-income populations). The residential units in question are condominiums within a single gated complex located adjacent to the southbound (western) side of I-5. According to the DRIR, ample relocation properties for these displaced residences are available within the immediate area and within the same neighborhood as the displaced residences themselves. While no demographic or economic information is available for the specific individuals or families occupying the relevant units, these residences are not designated as affordable housing (and are valued above the median value for individual housing in San Diego County as a whole), so it is not likely that these residences serve low-income populations. Therefore, given the availability of relocation properties within the same neighborhood (such that it should be possible to find housing in a demographically similar area, if desired) and the apparent lack of confounding variables such as affordable housing designation, impacts related to these residential displacements are not likely to be disproportionately high to either minority and/or low-income populations.

There is one instance along the I-5 North Coast Corridor where a disproportionate impact may occur to both minority populations and low-income populations. This population is located in a 47-unit apartment complex within block group 179.00.3, located in Carlsbad, south of Carlsbad Village Drive and adjacent to southbound I-5. This block group was among the block groups described previously as having the highest proportions of individuals living below the poverty threshold. Rent for each two-bedroom unit is approximately $1,050 per month, which is a relatively low rate for a coastal community such as Carlsbad. The DRIR states that the availability of apartments within Carlsbad with similar rental rates may not be adequate to relocate 47 two-bedroom apartments, and that it may be necessary to utilize the State's relocation program or LRH Program payments to relocate those displaced (Caltrans 2007a). It is, therefore, highly likely that those people living in this apartment complex, many of whom are likely members of either a minority and/or low-income population, would not be able to relocate within the immediate area. This apartment complex is the only large multi-family residential parcel displaced by the proposed project in any city, or in any demographic or income range.

As discussed in *Section 3.4.1, Community Character and Cohesion*, the community within which the apartment complex that would be displaced by the 10+4 Barrier alternative is located also has a high proportion of Spanish-speaking households, which can be an identifying trait of an area with high community cohesion. This complex lies within the cohesive community of Barrio Carlsbad. The potential loss of up to 47 families from the community may have a substantial effect on community cohesion in that area. Operational impacts associated with relocations and community cohesion may be considered to be disproportionately high for this block group. Disproportionate impacts associated with the displacement of these residences could also affect travel patterns and accessibility for those who both live and work in this community and rely on public transportation or walk to work. Additionally, residents could experience an increase in rent and other cost of living expenses associated with relocation outside of the community.

Based upon this analysis, there is no indication that either the construction or operation of the proposed project would result in disproportionately high and adverse impacts to either minority populations and/or low-income populations relative to the general population of the CIA study area and surrounding region for the vast majority of the alignment. However, the displacement of a 47-unit apartment complex in Carlsbad associated with 10+4 Barrier alternative in an area with greater proportions of minorities and individuals living in poverty would be considered a disproportionate impact and would be subject to the provisions of EO 12898.

10+4 Buffer

The 10+4 Buffer alternative design would avoid impacts to the 47-unit apartment building in Barrio Carlsbad. Generalized impacts along the remainder of the corridor would be similar to those described above and would not result in an adverse Environmental Justice impact. No minority and/or low-income populations that would be adversely affected by this alternative have been identified, as determined above. Therefore, this alternative would not cause disproportionate adverse impacts to minority and/or low-income populations within the meaning of EO 12898.

8+4 Barrier

The 8+4 Barrier alternative would impact 10 units of the 47-unit apartment complex in Barrio Carlsbad identified as a low-income and minority population. Generalized corridor impacts would remain similar to those discussed under the 10+4 Barrier alternative described above and would not be considered a disproportionate Environmental Justice impact. Therefore, this alternative would not cause disproportionate adverse impacts to minority and/or low-income populations within the meaning of EO 12898.

8+4 Buffer (Preferred Alternative)

The refined 8+4 Buffer alternative design would avoid impacts to the 47-unit apartment building in Barrio Carlsbad, identified as a low-income and minority population. Generalized impacts along the remainder of the corridor would be similar to those described above, and would not result in a disproportionate impact. No minority and/or low-income populations that would be adversely affected by this alternative have been identified, as determined above. Therefore, this alternative would not cause disproportionate adverse impacts to minority and/or low-income populations within the meaning of EO 12898.

No Build Alternative

Under the No Build alternative, the proposed improvements to I-5 would not occur. As such, there would be no activities that would disproportionately affect minority and/or low-income populations. In addition, no minority and/or low-income populations have been identified that would be disproportionately impacted.

3.4.3.4 Avoidance, Minimization, and/or Mitigation Measures

The 10+4 Barrier alternative would require the relocation of low-income and/or minority populations residing in the 47-unit apartment complex in Barrio Carlsbad. This may create a disproportionate impact to this community, which may not be fully mitigable.

Implementation of the 10+4 Buffer alternative would avoid impacts to the low-income and/or minority populations associated with the 47-unit apartment complex. No disproportionate impacts would occur; therefore, no mitigation would be required.

Implementation of the 8+4 Barrier alternative would impact 10 units of the 47-unit apartment complex in Barrio Carlsbad. The DRIR prepared in support of the Draft EIR/EIS identified adequate relocation housing in this area and residents displaced as the result of a given project are potentially eligible to be compensated in accordance with the Uniform Relocation Assistance Act of 1970, as amended.

The Preferred Alternative is the refined 8+4 Buffer alternative, which would avoid impacts to the low-income and/or minority populations associated with the 47-unit apartment complex, as described above. This alternative has the smallest footprint of the evaluated build alternatives. No additional minimization or mitigation for this low-income and/or minority population would be required.

Table 3.4.6: Study Area Race, Ethnicity, and Proportion of Total Minority

Geographic Area/ Block Group	White	Black/African American	American Indian and Alaskan Native	Asian	Native Hawaiian/ Pacific Islander	Some Other Race	Two or More Races	Hispanic	Total Minority
Study Area within San Diego	69.9% (52,873)	1.4% (1,056)	0.2% (181)	22.1% (16,724)	0.2% (127)	2.3% (1,763)	3.8% (2,885)	6.8% (5,151)	34.1% (25,800)
City of San Diego	60.2% (736,207)	7.9% (96,216)	0.6% (7,543)	13.6% (166,968)	0.5% (5,853)	12.4% (151,532)	4.8% (59,081)	25.4% (310,752)	50.6% (619,508)
Study Area within Del Mar	94.1% (4,132)	0.3% (11)	0.3% (15)	2.9% (126)	0.1%(5)	0.6% (25)	1.7% (75)	3.9% (170)	9.1% (399)
City of Del Mar	94.1% (4,132)	0.3% (11)	0.3% (15)	2.9% (126)	0.1%(5)	0.6% (25)	1.7% (75)	3.9% (170)	9.1% (399)
Study Area within Solana Beach	87.6% (12,740)	0.5% (79)	0.4% (54)	3.6% (524)	0.1% (19)	5.0% (734)	2.7% (396)	13.6% (1,981)	19.9% (2,899)
City of Solana Beach	87.0% (11,293)	0.5% (65)	0.4% (54)	3.5% (449)	0.1% (18)	5.6% (725)	2.9% (375)	14.8% (1,922)	21.0% (2,729)
Study Area within Encinitas	85.2% (36,511)	0.6% (271)	0.5% (202)	2.9% (1,244)	0.1% (64)	7.7% (3,300)	2.9% (1,251)	17.3% (7,432)	23.3% (9,995)
City of Encinitas	86.6% (50,241)	0.6% (340)	0.5% (267)	3.1% (1,798)	0.1% (69)	6.3% (3,645)	2.9% (1,654)	14.8% (8,584)	21.0% (12,162)
Study Area within Carlsbad	84.3% (35,142)	0.9% (376)	0.5% (207)	3.9% (1,646)	0.2% (87)	7.0% (2,907)	3.2% (1,316)	16.0% (6,672)	23.4% (9,746)
City of Carlsbad	86.6% (67,723)	1.0% (753)	0.4% (329)	4.2% (3,315)	0.2% (155)	4.6% (3,636)	3.0% (2,336)	11.7% (9,170)	19.5% (15,234)
Study Area within Oceanside	64.0% (32,472)	5.0% (2,563)	1.2% (622)	3.2% (1,600)	1.0% (510)	20.4% (10,376)	5.2% (2,629)	42.0% (21,330)	53.9% (27,391)
City of Oceanside	66.4% (106,866)	6.3% (10,189)	0.9% (1,370)	5.5% (8,896)	1.3% (2,042)	14.5% (23,342)	5.2% (8,324)	30.2% (48,691)	46.4% (74,719)
San Diego County	66.5% (1,871,839)	5.7% (161,480)	0.9% (24,337)	8.9% (249,802)	0.5% (13,561)	12.8% (360,847)	4.7% (131,967)	26.7% (750,965)	45.0% (1,265,000)

The percentages for race may not equal 100% because individuals may report more than one race.
Source: U.S. Bureau of the Census 2000

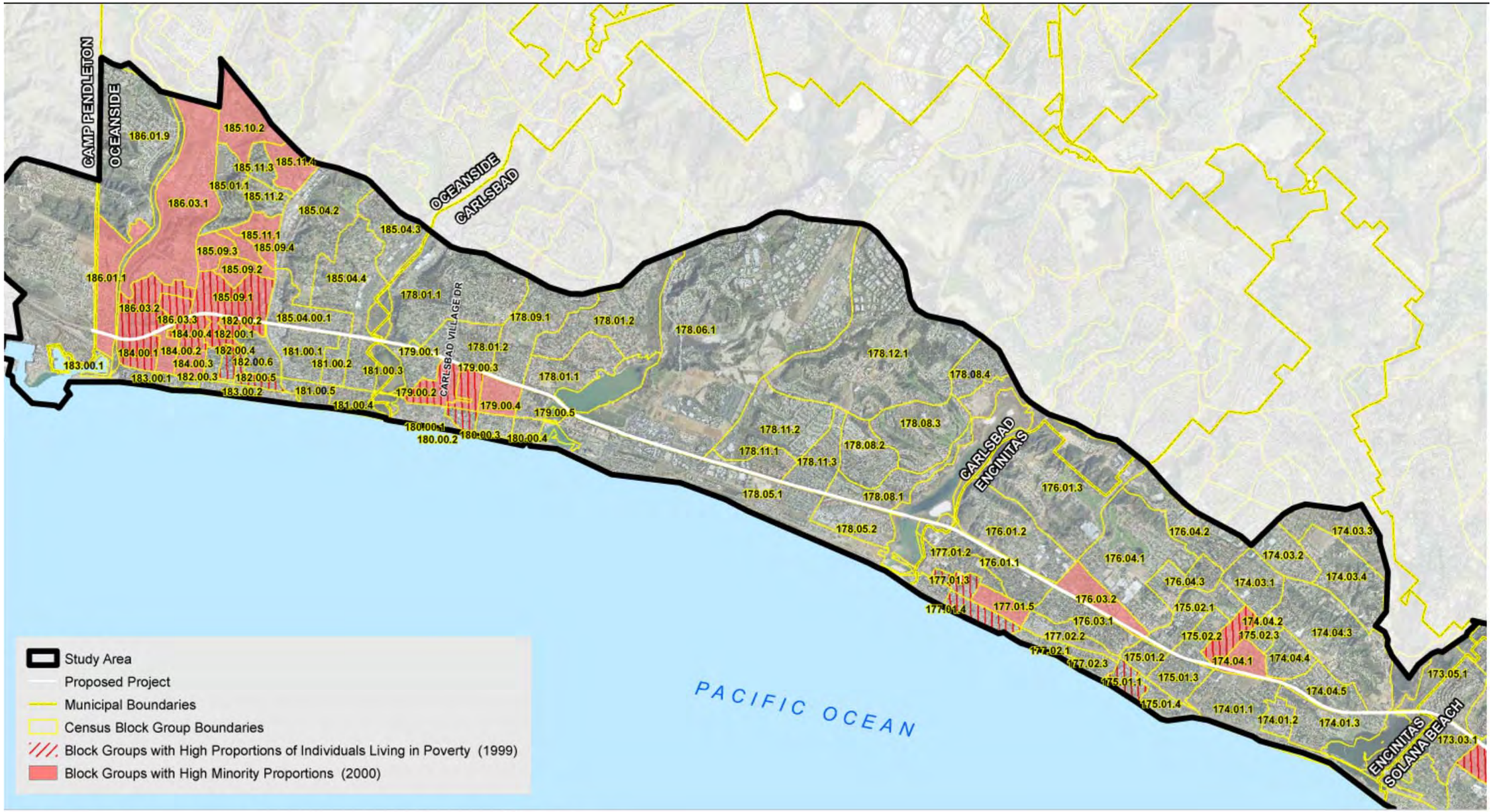
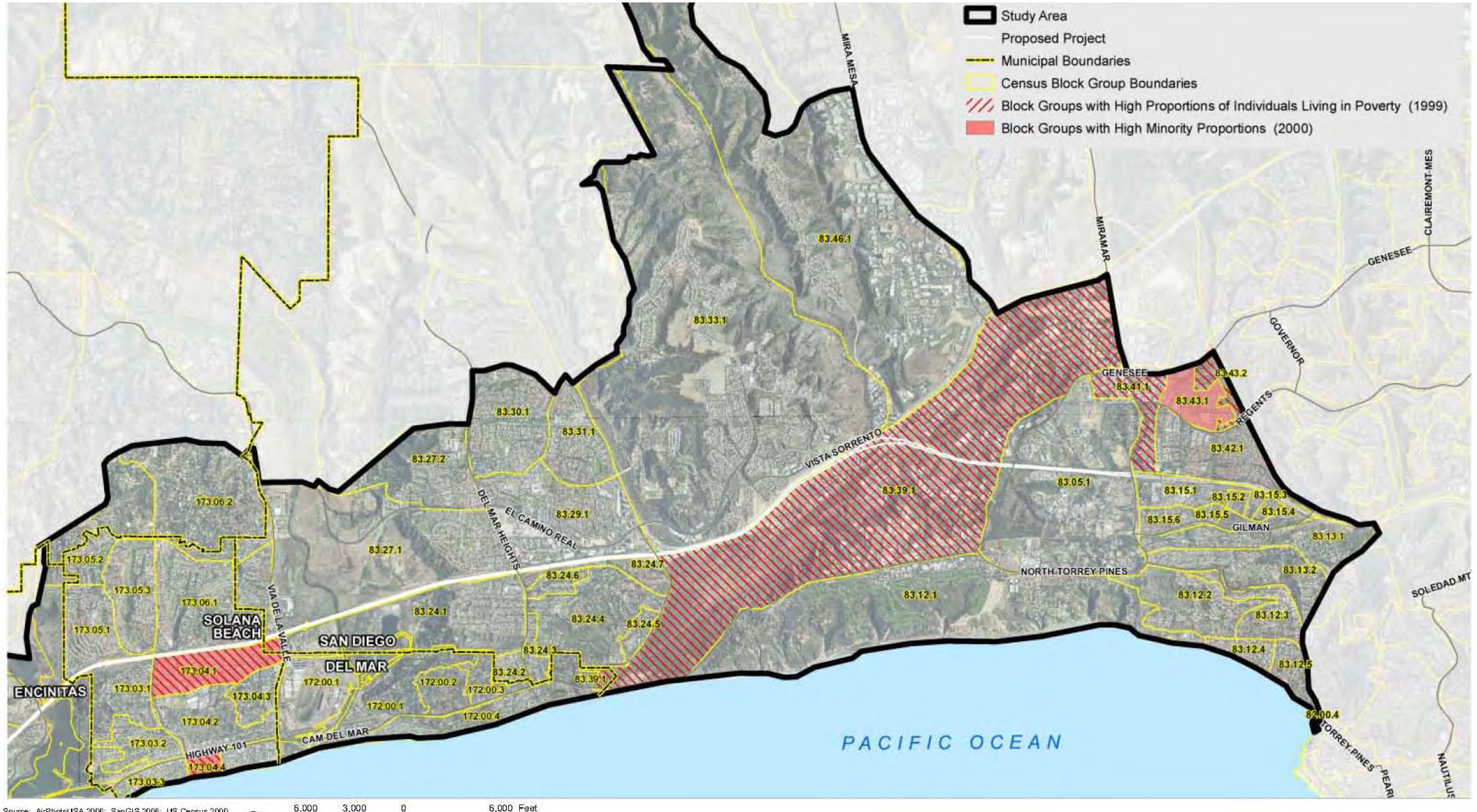


Figure 3-4.2: Block Groups Containing Low-Income and Minority Populations – North



Source: AirPhotoUSA 2006; SanGIS 2006; US Census 2000

6,000 3,000 0 6,000 Feet

Scale: 1:72,000; 1 inch = 6,000 feet

Figure 3-4.3: Block Groups Containing Low-Income and Minority Populations – South

3.5 Utilities and Emergency Services

The 8+4 Buffer alternative has been refined since the Draft EIR/EIS was publically circulated in 2010. This alternative was presented as the locally preferred alternative (LPA) in the August 2012 Supplemental Draft EIR/EIS, and has now been identified as the Preferred Alternative. The refined 8+4 Buffer alternative has the least amount of impact of any build alternative and also meets purpose and need.

3.5.1 Affected Environment

Utilities

Public utilities are located throughout the project limits. These utilities include existing gas, electric, television/cable, sewer, and water lines, and are often placed within public right-of-way.

A number of utility providers are located within the project limits. Gas and electric is provided by SDG&E. Water is supplied by the City of San Diego Water Department, San Dieguito Water District, City of Encinitas (Cardiff and Encinitas Sanitary Divisions), the San Elijo Joint Powers Authority, Santa Fe Irrigation District, City of Carlsbad (Carlsbad Municipal Water District [MWD], Olivenhain MWD, or the Vallecitos Water District), and City of Oceanside Water Utilities Department. Solid waste is provided throughout the project area by Waste Management Inc. (WM). Escondido Disposal, Inc. (EDCO) provides secondary recycling services throughout the County. Wastewater throughout the corridor is managed by the City of San Diego Metropolitan Wastewater Department, Del Mar Public Works Department, City of Solana Beach, Cardiff Encinitas Sanitary Division, City of Encinitas Water District, City of Escondido Municipal Encina Waste Water Authority, Leucadia Wastewater District, City of Carlsbad, La Salina Wastewater Treatment, and San Luis Rey Wastewater Plant. The Encina Power Station is located west of I-5, just north of Cannon Road. There is a brine line provided by the City of Oceanside. Also within these jurisdictions are cable lines, telephone lines, and fiber optic lines that allow multiple carriers to operate.

As discussed in *Section 1.3.7* of this Final EIR/EIS, other projects are planned along I-5, including two utility projects in Carlsbad; the Carlsbad Energy Center Project and the Carlsbad Desalination Project. The Carlsbad Energy Center Project would reconfigure approximately 23 ac of existing land zoned for public utilities at the Encina Power Station in the City of Carlsbad for a 558-MW natural gas-fired generating facility. Application for Certification was filed with the CEC and was accepted as complete on October, 31, 2007, and the CEC approved the project for construction on May 31, 2012. This facility is estimated to be online by 2016. The Carlsbad Desalination Project proposes a 50-million gallon per day seawater desalination plant and associated water delivery pipelines for high-quality water. The desalination plant would be located within a four-ac parcel at the Encina Power Station in the City of Carlsbad.

Emergency Services

CHP and emergency vehicles use the general purpose lanes, median, outside shoulders, and other areas within Caltrans' right-of-way.

3.5.2 Environmental Consequences

Utilities

The No Build alternative would not affect utilities, change the existing access for emergency services, nor would it include any improvements.

All build alternatives would require both above ground and below ground utility relocations in several locations. Please refer to the Project Features Maps in *Figures 2-2.3, Sheets 1* through *67*.

Numerous buried and overhead utilities are present in the project area. Existing utilities conflicting with proposed construction activities would require protection or relocation during construction. The location of all utilities would be verified prior to subsurface investigation or construction. Environmental effects anticipated as a result of the removal or relocation of these utility facilities, including SDG&E power lines, were assessed within the respective environmental issues sections with regard to land use, hydrology/water quality, air quality, biological and cultural resources, aesthetics, noise, traffic, and other environmental issues. For non-electrical utility relocations, or for those relocations less than 50 kV, no substantial conflicts are anticipated to existing or planned land uses; farmlands; hazardous materials; or hydrological, cultural, geological, or paleontological resources. The relocations would occur within existing utility easements, wherever possible, in order to avoid or minimize any potential additional environmental impacts.

There are several electrical utilities greater than 50 kV that would require relocation with the implementation of the project, as follow: eight relocations for 10+4 Barrier, seven relocations for 10+4 Buffer, seven relocations for 8+4 Barrier, and seven relocations for 8+4 Buffer. *Table 3.5.1* identifies the utilities over 50 kV within the project area. Most of these relocations would be minor relocations, such as relocating to housing within a bridge or relocating into non-sensitive or previously disturbed areas. Appendix J, Potential Utility Relocations, provides more detailed information.

The project currently proposes to avoid four high-voltage transmission towers and one distribution pole associated with the Encina Power Station located at the northwest quadrant of the I-5 / Cannon Road Interchange. To do so would require several design exceptions for narrowing the southbound lanes and shoulder widths in this area. Should it become necessary to relocate these towers, they would be relocated approximately 65 ft farther to the west and within the existing unpaved lot where they are currently located. No environmental impacts are anticipated should these towers require relocation. It is not anticipated that utility services would be interrupted during construction and utility relocation activities. Coordination between Caltrans and utility companies has been ongoing and would continue to occur throughout the project design process.

None of the proposed project alternatives would result in a need for new or permanent supplies of water. Nor would the proposed project affect any wastewater treatment facilities or landfill services during operation.

During construction, temporary utility relocations may be required at various locations along the corridor. All utility relocations would occur in coordination with the respective utility companies.

Emergency Services

Response time for emergency services and law enforcement would likely improve with the implementation of the build alternatives, due to an anticipated reduction in traffic congestion, and improved street and freeway access. During construction activities, there may be temporary, short-term increases in response times for emergency services due to detours and road closures.

Table 3.5.1: Utilities Over 50 kV

No.	Location	Str. #	Tie Line # ALL OH	KV	Project Considerations
1	Genesee Avenue West of NB off-ramp	203357	TL 6943	69	For all build alternatives, the existing temporary over-head transmission line would be housed within the new bridge for Genesee Avenue, and both the poles (west side and east side) would be eliminated. No environmental impacts are anticipated.
2	Via de la Valle Between NB off-ramp & HOV/Managed Lanes	91035	TL 667	69	For all build alternatives, the transmission pole may be protected in place or be relocated 65.6 ft to the east. No environmental impacts are anticipated.
3	Between Via de la Valle & Lomas Santa Fe Drive	22406	TL 660	69	For 10+4 Barrier only, the transmission pole would move further east on the southwest corner of the intersecting streets. No environmental impacts are anticipated.
4	Between Manchester & Birmingham Avenues	24511	TL 660	69	The transmission pole is within all build alternatives and is not impacted.
5	Between Manchester & Birmingham Avenues	24513	TL 660	69	The transmission pole is within the 10+4 Barrier project area only and would not be impacted.
6	Between Manchester & Birmingham Avenues	24515	TL 660	69	The transmission pole is within the 10+4 Barrier/Buffer and 8+4 Barrier project areas and would not be impacted.
7	South of Birmingham Avenue	24517	TL 660	69	The transmission pole is within the 10+4 Barrier/Buffer and 8+4 Barrier project areas and would not be impacted.
8	North of Cannon Road	124600	TL 23011 & 23012	230 & 230	For all build alternatives, the project currently proposes to avoid four high-voltage transmission towers. For all build alternatives, should relocation of transmission towers become necessary, all four structures on the west side would be relocated 65.6 ft to the west within the existing unpaved lot. No environmental impacts are anticipated.
9	North of Cannon Road	124590	TL 23003 & 13807	230 & 138	
10	North of Cannon Road	220564	TL 13804 &13806	138 & 138	
11	North of Cannon Road	124530	TL 13802 & 13803	138 & 138	
12	South of SR-76 Interchange	123637	TL 697	69	For all build alternatives, the pole would be relocated 65.6 ft to the west. No environmental impact is anticipated.

3.5.3 Avoidance, Minimization, and/or Mitigation Measures

Relocation of utilities would be coordinated with the appropriate utility owners during final design and construction. Impacts to resources would be avoided when utilities are relocated, and ESAs would be delineated when working near sensitive areas to prevent construction activities from impacting resources. Should it become necessary to relocate the high-voltage transmission towers at the I-5 / Cannon Road Interchange, no environmental impacts would be anticipated; therefore, no mitigation would be required.

During construction activities, the following strategies would be employed to aid in incident management, per Caltrans' standard practice:

- The Construction Zone Enhancement Enforcement Program (COZEEP) involves the presence of CHP to improve project safety by encouraging motorists to slow down and use care while driving through construction zones.

- The Freeway Service Patrol program is a cooperative effort between Caltrans, SANDAG, and the CHP to alleviate incident-related traffic congestion by operating tow services to aid stranded or disabled vehicles on urban freeways during morning and afternoon commuter periods. Common services performed include changing flat tires, jump-starting vehicles, providing gas, and towing disabled vehicles.

- A TMP would be developed to include various strategies to minimize delay during construction.

- Emergency providers and law enforcement officials would be informed of all detours to avoid or minimize increases in response times.

- The project would comply with all applicable solid waste regulations.

3.6 Traffic and Transportation/Pedestrian and Bicycle Facilities

The 8+4 Buffer alternative has been refined since the Draft EIR/EIS was publically circulated in 2010. This alternative was presented as the locally preferred alternative (LPA) in the August 2012 Supplemental Draft EIR/EIS, and has now been identified as the Preferred Alternative. The refined 8+4 Buffer alternative has the least amount of impact of any build alternative and also meets purpose and need.

3.6.1 Regulatory Setting

Caltrans and FHWA direct that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). They further direct that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the USDOT issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the USDOT regulations (49 CFR part 27) implementing Section 504 of the Rehabilitation Act (29 USC 794). FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to federal-aid projects, including Transportation Enhancement Activities.

3.6.2 Affected Environment

Applicable Technical Reports

- I-5 North Coast Freeway Operations Report, prepared for the I-5 North Coast Corridor Project, June 2010
- Direct Access Ramps/Local Circulation System Impact Study, I-5 North Coast HOV/Managed Lanes Project, Technical Report No. 1, Area of Influence Analysis. Draft for Review and Comment, August 2, 2004
- Direct Access Ramps/Local Circulation System Impact Study, I-5 North Coast HOV/Managed Lanes Project, Technical Report No. 2, Existing Conditions Data Collection. Draft for Review and Comment, August 2, 2004
- Direct Access Ramps/Local Circulation System Impact Study, I-5 North Coast HOV/Managed Lanes Project, Technical Report No. 3, Traffic Analysis Methodologies and Standards. Draft for Review and Comment, July 28, 2004
- I-5 North Coast HOV/Managed Lanes Project, Technical Report No. 4, Existing Conditions Traffic Analysis, March 8, 2006
- I-5 North Coast Corridor Project, Technical Report No. 5, Traffic Demand Forecasting Report, August 2007
- I-5 North Coast Corridor Project, Draft Technical Report No. 6, Freeway Interchange Operations Report, August 2007

- I-5 North Coast Corridor Project, Draft Technical Report No. 7, Direct Access Ramps/Local Circulation System Operations Report, August 2007
- I-5 North Coast Traffic Report. A Summary of Traffic Reports, prepared for the I-5 North Coast Corridor Project, Revised June 2010

3.6.2.1 Traffic and Transportation

Traffic Fundamentals

Annual Average Daily Traffic (ADT) – The total volume of vehicle traffic in both directions of a highway or road for a year divided by 365 days.

Bottlenecks – The persistent drop in speed between two locations on a freeway. There are two kinds of bottlenecks, non-recurrent and recurrent. Non-recurrent bottlenecks occur from an unforeseen event, such as an accident. Recurrent bottlenecks occur in daily and predictable traffic patterns, like those occurring during rush hour when there is not enough capacity on the freeway for all the motorists wanting access.

Capacity – The maximum flow in vehicles per hour that can be expected on a particular segment during a given time period. It is the point immediately prior to traffic flow breakdown resulting in congested conditions.

Congestion – Congestion occurs when the traffic demand on a given segment surpasses available capacity.

Delay – The amount of additional travel time expressed as the total amount of hours all vehicles remain on the roadway due to congestion. For example, if 5,000 vehicles wait 30 minutes in congestion, the total amount of delay is 2,500 hours.

Level of Service (LOS) – LOS is a qualitative measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six LOS are defined, with letters designating each level, from A to F, with LOS A representing the best operating conditions and LOS F representing the worst in terms of motorist satisfaction. Each LOS represents a range of operating conditions and a description of those conditions. Safety is not included in the measures that establish service levels. *Figure 3-6.1* provides a general description of each LOS.

Travel Time – The amount of time to travel a defined distance.

Existing and Forecasted Conditions

The primary planning analysis tool that is used for a majority of the planning and project development studies in San Diego County is the SANDAG Regional Transportation Model (RTM). The RTM also is the primary analysis tool used in the development of the SANDAG Regional Transportation Plan (RTP). The RTM follows a four-step travel demand modeling process that produces estimates of current and future travel demand on the transportation system in San Diego. The *I-5 NCC Project* has relied on SANDAG's RTM to develop supporting traffic forecasts for the project.

The RTM provides scenarios of how the region's transportation network is anticipated to behave in the future for a defined set of improvements and assumptions. The *I-5 NCC Project* traffic forecasts were based upon the SANDAG socio-economic data used by the Series 10 model for the 2030 RTP (approved by SANDAG in March 2003).

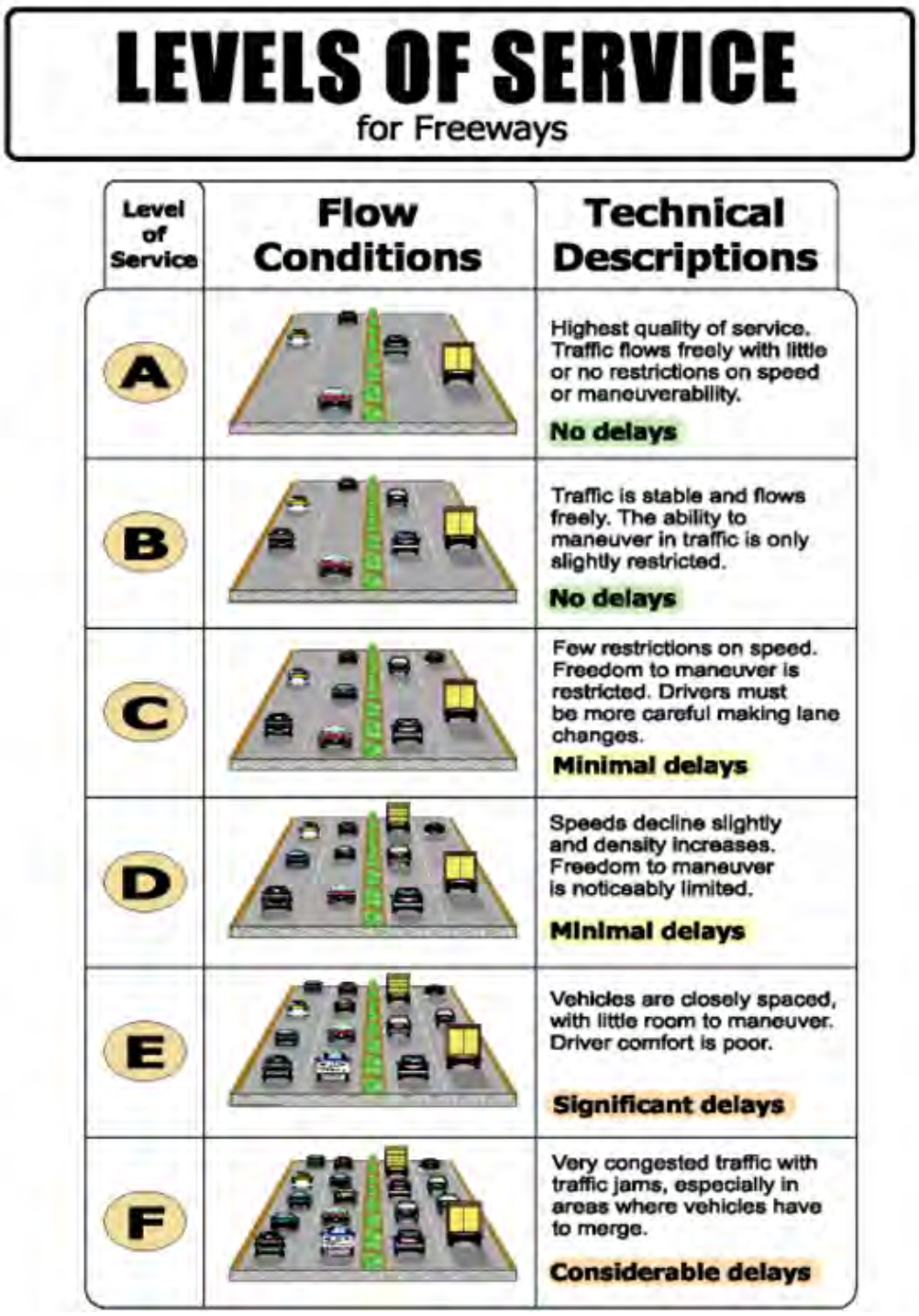


Figure 3-6.1: Level of Service

The previous list of technical reports for traffic analysis contains detailed background information on the traffic volume forecasting process and development of traffic methodologies. The reports also present the Year 2030/2015 forecast volumes and turning movements for mainline I-5, the HOV/Managed Lanes, the ramp interchange intersections, the DAR intersections, and intersections within the DAR areas of influence.

Below are the five traffic scenarios modeled for the purpose of producing future year traffic forecasts.

1. *No Build (Year 2030).* This scenario does not include any improvements to the I-5 North Coast Corridor other than those currently planned and programmed for implementation in addition to the *I-5 NCC Project*.

2. *10+4 without DARs (Year 2030).* This scenario includes 10 general purpose lanes on I-5 (south of SR-78) plus 4 HOV/Managed Lanes. DAR connections to HOV/Managed Lanes are not included as part of this scenario.

3. *10+4 with DARs (Year 2030).* This scenario includes 10 general purpose lanes on I-5 (south of SR-78) plus 4 HOV/Managed Lanes. DAR connections to HOV/Managed Lanes would be included at the following locations, from south to north:
   a. Voigt Drive (City of San Diego)
   b. Manchester Avenue (City of Encinitas)
   c. Cannon Road (City of Carlsbad)
   d. Oceanside Boulevard (City of Oceanside)

4. *8+4 with DAR Scenario (Year 2030).* This scenario includes eight general purpose lanes on I-5 plus four HOV/Managed Lanes. DAR locations are the same as the 10+4 Barrier/Buffer alternatives and DAR scenario.

5. *10+4 with DARs (Year 2015).* This scenario is identical to the Year 2030 10+4 Barrier/Buffer alternatives and DAR scenario, but the forecast horizon year is 2015.

As part of the development of the RTP, every three to five years SANDAG produces a new set of socio-economic data and land use forecasts for the San Diego Region. These are used by the RTM to generate regional traffic forecasts. Each new edition of the RTP also includes existing and planned transportation infrastructure, and the latest planning data and modal usage assumptions. During the course of the *I-5 NCC Project* development process, SANDAG released three RTMs, referred to as Series 10, Series 11, and Series 12. Successive versions of the SANDAG RTP are identified in *Table 3.6.1*. The *I-5 NCC Project* was modified from 10 mainlanes and 4 HOV/Managed Lanes (10+4) per the 2030 RTP approved in March 2003, using the Series 10 forecasts with a base year of 2000. The next modification was to eight mainlanes and four HOV/Managed Lanes (8+4) per the 2030 RTP approved in November 2007, using Series 11 forecasts with a base year of 2003. The 2050 (latest) RTP[1] retains the previous modification of eight mainlanes and four HOV/Managed Lanes. The 2050 RTP was approved in October 2011 and uses the Series 12 forecasts with a base year of 2008.

[1] On December 20, 2012, the San Diego Superior Court entered a judgment finding that the EIR for the 2050 RTP is legally inadequate with regard to greenhouse gas emissions. Although the judgment may be overturned on appeal, this Final EIR/EIS has been drafted to avoid the narrow alleged deficiencies found by the Court. Where this Final EIR/EIS relies upon 2050 RTP information, that information has not been challenged and is not part of the current lawsuit.

Table 3.6.1: Successive Versions of the SANDAG RTP

Series of Socio-Economic Data and Traffic Forecasts	SANDAG RTP	I-5 North Coast Corridor lane configuration per RTP version
Series 10	2030 RTP "Mobility 2030, The Transportation Plan for the San Diego Region" - approved March 2003	10 general purpose lanes and 4 HOV/Managed Lanes (10+4)
Series 11	2030 RTP "Pathways for the Future" – approved November 2007	8 general purpose lanes and 4 HOV/Managed Lanes (8+4)
Series 12	2050 RTP "Our Region. Our Future." – approved October 2011	8 general purpose lanes and 4 HOV/Managed Lanes (8+4)

Figure 3-6.2 presents the San Diego County "Revenue-Constrained" vehicle miles traveled (VMT) comparisons among Series 10, 11, and 12 forecasts. The North Coast Corridor traffic growth forecasts from Series 10 and 11 were within one percent. The Series 12 model with the 2008 base year included the effects of the recession, and incorporated revised estimates for economic and development growth within the region. The results are seen in *Figure 3-6.2*, which shows that the previously forecasted 2030 VMT from Series 10 and 11 is forecasted to occur around year 2045 in Series 12. This trend is also seen with respect to regional population growth. Previous projections under Series 10 and 11 predicted that the region would add approximately one million people by 2030, while Series 12 predicts that this growth is to occur around 2040.

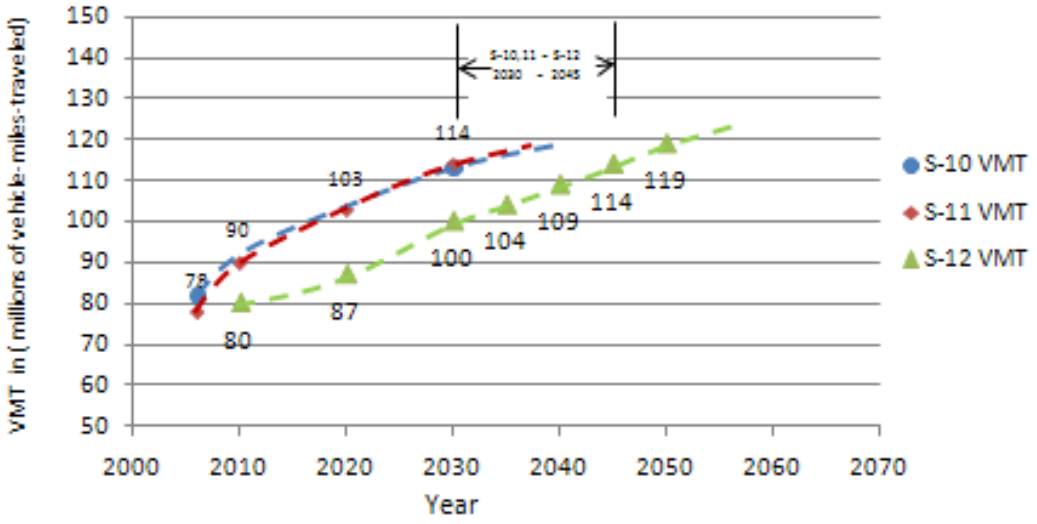


Figure 3-6.2: Regional "Revenue-Constrained" VMT Comparison Series 10, 11, and 12

A further comparison of the respective *I-5 NCC Project* models was undertaken by evaluating the total ADT for freeway segments along the I-5 North Coast Corridor for the different model years. Caltrans compared model outputs at various points, or "screenlines" along the freeway. These screenlines are often used in traffic analyses to determine how the traffic volume entering

or exiting a particular segment as they capture all of the traffic that moves across the selected location. A sample of these screenline locations is illustrated in *Figure 3-6.3*. As shown in *Figure 3-6.3*, the findings of the comparisons among the Series 10, 11, and 12 traffic volume forecasts generally indicate that Series 12 forecasts for years 2030 and 2040 are lower than both Series 10 and 11 for year 2030. More specifically:

- Series 12 forecast traffic volumes for year 2030 are generally lower than Series 10 2030 forecast volumes by an overall average of 7.9 percent.

- Series 12 forecast traffic volumes for year 2035 are generally lower than Series 10 2030 forecast volumes by an overall average of 3.5 percent.[2]

- Series 12 forecast traffic volumes for year 2040 are generally lower than Series 10 2030 forecast volumes by an overall average of 2.8 percent.[3] Series 12 forecast volumes for year 2050 are generally higher that Series 10 2030 forecast volumes by an average of 6.1 percent.

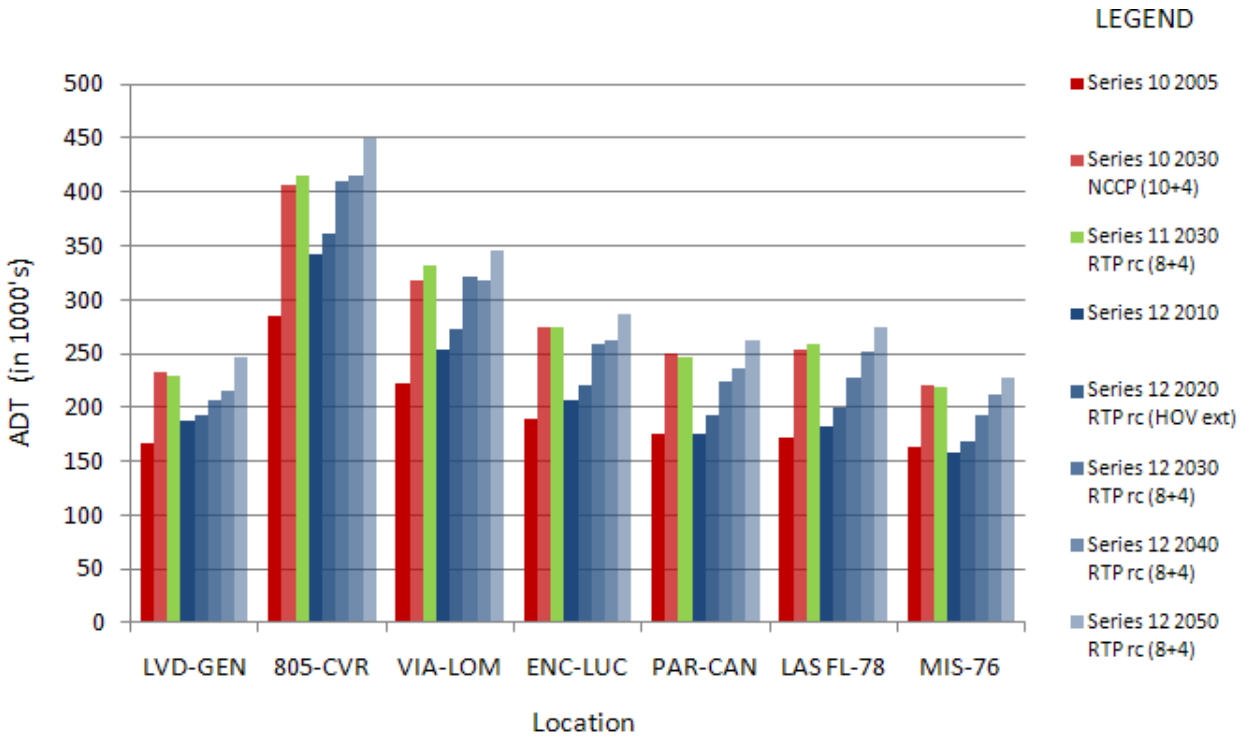


Figure 3-6.3: ADT (Unadjusted 24-hour Forecasted Volume [UVOL]) Comparison of Series 10, 11, and 12 Travel Models at Selected Screenline Locations on the I-5 North Coast Corridor

[2] No single segment varies by more than 9.1 percent when comparing Series 12 forecast traffic volumes for year 2035 to Series 10 2030 forecast traffic volumes.

[3] No single segment varies by more than 7.9 percent when comparing Series 12 forecast traffic volumes for year 2040 to Series 10 2030 forecast traffic volumes.

Upon review of these different data sets, the project team determined that the initial Series 10 2030 forecasted daily traffic demands, which were used as the basis of the original traffic studies, are generally equivalent to the Series 12 2035 forecast daily traffic volumes (within an average of 3.5 percent). These demand volume differences are considered minimal and updating the Series 10 travel forecasts to year 2035 at this time would not result in changes to the recommended geometric configurations of the project alternatives or alter the results of the associated studies. Therefore, travel volume forecasts and the associated technical studies presented in this Final EIR/EIS are based on the region's Series 10 travel forecast model and these analyses are considered representative of what is expected to occur within the 2040 to 2050 timeframe.

Corridor System Management Plan

Additional considerations in transportation planning include multimodal analysis. As noted in *Section 1.5, Other I-5 Considerations*, the Corridor System Management Plan (CSMP) for the travelshed along the I-5 North Coast Corridor addresses the transportation system as a whole, and focuses on how transit, local roadways, highways, pedestrian routes, and land use work together as a system. This promotes a strategy that prioritizes resources to phase in improvements across jurisdictions and transportation modes to achieve enhanced productivity, mobility, reliability, accessibility, and safety.

Average Daily Traffic

As the region continues to grow both economically and demographically, the ADT has increased along the I-5 corridor and would continue to do so without a project (No Build). The 2030 No Build shows less traffic using the freeway than the year 2030 build alternatives, because freeway demand would shift to routes parallel to I-5 (*Table 3.6.2* in *Section 3.6.3.1).* The reverse condition reflects an increase in freeway travel facilitated by improvements that make freeway travel more attractive or convenient than existing alternate routes. Additional traffic carried by a freeway facility is referred to as accommodating the "latent demand" to travel across the travelshed, and is reflected in the increased ADT volumes for the build alternatives.

Travel Time

The existing average travel time during free-flow conditions to travel the project area in the northbound or southbound direction is about 25 minutes, with an average speed of approximately 65 miles per hour (mph). The existing southbound average a.m. peak travel time is between 31 and 44 minutes and the p.m. peak travel time is between 27 and 32 minutes (*Table 3.6.3* in *Section 3.6.3.1*). The existing northbound travel time for the a.m. peak period is between 24 and 25 minutes. The p.m. peak travel time northbound is between 33 and 39 minutes.

Bottlenecks and Total Delay

Bottlenecks were calculated using weekdays, excluding holidays, when occurring 20 percent of the time or more in a calendar year. The tables below used 35 mph and the reference speed for the delay associated with bottlenecks. Manchester Avenue has been identified as both an a.m. and p.m. peak bottleneck in the southbound direction in 2006, causing an estimated daily average of 4,700 hours of delay for the general purpose lanes.

In the northbound direction, bottlenecks have been identified at Lomas Santa Fe Drive and Cannon Road, both in the p.m. peak. Combined, these two northbound locations cause an

estimated daily average of 3,500 hours of delay for the general purpose lanes. Future delay is included within *Total Delay* in *Section 3.6.3.*

Duration of Congestion

On weekdays, the 2006 duration of congestion for the general purpose lanes in the northbound direction is approximately zero hours in the a.m. peak hours and five hours in the p.m. peak hours. In the southbound direction, the duration of congestion for the general purpose lanes is approximately five hours in the a.m. peak hours and zero hours in the p.m. peak hours (*Table 3.6.3*).

Weekend Congestion

The weekend trips on I-5 include regional and interregional motorists seeking access to the beach or ocean, and special events such as the San Diego County Fair or horse racing at the Del Mar Fairgrounds, etc. These motorists are experiencing increasing levels of weekend congestion. This weekend congestion is highly variable and is based on seasonality, weather, school schedules, and the scheduling of special events.

It has been observed that many weekend trips on I-5 include a high percentage of carpools. A vehicle occupancy study done for Caltrans in 2008 (Memo from Wilson and Company, Vehicle Occupancy Study, I-5 North Coast Special Traffic Studies, July 11, 2008) indicated that the overall percentage of HOV vehicles was about 55 to 60 percent. These types of vehicles are expected to provide much of the demand for HOV or Managed Lane usage during weekend time periods.

LOS

The northbound and southbound directional LOS for both the a.m. and p.m. peak hours are summarized in *Tables 3.6.6* and *3.6.7*, respectively, found in *Section 3.6.3.1*. LOS is based on the forecasted traffic volumes, which did not make distinctions for barrier versus buffer.

HOV/Managed Lanes

At the time this traffic study was written, I-5 had one northbound six-mi HOV lane between the I-5 / I-805 merge and the Via de la Valle undercrossing. The existing conditions represent the year 2006. The traffic counts taken during the months of October and November of 2006 indicated a weekday average a.m. peak hour volume of 400 vehicles per hour and average p.m. peak hour volume of 1,050 vehicles per hour. Additionally, observed field data indicate that more than 90 percent of the vehicles using this HOV lane in both the a.m. and p.m. peak hours are passenger cars. A list of select I-5 freeway segments within the project limits and their respective HOV volumes are compiled in *Tables 3.6.8* and *3.6.9* (in *Section 3.6.3.1*).

Park and Ride Lots

A park and ride lot is a group of parking spaces designated for the purpose of supplying people a place to park to transfer to their carpool, vanpool, or bus pool partners. This works not only with HOV/Managed Lanes, but can work with other transit options when the park and ride lots are also served by transit. The lots provide a convenient place to park your car. Along the project area there are six park and ride lots, located at Sorrento Valley Road in San Diego; Birmingham Drive (off Villa Cardiff Drive) and Calle Magdalena in Encinitas; La Costa Avenue in Carlsbad; and Moreno Street and Maxson Street in Oceanside.

3.6.2.2 Pedestrian and Bicycle Existing Facilities

Pedestrian facilities include sidewalks, handicap-access curb ramps, crosswalks, paths, pedestrian overcrossings and undercrossings, traffic islands, and other similar features applicable for pedestrian use. In addition, bicyclists also share pedestrian facilities, when permitted.

Bicycle facilities are generally classified as: Shared Roadway (no bikeway designation), Class I Bikeway (Bike Path), Class II Bikeway (Bike Lane), or Class III Bikeway (Bike Route).

Shared roadways are streets and routes without bikeway designations. Most bicycle travel within the State of California occurs along these routes.

Class I Bike Paths provide right-of-way for exclusive use of bicyclists and pedestrians. They minimize crossflow by motorists and also reduce the influence of parallel streets/highways. Bike paths are usually found along rivers, ocean fronts, canals, utility right-of-way, railroad right-of-way, within college campuses, within and between parks, and in other areas as applicable.

Class II Bike Lanes are established along streets where there is significant bicycle demand. Bike lanes are delineated with bike lane signs and pavement markings to separate them from lanes assigned to motorists. This results in a more predictable movement between bicyclists and motorists using the same street.

Class III Bike Routes are shared facilities with motorists on the street or with pedestrians on sidewalks. They are intended to provide continuity to other bicycle facilities and also designate preferred routes through high demand corridors. Bike routes are established by placing Bike Route signs along the roadway.

Pedestrian and bicycle access are offered primarily from local streets that pass over or under I-5. There are 37 such crossings within the project footprint. Caltrans provides pedestrians with facilities at most crossings. All three types of bikeways exist in the I-5 corridor, and cyclists are allowed at all freeway crossings. Bicycle access also is allowed on the I-5 freeway shoulders, specifically between Sorrento Valley Road and Genesee Avenue, and also from Vandegrift Boulevard to Las Pulgas Road north of Oceanside.

The entire California coastline includes the Pacific Coast Bicycle Route. For the nation's bicentennial independence celebration, Caltrans established a bikeway that extends between Oregon and the International Border at Mexico. It is over 900 mi in length, and has been a major attraction for bicycle riders worldwide. This bikeway serves many users: short segments serve as ideal commuter access between adjoining communities; longer segments serve to accommodate the recreational bicycle users, as well as some commuters; and the full length of this bikeway within San Diego County serves the interregional users.

In the San Diego Region, there is relatively convenient access to the Pacific Coast Bicycle Route. The SR-56 Class I Bicycle Path, which terminates just east of I-5 in Carmel Valley, is a nearly complete link to the coast and other regional bikeways, but it has an existing gap just east of I-5. This coast route, also known as the Coastal Rail Trail, serves the communities of north coastal San Diego County. Following construction of the proposed project, nearly all local city streets and regional roadways that cross I-5 and link up to Coast Highway 101 would be

bicycle-friendly, meaning that Class II Bicycle Lanes would be striped on the shoulders and Class III Bicycle Routes would be signed to accommodate users to the coast route.

Local communities on the coast have coordinated to develop community plans and bicycle and pedestrian master plans that fully accommodate pedestrian and bicycle travel modes. Collectively, these plans propose to improve quality of life by offering safe transportation alternatives to the automobile. The common goals and principles of the various local community plans are detailed in *Section 3.2.1* under the subheading *Bicycle and Pedestrian Plans.*

AMTRAK interregional rail service and the COASTER (the regional commuter rail service) accommodate bicycles on their respective systems. All buses in the region, specifically NCTD and Metropolitan Transit System (MTS), are equipped to carry bicycles as well. In summary, the southern California coastline is reasonably well-equipped to accommodate non-motorized travel modes. Several bike routes are constricted, crossing over or under I-5. The project would improve bicycle access by providing Class II or Class III bicycle facilities wherever possible.

Other Existing/Planned/Proposed Pedestrian and Bicycle Facilities

Near I-5, there are several bicycle and pedestrian facilities that exist today, are planned for future construction, or are proposed to be developed. The following facilities affect how the current or planned network functions through the I-5 North Coast Corridor.

- Voigt Drive includes a Class II bike facility.

- As a component of the *I-5 NCC Project*, the North Coast (NC) Bike Trail would provide important community, regional, and interregional non-motorized transportation options. The NC Bike Trail is proposed to include Class I, Class II, and Class III bicycle facilities, as well as multi-use trails. Key features include trail crossings at most of the lagoons in the I-5 North Coast Corridor.

- I-5 freeway shoulders are opened to bicycle travel between Genesee Avenue and Sorrento Valley Road/Roselle Street. A project that is funded and will be constructed soon includes a paved bicycle trail that will connect Voigt Drive to Genesee Avenue and Genesee Avenue to Sorrento Valley Road. This will facilitate the removal of bicycles from the freeway shoulders and is anticipated to increase non-motorized mode share.

- Sorrento Valley Road includes a Class II bike facility.

- A portion of Sorrento Valley Road/Roselle Street is closed to vehicular traffic between Oleander Street and Carmel Valley Road. It is used exclusively by bicyclists and pedestrians and would be upgraded as a part of the NC Bike Trail project.

- Carmel Mountain Road includes is a Class II bike facility.

- The SR-56 Bike Path that parallels SR-56 on the south side begins at Sabre Springs Parkway (just east of I-15) and terminates just east of I-5 in Carmel Valley. As part of the NC Bike Trail project, a connection is proposed from the SR-56 bike path to Old

Sorrento Valley Road, providing a key gap closure in the regional bike network. Carmel Valley Road is used to access the coast from this bikeway.

- The Coastal Rail Trail, currently complete in some reaches, while in the developmental phase and construction phase in other reaches, begins in San Diego at Santa Fe Depot and terminates in Oceanside. (Solana Beach's section is finished. Carlsbad and Oceanside have several sections built and are planning others, but are encountering constrained areas. Encinitas and Del Mar have constraints that have delayed even the planning phases.) The Coastal Rail Trail would predominately lie within the railroad right-of-way between Oceanside and San Diego.

- Del Mar Heights Road includes a Class III bike facility as it crosses the freeway; otherwise, it is a Class II bike facility.

- The NC Bike Trail project proposes to connect Del Mar Heights Road to Via de la Valle as a paved bike trail. This would provide a new non-motorized connection over the San Dieguito Lagoon, adjacent to I-5.

- Via de la Valle includes a Class III bike facility as it crosses the freeway; otherwise, it is a Class II bike facility.

- Lomas Santa Fe Drive includes a Class I bike facility as it crosses under the I-5 freeway; otherwise, it includes a Class II bike facility.

- The NC Bike Trail project proposes to connect Solana Beach to Manchester Avenue in Encinitas as a paved bike trail. This would provide a new non-motorized connection over the San Elijo Lagoon, adjacent to I-5.

- Encinitas Boulevard includes a Class II bike facility.

- The Encinitas Grade Separated Pedestrian Crossings would construct separate railroad crossings for pedestrians and cyclists at Hillcrest Drive, El Portal Street, and Montgomery Avenue. A crossing at Santa Fe Drive has been completed. The crossings would improve safe connections for pedestrians and cyclists to beaches, schools, commercial areas, residential neighborhoods, and the planned Coastal Rail Trail.

- Leucadia Boulevard includes a Class III bike facility as it crosses the freeway; otherwise, it is a Class II bike facility.

- La Costa Avenue includes a Class II bike facility.

- The NC Bike Trail project proposes to connect La Costa Avenue to Avenida Encinas as a paved bike trail. This would provide a new non-motorized connection over the Batiquitos Lagoon, adjacent to I-5.

- Poinsettia Lane includes a Class II bike facility.

- Cannon Road includes a Class II bike facility.

- The NC Bike Trail project proposes to connect Cannon Road to the Coastal Rail Trail in Carlsbad as a paved bike trail and on-street facilities. This would provide a new non-motorized connection over the Agua Hedionda Lagoon, adjacent to I-5.

- Tamarack Avenue includes a Class II bike facility.

- Carlsbad Village Drive includes a Class III bike facility.

- Jefferson Street includes a Class II bike facility.

- California Street includes a Class III bike facility.

- Oceanside Boulevard includes a Class II bike facility.

- SR-76 includes a Class I bike facility on the San Luis Rey River Trail.

- The Inland Rail Trail is another rail trail that would extend from Oceanside to Escondido. Most of it has been planned, and several segments (in Escondido, San Marcos, and Vista) have either been constructed or are ready for construction.

- The San Luis Rey Bike Path is located within the SR-76 corridor. It parallels the San Luis Rey River, beginning at I-5 and ending just east of College Boulevard.

- In Oceanside, the Pier View Way Bicycle and Pedestrian undercrossing is located between Cleveland Street and Myers Street. It follows an alignment under the railroad tracks and provides access directly to the Oceanside Pier.

- The outside shoulders of I-5 north of Oceanside are opened to bicycle travel between Vandegrift Street and Las Pulgas Road. Bicycles are only intermittently permitted on the Camp Pendleton Marine Base during specific times.

In addition to the existing, planned, and proposed pedestrian and bicycle facilities listed above, the project would include a number of pedestrian and bicycle facilities potentially implemented as project enhancements. These are listed in *Section 3.6.3.2, Pedestrian and Bicycle Facilities*, below, and are described in *Section 2.3* of this Final EIR/EIS.

3.6.3 Environmental Consequences

3.6.3.1 Traffic and Transportation

Average Daily Traffic

Table 3.6.2 shows an increase in the amount of ADT for each alternative.

Table 3.6.2: Average Daily Traffic

Location		2006	2030 No Build	2030 8+4 Barrier/Buffer	2030 10+4 Barrier/Buffer
From	To				
La Jolla Village Drive	Genesee Avenue	169,900	249,590	255,250	262,150
I-5 / I-805 Merge	Carmel Valley Road	281,400	412,640	425,750	434,250
Via de la Valle	Lomas Santa Fe Drive	203,600	326,940	342,950	354,250
Encinitas Boulevard	Leucadia Boulevard	190,500	294,300	315,150	326,850
Palomar Airport Road	Cannon Road	188,500	290,100	309,850	320,350
SR-78	Oceanside Boulevard	192,900	303,800	319,150	323,300
Mission Avenue	SR-76	156,800	246,500	258,000	259,200

Travel Time

The No Build alternative average northbound travel time in 2030 during peak hours is forecasted to be between 29 and 37 minutes in the morning and between 67 and 69 minutes in the afternoon. The southbound peak travel time in 2030 is forecasted to be between 53 and 54 minutes in the morning and between 40 and 48 minutes in the afternoon (*Table 3.6.3*). The average general purpose lane peak travel time for northbound 10+4 Barrier/Buffer alternatives would decrease to between 25 and 27 minutes in the morning and between 30 and 36 minutes in the afternoon in 2030. The southbound 10+4 Barrier/Buffer alternatives travel time would be between 28 and 35 minutes at the morning peak and between 26 and 30 minutes at the afternoon peak for the general purpose lanes. The average general purpose lane peak travel time for northbound 8+4 Barrier/Buffer alternatives would decrease to between 27 and 29 minutes in the morning and between 45 and 50 minutes in the afternoon in 2030 and the southbound travel time would decrease to between 36 and 47 minutes in the morning and between 29 and 30 minutes in the afternoon.

Total Delay

Total weekday delay represents the general purpose lanes on an average weekday. The weekday delay for the 2006 existing conditions in the northbound and southbound directions are 3,500 and 4,700 vehicle hours, respectively. For the No Build alternative in the year 2030, the predicted total weekday delay in the northbound direction would be 13,700 vehicle hours. The total weekday delay in the southbound direction for the No Build alternative would be 14,000 vehicle hours. For the 10+4 Barrier/Buffer alternatives in the year 2030, the delay for the northbound direction would be 600 vehicle hours. Southbound delay in the year 2030 for the 10+4 Barrier/Buffer alternatives would be 3,700 vehicle hours. Northbound delay for the 8+4 Barrier/Buffer alternatives would be 9,600 vehicle hours. The southbound delay for the 8+4 Barrier/Buffer alternatives would be 8,000 hours (*Table 3.6.3*).

Table 3.6.3: Total Delay, Congested Hours, and Travel Time Per Day

Conditions	Year	Direction	Vehicle Hours of Delay	Congested Hours AM	Congested Hours PM	Travel Time Min AM	Travel Time Min PM
Existing	2006	NB	3,500	0.0	5.0	24-25	33-39
	2006	SB	4,700	5.0	0.0	31-44	27-32
No Build	2030	NB	13,700	3.5	6.0	29-37	67-69
	2030	SB	14,000	6.0	7.0	53-54	40-48
10+4 Barrier/Buffer	2030	NB	600	0.0	2.5	25-27	30-36
	2030	SB	3,700	5.0	2.0	28-35	26-30
8+4 Barrier/Buffer	2030	NB	9,600	0.0	6.0	27-29	45-50
	2030	SB	8,000	5.5	2.0	36-47	29-30

Duration of Congestion

By 2030, it is forecasted in the No Build scenario that the duration of congestion in the northbound direction would be approximately three-and-a-half hours in the a.m. peak hours and six hours in the p.m. peak hours. In 2030, the duration of congestion in the southbound direction is forecasted in the No Build to be six hours in the a.m. peak hours, and seven hours in the p.m. peak hours. The 10+4 Barrier/Buffer alternatives are forecasted to have no congestion northbound in the a.m. and two-and-a-half hours in the p.m. peak hours, while southbound would have five hours for a.m. and two hours for p.m. peak hours. The 8+4 Barrier/Buffer alternatives are forecasted to have no congestion northbound in the a.m. and six hours in the p.m. peak hours, while southbound would have five-and-a-half hours for a.m. and two hours for p.m. peak hours (*Tables 3.6.4* and *3.6.5*).

Table 3.6.4: Northbound AM and PM Weekday Peak Period Congestion Duration

Conditions	Year	AM Peak Hour			PM Peak Hour		
		Congestion		Duration (hrs)	Congestion		Duration (hrs)
		Begin	End		Begin	End	
Existing Conditions	2006	--	--	0	2:00	7:00	5
No Build	2030	7:30	11:00	3.5*	2:00	8:00	6
10+4 Barrier/Buffer	2030	-	--	0	4:00	6:30	2.5
8+4 Barrier/Buffer	2030	--	--	0	2:00	8:00	6

* Congestion would continue through the AM and PM hours.

Table 3.6.5: Southbound AM and PM Weekday Peak Period Congestion Duration

Conditions	Year	AM Peak Hour			PM Peak Hour		
		Congestion		Duration (hrs)	Congestion		Duration (hrs)
		Begin	End		Begin	End	
Existing Conditions	2006	6:30	11:30	5	--	--	0
No Build	2030	6:00	12:00	6*	12:00	7:00	7
10+4 Barrier/Buffer	2030	7:00	12:00	5*	4:00	6:00	2*
8+4 Barrier/Buffer	2030	6:30	12:00	5.5*	4:00	6:00	2

* Congestion would continue through the AM and PM hours.
** The PM peak hours are from 12:00 to 8:00.

LOS

In the No Build scenario for year 2030, northbound traffic conditions in the a.m. peak hour generally exhibit LOS ratings of D and E, with the exception of a few LOS ratings of F. The majority of the northbound traffic conditions in the p.m. peak hour exhibit a LOS rating of F. The majority of the southbound traffic conditions exhibit LOS ratings of F in the a.m. and p.m. peak hours (*Tables 3.6.6* and *3.6.7*).

In the 10+4 Barrier/Buffer alternatives for year 2030, the northbound traffic conditions in the a.m. peak hour generally exhibit LOS ratings of C and D, with the exception of a few LOS ratings of F. The majority of the northbound traffic conditions in the p.m. peak hour exhibit an LOS rating of D.

Table 3.6.6: Northbound I-5 Estimated General Purpose Lane LOS Summary

Freeway Segment		Existing LOS		2030 No Build LOS		2030 10+4 LOS		2030 8+4 LOS	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
La Jolla Village Drive	Genesee Avenue	E	C	E	D	F	E	E	D
Genesee Avenue	Sorrento Valley Road / Roselle Street	D	D	D	C	D	D	C	D
Sorrento Valley Road / Roselle Street	I-5 / I-805 Merge	B	B	B	B	B	C	B	C
I-5 / I-805 Merge	Carmel Valley Road	C	C	C	C	C	D	C	C
Carmel Valley Road	Del Mar Heights Road	C	D	C	D	D	E	D	F
Del Mar Heights Road	Via de la Valle	C	D	F	F	E	F	D	F
Via de la Valle	Lomas Santa Fe Drive	D	F	E	F	D	F	E	F
Lomas Santa Fe Drive	Manchester Avenue	D	F	E	F	D	F	D	F
Manchester Avenue	Birmingham Drive	D	E	E	F	D	E	D	F
Birmingham Drive	Santa Fe Drive	D	E	E	E	D	E	D	F
Santa Fe Drive	Encinitas Boulevard	D	E	E	E	D	E	D	F
Encinitas Boulevard	Leucadia Boulevard	D	F	E	F	D	E	D	F
Leucadia Boulevard	La Costa Avenue	D	F	F	F	D	E	D	F
La Costa Avenue	Poinsettia Lane	D	F	F	F	D	E	D	F
Poinsettia Lane	Palomar Airport Road	D	E	F	E	D	E	D	F
Palomar Airport Road	Cannon Road	D	E	E	E	D	D	D	F

Table 3.6.6 (cont.): Northbound I-5 Estimated General Purpose Lane LOS Summary

Freeway Segment		Existing LOS		2030 No Build LOS		2030 10+4 LOS		2030 8+4 LOS	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Cannon Road	Tamarack Avenue	D	F	E	F	C	E	D	F
Tamarack Avenue	Carlsbad Village Drive	D	F	D	F	C	E	D	F
Carlsbad Village Drive	Las Flores Drive	D	F	D	F	C	E	C	F
Las Flores Drive	SR-78	D	F	E	F	E	F	D	F
SR-78	California Street	C	C	D	D	E	F	D	D
California Street	Oceanside Boulevard	C	C	E	E	E	F	D	E
Oceanside Boulevard	Mission Avenue	D	D	E	D	E	E	D	D
Mission Avenue	SR-76	C	C	D	C	D	D	D	C
SR-76	Harbor Drive	D	C	E	C	E	C	D	C

Table 3.6.7: Southbound I-5 Estimated General Purpose Lane LOS Summary

Freeway Segment		Existing LOS		2030 No Build LOS		2030 10+4 LOS		2030 8+4 LOS	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Harbor Drive	SR-76	B	C	C	D	C	D	C	D
SR-76	Mission Avenue	C	B	D	D	D	D	C	D
Mission Avenue	Oceanside Boulevard	C	C	E	E	D	E	D	D
Oceanside Boulevard	Cassidy Street	D	C	F	F	D	D	C	C
Cassidy Street	SR-78	D	C	F	F	F	E	E	D
SR-78	Las Flores Drive	D	C	F	F	D	D	E	D
Las Flores Drive	Carlsbad Village Drive	D	C	F	E	D	D	E	D
Carlsbad Village Drive	Tamarack Avenue	D	C	F	E	E	D	E	D
Tamarack Avenue	Cannon Road	E	D	F	F	F	D	F	F
Cannon Road	Palomar Airport Road	D	C	F	E	D	D	E	D
Palomar Airport Road	Poinsettia Lane	E	D	F	F	D	D	E	E
Poinsettia Lane	La Costa Avenue	E	D	F	F	D	D	E	E
La Costa Avenue	Leucadia Boulevard	E	D	F	F	E	D	F	E
Leucadia Boulevard	Encinitas Boulevard	F	D	F	F	E	D	F	E
Encinitas Boulevard	Santa Fe Drive	E	D	E	F	D	D	E	E

Table 3.6.7 (cont.): Southbound I-5 Estimated General Purpose Lane LOS Summary

Freeway Segment		Existing LOS		2030 No Build LOS		2030 10+4 LOS		2030 8+4 LOS	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Santa Fe Drive	Birmingham Drive	E	D	E	F	D	D	E	E
Birmingham Drive	Manchester Avenue	F	D	F	F	E	D	F	E
Manchester Avenue	Lomas Santa Fe Drive	F	E	F	F	F	E	F	F
Lomas Santa Fe Drive	Via de la Valle	F	E	F	F	F	E	F	F
Via de la Valle	Del Mar Heights Road	E	D	E	E	F	E	F	D
Del Mar Heights Road	Carmel Valley Road	D	D	F	E	F	E	F	D
Carmel Valley Road	I-5 / I-805 Merge	D	D	F	E	F	D	E	D
I-5 / I-805 Merge	Roselle Street	C	C	D	B	D	B	B	B
Roselle Street	Genesee Avenue	D	D	E	D	E	D	D	D
Genesee Avenue	La Jolla Village Drive	C	D	C	F	F	F	D	F

The majority of the southbound traffic conditions exhibit LOS ratings of D, with the exception of a few LOS ratings of F in the a.m. and p.m. peak hours. The LOS ratings in the a.m. and p.m. peak hours for both the northbound and southbound directions would be very similar to the LOS ratings for the existing conditions, suggesting that the current LOS could possibly be maintained and possibly improved in a few locations *(Tables 3.6.6* and *3.6.7*).

In the year 2030 8+4 for the Barrier/Buffer alternatives, the northbound traffic conditions in the a.m. peak hour generally exhibit a LOS rating of D, while the majority of the p.m. peak hour exhibit a LOS rating of F (Del Mar Heights Road to SR-78). The southbound a.m. and p.m. peak hours would be similar to the LOS ratings of the existing conditions, with the exception of a few segments where the LOS ratings degrade to F (*Tables 3.6.6* and *3.6.7*).

With the 8+4 Barrier/Buffer alternatives, the corridor would degrade in the a.m. and p.m. peak hours when compared with the existing conditions; however, the a.m. and p.m. peak hour conditions would have a better LOS when compared with the year 2030 No Build scenario (*Tables 3.6.6* and *3.6.7*).

Weekend Use

There is an influx of midday traffic on weekends. Average travel times on Saturday and Sunday using recent 2003 to 2006 average travel times on the I-5 within the project area revealed that the weekend does not contain a distinct morning peak period, although congestion may sometimes begin before noon. This lack of a separate peak period can be attributed to the majority of people having weekends free from work and businesses operating on different schedules that are open during the weekends. There is, however, a notable travel trend on

Saturday in the southbound direction and on Sunday in the northbound direction. There is an increased travel time period from 9:00 a.m. to 8:00 p.m. on Saturday, and on Sunday the increased travel time period is from 1:00 p.m. to 8:00 p.m. Saturday southbound peak average travel time occurs between 12:00 p.m. and 1:00 p.m., while Sunday northbound average peak travel time occurs between 5:00 p.m. and 6:00 p.m. In the southbound direction, there is a consistent peak, between 25 and 35 minutes, for most of the daytime suggesting a constant, all day flow of traffic with a slight reduction in travel time.

HOV Use

During weekday peak periods, approximately 13 percent of the vehicles within the project limits are HOVs with two or more occupants. There is a directional tendency to the HOV demand volume between the northbound and southbound directions. The demand volume in the northbound direction is higher during the p.m. peak hour and lower during the a.m. peak hour. In contrast, the demand volume in the southbound direction is lower during the p.m. peak hour and higher during the a.m. peak hour. The HOV percentages are typically higher (13 to 23 percent) during the midday and the off-peak periods. (San Diego Regional Vehicle Occupancy and Classification Study – 2000, SANDAG, June 2002). This percentage is anticipated to increase to approximately 15 to 20 percent by 2030.

On the weekends, I-5 serves a variety of local, regional, and interregional, as well as tourist and seasonal/event-generated, trips. During weekend peak periods, approximately 55 to 60 percent of the vehicles within the project limits are HOV. The percentages of those vehicles are typically higher, 55 to 65 percent, during midday peak travel times southbound on Saturday, and northbound on Sunday *(Tables 3.6.8* and *3.6.9).*

Tables 3.6.8 and *3.6.9* provide a brief summary of peak hour HOV traffic volumes through each of the five cities traversed by the project.

Table 3.6.8: Weekday Northbound HOV Volumes

Freeway Segment		Existing*		2030 No Build*		2030 10+4 Barrier/Buffer		2030 8+4 Barrier/Buffer	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
La Jolla Village Drive	Genesee Avenue	X	X	X	X	1,500	1,280	1,600	1,530
I-5 / I-805 Merge	Carmel Valley Road	300	1,100	1,620	1,920	1,880	2,450	2,000	2,540
Carmel Valley Road	Lomas Santa Fe Drive	300	1,100	1,230	1,580	1,520	2,040	1,640	2,130
Santa Fe Drive	La Costa Avenue	X	X	X	X	1,900	2,270	2,120	2,470
La Costa Avenue	Cannon Road	X	X	X	X	1,820	2,170	2,030	2,180
SR-78	Oceanside Boulevard	X	X	X	X	1,700	2,100	1,900	2,240

*HOV/Managed Lanes do not exist in areas designated with an "X"

Table 3.6.9: Weekday Southbound HOV Volumes

Freeway Segment		Existing*		2030 No Build*		2030 10+4 Barrier/Buffer		2030 8+4 Barrier/Buffer	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Oceanside Boulevard	SR-78	X	X	X	X	2,170	1,650	2,570	2,030
Cannon Road	La Costa Avenue	X	X	X	X	2,080	1,920	2,460	2,380
La Costa Avenue	Santa Fe Drive	X	X	X	X	2,050	1,880	2,410	2330
Lomas Santa Fe Drive	Carmel Valley Road	1200	350	1,030	1,010	2,050	1,640	2,400	2,030
Carmel Valley Road	I-5 / I-805 Merge	1200	350	1,500	1,480	2,450	2,040	2,800	2,430
Genesee Avenue	La Jolla Village Drive	X	X	X	X	1,120	1,460	1,500	1,850

*HOV/Managed Lanes do not exist in areas designated with an "X"

Along with HOV/Managed Lanes, DAR locations were identified. For each proposed DAR location, an area of influence on the local streets was defined. Each area of influence was analyzed to establish the extent of potentially affected roadway segments and intersections in the vicinity of each proposed DAR location. These roadway segments and intersections became the focus of the subsequent local area traffic impact assessment. The area of influence was then used to define the project study area for the Local Circulation System Impact Study (Wilson & Company, August 2004). The methodology used to identify the areas of influence is discussed in more detail in Technical Report No. 1, Area of Influence Analysis (Wilson & Company, August 2004).

Opportunities for DAR development were based primarily on existing/future traffic patterns within the corridor, existing/future local freeway access locations, existing street over- and undercrossings to I-5, land use patterns and vacant land availability. Another key consideration is priority/Managed Lane connectivity for regional BRT or other transit services and HOV vehicles within the I-5 corridor. Over 30 DAR locations were identified throughout the corridor for further consideration.

Eleven sites, which propose the development of DARs within existing local interchanges, were initially eliminated from consideration due to the adverse traffic impacts of "three-point" signalized control.

The remaining DAR sites were initially screened based on the following criteria:

- Beneficial effect on freeway general purpose lane congestion by reducing/eliminating high volume "cross-lane weaving" for vehicles entering/exiting the Managed Lanes
- Potential land availability
- Proximity to employment/activity centers
- Potential to serve local/regional transit services
- Proximity to park and ride facilities

- Proximity to underrepresented communities
- Engineering feasibility
- Local support

The remaining DAR sites were further screened based on the following criteria:

- Potential impact to public parklands
- Potential impact to agricultural lands
- Potential impact to underrepresented communities
- Potential impact to public utilities
- Visual impacts/aesthetics
- Air quality/noise
- Engineering feasibility
- Projected traffic demand (ADT, peak hour)
- Potential impacts to local streets and roads

Based on the above criteria, the Draft EIR/EIS proposed DARs at four interchanges: Oceanside Boulevard, Cannon Road, Manchester Avenue, and Voigt Drive. Following public circulation of the Draft EIR/EIS, continued coordination with the Cities of Oceanside and Carlsbad resulted in the DARs at Oceanside Boulevard and Cannon Road being deleted from the project. The project addressed in this Final EIR/EIS proposes DARs at Manchester Avenue and Voigt Drive. The numbers of intersections at or over capacity at these two locations are shown on *Table 3.6.10*.

Table 3.6.10: Intersections At or Over Capacity

Street	Local Jurisdiction	Number of Intersections At or Over Capacity
Manchester Avenue	City of Encinitas	2
Voigt Drive	City of San Diego	3
	TOTAL	**5**

Weaving Analysis

One source of vehicle conflict occurs where vehicles are required to change one or more lanes creating a "weaving section." This can contribute to bottlenecks, ramp queues, and reduction in travel time for general purpose lanes. This occurs most frequently at closely spaced interchanges, ramps, lane drop, or access points. Weaving between interchanges was analyzed in both the a.m. and p.m. peak hours in 21 freeway segments at 1,800 vehicles per hour per lane (vphpl) for weaving lanes and 2,000 vphpl for general purpose lanes. In the existing condition, there were 6 a.m. peak and 17 p.m. peak exceedances in the northbound direction, and 16 a.m. peak and 8 p.m. peak exceedances in the southbound direction. In the 2030 No Build, there would be 15 a.m. peak and 17 p.m. peak exceedances in the northbound direction, and 20 a.m. peak and 20 p.m. peak exceedances in the southbound direction.

The analysis identified where the exceedances were due to high ramp volumes, main through lanes being above 2,000 vphpl, and auxiliary lanes exceeding 1,800 vphpl.

Accident Analysis

The number of accidents and accident rates for July 2004 through June 2007 from the CHP accident database available through PeMS were used. The total accident rates along the project area were less than the Statewide average for total accident rates. There were three segments that were over the Statewide average for fatal plus injury.

Other Related Congestion Analysis

Bottlenecks represent persistent drops in speed between two locations on the freeway as seen through increased travel time due to duration of the bottleneck and queue length. There can be a number of causes, including, but not limited to, a visual distraction, an incident, a heavy weaving section or a change in capacity (such as a reduction of the number of lanes). Consistently there are three major bottlenecks in the northbound direction during the p.m. peak perio—near Carmel Valley Road, Via de la Valle, and Lomas Santa Fe Drive—and smaller bottlenecks near Leucadia Boulevard and Cannon Road. In the southbound direction, there are bottlenecks during the a.m. peak near Via de la Valle, Manchester Avenue, and Birmingham Drive. In the p.m. peak, the southbound direction has bottlenecks at Birmingham Drive, Manchester Avenue, and Oceanside Boulevard. The No Build bottlenecks would increase in duration and queue length. The northbound direction for a.m. peak would include bottlenecks at La Jolla Village Drive and Del Mar Heights Road. The northbound p.m. peak would include bottlenecks near Del Mar Heights Road and Oceanside Boulevard. The southbound a.m. peak would include bottlenecks near Via de la Valle, Tamarack Avenue, and Manchester Avenue. The southbound p.m. peak would include bottlenecks near La Jolla Village Drive and Manchester Avenue.

Freeway interchanges were analyzed to assess if modifications could improve capacity and alleviate congestion at ramp intersections. In addition, all freeway on-ramp locations within the project limits would be metered to improve projected freeway operations while simultaneously not overloading surface streets with excessive queue lengths. The ramp meter rates for the interchanges within the project limits were analyzed and the length of signal time was developed from weaving results and queuing analysis.

On- and Off-ramps

Table 3.6.10 includes a summary of the intersections under the existing conditions within the proposed project's DAR area of influence that are at or over capacity (LOS E or F) in either the a.m. or p.m. peak traffic hour. Most on- and off-ramps in the project area would be widened. HOV lanes would be created at most on-ramps. Caltrans also is working with the local cities to improve intersections under their jurisdiction.

Freeway Interchange Operations

Freeway interchanges were analyzed along with on-ramp and off-ramp locations, capacity, turning, and metering. Several locations were identified in the Freeway Interchange Operations Report *(*Technical Report No. 6), which analyzed 51 ramp intersections and 25 arterial intersections within close proximity of the *I-5 NCC Project. Table 3.6.11* describes the proposed interchange improvements (with additional revisions based on the refined 8+4 Buffer alternative [Preferred Alternative]).

Table 3.6.11: Proposed Interchange Improvements

Interchange	Ramps	Proposed Lane Geometry Modifications
Genesee Avenue	SB & NB	Adding lanes to SB on-ramp, 1 SOV and 1 HOV, totaling 3 ramp lanes NB Braided on-ramp (1 HOV and 2 SOV), totaling 3 ramp lanes
Roselle Street	SB	Adding lanes to SB ramp, 1 SOV and 1 HOV, totaling 3 ramp lanes to merge with SB I-5. An additional SOV lane would diverge (split) from the SB on-ramp and merge with the SB Braided off-ramp to Genesee Avenue
Del Mar Heights Road	SB & NB	SB ramp adjustments to remove free right turn capabilities Convert NB left/through/right lane to a right-turn lane, Add a left-through lane (creating dual right and dual lefts) Adding lane to NB on-ramp and WB to SB on-ramp, 1 HOV, totaling 3 ramp lanes, respectively Adding lane to EB to SB on-ramp, 1 SOV, totaling 3 ramp lanes
Via de la Valle	SB & NB	SB ramp adjustments to remove free right turn capabilities. Widen Via de la Valle to add an exclusive WB right-turn lane NB ramp adjustments to remove free right-turn capabilities. Widen Via de la Valle to add an exclusive EB right-turn lane WB to SB on-ramp would remain 2 SOV lanes. Adding lane to EB to SB on-ramp Adding lane to EB to SB on-ramp, 1 SOV, totaling 3 ramp lanes
Manchester Avenue	SB	SB 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	SB & NB	Proposed roundabouts on the east and west sides of the overcrossing, otherwise there would be standard signalized intersections Adding lane to SB on-ramp, 1 HOV, totaling 3 ramp lanes Adding lane to NB on-ramp, 1 SOV, totaling 3 ramp lanes
Santa Fe Drive	SB & NB	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) Widen Santa Fe Drive to add a second EB left-turn lane (creating dual left-turn lanes) Adding lane to SB on-ramp, 1 SOV, totaling 3 ramp lanes Adding lanes to NB on-ramp, 1 SOV and 1 HOV, totaling 3 ramp lanes

Table 3.6.11 (cont.): Proposed Interchange Improvements

Interchange	Ramps	Proposed Lane Geometry Modifications
Encinitas Boulevard	SB & NB	SB adding an exclusive left-turn lane (creating one left-turn lane and one left-through lane)*; adding 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)* NB adding an exclusive NB left-turn lane (creating one left-turn lane and one left-through lane)*; adding 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* Adding lane to SB on-ramp, 1 SOV, totaling 3 ramp lanes Adding lane to NB on-ramp, 1 SOV, totaling 3 ramp lanes
Leucadia Boulevard	NB	Adding lane to NB on-ramp, 1 SOV, totaling 3 ramp lanes
La Costa Avenue	NB	Adding lane to NB on-ramp, 1 SOV, totaling 3 ramp lanes
Palomar Airport Road	SB	Ramp adjustments to remove free right-turn capabilities Adding lane to WB to SB on-ramp, 1 SOV, totaling 3 ramp lanes
Tamarack Avenue	SB & NB	SB adding a WB left-turn lane (creating dual lefts) NB adding a right-turn lane (creating dual right-turn lanes) Adding lane to NB on-ramp, 1 SOV, totaling 2 ramp lanes
Carlsbad Village Drive	SB & NB	Convert the SB shared left/through/right lane to a second right-turn lane, add a shared left-turn through 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) NB left-turn lane separated, right-turn lane converted to a shared left/through/right lane. Widen Carlsbad Village Drive to add a second EB left-turn (creating dual left-turn lanes) Adding lane to NB and SB ramps, 1 SOV, totaling 2 ramp lanes
Las Flores Drive	SB	Adding lane to SB on-ramp, 1 SOV, totaling 2 ramp lanes
SR-78	SB & NB	Adding lane to SR-78 to SB I-5 Connector, 1 SOV, totaling 2 connector lanes Remove EB SR-78 to NB I-5 Connector

Table 3.6.11 (cont.): Proposed Interchange Improvements

Interchange	Ramps	Proposed Lane Geometry Modifications
Oceanside Boulevard	SB	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 Widen Oceanside Boulevard to extend EB left-turn lane storage Adding lane to SB on-ramp, 1 SOV, totaling 3 ramp lanes
	NB	Convert 1 SOV lane, NB on-ramp, to 1 HOV lane, resulting in 1 SOV and 1 HOV, totaling 2 ramp lanes
Mission Avenue	SB & NB	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 SB right-turn lane to a shared through/right-turn lane. Widen Mission Avenue to extend WB left-turn lane storage Remove NB to EB free right-turn lane, add a second EB left-turn lane (creating dual lefts), add SB dual left-turn lanes Adding lane to SB on-ramp, 1 SOV, totaling 3 ramp lanes Adding 2 lanes to NB on-ramp, 1 SOV and 1 HOV, totaling 2 ramp lanes
SR-76	NB	Addition of a second NB left-turn lane (creating dual lefts) Adding lane to SB and NB ramps, 1 HOV, totaling 3 ramp lanes Remove loop structure (currently closed to traffic) located in the northeast quadrant of the interchange

Table 3.6.11 (cont.): Proposed Interchange Improvements

Interchange	Ramps	Proposed Lane Geometry Modifications
Harbor Drive	SB	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 NB re-alignment 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); convert NB shared through/right-turn lane into an exclusive through lane, eliminating the NB right-turn movement
	NB	EB Harbor Drive undercrossing off-ramp would be a new one-lane off-ramp that would facilitate traffic from EB Harbor Drive to SB San Rafael Drive. The off-ramp would diverge from EB Harbor Drive, then traverse under the I-5 NB off-ramp to EB Harbor Drive/Vandegrift Boulevard, and continue parallel to this off-ramp to terminate as a right-turn lane to SB San Rafael Drive. Adding lane to NB on-ramp, 1 SOV, totaling 2 ramp lanes

SB = southbound, NB = northbound, EB = eastbound, WB = westbound
HOV = High Occupancy Vehicle, SOV = Single Occupancy Vehicle
*To be cleared by the I-5/Encinitas Boulevard Project Environmental Document

Managed Lanes/Value Pricing Concept

The four HOV/Managed Lanes (two in each direction) proposed to be located in the median of I-5 are expected to operate at a high level of service for carpools, bus transit, vanpools, and others, regardless of the traffic conditions of the general purpose lanes. To optimize the capacity of the HOV/Managed Lanes and additionally help alleviate congestion of the main lanes, it has been suggested to allow SOVs to use the HOV/Managed Lanes for a predetermined fee. The concept, called Value Pricing, was analyzed in the I-5 North Coast Value Pricing Planning Study Concept Plan.

The viability of HOV/Managed Lanes along the *I-5 NCC Project* area was assessed along with investigating the technical and financial feasibility of HOV/Managed Lanes between the Cities of La Jolla and Oceanside. Specifically, the study included traffic operations (traffic demand, HOV/Managed Lane access, impacts to main lane traffic), pricing strategies (fixed/flat rate, preset variable rate, and dynamic variable rate), electronic toll collection requirements, potential revenue, equity, and performance monitoring requirements. A community outreach survey also was conducted to assess the interest of the general public, local agencies, and key stakeholders towards HOV/Managed Lanes and their use as Managed Lanes. The I-5 North Coast Value Pricing Planning Study Concept Plan is divided into two volumes; Volume 1 addresses technical studies involving value pricing and Volume 2 addresses the community outreach survey results and findings.

Table 3.6.12 is a summary of the estimated HOV/Managed Lane revenue for the year 2030 8+4 Barrier/Buffer alternatives and 10+4 Barrier/Buffer alternatives. A higher toll rate is anticipated at the south end of the project due to the larger traffic demand.

Table 3.6.12: I-5 HOV/Managed Lanes Estimated Annual Revenue

Location	2030 8+4 Estimated Revenue*	2030 10+4 Estimated Revenue*
South of SR-56	$6.656	$4.329
South of Via de la Valle	$6.274	$3.983
South of Manchester Avenue	$2.076	$1.154
North of Encinitas Boulevard	$2.421	$1.478
South of Palomar Airport Road	$1.203	$0.837
North of Carlsbad Village Drive	$0.882	$0.629
North of SR-76	$0.227	$0.225
TOTAL	**$19.739**	**$12.636**

*Estimated revenue in millions of dollars

Barrier and Buffer separated HOV/Managed Lanes

Both barrier and buffer separated facilities allow the HOV/Managed Lanes to function. The difference in traffic circulation between the barrier and buffer alternatives is nominal. The barrier-separated lanes provide the HOV/Managed Lanes a physical barrier from the mainline lanes and paved shoulders for emergency parking. The striped buffer separation provides a smaller overall construction footprint because it does not require shoulders for emergency parking.

No Build Alternative

In the No Build scenario, ADT would increase, but hourly volumes would be constrained to a maximum nominal capacity of approximately 2000 vphpl. The increase of congestion on I 5 would likely lead to additional congestion for local circulation as motorists seek alternative routes. For peak conditions, the northbound travel time would increase to 29 to 37 minutes in the a.m. and 67 to 69 minutes in the p.m.; while the southbound travel time would increase to 53 to 54 minutes in the a.m. and 40 to 48 minutes in the p.m. During congested times and bottlenecks, total delay to the motoring public would be 13,700 hours northbound and 14,000 hours southbound. The duration of congestion northbound would last three-and-a-half hours for a.m. peak and six hours for p.m. peak. The southbound duration of congestion would increase to six hours during the a.m. peak and seven hours for the p.m. peak. The LOS would mostly be F, with forced flow, heavy congestion, and long queues from behind break down points with stop-and-go traffic. Even the existing HOV Lanes would be congested. Freeway interchanges and ramps would experience back up from traffic entering I-5 (*Tables 3.6.3,* and *3.6.6* through *3.6.9* above, and Tables 3.7 and 3,8 in the Draft Technical Report No. 6, Freeway Interchange Operations Report, August 2007).

10+4 Barrier and 10+4 Buffer Alternatives

ADT would increase, as would capacity to accommodate the amount of vehicles forecasted for the year 2030. Therefore, peak hour northbound travel time would be 25 to 27 minutes in the a.m. and 30 to 36 minutes in the p.m. The southbound travel time would decrease to 28 to 35 minutes in the a.m. and 26 to 30 minutes in the p.m. Motorists could still seek alternative routes

to the congestion along I-5. However, during congested times and bottlenecks, total delay to the motoring public would be reduced to 600 (plus) hours northbound and 3,700 hours southbound. This would maintain or improve existing conditions. The duration of congestion in the northbound direction would be zero hours for a.m. peak and two-and-a-half hours for p.m. peak; while southbound congestion would last five hours in the a.m. and two hours in the p.m. (*Table 3.6.3*). The LOS would mostly be D, approaching unstable flow with heavier volumes and reduced freedom to maneuver. Even the HOV/Managed Lanes volumes would reach up to 1,900 a.m. peak and 2,270 p.m. peak in the northbound direction at La Costa Avenue; and up to 2,450 a.m. peak and 2,040 p.m. peak in the southbound direction at Carmel Valley Road. Freeway interchanges and ramps would have improvements decreasing the amount of back up from traffic entering I-5 identified in the No Build. Managed Lanes could earn revenue of approximately $12,600,000 per year (*Table 3.6.12*).

8+4 Barrier Alternative and 8+4 Buffer Alternative (Preferred Alternative)

ADT would increase, as would capacity to accommodate the amount of vehicles forecasted for the year 2030. Therefore, peak travel time in the northbound direction would be 27 to 29 minutes in the a.m. and 45 to 50 minutes in the p.m. The southbound travel time would be 36 to 47 minutes in the a.m. and 29 to 30 minutes in the p.m. Motorists could still seek alternative routes to the congestion along I-5. However, during congested times and bottlenecks, total delay to the motoring public would be 9,600 hours northbound and 8,000 hours southbound. The duration of congestion northbound would be zero hours for a.m. and six hours for p.m. The southbound congestion would last five-and-a-half hours for a.m. and two hours for p.m. The LOS would mostly be D, with LOS E and F during peak hours. LOS E approaches unstable flow, heavy volumes, very limited freedom to maneuver. LOS F is forced flow, heavy congestion, long queues from behind break down points with stop-and-go traffic. Even the HOV/Managed Lanes volumes would reach northbound up to 2,120 a.m. peak and 2,540 p.m. peak in the northbound direction at Santa Fe Drive and Carmel Valley Road, respectively. Freeway interchanges and ramps would have improvements, decreasing the amount of back up from traffic entering I-5 identified in the No Build. Managed Lanes could earn revenue of approximately $19,700,000 per year (*Table 3.6.12).*

Construction Impacts

For construction and funding purposes, the *I-5 NCC Project* would be broken into three stages and sub-stages to allow construction phasing flexibility, as described in *Section 2.4, Phased Construction.* During construction, detours would be required for nighttime work, bridge work, and where there are closed ramps and structures in order to maintain access for vehicles, bicycles, and pedestrians. Construction for the bridges over the freeway would occur in phases. Noise activity, such as demolition and pile driving, would be followed by more quiet activity providing a rest between types of construction activity. For peak travel times, an equivalent number of lanes would remain open as will exist at the time of construction. This information would be detailed in the TMP.

3.6.3.2 Pedestrian and Bicycle Facilities

The following facilities, most of which are included as project enhancements, would improve the existing pedestrian and bicycle circulation. Design and construction of these features would occur in coordination with each affected city and include future formal cooperative agreements between Caltrans and each city, where Caltrans would build these features and the cities and Caltrans would form an agreement regarding responsibility for their maintenance.

Pedestrian and Bicycle Enhancement Facilities

- Sorrento Valley Road would remove the bicycles from the freeway, moving them to a new Class III bike facility along city streets in the northbound direction and a Class I bike facility with barrier separation on the southbound side
- Carmel Valley Bicycle/Pedestrian Trail Connection, San Diego
- Enhanced trail and bridge on west side of San Dieguito Lagoon
- Pedestrian Overpass north of Del Mar Heights Road, San Diego
- Streetscape Enhancements on Ida Avenue, Solana Beach
- Pedestrian trailhead at Solana Hills Drive
- Enhanced trail on both sides of I-5 at San Elijo Lagoon with bridge connection to Manchester Avenue
- Manchester Avenue would include sidewalks and a Class II bike facility
- Park and ride enhancements at Birmingham Drive, including new trailhead along Villa Cardiff Drive
- Villa Cardiff Drive Improvements and MacKinnon Bridge enhancements including connections to sidewalk/trails, Encinitas
- Hall Property Park Trail Connecting to Santa Fe Drive, Encinitas
- Trail Connecting Santa Fe Drive to Requeza Street with Wetland Revegetation, Encinitas
- Trail Connecting Requeza Street to Encinitas Boulevard
- Union Street Pedestrian Overpass and Trail Connection, Encinitas
- Cottonwood Creek Park to Union Street Trail Connection with Wetland Revegetation
- Park and Ride Enhancement at La Costa Avenue, Carlsbad
- Bridge crossing under I-5 to connect to lagoon trails on east side of I-5 at Batiquitos Lagoon, Carlsbad
- Trail on west side of I-5 crossing over Batiquitos Lagoon
- Pedestrian bridge and trail crossing from east to west sides of I-5 on the southern shore of Agua Hedionda Lagoon, Carlsbad
- Trail on east side of I-5 crossing over Agua Hedionda Lagoon, Carlsbad
- Streetscape Enhancements on Chestnut Avenue, Carlsbad
- Pocket Park and Access at California Street, Oceanside
- Oceanside Boulevard Pedestrian Streetscape Enhancement, Oceanside
- Enhancements to Division Street Overpass, Oceanside
- Enhanced Pedestrian Overpass Connection on Mission Avenue, Oceanside
- Enhanced Pedestrian Overpass Connection on Bush Street, Oceanside
- Community Open Space Park and/or community gardens, Oceanside
- Parking/Staging Area for recreation at SR-76, Oceanside
- Pedestrian Underpass Improvements at San Luis Rey River, Oceanside
- Harbor Drive/Camp Pendleton pedestrian and bicycle enhancements
- Elements of the NC Bike Trail from Gilman Drive in the City of San Diego to Harbor Drive in the City of Oceanside

10+4 Barrier/Buffer Alternatives

Circulation for pedestrians and bicyclists would improve. Many of the bridges carrying streets over the freeway would need to be replaced for the 10+4 Barrier/Buffer alternatives because the existing bridges are not long enough to span the improved freeway. Bike lanes and sidewalks would be added to the new structures as part of the project. The new bridges would include areas for bike lanes and sidewalks connections or improve many existing pedestrian and bike

facilities that are currently constrained. In addition, the enhancement opportunities, if implemented, would improve trailheads and enhance existing facilities.

8+4 Barrier Alternative and 8+4 Buffer Alternative (Preferred Alternative)

Circulation for pedestrians and bicyclists would improve as some of the existing bridges spanning I-5 would be replaced as part of the 8+4 Barrier/Buffer alternatives. Where new bridges are constructed, bike lanes and sidewalks would be added that would connect pedestrian and bicycle facilities currently constrained. In addition, the enhancement opportunities, if implemented, would improve trailheads and enhance existing facilities.

No Build Alternative

Circulation of pedestrians and bicyclists would continue similarly to existing conditions, with some improvements occurring from other planned projects.

3.6.4 Avoidance, Minimization, and/or Mitigation Measures

3.6.4.1 Traffic and Transportation

A construction phasing plan has been proposed, as detailed in *Chapter 2*, to further identify the sequence of construction and help minimize traffic delays. Traffic delays would be controlled to the extent feasible during periods of many simultaneous construction operations. A comprehensive TMP to further minimize delays would be developed after selection of the Preferred Alternative but prior to the start of construction.

The TMP would be similar for each build alternative. It is designed to increase driver awareness, ease congestion, and minimize delay during construction. Many TMP components would be implemented prior to construction and could continue after construction with local funding. The components of the TMP would be:

Public Awareness Program

Strategies that would be considered to increase public awareness may include one or more of the following items:

- Mailings: construction bulletins, newsletters, public notices
- Speakers bureau
- Public service announcements: radio, television, and newspapers
- Paid advertising
- Signs along roadway: changeable message signs
- Telephone information line, hotline, “800” number
- Updates to local businesses
- Web page

Traffic Operations Strategies Program

This includes ongoing evaluation of traffic operations and would provide for incident response during construction. Strategies that would be considered may include one or more of the following items:

- TMP evaluation and adjustment
- Alternate route strategies

- Construction Strategies, including lane closure charts for closing lanes, ramps, and connectors
- Delay clauses for the late re-opening of lane closures
- Temporary signal location
- CHP enforcement of construction zone speed limits during lane closures
- Freeway Service Patrol
- Demand Management strategies, including improvement to HOV/Managed Lanes and public transit

3.6.4.2 Pedestrian and Bicycle Facilities

During construction of transportation facilities, work can act as both a physical and psychological barrier to pedestrians and bicycle users. Where freeway construction crosses bikeways and sidewalks, access may be restricted or severed entirely. The TMP would include components for pedestrians and bicyclists along with consideration for the motoring public. In addition to the items listed for the motoring public, signs would be used, as appropriate, to provide notices of bike and pedestrian closures, detours, and other pertinent information. Temporary access would be provided where possible.

3.7 Visual / Aesthetics

The 8+4 Buffer alternative has been refined since the Draft EIR/EIS was publically circulated in 2010. This alternative was presented as the locally preferred alternative (LPA) in the August 2012 Supplemental Draft EIR/EIS, and has now been identified as the Preferred Alternative. The refined 8+4 Buffer alternative has the least amount of impact of any build alternative and also meets purpose and need.

3.7.1 Regulatory Setting

NEPA establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 USC 4331[b][2]). To further emphasize this point, the FHWA in its implementation of NEPA (23 USC 109[h]) directs that final decisions regarding projects are to be made in the best overall public interest, taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

Likewise, CEQA establishes that it is the policy of the State to take all action necessary to provide the people of the State "with…enjoyment of *aesthetic*, natural, scenic and historic environmental qualities" (CA PRC Section 21001[b]).

3.7.2 Affected Environment

This section in based upon the Visual Impact Assessment (VIA), 2009, which is incorporated by reference and the Design Guidelines: I-5 NCC Project contained in Appendix L.

Project Setting

The I-5 North Coast Corridor freeway began in 1955 as a short by-pass route on the east side of downtown Oceanside. As the freeway moved south over the years, it continued as a rural route around the old coastal towns, and formed an unofficial dividing line between the coastal and inland portions of the region. Of greater significance was the corridor's developing role as the northern gateway to the San Diego region. Today, the corridor's scenic image forms the visitor's first impression of a city that takes pride in its unique visual identity.

Although the freeway has grown to become the primary link between two of the largest metropolitan regions in the country, the character of the corridor has managed to survive. Expansive views of river valleys, coastal lagoons, beaches, and other natural scenic resources offer a freeway driving experience like no other in southern California. Development densities near these natural features have remained low for the most part, and large groupings of mature trees are the primary visual element in the developed landscape.

Large structures normally found on urban freeways such as retaining walls and soundwalls are, in a large part, absent from much of the corridor. An exception to this is at Lomas Santa Fe Drive where large retaining walls were recently constructed. Throughout most of the corridor, however, natural landscape features remain in the forefront, opening scenic views from the road and screening views of the freeway from adjacent communities. On the freeway proper, large

oleander shrubs in the median reduce the visual scale of the freeway by half for the driver, suggesting the visual character of a parkway. On both sides of I-5, towering eucalyptus trees provide vertical relief in proportion to the broad horizontal plane of the freeway.

The I-5 corridor leads the traveler through a sequence of outdoor spaces that alternates between coastal valleys and their corresponding uplands. The valleys are characterized by natural open space and open water in the form of the ocean, lagoons and/or rivers, and the uplands consist of hills and mesas that contain a variety of developed land. Typically, new large-scale suburban development is primarily located east of I-5 and much of this is beyond the freeway viewshed,[1] while older, small scale beach communities are adjacent to and west of the freeway.

Landscape Units in the Project Setting

The project setting is broken down into Landscape Units, which are portions of the regional landscape that provides local visual context. A Landscape Unit can be thought of as an outdoor room that exhibits a distinct visual character, and will often correspond to a place or district that is commonly known among local viewers. Landscape Units identified for the proposed project are oriented to the freeway corridor, but also include characteristic landscape components in adjacent communities beyond the view of the freeway. Landscape Units for the proposed projects are identified in *Figure 3-7.1*.

Analyzing Visual Resources

Identify Visual Character

Visual character is descriptive and non-evaluative, which means it is based on defined attributes that are neither good nor bad in and of themselves. A change in visual character cannot be described as having good or bad attributes until it is compared with the viewer response to that change. If there is public preference for the established visual character of a regional landscape and a resistance to a project that would contrast that character, then changes in the visual character can be evaluated.

Assess Visual Quality

Visual quality is evaluated by identifying the vividness, intactness, and unity present in the viewshed. This approach is particularly useful in highway planning because it does not presume that a highway project is necessarily an eyesore. This approach to evaluating visual quality can also help identify specific methods for mitigating specific adverse impacts that may occur as a result of a project.

The three criteria for evaluating visual quality can be defined as follows:

Vividness is the visual power or memorability of landscape components as they combine in distinctive visual patterns.

[1] A viewshed is an analytical tool used to aid in the identification of views that could be affected by a potential project. The viewshed is defined as the surrounding geographic area from which the on-site elements of a project are likely to be seen, and is primarily delineated based on topography.

Intactness is the visual integrity of the natural and man-built landscape and its freedom from encroaching elements. It can be present in well-kept urban and rural landscapes, as well as in natural settings.

Unity is the visual coherence and compositional harmony of the landscape considered as a whole. It frequently attests to the careful design of individual man-made components in the landscape.

Assessment Methodology

A VIA (2009) was prepared for this project and can be referred to for additional details. The enjoyment or interpretation of experience can have many preferential and subjective components, yet there is clear public agreement that the visual resources of certain landscapes have high visual quality. The existence of a broad commonality of public response to visual stimuli has been validated by academic research and forms the basis for the FHWA method of visual quality assessment.

During the development of the assessment method, several sets of evaluative criteria based on relationships between visual components in the landscape were proposed and tested. One set that proved to be useful includes the three criteria mentioned above: vividness, intactness, and unity. The relationship among these three criteria correlates sufficiently well with public judgments of visual quality to predict those judgments. The FHWA concluded that professionals can use these relationships as valid and reliable criteria for evaluative appraisals of visual quality.

FHWA guidelines state:

> The objectivity of evaluation processes can sometimes be an issue. Two principal components of objectivity are reliability and validity. A test is reliable if different observers using the test obtain similar results. A test is valid if the results prove relevant to other evaluation measures, which may be more direct but generally impractical to use. Thus, it may be impractical to obtain a random and completely representative sample of the public to rate the visual effects of highway alternatives. Expert judgment may be a valid and reliable substitute, if it is based on criteria derived from research about public perceptions. Its validity can be further strengthened by direct but limited public response in project community involvement programs.

In addition to the FHWA method, this assessment relies upon a variety of public response data to validate its results. Public policy and planning document goals and objectives pertaining to visual quality and character were researched and are summarized in the viewer sensitivity section. Moreover, a wide range of direct public comment was received over a period of several years from elected officials, local agency staff, resource agency staff, interested community groups, organizations of design professionals, and the general public.

Figure 3-7.1: Landscape Units Map (not to scale)

Existing Visual Resources within the Project Setting

La Jolla Hills

Natural forms of mature groves of trees and rolling topography give this landscape unit its visual character (*Figures 3-7.2* and *3-7.3*). Freeway slopes are planted with eucalyptus trees and naturalized groundcover consistent with the adjacent UCSD campus landscape. The unit has an almost ranch-like appearance despite the presence of large institutional campus buildings.

The existing visual quality of this unit is moderate. Views from the freeway are somewhat limited due to its location in a depressed section, but the unity created between the freeway landscape and surrounding landscape is high. Intactness is moderate to high due to the lack of visually intrusive features in the landscape. Vividness is low to moderate.

Figure 3-7.2: Looking north to Voigt Drive overcrossing

Figure 3-7.3: Freeway landscaping blends with that of UCSD near Voigt Drive

Sorrento Valley

Open space and rolling hills in the southern portion give way to graded slopes and large-scale development farther to the north (*Figures 3-7.4* and *3-7.5*). In the valley, the I-5 / I-805 merge forms a wide horizontal plain of concrete bordered by retaining walls and topped by bridge structures. These features give the project area an urban character that contrasts with the natural landscape of Torrey Pines State Reserve to the west.

The existing visual quality of this unit is low to moderate. The tangle of freeway structures, manufactured topography, and large-scale development in the northern part of the unit results in low levels of intactness and unity. Views of the rolling hillsides near Genesee Avenue are moderate in intactness and unity. Both portions possess low levels of vividness.

Figure 3-7.4: Looking north to the freeway and Sorrento Valley beyond

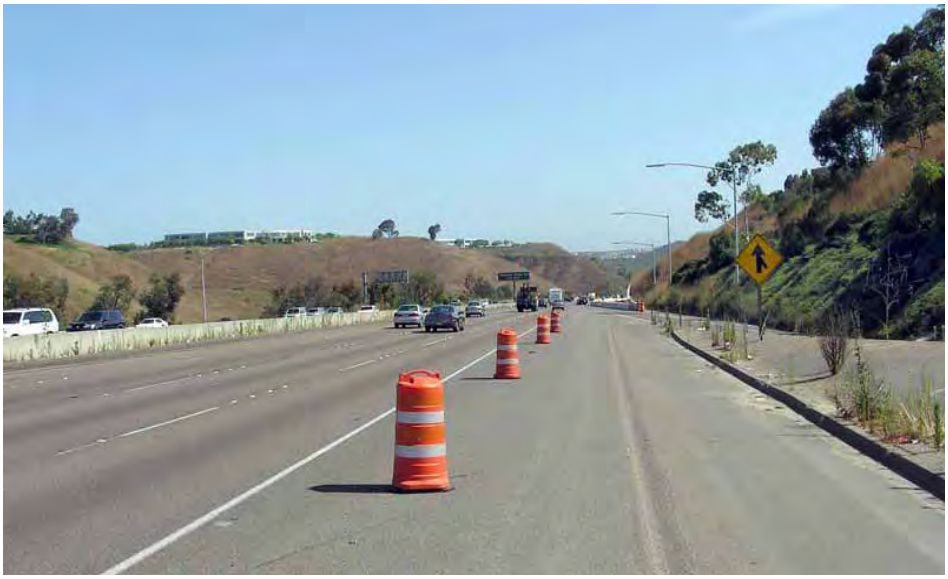


Figure 3-7.5: Looking north from northbound I-5 at Genesee Avenue

Carmel Valley

The unique forms, colors, and textures of Torrey Pines bluffs and Los Peñasquitos Lagoon become prominent here, and give this landscape unit a natural character despite the presence of the freeway and encroaching development to the east and north (*Figures 3-7.6* and *3-7.7*). Also, the freeway is more compatible with the surrounding landscape in scale and pattern character due to fewer lanes and contour-graded side slopes.

This unit has moderate to high levels of existing visual quality. The views of Torrey Pines State Reserve and beach, Los Peñasquitos Lagoon, and an historic bridge in the distance, possess very high levels of vividness, intactness, and unity. The visual quality of the unit is moderated by the presence of the freeway and adjacent development to the east.

Figure 3-7.6: A distant view of the ocean and Los Peñasquitos Lagoon from northbound I-5

Figure 3-7.7: A distant view of I-5 from Torrey Pines State Reserve

Del Mar Heights

Manufactured forms predominate here, including slopes that reinforce the flat planes and linear forms of the freeway and adjacent architecture (*Figures 3-7.8* and *3-7.9*). The overall visual character would be considered suburban due to the low density of the development and visual prominence of mature community landscaping.

Views from the freeway are limited to manufactured slopes, residential and commercial development, and the Del Mar Heights Interchange. Visual quality in this landscape unit is moderate due to a continuity of landscape elements between the freeway interchange and adjacent community that maintains a degree of unity and intactness despite the lack of vividness.

Figure 3-7.8: Looking north to Del Mar Heights Road

Figure 3-7.9: Looking south from the Del Mar Heights Road overcrossing

San Dieguito Valley

Views of the ocean and natural forms of the river valley are in contrast with views of the freeway itself, and commercial development at the northern side of the valley along Via de la Valle (*Figures 3-7.10* and *3-7.11*). The large tracts of natural open space allow distant views from the freeway, which outweigh the scale of built forms and give the valley an almost rural character. Highly visible, distinctive natural features also contribute to the natural feel of the area. The racetrack and fairgrounds complex is a cultural landmark that seems to reinforce the rural character by adding a resort atmosphere to the landscape.

Views of the natural features in the river valley, surrounding bluffs, and ocean, are of high vividness despite lower levels of unity and intactness found on the northern edge along Via de la Valle where commercial development is located. The racetrack enhances the vividness of the scene due to its unique location near the ocean "where the surf meets the turf." Overall visual quality remains high because the vivid natural and man-made features far outweigh less desirable elements in the landscape.

Figure 3-7.10: Looking southwest from I-5 towards San Dieguito Lagoon and the bluffs of Del Mar

Figure 3-7.11: Looking northeast from I-5 towards San Dieguito Lagoon

Solana Beach Hills

Natural forms and human-scale manufactured visual elements adjacent to the freeway predominate in this unit. Views of the ocean and racetrack are available for southbound freeway travelers. As shown in *Figure 3-7.12*, median oleanders also reduce the scale of the freeway by half, in comparison to the landscape unit to the south. Manufactured cut slopes are vegetated with native and naturalized plants, and possess partially eroded surfaces similar to nearby scenic bluffs. With the exception of an office building in close proximity to the freeway, this unit displays a natural visual character associated with north coast beach communities.

The visual quality of this unit is moderate. Views from the freeway include topography, vegetation, and development characteristic of north coast beach communities that are moderated by foreground views of manufactured cut slopes. Views of the ocean from the southbound lanes add vividness to the unit. Unity and intactness are moderate due to encroaching visual elements such as a four-story commercial building located in close proximity to the northbound lanes. Tall vegetation and intervening slopes generally screen views of the freeway from the community. Some residences located near the freeway have ocean views, and the low-density, suburban hillside neighborhoods in which they are set possess high levels of visual quality.

Figure 3-7.12: A view of the sandstone slopes and northbound I-5, south of Lomas Santa Fe Drive

San Elijo Valley

Natural features of the ocean, San Elijo Lagoon, and bordering bluffs define the visual character of this landscape unit (*Figures 3-7.13* and *3-7.14*). Distant views to the eastern foothills display a typical west-to-east progression of the regional landscape as it transitions from coastal lagoon to inland foothills to back-country mountains. A small agricultural field on the northern side of the lagoon contributes a rural character to the unit, while the bisecting freeway and a residential community on the southeastern slope form an urbanized contrast.

Views of the ocean, the San Elijo Lagoon Reserve, and inland foothills contribute to the high level of visual quality in this unit. A residential development on the southeast edge of the preserve reduces intactness, but levels of vividness and unity remain high.

Figure 3-7.13: Distant view to eastern foothills from northbound I-5, south of Manchester Avenue

Figure 3-7.14: View of San Elijo Lagoon, agricultural fields, and sandstone bluffs from the shoulder of northbound I-5, just south of Manchester Avenue

Cardiff Bluffs

Natural forms and human-scale visual elements off the freeway predominate in this unit. Naturally vegetated open space canyons, bluffs, and hillsides are visible from the freeway and buffers overlooking residences (*Figures 3-7.15, 3-7.16,* and *3-7.17*). Ocean views are visible from the southbound lanes and this unit contains a scenic viewpoint overlooking the ocean and San Elijo Lagoon. Median oleanders reduce the scale of the freeway by half, and combined with freeway landscaping north of Birmingham Drive, suggest the visual character of a suburban parkway. This unit displays a natural visual character in its southern portion, and a suburban character to the north.

Visual quality in this unit is moderate to high. Ocean views, natural open space, small-scale residential development set in mature vegetation, and freeway landscaping combine to create high levels of intactness and unity. Vividness is moderate.

Figure 3-7.15: A view of I-5 looking south

Figure 3-7.16: Looking southwest from the Birmingham Drive overcrossing

Figure 3-7.17: Natural open space along the northbound lanes of I-5

Encinitas Uplands

South of Encinitas Boulevard, moderate levels of intactness and unity combine with moderate to low vividness as the freeway traverses a mixture of commercial, residential, and institutional land uses (*Figures 3-7.18, 3-7.19*, and *3-7.20*). The northern portion of the landscape unit exhibits higher levels in all three categories due to a consistency of residential land use and the unique visual character of the community as described elsewhere in this assessment. Overall visual quality for this landscape unit is moderate.

Figure 3-7.18: Wetland vegetation buffers the adjacent community from I-5

Figure 3-7.19: Northbound I-5, looking north toward Requeza Street overcrossing

Figure 3-7.20: Looking northwest across I-5 from MacKinnon Drive overcrossing

Leucadia Hills

Natural forms and human-scale visual elements off the freeway predominate in the unit. North of Encinitas Boulevard, long-established residential areas composed of widely spaced custom homes nestle in the remnants of historic avocado and citrus groves (*Figures 3-7.21* and *3-7.22*). Interspersed throughout are commercial greenhouses which contribute to the unit's distinctive character. Large groves of mature trees are the primary visual element, along with median oleanders that complement the view. These median oleanders reduce the scale of the freeway for the driver. This unit epitomizes the visual character associated with historic north coast hillside neighborhoods. Overall visual quality for this landscape unit is moderately high.

Figure 3-7.21: Looking west from southbound I-5, a residential area at Orpheus Street

Figure 3-7.22: Commercial greenhouses and open space lots characterize this landscape unit

Batiquitos Valley

The wide expanse of open water in Batiquitos Lagoon gives this landscape a distinct character rare in the arid climate of southern California. The rolling topography of this unit also distinguishes it from similar wetlands to the south, although the general character created by distant open views across natural open space continues to prevail even if an ocean view from the freeway is absent (*Figures 3-7.23* and *3-7.24*).

Batiquitos Lagoon is a vivid landscape component; although the vividness of the freeway viewshed is moderated somewhat because views to the west are limited and adjacent hillsides lack picturesque geologic features or vegetation. Recent development near the northern shore also moderates a high degree of unity and intactness. Overall visual quality is moderately high.

Figure 3-7.23: Batiquitos Lagoon as seen from southbound I-5

Figure 3-7.24: A view of Batiquitos Lagoon and I-5, looking southeast

Carlsbad Mesa

Relatively flat topography and large-scale development give this landscape unit an urban character (*Figures 3-7.25, 3-7.26*, and *3-7.27*). Despite the high number of manufactured landscape elements, ornamental landscaping and median oleanders play a large role in softening their effects and making the area more compatible with other coastal communities.

Generic suburban development placed on flat topography result in low levels of vividness and intactness. A moderate degree of unity exists due to regulated signage and landscaping. Another moderating influence is an agricultural field that is a visual resource and provides a vivid highlight to an otherwise ordinary suburban viewshed. Freeway landscaping (notably oleanders) provides a buffer for adjacent development, and screens views of an industrial area from the freeway. Overall visual quality is moderately low.

Figure 3-7.25: Commercial development bordering northbound I-5

Figure 3-7.26: Commercial development bordering southbound I-5

Figure 3-7.27: A naturalized drainage channel buffers northbound I-5 from nearby residences

Agua Hedionda

This landscape unit is characterized by the open water of the lagoon and the recreational and agricultural uses that border it (*Figures 3-7.28* and *3-7.29*). Freeway landscaping complements this character and screens views of contrasting industrial uses from freeway travelers. Five-story multiple unit residential buildings interspersed along the shore contrast with the natural elements contained in large tracts of open space near the water.

The high vividness of the lagoon with its adjacent agricultural land is reduced somewhat by moderate levels of intactness and unity caused by development on its northern shores. Views to the west are limited due to the freeway's low profile. Overall visual quality is moderately high.

Figure 3-7.28: A view of Agua Hedionda Lagoon from northbound I-5

Figure 3-7.29: A view of Agua Hedionda Lagoon from the southbound lanes

Carlsbad Village

This landscape unit is characterized by small to medium-scale built forms buffered by ornamental landscape elements (*Figures 3-7.30* and *3-7.31*). Mixed-use development gives the viewshed the appearance of a small town or village that is consistent with the downtown districts of other beach communities in the corridor.

The elevated section of the freeway in this landscape unit allows for expansive views across Carlsbad Village, including distant views towards the horizon. A traditional, pedestrian-scale village of this type is a rare and vivid image in southern California. The village landscape includes a variety of land uses that are, for the most part, unified in scale by building type and mature urban landscaping. Mature freeway landscaping serves as a buffer and a unifying element. An absence of encroaching signage contributes to the intactness of the setting. Overall visual quality is moderately high.

Figure 3-7.30: A view of Pine Street looking west to the freeway and ocean

Figure 3-7.31: Holiday Park as seen from the shoulder of northbound I-5