Appendix B

Paleontological and Cultural Resources Assessment

Euclid-Hazard 7-Eleven Service Station

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

CULTURAL AND PALEONTOLOGICAL RESOURCES ASSESSMENT FOR THE EUCLID FUELING STATION PROJECT, CITY OF SANTA ANA, ORANGE COUNTY, CALIFORNIA

Prepared for:
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Cogstone Project Number: 4797
Type of Study: Cultural (Phase I including survey) and Paleontological Resources Assessment
Archaeological Sites: None
Paleontological localities: None
USGS 7.5' Quadrangle: Anaheim, CA 1981
Area: Approximately 0.72 acres
Key Words: Negative survey, cultural resources assessment, paleontological resources assessment

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SUMMARY OF FINDINGS

This study was conducted to determine the potential impacts to cultural and paleontological resources during the construction of a convenience store, associated parking, gas station, and underground fuel storage tank at 813 North Euclid Street in Santa Ana, California (Project). The Project is located on approximately 0.72 acres at the southeast corner of the intersection of Euclid Street and Hazard Avenue (Project Area). Planned vertical impacts include removal of approximately 5 feet of fill and the excavation of one trench approximately 16 feet deep, 20 feet wide, and 25 feet long for the underground fuel storage tank. This report meets the requirements of the California Environmental Quality Act (CEQA) with the City of Santa Ana acting as lead agency.

Cogstone requested a paleontological records search from the Natural History Museum of Los Angeles on August 5, 2019. The results revealed no fossil localities within the Project Area or within an approximately 5-mile radius. However, fossil localities are known from terrestrial deposits near the Project Area.

A California Historical Resources Information System (CHRIS) cultural records search was completed at the South Central Coastal Information Center (SCCIC) at California State University, Fullerton on August 14, 2019. Results of the records search indicated that 17 cultural resources investigations have been completed previously within a one-mile radius of the Project Area, with 12 historical cultural resources recorded within a one-mile radius of the Project Area. None of the previous studies or resources are located within Project Area. The results of a Sacred Lands File (SLF) Search requested from the Native American Heritage (NAHC) Commission on August 15, 2019 indicated that there are no sacred lands or resources known to the NAHC within the Project Area.

An intensive pedestrian survey of the Project Area was completed on August 22, 2019. No cultural or paleontological resources were observed. No further assessment work is needed.

If unanticipated fossil discoveries are made, all work must halt within 50 feet of the find until an Orange County qualified paleontologist can evaluate the find. Work may resume immediately outside of the 50 foot radius. In the event cultural resources are discovered all work must halt within 50 feet of the find until a qualified archaeologist evaluates it. In the unlikely event that human remains are encountered during the Project's development, all work must cease near the find immediately.

In accordance with California Health and Safety Code Section 7050.5, the County Coroner must be notified if potentially human bone is discovered. The Coroner will then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she shall contact the Native American Heritage Commission (NAHC) by phone within 24 hours, in accordance with Public Resources Code Section 5097.98. The NAHC will then designate a Most Likely Descendant (MLD) with respect to the human remains. The MLD then has the opportunity to recommend to the property

owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and associated grave goods. Work may not resume in the vicinity of the find until all requirements of the health and safety code have been met.

INTRODUCTION

PURPOSE OF STUDY

The purpose of this study is to determine the potential impacts to cultural and paleontological resources resulting from completion of the Euclid Fueling Station Project (Project) located in the City of Santa Ana (City) in Orange County, California (Figure 1). The City is the lead agency for the Project under the California Environmental Quality Act (CEQA). This assessment report includes all lands within the subject parcel.

Figure 1. Project vicinity map

PROJECT LOCATION AND DESCRIPTION

The Project is located at 813 North Euclid Street, on the southeast corner of North Euclid Street and West Hazard Avenue in the City of Santa Ana in Orange County, California. It is situated on the Anaheim 7.5' United States Geological Survey (USGS) topographic quadrangle, within Section 9, Township 5 South, Range 10 West of the San Bernardino Baseline and Meridian (Project Area; Figure 2). The Project Area encompasses approximately 0.72 acres of mostly vacant property surrounded by residential developments (Figure 3). Elevation is between 65 and 70 feet above mean sea level.

The Project consists of the construction of a new 7-11 convenience store facility with an approximately 3,000 square foot building, parking, gas pumps, and underground fuel storage tanks. Planned vertical impacts include removal of approximately 5 feet of fill and the excavation of one trench approximately 16 feet deep, 20 feet wide, and 25 feet long for the underground fuel storage tank. Trenches for utilities are anticipated to be a minimum of three feet deep and will be excavated in newly imported and compacted fill, making it unlikely that the trenches will extend in to native sediments.

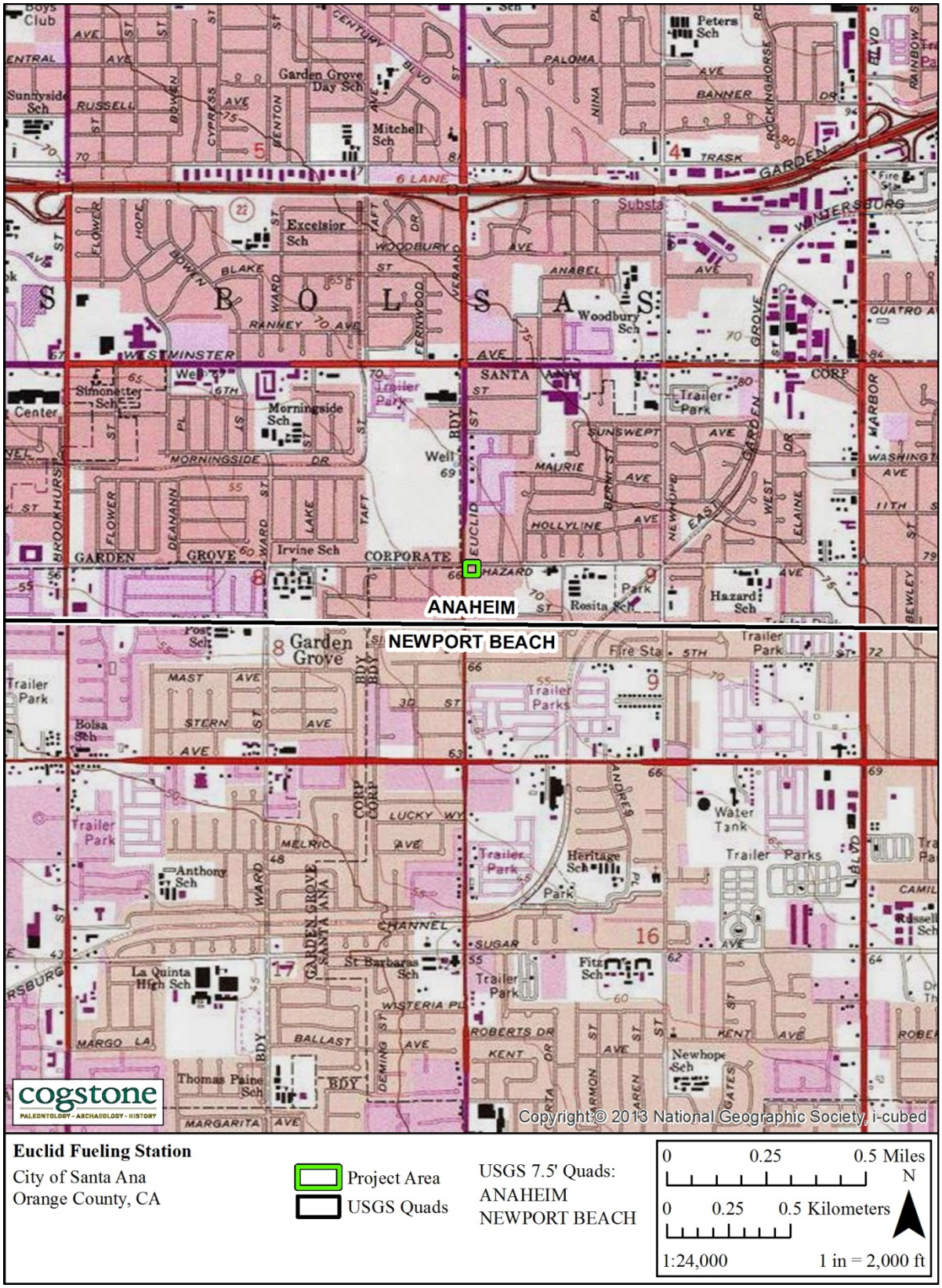

Figure 2. Project location

Figure 3. Aerial map

PROJECT PERSONNEL

Cogstone Resource Management, Inc. (Cogstone) conducted this cultural resources and paleontological resources assessment.

Desireé Martinez served as the Task Manager providing QA/QC for the Project. Ms. Martinez is a Registered Professional Archaeologist (RPA) with an M.A. in Anthropology from Harvard University. She is an Orange County Certified Archaeologist with more than 22 years of experience in southern California archaeology.

Dr. John Gust, RPA, served as the Principal Investigator for Archaeology, supervising all work, and co-authored this report. Dr. Gust has a Ph.D. in Anthropology from the University of California (UC), Riverside and an M.A. in Geography from the University of Colorado, Colorado Springs. He has over seven years of experience in archaeology.

Kim Scott served as the Principal Investigator for Paleontology and co-authored this report. Scott holds an M.S. in Biology with a paleontology emphasis from California State University (CSU) San Bernardino and a B.S. in Geology with paleontology emphasis from UC Los Angeles. She is an Orange County Certified Paleontologist with more than 23 years of experience in California paleontology and sedimentary geology.

Logan Freeberg conducted the field survey, prepared the maps, ands co-wrote this report. Mr. Freeberg has a certificate in Geographic Information Systems (GIS) from CSU Fullerton and a B.A. in Anthropology from UC Santa Barbara. He is an Orange County Certified Archaeologist with more than 15 years of experience in southern California archaeology.

Nancy De La Cruz conducted the records search. Ms. De La Cruz has a B.A. from CSU Long Beach and over one year experience in California archaeology.

REGULATORY ENVIRONMENT

STATE LAWS AND REGULATIONS

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA states that: It is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required are intended to assist public agencies in systematically identifying both the significant effects of proposed project and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.

CEQA declares that it is state policy to: "take all action necessary to provide the people of this state with...historic environmental qualities." It further states that public or private projects financed or approved by the state are subject to environmental review by the state. All such projects, unless entitled to an exemption, may proceed only after this requirement has been satisfied. CEQA requires detailed studies that analyze the environmental effects of a proposed project. In the event that a project is determined to have a potential significant environmental effect, the act requires that alternative plans and mitigation measures be considered.

If paleontological resources are identified as being within the proposed project study area, the sponsoring agency must take those resources into consideration when evaluating project effects. The level of consideration may vary with the importance of the resource.

TRIBAL CULTURAL RESOURCES

As of 2015, CEQA established that “[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment” (Public Resources Code, § 21084.2). In order to be considered a “tribal cultural resource,” a resource must be either:

(1) listed, or determined to be eligible for listing, on the national, state, or local register of historic resources, or
(2) a resource that the lead agency chooses, in its discretion, to treat as a tribal cultural resource.

To help determine whether a project may have such an effect, the lead agency must consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. If a lead agency determines that a project may cause a substantial adverse change to tribal cultural resources, the lead agency must consider measures to mitigate that impact. Public Resources Code §20184.3 (b)(2) provides

examples of mitigation measures that lead agencies may consider to avoid or minimize impacts to tribal cultural resources.

PUBLIC RESOURCES CODE

Section 5097.5: No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands (lands under state, county, city, district or public authority jurisdiction, or the jurisdiction of a public corporation), except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

CALIFORNIA REGISTER OF HISTORICAL RESOURCES

The California Register of Historical Resources (CRHR) is a listing of all properties considered to be significant historical resources in the state. The California Register includes all properties listed or determined eligible for listing on the National Register, including properties evaluated under Section 106, and State Historical Landmarks number No. 770 and above. The California Register statute specifically provides that historical resources listed, determined eligible for listing on the California Register by the State Historical Resources Commission, or resources that meet the California Register criteria are resources which must be given consideration under CEQA (see above). Other resources, such as resources listed on local registers of historic registers or in local surveys, may be listed if they are determined by the State Historic Resources Commission to be significant in accordance with criteria and procedures to be adopted by the Commission and are nominated; their listing in the California Register, is not automatic.

Resources eligible for listing include buildings, sites, structures, objects, or historic districts that retain historical integrity and are historically significant at the local, state or national level under one or more of the following four criteria:

1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
2) It is associated with the lives of persons important to local, California, or national history;
3) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or
4) It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

In addition to having significance, resources must have integrity for the period of significance. The period of significance is the date or span of time within which significant events transpired,

or significant individuals made their important contributions. Integrity is the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance.

Alterations to a resource or changes in its use over time may have historical, cultural, or architectural significance. Simply, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. A resource that has lost its historic character or appearance may still have sufficient integrity for the California Register, if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data.

NATIVE AMERICAN HUMAN REMAINS

Sites that may contain human remains important to Native Americans must be identified and treated in a sensitive manner, consistent with state law (i.e., Health and Safety Code §7050.5 and Public Resources Code §5097.98), as reviewed below:

In the event that human remains are encountered during project development and in accordance with the Health and Safety Code Section 7050.5, the County Coroner must be notified if potentially human bone is discovered. The Coroner will then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she shall contact the Native American Heritage Commission (NAHC) by phone within 24 hours, in accordance with Public Resources Code Section 5097.98. The NAHC will then designate a Most Likely Descendant (MLD) with respect to the human remains. The MLD then has the opportunity to recommend to the property owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and associated grave goods.

CALIFORNIA ADMINISTRATIVE CODE, TITLE 14, SECTION 4307

This section states that "No person shall remove, injure, deface or destroy any object of paleontological, archeological or historical interest or value."

LOCAL LAWS AND REGULATIONS

CITY OF SANTA ANA

The City's Conservation Element of the General Plan calls for the "protection, utilization and development of natural and cultural resources. It emphasizes scarce resources and those needing special attention or management, and aims to prevent their exploitation, neglect or destruction" (City of Santa Ana 2014).

DEFINITION OF SIGNIFICANCE FOR PALEONTOLOGICAL RESOURCES

Only qualified, trained paleontologists with specific expertise in the type of fossils being evaluated can determine the scientific significance of paleontological resources. Fossils are considered to be significant if one or more of the following criteria apply:

1. The fossils provide information on the evolutionary relationships and developmental trends among organisms, living or extinct;
2. The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein;
3. The fossils provide data regarding the development of biological communities or interaction between paleobotanical and paleozoological biotas;
4. The fossils demonstrate unusual or spectacular circumstances in the history of life;
5. The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.

As so defined, significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, uncommon, or diagnostically important. Significant fossils can include remains of large to very small aquatic and terrestrial vertebrates or remains of plants and animals previously not represented in certain portions of the stratigraphy. Assemblages of fossils that might aid stratigraphic correlation, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, and paleoclimatology are also critically important (Scott and Springer 2003; Scott et al. 2004). Background

The geologic, paleontological, and environmental sections below provides information on the environmental factors that affect cultural and paleontological resources, while the prehistoric and historical settings provide information on the history of land use in the general Project region.

GEOLOGIC SETTING

The Project lies in the broad coastal plain of Orange County, California, named the Tustin Plain. The Tustin Plain is bounded by the Santa Ana Mountains to the east, the Puente and Coyote Hills to the north, the Pacific Ocean to the west, and the San Joaquin Hills to the south. Orange County is part of the coastal section of the Peninsular Range Geomorphic Province which is characterized by elongated northwest-trending mountain ridges separated by sediment-floored valleys. Faults branching off from the San Andreas Fault to the east create the local mountains

and hills. The Peninsular Ranges Geomorphic Province is located in the southwestern corner of California and is bounded by the Transverse Ranges Geomorphic Province to the north and the Colorado Desert Geomorphic Province to the east.

STRATIGRAPHY

The Project is mapped as Holocene to late Pleistocene (modern to 126,000 year old) young alluvial fans (Morton and Miller 2006). The geotechnical report indicates fill occurs over some of the site (Garcrest Engineering and Construction Inc. 2018).

Artificial fill, modern

Garcrest Engineering and Construction Inc. (2018) reported that fill was three to four feet thick at two of the boreholes and up to 12 feet thick at the third borehole (B-3). They concluded that at least the upper five feet of the onsite fill and underlying sediments will have to be removed and replaced.

Young alluvial fan, Holocene to late Pleistocene

Holocene to late Pleistocene alluvial fan flood plain deposits consist of unconsolidated to moderately consolidated, poorly sorted, permeable sands (Qyaa). Deposits are poorly consolidated and may be capped by poorly to moderately developed soils. These sediments were deposited by streams and rivers on canyon floors and in the flat flood plains of the area (Morton and Miller 2006).

PALEONTOLOGICAL SETTING

During the past 100,000 years or so, southern California's climate has shifted from the cooler and damper conditions of the last glacial period to the warmer and dryer conditions of the Holocene interglacial. While continental ice sheets covered the interior of northern North America, Orange County ice free.

ENVIRONMENTAL SETTING

Located in Orange County, the City of Santa Ana is situated approximately 30 miles south of Los Angeles and 14 miles east of Alamitos Bay. The Santa Ana River flows southwest through the city to the Pacific Ocean. The Santa Ana Mountains, a north-south trending range, and the Cleveland National Forest lies to the east. Cities bordering Santa Ana are Tustin to the east, Garden Grove and Orange to the north, Westminster to the west, and Fountain Valley to the south.

The native vegetation consisted of coastal sage scrub but this has largely been removed in modern times. Characteristic species of the California coastal sage scrub include California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis* var. *consanguinea*), California buckwheat (*Eriogonum fasciculatum*), lemonade berry (*Rhus integrifolia*), poison oak (*Toxicodendron diversiloba*), purple sage (*Salvia leucophylla*), and black sage (*Salvia mellifera*; Ornduff et al. 2003). Additional common species include brittlebush (*Encelia californica*), chamise (*Adenostoma fasciculatum*), white sage (*Salvia apiana*), Our Lord's candle (*Hesperoyucca whipplei*), and prickly pear cactus (*Opuntia*; Hall 2007).

Modern vegetation in this portion of Orange County includes grasslands and California coastal sage scrub with non-native species such as Russian thistle mixed in. Eucalyptus trees planted at home-sites throughout California dating to the turn-of-the-century were noted in the area. Native fauna of the region includes mule deer (*Odocoileus hemionus*), pronghorn (‡*Antilocapra americana*), bobcat (*Lynx rufus*), mountain lion (*Felis concolor*), coyote (*Canis latrans*), rabbits (Lepus californicus, Sylvilagus audubonii, Sylvilagus bachmani), desert tortoise (*Gopherus agassizii*), and numerous other species.

The climate of Santa Ana is Mediterranean, ranging from cool, moist winters to dry, hot summers. Mild breezes reach the area from the Pacific Ocean, located west of the Project location. It is unlikely that the climate of prehistoric times varied from that of the present-day.

Today the most restricted conifers (Monterey cypress and Torrey pine), only inhabit locations on the coasts with cool, moist summers characterized by abundant sea fog. These locations

experience a mean summer high temperature of 70 ºF - 83ºF (21.1 ºC - 28.3ºC). Winters are cool and damp with average precipitation of 10.59" - 32.41" (26.90cm - 82.32cm). Cold water upwellings due to submarine canyons adjacent to the shore near the relict populations create these conditions (Weather Underground 2014; Weather Channel 2019).

PREHISTORIC SETTING

Approaches to prehistoric frameworks have changed over the years from being based on material attributes to radiocarbon chronologies to association with cultural traditions. Archaeologists defined a material complex consisting of an abundance of milling stones (for grinding food items) with few projectile points or vertebrate faunal remains dating from about 7,000 to 3,000 years before the present as the "Millingstone Horizon". Later, the "Millingstone Horizon" was redefined as a cultural tradition named the Encinitas Tradition with various regional expressions including Topanga and La Jolla. Use by archaeologists varied as some adopted a generalized Encinitas Tradition without regional variations, some continued to use "Millingstone Horizon" and some used Middle Holocene (the time period) to indicate this observed pattern (Sutton and Gardner 2010:1-2).

Recently, the fact that generalized terminology is suppressing the identification of cultural, spatial and temporal variation and the movement of peoples throughout space and time was noted. These factors are critical to understanding adaptation and change (Sutton and Gardner 2010:1-2).

The latest cultural revisions for the Project Area define traits for time phases of the Greven Knoll pattern of the Encinitas Tradition applicable to the Pasadena area (Sutton and Gardner 2010; Table 1). This pattern is replaced in the Project Area by the Angeles pattern of the Del Rey Tradition later in time (Sutton 2010; Table 1). Each pattern has subdivisions as identified by specific changes in cultural assemblages through time. Phases are identified by their archaeological signatures in components within sites.

Greven Knoll sites tend to be in valleys similar to areas like the Project Area. These inland peoples did not switch from manos/metates to pestles/mortars like coastal peoples (c. 5,000 years before present); this may reflect their closer relationship with desert groups who did not exploit acorns.

Table 1. Culture Chronology

PATTERN	PHASE	DATES (BP)	MATERIAL TRAITS	OTHER TRAITS
Encinitas	Greven Knoll I	8,500 to 4,000	Abundant manos and metates, Pinto dart points for atlatls or spears, charmstones, cogged stones and discoidals rare, no mortars or pestles, general absence of shell artifacts	No shellfish, hunting important, flexed inhumations, cremations rare
	Greven Knoll II	4,000 to 3,500	Abundant manos and metates, Elko dart points for atlatls or spears, core tools, late discoidals, few mortars and pestles, general absence of shell artifacts	No shellfish, hunting and gathering important, flexed inhumations, cremations rare
Angeles	Angeles I	3,500 to 2,600	Appearance of Elko dart points and an increase in the overall number of projectile points from Encinitas components; beginning of large-scale trade in small steatite artifacts (effigies, pipes, and beads) and *Olivella* shell beads from the southern Channel Islands; appearance of single-piece shell fishhooks and bone harpoon points; Coso obsidian becomes important; appearance of donut stones	appearance of a new biological population (Takic proto-Gab/Cupan language), apparent population increase; fewer and larger sites along the coast; collector strategy; less overall dependence on shellfish but fishing and terrestrial hunting more important; appearance of flexed and extended inhumations without cairns, cremations uncommon
	Angeles II	2,600 to 1,600	Continuation of basic Angeles I material culture with the addition of mortuary features containing broken tools and fragmented cremated human bone; fishhooks become more common	continuation of basic Angeles I settlement and subsistence systems; appearance of a new funerary complex
	Angeles III	1,600 to 1,250	Appearance of bow and arrow technology (e.g., Marymount or Rose Spring points); changes in *Olivella* beads; asphaltum becomes important; reduction in obsidian use; Obsidian Butte obsidian largely replaces Coso	larger seasonal villages; flexed primary inhumations but no extended inhumations and an increase in cremations; appearance of obsidian grave goods; possible expansion into eastern Santa Monica Mountains, replacing Topanga III groups
	Angeles IV	1,250 to 800	Cottonwood points appear; some imported pottery appears; birdstone effigies at the beginning of the phase and "spike" effigies dropped by the end of the phase; possible appearance of ceramic pipes	change in settlement pattern to fewer but larger permanent villages; flexed primary inhumations continue, cremations uncommon; expansion into the San Gabriel Mountains, displacing Greven Knoll III groups

PATTERN	PHASE	DATES (BP)	MATERIAL TRAITS	OTHER TRAITS
	Angeles V	800 to 450	Trade of steatite artifacts from the southern Channel Islands becomes more intensive and extensive, with the addition or increase in more and larger artifacts, such as vessels and comals; larger and more elaborate effigies	strengthening of ties, especially trade, with southern Channel Islands; expansion into the northern Santa Ana Mountains and San Joaquin Hills; development of mainland dialects of Gabrielino
	Angeles VI	450 to 150	Addition of Euroamerican material culture (e.g., glass beads and metal tools), locally made pottery, metal needle-drilled *Olivella* beads	change of settlement pattern, movement close to missions and ranches; use of domesticated species obtained from Euroamericans; flexed primary inhumations continue, cremations uncommon to the north (nearer the Chumash) but somewhat more common to the south (nearer the Luiseño); apparent adoption of Chingichngish religion

The Greven Knoll toolkit is dominated by manos and metates throughout its extent. In Phase I, other typical characteristics were pinto dart points for atlatls or spears, charmstones, cogged stones, absence of shell artifacts and flexed position burials (Table 1). In Phase II, Elko dart points for atlatls or spears and core tools are observed along with increased indications of gathering (Table 1). In addition, the Greven Knoll populations are biologically Yuman (based on skeletal remains) while the later Angeles populations are biologically Shoshonean (Sutton and Gardner 2010, Sutton 2010).

The Angeles pattern generally is restricted to the mainland and appears to have been less technologically conservative and more ecologically diverse, with a largely terrestrial focus and greater emphases on hunting and nearshore fishing. In Angeles Phase I, Elko points for atlatls or darts appear, small steatite objects such as pipes and effigies from Catalina are found, shell beads and ornaments increase, fishing technologies increase including bone harpoons/fishhooks and shell fishhooks, donut stones appear, and hafted micro blades for cutting/graving wood or stone appear. In addition, several Encinitas (Topanga) traits, such as discoidals, cogged stones, plummet-like charm stones and cairn burials (see Sutton and Gardner 2010: Table 1) virtually disappear from the record. Mortuary practices changed to consist of primarily flexed primary inhumations, with extended inhumations becoming less common. Settlement patterns made a shift from general use sites being common to habitation areas separate from functional work areas. Subsistence shifted from mostly collecting to increased hunting and fishing (Sutton 2010).

The Angeles Phase II is identified primarily by the appearance of a new funerary complex, with other characteristics similar to Angeles I. The complex features killed (broken) artifacts including manos, metates, bowls, mortars, pestles, points and others plus highly fragmented cremated human bones and a variety of faunal remains. In addition to the cremains, the other material also often burned. None of the burning was performed in the burial feature (Sutton 2010).

The Angeles III Phase is the beginning of what has been known as the Late Period and is marked by several changes from Angeles I and II. These include the appearance of small projectile points, steatite shaft straighteners and increased use of asphaltum all reflecting adoption of bow and arrow technology, obsidian sources changed from mostly Coso to Obsidian Butte and shell beads from Gulf of California species began to appear. Subsistence practices continued as before and the geographic extent of the Angeles Pattern increased (Sutton 2010).

Angeles Phase IV is marked by new material items including Cottonwood points for arrows, Olivella cupped beads and Mytilus shell disks, birdstones (zoomorphic effigies with magico-religious properties) and trade items from the Southwest including pottery. It appears that populations increased and that there was a change in the settlement pattern to fewer but larger permanent villages. Presence and utility of steatite vessels may have impeded the diffusion of pottery into the Los Angeles Basin. The settlement pattern altered to one of fewer and larger permanent villages. Smaller special-purpose sites continued to be used (Sutton 2010).

Angeles V components contain more and larger steatite artifacts, including larger vessels, more elaborate effigies and comals. Settlement locations shifted from woodland to open grasslands. The exploitation of marine resources seems to have declined and use of small seeds increased. Many Gabrielino inhumations contained grave goods while cremations did not (Sutton 2010).

The Angeles VI phase reflects the ethnographic mainland Gabrielino of the post-contact (i.e., post-A.D. 1542) period. One of the first changes in Gabrielino culture after contact was undoubtedly population loss due to disease, coupled with resulting social and political disruption. Angeles VI material culture is essentially Angeles V augmented by a number of Euroamerican tools and materials, including glass beads and metal tools such as knives and needles (used in bead manufacture). The frequency of Euroamerican material culture increased through time until it constituted the vast majority of materials used. Locally produced brownware pottery appears along with metal needle-drilled Olivella disk beads (Sutton 2010).

The ethnographic mainland Gabrielino subsistence system was based primarily on terrestrial hunting and gathering, although nearshore fish and shellfish played important roles. Sea mammals, especially whales (likely from beached carcasses), were prized. In addition, a number

of European plant and animal domesticates were obtained and exploited. Ethnographically, the mainland Gabrielino practiced interment and some cremation (Sutton 2010).

ETHNOGRAPHY

Project Area is located within the traditional territory of the Gabrielino (Tongva) who were semi-sedentary hunters and gatherers (Figure 4). The Gabrielino speak a language that is part of the Takic language family. Their territory encompassed a vast area stretching from Topanga Canyon in the northwest, to the base of Mount Wilson in the north, to San Bernardino in the east, Aliso Creek in the southeast and the Southern Channel Islands, in all an area of more than 2,500 square miles (Bean and Smith 1978, McCawley 1996). At European contact, the tribe consisted of more than 5,000 people living in various settlements throughout the area. Some of the villages could be quite large, housing up to 150 people.

The Gabrielino are considered to have been one of the wealthiest tribes and to have greatly influenced tribes they traded with (Kroeber 1976:621). Houses were domed, circular structures thatched with tule or similar materials (Bean and Smith 1978:542). The best known artifacts were made of steatite and were highly prized. Many common everyday items were decorated with inlaid shell or carvings reflecting an elaborately developed artisanship (Bean and Smith 1978:542).

The main food zones utilized were marine, woodland and grassland (Bean and Smith 1978). Plant foods were, by far, the greatest part of the traditional diet at contact. Acorns were the most important single food source. Villages were located near water sources necessary for the leaching of acorns, which was a daily occurrence. Grass seeds were the next most abundant plant food used along with chia. Seeds were parched, ground, and cooked as mush in various combinations according to taste and availability. Greens and fruits were eaten raw or cooked or sometimes dried for storage. Bulbs, roots, and tubers were dug in the spring and summer and usually eaten fresh. Mushrooms and tree fungus were prized as delicacies. Various teas were made from flowers, fruits, stems, and roots for medicinal cures as well as beverages (Bean and Smith 1978:542).

The principal game animals were deer, rabbit, jackrabbit, woodrat, mice, ground squirrels, antelope, quail, dove, ducks, and other birds. Most predators were avoided as food, as were tree squirrels and most reptiles. Trout and other fish were caught in the streams, while salmon were available when they ran in the larger creeks. Marine foods were extensively utilized. Sea mammals, fish, and crustaceans were hunted and gathered from both the shoreline and the open ocean, using reed and dugout canoes. Shellfish were the most common resource, including abalone, turbans, mussels, clams, scallops, bubble shells, and others (Bean and Smith 1978:542).

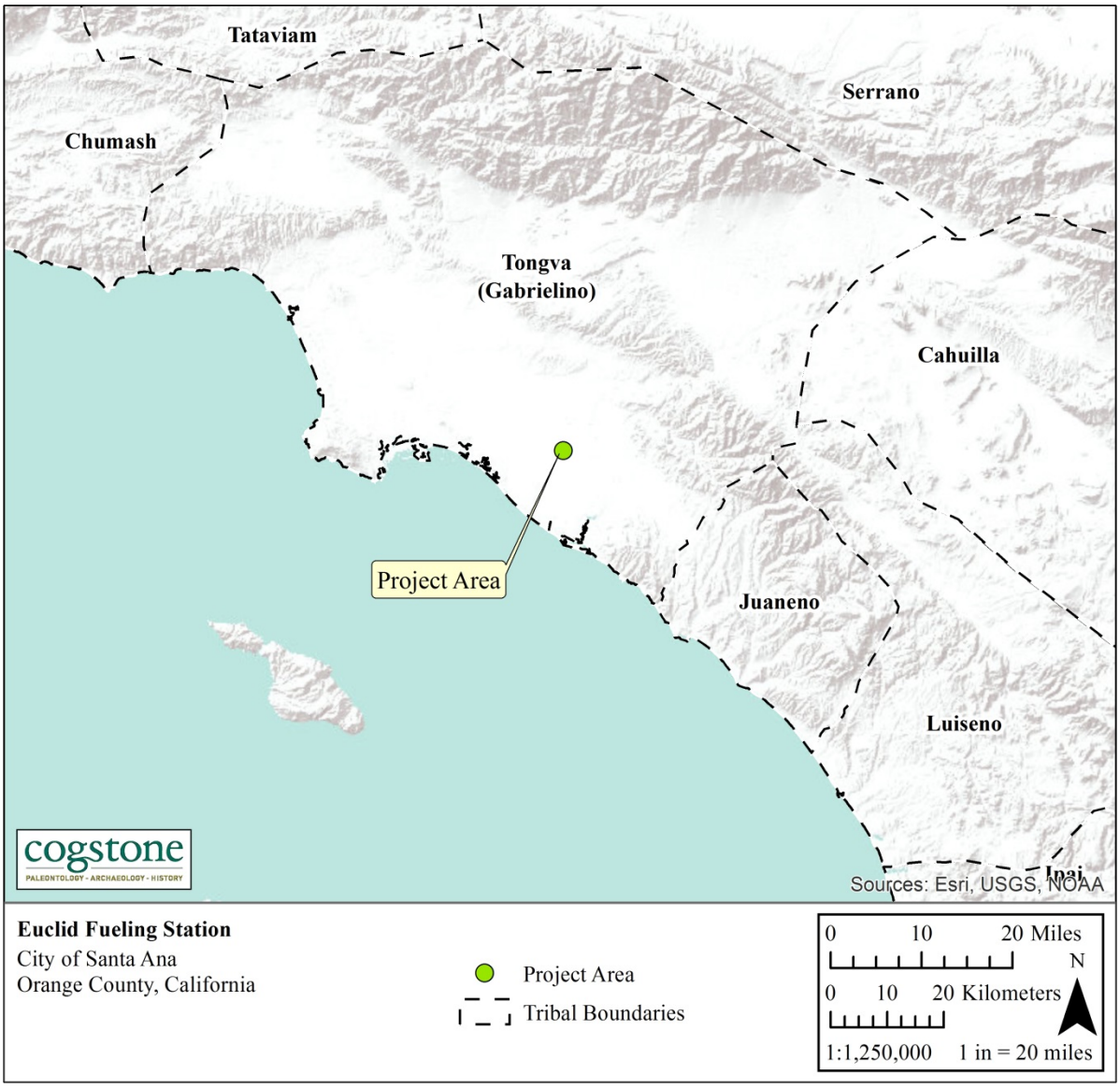

Figure 4. Tribal boundary map

HISTORIC SETTING

In 1769, Spanish settlers began to enter and colonize Alta California. These initial settlers introduced the missions, presidios, pueblos, and ranchos (Figure 5). The Project Area was once under the control of San Gabriel Mission. After Mexico declared independence from Spain, the missions were secularized and their lands redistributed. In many cases lands were granted to veterans of military service.

In 1834, the 33,460-acre Rancho Las Bolsas given to Maria Catarina Ruiz, the daughter-in-law of Manuel Nieto who had originally received the land in 1784 as part of an approximately 300,000 acre grant from Mexican California Governor Felipe de Neve (Amigos de Bolsa Chica 2019; Westfall 2003). Bureau of Land Management Government Land Office records show that patent to the rancho was granted to Juan Abila and six others in March of 1851 (see Table 7). By 1860, Abel Stearns had become the sole owner of Rancho Las Bolsas. In 1869, a settler from Kentucky , William H. Spurgeon, purchased 74.2 acres of land in the adjacent Rancho Santiago de Santa Ana Land Grant and founded the town of Santa Ana. The city was reincorporated under the Municipal Corporation Act in 1887 (Amigos de Bolsa Chica 2019; Westfall 2003).

PROJECT AREA HISTORY

Euclid Street and Hazard Avenue are first visible in the 1935 Garden Grove (1:31,680) USGS topographic quadrangle. The earliest available United States Department of Agriculture (USDA) aerial photograph dates to 1953 and depicts the Project Area as empty except for a number of trees. The 1972 USDA photograph shows a large structure in the northeast corner of the Project Area and the 1994 photograph contains a dark patch, likely a lawn or garden, adjacent to the structure to the west. The structure is present in the 2005 USDA photograph but was removed prior to the 2009 USDA photograph, after which no significant changes are visible in the Project Area (Historic Aerials 2019).

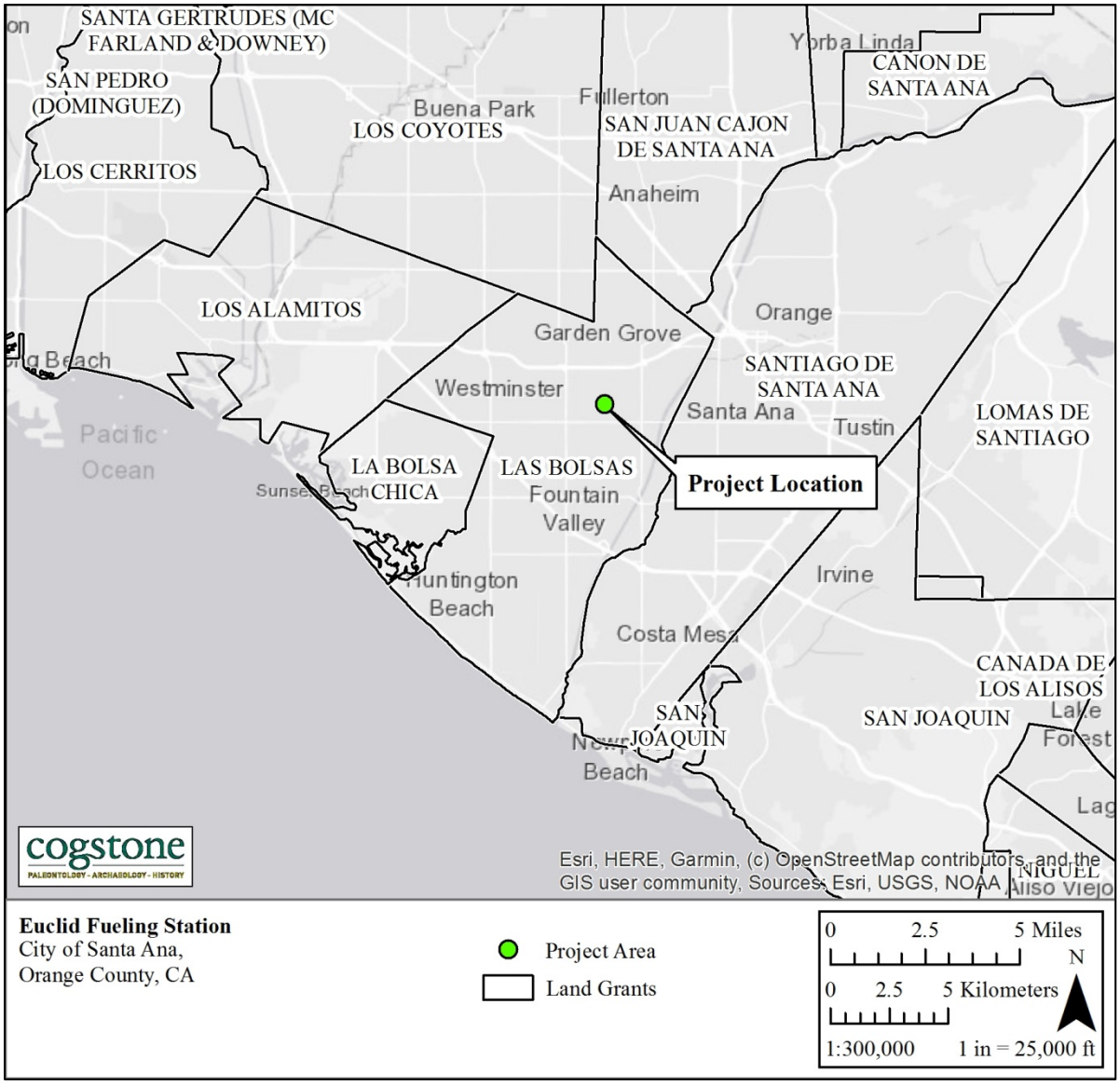

Figure 5. Land grant map

RECORDS SEARCH

PALEONTOLOGICAL RECORDS SEARCH

Cogstone requested a records search from the Natural History Museum of Los Angeles County, Department of Vertebrate Paleontology (LACM) that covered the Project Area as well as a one mile radius (McLeod 2019; Appendix B). Online databases including the Natural History Museum of Los Angeles County, Department of Invertebrate Paleontology (LACMIP 2019), the Paleobiology Database (PBDB 2019), and the University of California Museum of Paleontology

Database (UCMP 2019) were also searched for localities near to the Project. Print resources including published material (Hay 1927; Jefferson 1991a, 1991b) were searched for fossil localities.

HOLOCENE FOSSILS

Results of the record search indicate that no previous fossil localities have been recorded within the Project boundaries. A Holocene peat locality was recovered a little less than five miles to the southwest of the Project (LACM 4018; McLeod 2019), however, the estuary that had produced the peat did not reach as far inland as Santa Ana (Table 2; Fairchild and Weibe 1976:337).

LATE PLEISTOCENE FOSSILS

Pleistocene fossils of mammoths (*Mammuthus* sp.), elephant (Proboscidea), camels (Camelidae), and bison (*Bison* sp.) are known from Orange County as shallow as six to eight feet below the current ground surface (Table 2; McLeod 2011, 2019). Hundreds of late Pleistocene vertebrate fossils from Irvine adjacent to the San Joaquin Marsh have been collectively placed in the San Joaquin Marsh Local Fauna (Table 3). Fossils have been recovered between eight to 25 feet below the modern surface (Michalsky and Sample 2002, Reynolds 2003, Staley 2003, Commendador-Dugeon et al. 2006a, 2006b, DeBusk and Seckel 2007, DeBusk 2008, Lander 2008, Scott and Gust 2008, Gust and Scott 2009, Smith 2009). Fossils of Harlan's ground sloth (*Paramylodon harlani*), dire wolf (*Canis dirus*), sabertoothed cat (*Smilodon fatalis*), American lion (*Panthera atrox*), Pacific mastodon (*Mammut pacificus*; Dooley et al. 2019), Columbian mammoth (*Mammuthus columbi*), Western horse (*Equus occidentalis*), California tapir (*Tapirus californicus*), stilt-legged llama (*Hemiauchenia macrocephala*), llama (*Paleolama* sp.?), yesterday's camel (*Camelops hesternus*), long-horned bison (*Bison* spp. cf. *B. latifrons*), and antique bison (*Bison antiquus*) have been recovered (Table 3).

Planned grading for the Project will not be deep enough to impact the San Pedro Formation mentioned by McLeod (2019; LACM 76547-7659).

Table 2. Late Pleistocene Fossils near the Project Exclusive of the San Joaquin Marsh Local Fauna, Irvine

COMMON NAME	TAXON	DEPTH* (FEET)	AGE/ DATES	LOCALITY	LOCATION	REFERENCE
late Holocene peat						
invertebrates, reptiles, birds, rodents, horses, deer	unlisted	4 to 8	late Holocene	LACM 4018	Intersection of Warner Ave and Golden West St, Huntington Beach	McLeod 2019
Pleistocene alluvium						
mammoth	† *Mammuthus* sp.	unknown	Pleistocene	LACM 6746	7th Street west of Pacific Coast Highway, Long Beach	McLeod 2011
mammoth	† *Mammuthus* sp.	6 to 8	late Pleistocene	LACM 65113	Warner Ave, close to Bolsa Chica St, Huntington Beach	McLeod 2019
bison	† *Bison* sp.	14 to 20				
mammoth	† *Mammuthus* sp.	~15	Pleistocene	LACM 1339	Adams Ave east of the Santa Ana River, Costa Mesa	McLeod 2011
camel	† Camelidae					
camel	† Camelidae	~30	Pleistocene	LACM 4219	Roadcut for Newport Blvd near Santa Isabel Ave, Costa Mesa	McLeod 2011
turtle	Testudinata					
elephant	† Proboscidea	unknown	Pleistocene	LACM 3267	Near Anaheim Ave and 19th St, Costa Mesa	McLeod 2011

† = *the only taxon that this could represent is extinct although the Family or genus may still be extinct*
* Depth is below original ground surface

Table 3. Late Pleistocene Vertebrates from the San Joaquin Marsh Local Fauna, Irvine

GROUP	COMMON NAME	TAXON
Amphibians	arboreal salamander	*Aneides lugubris*
Reptiles	alligator lizard	*Elgaria* (*Gerrhonotus*) sp.
	lizards	Lacertilla
	ring-necked snake	*Diadophis* sp.?
	pine snake	*Pituophis melanoleucus*
	constrictor snake family	Colubridae
	rattlesnake	*Crotalus* spp.
Birds	duck	*Anas* spp.
	western black vulture	† *Coragyps occidentalis*
Rabbits	black-tailed jackrabbit	*Lepus californicus*
	desert cottontail	*Sylvilagus audubonii*
	brush rabbit	*Sylvilagus bachmani*
Rodents	California ground squirrel	*Spermophilus beecheyi*
	Botta's pocket gopher	*Thomomys bottae*
	Pacific kangaroo rat	*Dipodomys agilis*
	harvest mouse	*Reithrodontomys megalotus*
	deer mouse	*Peromyscus maniculatus*
	imperfect mouse	† *Peromyscus imperfectus*
	southern grasshopper mouse	*Onychomys torridus*
	dusky footed wood rat	*Neotoma fuscipes*
	desert wood rat	*Neotoma lepida*
	California meadow vole	*Microtus californicus*
	rodents	Rodentia
Carnivores	long-tailed weasel	*Mustela frenata*
	striped skunk	*Mephitis mephitis*
	badger	*Taxidea taxus*
	sea otter	*Enhydra lutris*
	coyote	*Canis latrans*
	dire wolf	† *Canis dirus*
	grey fox	*Urocyon cinereoargenteus*
	raccoon	*Procyon lotor*
	black bear	‡ *Ursus americanus*
	bobcat	*Lynx rufus*
	sabertoothed cat	† *Smilodon fatalis*
	American lion	† Panthera atrox
Ground sloths	Harlan's ground sloth	† *Paramylodon harlani*
Proboscideans	American mastodon	† *Mammut americanum*
	Columbian mammoth	† *Mammuthus columbi*
Perissodactyls	cf. western horse	† *Equus occidentalis*
	California tapir	† *Tapirus californicus*
	peccary	‡ *Platygonus* cf. *P. compressus*

GROUP	COMMON NAME	TAXON
Artiodactyls	stilt-legged llama	† *Hemiauchenia macrocephala*
	llama	† *Paleolama* sp.?
	yesterday's camel	† *Camelops hesternus*
	camel	† *Camelops* sp.
	cf. mule deer	*Odocoileus* cf. *O. hemionus*
	diminutive pronghorn	† *Capromeryx minor*
	bison cf. long-horned bison	† *Bison* spp. cf. *B. latifrons*
	antique bison	† *Bison antiquus*
	bison	† *Bison* spp.
	bovid	Bovidae † ?*Bootherium* sp. or † *Bison* sp.
† = the only taxon that this could represent is extinct although the Family or genus may still be extinct ‡ = animal extirpated from the Los Angeles valley areas and Tustin Plain in Orange County Fossils were recovered from 8 to 25 feet below the original ground surface. Irvine Business Center Projects: Campus Center Apts and expansion, Carlyle at Colton Plaza, Central Park West, Forest City, Park Place, The Plaza, Plaza Irvine Condos, Scholle, Toscana, Villa Sienna, Watermarke References: Michalsky and Sample 2002, Reynolds 2003, Staley 2003, Commendador-Dugeon et al. 2006a, 2006b, DeBusk and Seckel 2007, DeBusk 2008, Lander 2008, Scott and Gust 2008, Gust and Scott 2009, Smith 2009		

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

The purpose of the records search is to identify all previously recorded cultural resources (prehistoric and historic archaeological sites, historic buildings, structures, objects, or districts) within the Project Area. All cultural resources as well as cultural resource surveys performed within the city boundaries were reviewed.

Nancy de la Cruz, a Cogstone employee, performed a search for cultural and historical records on August 14, 2019 at the South Central Coastal Information Center (SCCIC) of the California Historical Resource Information System (CHRIS) located on the campus of CSU Fullerton (Table 4). The Project Area is located within the Anaheim USGS 7.5' topographic quadrangle and the search area also extended onto the Newport Beach USGS 7.5' topographic quadrangle. The results of the record search indicated that no previous studies have been completed within the Project Area, and seventeen cultural resource investigations have been completed previously within a one-mile radius of the Project Area (Table 4).

Table 4. Previous Cultural Studies Within a One-Mile Radius of Project Area

REPORT NO. (OR-)	AUTHOR(S)	TITLE	YEAR	USGS QUAD MAP(S)
00572	Archaeological Planning Collaborative	Archaeological Assessment of the Euclid and Hazard, Garden Grove Property, Garden Grove, California	1980	Anaheim
01813	Bonner, Wayne H.	Cultural Resources Records Search and Literature Review Report for a Pacific Bell Mobile Services Telecommunications Facility: Cm 009-21 in the City of Garden Grove, California	1998	Anaheim
01949	Padon, Beth, McLean, Deborah, and Strudwick, Ivan	Cultural Resource Assessment for the City of Garden Grove	1995	Anaheim, Los Alamitos, Newport Beach
01954	Padon, Beth	Archaeological Archival Review and Survey of the Co 5 and Co 6 Flood Control Channels, Anaheim, Newport, and Seal Beach USGS 7.5' Quadrangles, Orange County, California	1996	Anaheim, Newport Beach, Seal Beach
02186	Lapin, Philippe	Cultural Resource Assessment for Pacific Bell Wireless Facility Cm 291-02, County of Orange	2000	Anaheim, Newport Beach
02738	Duke, Curt	Cultural Resource Assessment AT & T Wireless Services Facility No. 13045b Orange County, California	2002	Anaheim
02769	Billat, Lorna	Nextel Communications Wireless Telecommunications Service Facility CA-6638a Orange County, California	2000	Newport Beach
03019	Bonner, Wayne H.	Cultural Resource Records Search Results and Site Visit for T-Mobile Telecommunications Facility Candidate La02835 (California Custom Lift) 13812 West Street, Garden Grove, Orange County, California	2006	Anaheim
03024	Bonner, Wayne H.	Cultural Resources Records Search and Site Visit for T-Mobile Candidate La03008 (Saigon Market) 10131 Westminster Avenue, Garden Grove, Orange County, California	2005	Anaheim
03070	Bonner, Wayne H.	Indirect Ape Historic Architectural Assessments for Sprint Telecommunications Facility Candidate Og60xc612d (Hazard) 10541 Bolsa Avenue, Garden Grove, Orange County, California	2004	Newport Beach
03076	Bonner, Wayne H.	Cultural Resources Records Search Results and Site Visit for T-Mobile Candidate La03002f (Ngon Restaurant), 10522 Mcfadden Avenue, Garden Grove, Orange County, California	2005	Newport Beach
03452	Bonner, Wayne H.	Cultural Resource Records Search and Site Visit Results for T-mobile Candidate La03862c (Saint Barbara Church), 5306 Mcfadden Avenue, Santa Ana, Orange County, California	2006	Newport Beach

REPORT NO. (OR-)	AUTHOR(S)	TITLE	YEAR	USGS QUAD MAP(S)
03520	Bonner, Wayne H.	Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate LA33321C (Rosita Park Lt. Standard), 4600 West Hazard Avenue, Santa Ana, Orange County, California	2009	Anaheim
03776	Padon, Beth	Historic Property Survey Report for Harbor Boulevard Smart Street Improvements, City of Garden Grove, Orange County, California.	2000	Anaheim, Newport Beach
03889	Dice, Michael	A Cultural Resources Assessment: The Newhope Street Resurfacing Project, Edinger Avenue to Westminster Avenue, City of Santa Ana, California	2003	Anaheim, Newport Beach
04435	Bonner, Diane, Wills, Carrie, and Crawford, Kathleen	Cutural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate LA03862C (St. Barbara Church RL) 730 3/4 South Euclid Street, Santa Ana, Orange County, California	2014	Newport Beach
04469	Bonner, Wayne and Crawford, Kathleen	Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate LA02631A (SM320 Lincoln Plaza) 10872 Westminster Avenue, Garden Grove, Orange County, California	2012	Anaheim

The records search also determined eleven previously recorded resources are located within the 1-mile radius of the Project Area (Table 5). All of these are historic architectural resources.

Table 5. Recorded Built Environment Resources Within One-Mile Radius of the Project Area

PRIMARY NO. (P-30-)	RESOURCE TYPE	DESCRIPTION	ADDRESS	DISTANCE FROM PROJECT AREA
157430	Historic	Single family residence constructed in 1912	11062 Trask Avenue, Santa Ana	Within 1-mile
176918	Historic	Single family residence constructed in 1947	3802 West Westminster Boulevard, Santa Ana	Within 1-mile
176921	Historic	Single family residence constructed in 1941	1221 North Harbor Boulevard, Santa Ana	Within 1-mile
176922	Historic	Single family residence constructed in 1947	1209 North Harbor Boulevard, Santa Ana	Within 1-mile
176923	Historic	Single family residence constructed in 1949	913 North Harbor Boulevard, Santa Ana	Within 1-mile

PRIMARY NO. (P-30-)	RESOURCE TYPE	DESCRIPTION	ADDRESS	DISTANCE FROM PROJECT AREA
176924	Historic	Single family residence constructed in 1950	322 North Harbor Boulevard, Santa Ana	Within 1-mile
176925	Historic	Single family residence constructed in 1947	406 North Harbor Boulevard, Santa Ana	Within 1-mile
176926	Historic	Commercial drive-in fast food restaurant constructed in 1912	426 North Harbor Boulevard, Santa Ana	Within 1-mile
177024	Historic	Single family residence constructed in 1916	11271 Trask Avenue, Santa Ana	Within 1-mile
177500	Historic	Commercial recreational vehicle repair and retail facility constructed in 1966	815 North Harbor Boulevard, Santa Ana	Within 1-mile
177514	Historic	Church facility constructed in 1965	730 3/4 South Euclid Street., Santa Ana	Within 1-mile

OTHER CULTURAL SOURCES

In addition to the SCCIC records search, a variety of sources were consulted in August 2019 to obtain information regarding the archaeological and historical context of the Project Area (Table 6). Sources included the National Register of Historic Places (NRHP), the California Register of Historic Resources (CRHR), California Historical Landmarks (CHL), and California Points of Historical Interest (CPHI). Specific information about the Project Area, obtained from historic-era maps and aerial photographs, is presented in the Project Area History section.

Table 6. Additional Archaeological Sources Consulted

SOURCE	RESULTS
National Register of Historic Places (NRHP; 1979-2002 & supplements)	Negative
Historic USGS Topographic Maps	A network of roads in the greater area surrounding the Project Area is visible in the Anaheim 1:62,500 map in 1896. Between 1902 (Corona; 1:125,000) and 1950 (Anaheim 7.5') the vicinity begins to fill in with additional buildings and smaller streets. Euclid Street and Hazard Avenue are first visible in the 1935 Garden Grove (1:31,680) map. Few other changes are noted on the maps until the 1974 Anaheim 7.5' map which shows the area almost entirely urbanized. No additional changes to the Project Area are noted in the most recent maps (Anaheim 7.5', 1981 and Santa Ana 1:100,000, 1983)
Historic US Department of Agriculture Aerial Photographs	The earliest available aerial photograph dates to 1953 and depicts the Project Area as empty except for a number of trees. The photograph from 1972 shows a large structure in the northeast corner of the Project Area. The 1994 photograph contains a darker patch, likely a lawn or garden, adjacent to the structure to the west. The structure in present in the 2005 image but was removed prior to the 2009 image, after which no significant changes are visible in the Project Area (Historic Aerials 2019).
California Register of Historical Resources (CRHR; 1992-2014)	Negative
California Historical Resources Inventory (CHRI; 1976-2014)	Negative
California Historical Landmarks (CHL; 1995 & supplements to 2014)	Negative
California Points of Historical Interest (CPHI; 1992 to 2014)	Negative
Bureau of Land Management (BLM) General Land Office Records	Positive, see Table 7

Table 7. BLM General Land Office Records

NAME(S)	YEAR	ACCESSION NO.	T; R; SECTION
Abila, Juan, Soledad Yorba Abila, Christobal Aguilar Dolores Yorba Aguilar Julian Chaves Dominga Yorba Ramon Yorba	1851	CACAAA 084785	T: 5S; R: 10W, Section 9

SACRED LANDS FILE SEARCH

Cogstone requested a Sacred Lands File (SLF) search from the Native American Heritage Commission (NAHC) on August 15, 2019. The NAHC responded on September 5, 2019, that the Project Area is negative for known sacred sites or resources. The NAHC provided a list of 17 tribal organizations to be contacted for more information on the potential for tribal resources and sacred sites within the vicinity of the Project (Appendix C). The City is conducting Native American consultation in conformance with Assembly Bill 52 (AB 52).

SURVEY

SURVEY METHODS

The purpose of the survey is to assess the potential for the Project Area to contain subsurface resources and to confirm that field observations conform to the prehistoric, historic, and geological maps of the Project Area. All undeveloped ground surface areas that may be impacted within the proposed Project Area are examined for fossils and artifacts (e.g., historic debris such as cans and bottles, flaked stone tools, tool-making debris, stone milling tools or fire-affected rock), soil discoloration that might indicate the presence of an archaeological midden, soil depressions and features indicative of the former presence of structures or buildings (e.g., postholes, foundations). Portions of the Project Area where potentially fossiliferous sediments were present at the surface or where existing ground disturbances (e.g., cutbanks, ditches, animal burrows, etc.) incised into potentially fossiliferous sediments were intensely surveyed. Photographs of the Project Area, including ground surface visibility and items of interest, are taken with a digital camera.

SURVEY RESULTS

Cogstone archaeologist, Logan Freeberg, completed an intensive pedestrian survey of the Project Area on August 22, 2019. At the time of the survey, the Project Area was level and contained no permanent structures (Figures 6 and 7). A transient encampment was located on the western side of the Project Area near the southwest corner of the property (Figure 8). Large tents and tarps were used to create shelters and multiple piles of refuse were placed around the shelters with some spreading out to other parts of the Project Area. Excluding areas hidden as a result of the encampment, ground visibility was generally very good averaging approximately 90%. The Project Area had been cleared and disked prior to the transient encampment being established. Transects were walked at 2-meter intervals, given the relatively small size of the survey area.

At the surface, the soil is light brown silty loam (Figure 9). All stone/rock material was sub-angular to well-rounded (pebbles to very small cobbles). The few plants within the Project Area consisted of non-native weeds of various types.

No cultural or fossil resources were observed during the pedestrian survey.

Figure 6. Overview of the southeast corner of the Project Area, view southeast

Figure 7. Overview of the eastern portion of the Project Area, view east

Figure 8. Southern wall of Project Area with transient encampment at right, view south

Figure 9. Surface soils within the Project Area

SENSITIVITY ANALYSIS

PALEONTOLOGICAL SENSITIVITY

A multilevel ranking system was developed by professional resource managers within the BLM as a practical tool to assess the sensitivity of sediments for fossils. The Potential Fossil Yield Classification (PFYC) system (BLM 2016; Appendix D) has a multi-level scale based on demonstrated yield of fossils. The PFYC system provides additional guidance regarding assessment and management for different fossil yield rankings.

Fossil resources occur in geologic units (e.g., formations or members). The probability for finding significant fossils in a Project area can be broadly predicted from previous records of fossils recovered from the geologic units present in and/or adjacent to the study area. The geological setting and the number of known fossil localities help determine the paleontological sensitivity according to PFYC criteria

All alluvial deposits may increase or decrease in fossiliferous potential depending on how coarse the sediments are. Sediments that are close to their basement rock source are typically coarse;

those farther from the basement rock source are finer. The chance of fossils being preserved greatly increases once the average size of the sediment particles is reduced to 5 mm or less in diameter. Moreover, fossil preservation also greatly increases with rapid burial in flood-plains, rivers, lakes, oceans, etc. Remains left on the ground surface become weathered by the sun or consumed by scavengers and bacterial activity, usually within 20 years or less. So the sands, silts, and clays of flood-plains, rivers, lakes, and oceans are the most likely sediments to contain fossils.

Using the PFYC system, geologic units are classified according to the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts within the known extent of the geological unit. Although significant localities may occasionally occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher PFYC value; instead, the relative abundance of localities is intended to be the major determinant for the value assignment.

The artificial fill has no potential to produce scientifically relevant fossils and so are assigned a very low potential for fossils (PFYC 1). Late Pleistocene to Holocene alluvial fan sediments less than eight feet below the modern surface are assigned a low potential for fossils (PFYC 2) due to the lack of fossils in these deposits. Sediments located more than 8 feet below the modern surface are assigned a moderate but patchy potential for fossils (PFYC 3a) due to similar deposits producing fossils at that depth near to the study area (Table 8).

Table 8. Paleontological Sensitivity Rankings

ROCK UNIT	PFYC RANKINGS					
	5 VERY HIGH	4 HIGH	3A MODERATE; PATCHY	3B MODERATE; UNDEMONSTRATED	2 LOW	1 VERY LOW
artificial fill, modern						X
old alluvial fan, late Pleistocene to Holocene					less than 8 feet deep	
old alluvial fan, late Pleistocene to Holocene			more than 8 feet deep			

CULTURAL SENSITIVITY

Based on the results of the pedestrian survey, the cultural records search, and the SLF search, the Project Area is assessed to have low sensitivity for prehistoric cultural resources. Analysis of these data sources and historical USDA aerial photographs indicates that the Project Area has also low sensitivity for buried historical archaeological features such as foundations or trash pits.

CONCLUSIONS AND RECOMMENDATIONS

PALEONTOLOGY

Project sediments include modern fill and late Pleistocene to Holocene alluvial fan. The record search revealed no fossil localities from within the Project or immediate vicinity, however localities are known from the same sediments as found within the study area near to the Project.

The modern fill is assigned a very low potential for fossils (PFYC 1). The late Pleistocene to Holocene alluvial fan sediments less than eight feet below the modern surface are assigned a low potential for fossils (PFYC 2) due to the lack of fossils in these deposits. More than eight feet below the modern surface the late Pleistocene to Holocene alluvial fan deposits are assigned a moderate but patchy potential for fossils (PFYC 3a) due to similar deposits producing fossils at that depth near to the study area.

Planned vertical impacts include removal of approximately five feet of fill from most if not all of the of the Project Area, and excavation for a trench to be approximately 16 feet deep, 20 feet wide and 25 feet long for underground fuel storage tank. Trenches for utilities must be a minimum of three feet deep but will be excavated in newly imported and compacted fill and are unlikely to extend into native sediments. If unanticipated fossil discoveries are made, all work must halt within 50 feet until an Orange County qualified paleontologist can evaluate the find. Work may resume immediately outside of the 50 foot radius.

ARCHAEOLOGY

No cultural resources were identified within the Project Area during survey or during any previous investigations. The CHRIS and SLF searches conducted in support of the Project indicate that no cultural or tribal resources have been previously recorded within the Project Area. These negative findings, in addition to those of desktop research, suggest that the potential for subsurface archaeological deposits is also low. Based on the USDA aerial photographs, the structures visible within the Project Area were constructed between 1953 and 1974 when residential garbage pickup and sewers were common, thus it is unlikely that buried trash pits or privies will be found.

In the event of an unanticipated discovery, all work must be suspended within 50 feet of the find until a qualified archaeologist evaluates it. In the unlikely event that human remains are encountered during Project development, all work must cease near the find immediately.

In accordance with California Health and Safety Code Section 7050.5, the County Coroner must be notified if potentially human bone is discovered. The Coroner will then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she shall contact the Native American Heritage Commission (NAHC) by phone within 24 hours, in accordance with Public Resources Code Section 5097.98. The NAHC will then designate a Most Likely Descendant (MLD) with respect to the human remains. The MLD then has the opportunity to recommend to the property owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and associated grave goods. Work may not resume in the vicinity of the find until all requirements of the health and safety code have been met.

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2019 Vertebrate Paleontology Records Check for paleontological resources for the proposed Euclid Fueling Station Project, Cogstone Project # 4797, in the City of Santa Ana, Orange County, project area. See Appendix B.

Michalsky, J. and L. Sample
2002 Paleontological Mitigation Report for Watermarke Apartments, City of Irvine, Orange County, California. On file LSA, Irvine.

Morton, D. M. and F. K. Miller
2006 Geology map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California; Geology and description of map units, version 1.0. Digital preparation by Cossette, P. M. and K. R. Bovard. USGS Open File Report 2006-1217, scale 1:100,000.

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2003 The Park Place Fauna: a faunal assemblage from Irvine, Orange County, California. 2003 Desert Symposium 66-67.

Scott, E. and K. Springer.
2003 CEQA and fossil preservation in southern California. The Environmental Monitor, Fall 2003, p. 4-10, 17.

Scott, E., K. Springer and J.C. Sagebiel
2004 Vertebrate Paleontology in the Mojave Desert: The Continuing Importance of 'follow-through' in Preserving Paleontologic Resources. In M.W. Allen and J. Reed (eds.), The Human Journey and Ancient Life in California's Deserts: Proceedings from the 2001 Millennium Conference. Ridgecrest: Maturango Museum Pub. 15: 65-70.

Scott, K. and S. Gust
2008 Paleontological Monitoring Report for the Carlyle at Colton Plaza Project, Irvine, California. On file Cogstone Resource Management Inc., Orange, CA.

Smith, B.
2009 Personal Communication, January 2009.

Stewart, J. D.
2003 Paleontological Identification Report / Paleontological Evaluation Report San Diego Freeway (I-405) Improvement Project From State Route (SR) 73 to Interstate 605 (I-605) Orange and Los Angeles Counties, California. On file URS, Irvine, CA; Caltrans District 12, Santa Ana, CA.

Sutton, M. and J. Gardner
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Sutton, M.
2010 The Del Rey Tradition and its Place in the Prehistory of Southern California. *Pacific Coast Archaeological Society Quarterly* 44(2):1-54.

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APPENDIX A. QUALIFICATIONS

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

DESIREÉ RENEÉ MARTINEZ
Task Manager

EDUCATION

1999 M.A., Anthropology (Archaeology), Harvard University, Cambridge
1995 B.A., Anthropology, University of Pennsylvania, Philadelphia

SUMMARY QUALIFICATIONS

Ms. Martinez is a Registered Professional Archaeologist (RPA) with over 20 years of experience in archaeological fieldwork, research, and curation. She has expertise in the planning, implementation, and completion of all phases of archaeological work and has participated in archaeological investigations as a principal investigator, crew member, and tribal monitor. She meets national standards in archaeology set by the Secretary of Interior's *Standards and Guidelines for Archaeology and Historic Preservation.* Her experience also includes compliance with CEQA, NEPA, NHPA Sec. 106, NAGPRA, SB 18, AB 52, and California General Order 131-D exemption. Ms. Martinez has extensive experience consulting with Native American leaders and community members in a variety of contexts.

SELECTED EXPERIENCE

Veterans Affairs Long Beach Health Systems (VALBHS), Cultural Resources Services and Native American Monitoring, City of Long Beach, Los Angeles County, CA. Managed a variety of public works and infrastructure improvements on the VALBHS campus. Services included archaeological surveys, testing, archaeological monitoring, providing and managing Gabrielino (Tongva) Native American monitoring, and compliance reporting. Projects on the campus included an intensive-level archaeological survey utilizing ground penetrating radar and magnetometry to identify subsurface cultural debris, accurately map abandoned utilities, locate a historic trash pit within the Area of Potential Effects (APE). Principal Archaeologist. 2014-2018

Los Angeles Sanitation District On-Call, Los Angeles Department of Public Works (LADPW), Los Angeles, CA. As part of 10 task orders for this on-call contract, conducted archaeological investigations for Joint Outfall A, Joint Outfall B, and Joint Outfall D, produced technical reports, and provided Worker Environmental Awareness Program (WEAP) training for cultural resources sensitivity of construction forces and on-call support during construction. Principal Investigator. 2015-2017

High Desert Corridor/ SR-138 Widening Project, Caltrans District 7/LA Metro, Los Angeles and San Bernardino Counties, CA. This project involved construction of a 63-mile long, east-west freeway/expressway and rail line between SR-14 in Los Angeles County and SR-18 in San Bernardino County (Palmdale, Lancaster, Adelanto, Victorville, Apple Valley). Field services and reporting included an intensive-level pedestrian survey; Historic Property Survey Report (HPSR), Historical Resources Evaluation Report (HRER), ASR, Extended Phase I Testing Report (XPI), Finding of Effect (FOE) and a combined Paleontological Identification and Evaluation Report (PIR/PER). Compliance with Section 106 of the NHPA and CEQA was required. Sub to Parsons. Principal Archaeologist. 2014-2016

Lyon Subdivision EIR, Community of Coto de Caza, Orange County, CA. Managed cultural and paleontological resources technical studies to support preparation of an EIR for the proposed subdivision of an existing large estate for development of 28 new residential lots on approximately 50-57 acres of land. Sub to CAA Planning. Project Manager. 2015

Hidden Oaks Country Club Specific Plan and TT 18869, City of Chino Hills, San Bernardino County, CA. Managed cultural and paleontological resources assessments, assisted the City with SB 18 compliance, and responded to the cultural section of the project EIR comment for this proposed 537-acre residential project with minimum 5-acre per lot constraints. Services included records search, Sacred Lands search, NAHC consultation, field survey, and mitigation recommendations. Authored sections of the report. Principal Archaeologist. 2015

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

JOHN GUST
Principal Investigator for Archaeology

EDUCATION

2016 Ph.D., Department of Anthropology, University of California, Riverside (UCR)
2011 M.A., Department of Anthropology, UCR
2007 M.A., Applied Geography, University of Colorado, Colorado Springs (UCCS)
2002 B.A., Department of Anthropology, minor in Geography/Environmental Studies, UCCS

SUMMARY QUALIFICATIONS

Dr. Gust is a Registered Professional Archaeologist (RPA) with over 7 years of experience in field archaeology and also serves as Cogstone's Lab Manager. He meets the qualifications required by the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* and his field expertise includes pedestrian surveys, excavation monitoring, resource recording, and historic artifact analysis.

SELECTED EXPERIENCE

Los Serranos Park Project, Chino Hills, San Bernardino County, CA. Cogstone conducted cultural, paleontological, and Native American monitoring during ground-disturbing activities of undeveloped lands during the construction of a new 6.6 acre neighborhood park. Record searches, background research, and lab analysis of recovered materials from the project area were completed. As a result, mitigation measures were recommended via a monitoring compliance report. Principal Investigator for Archaeology & Report Author. 2018-2019

Corona Affordable Housing Monitoring Project, City of Corona, Riverside County, CA. The project consisted of grading, for the development of affordable multi-family apartment buildings. Cogstone conducted cultural and paleontological resources monitoring, analyzed recovered artifacts and prepared a monitoring compliance report. Conducted lab work and artifact analysis. Sub to C&C Development. Archaeology Supervisor & Report Author. 2018-2019

Florence Mills Apartments Project, City of Los Angeles, Los Angeles County, CA. This project was for the development of affordable and subsidized multi-family apartment buildings along the Historic Central Avenue Corridor in Southeast LA. Cogstone conducted monitoring of construction activities associated with excavation of historic-age and modern-age fill, as well as native soils, functions to ensure archaeological materials not previously exposed would be identified, assessed and impacts mitigated in order to preserve and/or extract the maximum scientific value of the resource. Archaeology Supervisor & Report Author. 2019

60 Ash Avenue Monitoring Project, City of Cayucos, San Luis Obispo County, CA. Cogstone prepared a cultural resources mitigation plan, closely inspected 20 yards of sediment, recovered artifacts, reburied of all archaeological materials at the request of tribal representatives and prepared a monitoring compliance report. Report Author. 2018

Washington Boulevard Stormwater and Urban Runoff Diversion Project, Culver City, Los Angeles County, CA. The project consisted of the construction of a diversion/pumping system and installation of subsurface storage tanks. Tasks included a cultural records search, Native American consultation, background research, and assessment report. Conducted AB 52 consultation. Sub to CWE. Archaeologist. 2018

Old El Mirage Road Project, San Bernardino County, CA. Cogstone monitored road grading on three roads in San Bernardino County, recorded new sites and prepared reports for each road. Monitored grading and prepared report for two roads. Archaeology Supervisor & Report Author. 2018

10440 Box Springs Mountain Road Project, Riverside County, CA. Cogstone monitored earth disturbing activities for the installation of a new broadcast tower for KVCR public television station, and prepared a report. Supervised the monitoring and prepared the report. Archaeology Supervisor & Report Author. 2018

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

KIM SCOTT
Principal Investigator for Paleontology

EDUCATION

2013 M.S., Biology with a paleontology emphasis, California State University, San Bernardino
2000 B.S., Geology with paleontology emphasis, University of California, Los Angeles

SUMMARY QUALIFICATIONS

Scott has more than 20 years of experience in California paleontology. She is a qualified geologist and field paleontologist with extensive survey, monitoring and fossil salvage experience. In addition, she has special skills in fossil preparation (cleaning and stabilization) and preparation of stratigraphic sections and other documentation for fossil localities. Scott serves as company safety officer and is the author of the company safety and paleontology manuals.

SELECTED EXPERIENCE

I-5 Jeffrey Open Space Trail (JOST) Segments 1 & 2, Caltrans District 12, City of Irvine, Orange County, CA. In preparation of construction of a recreational trail and bridge, coordinated record search, Sacred Lands search, NAHC consultation; preparation of APE maps for archaeological and architectural resources with RBF and Caltrans; intensive pedestrian survey and mapping; preparation of ASR, HPSR, Paleontological Identification Report (PIR) technical reports on behalf of the City of Irvine in compliance with CEQA. Sub to Michael Baker International. Principal Investigator for Paleontology. 2015-2018

Ganahl Lumber Facility, City of Costa Mesa, Orange County, CA. The project was expansion of a lumber yard and facilities. Prepared Paleontological Resources Mitigation and Monitoring Plan, managed monitoring, and prepared a Compliance Memo. Sub to ECORP. Principal Investigator for Paleontology. 2016-2017

Westminster General Plan Update EIR, City of Westminster, Orange County, CA. Prepared paleontological resources assessment to support the General Plan Update. The study area included the entire City, spanning 6,590 acres. Services involved records search, GIS mapping. Impact analysis determined negative results. Sub to PlaceWorks. Principal Investigator for Paleontology/Author of Paleontological Report. 2015-2016

Laguna Beach Village Entrance Project, City of Laguna Beach, Orange County, CA. Cogstone conducted an assessment of both cultural and paleontological resource constraints for the proposed beautification of downtown Laguna Beach. Tasks included a literature search to determine the existence of previously recorded cultural resources (archaeological and built environment resources), aa paleontological records search, Native American Consultation (including a Sacred Lands search from the Native American Heritage Commission, a Phase I pedestrian survey, and technical reports with appropriate recommendations to avoid or minimize any potentially significant impacts. Sub to Michael Baker. Principal Investigator for Paleontology. 2017

Lyon Subdivision EIR, community of Coto de Caza, Orange County, CA. The Project proposes the subdivision of an existing large estate for development of 28 new residential lots on approximately 50-57 acres of land. Proposed residential lots will be a minimum of one acre in size. Sub to CAA Planning. Co-Principal Investigator for Paleontology/Report Co-author. 2015

Little Corona Infiltration, Newport Coast Watershed Management Plan, City of Newport Beach, Orange County, CA. The project involved a cultural and paleontological resources assessment on behalf of the City of Newport Beach to support design and implement water quality improvement projects in Buck Gully, located just to the south of Corona del Mar. Services involved record search, sacred lands search, NAHC consultation, intensive-level pedestrian survey for cultural and paleontological resources, and technical report on findings with recommendations for construction crew sensitivity training. Sub to Michael Baker/RBF Consulting. Principal Investigator for Paleontology. 2015

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

LOGAN FREEBERG
GIS Analyst

EDUCATION

2018 Geographic Information Systems (GIS) Certificate, California State University, Fullerton
2003 B.A., Anthropology, University of California, Santa Barbara

SUMMARY QUALIFICATIONS

Mr. Freeberg has over 15 years of experience in cultural resource management and has extensive experience in field surveying, data recovery, monitoring, and excavation of archaeological and paleontological resources associated with land development projects in the private and public sectors. He has conducted all phases of archaeological work, including fieldwork, laboratory analysis, research, and reporting. Mr. Freeberg also has a strong grounding in conventional field and laboratory methods and is skilled in the use of ArcGIS.

SELECTED EXPERIENCE

Laguna Creek Trail and Bruceville Road Project, Caltrans District 3, City of Elk Grove, Sacramento County, CA. The City of Elk Grove, in cooperation with Caltrans, proposed multiple trail extensions and gap closures in effort to provide connecting links that would ultimately provide trail users with access to a vast system of trails, with connections to parks, schools, community centers, commercial retail and office areas, and transit facilities. Cogstone conducted pedestrian surveys, records search, and prepared an Archaeological Survey Report (ASR) and a Historic Property Survey Report (HPSR). GIS Analyst. Sub to Helix Environmental. 2019

Fresno West Area Specific Plan, City of Fresno, Fresno County, CA. The objective of this study was to review and summarize available information regarding known paleontological, archaeological, and historical resources within the boundaries of the City of Fresno's West Area Specific Plan.. The purpose of the West Area Specific Plan is to implement and refine the City's vision for the West Area in order to guide future growth and development in the most northwest area of the City. Cogstone's services included record searches, mapping, and extensive background research. Sub to De Novo Planning. GIS Analyst. 2019

Avenida La Pata Extension, District 12, Cities of San Clemente and San Juan Capistrano, Orange County, CA. This project was initiated to construct a roadway to connect La Pata Avenue to Antonio Parkway San Juan Capistrano running through the Prima Deshecha Landfill. Served as a field technician for the preconstruction archaeological surveying and data recovery for this project, as well as the archaeological and paleontological monitoring of this project. During laboratory analysis, Mr. Freeberg prepared numerous pinniped specimens with zip scribes. Technician & Monitor. 2014

Measure M2 Freeway Environmental Mitigation Program, Orange County, CA. This project consisted of 6 open space properties and 11 restoration project areas selected for the mitigation of impacts from the Measure M2 Freeway Environmental Mitigation Program. Mr. Freeberg served as the lead field technician for the cultural resource surveys of each project area. Lead Archaeologist. 2014

Southern California Gas (SCG) Line 85 and Line 225 Repair, unincorporated community of Los Angeles County, CA. SCG was repairing Line 85 and Line 225 pipelines (both 26-inch natural gas transmission lines that run through the Angeles National Forest). Mr. Freeberg was the lead archaeological and paleontological monitor and was in charge of the in-field cultural resource awareness training of all construction crew members working in the area. In addition, he monitored the work of the construction crew. His other duties included videotaping the Old Ridge Route (ORR) before and after construction activities, recording all vehicles that drove on and off the ORR, protecting the National Forest Inn, enforcing the speed limit on the ORR, enforcing the Transportation Plan, and ensuring that no damage was done to the ORR. Lead Archaeological & Paleontological Montior/WEAP Trainer. 2007-2008; 2012-2013

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

NANCY DE LA CRUZ
Archaeologist

EDUCATION

I.P. M.A., Anthropology, California State University, Long Beach (*expected graduation 2019)*
2017 B.A., Anthropology, California State University, Long Beach

SUMMARY QUALIFICATIONS

Ms. Del La Cruz has 3 years of experience in archaeological collections processing and management which includes identifying, inventorying, sorting, and cataloging prehistoric artifacts and ancestral remains, flotation, and preparing collections for curation. Experience also includes the archiving of archaeological documents.

SELECTED EXPERIENCE

Florence Mills Apartments Project, City of Los Angeles, Los Angeles County, CA. This project was for the development of affordable and subsidized multi-family apartment buildings along the Historic Central Avenue Corridor in Southeast LA. Cogstone conducted monitoring of construction activities associated with excavation of historic-age and modern-age fill, as well as native soils, functions to ensure archaeological materials not previously exposed would be identified, assessed and impacts mitigated in order to preserve and/or extract the maximum scientific value of the resource. Archaeological Monitor. 2019

Roosevelt Park Regional Stormwater Capture Project, unincorporated area of Florence-Firestone, Los Angeles County, CA. Conducted cultural and paleontological monitoring during all ground disturbing activities in native sediments. This project includes the construction of three diversion structures and pipelines. Sub to Environmental Advisors. Monitor. 2019

Bradley Pool Project, City of Malibu, Los Angeles County, CA. Cogstone was retained by a home owner to conduct a cultural resources assessment to identify potential effects to cultural resources from the proposed construction of an 8-foot deep pool. Cogstone prepared a cultural resources assessment which included a record search and field survey of a proposed private residence pool site. Archaeologist. 2019

On-Call Eukon Telecommunication Projects, Los Angeles County, CA. Conducted record searches for proposed Sprint Wireless telecommunication sites and assisted in authoring reports. Archaeologist. 2019

Trileaf California Telecommunication Project, Los Angeles and Ventura Counties, CA. Conducted record search searches for proposed Verizon telecommunication sites and assisted in authoring report. Archaeologist. 2019

Archaeological Inventory, Analysis and Curation Internship, California State University, Long Beach, CA. Participated in the inventory, analysis, and processing of collections held by the CSULB NAGPRA Laboratory. Duties included provenance and provenience research of CA-LAN 704 and ORA 193, creation and management of document database, archiving archaeological collection documents, floatation of soil sample for macrobotanical materials, and preparation of collections for curation. Archaeological Intern. 2019

NAGPRA Laboratory, California State University, Long Beach, CA. Under the supervision of the NAGPRA Coordinator, Cindi Alvitre, identified, inventoried, sorted, and cataloged prehistoric artifacts and ancestral remains from the collections held by the CSULB NAGPRA Laboratory. Duties also included preparing collections for curation and the identification and processing of archaeological archival material. Volunteer. 2016-2019

APPENDIX B. PALEONTOLOGICAL RECORD SEARCH

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Vertebrate Paleontology Section
Telephone: (213) 763-3325

e-mail: smcleod@nhm.org

5 August 2019

Cogstone Resource Management, Inc.
1518 West Taft Avenue
Orange, CA 92865-4157

Attn: Logan Freeberg, GIS Technician

re: Vertebrate Paleontology Records Check for paleontological resources for the proposed Euclid Fueling Station Project, Cogstone Project # 4797, in the City of Santa Ana, Orange County, project area

Dear Logan:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed Euclid Fueling Station Project, Cogstone Project # 4797, in the City of Santa Ana, Orange County, project area as outlined on the portion of the Anaheim North USGS topographic quadrangle maps that you sent to me via e-mail on 22 July 2019. We do not have any vertebrate fossil localities that lie directly within the proposed project area boundaries, but we do have localities nearby from the same sedimentary deposits that occur at depth in the proposed project area.

In the entire proposed project the surface deposits consist of younger Quaternary Alluvium, derived broadly as floodplain deposits from the Santa Ana River that currently flows to the east and other drainages from the Coyote Hills to the north. These deposits typically do not contain significant vertebrate fossils, at least in the uppermost layers, but they are usually underlain by older Quaternary deposits that frequently do contain significant vertebrate fossils. Southwest of the proposed project area, in the bluffs above the East Garden Wintersberg Channel, there are marine older Quaternary terrace deposits.

Our closest fossil vertebrate locality from these deposits is LACM 4018, southwest of the proposed project area at the intersection of Warner Avenue and Golden West Street, that produced specimens of invertebrates, reptiles, birds, rodents, horses and deer in peat between four and eight feet below the surface, but these specimens were later determined to be of very late Holocene age. Further west along Warner Avenue, close to Bolsa Chica Street, our fossil vertebrate locality LACM 65113 from these deposits produced Pleistocene age specimens of mammoth, *Mammuthus*, between six and eight feet below the soil and specimens of fossil bison, *Bison*, between fourteen and twenty feet below the soil. A little further south-southwest of the proposed project area, along Ellis Avenue east of Beach Boulevard, our vertebrate fossil localities LACM 7657-7659 from the underlying Pleistocene San Pedro Sand produced fossil shark and fish specimens including soupfin shark, *Galeorhinus galeus*, skate, *Raja*, ray, *Myliobatis*, angel shark, *Squatina californica*, cusk eel, *Otophidium*, toadfish, *Porichthys notatus*, queenfish, *Seriphus politus*, sculpin, *Leptocottus*, goby, *Lepidogobius lepidus*, and sanddabs, *Citharichthys sordidus* and *Citharichthys stigmaeus*, from well cores over 100 feet below the surface.

Surface grading or very shallow excavations in the younger Quaternary Alluvium exposed in the proposed project area probably will not uncover significant vertebrate fossil remains. Deeper excavations that extend down into older Quaternary deposits, however, may well encounter significant fossil vertebrate specimens. Any substantial excavations in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

APPENDIX C. NATIVE AMERICAN SCOPING

STATE OF CALIFORNIA GAVIN NEWSOM, Governor

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

September 16, 2019

Logan Freeberg
Cogstone

VIA Email to: cogstoneconsult@cogstone.com

RE: Euclid Fueling Station Project, Orange County

Dear Mr. Freeberg:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: steven.quinn@nahc.ca.gov.

Sincerely,

Steven Quinn
Associate Governmental Program Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Orange County
9/16/2019

Agua Caliente Band of Cahuilla Indians
Jeff Grubbe, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6800
Fax: (760) 699-6919

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 — Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
admin@gabrielenoindians.org

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., — Gabrielino
#231
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Juaneno Band of Mission Indians
Sonia Johnston, Chairperson
P.O. Box 25628 — Juaneno
Santa Ana, CA, 92799
sonia.johnston@sbcglobal.net

Juaneno Band of Mission Indians Acjachemen Nation
Matias Belardes, Chairperson
32161 Avenida Los Amigos — Juaneno
San Juan Capisttrano, CA, 92675
Phone: (949) 293 - 8522
kaamalam@gmail.com

Juaneno Band of Mission Indians Acjachemen Nation - Belardes
Joyce Perry, Tribal Manager
4955 Paseo Segovia — Juaneno
Irvine, CA, 92603
Phone: (949) 293 - 8522
kaamalam@gmail.com

Juaneno Band of Mission Indians Acjachemen Nation - Romero
Teresa Romero, Chairperson
31411-A La Matanza Street — Juaneno
San Juan Capistrano, CA, 92675
Phone: (949) 488 - 3484
Fax: (949) 488-3294
tromero@juaneno.com

La Jolla Band of Luiseno Indians
Fred Nelson, Chairperson
22000 Highway 76 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 3771

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Euclid Fueling Station Project, Orange County.

PROJ-2019-004775 — 09/16/2019 10:50 AM — 1 of 2

Native American Heritage Commission
Native American Contact List
Orange County
9/16/2019

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Rd. — Cupeno, Luiseno
Pala, CA, 92059
Phone: (760) 891 - 3515
Fax: (760) 742-3189
sgaughen@palatribe.com

Pauma Band of Luiseno Indians
Temet Aguilar, Chairperson
P.O. Box 369 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 1289
Fax: (760) 742-3422
bennaecalac@aol.com

Pechanga Band of Luiseno Indians
Mark Macarro, Chairperson
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6000
Fax: (951) 695-1778
epreston@pechanga-nsn.gov

Pechanga Band of Luiseno Indians
Paul Macarro, Cultural Resources Coordinator
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6306
Fax: (951) 506-9491
pmacarro@pechanga-nsn.gov

Rincon Band of Luiseno Indians
Jim McPherson, Tribal Historic Preservation Officer
One Government Center Lane — Luiseno
Valley Center, CA, 92082
Phone: (760) 749 - 1051
Fax: (760) 749-5144
vwhipple@rincontribe.org

Rincon Band of Luiseno Indians
Bo Mazzetti, Chairperson
One Government Center Lane — Luiseno
Valley Center, CA, 92082
Phone: (760) 749 - 1051
Fax: (760) 749-5144
bomazzetti@aol.com

San Luis Rey Band of Mission Indians
1889 Sunset Drive — Luiseno
Vista, CA, 92081
Phone: (760) 724 - 8505
Fax: (760) 724-2172
cjmojado@slrmissionindians.org

San Luis Rey Band of Mission Indians
San Luis Rey, Tribal Council
1889 Sunset Drive — Luiseno
Vista, CA, 92081
Phone: (760) 724 - 8505
Fax: (760) 724-2172
cjmojado@slrmissionindians.org

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 — Cahuilla, Luiseno
San Jacinto, CA, 92581
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This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Euclid Fueling Station Project, Orange County.

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APPENDIX D. PALEONTOLOGICAL SENSITIVITY RANKING CRITERIA

PFYC DESCRIPTION (BLM 2008)	PFYC RANK
Very Low. The occurrence of significant fossils is non-existent or extremely rare. Includes igneous or metamorphic and Precambrian or older rocks. Assessment or mitigation of paleontological resources is usually unnecessary.	1
Low. Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant nonvertebrate fossils. Includes rock units too young to produce fossils, sediments with significant physical and chemical changes (e.g., diagenetic alteration) and having few to no fossils known. Assessment or mitigation of paleontological resources is not likely to be necessary.	2
Potentially Moderate but Undemonstrated Potential. Units exhibit geologic features and preservational conditions that suggest fossils could be present, but no vertebrate fossils or only common types of plant and invertebrate fossils are known. Surface-disturbing activities may require field assessment to determine appropriate course of action.	3b
Moderate Potential. Units are known to contain vertebrate fossils or scientifically significant nonvertebrate fossils, but these occurrences are widely scattered and of low abundance. Common invertebrate or plant fossils may be found. Surface-disturbing activities may require field assessment to determine appropriate course of action.	3a
High. Geologic units containing a high occurrence of significant fossils. Fossils must be abundant per locality. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. If impacts to significant fossils can be anticipated, on-the-ground surveys prior to authorizing the surface disturbing action will usually be necessary. On-site monitoring or spot-checking may be necessary during construction activities.	4
Very High. Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils. Vertebrate fossils or scientifically significant invertebrate fossils are known or can reasonably be expected to occur in the impacted area. On-the-ground surveys prior to authorizing any surface disturbing activities will usually be necessary. On-site monitoring may be necessary during construction activities.	5