5.6 ARCHAEOLOGICAL AND PALEONTOLOGICAL RESOURCES

5.6.1 Archaeological and Paleontological Resources in the Corridor

The North Coast Corridor (NCC) is located in a region of sensitivity for archaeological and paleontological resources. The corridor is located in an area of San Diego County with the potential to include archaeology sites associated with the San Dieguito Complex (dating as far back as 8000 to 10000 years before present [B.P.]), and with the La Jolla Complex (generally dating between 3000 and 8000 B.P.), but with some evidence of continued occupation occurring between 1300 and 3000 B.P. Archaeological resources most commonly observed within these sites in the region include lithic scatters, milling stations, shell middens, and quarries. Late Period sites, dating between 200 to 1300 B.P., are less common in the corridor and are characterized by resources associated with a more sedentary settlement system, including habitation or village sites, and which have the potential to include midden, rock features, and, in some cases, human burials. In addition, as is with much of California, the corridor area is subject to complex, active geologic processes that have resulted in surface exposure of many rock units with high paleontological sensitivity. As such, the corridor also contains a rich geologic record.

5.6.1.1 LOSSAN Rail Corridor Resources

Archaeological Resources

Information regarding the locations of archaeological sites within the Area of Potential Effect (APE) of the rail improvement area was obtained from the California Historical Resources Information System (CHRIS) information centers. The Native American Heritage Commission (NAHC) was also consulted for a search of their Sacred Lands file and lists of Native American contacts,[1] with cultural resource specialist knowledge and background of regional prehistory used to supplement the record's search results. Native American contacts were sent letters providing information about the proposed project alternatives and requesting information about any traditional cultural properties that could be affected by the project. The study area for cultural resources for the LOSSAN rail corridor improvements was defined in the *LOSSAN Final Program EIR/EIS* (September 2007) in consultation with the State Historic Preservation Office (SHPO).[2] Traditional cultural properties were assessed on a presence/absence basis using record searches of CHRIS repositories for each alignment option.

The *LOSSAN Final Program EIR/EIS* indicates that 6 prehistoric[3] and possibly as many as 14 historic archaeological sites[4] (depending on the Del Mar tunnel option) are located within the APE for the rail improvements and, in some locations of the corridor, there is a high potential for unknown sites to occur, particularly where rail improvements would occur in proximity to the coast and coastal water bodies. No traditional cultural properties[5] were identified in the APE of any of the alignment options by the NAHC or any Native American tribe.

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1 Consultation with the NAHC was also undertaken in the context of the statewide high-speed rail program, and was used in development of the *LOSSAN Final Program EIR/EIS*.

2 The initiation of consultation with the SHPO was done in the context of the statewide high-speed rail program.

3 Prehistoric archaeological sites in California are places where Native Americans lived or carried out activities during the prehistoric period before 1769 AD. Prehistoric sites contain artifacts and subsistence remains, and they may contain human burials.

4 Historic archaeological sites in California are places where human activities were carried out during the historic period between 1769 AD and 50 years ago. Some of these sites may be the result of Native American activities during the historic period, but most are the result of Spanish, Mexican, or Anglo-American activities. Other sites may be the result of Asian and African American groups.

5 Traditional cultural properties are places associated with the cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community.

Paleontological Resources

Literature and institutional record's research and review of geologic maps and geographic data from the University of California Museum of Paleontology in Berkeley resulted in designating areas within the APE as having "high," "low," or "undetermined" paleontologic sensitivity. High sensitivity areas include sedimentary units with a high potential for containing significant nonrenewable paleontological resources, including units that contain a high density of recorded vertebrate fossil sites, have produced vertebrate fossil remains within the study area and/or vicinity, and are very likely to yield additional remains within the study area. Low sensitivity areas include rock units with no or a very low density of recorded resource localities, those that have produced little or no fossil remains within the study area and/or vicinity, and units not likely to yield any remains within the study area. Undetermined sensitivity areas include rock units with limited exposure(s) in the study area and that have been studied very little, and units in which there are no known recorded paleontological resource localities; however, in other areas, the same or a similar rock unit contains sufficient paleontological resource localities to suggest that exposures to disturbance of the unit within the rail right-of-way have potential to yield fossil remains.

The study area for paleontological resources for the LOSSAN rail corridor improvements was defined in *LOSSAN Final Program EIR/EIS* as 100 feet on each side of the centerline of proposed alignment options (including station locations), in both non-urban and urban areas. The study area for paleontological resources is limited to the area that would potentially be disturbed by earthwork construction activities.

The *LOSSAN Final Program EIR/EIS* indicates the paleontological sensitivity rating is high throughout the NCC. Geologic formations within the rail corridor that have the potential to include paleontological resources include:

- The Ardath Shale and Scripps Formation along the rail segments from Highway 52 to San Diego, with shark, ray, bony fish, marine microorganism and macroinvertebrate, rhinoceros, artiodactyl, brontothere, uintathere, crocodile, turtle, as well as wood fossils.
- The Delmar Formation in Del Mar and between the I-5/I-805 merge and Highway 52, with estuarine vertebrate and invertebrate, aquatic reptile, and rhinoceros fossils.
- The Torrey Sandstone from Encinitas to Solana Beach and Del Mar, with plant and marine invertebrate fossils.
- The Capistrano Formation from Camp Pendleton, Oceanside, and Carlsbad, with whale, walrus, sea cow, fur seal, sea bird, shark, ray, bony fish, and kelp fossils.
- The San Diego Formation along Highway 52 to San Diego, with shark, ray, bony fish, marine invertebrate, sea bird, walrus, fur seal, cow, whale, dolphin, terrestrial mammal, wood, and leaf fossils.
- The Lindavista Formation along I-5/I-805, with marine invertebrate, shark, and whale fossils.
- The Bay Point Formation along Highway 52 to San Diego, with shark, ray, bony fish, and mollusk fossils.
- Unnamed marine terrace deposits from Camp Pendleton through Encinitas and Solana Beach to the Santa Fe Depot in San Diego, with marine invertebrate, shark, ray, bony fish, and terrestrial mammal fossils.

5.6.1.2 I-5 Highway Corridor Resources

Archaeological Resources

Numerous studies were conducted and reviewed in preparing the *I-5 NCC Project Draft EIR/EIS* (June 2010), including archaeological and historic architecture field surveys to identify cultural resources; archaeological test excavations designed to determine the nature and significance of the sites within the APE; a geomorphic study to determine the potential for buried soils and cultural deposits to occur within the APE; data recovery plans for two sites that no longer will be adversely affected by the proposed improvements; and an Environmentally Sensitive Area (ESA) Action Plan designed to prevent direct or indirect impacts to cultural resources located adjacent to, but outside, project construction activities. In addition, numerous archival sources identified resources within the APE, including the CHRIS repository at San Diego State University, local historical societies, Native American tribes and individuals, historical maps and photographs, and discussions with long-time area residents. CHRIS is administered by the California Department of Parks and Recreation and includes all resources listed in the California Register of Historical Resources (CRHR); all resources in California listed or eligible for listing in the National Register of Historic Places (NRHP); and traditional cultural properties, including some Native American traditional cultural sites identified through consultation with the California Department of Parks and Recreation (Section 106 of National Historic Preservation Act), the SHPO, or the NAHC.

The APE for cultural resources within the highway improvement area was developed in consultation with the project archaeologist, project manager, and project engineers, with continuous input from design and other environmental functional units. The APE was established as the limits of future right-of-way for the roadway work, which considered potential affected areas, including proposed soundwall locations outside the right-of-way, biological mitigation sites, community enhancements and trails outside the right-of-way, and construction and utility easements.

A total of 32 archaeological sites were identified within or immediately adjacent to the APE for the highway improvement area. Of these, 14 archaeological sites are considered eligible for the NRHP/CRHR, and all fall outside the project's Area of Direct Impacts (ADI) and therefore would not be directly affected by the proposed project. As a result of project redesign and the selection of the Locally Preferred Alternative (8+4 with Buffer), two prehistoric archaeological sites, CA-SDI-12670 and CA-SDI-17928, will no longer be affected by soundwalls and have been removed from the APE. Remaining sites inside the APE for the highway improvements were deemed not eligible for the NRHP/CRHR for various reasons, including lack of cultural remains, no further research potential, and/or highly disturbed or displaced deposits. These conclusions are based on the results of archaeological investigations and Native American consultations.

Paleontological Resources

A paleontology study (*Paleontological Resource Assessment, I-5 NCC Project, Caltrans District 11, San Diego County, California*) was conducted for the highway improvements and identified the presence of geologic formations within the I-5 highway corridor that could contain important fossil remains within the project footprint. The following geologic formations within the I-5 highway corridor could include paleontological resources:

- The Delmar Formation from Sorrento Valley in the south to at least Batiquitos Lagoon in the north, and from the coast inland to La Costa and Rancho Santa Fe with well-preserved to poorly preserved remains of estuarine invertebrates (e.g., clams, oysters, and snails) and estuarine vertebrates (e.g., sharks, rays, and fishes). An extremely important locality at Swami's Point in

Encinitas has yielded well-preserved skull remains of aquatic reptiles (e.g., crocodile) and terrestrial mammals (e.g., tillodont and early rhinoceros).

- Torrey Sandstone Formation from Sorrento Valley in the south to Batiquitos Lagoon in the north, and from the coast inland to La Jolla Valley and Olivenhain with potentially important remains of fossil plants and marine invertebrates (e.g., clams, oysters, snails, and barnacles) and vertebrate fossil remains, including teeth of crocodiles, sharks, and rays.
- Ardath Shale Formation La Jolla, Pacific Beach, and Clairemont in the south to Carmel Valley in the north with marine microfossils, macroinvertebrates, and vertebrates (e.g., sharks, rays, and bony fish).
- Scripps Formation from Presidio Park in the south, north to Del Mar, and from Clairemont east to La Jolla Valley, with remains of marine organisms, including clams, snails, crabs, sharks, rays, and bony fishes, and remains of fossil reptiles (e.g., crocodile and turtle) and land mammals (e.g., uintathere, brontothere, rhinoceros, and artiodactyl).
- The Santiago Formation—containing three recognized members referred to as “A,” “B,” and “C”—occurs in the general area of Olivenhain and Cardiff-by-the-Sea, and collectively includes remains of turtles, snakes, lizards, crocodiles, birds, and mammals (e.g., opossums, insectivores, primates, rodents, brontotheres, tapirs, protoreodonts, rhinoceros, and uintathere) and various types of marine and estuarine mollusks.
- An unmapped formation of Oligocene age occurs in the exposed sedimentary rocks of the Santiago Formation and includes terrestrial mammal fossils.
- The San Onofre Breccia is an alluvial fan and nearshore marine rock unit (from Oceanside, north through the coastal portion of the Camp Pendleton Marine Corps Base) with remains of nearshore marine foraminifers and bivalve mollusks and mammals.
- The San Mateo Formation (from the San Luis Rey River Valley in Oceanside north through Camp Pendleton Marine Corps Base to San Mateo Point near San Clemente) contains fossils of marine vertebrates, including rays, sharks, bony fishes, sea birds, dolphins, sperm whale, baleen whales, sea cow, fur seals, walrus, and sea otter, marine invertebrates (e.g., clams, scallops, snails, and sea urchins), and terrestrial mammal remains (e.g., horse, camel, llama, and peccary) have been recovered from these deposits.
- The Lindavista Formation occurs over a large area (from the International Border north to San Clemente) and contains remains of nearshore marine invertebrates, including clams, scallops, snails, barnacles, and sand dollars, as well as sparse remains of sharks and baleen whales.
- The Bay Point Formation occurs along the coast (from the International Border to San Clemente) and contains remains of marine invertebrate fossils (e.g., mollusks, crustaceans, and echinoderms) as well as sparse remains of marine vertebrates (e.g., sharks, rays, and bony fish) and, in the non-alluvial deposits, includes concentrated fossil remains of terrestrial mammals (e.g., ground sloth, dire wolf, tapir, horse, deer, camel, mastodon, and mammoth).

5.6.2 PWP/TREP Concerns

Environmental documentation and analysis prepared for the PWP/TREP rail and highway corridor improvements indicate that there are known archaeological resources within the project improvement areas that could be affected by proposed grading and construction activities. As many archaeological resources have been disturbed by past development projects, the remaining sites within the corridor have become increasingly valuable resources. Further loss and degradation could occur if corridor projects located in areas of sensitivity are not properly designed, monitored, and managed during earth-moving activities and construction to avoid or mitigate potential impacts to the resource.

In California, fossils are considered a limited, nonrenewable, and highly sensitive scientific resource. Direct impacts to paleontological resources could occur when earthwork activities (e.g., mass grading operations) cut into geological deposits containing fossils, thereby directly damaging the resource, or exposing paleontological resources to potential indirect impacts (e.g., surficial erosion, uncontrolled specimen collection).

5.6.2.1 LOSSAN Rail Corridor Impact Assessment

Archaeological Resources

Approximately 6 prehistoric and possibly as many as 14 historic archaeological sites (depending on the Del Mar tunnel option) are located within the APE for the rail improvements, and in some locations of the corridor there is a high potential for unknown sites to occur, particularly where rail improvements would occur in proximity to the coast and coastal water bodies.

Generally, rail alignment options that involve tunneling would avoid most impacts to cultural resources because of the depth of the tunneling; however, at-grade improvements—including constructing new tracks and extended paved surfaces, and constructing transit stations and parking structures or lots—would disturb the ground surface, potentially resulting in impacts to resources. In addition, trenching for rail improvements would involve subsurface disturbance and therefore could increase the potential to encounter unknown archaeological sites. As such, the trench options for rail improvements would have a somewhat higher potential for impacts to archaeological resources than at-grade options.

Paleontological Resources

Potential impacts to paleontological resources from proposed rail improvements could occur during earthwork activities involving sensitive geologic formations that could damage paleontological resources directly, or expose fossils to long-term surface erosion and/or uncontrolled specimen collection.

5.6.2.2 I-5 Highway Corridor Impact Assessment

Archaeological Resources

Eleven archaeological sites have been identified in the highway corridor and are considered eligible for the NRHP/CRHR. All of these sites fall outside the project's ADI and therefore would not be directly affected by the proposed highway improvements. Implementation measures, identified in Section 5.6.3.3, that establish an ESA Action Plan would ensure that archaeological sites located outside the project's ADI would be protected from impacts.

Paleontological Resources

Impacts to paleontological resources could occur during earthwork activities involving sensitive geologic formations that could damage paleontological resources directly, or expose fossils to long-term surface erosion and/or uncontrolled specimen collection.

5.6.3 PWP/TREP Opportunities, Design/Development Strategies and Policies/Implementation Measures

While the proposed rail and highway improvements have the potential to affect sensitive archaeological and paleontological resources in the corridor, the majority of program improvements would occur within previously disturbed and developed areas of existing rail and highway rights-of-way and adjacent land uses. In this regard, the PWP/TREP program improvements have been designed to avoid and minimize, to a large extent, the potential for adverse effects to cultural resources.

5.6.3.1 PWP/TREP Policies

Caltrans and San Diego Association of Governments (SANDAG) would implement the following policy to ensure that proposed improvements are designed, implemented, and maintained to provide for maximum protection of archaeological and paleontological resources:

- **Policy 5.6.1:** New highway development, rail station and pedestrian crossings, and associated community and resource enhancement improvements shall strive to protect and minimize impacts to archaeological and paleontological resources. Where new development may potentially adversely impact archaeological or paleontological resources, appropriate mitigation measures, including the measures identified below, shall be required and implemented.

5.6.3.2 PWP/TREP Design/Development Strategies

The following design and development strategies provide guidance for designing and implementing specific PWP/TREP projects consistent with the archaeological and paleontological resources protection policies of the Coastal Act:

1. A qualified Native American monitor and archaeologist, or paleontologist, as applicable, should be present at all times during ground-disturbing activities occurring in areas of known or suspected archaeological and/or paleontological significance. Should previously unknown archaeological and/or paleontological resources be encountered during construction activities, all activity that could damage or destroy these resources should be temporarily suspended until qualified archaeologists and/or Native American representatives, or paleontologists, as applicable, have examined the site and mitigation measures have been developed that address impacts of the project on archaeological and/or paleontological resources. Development should incorporate measures to address issues and impacts identified through any archaeologist/paleontologist and/or Native American consultation.
2. The following should be considered as mitigation measures for potential impacts to eligible or listed archaeological sites as identified by the SHPO within the NCC:
   - Develop procedures for fieldwork, identifying, evaluating, and determining potential effects to cultural resources in consultation with the SHPO and Native American tribes. On-site monitoring should be incorporated in the fieldwork when sites are known or suspected of containing Native American human remains. All procedures should comply with federal and state statutes concerning burials.
   - Avoid impacts wherever feasible, and if not feasible, minimize scale of impact to the extent practical.
   - Cap or cover sensitive site before construction.
   - Provide data recovery where impacts would destroy or affect data of a potentially significant site.
3. Project-level analysis for potential archaeological resource impacts of new highway, rail station and pedestrian crossings, and associated community and resource enhancements improvements should be conducted pursuant to future environmental and phased federal consistency review, when applicable, and should include a field survey of the APE, review of geomorphological maps and relevant studies, and consultation with the SHPO and appropriate Native American tribes and individuals knowledgeable about the nature and locations of traditional cultural properties to assess the potential for corridor segments to contain significant archaeology sites within the APE.
4. The APE for new highway, rail station, and pedestrian crossings, and associated community and resource enhancements improvements should be defined as all areas that could include direct and

indirect impacts from construction, including locations of any construction easements and construction-related facilities (such as equipment staging areas, borrow and disposal areas, and access roads).

5. All identified archaeological resources should be evaluated using NRHP and CRHR eligibility criteria. Where applicable, evaluating archaeological sites should include preparing test plans for archaeological resources that contain regionally relevant research questions. Lead agencies should consult with the SHPO on test plans and determinations of eligibility for evaluated resources, and any required mitigation measures and reporting requirements.
6. A paleontological resource assessment program should be completed for future project-level environmental and phased federal consistency review, when applicable. The assessment program should include field reconnaissance to identify exposed paleontological resources and more precisely determine potential paleontological sensitivity for the project. In addition, a Paleontological Resources Treatment Plan should be prepared by a qualified paleontologist, which should address the treatment of paleontological resources discovered prior to and constructing improvements. Mitigation measures for paleontological resources should be developed and implemented at the project-level for proposed NCC improvements, and may include the following measures, where appropriate:
   - Workers' education on resources protection measures
   - Recovery of fossils identified during the field reconnaissance
   - Construction monitoring
   - Development of protocols for handling fossils discovered during construction, likely including temporary diversion of construction equipment so that the fossils could be recovered, identified, and prepared for dating, interpreting, and preserving at an established, permanent, accredited research facility.

5.6.3.3 Implementation Measures

Caltrans/SANDAG would utilize the following implementation measures for all projects subject to Notice of Impending Development (NOID) procedures:

- **Implementation Measure 5.6.1:** A qualified Native American monitor and qualified archaeologist, or paleontologist, as applicable, shall be present during ground-disturbing activities occurring in areas of known or suspected archaeological and/or paleontological significance as identified in the *I-5 NCC Project Draft EIR/EIS,* the *LOSSAN Final Program EIR/EIS*, and/or as listed within any affected local jurisdiction's LCP. If previously unknown archaeological and/or paleontological resources are encountered during construction, activities that can damage or destroy these resources shall be temporarily diverted to another location until a qualified archaeologist or paleontologist, as applicable, has examined the finds and determined the appropriate measures necessary to mitigate any potential adverse impacts. Development shall incorporate measures to address issues and impacts identified through any archaeologist/paleontologist and/or Native American consultation, which shall be detailed in all project NOID submittals, where applicable.
- **Implementation Measure 5.6.2:** An ESA Action Plan shall be developed and implemented by Caltrans/SANDAG for rail, highway, and community enhancement construction activities located in the vicinity of eligible archaeological sites identified in the *I-5 NCC Project Draft EIR/EIS*, the *LOSSAN Final Program EIR/EIS*, and/or as listed within any affected local jurisdiction's LCP to prevent direct or indirect impacts to cultural resources located adjacent to project construction activities. The ESA Action Plan shall identify the individuals involved and their roles and responsibilities for implementing the plan. Consistent with Implementation Measure 5.6.1, the

construction contract shall also contain language related to unanticipated discoveries should they be made during construction, including diverting activities away from such finds until an archaeologist can assess their nature and significance. If unanticipated discoveries should occur, the SHPO shall be contacted, and the Section 106 consultation process shall be reopened until a plan is developed to address either the preservation of the remains in place, or their proper removal and treatment. Appropriate Native American representatives shall be contacted to participate in this process.

- **Implementation Measure 5.6.3:** Should unanticipated human remains be discovered during construction activities, Caltrans/SANDAG shall implement all measures in compliance with State Health and Safety Code Section 7050.5 and Public Resources Code (PRC) Section 5097.98. All disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the county coroner, NAHC, and Caltrans District 11 Chief of the Environmental Analysis Branch (if discovered within Caltrans's jurisdictional boundaries) would be contacted, as applicable, who shall coordinate with the Native American most likely descendants (MLD) on the respectful treatment and disposition of the remains.
- **Implementation Measure 5.6.4:** A paleontological mitigation program shall be developed and implemented by Caltrans/SANDAG during construction activities in areas of paleontological sensitivity as identified in the *I-5 NCC Project Draft EIR/EIS,* the *LOSSAN Final Program EIR/EIS*, and/or as listed within any affected local jurisdiction's LCP and shall include the following measures:
  - **Monitoring:** A qualified principal paleontologist (M.S. or Ph.D. in paleontology or geology familiar with paleontological procedures and techniques) shall be present at pre-grading meetings to consult with grading and excavation contractors. A paleontological monitor, under the direction of the qualified principal paleontologist, shall be on-site to inspect cuts for fossils at all times during original grading involving sensitive geologic formations.
  - **Macrofossil/Microfossil Analysis:** When fossils are discovered, the paleontologist (or paleontological monitor) shall recover the fossil remains. Construction work in these areas shall be halted or diverted to allow recovery of fossil remains in a timely manner. Fossil remains collected during the monitoring and salvage portion of the mitigation program shall be cleaned, repaired, sorted, and cataloged.
  - **Report Preparation:** Prepared fossils, along with copies of all pertinent field notes, photos, and maps, shall be deposited in a scientific institution with paleontological collections. A Paleontological Resource Assessment Report shall be prepared by the San Diego Natural History Museum, which shall outline the results of the mitigation program.

5.6.4 Coastal Act Consistency

Coastal Act Section 30244 provides for protecting archaeological resources of the Coastal Zone:

> Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

The Coastal Act requires that archaeological and paleontological resources in the Coastal Zone be protected from adverse impacts by applying reasonable mitigation measures. Section 30116 of the Coastal Act defines archaeological sites that are referenced in the California Coastline and Recreation Plan or as designated by the SHPO as sensitive coastal resources.

The majority of rail program improvements would be located in previously developed and disturbed areas within the existing right-of-way. As such, potential impacts to archaeological and paleontological resources would be at least partially mitigated by design in an otherwise highly sensitive region for cultural resources. In the case of the proposed highway improvements, the location of archaeological resources was determined early in the planning stages for the improvements, which allowed for project redesign to avoid the known resources in the corridor. The archaeological sites that initially were within the project's APE fell out as the project was redesigned to avoid them.

Approximately 6 prehistoric and possibly as many as 14 historic archaeological sites (depending on the Del Mar tunnel option) are located within the APE for the rail improvements and, in some locations of the corridor, there is a high potential for unknown sites to occur particularly where rail improvements would occur in proximity to the coast and coastal water bodies.

Rail alignment options that involve tunneling would generally avoid most impacts to cultural resources due to the depth of the tunneling; however, at-grade improvements would disturb the ground surface, potentially resulting in impacts to resources. In addition, trenching for rail improvements would involve subsurface disturbance and therefore could increase the potential to encounter unknown archaeological sites.

The at-grade and the trench options for rail improvements from Oceanside to Solana Beach would remain within the existing LOSSAN rail corridor alignment, thereby minimizing potential impacts to previously undisturbed resources; however, the *LOSSAN Final Program EIR/EIS* identifies a high-build alternative within these areas that includes approximately 2.5 miles of trenching through downtown Carlsbad and downtown Encinitas, which could affect archaeological resources given the subsurface disturbance associated with these improvements.

Within the area of Del Mar, two archaeological sites are recorded within the APE for the LOSSAN rail tunnel option under Camino del Mar, and given the proximity of the segment to the coast and San Dieguito River and Lagoon and to known sites in the area, there is an unknown but possibly high potential for prehistoric archaeological sites to occur in the improvement area. The I-5 highway corridor tunnel option within Del Mar would leave the LOSSAN rail corridor near the Del Mar Racetrack and turn inland, passing along the southern shore of San Dieguito Lagoon, and then proceed in a tunnel under I-5. Eight archaeological sites are recorded within the APE for this option. In addition, numerous prehistoric sites are known to exist along the shores and bluffs of San Dieguito Lagoon. Due to the proximity of this option to the lagoon and coast, there is an unknown, but possibly high potential for prehistoric archaeological sites to occur in the improvement area.

Both options in the Del Mar area would involve deep tunnels, which would avoid most impacts to cultural resources; however, the I-5 highway corridor tunnel option would require new at-grade and aerial rail infrastructure at the south end of San Dieguito Lagoon. As such, the I-5 highway corridor tunnel option would have a higher potential for impacts to unknown archaeological sites than the Camino del Mar tunnel option.

PWP/TREP implementation measures require that paleontological mitigation for proposed improvements would be carried out during the project's construction phase and consist of monitoring, macrofossil and microfossil analysis, and report preparation. ESAs for adjacent sites would be marked on construction contract plans and would be called out in the contract specifications. A letter would be sent to the resident engineer's file, along with a copy of the ESA Action Plan, which would identify the individuals involved, and their roles and responsibilities for implementing the plan. The construction contract would also contain provisions related to unanticipated discoveries, including diverting activities

away from resources until an archaeologist could assess their nature and significance. If unanticipated discoveries occurred, Section 106 consultation with the SHPO would be reopened.

If unanticipated human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities would cease in any area or nearby area suspected to overlie remains, and the county coroner would be contacted. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner would notify the NAHC, who would then notify the Native American MLD. If the remains were discovered during construction of a Caltrans project component, the person who discovered the remains would simultaneously contact the District 11 Chief of the Environmental Analysis Branch construction so that they could work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC Section 5097.98 would be followed, as applicable.

Additional design and development strategies to address potential impacts to archaeological resources would be evaluated for future project-specific improvement proposals pursuant to future environmental and phased federal consistency review, when applicable. These strategies could include, among other measures, developing procedures for fieldwork; identifying, evaluating and determining potential effects to cultural resources in consultation with the SHPO and Native American tribes; and on-site monitoring of fieldwork when sites are known or suspected of containing resources. Where archaeological sites are identified, impacts would be avoided, wherever feasible. If impacts cannot be avoided, the archaeological site would be evaluated using NRHP and CRHR eligibility criteria. Where applicable, evaluating archaeological sites would include preparing test plans for archaeological resources that contain regionally relevant research questions. The SHPO would be consulted on test plans and determinations of eligibility for evaluated resources and any required mitigation measures and reporting requirements.

Design and development strategies to address potential impacts to paleontological resources could include preparing a paleontological resource assessment program for project-level environmental analyses, where applicable. The assessment program would include field reconnaissance to identify exposed paleontological resources and more precisely determine potential paleontological sensitivity for the project. In addition, a Paleontological Resources Treatment Plan would be prepared by a qualified paleontologist to address the treatment of paleontological resources discovered prior to and during construction of proposed improvements. Mitigation measures for paleontological resources could include, as applicable, workers' education on resources protection measures, recovery of fossils identified during the field reconnaissance, construction monitoring, and development of protocols for handling fossils discovered during construction.

Based on available project and environmental data and the policies and implementation measures included herein, the proposed PWP/TREP improvements would protect archaeological and paleontological resources from substantial adverse impacts through sensitive site design and by applying reasonable mitigation measures, and therefore the PWP/TREP is consistent with Section 30244 of the Coastal Act.

5.6.5 Local Coastal Program Consistency

For LOSSAN rail projects included in the PWP/TREP that improve the movement of freight, the LCP policy consistency analysis provides guidance and background information for analyzing rail-project consistency with Section 30244 of the Coastal Act, as appropriate and applicable (see Chapter 1 for additional discussion of LCP applicability to rail projects that may fall under the exclusive jurisdiction of the Surface Transportation Board). The corridor's LCP archaeological and paleontological resource

policies are summarized with brief city-specific consistency analyses below, which also integrate and supplement the above consistency analysis for Sections 30244 of the Coastal Act.

5.6.5.1 Local Coastal Program Consistency Analysis Summary

The corridor LCPs include policies that mirror, in part, the requirements of Section 30244 of the Coastal Act, which requires that reasonable mitigation measures be required where new development would adversely affect archaeological or paleontological resources as identified by the SHPO. LCPs for San Diego, Encinitas, and Carlsbad include additional and specific policies and development standards that address potential impacts to cultural resources including, among others, requirements for site-specific surveys to determine resource occurrence, significance and eligibility, and implementation of preservation and/or impact mitigation programs to avoid or minimize impacts.

City of San Diego

The City of San Diego LCP contains resource protection policies that address archaeological and/or paleontological resources in the North City Land Use Plan and the Community Plans for Torrey Pines, University, and the North City Future Urbanizing Framework Plan. The LCP and these noted plan components include policies that are unique to this portion of the corridor:

- **North City Land Use Plan**
  - Sites considered by a project archaeologist to be of sufficient significance will be submitted to The City of San Diego for possible designation as City Historical Landmarks. Sites which are, in the opinion of the project archaeologist, eligible for nomination to the National Register of Historic Places, should be so nominated. These actions will become part of the conditions of project approval.
  - Significant archaeological resources located on-site should be preserved either intact underground by incorporating them into local dedicated open space areas or by providing for professional salvage operations. Preservation is usually preferable to salvage to the mitigation of impacts to archaeological resources by a project. Preservation permits future study of the resources with methods and techniques not yet developed, and may provide answers to questions which are yet to be raised. Salvage operations should include coordination between professional archaeologists, college or university classes, archaeological and historical societies, museums, and interested laymen capable of assisting in salvage work under the supervision of qualified professionals.

- **Torrey Pines Community Plan**
  - New development, both public and private, should incorporate site planning and design features that avoid or mitigate impacts to cultural resources. When sufficient plan flexibility does not permit avoiding construction on cultural resource sites, mitigation shall be designed in accordance with guidelines of the SHPO and the State of California NAHC.

- **University Community Plan**
  - Provide for the identification and recovery of significant paleontological resources.
  - Ensure the effective preservation and management of significant archaeological and historic resources.
  - Avoid destruction of native vegetation, wildlife habitats, geologic landmarks, or known archaeological resources.

- **North City Future Urbanizing Framework Plan (NCFUA)**
  - Create the environmental tier, an interconnected, viable system of natural open space that serves to protect and conserve cultural resources, flora, and fauna that occur in the NCFUA.

City of Encinitas

The City of Encinitas LCP designates a Special Study Overlay for Cultural/Historic Resources and includes the following policies to protect significant paleontological, historical, and archaeological resources:

- Make every effort to ensure significant scientific and cultural resources in the planning area are preserved for future generations.
- Require that paleontological, historical, and archaeological resources in the planning area are documented, preserved, or salvaged if threatened by new development.
- Survey to identify historic structures and archaeological/cultural sites…ensure action to ensure preservation.
- The presence, significance and protection of cultural/historic resources should be addressed through the city's environmental review processes and zoning regulations … a system of screening development applications and building/demolition permits shall be implemented to avoid unintended loss of resources.

City of Carlsbad

The City of Carlsbad LCP incorporates Section 30244 of the Coastal Act and includes other policies that speak to preservation and mitigation for archaeological and paleontological resources. The LCP relies on the environmental impact review process to determine where development will adversely affect archaeological and paleontological resource and notes that site-specific review should also determine the most appropriate methods for mitigating impacts. In addition, several LCP Land Use Segments contain discussions of site-specific archaeological and paleontological resources and appropriate mitigation programs. For the West Batiquitos Lagoon/Sammis Properties Land Use Segment, the LCP provides that a program of preservation and/or impact mitigation regarding archaeological sites located on the affected area shall be completed prior to any development. The Agua Hedionda Land Use Plan similarly provides for development and implementation of site and resource-specific mitigation measures prior to any development based on available impact analyses within the area, and identifies a list of specific sites with archaeological or cultural resources. In addition, within the Mello II Land Use Segment, Policy 8-4 specifically discusses archaeological and paleontological resources, and refers to completion of appropriate environmental review and implementation of mitigation.

As discussed in detail in the Coastal Act policy consistency analysis above, PWP/TREP improvements would protect archaeological and paleontological resources from substantial adverse impacts through sensitive site design and by applying reasonable mitigation measures. As such, the archaeological and paleontological resource protection policies of the city LCPs noted above do not present potential policy conflicts for the proposed PWP/TREP improvements, and therefore these policies would not need to be amended to implement the proposed transportation facility improvements.