

3.9 CULTURAL AND PALEONTOLOGICAL RESOURCES

3.9.1 INTRODUCTION AND METHODOLOGY

This section is based on a Cultural Resource Evaluation of the proposed project prepared by Affinis (October 2004) and a Paleontological Resource Assessment prepared by Thomas A. Deméré of the Department of PaleoServices at the San Diego Natural History Museum (SDNHM) (September 2007). The technical reports are presented in their entirety in **Appendix 3.9** of this EIR. The Cultural Resource Evaluation analyzes the potential for impacts to occur to any potential cultural resources on site during construction and operation of the project.

The methodology utilized to prepare the Cultural Resource Evaluation included an archaeological survey of the proposed site, conducted on September 17, 2004. During that survey, the archeologist walked the flat areas of the property and followed the foot paths up the bluff to examine the top of the bluff. The flat areas were walked in using a series of parallel transects spaced about ten meters apart. Additionally, records searches were requested from the South Coastal Information Center (SCIC) at San Diego State University, and from the San Diego Museum of Man. Record search maps from old projects in the area were also consulted to determine that a potential cultural resource site was recorded on the property at one time.

The Cultural Resource Evaluation utilized the following sources:

- Department of Parks and Recreation Archaeological Site Survey Form, 1976 (Cal:E:4:56);
- Bowman, R.H., *Soil Survey: San Diego Area*. United States Department of Agriculture, 1973;
- Kennedy, M.P., Western San Diego Metropolitan Area, in *Geology of the San Diego Metropolitan Area, California* by M.P. Kennedy and G.L. Peterson, pp. 9-39. California Division of Mines and Geology, Bulletin 200, Sacramento, 1975; and
- Griner, E.L. and P.R. Pryde, *Climate, Soils and Vegetation*, in *San Diego: An Introduction to the Region*, edited by P.R. Pryde, pp. 29-46. 4th edition, Kendall/Hunt, Dubuque, Iowa, 1976.

The methodology utilized to prepare the Paleontological Resource Assessment included a review of relevant published geologic reports, unpublished paleontological reports, and museum paleontological locality data. This approach was followed in recognition of the direct relationship between paleontological resources and the geologic formations within which they are entombed. Knowing the geology of a particular area and the fossil productivity of particular formations that occur in that area, it is possible to predict where fossils will, or will not, be encountered.

A walkover survey of the project site was conducted on September 8, 2007 by SDNHM personnel to determine the paleontological sensitivity of the geologic units that will be affected by the proposed improvements and to field check the results of the literature and record

reviews. Field work involved inspection of the site for bedrock outcrops, geologic contacts, and presence or absence of paleontological resources (*i.e.*, fossils).

3.9.2 EXISTING CONDITIONS

The project area is in the coastal plains of San Diego County, where the climate is characterized as semi-arid and cool. Average annual temperatures range from a low of about 44°F to a high of 75 to 80°F, and annual rainfall averages between 9 and 16 inches.

The project site was graded sometime in the past and has artificially steepened slopes along its southern boundary. These slopes are underlain by geologic deposits of Eocene and Pleistocene age. The low lying areas along the northern boundary are underlain by geologic deposits of Pleistocene age, as well as some artificial fill materials. The older Eocene stratigraphic sequence consists of sedimentary rocks mapped as Delmar Formation and Torrey Sandstones. The younger Pleistocene stratigraphic sequence consists of strata mapped as Bay Point Formation.

The property is located on a loamy sand soil. This soil type is a deeply developed soil that forms on alluvium that is weathered from marine sandstone. The soil mapped for the property would not be expected to be in a depositional environment where substantial archaeological deposits could have been buried through natural processes. Most of the project area is graded with no vegetation except for a few weedy plants. The slopes of the property support scrub vegetation. Torrey Pines are noted at the top of the bluff. A marshy area occurs at the northeast edge of the property.

SCIC had eight sites recorded within one mile of the project area. The San Diego Museum of Man had 15 sites, six of which were also among the eight sites recorded at SCIC. Only SCIC had any record of SDI-192, an archaeological point of interest on or near the project site, and that was based on a form filed by an early San Diego area archaeologist. The form did not provide a description of the SDI-192 site, and did little more than indicate the location of the site. Neither the SCIC nor the Museum of Man has any indication that the proposed project property has been surveyed for archaeological sites for any cultural resource management projects.

The City of Del Mar Community Plan confirms that several archaeological sites exist within Del Mar. Because vandalism may occur, their specific locations are not identified; however, the following general areas contain sites:

- North bluff area west of Camino del Mar;
- In the vicinity of Turf Road and Via de la Valle;
- On the north slopes of the Del Mar hills above Jimmy Durante Boulevard;
- On the northeast slopes of the Del Mar Hills above San Dieguito Drive;
- Torrey Pines Terrace area; and
- Del Mar Canyon area.

Cultural Resources Background

The earliest accepted archaeological manifestation of native Americans in the San Diego area is the San Dieguito complex, dating to approximately 10,000 years ago. The material culture of the San Dieguito complex consists primarily of scrapers, scraper planes, choppers, large blades, and large projectile points. Crescentic stones were considered to be characteristic of the San Dieguito complex as well. Tools and debitage made of fine-grained green metavolcanic material, locally known as felsite, were found at many sites which Rogers identified as San Dieguito. Often these artifacts were heavily patinated. Felsite tools, especially patinated felsite, came to be seen as an indicator of the San Dieguito complex. Sleeping circles, trail shrines, and rock alignments have also been associated with early San Dieguito sites. The San Dieguito complex is chronologically equivalent to other Paleoindian complexes across North America, and sites are sometimes called "Paleoindian" rather than "San Dieguito."

The traditional view of San Diego prehistory has the San Dieguito complex followed by the La Jolla complex at least 7000 years ago, possibly as long as 9000 years ago. The La Jolla complex is part of the Encinitas tradition. The Encinitas tradition is generally "recognized by millingstone assemblages in shell middens, often near sloughs and lagoons." "Crude" cobble tools, especially choppers and scrapers, characterize the La Jolla complex. Basin metates, manos, discoidals, a small number of Pinto series and Elko series points, and flexed burials are also characteristic.



The La Jolla complex developed with the arrival of a desert people on the coast who quickly adapted to their new environment. This Pre-La Jolla complex is represented at Texas Street, Buchanan Canyon, and the Brown site (see **Figure 3.9-1** for locations). These sites are all in the vicinity of Mission Valley in San Diego, as demonstrated in the map on the right. There are no demonstrable Pleistocene occupations at any of these sites. In recent years, archaeologists in the region have begun to question the traditional definition of San Dieguito people simply as makers of finely crafted felsite projectile points, domed scrapers, and discoidal cores, who lacked milling technology. The traditional defining criteria for La Jolla sites (manos, metates, "crude" cobble tools, and reliance on lagoonal resources) have also been questioned.

The Late Prehistoric period is represented by the San Luis Rey complex in northern San Diego County and the Cuyamaca complex in the southern portion of the county. The San Luis Rey complex is the archaeological manifestation of the Shoshonean predecessors of the ethnohistoric Luiseño (named for the San Luis Rey Mission). The Cuyamaca complex represents the Yuman forebears of the Kumeyaay (Diegueño, named for the San Diego Mission). Agua Hedionda is traditionally considered to be the point of separation between Luiseño and Northern Diegueño territories.

Elements of the San Luis Rey complex include small, pressure-flaked projectile points (Cottonwood and Desert Side-notched series); milling implements, including mortars and pestles; *Olivella* shell beads; ceramic vessels; and pictographs. Of these elements, mortars and pestles, ceramics, and pictographs are not associated with earlier sites. A greater number of

quartz projectile points were found at San Luis Rey sites than at Cuyamaca complex sites, which he interpreted as a cultural preference for quartz. Ceramics were a late development among the Luiseño, probably learned from the Diegueño. The general mortuary pattern at San Luis Rey sites is ungathered cremations.

The Cuyamaca complex is similar to the San Luis Rey complex, differing in the following points:

1. Defined cemeteries away from living areas;
2. Use of grave markers;
3. Cremations placed in urns;
4. Use of specially made mortuary offerings;
5. Cultural preference for side-notched points;
6. Substantial numbers of scrapers, scraper planes, *etc.*, in contrast to small numbers of these implements in San Luis Rey sites;
7. Emphasis placed on use of ceramics; wide range of forms and several specialized items;
8. Steatite industry;
9. Substantially higher frequency of milling stone elements compared with San Luis Rey; and
10. Clay-lined hearths.

Both the San Luis Rey and Cuyamaca complexes were defined on the basis of village sites in the foothills and mountains. Coastal manifestations of both Luiseño and Kumeyaay differ from their inland counterparts. Fewer projectile points are found on the coast, and there tends to be a greater number of scrapers and scraper planes at coastal sites. Cobble-based tools, originally defined as "La Jolla," are characteristic of coastal sites of the Late Prehistoric period as well.

Paleontological Resources Background

As stated above, the project site is underlain by geologic deposits of Eocene and Pleistocene age. The older Eocene stratigraphic sequence consists of sedimentary rocks mapped as Delmar Formation and Torrey Sandstones. The younger Pleistocene stratigraphic sequence consists of strata mapped as Bay Point Formation.

Delmar Formation

The Delmar Formation consists of greenish silty mudstones, brown siltstones, and greenish sandstones, with interbeds of well-cemented oyster-rich shell beds. This formation is overlain by the Torrey Sandstone, and is presumably underlain by Cretaceous sedimentary rocks and

pre-Cenozoic crystalline basement rocks. It was deposited in a lagoonal/estuarine setting and preserves marsh flat and tidal channel paleoenvironments. The Delmar Formation is late early to early middle Eocene in age, approximately 49-50 Ma (mega annum; million years ago).

The Delmar Formation is not clearly exposed on the proposed project site. However, the increase in greenish mudstones towards the base of the steep, near vertical slopes along the eastern portion of the site suggests that the Delmar Formation likely does occur at or near the level of the graded pad that forms the northern portion of the site.

Fossils from the Delmar Formation consist of well-preserved to poorly preserved remains of estuarine invertebrates (*e.g.*, clams, oysters, and snails) and estuarine vertebrates (*e.g.*, sharks and rays). 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

The Torrey Sandstone consists primarily of yellowish-white, coarse-grained, locally cross-bedded, arkosic sandstones. The type area for this rock unit is the seacliffs at Torrey Pines State Reserve. Portions of the Torrey Sandstone were deposited in an ancient nearshore marine environment, while other parts of the deposit formed within a barrier island/protected lagoon setting. The Torrey Sandstone gradationally overlies the Delmar Formation and is in turn unconformably overlain by the Ardath Shale and Scripps Formation. Based upon its stratigraphic position the formation is considered to be early middle Eocene in age, approximately 48-49 Ma.

The Torrey Sandstone as exposed in the steep, near vertical slopes along the eastern portion of the site consists of interbedded strata of light yellow, coarse-grained, massive, bioturbated and cross-bedded sandstones and light olive green, bioturbated sandy mudstone. This interbedded sequence strongly resembles the stratigraphic interval characteristic of the transitional zone between the Torrey Sandstone and Delmar Formation as well exposed in the sea cliffs of Del Mar and Solana Beach.

The Torrey Sandstone has produced important remains of fossil plants and marine invertebrates. The plant remains (mostly leaves) are especially significant. Many are from taxa related to species that today live in brackish-water marsh and/or riparian woodland environments in subtropical and tropical regions of Southeast Asia and the southeastern United States. Their occurrence in the Torrey Sandstone suggests that the Eocene climate in this area was warmer (20° C mean annual temperature) and wetter (120-150 cm annual rainfall) than the modern climate.

Invertebrate fossils known from the Torrey Sandstone primarily consist of nearshore marine taxa (*e.g.*, clams, oysters, snails, and barnacles). Vertebrate fossil remains are rare and include teeth of crocodiles, sharks, and rays.

Bay Point Formation

The coastal plain of San Diego County is characterized by a "stair-step" sequence of elevated marine terraces (uplifted sea floors) and their associated marine and non-marine sedimentary covers. Generally speaking, these marine terraces and their sedimentary deposits show a direct correlation between elevation and geologic age (*i.e.*, the lowest terraces are the youngest, while the highest terraces are the oldest). Various formational names have been used to refer to these marine terrace deposits including Sweitzer Formation, Lindavista Formation, and Bay Point Formation. The Lindavista Formation is considered by most workers to be synonymous with the Sweitzer Formation and to only represent deposits on the higher terraces (*i.e.*, above elevations of 300 feet). In contrast, the Bay Point Formation is generally considered to include marine and non-marine sedimentary deposits (primarily light-brown, fine-grained, sandstones) on the lower terraces (*i.e.*, from near sea level to elevations of ~200 feet). The Bay Point Formation also includes Pleistocene non-marine valley-fill deposits exposed along the margins of coastal valleys (*e.g.*, San Luis Rey Valley and San Dieguito Valley).

The Bay Point Formation as exposed in the graded slopes along the southwestern portion of the site consists of light gray to light brown, poorly sorted, fine- to coarse-grained, compact sandstones. Exposures of this rock unit in the steep, near vertical slopes along the eastern portion of the site consist of medium brown, to light greenish gray, coarse-grained, massive sandstone with a cobble to small boulder basal conglomerate. It is likely that the sandstones in both areas are part of a single stratigraphic unit that was deposited along an irregular buttress unconformity eroded into the underlying Eocene rock units.

The Bay Point Formation has produced large and diverse assemblages of well-preserved marine invertebrate fossils, primarily mollusks. Remains of fossil marine vertebrates (*i.e.*, sharks, rays, and bony fishes) have also been recovered from this rock unit. Recorded collecting sites in the Bay Point Formation include both natural exposures (*e.g.*, sea cliffs) as well as construction-related excavations. The Bay Point Formation has also produced significant assemblages of Pleistocene land mammals from valley-fill deposits. Recovered vertebrate fossils include ground sloth, dire wolf, horse, tapir, camel, deer, mastodon and mammoth.

3.9.3 THRESHOLDS OF SIGNIFICANCE

Appendix G of the CEQA Guidelines provides that a project may result in a potentially significant impact to cultural resources if the project would:

- (A) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5 (**Threshold A**).
- (B) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5 (**Threshold B**).
- (C) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (**Threshold C**).
- (D) Disturb any human remains, including those interred outside of formal cemeteries (**Threshold D**).

3.9.4 POTENTIAL IMPACTS OF THE PROJECT

3.9.4.1 Threshold A: Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

The proposed project site does not contain any historical resources as defined by CEQA under Public Resources Code section 21084.1, or as defined in CEQA Guideline section 15064.5. Therefore, no impact would occur.

3.9.4.2 Threshold B: Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

SCIC had eight sites recorded within one mile of the project area. The San Diego Museum of Man had 15 sites, six of which were also among the eight sites recorded at SCIC. The City of Del Mar Community Plan confirms that several archaeological sites exist within Del Mar.

A cultural resources record search and a cultural resources pedestrian survey were conducted for the project site. SCIC identified one archaeological site (CA-SDI-192) that had been previously recorded on the project site, based on a form filed by an early San Diego area archaeologist. The form did not provide a description of the SDI-192 site, and did little more than indicate the location of the site. Neither the SCIC nor the Museum of Man has any indication that the proposed project property has been surveyed for archaeological sites for any cultural resource management projects. Additionally, no evidence of this site or any other cultural resources were found during the cultural resources pedestrian survey of the site.

The cultural resources evaluation for the project determined that it is likely that previous site disturbance and grading activities destroyed the site or that the site was incorrectly mapped. Since no cultural resources were identified to exist on the project site, the project would not disturb any archaeological resources. A mitigation measure would be imposed on the project, in order to ensure that no impacts would occur to any potential unknown paleontological and/or archaeological resources if such were to be discovered on site during the construction phase.

3.9.4.3 Threshold C: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Although no recorded paleontological sites are known on the proposed project site, there are several sites recognized within a one-mile radius. With respect to Bay Point Formation, these sites include a marine terrace deposits exposed in the sea cliffs of southern Solana Beach and several sites in estuarine valley-fill deposits in cut slopes adjacent to the Flower Hill shopping center. The former locality has produced well-preserved fossils of intertidal to subtidal, exposed sandy shore mollusks. The latter localities produced well-preserved fossils of intertidal to subtidal, estuarine, warm water mollusks. Because of these previous records, and following the paleontological guidelines developed by the County of San Diego, the Bay Point Formation is assigned a moderate to high paleontological resource sensitivity rating.

No recorded paleontological sites are known with respect to the Torrey Sandstone located on the proposed project site. The closest recorded site in this rock unit occurs approximately three

miles to the southeast and has produced significant impressions (leaves, stems, and seeds) of fossil plants. During the field survey well-preserved trace fossils (*i.e.*, burrows) of infaunal marine invertebrates (*e.g.*, burrowing crustaceans and/or annelid worms) were observed in outcrops of the Torrey Sandstone. Because of these previous records, and following the paleontological guidelines developed by the County of San Diego, the Torrey Sandstone is assigned a moderate paleontological resource sensitivity rating.

Finally, no recorded paleontological sites are known from the Delmar Formation as potentially exposed in the proposed project site. The closest observed paleontological sites in this rock unit occur less than 0.5 miles southwest of the APE along Jimmy Durante Boulevard. These sites contain well-preserved fossils of estuarine marine mollusks. Because of these previous records, and following the paleontological guidelines developed by the County of San Diego, the Delmar Formation is assigned a high paleontological resource sensitivity rating.

Direct impacts to paleontological resources occur when earthwork activities, such as mass grading operations, cut into the geological deposits (formations) within which fossils are buried. These direct impacts are in the form of physical destruction of fossil remains. Since fossils are the remains of prehistoric animal and plant life they are considered to be nonrenewable. Such impacts can be significant and, under CEQA guidelines, require mitigation.

3.9.4.4 Threshold D: Disturb any human remains, including those interred outside of formal cemeteries?

No known existing religious or sacred uses, or human remains exist on the project site. Therefore, the proposed project would not restrict or disturb existing religious or sacred uses within the potential impact area. A mitigation measure would be imposed on the project, in the unlikely event that unknown human remains were to be discovered on site during the project's construction phase.

3.9.5 LEVEL OF SIGNIFICANCE PRIOR TO MITIGATION

Based on the on-site archaeological survey and records searches, no cultural resources are likely to be on-site, and therefore no impacts resulting from implementation of the proposed project are likely to occur. However, potential impacts to unknown archaeological resources or potential human remains remain a concern if such were to be discovered on site during the project construction phase. Additionally, based on the on-site paleontological assessment, potentially sensitive formations are located on-site, a risk of direct impacts in the form of physical destruction of fossil remains. Therefore, mitigation is required to ensure that potential impacts to unknown

3.9.6 MITIGATION MEASURES

Any potentially significant impacts caused by implementation of the proposed project would be mitigated to below a level of significance by implementation of the following mitigation measure:

Cul-1. A qualified paleontologist (an individual with a MS or Ph.D. in paleontology or geology that is familiar with paleontological procedures and techniques, who is knowledgeable in the geology and paleontology of San Diego County, and who has worked as a paleontological mitigation project supervisor in the county for at least one year) shall attend the pre-construction meeting to consult with the grading and excavation contractors concerning excavation schedules, paleontological field techniques, and safety issues. A paleontological monitor (an individual who has experience in the collection and salvage of fossil materials, working under the direction of a qualified paleontologist) shall be on-site on a full-time basis during the original cutting of previously undisturbed deposits of high paleontological resource potential (Bay Point Formation and Delmar Formation) to inspect exposures for contained fossils. Grading activities in previously undisturbed deposits of moderate paleontological resource potential (Torrey Sandstone) shall be monitored on a part-time basis.

In the event that paleontological resources are accidentally discovered or unearthed during project subsurface activities, all earth disturbing work within a 100-meter radius shall be temporarily suspended or redirected until a certified paleontologist has recovered, identified, and/or evaluated the nature and significance of the find, in compliance with CEQA Guidelines §15064.5(f). After the find has been appropriately mitigated, work in the area may resume.

During the monitoring and recovery phases of the mitigation program, the qualified paleontologist and/or the paleontological monitor shall routinely collect stratigraphic data (*e.g.*, lithology, vertical thickness, lateral extent of strata, nature of upper and lower contacts, and taphonomic character of exposed strata). Collection of such data is critical for providing a stratigraphic context for any recovered fossils. Fossil remains collected during monitoring and salvage shall be cleaned (removal of extraneous enclosing sedimentary rock material), repaired (consolidation of fragile fossils and gluing together broken pieces), sorted (separating fossils of the different species), and cataloged (scientific identification of species, assignment of inventory tracking numbers, and recording of these numbers in a computerized collection database) as part of the mitigation program. Prepared fossils, along with copies of all pertinent field notes, photos, and maps, shall be deposited (as a donation) in a scientific institution with permanent paleontological collections such as the San Diego Natural History Museum. Donation of the fossils shall be accompanied by financial support for preparation, curation and initial specimen storage, if this work has not already been completed. A final summary report shall be completed that outlines the results of the mitigation program. This report shall include discussions of the methods used, stratigraphic section(s) exposed, fossils collected, and significance of recovered fossils.

Cul-2. In the event that archeological resources are accidentally discovered or unearthed during project subsurface activities, all earth disturbing work within a 100-meter radius shall be temporarily suspended or redirected until a certified archeologist has identified and evaluated the nature and significance of the find, in compliance with CEQA Guidelines §15064.5(f). If the artifact that is accidentally discovered or

unearthed is of Native American origin, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources will be consulted for identification and evaluation purposes. After the find has been appropriately mitigated, work in the area may resume.

- Cul-3. In the event that human remains are accidentally discovered or unearthed during project subsurface activities, all earth disturbing work within a 100-meter radius shall be temporarily suspended or redirected until a forensic expert has identified and evaluated the nature and significance of the find, in compliance with CEQA Guidelines §15064.5(f). If human remains of Native American origin are accidentally discovered or unearthed, CEQA Guidelines provide for agreements with Native Americans, identified by the Native American Heritage Commission, to assure the appropriate and dignified treatment of Native American human remains and any associated grave liens. After the find has been appropriately mitigated, work in the area may resume.

3.9.7 RESIDUAL IMPACTS/LEVEL OF SIGNIFICANCE AFTER MITIGATION

With implementation of the proposed mitigation measure, all potential impacts to archaeological and paleontological resources would be reduced to a level below significant. Therefore, the proposed project will not result in any significant and unavoidable impacts to archaeological and paleontological resources.