Appendix J

Cultural Resources Technical Report

SINGLE-FAMILY RESIDENTIAL HAULED WATER INITIATIVE FOR NEW DEVELOPMENT

CULTURAL RESOURCES TECHNICAL REPORT

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SECTION 1.0
INTRODUCTION

This Cultural Resources Technical Report (CRTR) was prepared to characterize the proposed Single-Family Residential Hauled Water Initiative for New Development (proposed initiative) with regard to cultural resources and determine if the proposed initiative may have a significant impact to cultural resources, thus requiring the consideration of mitigation measures or alternatives in accordance with Section 15063 of the California Environmental Quality Act Guidelines (State CEQA Guidelines). Cultural resources in the general areas of Los Angeles County (County) where parcels that would potentially be eligible for the use of hauled water pursuant to the proposed initiative were assessed with regard to the Land Use Element and Conservation and Open Space Element of the existing adopted Los Angeles County General Plan;[1,2] the Conservation and Natural Resources Element of the Draft Los Angeles County General Plan Draft 2035 Update;[3,4] and the Los Angeles County Code of Ordinances – Title 22 Planning and Zoning.[5] The characterization and analysis contained in the CRTR relies on information developed from literature reviews; agency coordination; consideration of applicable federal, state, and local statues and guidelines; and cultural resources database searches.

1.1 PURPOSE OF THE PROPOSED INITIATIVE

The Los Angeles County Board of Supervisors has directed the preparation of a proposed ordinance (proposed initiative) that would allow hauled water as the primary source of potable water for new development of single-family residences on existing vacant legal lots, or lots that are eligible for a certificate of compliance, where the property owner has demonstrated that there is no other feasible source of private or municipal potable water, or capability of developing an on-site well to provide potable water to the property, and if the property lies outside of the boundaries of the local private and municipal water districts, and is not eligible for service by the nearest public or private water purveyor. The proposed initiative is proposed for parcels that are larger than 2,000 square feet in size, with slopes under 50 percent (26.6°). The term "vacant" is used as identified by the County Assessor.

[1] County of Los Angeles Department of Regional Planning. 25 November 1980. County of Los Angeles General Plan Land Use Element. Available online at http://planning.lacounty.gov/assets/upl/initiative/gp_web80-land-use.pdf

[2] County of Los Angeles Department of Regional Planning. 25 November 1980. County of Los Angeles General Plan Conservation and Open Space Element. Available online at http://planning.lacounty.gov/assets/upl/initiative/gp_web80-conservation-and-open-space.pdf

[3] Los Angeles County Department of Regional Planning. January 2014. Los Angeles County General Plan Public Review Draft: Chapter 6: Land Use Element. Available online at: http://planning.lacounty.gov/assets/upl/initiative/gp_2035_Chapter6_2014.pdf

[4] Los Angeles County Department of Regional Planning. January 2014. Los Angeles County General Plan Public Review Draft: Chapter 9: Conservation and Natural Resources Element. Available online at: http://planning.lacounty.gov/assets/upl/initiative/gp_2035_Chapter9_2014.pdf

[5] Los Angeles County Department of Regional Planning. n.d. Los Angeles County Code of Ordinances – Title 22 Planning and Zoning. Available online at: https://library.municode.com/HTML/16274/level3/TIT22PLZO_DIV1PLZO_CH22.04INPR.html

1.2 PURPOSE OF THE CULTURAL RESOURCES TECHNICAL REPORT

This CRTR was prepared to characterize the cultural resources that would potentially be affected by the proposed initiative. The report provides the substantial evidence on which the required evaluation of feasibility, environmental analysis, and findings of fact in relation to cultural resources can be made.

1.3 INTENDED AUDIENCE

The information included in this CRTR documents the cultural resources that would potentially be affected by the proposed initiative. This information is intended to inform the decision-making process to be undertaken by the County Board of Supervisors. This information is also provided to responsible and trustee agencies; Tribal Historic Preservation Officers and other Native American representatives, the public, and other interested stakeholders so that they may provide the County with meaningful input in response to circulation of the Draft Environmental Impact Report (EIR) for public review and comment.

1.4 CONFIDENTIALITY OF ARCHAEOLOGICAL SITE INFORMATION

The location data for the archaeological resources will not be circulated for public review. To protect the sites from unauthorized excavation, looting, and/or vandalism, the locations of known archaeological resources will be kept confidential. Information concerning the nature and location of archaeological resources is protected under the Archaeological Resources Protection Act (16 U.S.C. 470 hh) and other statutes. Records in the information centers are exempt from the California Public Records Act (Government Code Section 6250 *et seq.*). Government Code Section 6254.10 states,

> Nothing in this chapter requires disclosure of records that relate to archaeological site information and reports maintained by, or in the possession of, the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the Native American Heritage Commission, another state agency, or a local agency, including the records that the agency obtains through a consultation process between a California Native American tribe and a state or local agency.

Government Code Section 6254(r) explicitly authorizes public agencies to withhold information from the public relating to "Records of Native American graves, cemeteries, and sacred places and records of Native American places, features, and objects described in Sections 5097.9 and 5097.993 of the Public Resources Code maintained by, or in the possession of, the Native American Heritage Commission, another state agency, or a local agency." Due to the sensitive nature of cultural resources described herein, the technical appendices to the report containing the archaeological site records and/or maps are confidential and meant for those parties that are in a "need to know" basis, such as the State Historic Preservation Officer (SHPO), Native American Heritage Commission (NAHC), and California Office of Historic Preservation (OHP).

1.5 SCOPE OF THE INVESTIGATION

The analysis of cultural resources consists of a summary of the regulatory framework that guides the decision-making process, a description of the methods employed to support the characterization and evaluation of cultural resources within the cultural resources study area, the results for baseline conditions for cultural resources, the potential for the proposed initiative to

affect cultural resources, and opportunities to avoid and minimize the potential effects of the initiative.

Each of the environmental issues considered in Appendix G of the State CEQA Guidelines for cultural resources is addressed through this analysis:

- Historical resources
- Archaeological resources
- Unique paleontological resources or unique geologic features
- Human remains and other potential Native American sacred sites

The area that would be subject to the proposed initiative consists of 42,867 parcels in the unincorporated territory of Los Angeles County. The combined proposed initiative study area consists of approximately 342,715 acres or approximately 535 square miles. Therefore, the characterization of historic resources, archeological resources, paleontological resources, and human remains and Native American sacred sites has been based on records and archival data and predicative modeling of the potential for impacts to occur based on the type and density or resources known from areas that have been the subject of Phase I and II investigations in comparable environments. The proposed initiative would not authorize construction of individual properties; rather, it would make individual properties potentially eligible for the use of hauled water as the primary source of potable water. Individual properties seeking to use hauled water as the primary source of potable water for new single-family residential development would still be required to apply for and obtain a building permit.

1.6 SOURCES OF RELEVANT INFORMATION

Information used in the preparation of this CRTR was derived from an extensive literature review, consultation with experts knowledgeable of the cultural resources identified as having the potential to occur within the cultural resources study area, consultation with responsible and trustee agencies, and coordination with special interests. This CRTR documents the coordination and consultation that has been undertaken with the California Native American Heritage Commission (NAHC) as well as individuals identified by the NAHC as having ancestral ties to the region. In addition, preparation of this report utilized the University of California Museum of Paleontology (UCMP) online database as well as the South Central Coastal Information Center (SCCIC) at California State University, Fullerton, one of 10 independent centers operated under contract to the Office of Historic Preservation (OHP), California Department of Parks and Recreation, for the purpose of maintaining the federally and state-mandated California Historic Resources Inventory (HRI). Sources of relevant information are cited in footnotes and compiled in Section 6, *References*.

1.7 WORKING DEFINITIONS

Alluvium is an unconsolidated accumulation of stream-deposited sediments, including sands, silts, clays or gravels.

Archaeological site is defined by the National Register of Historic Places (NRHP) as the place or places where the remnants of a past culture survive in a physical context that allows for the interpretation of these remains. Archaeological remains usually take the form of artifacts (e.g., fragments of tools, vestiges of utilitarian, or non-utilitarian objects), features (e.g., remnants of walls, cooking hearths, or midden deposits), and ecological evidence (e.g., pollen remaining from

plants that were in the area when the activities occurred). These can include prehistoric (pre-European contact), historic (post-contact), or combination thereof.

BP stands for "before present," which is defined as before 1950 and is used by archaeologists in conjunction with the commonly used term, AD.

Cretaceous is defined as an interval of time relating to, or denoting the last period of the Mesozoic era, between the Jurassic and Tertiary periods.

Formation is defined as a laterally continuous rock unit with a distinctive set of characteristics that make it possible to recognize and map from one outcrop or well to another. The basic rock unit of stratigraphy.

Holocene is defined as an interval of time relating to, or denoting the present epoch, which is the second epoch in the Quaternary period, including the time period from approximately 11,000 years ago to the present.

Historic period is defined as the period that begins with the arrival of the first nonnative population and thus varies by area. In 1769, Gaspar de Portolá became the first European to enter the San Fernando Valley, initiating the historic period in the proposed initiative study area.

Historical resource is defined by CEQA as any object, building, structure, site (including archaeological sites), area, place, record, or manuscript that is listed in, or is eligible for listing in, the California Register of Historical Resources (CRHR); officially designated or recognized as historically significant by a local government pursuant to a local initiative or resolution; or identified as significant in a historic resource survey conducted in accordance with the requirements of the CRHR statute (Public Resources Code Section 5024.1(g)). Properties listed in, or determined eligible for listing in, the NRHP are automatically listed in the CRHR and are therefore historical resources under CEQA.

Isolate is defined as an isolated artifact or small group of artifacts that appear to reflect a single event, loci, or activity. It may lack identifiable context but has the potential to add important information about a region, culture, or person. Isolates are not considered under CEQA to be significant and, thus, do not require avoidance or mitigation under CEQA. All isolates located during the field effort, however, are recorded, and the data are transmitted to the appropriate California Historical Resources Information System (CHRIS) Information Center.

Miocene is defined as an interval of time relating to or denoting the fourth epoch of the Tertiary period, between the Oligocene and Pliocene epochs, from approximately 23 to 5.5 million years ago.

Oligocene is defined as an interval of time relating to or denoting the third epoch of the Tertiary period, between the Eocene and Miocene epochs, from approximately 34 to 23 million years ago.

Outcrop is defined as a rock formation that is visible on earth's surface.

Paleocene is defined as an interval of time, relating to, or denoting the earliest epoch of the Tertiary period, between the Cretaceous period and the Eocene epoch.

Phase I archaeological resources survey consists of a literature review (background research), consultation with the NAHC, and fieldwork. Fieldwork consists of a physical inspection of the cultural resources survey area, generally through pedestrian surveys, or by other means when appropriate. The purpose of the Phase I survey is to identify the cultural resources known or likely to be present in the initiative's impact area and in the immediate vicinity.

Phase II archaeological investigation, consisting of testing and evaluation, is conducted when the results of a Phase I investigation indicate the presence of potentially significant cultural resources. Phase II investigations are intended to evaluate the historical significance of historic and prehistoric archaeological sites and require a comprehensive and detailed scope of work, a research design, and fieldwork. Surface and subsurface testing is conducted during Phase II investigations to collect the data necessary to establish historical significance of archaeological sites.

Phase III data recovery is implemented on those archaeological sites that are determined to be significant as a result of the Phase II investigations and that cannot feasibly be avoided or preserved with initiative implementation. Phase III efforts typically involve the collection of data intended to answer scientific or research questions that have been formulated during Phase II testing and formalized by a comprehensive Phase III research design. Most commonly, Phase III data collections are implemented on sites determined to be significant as a means of mitigating the effects of an initiative through salvage, recordation, and archiving of scientific data associated with the site.

Pleistocene is defined as an interval of time, relating to or denoting the first epoch of the Quaternary period, between the Pliocene and Holocene epochs, from approximately 2.6 million years ago to 11,000 years ago.

Pliocene is defined as an interval of time, relating to or denoting the last epoch of the Tertiary period, between the Miocene and Pleistocene epochs, from approximately 5.5 to 2.6 million years ago.

Plutonic igneous rocks are igneous rocks that have crystallized beneath the earth's surface.

Prehistoric period is defined as the era prior to AD 1769. The later part of the prehistoric period (post–AD 1542) is also characterized as the protohistoric period in some areas, which marks a transitional period during which native populations began to be influenced by European presence resulting in gradual changes to their lifeways.

Quaternary is defined as the most recent Period in geological time; includes the Pleistocene and Holocene Epochs.

Unique geologic feature is defined as an important and irreplaceable geological formation. Such features may have scientific and/or cultural values.

Unique paleontological resource is defined as a fossil that meets one or more of the following criteria:

- It provides information on the evolutionary relationships and developmental trends among organisms, living or extinct.

- It provides 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.

- It provides data regarding the development of biological communities or interaction between plant and animal communities.

- It demonstrates unusual or spectacular circumstances in the history of life.

- 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.

SECTION 2.0
PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The area that would be subject to the proposed initiative consists of 42,867 parcels in the unincorporated territory of Los Angeles County (see Figure 2.1-1, *Proposed Initiative Study Area*, at the end of this section).[1] The combined proposed initiative study area consists of approximately 340,461 acres or approximately 532 square miles.

Although this is a Countywide initiative, the parcels that would potentially be affected by the proposed initiative are located entirely within the 5th Supervisorial District in the northern one-third of the County, including areas located in the San Gabriel Mountains, in the Antelope Valley; areas located northeast of the City of Santa Clarita, north and south of California State Route 14; areas that are southwest of the City of Palmdale in the communities of Agua Dulce and Acton. The subject parcels have been categorized into seven subareas:

1. **Lake Hughes/Gorman/West of Lancaster:** The Lake Hughes/Gorman/West of Lancaster subarea is located in an area generally located west of State Highway 14 and north of the Angeles National Forest. This subarea consists of 15,166 parcels and encompasses approximately 195.4 square miles (125,041.4 acres). State Highway 138 bisects the subarea in an east-west direction, and State Highway 14 forms the eastern boundary of this subarea. This subarea is adjacent to the northwestern edge of the incorporated City of Lancaster.

2. **Lancaster Northeast:** The Lancaster Northeast subarea is located in an area generally east of State Highway 14 and north of East Avenue J. This subarea consists of 6,794 parcels and encompasses approximately 55.2 square miles (35324.90 acres). State Highway 14 forms the western boundary and East Avenue J forms the southern boundary of this subarea. Edwards Air Force Base is located north of the study area. This subarea is adjacent to the northeastern edge of the incorporated City of Lancaster.

3. **Antelope Valley Northeast:** The Antelope Valley Northeast subarea is located in an area generally located north of East Avenue E and east of 165th Street East in the far northeastern portion of Los Angeles County. This subarea consists of 1,938 parcels and encompasses approximately 22.7 square miles (14,528.23 acres). This subarea is relatively isolated and is located in the northeastern area of Los Angeles County. This subarea is located approximately 10.9 miles northeast of the incorporated City of Palmdale and approximately 11.3 miles northeast of the incorporated City of Lancaster.

4. **Lake Los Angeles/Llano/Valyermo/Littlerock:** The Lake Los Angeles/Llano/Valyermo/Littlerock subarea is located in an area generally south of East Avenue J, east of 47th Street East. This subarea consists of 14,822 parcels and encompasses approximately 168.8 square miles (108067.33 acres). Avenue J forms the northern

[1] Assessor's Parcels Numbers for the referenced parcels are on file at the Los Angeles County Department of Regional Planning.

boundary, the Cities of Palmdale and Lancaster form the western boundary, and the San Bernardino County line forms the eastern boundary of this subarea. This subarea is adjacent to the eastern edge of the incorporated City of Palmdale.

5. **Acton:** The Acton subarea is located in an area generally east of Hubbard Road and West of 47th Street East. This subarea consists of 1,246 parcels and encompasses approximately 28.2 square miles (18,067.22 acres). The Angeles National Forest is located to the north and south of the subarea. This subarea is adjacent to the southwestern edge of the incorporated City of Palmdale.

6. **Castaic/Santa Clarita/Agua Dulce:** The Castaic/Santa Clarita/Agua Dulce subarea is located generally west of Hubbard Road and north of the 210 Freeway excluding Kagel Canyon. This subarea consists of 2,243 parcels and encompasses approximately 55.2 square miles (35,340.2 acres). This subarea is adjacent to the northern, western, and southern edges of the incorporated City of Santa Clarita and the northern edge of the incorporated City of Los Angeles.

7. **East San Gabriel Mountains:** The East San Gabriel Mountains subarea consists of parcels generally located within the Angeles National Forest east of State Highway 14, north of the 210 freeway, south of the Pearblossom Highway, and west of the San Bernardino County line. This subarea consists of 658 parcels and encompasses approximately 6.4 square miles (4092.26 acres). This subarea is adjacent to the northern edges of the San Gabriel and San Fernando Valleys.

The proposed initiative study area is located within 53 USGS 7.5-minute quadrangle maps (see Figure 2.1-2, *USGS 7.5-Minute Quadrangle Index*, at the end of this section):

- Acton
- Adobe Mountain
- Agua Dulce
- Alpine Butte
- Azusa
- Black Mountain
- Burnt Peak
- Chilao Flat
- Condor Peak
- Crystal Lake
- Del Sur
- El Mirage
- Fairmont Butte
- Frazier Mountain
- Glendora
- Green Valley
- Hi Vista
- Jackrabbit Hill
- Juniper Hills
- La Liebre Ranch
- Lake Hughes
- Lovejoy Buttes
- Mescal Creek
- Mint Canyon
- Mount Baldy
- Mount San Antonio
- Mount Wilson
- Neenach School
- Newhall
- Oat Mountain
- Pacifico Mountain
- Palmdale
- Pasadena
- Redman
- Ritter Ridge
- Rogers Lake South
- Rosamond
- Rosamond Lake
- San Fernando
- Simi Valley East
- Sleepy Valley
- Sunland

- Lancaster East
- Lancaster West
- Lebec
- Liebre Mountain
- Little Buttes
- Littlerock
- Val Verde
- Valyermo
- Warm Springs Mountain
- Waterman Mountain
- Whitaker Peak

The elevation of the overall proposed initiative study area ranges from 7,409 feet above sea level in the East San Gabriel Mountains subarea to 862 feet above sea level also in the East San Gabriel Mountains subarea (see Figure 2.1-3, *Topographic Map*, at the end of this section).

2.2 EXISTING CONDITIONS

2.2.1 Lake Hughes/Gorman/West of Lancaster

The Lake Hughes/Gorman/West of Lancaster subarea is located in an area generally west of State Highway 14 and north of the Angeles National Forest; however, there are also several National Forest inholding parcels located along San Francisquito Canyon and Lake Hughes Road. The topography of this subarea is generally flat, except for the parcels located along San Francisquito Canyon and Lake Hughes Road, which are located in mountainous terrain. The highest elevation within this subarea is approximately 4,768 feet above mean sea level (MSL), and the lowest elevation is approximately 2,315 feet above MSL. State Highway 14 provides access to the subarea from the east, and Interstate 5 provides access to the subarea from the west. The main existing land uses in this subarea are agriculture and rural residential uses. The established communities of Del Sur, Gorman, Lake Hughes, Leona Valley, and Quartz Hill are located in this subarea.

2.2.2 Lancaster Northeast

The Lancaster Northeast subarea is located in an area generally east of State Highway 14 and north of East Avenue J. The topography of this subarea is generally flat; the highest elevation within this subarea is approximately 2,688 feet above MSL, and the lowest elevation is approximately 2,298 feet above MSL. State Highway 14 provides access to the subarea from the west. The predominant existing land uses in this subarea consist of agricultural, recreation, and rural residential uses. The established communities of Hi Vista and a small portion of Del Sur are located in this subarea.

2.2.3 Antelope Valley Northeast

The Antelope Valley Northeast subarea is located in an area generally north of East Avenue E and east of 165th Street East in the far northeastern portion of Los Angeles County. The topography of this subarea is mainly flat, with a few hills to the north. The highest elevation within this subarea is approximately 3,296 feet above MSL, and the lowest elevation is approximately 2,547 feet above MSL. There are no existing primary access roads to the area; however, East Avenue G provides access to the area from the Lancaster area. Presently, the entirety of this subarea is vacant. Saddleback Butte State Park is located to the south of the subarea. A small portion of the established community of Hi Vista is located in this subarea.

2.2.4 Lake Los Angeles/Llano/Valyermo/Littlerock

The Lake Los Angeles/Llano/Valyermo/Littlerock subarea is located in an area generally south of East Avenue J, east of 47th Street East. The topography of this subarea is generally flat, except for several parcels that are located on slopes of the San Gabriel Mountains to the south. The highest elevation within this subarea is approximately 5,626 feet above MSL, and the lowest elevation is approximately 2,443 feet above MSL. State Highways 138 and 18 provide the primary access to this subarea. Predominant existing land uses within this subarea consist of vacant land, single-family residential subdivisions, agricultural uses, and scattered rural residential uses. The Angeles National Forest forms the southern border of this subarea. The established communities of Llano, Valyermo, Pearblossom, Littlerock, Lake Los Angeles and portions of Hi Vista are located within this subarea.

2.2.5 Acton

The Acton subarea is located in an area generally east of Hubbard Road and West of 47th Street East. The topography of the subarea is mainly mountainous and hilly. The highest elevation within this subarea is approximately 4,900 feet above MSL, and the lowest elevation is approximately 2,290 feet above MSL. State Highway 14 provides the primary access to this subarea. Predominant existing land uses consist of rural residential uses, single-family residential uses, and scattered agricultural uses. The Angeles National Forest forms the southern border of this subarea. The established communities of Acton, South Antelope Valley, and portions of Agua Dulce are located in this subarea.

2.2.6 Castaic/Santa Clarita/Agua Dulce

The Castaic/Santa Clarita/Agua Dulce subarea is located generally west of Hubbard Road and north of the 210 Freeway excluding Kagel Canyon. The topography of this subarea is generally mountainous. The highest elevation within this subarea is approximately 4,430 feet above MSL, and the lowest elevation is approximately 994 feet above MSL. Interstate 5 and State Highway 14 are the primary access roads for this subarea. Additionally, State Highway 126 provides access to areas in the western portion of the subarea. Predominant existing land uses consist of rural residential, single-family residential, and scattered agricultural. The Angeles National Forest forms the northern and southern borders of this subarea. The established communities of Agua Dulce, Castaic Val Verde, Stevenson Ranch, Newhall, Canyon Country, and portions of Acton are located within this subarea.

2.2.7 East San Gabriel Mountains

The East San Gabriel Mountains subarea consists mainly of private inholding parcels located within the eastern San Gabriel Mountain range and is generally located east of State Highway 14, north of the 210 freeway, south of the Pearblossom Highway, and west of the San Bernardino County line. The topography of the subarea is very mountainous. The highest elevation within this subarea is approximately 7,409 feet above MSL, and the lowest elevation is approximately 862 feet above MSL. Primary access to this subarea is provided by Mount Baldy Road, San Gabriel Canyon Road (Highway 39), Angeles Crest Highway (Highway 2), Big Tujunga Canyon Road, and Little Tujunga Canyon Road from the 210 freeway to the south and Soledad Canyon Road and Big Pines Road from the north. Predominant existing land uses consist of national forest recreation, open space, and resource uses, widely scattered residential uses exist in places such as Wrightwood and Mt. Baldy Village. Communication infrastructure uses are located on Mount Wilson. The Angeles

National Forest surrounds all 658 private inholding parcels within this subarea, which have been designated in the 2005 update to the Angeles National Forest Land Management Plan as Non-Forest System Land Ownership and therefore are not subject to the national land management plan.[2,3] The established communities of Angeles National Forest, Altadena, Sylmar, and portions of Acton, Valyermo, Pearblossom, Llano, and Littlerock are located in this subarea.

2.3 PROJECT DESCRIPTION

The Los Angeles County Board of Supervisors has directed the preparation of a proposed ordinance that would allow hauled water as the primary source of potable water for new development of single-family residences on existing vacant legal lots, or lots that are eligible for a certificate of compliance, where the property owner has demonstrated that there is no other feasible source of private or municipal potable water, or capability of developing an on-site well to provide potable water to the property, and only if the property lies outside of the boundaries of the local private and municipal water districts, and is not eligible for service by the nearest public-community water purveyor. The proposed initiative is proposed for parcels that consists of at least 2,000 square feet net parcel size of land under 50 percent average slope (26.6 degrees). The term vacant is used as identified by the County Assessor.

In order to determine which areas would be subject to the proposed initiative, Los Angeles County developed a geographic information system (GIS) suitability model in 2012 based on five criteria defined by the Task Force:

- Parcels located in the unincorporated territory of Los Angeles County
- Vacant parcels
- Parcels located in areas where there is no designated water purveyor
- Zoning and General Plan designation that allow for development of a single-family residence
- Parcel size >2,000 net square feet with slopes under 50 percent (26.6 degrees)

2.4 CONSTRUCTION SCENARIO

The proposed initiative would not authorize construction of single-family residential development per se. It simply provides for the use of hauled water as an allowable source of potable water during the building permit application process where the property is not located within a public or private water district and where potable water for domestic and fire protection requirements cannot be provided by an on-site groundwater well. To determine historical development trends, 17 years of building permit application data from 1997 through 2014 were reviewed to determine the average number of building permits issued per year for single-family residential development not associated with subdivision development.4 An anticipated growth factor of 25 percent has been

[2] United States Department of Agriculture Forest Service, Angeles National Forest. April 2006. Record of Decision, Angeles National Forest Land Management Plan. Available at: http://www.fs.usda.gov/detail/angeles/landmanagement/planning/?cid=stelprdb5324056#I.

[3] United States Department of Agriculture Forest Service. September 2005. Final Land Management Plan Alternative 4a Selected: Land Use Zones [Map]. Available at: http://www.fs.usda.gov/Internet/FSE_MEDIA/stelprdb5311720.pdf

[4] County Building and Safety Division building permit records have been digitally tracked since 1997; records were not readily available from before 1997.

applied based on Southern California Association of Governments (SCAG) projections for the unincorporated area of Los Angeles County from 2008 to 2035.[5]

The reasonable worst-case scenario assumes the annual average rate of issuance of building permits over the 20-year 2015 to 2035 planning horizon would be approximately 32 per year in the Santa Clarita Valley and approximately 151 per year in the Antelope Valley for a total of 184 permits per year for both areas. The total anticipated building permits issued over the 20-year 2015 to 2035 planning horizon would be approximately 3,680. As a result, it is anticipated that the disturbance area for the single-family residences constructed on these parcels would be approximately 5,299 acres (Table 2.4-1, *Estimated Number of Parcels to Be Developed and Disturbance Area in the Unincorporated Antelope Valley and Santa Clarita Valley, 2015–2035*).

TABLE 2.4-1
ESTIMATED NUMBER OF PARCELS TO BE DEVELOPED AND DISTURBANCE AREA IN THE UNINCORPORATED ANTELOPE VALLEY AND SANTA CLARITA VALLEY, 2015–2035*

Estimated Annual Santa Clarita Valley Building Permits	Estimated Annual Antelope Valley Building Permits	Total Estimated Annual Building Permits** in Unincorporated Santa Clarita and Antelope Valleys[1]	Total Estimated Building Permits over 20-Year Planning Horizon	Total Estimated Disturbance Area over 20-Year Planning Horizon (acres)***
32	151	184	3,680	5,299

NOTES:
* Includes a 25 percent growth factor based on SCAG population projections.[2]
** Including mobile homes.
*** Based on an average parcel size of four acres with 36 percent disturbance.[3]
SOURCE:
[1] Los Angeles County Department of Public Works, Building and Safety Division. Electronic Building Permit Data from January 1, 1997 to June 30, 2014.
[2] Southern California Association of Governments. 12 March 2012. 2012 Adopted RTP Growth Forecast. Available online at: http://www.scag.ca.gov/Documents/2012AdoptedGrowthForecastPDF.pdf
[3] Sapphos Environmental, Inc. 27 August 2014. Memorandum for the Record. Subject: "Analysis of Residential Development and Existing Disturbance for Parcels within or near the Proposed Hauled Water Initiative Study Area." Prepared for: Los Angeles County Hauled Water Task Force.

An analysis of a small subset of parcels in each subarea was performed in order to determine potential impacts from hauled water infrastructure including a storage tank, a septic leach field, and access for hauled water delivery vehicles. Based on the analysis it was determined that the average area of disturbance for each parcel was approximately 36 percent. The average size of lots analyzed was four gross acres (Table 2.4-1).

[5] Southern California Association of Governments. 12 March 2012. 2012 Adopted RTP Growth Forecast. Available online at: http://www.scag.ca.gov/Documents/2012AdoptedGrowthForecastPDF.pdf

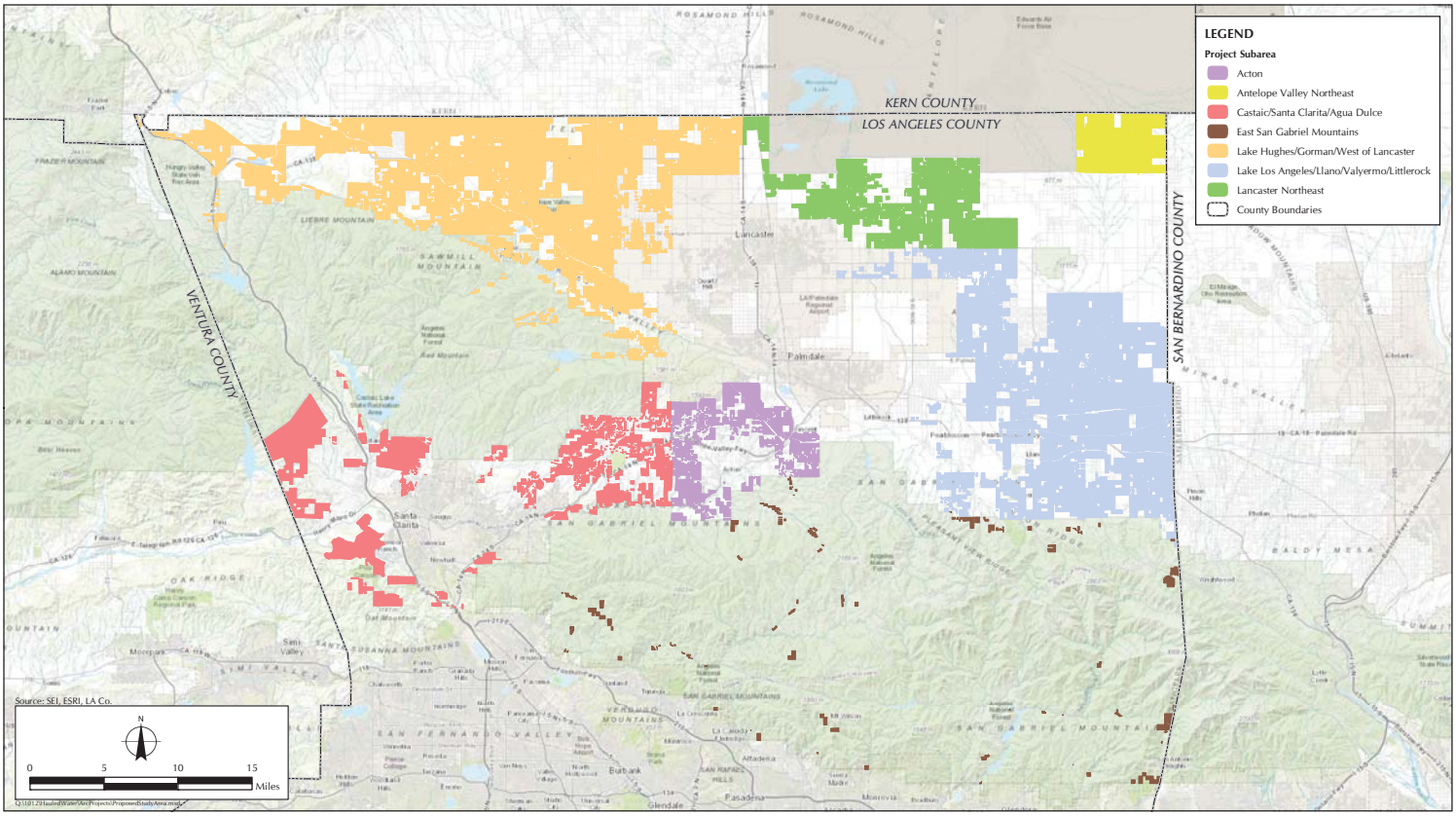

FIGURE 2.1-1
Proposed Initiative Study Area

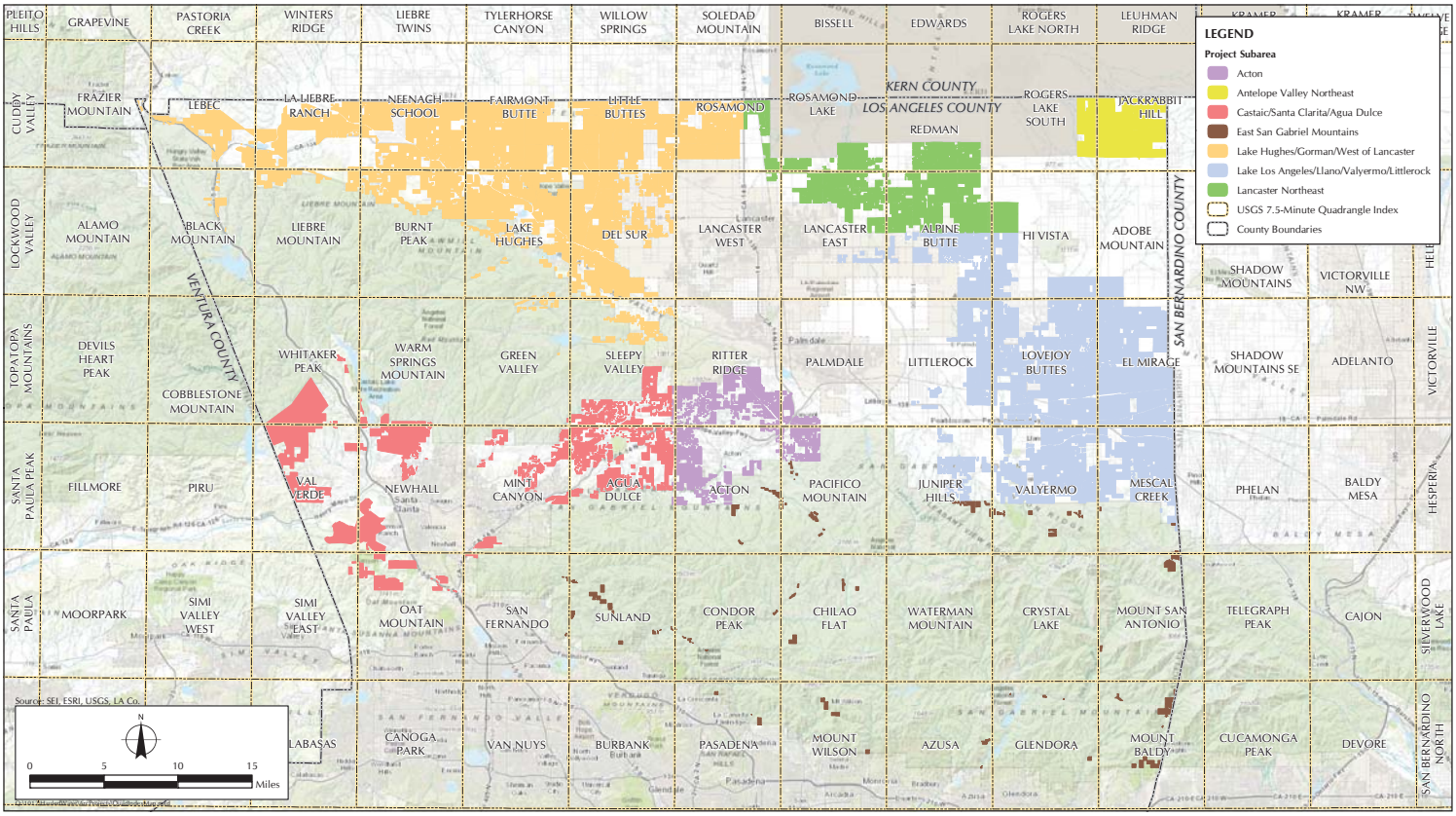

FIGURE 2.1-2
USGS 7.5-Minute Quadrangle Index

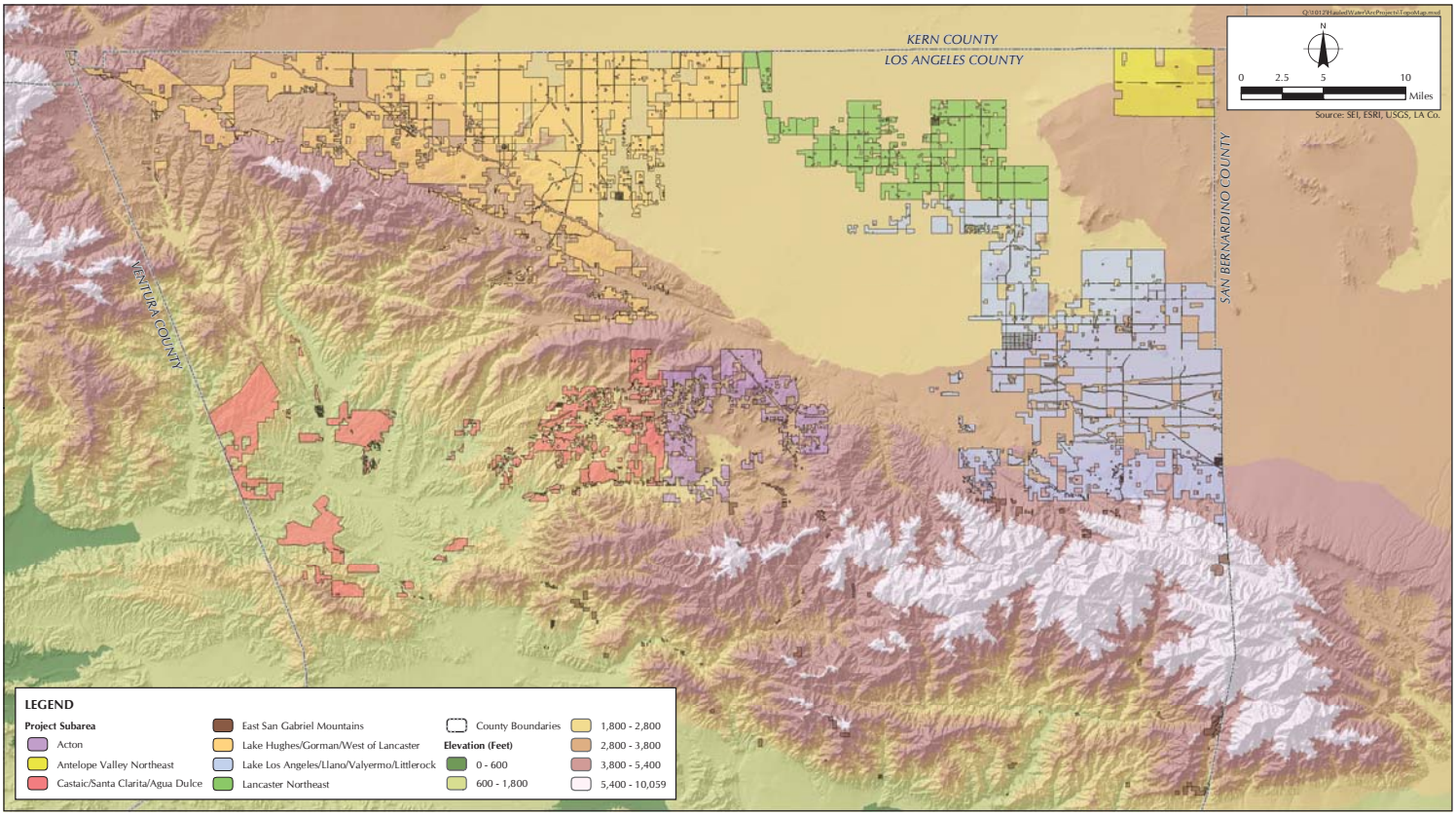

FIGURE 2.1-3
Topographic Map

SECTION 3.0
REGULATORY FRAMEWORK

This regulatory framework identifies the federal, state, and local statutes, ordinances, or policies that govern the conservation and protection of cultural resources that will be considered by the County during the decision-making process for the proposed initiative.

3.1 FEDERAL

3.1.1 National Historic Preservation Act of 1966 (NHPA)[1]

Enacted in 1966, the NHPA declared a national policy of historic preservation and instituted a multifaceted program, administered by the National Parks Service, to encourage the achievement of preservation goals at the federal, state, and local levels. The NHPA authorized the expansion and maintenance of the NRHP, established the position of State Historic Preservation Officer and provided for the designation of State Review Boards, set up a mechanism to certify local governments to carry out the purposes of the NHPA, assisted Native American tribes to preserve their cultural heritage, and created the Advisory Council on Historic Preservation (ACHP). Section 106 of the NHPA states that federal agencies with direct or indirect jurisdiction over federally funded, assisted, or licensed undertakings must take into account the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the NRHP, and that the ACHP must be afforded an opportunity to comment, through a process outlined in the ACHP regulations at 36 Code of Federal Regulations (CFR) Part 800, on such undertakings.

National Register of Historic Places

The NRHP was established by the NHPA of 1966 as "an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment."[2] The NRHP recognizes properties that are significant at the national, state, and local levels. To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must also possess integrity of location, design, setting, materials, workmanship, feeling, and association. A property is eligible for the NRHP if it is significant under one or more of the following criteria:[3]

Criterion A: It is associated with events that have made a significant contribution to the broad patterns of our history.

Criterion B: It is associated with the lives of persons who are significant in our past.

Criterion C: It embodies the distinctive characteristics of a type, period, or method of construction; represents the work of a master; possesses high artistic values; or represents a significant and distinguishable entity whose components may lack individual distinction.

[1] United States Code, 16 USC 470.

[2] Code of Federal Regulations, 36 CFR 60.2.

[3] Code of Federal Regulations, 36 CFR 60.4.

Criterion D: It has yielded, or may be likely to yield, information important in prehistory or history.

Cemeteries, birthplaces or graves of historic figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, and properties that are primarily commemorative in nature are not considered eligible for the NRHP unless they satisfy certain conditions. In general, a resource must be at least 50 years of age to be considered for the NRHP, unless it satisfies a standard of exceptional importance.

3.1.2 Native American Graves Protection and Repatriation Act of 1990 (NAGPRA)

The NAGPRA of 1990 sets provisions for the intentional removal and inadvertent discovery of human remains and other cultural items from federal and tribal lands. It clarifies the ownership of human remains and sets forth a process for repatriation of human remains and associated funerary objects and sacred religious objects to the Native American groups claiming to be lineal descendants or culturally affiliated with the remains or objects. It requires any federally funded institution housing Native American remains or artifacts to compile an inventory of all cultural items within the museum or with its agency and to provide a summary to any Native American tribe claiming affiliation.

3.2 STATE

3.2.1 California Environmental Quality Act[4]

Pursuant to CEQA, a *historical resource* is a resource listed in, or eligible for listing in, the CRHR. In addition, resources included in a local register of historic resources or identified as significant in a local survey conducted in accordance with state guidelines are also considered historical resources under CEQA, unless a preponderance of the facts demonstrates otherwise. According to CEQA, the fact that a resource is not listed in or determined eligible for listing in the CRHR or is not included in a local register or survey shall not preclude a Lead Agency, as defined by CEQA, from determining that the resource may be a historical resource as defined in California Public Resources Code (PRC) Section 5024.1.[5]

CEQA applies to archaeological resources when (1) the archaeological resource satisfies the definition of a historical resource or (2) the archaeological resource satisfies the definition of a "unique archaeological resource." A *unique archaeological resource* is an archaeological artifact, object, or site that has a high probability of meeting any of the following criteria:[6]

1. The archaeological resource contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.

[4] California Public Resources Code, Division 13, Sections 21083.2, 21084.1.

[5] California Code of Regulations, Title 14, Chapter 3. Amended 6 October 2005. Guidelines for the Implementation of the California Environmental Quality Act, Section 15064.5(a).

[6] California Public Resources Code, Division 13, Section 21083.2(g).

2. The archaeological resource has a special and particular quality such as being the oldest of its type or the best available example of its type.

3. The archaeological resource is directly associated with a scientifically recognized important prehistoric or historic event or person.

Appendix G of the State CEQA Guidelines provides a set of sample questions that guide the evaluation of potential impacts with regard to cultural resources.

Would the project:

(a) Cause a substantial adverse change in the significance of an historical resource as defined in §15064.5?

(b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?

(c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

(d) Disturb any human remains, including those interred outside of formal cemeteries?[7]

3.2.2 California Register of Historical Resources

Created in 1992 and implemented in 1998, the CRHR is "an authoritative guide in California to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change."[8] Certain properties, including those listed in or formally determined eligible for listing in the NRHP and California Historical Landmarks (CHLs) numbered 770 and higher, are automatically included in the CRHR. Other properties recognized under the California Points of Historical Interest program, identified as significant in historic resources surveys, or designated by local landmarks programs may be nominated for inclusion in the CRHR. A resource, either an individual property or a contributor to a historic district, may be listed in the CRHR if the State Historical Resources Commission determines that it meets one or more of the following criteria, which are modeled on NRHP criteria:[9]

Criterion 1: It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

Criterion 2: It is associated with the lives of persons important in our past.

Criterion 3: It embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values.

[7] California Code of Regulations, Title 14, Chapter 3. Amended 6 October 2005. Guidelines for the Implementation of the California Environmental Quality Act, Appendix G.

[8] California Public Resources Code, Section 5024.1(a).

[9] California Public Resources Code, Section 5024.1(c).

Criterion 4: It has yielded, or may be likely to yield, information important in history or prehistory.

Resources nominated to the CRHR must retain enough of their historic character or appearance to be recognizable as historic resources and to convey the reasons for their significance.[10] It is possible that a resource whose integrity does not satisfy NRHP criteria may still be eligible for listing in the CRHR. A resource that has lost its historic character or appearance may still have sufficient integrity for the CRHR if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data. Resources that have achieved significance within the past 50 years also may be eligible for inclusion in the CRHR, provided that enough time has lapsed to obtain a scholarly perspective on the events or individuals associated with the resource.[11]

3.2.3 California Historical Landmarks Registration Program[12]

CHLs are buildings, structures, sites, or places that have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value and that have been determined to have statewide historical significance by meeting at least one of the criteria listed below. The resource must also be approved for designation by the County Board of Supervisors (or the City or Town Council in whose jurisdiction it is located), be recommended by the State Historical Resources Commission, and be officially designated by the Director of California State Parks. The specific standards in use now were first applied in the designation of CHL No. 770. CHLs No. 770 and above are automatically listed in the CRHR.

To be eligible for designation as a Landmark, a resource must meet at least one of the following criteria:

- The first, last, only, or most significant of its type in the state or within a large geographic region (Northern, Central, or Southern California)
- Associated with an individual or group having a profound influence on the history of California
- A prototype of, or an outstanding example of, a period, style, architectural movement or construction or one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder

[10] Office of Historic Preservation. n.d. Technical Assistance Bulletin 6: California Register and National Register, A Comparison (for Purposes of Determining Eligibility for the California Register). Available online at: www.ohp.parks.ca.gov

[11] Office of Historic Preservation. n.d. Technical Assistance Bulletin 6: California Register and National Register, A Comparison (for Purposes of Determining Eligibility for the California Register). Available online at: www.ohp.parks.ca.gov

[12] Office of Historic Preservation, Department of Parks and Recreation, State of California. n.d. California Historical Landmarks Registration Programs. Available online at: www.ohp.parks.ca.gov

3.2.4 California Points of Historical Interest[13]

California Points of Historical Interest are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Points of Historical Interest designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the CRHR. No historic resource may be designated as both a Landmark and a Point. If a Point is later granted status as a Landmark, the Point designation will be retired. In practice, the Point designation program is most often used in localities that do not have a locally enacted cultural heritage or preservation ordinance.

To be eligible for designation as a Point of Historical Interest, a resource must meet at least one of the following criteria:

- The first, last, only, or most significant of its type within the local geographic region (city or county)
- Associated with an individual or group having a profound influence on the history of the local area
- A prototype of, or an outstanding example of, a period, style, architectural movement or construction or one of the more notable works or the best surviving work in the local region of a pioneer architect, designer, or master builder

3.2.5 Public Resources Code Sections 5097.9–5097.991

Section 5097.91 of the PRC established the NAHC, whose duties include the inventory of places of religious or social significance to Native Americans and the identification of known graves and cemeteries of Native Americans on private lands. Under Section 5097.9 of the PRC, a state policy of noninterference with the free expression or exercise of Native American religion was articulated along with a prohibition of severe or irreparable damage to Native American sanctified cemeteries, places of worship, religious or ceremonial sites, or sacred shrines located on public property. Section 5097.98 of the PRC specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a county coroner. Section 5097.5 states that is a misdemeanor to knowingly and willfully excavate, disturb, destroy, deface, or remove any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological sites, on public lands, except with the express permission of the public agency holding jurisdiction over the lands.

3.2.6 California Native American Graves Protection and Repatriation Act of 2001

Codified in the California Health and Safety Code Sections 8010–8030, the California Native American Graves Protection and Repatriation Act (Cal NAGPRA) is consistent with the federal NAGPRA. Intended to "provide a seamless and consistent state policy to ensure that all California Indian human remains and cultural items be treated with dignity and respect," Cal NAGPRA also encourages and provides a mechanism for the return of remains and cultural items to lineal descendants. Section 8025 established a Repatriation Oversight Commission to oversee this

[13] Office of Historic Preservation, Department of Parks and Recreation, State of California. n.d. California Points of Historical Interest Registration Programs. Available online at: www.ohp.parks.ca.gov

process. The Act also provides a process for non–federally recognized tribes to file claims with agencies and museums for repatriation of human remains and cultural items.

3.2.7 Health and Safety Code, Sections 7050 and 7052

Health and Safety Code Section 7050.5 declares that, in the event of the discovery of human remains outside a dedicated cemetery, all ground disturbance must cease and the county coroner must be notified. Section 7052 establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by relatives.

3.2.8 Penal Code, Section 622.5

Penal Code Section 622.5 provides misdemeanor penalties for injuring or destroying objects of historic or archaeological interest located on public or private lands but specifically excludes the landowner.

3.3 LOCAL

3.3.1 Southern California Association of Governments Growth Management Policy No. 3.21

The Southern California Association of Governments (SCAG) Growth Management Chapter (GMC) has instituted policies regarding the protection of cultural resources. SCAG GMC Policy No. 3.21 "encourages the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites."[14]

3.3.2 County of Los Angeles General Plan

The areas that would be potentially affected by the proposed initiative are located within seven subareas in the unincorporated areas of Los Angeles County and subject to the County of Los Angeles General Plan. The 1980 County of Los Angeles General Plan and the Los Angeles County General Plan 2035 have both been referenced below.[15,16]

The Conservation, Open Space, and Recreation element of the County General Plan[17] establishes goals and policies for conservation of cultural resources in the County. The General Plan recognizes that the County has numerous archaeological and historical sites from the Native American, Hispanic, and American periods of California's history, as well as paleontological sites and important geological formations that predate human occupation, and are nonrenewable and irreplaceable.

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[14] Southern California Association of Governments. 2001. SCAG Growth Management Chapter (GMC) Policy No. 3.21. Los Angeles, CA.

[15] County of Los Angeles Department of Regional Planning. 1980. County of Los Angeles General Plan. Conservation and Open Space Element. Available online at: http://planning.lacounty.gov/assets/upl/project/gp_web80-conservation-and-open-space.pdf

[16] County of Los Angeles Department of Regional Planning. 2014. Draft Los Angeles County General Plan 2035. Conservation and Natural Resources Element. Available online at: http://planning.lacounty.gov/assets/upl/project/gp_2035_Chapter9_2014.pdf

[17] County of Los Angeles Department of Regional Planning. January 1993. County of Los Angeles Streamlined General Plan, page CA2.

- **Policy 20** states the County's intention to "protect cultural heritage resources, including historical, archaeological, paleontological, and geological sites, and significant architectural structures."[18]

The County's cultural resources objective, found in the Conservation and Natural Resources Element of the General Plan 2035, is to preserve and protect cultural resources including historic, archaeological, and paleontological resources. Under this objective, the County has established the following policies:[19]

- **Policy C/NR 14.1:** Mitigate all impacts from new development on or adjacent to historic, cultural, and paleontological resources to the greatest extent feasible.

- **Policy C/NR 14.2:** Support an inter-jurisdictional collaborative system that protects and enhances historic, cultural and paleontological resources.

- **Policy C/NR 14.3:** Support the preservation and rehabilitation of historic buildings.

- **Policy C/NR 14.4:** Ensure proper notification procedures to Native American tribes in accordance with Senate Bill 18 (2004).

- **Policy C/NR 14.6:** Ensure proper notification and recovery processes are carried out for development on or near historic, cultural, and paleontological resources.

3.3.3 Los Angeles County Historical Landmarks and Records Commission

The Los Angeles County Board of Supervisors established and has maintained the Los Angeles County Historical Landmarks and Records Commission (Commission) pursuant to Los Angeles County Code Chapter 3.30. Pursuant to Section 26490 of the California Government Code, the Commission is designated as a historical records commission to foster and promote the preservation of historical records. The Commission considers and recommends to the Board of Supervisors local historical landmarks defined to be worthy of registration by the State of California, either as CHLs or as Points of Historical Interest. The Commission may also comment for the Board on applications relating to the NRHP. The Commission is also charged with fostering and promoting the preservation of historical records. In its capacity as the memorial plaque review committee of the County of Los Angeles, the Commission screens applications for donations of historical memorial plaques and recommends to the Board plaques worthy of installation as County property.[20]

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[18] County of Los Angeles Department of Regional Planning. January 1993. County of Los Angeles Streamlined General Plan, page OS-11.

[19] Los Angeles County Department of Regional Planning. January 2014. Los Angeles County General Plan Public Review Draft: Chapter 9: Conservation and Natural Resources Element. Available online at: http://planning.lacounty.gov/assets/upl/project/gp_2035_Chapter9_2014.pdf

[20] County of Los Angeles Department of Auditor-Controller (J. Tyler McCauley, Auditor-Controller). 21 October 2002. Sunset Review for the Los Angeles County Historical Landmarks and Records Commission. Accessed 17 July 2006. Available online at: http://auditor.co.la.ca.us/cms1_003345.pdf

SECTION 4.0
METHODS

This section of the CRTR describes the methods employed in the characterization and evaluation of cultural resources within the seven subareas. The study methods were designed to provide the substantial evidence required to address the scope of analysis recommended in Appendix G of the State CEQA Guidelines, as well as the Land Use Element and Conservation and Open Space Element of the existing adopted Los Angeles County General Plan;[1,2] the Conservation and Natural Resources Element of the Los Angeles County General Plan 2035;[3,4] and the Los Angeles County Code of Initiatives – Title 22 Planning and Zoning goals and policies related to paleontological resources, archaeological resources, Native American sacred sites and human remains, and historical resources.

4.1 LOS ANGELES COUNTY EXISTING ADOPTED GENERAL PLAN AND ORDINANCES

All seven subareas are within the County, which has primary decision-making authority for discretionary land uses. An evaluation was undertaken to assess the consistency of the proposed initiative with the Los Angeles County Adopted General Plan and Los Angeles County General Plan 2035 goals and policies. The Conservation and Natural Resource Element of the Adopted Los Angeles County General Plan and Los Angeles County General Plan 2035 were reviewed to identify goals, policies, and compliance measures related to cultural resources for integration into the regulatory framework and study methods for prehistoric, and historic resources.[5,6] Also considered was the potential presence of any local conservation plans in place for any or all of the seven subareas.

4.2 PALEONTOLOGICAL RESOURCES

The following sections describe the resource inventory methods used for the paleontological assessment, the resource assessment criteria applied to the assessment, and the results of the resource inventory.

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[1] County of Los Angeles Department of Regional Planning. 25 November 1980. County of Los Angeles General Plan Land Use Element. Available online at http://planning.lacounty.gov/assets/upl/initiative/gp_web80-land-use.pdf

[2] County of Los Angeles Department of Regional Planning. 25 November 1980. County of Los Angeles General Plan Conservation and Open Space Element. Available online at http://planning.lacounty.gov/assets/upl/initiative/gp_web80-conservation-and-open-space.pdf

[3] Los Angeles County Department of Regional Planning. January 2014. Los Angeles County General Plan Public Review Draft: Chapter 6: Land Use Element. Available online at: http://planning.lacounty.gov/assets/upl/initiative/gp_2035_Chapter6_2014.pdf

[4] Los Angeles County Department of Regional Planning. January 2014. Los Angeles County General Plan Public Review Draft: Chapter 9: Conservation and Natural Resources Element. Available online at: http://planning.lacounty.gov/assets/upl/initiative/gp_2035_Chapter9_2014.pdf

[5] Los Angeles County. 25 November 1980. Los Angeles County General Plan, Land Use Element. Los Angeles, CA. Available at: http://planning.lacounty.gov/assets/upl/project/gp_web80-land-use.pdf

[6] Los Angeles County. 25 November 1980. Los Angeles County General Plan, Conservation, and Open Space Element. Los Angeles, CA. Available at: http://planning.lacounty.gov/assets/upl/project/gp_web80-conservation-and-open-space.pdf

4.2.1 Resource Inventory Methods

These procedures follow guidelines from the Society of Vertebrate Paleontology (SVP) and include both a paleontological records search and literature search.[7] The following methods were used to characterize the paleontological sensitivity of the seven subareas.

Published and unpublished literature concerning area paleontological and geological topics was consulted. As part of the inventory methods, surface distribution of the formations in the study area was defined to estimate their subsurface distribution and thereby approximate the paleontological productivity of these units from the literature. The paleontological records search of pertinent paleontological collections is another important source of data concerning distribution area of known paleontological localities and productivity. To obtain this information, an archival database search was conducted of the UCMP online archival database.

4.2.2 Paleontological Resource Assessment Criteria

It is the position of the SVP that a vertebrate fossil is considered scientifically important unless otherwise demonstrated.[8] This position is based on the relative rarity of vertebrate fossils. Vertebrate fossils are so uncommon that, in many cases, each recovered specimen will provide additional important information about the morphological variation or the geographic distribution of its species. The SVP recommendations also mention that certain invertebrate or botanical fossils are considered important paleontological resources.

A geological unit is considered "sensitive" to adverse impacts if there is a high probability that grading, excavation, or other earth-moving activities would jeopardize important fossil remains. Using criteria published by the SVP, the paleontological importance or sensitivity (high, low, or undetermined) of each geological unit exposed in a project site or surrounding area is the measure most amenable to assessing the significance of paleontological resources because the area distribution of each geological unit can be delineated on a topographic or geologic map.[9] The paleontological sensitivity of a stratigraphic unit reflects its potential paleontological productivity and sensitivity, as well as the scientific significance of the fossils it has produced. This method of paleontological resource assessment is the most appropriate because discrete levels of paleontological importance can be delineated on a topographic or geologic map.

Reasons for considering an individual fossil specimen scientifically important include:

1. If it is well preserved
2. If it can be identified
3. If it is more complete than most specimens for that species
4. If it preserves one or more elements not known in most specimens of that species
5. If it is indicative of a particular time period
6. If it has not been recorded from that sedimentary unit
7. If it provides information concerning the environment in which it lived

[7] Society of Vertebrate Paleontology (SVP). 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontological Resources: Standard Guidelines. Society of Vertebrate Paleontology News Bulletin 163: 22–27.

[8] Society of Vertebrate Paleontology (SVP). 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontological Resources: Standard Guidelines. Society of Vertebrate Paleontology News Bulletin 163: 22–27.

[9] Society of Vertebrate Paleontology (SVP). 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontological Resources: Standard Guidelines. Society of Vertebrate Paleontology News Bulletin 163: 22–27.

8. If it could be the basis for description of a new species or comes from a site that produced the type (definitive) specimen of its species
9. If it belongs to a species rarely encountered

For specimens meeting the above criteria, the following criteria were considered in establishing the importance and paleontological sensitivity of each rock unit exposed within each of the seven subareas:

1. Estimation of the potential paleontological productivity of each geological unit on the evidence of fossil localities in or near the seven subareas, on the basis of published and unpublished sources
2. Consideration of the scientific significance of fossils from each of the rock units exposed within the seven subareas

4.2.3 Categories of Sensitivity

The SVP established three categories of sensitivity for paleontological resources in its standard guidelines for assessment and mitigation of adverse impacts to paleontological resources.[10] The three categories are low, high, and undetermined.

- Low sensitivity paleontological resources are categorized as geological units that are not sedimentary in origin. Likewise, sedimentary rock units that have been well examined and have not produced paleontological resources are considered to have low sensitivity.
- High sensitivity paleontological resources are categorized as geological units older than recent for which vertebrate or significant invertebrate fossils or a significant suite of plant fossils have been recovered.
- Paleontological resources with undetermined sensitivity are categorized as sedimentary geological units for which little information is available. It is often possible for an experienced paleontologist to determine whether such a rock unit should be assigned a high or low sensitivity after he or she has performed a pedestrian survey and has made detailed observations of both natural and artificial exposures of the rock unit.

4.3 ARCHAEOLOGICAL AND HISTORICAL RESOURCES

4.3.1 Record Search and Literature Review

A literature review was undertaken to determine if the proposed initiative would have the potential to cause a substantial adverse change to the significance of an archaeological (prehistoric and historic) and/or historic resources within each of the seven subareas, thus requiring the consideration of avoidance and minimization, in accordance with Section 15063 of the State CEQA Guidelines. A sample archaeological and historic resources records search was conducted at the SCCIC, housed at California State University, Fullerton, on April 29, 2014. The sample records search included a spatial review of all known relevant cultural resource investigation (including survey and excavation) report locations as well as the location of known prehistoric and historic archaeological resources and historic resources within the seven subareas of the proposed

[10] Society of Vertebrate Paleontology (SVP). 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontological Resources: Standard Guidelines. Society of Vertebrate Paleontology News Bulletin 163: 22–27.

initiative. In addition, the California Historic Resources Inventory, California Points of Historical Interest, CHLs, CRHR, and NRHP were searched to determine whether known cultural resources (archaeological and/or historical) are located within the seven subareas.

4.3.2 Agency Consultation

Informal consultation was also undertaken with the County, and a review of the Conservation and Natural Resources Element of the Los Angeles County Existing General Plan and Los Angeles County General Plan 2035 was conducted to determine if the County provides regulatory protection for archaeological and historical resources.[11,12,13,14]

4.4 NATIVE AMERICAN SACRED SITES AND HUMAN REMAINS

4.4.1 Record Search and Literature Review

The NAHC was requested to conduct a records search from their Sacred Lands File for the presence of Native American sacred sites or human remains within each of the seven subareas on April 21, 2014. A written response received by Sapphos Environmental, Inc. on May 7, 2014, advised that the Sacred Lands File did not indicate the presence of Native American cultural resources within the Lake Hughes/Gorman/West of Lancaster, Lancaster Northeast, and Lake Los Angeles/Llano/Valyermo/Littlerock subareas.[15] Sapphos Environmental, Inc. sent second requests for the Acton subarea on September 24, 2014, and for the Antelope Valley Northeast, Castaic/Santa Clarita/Agua Dulce, and East San Gabriel Mountains subareas on October 9, 2014. A written response for the Acton subarea was received October 1, 2014, and did not indicate the presence of Native American cultural resources within the subarea.[16] A written response for the Antelope Valley Northeast subarea was received October 15, 2014, and did not indicate the presence of Native American cultural resources within the subarea.[17] A written response for the Castaic/Santa Clarita/Agua Dulce subarea was received October 21, 2014, and did not indicate the presence of Native American cultural resources within the subarea.[18] As of May 8, 2015, Sapphos Environmental, Inc. has not received a NAHC response for the East San Gabriel Mountains subarea.

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[11] Los Angeles County. 25 November 1980. Los Angeles County Existing Adopted General Plan, Land Use Element. Los Angeles, CA. Available at: http://planning.lacounty.gov/assets/upl/project/gp_web80-land-use.pdf

[12] Los Angeles County. 25 November 1980. Los Angeles County Existing Adopted General Plan, Conservation, and Open Space Element. Los Angeles, CA. Available at: http://planning.lacounty.gov/assets/upl/project/gp_web80-conservation-and-open-space.pdf

[13] City of Calabasas Planning Division. 2008. 2030 City of Calabasas General Plan. Accessed March 31, 2014. Available at: http://www.cityofcalabasas.com/pdf/documents/gpac/CalabasasFinalGeneralPlan.pdf

[14] City of Calabasas Land Use and Development Code, 17.36.010-250. Available at: http://www.cityofcalabasas.com/departments/planning/pdf/Historic-Preservation-Ordinance.pdf

[15] Singleton, Dave, Native American Heritage Commission, Sacramento, CA. 7 May 2014. Letter response to Roberta Thomas, Sapphos Environmental, Inc., Pasadena, CA.

[16] Sanchez, Katy, Native American Heritage Commission, Sacramento, CA. 1 October 2014. Letter response to Karl Holland, Sapphos Environmental, Inc., Pasadena, CA.

[17] Sanchez, Katy, Native American Heritage Commission, Sacramento, CA. 15 October 2014. Letter response to Karl Holland, Sapphos Environmental, Inc., Pasadena, CA.

[18] Sanchez, Katy, Native American Heritage Commission, Sacramento, CA. 21 October 2014. Letter response to Karl Holland, Sapphos Environmental, Inc., Pasadena, CA.

4.4.2 Agency Consultation

Coordination was initiated with the NAHC in association with the proposed initiative on April 21, 2014. On the recommendation of the NAHC, Sapphos Environmental, Inc. sent letters to eight Native American contacts classified by the NAHC as potential sources.[19] The letters advised the Tribes and specific individuals of the proposed initiative and its geographic area and requested information regarding cultural resources in the study area, as well as feedback or concerns related to the proposed initiative. No responses have been received.

[19] Nixon, Rachael, Sapphos Environmental, Inc., Pasadena, CA. 20 March 2014. Letter to Dave Singleton, Native American Heritage Commission, Sacramento, CA.

SECTION 5.0
RESULTS

This section of the CRTR characterizes the baseline conditions for cultural resources; evaluates the potential for the proposed initiative to result in significant direct, indirect, and cumulative impacts; and identifies feasible mitigation measures for avoiding and reducing these impacts. The results described in this section provide the substantial evidence required to address the scope of analysis recommended in Appendix G of the State CEQA Guidelines related to cultural resources, paleontological resources, prehistoric resources, historic resources, Native American sacred sites, and human remains.

5.1 PALEONTOLOGICAL RESOURCES

5.1.1 Paleontological Setting

The results of the paleontological resources literature and records search show the study area is dominated by 12 geologic units that were reviewed to determine their known potential to yield unique or significant paleontological resources:

- Holocene and Pleistocene Quaternary alluvium
- Quaternary landslide deposits
- The Pleistocene Saugus and Harold Formations
- The Pliocene Pico and Anaverde Formations
- The Late Miocene Towsley, Ridge Basin Group, Sisquoc Formation, and Punch Bowl Formations
- The Middle to Late Miocene Castaic, Monterey, Quail Lake, and Mint Canyon Formations
- The early to Middle Miocene Tick Canyon Formation
- The Miocene Fiss Fanglomerate and Crowder Formation
- The Oligocene to Early Miocene Vasquez Formation
- The Eocene Llajas Formation
- The Paleocene (Cretaceous?) San Francisquito Formation
- Plutonic igneous rocks and metamorphic rocks of Cenozoic, Mesozoic, and Paleozoic ages

Many of the sedimentary units and Formations have produced significant vertebrate and plant fossils within Los Angeles County (Table 5.1-1, *Geologic Units with the Potential to Yield Paleontological Resources*).

TABLE 5.1-1
GEOLOGIC UNITS WITH THE POTENTIAL TO YIELD PALEONTOLOGICAL RESOURCES

Initiative Subarea	Potential for Significant Paleontological Resources	Geological Units with Paleontological Resource Potential
Acton	Yes	Pleistocene Quaternary alluvium
Antelope Valley Northeast	Yes	Pleistocene Quaternary alluvium
Castaic/Santa Clarita/Agua Dulce	Yes	Pleistocene older alluvium, Saugus Formation; Pliocene marine Pico Formation; Pliocene to Late Miocene marine Towsley Formation; Late Miocene marine Ridge Basin Group and Sisquoc Formations; Late to Middle Miocene marine, Monterey and Castaic Formations; Middle Miocene Mint Canyon Formation; Early to Middle Miocene Tick Canyon Formation
East San Gabriel Mountains	Yes	Quaternary older alluvium (Pleistocene); Plio-Pleistocene Saugus Formation; Pliocene marine Pico Formation; Pliocene to Late Miocene marine Towsley Formation; Miocene marine Ridge Basin Group and Sisquoc Formations; Late to Middle Miocene marine Monterey Formation; Middle Miocene Mint Canyon Formation; Eocene Llajas Formation
Lake Los Angeles/Llano/ Valyermo/Little Rock	Yes	Pleistocene alluvium and Harold Formation; Pliocene Anaverde Formation; Late Miocene Punchbowl Formation; Miocene Crowder Formation; Cretaceous San Francisquito Formation
Lake Hughes/Gorman/ West of Lancaster	Yes	Late Pleistocene older playa deposits and older fan deposits; Oligocene to Middle Miocene Gem Hill Formation?
Lancaster Northeast	Yes	Pleistocene channel deposits, eolian sands, and beach bar deposits

Because the proposed initiative includes a large geographic area with complex geology indicative of tectonic plate boundaries, the geology and paleontology of each subarea has been described individually below. All sedimentary units are terrestrial unless otherwise noted.

Acton. The literature review did not yield any fossil localities within the Acton subarea; however, there is potential for Pleistocene Quaternary alluvium to yield significant paleontological resources.[1] Beginning in the mid-1990s and continuing into the early years of the 21st century, Diblee mapped the surficial geology within the Acton subarea, including Holocene Quaternary alluvium, Quaternary landslide deposits, the Vasquez Formation, plutonic igneous rocks, and metamorphic rocks are considered to have low paleontological sensitivity.[2,3,4]

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[1] Jefferson, G. T. 1991 A Catalogue of Late Quaternary Vertebrates from California, Part Two, Mammals. Natural History Museum of Los Angeles County Technical Reports No. 7.

[2] Dibblee, T. W., Jr. 1996. Geologic map of the Acton quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-59 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, two cross-sections.

[3] Dibblee, T. W., Jr. 1997. Geologic map of the Sleepy Valley and Ritter Ridge quadrangles, Los Angeles County, California. Dibblee Geological Foundation Map DF-66 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, four cross-sections.

Castaic/Santa Clarita/Agua Dulce. The surficial geology of the Castaic/Santa Clarita/Agua Dulce subarea was mapped by Dibblee.[5,6,7,8,9,10,11] The following rock units/formations have the potential to yield significant paleontological resources based on previous collections and/or age and lithology and are given high paleontological sensitivity: Pleistocene alluvial deposits;[12] the Saugus Formation;[13] the Pliocene marine, Pico Formation;[14,15] the Towsley Formation;[16] the Ridge Basin Group; the Sisquoc Formation; the Castaic Formation;[17,18,19] the Monterey Formation; the Mint Canyon Formation;[20,21,22] and the Tick Canyon Formation.[23] Igneous and metamorphic rocks and

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[4] Dibblee, T. W., Jr. 2001. Geologic map of the Pacifico Mountain and Palmdale (south half) quadrangles, Los Angeles County, California. Dibblee Geological Foundation Map DF-76 (Ehrenspeck, H.E., ed.), scale 1:24,000.

[5] Dibblee, T. W., Jr. 1991. Geologic Map of the San Fernando and Van Nuys (North 1/2) quadrangles, Los Angeles County, California. Dibblee Geological Foundation DF-33 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[6] Dibblee, T. W., Jr. 1992. Geologic Map of the Oat Mountain and Canoga Park (North 1/2) Quadrangles, Los Angeles County, California. Dibblee Geological Foundation DF-36 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, one cross-section. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[7] Dibblee, T. W., Jr. 1993. Geologic Map of the Val Verde Quadrangle, Los Angeles and Ventura Counties, California. Dibblee Geological Foundation DF-50 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, one cross-section. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[8] Dibblee, T. W., Jr. 1996a. Geologic Map of the Newhall Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-56 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, two cross-sections. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[9] Dibblee, T. W., Jr. 1996b. Geologic Map of the Mint Canyon Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-57 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, three cross-sections. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[10] Dibblee, T. W., Jr. 1997a. Geologic Map of the Warm Springs Mountain Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-64 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, three cross-sections. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[11] Dibblee, T. W., Jr. 1997b. Geologic Map of the Whitaker Peak Quadrangle, Los Angeles and Ventura Counties, California. Dibblee Geological Foundation Map DF-63 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, three cross-sections. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[12] Jefferson, G. T., 1991 A catalogue of Late Quaternary vertebrates from California, Part Two, mammals. Natural History Museum of Los .Angeles County Technical Reports, no. 7, 129 p.

[13] Jefferson, G. T., 1991 A catalogue of Late Quaternary vertebrates from California, Part Two, mammals. Natural History Museum of Los .Angeles County Technical Reports, no. 7, 129 p.

[14] Squires, R. L., Groves, L.T., and J. T. Smith. 2006. New information on molluscan paleontology and depositional environments of the Upper Pliocene Pico Formation, Valencia Area, Los Angeles County, Southern California. Los Angeles County Museum of Natural History Contributions in Science 511.

[15] Fierstine, H.L., Huddleston, R.W, and G.T. Takeuchi. 2012. Catalog of Neogene Bony Fishes of Southern California: A Systematic Inventory of all Published Accounts. Occasional Papers of the California Academy of Sciences, 206 p.

[16] Kern, J. P. 1973. Early Pliocene marine climate and environments of eastern Ventura Basin, southern California. University of California Publications in Geologic Sciences 96:1-117.

[17] Kellogg, R., 1925. Additions to the Tertiary history of the pelagic mammals on the pacific coast of North America. Contributions to Paleontology, Carnegie Institution of Washington, No. 348: 1-120.

[18] Kellogg, R., 1929. A new cetothere from southern California. University of California Publications, Bulletin of the Department of Geological Sciences 18: 449-457.

[19] Repenning, C. A. and R. H. Tedford. 1977. Otarioid seals of the Neogene. U.S. Geological Survey Professional Paper 992: 1-93.

[20] Maxson, J. H. 1930. A Tertiary mammalian fauna from the Mint Canyon Formation of southern California. Carnegie Institution of Washington Publications 404:77-112.

the Vasquez Formation have a low potential for yielding significant paleontological resources, and are therefore assigned low paleontological sensitivity within the subarea.

Antelope Valley Northeast. Surficial geological mapping covering the Antelope Valley Northeast subarea was completed by Dibblee[24] and Dixon and Ward.[25] Research for this subarea revealed no previously known, significant paleontological resources; however, Late Pleistocene alluvium has yielded significant vertebrate fossils in other areas of Los Angeles County.[26] Quaternary fanglomerates and Pleistocene alluvial fan deposits are usually coarse-grained and do not often produce significant paleontological resources. Because of this, Late Pleistocene alluvium within this subarea is determined to have a high sensitivity for paleontological resources, and Quaternary fanglomerates and Pleistocene alluvial fan deposits have moderate sensitivity for significant paleontological resources. Igneous rocks have a low potential to yield significant paleontological resources.

East San Gabriel Mountains. The geology of the East San Gabriel Mountains subarea was mapped by Dibblee.[27,28,29,3031,32,33,34,35,36,37,38] The following rock units/formations have the potential to yield

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[21] Axelrod, D. I. 1940. The Mint Canyon flora of southern California: a preliminary statement. American Journal of Science 238: 577-585.

[22] Mount, J. D. 1971. A late Miocene flora from the Solemint Area, Los Angeles County, California. Bulletin of the Southern California Paleontological Society 3:1-4.

[23] Whistler, D.P., 1967. Oreodonts of the Tick Canyon Formation, southern California, Paleobios, v. 1: 1-14.

[24] Dibblee, T. W., Jr. 1953. Geologic Map of the Rogers Lake and Kramer Quadrangles, Los Angeles County, California. U. S. Department of the Interior, Bulletin 1089, Plate 8, scale 1:62,500.

[25] Dixon, G.L. and A.W. Ward, 2002, Preliminary geologic map of the Rogers Lake South quadrangle, Los Angeles and Kern Counties, California. US Geological Survey, Open-File Report OF-93-696, Scale 1:24,000.

[26] Jefferson, G. T. 1991 A catalogue of Late Quaternary vertebrates from California, Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, no. 7, 129 p.

[27] Dibblee, T. W., Jr. 1991. Geologic Map of the San Fernando and Van Nuys (North 1/2) quadrangles, Los Angeles County, California. Dibblee Geological Foundation DF-33 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[28] Dibblee, T. W., Jr. 1991a. Geologic Map of the Sunland and Burbank (North 1/2) Quadrangles, Los Angeles County, California. Dibblee Geological Foundation DF-32 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[29] Dibblee, T. W., Jr. 1992. Geologic Map of the Oat Mountain and Canoga Park (North 1/2) Quadrangles, Los Angeles County, California. Dibblee Geological Foundation DF-36 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, one cross-section. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[30] Dibblee, T. W., Jr. 2002. Geologic Map of the Mount San Antonio Quadrangle, Los Angeles and San Bernardino Counties, California. Dibblee Geological Foundation DF-88, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[31] Dibblee, T. W., Jr. and Minch, J.A. 2002. Geologic Map of the Black Mountain Quadrangle, Los Angeles and Ventura Counties, California. Dibblee Geological Foundation DF-92, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[32] Dibblee, T. W., Jr. and Minch, J.A. 2002. Geologic Map of the Mount Baldy Quadrangle, Los Angeles and San Bernardino Counties, California. Dibblee Geological Foundation DF-90, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[33] Dibblee, T. W., Jr. 2002. Geologic Map of the Glendora Quadrangle, Los Angeles County, California. Dibblee Geological Foundation DF-89, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[34] Dibblee, T. W., Jr. 1998. Geologic Map of the Mt. Wilson and Azusa Quadrangles, Los Angeles County, California. Dibblee Geological Foundation DF-67, scale 1:24,000, colored. Available online at:

significant paleontological resources based on previous collections and/or age and lithology and are given high paleontological sensitivity: Pleistocene alluvial deposits; the Saugus Formation; the Pliocene marine, Pico Formation; the Towsley Formation; the Ridge Basin Group; the Sisquoc Formation; the Monterey Formation; the Mint Canyon Formation; and the Eocene Llajas Formation.[39] Igneous and metamorphic rocks mapped in the subarea have low paleontological sensitivity.

Lake Hughes/Gorman/West of Lancaster. The surficial geology of the Lake Hughes/Gorman/West of Lancaster subarea was mapped by Dibblee,[40,41,42,43,44] Dibblee and Minch,[45,46,47] Hernandez and

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http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[35] Dibblee, T. W., Jr. 1989. Geologic Map of the Pasadena Quadrangle, Los Angeles County, California. Dibblee Geological Foundation DF-23, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[36] Dibblee, T. W., Jr. 2002. Geologic Map of the Condor Peak Quadrangle, Los Angeles County, California. Dibblee Geological Foundation DF-84, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[37] Dibblee, T. W., Jr. 1992. Geologic Map of the Santa Susana Quadrangle, Ventura and Los Angeles Counties, California. Dibblee Geological Foundation DF-38, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[38] Dibblee, T. W., Jr. 2002. Geologic Map of the Chilao Flat Quadrangle, Los Angeles County, California. Dibblee Geological Foundation DF-85, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[39] R. L. Squires. 2001. Additions to the Eocene megafossil fauna of the Llajas Formation, Simi Valley, southern California, in Contributions in Science (Natural History Museum of Los Angeles County) 489:1-40 [A. Miller/A. Hendy/A. Hendy]

[40] Dibblee, T. W., Jr. 1959. Geologic Map of Rosamond/Willow SpringsQuadrangle, Los Angeles and Kern Counties, California. U.S. Geological Survey Open-File Map 59-30, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[41] Dibblee, T. W., Jr. 1959a. Geologic Map of the Lancaster/Alpine Butte Quadrangle, Los Angeles County, California. U. S. Geological Survey Mineral Investigations Field Studies Map MF-222, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[42] Dibblee, T. W., Jr. 1997c. Geologic Map of the Green Valley Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-65 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, two cross-sections. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[43] Dibblee, T. W., Jr. 2006. Geologic Map of the Frazier Mountain & Lebec Quadrangles, Los Angeles, Ventura, & Kern Counties, California. Dibblee Geological Foundation Map DF-198 (Minch, J.A., ed.), scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[44] Dibblee, T. W., Jr. 2008. Geologic Map of the Neenach & Willow Springs 15-minute Quadrangles: Kern & Los Angeles Counties, California. Dibblee Geological Foundation Map DF-198 (Minch, J.A., ed), scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[45] Dibblee, T. W., Jr. 2002. Geologic Map of the Burnt Peak Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-83 (Minch, J.A., ed.), scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[46] Dibblee, T. W., Jr. 2002a. Geologic Map of the Lake Hughes and Del Sur Quadrangles, Los Angeles County, California. Dibblee Geological Foundation Map DF-82 (Minch, J.A., ed.), scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[47] Dibblee, T. W., Jr. 2002b. Geologic Map of the Liebre Mountain Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-93 (Minch, J.A., ed.), scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

Lancaster,[48] and Lancaster and Holland.[49] The research for this subarea revealed no previously known significant paleontological resources within the proposed initiative boundaries; however, the following sediments have the potential to yield significant paleontological resources: older Quaternary sediments,[50] fine-grained sedimentary units,[51] the Pliocene Anaverde Formation,[52] and the Santa Margarita Formation.[53,54] Igneous and metamorphic rocks do not normally yield significant paleontological resources, and therefore are considered to have low paleontological sensitivity.

Lake Los Angeles/Llano/Valyermo/Littlerock. The geology of the Lake Los Angeles, Llano, Valyermo, Littlerock subarea was mapped by Dibblee[55,56,57] and Dibblee and Minch.[58,59,60] Research for this subarea did not reveal any previously document paleontological localities within the proposed initiative boundaries; however, the following geological units and formations are considered to have high paleontological sensitivity: the Harold Formation, Pleistocene alluvium,[61]

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[48] Hernandez, J.L., and J.T. Lancaster. 2011. Geologic Map of the Fairmont Butte 7.5' Quadrangle, Los Angeles County, California. A digital database: California Geological Survey, Preliminary Geologic Maps, scale 1:24,000. Available online at: http://www.conservation.ca.gov/cgs/rghm/rgm/Pages/preliminary_geologic_maps.aspx

[49] Lancaster, J.T. and P.J. Holland. 2011. Preliminary Geologic Map of the Little Buttes 7.5' Quadrangle Los Angeles and Kern Counties, California. California Department of Conservation, scale 1:24,000. Available online at: http://www.conservation.ca.gov/cgs/rghm/rgm/Pages/preliminary_geologic_maps.aspx

[50] Jefferson, G. T., 1991 A catalogue of Late Quaternary vertebrates from California, Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, no. 7, 129 p

[51] Dibblee, T. W., Jr. 1997c. Geologic Map of the Green Valley Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-65 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, two cross-sections. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[52] Axelrod, D. I. 1950. The Anaverde Flora of southern California. Carnegie Institution of Washington Publications 590:119-158.

[53] Durham, D. L. and W.O. Addicot, 1964. Upper Miocene and Pliocene marine stratigraphy in southern Salinas Valley, California.Contributions to Stratigraphy, U.S. Geological Survey Bulletin 1194-E. 7p.

[54] Boessenecker, R.W. 2011. Herpetocetine (Cetacea: Mysticeti) dentaries from the Upper Miocene Santa Margarita Sandstone of Central California. Paleobios 30(1):1-12

[55] Dibblee, T. W., Jr. 1959a. Geologic Map of the Alpine Butte Quadrangle, Los Angeles County, California. U. S. Geological Survey Mineral Investigations Field Studies Map MF-222, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[56] Dibblee, T. W., Jr. 1960. Preliminary Geologic Map of the Shadow Mountains Quadrangle, Los Angeles and San Bernardino Counties, California. U.S. Geological Survey Mineral Investigations Field Studies Map MF-227, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[57] Dibblee, T. W., Jr. 1960a. Geology Map of the Lancaster Quadrangle, Los Angeles County, California. U.S. Geological Survey Mineral Investigations Field Studies Map MF-76, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[58] Dibblee, T.W., and J.A. Minch. 2002. Geologic Map of the Mescal Creek Quadrangle, Los Angeles and San Bernardino Counties, California. Dibblee Geological Foundation, Dibblee Foundation Map DF-81, scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[59] Dibblee, T.W., and J.A. Minch. 2002a. Geologic Map of the Valyermo Quadrangle, Los Angeles County, California. Dibblee Geological Foundation, Dibblee Foundation Map DF-80, scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[60] Dibblee, T.W., and J.A. Minch. 2002b. Geologic Map of the Juniper Hills Quadrangle [and Southern Littlerock Quadrangle], Los Angeles County, California. Dibblee Geological Foundation, Dibblee Foundation Map DF-79, scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[61] Jefferson, G. T., 1991 A catalogue of Late Quaternary vertebrates from California, Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, no. 7, 129 p.

the Anaverde Formation,[62] the Punchbowl Formation,[63] the Crowder Formation,[64] and the San Francisqutio Formation. Igneous and metamorphic rocks have a low potential for yielding significant paleontological resources, and are therefore assigned low paleontological sensitivity within the subarea.

Lancaster Northeast. Surficial geological mapping of areas within the Lancaster Northeast subarea was conducted by Dibblee[65,66,67] and Ward and Dixon.[68] Research revealed no previously known significant paleontological resources from the Lancaster Northeast subarea; however, Pleistocene channel deposits, eolian sands, and beach bar deposits mapped in the area have the potential to yield significant paleontological resources. Because of this, these deposits are considered to have high sensitivity to paleontological resources. Quaternary alluvium recent playa clay, sand bars, windblown sand are too young to contain significant paleontological resources and are considered to have low paleontological sensitivity.

5.2 ARCHAEOLOGICAL RESOURCES

5.2.1 Regional Ethnography and Prehistoric Period

5.2.1.1 Ethnographic Context

The proposed initiative study areas are located at the convergence of several cultural spheres of influence. Traditional utilization of these areas likely varied over time but included the Kitanemuk, Serrano, Tataviam, and Vanyume groups. Brief ethnographic reviews of each group are provided below.

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[62] Axelrod, D. I. 1950. The Anaverde Flora of southern California. Carnegie Institution of Washington Publications 590:119-158.

[63] Pagnac, D.C. 2009. Revised Large Mammal Biostratigraphy and Biochronology of the Barstow Formation (Middle Miocene), California. Paleobios. 29(2):48-59.

[64] Reynolds, R.E., Reynolds R.L., and E.H. Lindsay. 2008. Biostratigraphy of the Miocene Crowder Formation, Cajon Pass, southwestern Mojave Desert, California; pp.237-253, in X. Wang and L. G. Barnes (eds.), Geology and vertebrate paleontology of western and southern North America, Contributions in honor of David P. Whistler, Natural History Museum of Los Angeles County Science Series 41:i-viii, 1-388.

[65] Dibblee, T. W., Jr. 1959. Geologic Map of Rosamond Quadrangle, Los Angeles and Kern Counties, California. U.S. Geological Survey Open-File Map 59-30, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[66] Dibblee, T. W., Jr. 1959a. Geologic Map of the Alpine Butte Quadrangle, Los Angeles County, California. U. S. Geological Survey Mineral Investigations Field Studies Map MF-222, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[67] Dibblee, T.W., Jr. 1960. Geology of the Rogers Lake and Kramer quadrangles, California. U. S. Geological Survey Bulletin 1089-B, p. 73-139, map scale 1:62,500, colored. http://www.sbnature.org/dibblee/newweb/maps_catalog.html

[68] Dixon, G.L. and A.W. Ward. 2002. Preliminary Geologic Map of the Rogers Lake South Quadrangle, Los Angeles and Kern Counties, California. U.S. Geological Survey, Open-File Report OF-93-696, Scale 1:24,000. Available online at: http://pubs.er.usgs.gov/

The Kitanemuk

The Kitanemuk have been referred to as the main inhabitants of the Antelope Valley, but they are nonetheless one of the least known groups in California.[69,70] Although the exact range of the Kitanemuk is unknown, the Kitanemuk are thought to have inhabited the north and south faces of the Tehachapi Mountains, the Antelope Valley, and the westernmost extent of the Mojave Desert.[71] Kitanemuk territory included portions of the Lake Hughes/Gorman/West of Lancaster, Lancaster Northeast, and possibly Antelope Valley Northeast initiative subareas.

In contrast with the Kawaiisu to the north, the Kitanemuk culture shared more similarities with southern coastal groups such as the Chumash than with the Great Basin and Central Valley groups.[72] Chumash influences on the Kitanemuk are observed in Kitanemuk burial practices and religion. However, certain aspects of Kitanemuk culture reflected Great Basin and Central Valley groups, such as communal tule houses and basketry similar to the Central Valley Yokuts.[73] The Kitanemuk spoke a Serrano language of the Takic branch of Uto-Aztecan language family that was shared by groups living as far as Yucca Valley and Twentynine Palms. Kitanemuk buried their dead along with personal valuables. Like other Takic-speaking groups, the Kitanemuk had a patrilineal social organization. [74]

The Kitanemuk lived in permanent village sites that functioned as year-round base camps. During the spring, summer, and fall months, gathering expeditions were sent to satellite villages or temporary camps in pursuit of available seasonal resources.[75]

The Serrano

The term "Serrano" has been used to describe linguistic similarities between the Kitanemuk, Vanyume, Tataviam, and Serranos groups; however, the Serrano group refers to a small ethnic nationality that primarily inhabited the San Bernardino Mountains. [76] The word "Serrano" is from the Spanish term for "mountaineer," and the group's core inhabited lands are thought to have been the San Bernardino Mountains. Although it is difficult to determine the boundary of Serrano territory beyond the San Bernardino Mountains, the Transverse Mountains east of the Cajon Pass, the western Mojave Desert and the area from the Tehachapi Mountains to the northern Colorado Desert have all been attributed to Serrano territory.[77] Serrano territory included portions of the Lake

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[69] Sutton, Mark Q. 1979. "Some Thoughts of the Prehistory of the Antelope Valley." Paper presented at the 1979 Annual Meeting of the Society for California Archaeology, San Luis Obispo, CA.

[70] Sutton, Mark Q. 1987. "Some Aspects of Kitanemuk Prehistory." In Prehistory of the Antelope Valley, California: An Overview. Occasional Paper No. 1. Lancaster, CA: Antelope Valley Archaeological Society.

[71] Kroeber, A.L. 1925. Handbook of the Indians of California. New York: Dover Publications, Inc., p. 611.

[72] Blackburn, T.C., and L.J. Bean. 1978. "Kitanemuk." In Handbook of North American Indians, Vol. 8, ed. William C. Sturtevant. Washington, DC: Smithsonian Institution Press, p. 564.

[73] Kroeber, A.L. 1925. Handbook of the Indians of California. New York: Dover Publications, Inc., p. 612.

[74] Blackburn, Thomas C., and Lowell J. Bean. 1978. "Kitanemuk." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 564-569.

[75] Earle, D. 1997. Ethnohistoric Overview of the Edwards Air Force Base Region and the Western Mojave Desert. Prepared for: AFFTC/EMXR, Edwards Air Force Base, CA. Prepared by: Earle and Associates, Palmdale, CA, p. 10.

[76] Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

[77] Kroeber, A.L. 1925. Handbook of the Indians of California. New York: Dover Publications, Inc., p. 611.

Angeles/Llano/Valyermo/Littlerock, Lancaster Northeast, and Antelope Valley Northeast initiative subareas.

Related groups of the Serrano include the Gabrieliño and Luiseño to the west at the Pacific Coast and the Cahuilla inhabiting the Colorado Desert. For much of the Late Prehistoric Complex, the Serrano band likely inhabited the western Mojave Desert, in what is now the Cajon Pass and Barstow area. Little is known about early Serrano social organization because the band was not studied until the 1920s, and by that time enculturation had seriously compromised their native lifeway.[78] The Serrano were a hierarchically ordered society with a chief who oversaw social and political interactions both within their own culture and with other groups. Like other local groups, the Serrano had multiple villages ranging from seasonal satellite villages to larger, more permanent villages.

The primary food staple varied depending on locality. Groups located in the mountain and foothill regions gathered acorns and piñon; desert groups gathered honey mesquite, piñon nuts, yucca roots, mesquite, and cacti fruits.[79] In additional to this, deer, mountain sheep, antelope, rabbits, small rodents, and birds were hunted by the Serrano.[80]

Serrano villages were typically located near water sources and dwelling consisted of large, circular thatched and domed structures of willow covered with tule thatching. These tule structures could be built to house a large family. In addition to the living structure, a ramada (an open air structure for outdoor cooking) was located adjacent to the home.[81] A large ceremonial structure was often present and was used as the religious center where the lineage leader resided. Additional structures, such as granaries for food storage and sweathouses for ritual activities, were often located adjacent to pools or streams.[82]

Because of their inland location, Serrano society was left relatively intact during initial Spanish colonization, unlike groups that inhabited the coastal area. In 1772, Spanish explorer Pedro Fagès traveled through the Cajon Pass to the Mojave Desert in an attempt to identify the native groups in this region. Fages' ultimate goal was to place the Serrano under the supervision of a mission. By 1819, the Serrano were relocated to the Estancia of the Mission San Gabriel in Redlands.[83] At the time of relocation, there were likely on the order of 3,500 Serrano inhabiting the Mojave Basin. Between 1840 and 1860, a smallpox epidemic decimated the population. By 1910, the census recorded only 100 Serrano.[84]

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[78] Kroeber, A.L. 1925. Handbook of the Indians of California. New York: Dover Publications, Inc., p. 611.

[79] Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

[80] Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

[81] Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

[82] Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

[83] Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

[84] Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

The Tataviam

The existing ethnographic data on the Tataviam is limited and limited archaeological research been directly linked to this group. Most of what is known about the Tataviam comes from the work of two anthropologists, John Harrington (1910s) and Alfred Kroeber (mid-1920s), and from data obtained from the San Fernando Mission's registers, as well as the limited archaeological record.[85]

Tataviam territory was bounded by the Chumash to the west, the Kitanemuk to the north, the Serrano to the east, and the Gabrielino to the south. Thus, their material culture, subsistence strategies, rock art representation, and religious practices resemble those of their neighbors, primarily the Gabrielino and Inland Chumash, as well as the Serrano and even the Kawaiisu, who were located to the north of the Kitanemuk.[86,87]

The Tataviam territory extended from the northwest to the southeast, and encompassed portions of the Antelope, San Fernando, and Santa Clarita Valleys. The center of their territory is assumed to have been the Santa Clarita Basin area (upper portion of the Santa Clara River), east of Piru Creek, just north of what is currently known as the Los Angeles Metropolitan area.[88] The northern portion of their territory probably included the foothills of Liebre Mountain and Sawmill Mountain, located at the southwestern edge of the Antelope Valley. The northeast boundary of Tataviam territory included the south-facing slopes of Sawmill Mountain and Sierra Pelona, extending southeast to Soledad Pass. The southeastern boundary is unclear but it is likely that the upper Soledad Canyon–Acton area was part of Tataviam territory, at least sometime during the Late Prehistoric period. The southern boundary included the high portions of the San Gabriel Mountains and continued to the west towards the Santa Susana Mountains. Piru Creek appears to be the westernmost boundary of the Tataviam territory.[89,90] Tataviam territory included portions of the Lake Hughes/Gorman/West of Lancaster, Castaic/Santa Clarita/Agua Dulce, and Acton initiative subareas.

Linguistically the Tataviam (also known as Alliklik)[91] are considered to be part of the Takic subfamily of the Uto Aztecan linguistic family, who moved inland towards the west and along the California coast. The time frame of the Takic expansion is not clearly defined, because migration of

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[85] King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, p. 535-537.

[86] King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In Handbook of North American Indians, Volume 8: California, ed. by William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 535-537.

[87] Heizer, R.F. (ed). 1978. "Key to Tribal Territories." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, p. ix.

[88] Johnson, John R. 1990. "Tataviam Geography and Ethnohistory." In Journal of California and Great Basin Anthropology, 12(2): 191-214. Banning, CA: Malki Museum, Inc.

[89] King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 535-537.

[90] Johnson, John R. 1990. "Tataviam Geography and Ethnohistory." In Journal of California and Great Basin Anthropology, 12(2): 191-214. Banning, CA: Malki Museum, Inc.

[91] Kroeber, A. 1925. Handbook of the Indians of California. New York: Dover Publications, Inc., p. 995. (Used the term Alliklik, which was the name used by neighboring Chumash groups and roughly translates grunters or stammerers. The Kitanemuk used the term Tataviam or "people facing the sun" when referring to the inhabitants of the sunny upper Santa Clara River. The term Alliklik is considered to be derogatory, and therefore ceased to be used in literature around the mid-1970s.)

the population throughout the region took place at different times. Moratto indicates that Uto-Aztecan speakers migrated to California and that by the end of the Early period (circa 1500–1200 BC) Takic groups, such as the Tataviam, the Gabrielino, and the northern Serrano, already had firmly established territories.[92]

Ethnographic and archaeological information indicates that the Tataviam lived in villages of various sizes, with large centers occupied by about 200 people, widely separated from each other. Large villages were considered to be the major centers. Very small satellite communities of 10 to 15 people were located near the large centers, while mid-size settlements of 20 to 60 people were situated among the large villages. The total Tataviam population at the time of contact is assumed not to have exceeded 1,000 people.[93] The village located at Vasquez Rocks is known as the Agua Dulce Village. According to King *et al.*,[94] the Agua Dulce Village was larger than the surrounding villages and was probably an important economic and political center. Alliances with other villages were maintained through intermarriage and trade. It is estimated that the population of the Agua Dulce Village was possibly as low as 50 people during the early portion of the Middle period and approximately 200 to 300 people towards the end of the Middle period and throughout the Historic period (after AD 1200).[95]

Tataviam subsistence strategies were very similar to those of neighboring groups. A variety of plant foods was part of their diet, including the buds of the yucca plant (*Yucca whipplei*), a major staple, as well as coast live oak acorns (*Quercus agrifolia*), sage (*Salvia mellifera*), juniper berries (*Juniperus californica*), and berries of holly-leaf cherry (*Prunus ilicifolia*). Their diet was also supplemented with insects, small mammals, deer, and possibly pronghorn.[96] The Tataviam cooked the flower stalks of the plant in earth ovens lined with rocks. The final product was stored and consumed throughout the year. The flowers, seeds, and leaves at the base of the plant were also consumed. Archaeological evidence suggests that the Tataviam, as well as most native Southern Californians, traveled a long distance to collect acorns during certain times of the year. Ethnographic information indicates that acorn was primarily processed using bedrock mortars.

The Tataviam mortuary practices were influenced by their immediate neighbors, and archaeological evidence indicates that the Tataviam practiced both cremation and inhumation. Among the groups influencing the Tataviam were the Chumash; Coastal and inland Chumash were among the few that used inhumation exclusively.[97] The Gabrielino practiced both, inhumation and cremation,[98] until the establishment of the missions, when cremation was eliminated and

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[92] Moratto, Michael J. [1984] 2004. California Archaeology. Salinas, CA: Coyote Press.

[93] King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 535-537.

[94] King, Chester D., Charles Smith and Tom King. 1974. Archaeological Report Related to the Interpretation of Archaeological Resources Present at Vasquez Rocks County Park. Prepared for: County of Los Angeles Department of Parks and Recreation, p. 43.

[95] King, Chester D., Charles Smith and Tom King. 1974. Archaeological Report Related to the Interpretation of Archaeological Resources Present at Vasquez Rocks County Park. Prepared for: County of Los Angeles Department of Parks and Recreation, p. 33.

[96] King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 535-537.

[97] Kroeber, A.L. 1925. Handbook of the Indians of California. New York: Dover Publications, Inc., p. 556.

[98] McCawley, William. 1996. The First Angelinos: The Gabrielino Indians of Los Angeles. Banning, CA: Malki Museum Press, p. 157.

inhumation alone became the norm. The Serrano cremated their deceased,[99] while the Kitanemuk preferred inhumation.[100] Based on his research of the Gabrielinos, McCawley[101] mentions that inhumation (more common along coastal groups) may have been a result of cultural influence by the Chumash or a practice adopted because scarcity of fuel required for cremations.[102] With interment came the practice of grave goods a practice favored by most of the tribes in California. Grave goods usually consisted of beads of various materials, knives, projectile points, and exotic trade items among other objects. Ethnographic studies, as well as archaeological evidence regarding the presence or absence of grave goods and their quality, have been important archaeological tools to determine social hierarchy among individuals in specific social groups. Excavations at two burial sites in the Agua Dulce Village (CA-LAN-361 and CA-LAN-373) show social differentiation, which is reflected as the presence of exotic trade items in the graves, or complete lack of any grave goods.

The Vanyume

Limited information is available on the Vanyume. The Vanyume are a small division of the Serrano linguistic group that lived in the Mojave Desert, near the Mojave River.[103] The Vanyume population was likely low and confined to several small villages. The Vanyume were hostile to the neighboring Serrano, but were reported to have good relations with the Mojave and Chemehuevi.[104] The Vanyume were hunters and gatherers, and shell beads and millingstones were known to have been used. The Vanyume are generally associated with life ways similar to the Serrano.[105] Vanyume territory may have included portions of the Lake Angeles/Llano/Valyermo/Littlerock, Lancaster Northeast, and Antelope Valley Northeast initiative subareas.

5.2.1.2 Prehistoric Context

The proposed initiative study area is located at the boundary between two prehistoric cultural chronologies proposed by researchers: the California coastal chronology and the Mojave Desert chronology. The geographical extent of both chronologies are poorly defined; however, the approximate eastern limit of the California coastal chronology in this area is the Sierra Pelona Ridge and the western limit of the Mojave Desert chronology in this area is the Antelope Valley. For this reason, both the coastal and desert chronologies are presented below. Future work may provide support for a more precise chronology of this area.

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[99] Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

[100] Blackburn, Thomas C., and Lowell J. Bean. 1978. "Kitanemuk." In Handbook of North American Indians, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 564-569.

[101] McCawley, William. 1996. The First Angelinos: The Gabrielino Indians of Los Angeles, Banning, CA: Malki Museum Press.

[102] McCawley, William. 1996. The First Angelinos: The Gabrielino Indians of Los Angeles. Banning, CA: Malki Museum Press, p. 157.

[103] Kroeber, A.L. 1925. Handbook of the Indians of California. New York: Dover Publications, Inc., p. 614.

[104] Kroeber, A.L. 1925. Handbook of the Indians of California. New York: Dover Publications, Inc., p. 614.

[105] Kroeber, A.L. 1925. Handbook of the Indians of California. New York: Dover Publications, Inc., p. 614.

Coastal Chronology

Several prehistoric cultural chronologies have been proposed for the coastal Southern California region with three of the most frequently cited sequences developed by William Wallace,[106] Claude Warren,[107] and Chester King.[108] Such chronologies provide a framework to discuss archaeological data in relation to broad cultural changes seen in the archaeological record. The chronological sequence presented herein represents an updated synthesis of these schemes as compiled by Glassow and others[109] for the Northern California Bight. This geographic area consists of the coastal area from Vandenberg Air Force Base south to Palos Verdes, as well as the Channel Islands and adjacent inland areas, including the San Fernando Valley and Los Angeles Basin.[110] The prehistoric sequence of the Northern California Bight can be divided into four broad temporal categories (Table 5.2.1.2-1, *Southern California Coastal Regional Chronology*). It should be noted that the prehistoric chronology for the region is being refined on a continuing basis, with new discoveries and improvements in the accuracy of dating techniques.

TABLE 5.2.1.2-1
SOUTHERN CALIFORNIA COASTAL REGIONAL CHRONOLOGY

Epoch	Coastal Region	Dates
Terminal Pleistocene / Early Holocene	Paleo-Coastal Period	Circa 9500 to 7000/6500 BC
Middle Holocene	Millingstone Period	Circa 7000/6500 to 1500/1000 BC
Late Holocene	Intermediate Period	1500/1000 BC to AD 750
Late Holocene	Late Period	AD 750 to Spanish contact

Terminal Pleistocene and Early Holocene: Paleo-Coastal Period (Circa 9500 to 7000/6500 BC)

Although data on early human occupation for the Southern California coast are limited, archaeological evidence from the northern Channel Islands suggests initial settlement within the region occurred at least 12,000 years BP. At Daisy Cave (CA-SMI-261) on San Miguel Island, radiocarbon dates indicate an early period of use in the terminal Pleistocene, sometime between 9600 and 9000 calibrated (cal) BC.[111] Evidence of early human occupation in the Northern California Bight has also been found on nearby Santa Rosa Island, where human remains from the

[106] Wallace, William J. 1955. "A Suggested Chronology for Southern California Coastal Archaeology." Southwestern Journal of Anthropology 11: 214–30.

[107] Warren, Claude M. 1968. "Cultural Tradition and Ecological Adaptation on the Southern California Coast." In Archaic Prehistory in the Western United States, ed. Cynthia Irwin-Williams. Eastern New Mexico University Contributions in Anthropology No. 1. Portales, NM: Eastern New Mexico University.

[108] King, Chester. 1990. Evolution of Chumash Society: A Comparative Study of Artifacts Used for Social System Maintenance in the Santa Barbara Channel Region before AD 1804. New York, NY: Garland.

[109] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In California Prehistory, Colonization, Culture, and Complexity, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

[110] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In California Prehistory, Colonization, Culture, and Complexity, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

[111] Erlandson, J.M., D.J. Kennett, B.L. Ingram, D.A. Guthrie, D.P. Morris, M.A. Tveshov, G.J. West, and P.L. Walker 1996. "An Archaeological and Paleontological Chronology for Daisy Cave (CA-SMI-261), San Miguel Island, California." Radiocarbon, 38: 355–73.

Arlington Springs Site (CA-SRI-1730) have been dated between 11,000 and 10,000 cal BC.[112] Archaeological data recovered from these and other coastal Paleoindian sites indicate a distinctively maritime cultural adaptation, termed the "Paleo-Coastal Tradition,"[113] which involved the use of seafaring technology and a subsistence regime focused on shellfish gathering and fishing.[114]

Relatively few sites have been identified in Los Angeles County that date to the terminal Pleistocene and early Holocene. Currently, the earliest reliable date for human occupation in the area derives from the La Brea Tar Pits (CA-LAN-159), where human bone has been dated to 8520 cal BC.[115] Evidence of possible early human occupation has also been found at the sand dune bluff site of Malaga Cove (CA-LAN-138), located between Redondo Beach and Palos Verdes.[116] Researchers have proposed that archaeological remains recovered from the lowermost cultural stratum at the site, which include shell, animal bone, and chipped stone tools, may date as early as 8000 cal BC.[117,118]

Middle Holocene: Millingstone Period (Circa 7000/6500 to 1500/1000 BC)

The Millingstone Period or Horizon, also referred to as the "Encinitas Tradition,"[119,120] is the earliest well-established cultural occupation of the coastal areas of the region. The onset of this period, which began sometime between 7000 and 6500 cal BC, is marked by the expansion of populations throughout the Northern California Bight. Regional variations in technology, settlement patterns, and mortuary practices among Millingstone sites have led researchers to define several local manifestations or "patterns" of the tradition.[121] Groups that occupied the San Fernando Valley are thought to have been relatively small and highly mobile during this time, with a general subsistence economy focused on the gathering of shellfish and plant foods, particularly hard seeds, with hunting being of less importance.[122]

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[112] Johnson, J.R., T.W. Stafford Jr., H.O. Ajie, and D.P. Morris. 2002. "Arlington Springs Revisited." In Proceedings of the Fifth California Islands Symposium, ed. D. Browne, K. Mitchell, and H. Chaney, pp. 541–45. Santa Barbara, CA: USDI Minerals Management Service and The Santa Barbara Museum of Natural History.

[113] Moratto, M.J. 1984. California Archaeology, pp. 103-113. Academic Press, New York.

[114] Rick, T.C., J.M. Erlandson, and R.L. Vellanoweth. 2001. "Paleocoastal Fishing along the Pacific Coast of the Americas: Evidence from Daisy Cave, San Miguel Island, California." American Antiquity, 66: 595–614.

[115] Berger, R., R. Protsch, R. Reynolds, C. Rozaire, and J.R. Sackett. 1971. New Radiocarbon Dates Based on Bone Collagen of California Indians. Los Angeles, CA: Contributions to the University of California Archaeological Survey.

[116] Walker, Edwin Francis. 1951. Five Prehistoric Archaeological Sites in Los Angeles County, California. F. W. Hodge Anniversary Publication Fund VI. Los Angeles, CA: Southwest Museum.

[117] Moratto, M.J. 1984. California Archaeology, pp. 132. Academic Press, New York.

[118] Wallace, W.J. 1986. "Archaeological Research at Malaga Cove." In Symposium: A New Look at Some Old Sites, ed. G.S. Breschini and T. Haversat. Salinas, CA: Coyote Press.

[119] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." Pacific Coast Archaeological Society Quarterly, 44(2): 1–54.

[120] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." Pacific Coast Archaeological Society Quarterly, 42(4): 1–64.

[121] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." Pacific Coast Archaeological Society Quarterly, 42(4): 1–64.

[122] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In California Prehistory, Colonization, Culture, and Complexity, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

Two temporal subdivisions have been defined for the portion of the Topanga Pattern falling within the Millingstone Period: Topanga I (circa 6500 to 3000 BC) and Topanga II (circa 3000 to 1000 BC).[123] Topanga I assemblages are characterized by abundant manos and metates, core tools and scrapers, charmstones, cogged stone, and discoidals; projectile points are quite rare with those present resembling earlier, large, leaf-shaped forms.[124] Secondary inhumations with associated cairns are the most common burial form at Millingstone sites with small numbers of extended inhumations also identified. The subsequent Topanga II phase largely represents a continuation of the Topanga pattern with site assemblages characterized by numerous manos and metates, charmstones, cogged stones, discoidals, and some stone balls. A significant technological change in ground stone occurs at this time with the appearance of mortars and pestles at Topanga II sites suggesting the adoption of balanophagy by coastal populations.[125] The quantity of projectile points also notably increases in Topanga II site deposits indicating that the hunting of large game may have played a greater role in the subsistence economy than in earlier times. While secondary burials continue to be quite common, a few flexed inhumations have also been recovered from archaeological contexts dating to the Topanga II phase.

A number of Millingstone sites have been identified in the San Fernando Valley and surrounding areas. The early component of the Tank site (CA-LAN-1), located in the nearby Santa Monica Mountains, appears to date to the Topanga I phase.[126] In addition, a marine shell sample from the Encino Village site (CA-LAN-43 / CA-LAN-111) yielded a radiocarbon date of 4570 ± 80, suggesting use of the southern portion of the valley during the Topanga I phase.[127] The presence of mortars and pestles alongside stemmed projectile points at the Chatsworth site (CA-LAN-21), located at the western edge of the San Fernando Valley, suggests a Topanga II presence.[128] Finally, the Big Tujunga Wash site, located at the eastern edge of the San Fernando Valley, may have also contained a Topanga II component.[129]

Late Holocene: Intermediate Period (1500/1000 BC to AD 750)

The Intermediate Period, which encompasses the early portion of the "Del Rey Tradition" as defined by Sutton,[130] begins around 3500 BP. At this time, significant changes are seen throughout the coastal areas of Southern California in material culture, settlement systems, subsistence

[123] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." Pacific Coast Archaeological Society Quarterly, 42(4): 1–64, 8.

[124] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In California Prehistory, Colonization, Culture, and Complexity, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

[125] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." Pacific Coast Archaeological Society Quarterly, 42(4): 1–64, 41.

[126] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." Pacific Coast Archaeological Society Quarterly, 42(4): 1–64, 8.

[127] Taylor, R.E., P.J. Ennis, P.J. Slota Jr. and L.A. Payen. 1989. "Non-Age-Related Variations in Aspartic Acid Racemization in Bone from a Radiocarbon-dated Late Holocene Archaeological Site." Radiocarbon, 31(3): 1048-56.

[128] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." Pacific Coast Archaeological Society Quarterly, 42(4): 1–64, 8.

[129] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." Pacific Coast Archaeological Society Quarterly, 42(4): 1–64, 8.

[130] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." Pacific Coast Archaeological Society Quarterly, 44(2): 1–54.

strategies, and mortuary practices. These new cultural traits have been attributed to the arrival of Takic speaking people from the southern San Joaquin Valley.[131] Biological, archaeological, and linguistic data indicate that the Takic groups who settled in the San Fernando Valley were ethnically distinct from the preexisting Hokan-speaking Topanga populations and are believed to be ancestral to ethnographic Gabrielino groups.[132] While archaeological evidence indicates that "relic" Topanga III populations continued to survive in isolation in the Santa Monica Mountains, these indigenous groups appear to have been largely replaced or absorbed by the Gabrielino or Chumash by 2000 BP.[133]

Intermediate Period sites within Los Angeles County are represented by the "Angeles Pattern" of the Del Rey Tradition.[134] Three temporal subdivisions have been defined for the portion of the Angeles Pattern that falls within the Intermediate Period: Angeles I (1500 to 600 BC), Angeles II (600 BC to AD 400), and Angeles III (AD 400 to 750).[135] The onset of the Angeles I phase is characterized by the increase and aggregation of regional populations and the appearance of the first village settlements. The prevalence of projectile points, single-piece shell fishhooks, and bone harpoon points at Angeles I sites suggests a subsistence shift in the Intermediate Period with an increased emphasis on fishing and terrestrial hunting and less reliance on the gathering of shellfish resources. Regional trade or interaction networks also appeared to develop at this time with coastal populations in Los Angeles County obtaining small steatite artifacts and *Olivella* shell beads from the southern Channel Islands and obsidian from the Coso Volcanic Field.[136] Finally, marked changes are seen in mortuary practices during the Angeles I phase with flexed primary inhumations and cremations replacing extended inhumations and cairns.

The Angeles II phase largely represents a continuation and elaboration of the Angeles I technology, settlement, and subsistence systems. One exception to this pattern is the introduction of a new funerary complex around 2600 BP consisting of large rock cairns or platforms which contain abundant broken tools, faunal remains, and cremated human bone. These mortuary features have generally been thought to represent the predecessor of the Southern California Mourning Ceremony.[137] Several important changes in the archaeological record mark the beginning of the Angeles III phase. At this time, larger seasonal villages characterized by well-developed middens and cemeteries were established along the coast or inland areas. Archaeological data from Angeles III sites indicate that residents of these settlements practiced a fairly diverse subsistence strategy

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[131] Sutton, Mark Q. 2009. "People and Language: Defining the Takic Expansion in Southern California." Pacific Coast Archaeological Society Quarterly, 41(2&3): 31-93.

[132] Sutton, Mark Q. 2009. "People and Language: Defining the Takic Expansion in Southern California." Pacific Coast Archaeological Society Quarterly, 41(2&3): 31-93.

[133] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." Pacific Coast Archaeological Society Quarterly, 42(4): 1–64, 17.

[134] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." Pacific Coast Archaeological Society Quarterly, 44(2): 1–54.

[135] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." Pacific Coast Archaeological Society Quarterly, 42(4): 1–64, 8.

[136] Koerper, Henry C., Roger D. Mason, and Mark L. Peterson. 2002. "Complexity, Demography, and Change in Late Holocene Orange County." In Catalysts to Complexity: Late Holocene Societies of the California Coast, ed. M. Erlandson and Terry L. Jones. Perspectives in California Archaeology, Vol. 6. Los Angeles, CA: University of California, Los Angeles, Institute of Archaeology.

[137] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." Pacific Coast Archaeological Society Quarterly, 44(2): 1–54.

which included the exploitation of both marine and terrestrial resources.[138] Notable technological changes occurred at this time with the introduction of the plank canoe and bow and arrow.[139] The appearance of new *Olivella* bead types at Angeles III sites indicates a reconfiguration of existing regional exchange networks with increased interaction with populations in the Gulf of California.[140] Finally, cremations increase slightly in frequency at this time with inhumations no longer placed in an extended position.[141] Intermediate Period sites in Los Angeles County include CA-LAN-2 and CA-LAN-197, both of which are located in the Santa Monica Mountains. The formal cemeteries at these sites are representative of the increased sedentism that occurred during the Intermediate Period.[142]

Late Holocene: Late Period (AD 750 to Spanish Contact)

The Late Period dates from approximately AD 750 until Spanish contact at AD 1542. Sutton[143] has divided this period, which falls within the larger Del Rey Tradition, into two phases: Angeles IV (AD 750–1200) and Angeles V (AD 1200–1550). The Angeles IV phase is characterized by the continued growth of regional populations and the development of large, sedentary villages. Although chiefdoms appear to have developed in the northern Channel Islands and Santa Barbara region after 850 BP,[144,145] little direct evidence has been found to suggest this level of social complexity existed in the San Fernando Valley during the late prehistoric period.[146]

Several new types of material culture appear during the Angeles IV phase including Cottonwood series points, birdstone and "spike" effigies, *Olivella* cupped beads, and *Mytilus* shell disk beads. The presence of Southwestern pottery, Patayan ceramic figurines, and Hohokam shell bracelets at Angeles IV sites suggests some interaction between groups in Southern California and the Southwest. Notable changes are seen in regional exchange networks after 800 BP with an increase in the number and size of steatite artifacts, including large vessels, elaborate effigies, and *comals*, recovered from Angeles V sites. The presence of these artifacts suggests a strengthening of trade ties

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[138] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." Pacific Coast Archaeological Society Quarterly, 44(2): 1–54.

[139] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In California Prehistory, Colonization, Culture, and Complexity, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

[140] Koerper, Henry C., Roger D. Mason, and Mark L. Peterson. 2002. "Complexity, Demography, and Change in Late Holocene Orange County." In Catalysts to Complexity: Late Holocene Societies of the California Coast, ed. M. Erlandson and Terry L. Jones. Perspectives in California Archaeology, Vol. 6. Los Angeles, CA: University of California, Los Angeles, Institute of Archaeology.

[141] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." Pacific Coast Archaeological Society Quarterly, 44(2): 1–54.

[142] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In California Prehistory, Colonization, Culture, and Complexity, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

[143] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." Pacific Coast Archaeological Society Quarterly, 44(2): 1–54.

[144] Arnold, Jeanne E. 1992. "Complex Hunter-Gatherer-Fishers of Prehistoric California: Chiefs, Specialists, and Maritime Adaptations of the Channel Islands." American Antiquity, 57(1): 60–84.

[145] Gamble, Lynn H. 2005. "Culture and Climate: Reconsidering the Effect of Palaeoclimatic Variability among Southern California Hunter-Gatherer Societies." World Archaeology, 37(1): 92–108.

[146] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." Pacific Coast Archaeological Society Quarterly, 44(2): 1–54.

between coastal Los Angeles populations and the southern Channel Islands.[147] Finally, Late Period mortuary practices remain largely unchanged from the Intermediate Period with flexed primary inhumations continuing to be the preferred burial method.

Late Period sites in Los Angeles County include CA-LAN-227 and CA-LAN-229, which are situated in the Santa Monica Mountains. Both sites contain less Millingstone artifacts than earlier sites, but more mortars, pestles, projectile points, drills, beads, pipes, and bone tools.[148] Although these sites represent a move toward centralized sedentary villages during this period, it is unclear whether they represent year-round occupation or semi-permanent villages used as base settlements.[149]

Mojave Desert Chronology

The desert chronology consists of a brief outline of the currently accepted chronological framework for the Mojave Desert Region. Archaeological sequences are grouped into Late Pleistocene and Early, Middle, and Late Holocene time frames, with period and phase definitions varying by region. This report uses the set of period names that has been broadly applied to the Mojave Desert (Table 5.2.1.2-2, *Mojave Desert Regional Chronology*). It should be noted that the prehistoric chronology for the region is being refined on a continuing basis, with new discoveries and improvements in the accuracy of dating techniques.

TABLE 5.2.1.2-2
MOJAVE DESERT REGIONAL CHRONOLOGY

Epoch	Mojave Desert Region	Dates
Late Pleistocene	Paleoindian Period	12,000[150] to 10,000 BP
Early Holocene	Lake Mojave Period	Circa 10,000 to 7000 BP
Middle Holocene	Pinto Period	Circa 7000 to 4000 BP
Late Holocene	Gypsum Period	Circa 4000/3500 to 1500 BP
Late Holocene	Rose Spring Period	Circa 1500 to 1000/600 BP
Late Holocene	Late Prehistoric Period	Circa 1000 BP to Contact AD 1770

Late Pleistocene: Pre-Projectile Point Period (Before 12,000 BP)

The earliest Pleistocene archaeological sites, which may be earlier than 12,000 years BP, are often referred to as pre-Clovis, or pre-projectile point and are viewed as controversial by many archaeologists because of the lack of dateable contexts and the uncertainty in the accuracy of dates obtained from some artifacts submitted for analysis.[151] One of the most thorough studies on this

[147] Koerper, Henry C., Roger D. Mason, and Mark L. Peterson. 2002. "Complexity, Demography, and Change in Late Holocene Orange County." In Catalysts to Complexity: Late Holocene Societies of the California Coast, ed. M. Erlandson and Terry L. Jones. Perspectives in California Archaeology, Vol. 6. Los Angeles, CA: University of California, Los Angeles, Institute of Archaeology.

[148] Moratto, M. 1984. California Archaeology. pp. 141. Academic Press, Inc. Orlando, Florida.

[149] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In California Prehistory, Colonization, Culture, and Complexity, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

[150] This date is subject to dispute among archaeologists.

[151] Wallace, W.J. 1962. "Prehistoric Cultural Development in the Southern California Deserts." American Antiquity, 28(2): 172–180.

time period is Emma Lou Davis's 1978 study of Pleistocene Lake China, Ridgecrest, in eastern California.[152] Other examples are the Calico Early Man Site and the Manix Lake Lithic Industry.[153,154]

Late Pleistocene: Paleoindian Period (Circa 12,000 BP to 10,000 BP)

The subsequent Paleoindian Period is recognized throughout the west by the presence of fluted projectile points, such as the well-known Clovis points, and associated artifacts. Recent calibrations of these radiocarbon dates suggest that fluted points may be up to 2,000 years older than previously thought, with a range of about 13,000 to 11,000 calendar years BP.[155] Although many fluted points have been found in the Great Basin and Mojave Desert, none of these have been recovered in dateable contexts.[156] Davis identified several sites associated with the shoreline at Pleistocene Lake China that contained fluted points.[157] In the vicinity of the proposed initiative area, fluted points have been reported in the El Paso Mountains, Antelope Valley, and adjacent mountains.[158,159]

Fluted points have traditionally been interpreted as tools used for hunting Pleistocene megafauna due to their clear association with megafauna remains in the southwestern United States. However, more recent research suggests a more diversified subsistence strategy, one including the use of productive shallow lakes and marsh environments. This interpretation flows from the fact that nearly all fluted points sites in the Great Basin were found along the perimeter of the now-extinct lakes and marshes that existed during the Late Pleistocene and early Holocene.[160] Some argue that this distribution may represent a bias in the visibility of older sites in that exposed older surfaces, where such sites would be found, are typically more pervasive along washes and as the center of flat, playa bearing locations, in areas not obscured by younger deposits.[161] This bias would provide

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[152] Davis, E.L. 1978. "The Ancient Californians: Rancholabrean Hunters of the Mohave Lakes Country." Science Series 29. Los Angeles, CA: Natural History Museum.

[153] Leakey, L.S.B., R.D. Simpson, and T. Clements. 1968. "Archaeological excavations in the Calico Mountains, California: Preliminary Report." Science, 160: 1022–1023.

[154] Simpson, R.D. 1958. "The Manix Lake Archaeological Survey." The Masterkey, 32(1): 4–10.

[155] Fagan, Brian. 2005. Ancient North America: The Archaeology of a Continent. 4th Edition. London: Thames & Hudson, p. 12.

[156] Dillon, B.D. 2002. "California Paleoindians: Lack of Evidence, or Evidence of Lack?" In Essays in California Archaeology: A Memorial to Franklin Fenega, ed. W.J. Wallace and F.A. Riddell. Berkeley, CA: University of California Publications, pp. 110–128.

[157] Davis, E.L. 1978. "The Ancient Californians: Rancholabrean Hunters of the Mohave Lakes Country." Science Series 29. Los Angeles, CA: Natural History Museum.

[158] Dillon, B.D. 2002. "California Paleoindians: Lack of Evidence, or Evidence of Lack?" In Essays in California Archaeology: A Memorial to Franklin Fenega, ed. W.J. Wallace and F.A. Riddell. Berkeley, CA: University of California Publications, pp. 110–128.

[159] Earle, D.D., B.L. Boyer, R.A. Bryson, R.U. Bryson, M.M. Campbell, J.J. Johannesmeyer, K.A. Lark, C.J. Parker, M.D. Pittman, L.M. Ramirez, M.R. Ronning, and J. Underwood. 1997. Cultural Resources Overview and Management Plan for Edwards Air Force Base, California, Volume 1, Overview of Prehistoric Cultural Resources. Prepared for: AFFTC/EMXR, Edwards Air Force Base, CA, p. 54.

[160] Grayson, Donald K. 1993. The Desert's Past: A Natural Prehistory of the Great Basin. Washington, DC: Smithsonian Institution Press.

[161] Basgall, M.E., and M.C. Hall. 1994. "Perspectives on the Early Holocene Archaeological Record of the Mojave Desert." In Kelso Conference Papers 1987–1992, A Collection of Papers and Abstracts from the First Five Kelso Conferences on the Prehistory of the Mojave Desert, ed. G. Dicken Everson and Joan S. Schneider. Bakersfield, CA: California State University, Bakersfield, Museum of Anthropology, Occasional Papers in Anthropology, 4: 63–81.

a narrow view of subsistence and adaptive strategies during the early Holocene to Late Pleistocene periods if in fact additional activity areas located away from these resources are not being recognized. Although the level of utilization and focus on these areas is debated, these environments would undoubtedly have provided a rich habitat for numerous plants and animals and were likely exploited by Paleoindian peoples.

Early Holocene: Lake Mojave Period (Circa 10,000 BP to 7000 BP)

The quantity of archaeological remains in the western United States increases at the beginning of the Holocene Period, about 10,000 years BP. Sites dating to the Early Holocene are found along the shorelines of Pleistocene dry lakes and are characterized by the occurrence of large stemmed and concave base projectile points, as well as other distinctive flaked stone tools. The point types that are associated with this period are known as Lake Mojave and Silver Lake projectile points, named for the dry lakes where they were first found.[162] Lake Mojave sites are relatively rare in the western Mojave Desert, but Earle et al. reported at least five sites on Edwards Air Force Base with Lake Mojave Period points.[163,164]

Little is known about the subsistence strategies during this period, although it is assumed that hunting was a primary focus. The presence of projectile points and the relative lack of ground stone tools indicative of plant processing lend credence to this view. Faunal assemblages at several sites of this period have also supported this assumption, with evidence for both small (e.g., lagomorph) and large (e.g., artiodactyl) animal exploitation.[165,166] As with the Paleoindian Period, however, the presence of Lake Mojave Period sites near extinct Pleistocene and early Holocene lakes suggest a diverse range of resources may have been utilized.

Middle Holocene: Pinto Period (Circa 7000 BP to 4000 BP)

The Middle Holocene is characterized by the appearance of Pinto series projectile points in the Mojave Desert.[167] Pinto points are smaller than Lake Mojave points, and their name derives from

[162] Campbell, E.W.C., W.H. Campbell, E. Antevs, C.E. Amsden, J.A. Barbieri, and F.D. Bode. 1937. "The Archaeology of Pleistocene Lake Mojave." Southwest Museum, Paper No. 9. Los Angeles, CA.

[163] Sutton, Mark Q. 1987. "Some Aspects of Kitanemuk Prehistory." In Prehistory of the Antelope Valley, California: An Overview. Occasional Paper No. 1. Lancaster, CA: Antelope Valley Archaeological Society, p. 229.

[164] Earle, D.D., B.L. Boyer, R.A. Bryson, R.U. Bryson, M.M. Campbell, J.J. Johannesmeyer, K.A. Lark, C.J. Parker, M.D. Pittman, L.M. Ramirez, M.R. Ronning, and J. Underwood. 1997. Cultural Resources Overview and Management Plan for Edwards Air Force Base, California, Volume 1, Overview of Prehistoric Cultural Resources. Prepared for: AFFTC/EMXR, Edwards Air Force Base, CA, p. 54.

[165] Basgall, M.E. 2000. "The Structure of Archaeological Landscapes in the North-Central Mojave Desert." In Archaeological Passages: A Volume in Honor of Claude Nelson Warren, ed. J.S. Schneider, R.M. Yohe II, and J.K. Gardner. Hemet, CA: Western Center for Archaeology and Paleontology, Publications in Archaeology.

[166] Basgall, M.E., and M.C. Hall. 1994. "Perspectives on the Early Holocene Archaeological Record of the Mojave Desert." In Kelso Conference Papers 1987–1992, A Collection of Papers and Abstracts from the First Five Kelso Conferences on the Prehistory of the Mojave Desert, ed. G. Dicken Everson and Joan S. Schneider. Bakersfield, CA: California State University, Bakersfield, Museum of Anthropology, Occasional Papers in Anthropology, 4: 63–81.

[167] Sutton, Mark Q. 1996. "The Current Status of Archaeological Research in the Mojave Desert." Journal of California and Great Basin Anthropology, 18(2): 231.

the Pinto Basin where they were first defined.[168] The period is not well delineated because of a paucity of chronometric data and disagreement on the definition and dating of the Pinto series.[169]

With the onset of the Middle Holocene, the climate became dryer and hotter throughout the deserts of the western United States. Sites dating to this time period exhibit diverse artifact assemblages, marked by the presence of both hunting tools and milling equipment. Many interpret these assemblages as a move from exploitation of only higher-ranked food items, such as large animals, to a more diversified subsistence strategy that also includes low-ranked resources such as seeds, as a response to the climatic shift to more arid conditions. Settlement patterns also appear to change in response to climatic conditions with a move from lakeshore habitats, which became dry, to areas around streams or springs.[170]

Late Holocene Gypsum Period (Circa 4000/3500 BP to 1500 BP)

About 4,000 years ago, climatic conditions shifted again, this time to the cooler, moister conditions characterizing the Late Holocene. This period is characterized by the replacement of Pinto points with Gypsum and Elko series projectile points. In the Owens Valley region, at approximately the same time period, Pinto points were replaced by Humboldt and Elko series projectile points.

An increase in population, trade, and social complexity is suggested with the more favorable climate conditions. The mortar and pestle appears to have been introduced during this period, which is hypothesized to mark the beginning of tree crop utilization, such as mesquite and oak. There was an increase in the use of seeds, including piñon, which is indicated by the presence of milling stones. However, hunting of a variety of fauna, including mountain sheep, remained an important part of the economy. This period is also marked by increased evidence of ritual activities as indicated by numerous rock art sites (e.g., Coso Range) and the discovery of split-twig figurines at Newberry Cave in the central Mojave Desert.[171] The presence of split-twig figurines also suggests interaction with the Southwest culture area during this time period.

Late Holocene: Rose Spring Period (Circa 1500 to 1000/600 BP)

Throughout the Great Basin, Elko and other dart-size points were replaced about 1,500 years ago with Rose Spring and Eastgate projectile points, often grouped together under the label Rosegate.[172] This occurrence, which correlates with the introduction of the bow and arrow around AD 500,[173] may also mark the beginning of the Numic expansion, which many researchers believe emanated from southeastern California.

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[168] Campbell, E.W.C., and W.H. Campbell. 1935. "The Pinto Basin Site." In Southwest Museum, Paper No. 9. Los Angeles, CA.

[169] Warren, C.N. 2002. "Time, Form, and Variability: Lake Mojave and Pinto Periods in Mojave Desert Prehistory." In Essays in California Archaeology: A Memorial to Franklin Fenenga, ed. W.J. Wallace and F.A. Riddell. Berkeley, CA: University of California Archaeological Research Facility, pp. 129–141.

[170] Sutton, Mark Q. 1996. "The Current Status of Archaeological Research in the Mojave Desert." Journal of California and Great Basin Anthropology, 18(2): 221–257.

[171] Smith, G.A., W.C. Schuiling, L. Martin, R.J. Sayles, and P. Jillson. 1957. San Bernardino County Museum Scientific Series 1, Newberry Cave, CA.

[172] Thomas, D. H. 1981. "How to Classify the Projectile Points from Monitor Valley, Nevada." Journal of California and Great Basin Anthropology, 3(1): 7–43.

[173] Yohe, R.M. 1998. "The Introduction of the Bow and Arrow and Lithic Resource Use at Rose Spring (CA-INY-372)." Journal of California and Great Basin Anthropology, 20: 26–52.

The appearance of Rose Spring series projectile points marks the beginning of the Rose Spring Period in the Mojave Desert.[174,175] Major villages and numerous other sites dating to this time period have been recorded in eastern California. Many of these contain bedrock milling features and portable milling stones, along with marine shell artifacts and obsidian from extralocal sources, suggesting long-distance trade. Two sites exhibit architectural features distinct to this period; at Cantil, there was evidence of a wickiup-like structure, and the Koehn Lake site shows evidence of a pit house.[176] Subsistence strategies during this time period appear to have shifted from one with a predominant focus on hunting of large game to one focused on utilization of a variety of plant resources, supplemented with some hunting of medium to small game such as lagomorphs and rodents.[177]

Late Holocene Late Prehistoric Period (Circa 1000 BP to Contact AD 1770)

The final time period is known as the Late Prehistoric in the Mojave Desert. The period began about 1000 BP and lasted until historic contact. Desert Side-notched and Cottonwood series projectile points replaced the larger points from the previous period, and pottery first appeared in the form of Owens Valley brown ware. During this period, trade networks increased along the Mojave River and over the San Gabriel Mountains, and groups from the Antelope Valley may have served as intermediaries among populations located in peripheral areas.[178] Subsistence strategies remained much the same from the Gypsum Period onward, with a focus on collection of plant resources, supplemented by hunting of medium to small animals.

5.2.2 Historic Resources

5.2.2.1 Historic Period Context

The history of the areas covered by the proposed initiative is diverse and difficult to synthesize into a single narrative. For this reason, the historic context is broken into two regions: the Antelope Valley, which approximates the history of the Antelope Valley Northeast, Lake Angeles/Llano/Valyermo/Littlerock, Lake Hughes/Gorman/West of Lancaster, and Lancaster Northeast subareas; and the Santa Clarita Valley, which approximates the history of the Acton, Castaic/Santa Clarita/Agua Dulce, and East San Gabriel Mountains subareas.

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[174] Lanning, E.P. 1963. "Archaeology of the Rose Spring Site INY-372." American Archaeology and Ethnology, 49(3): 237–336.

[175] Yohe, R.M. 1998. "The Introduction of the Bow and Arrow and Lithic Resource Use at Rose Spring (CA-INY-372)." Journal of California and Great Basin Anthropology, 20: 26–52.

[176] Sutton, Mark Q. 1996. "The Current Status of Archaeological Research in the Mojave Desert." Journal of California and Great Basin Anthropology, 18(2): 221–257.

[177] Sutton, Mark Q. 1996. "The Current Status of Archaeological Research in the Mojave Desert." Journal of California and Great Basin Anthropology, 18(2): 221–257.

[178] Earle, D.D., B.L. Boyer, R.A. Bryson, R.U. Bryson, M.M. Campbell, J.J. Johannesmeyer, K.A. Lark, C.J. Parker, M.D. Pittman, L.M. Ramirez, M.R. Ronning, and J. Underwood. 1997. Cultural Resources Overview and Management Plan for Edwards Air Force Base, California, Volume 1, Overview of Prehistoric Cultural Resources. Prepared for: AFFTC/EMXR, Edwards Air Force Base, CA, p. 58.

Antelope Valley

European Discovery and the Mission Period (1772–1821)

The first documented expedition into Antelope Valley by a European was in 1772 and was led by Don Pedro Fages who traveled from San Diego to San Luis Obispo via Cajón Pass, Mojave Desert, Hughes Lake, Antelope Valley, Tejón Pass, Cañada de los Uvas (Grapevine Canyon), and Buena Vista Lake. Don Fages left the first written record of exploration in the south San Joaquin Valley.[179] In 1776, Francisco Garces is reported to have explored the region, including the Cummings and Tehachapi Valleys in the Tehachapi Mountains, when traveling from the San Joaquin Valley to the Mojave River near Barstow. Historic accounts also indicate that Garces left traces of his visit at Willow Springs (near Rosamond) and on Castle Butte (near California City).[180] After this time, little documentation exists for European explorations or visits to the Mojave Desert and beyond until the 1800s; however, it is certain that such contacts occurred. Aside from these minor encounters, Native Americans residing in these areas were likely indirectly affected by disruptions in trade caused by the European occupation in the coastal and adjacent areas.

In the early 1800s, the Spanish increased their efforts to incorporate Native Americans into the mission system. Native Americans from interior tribes were either brought or came to the San Gabriel and San Fernando missions, established in 1771 and 1797, respectively, which may have exerted influence as far as the upper Mojave River. Although the Spanish were determined to gather all natives into the mission system, there are numerous examples of interior Native American villages not represented in the mission registers, such as in the southern Antelope Valley, suggesting low levels of interaction or influence prior to this time. For example, according to Earle, the first baptism of a Kawaiisu member was not recorded in the missions until 1821.[181] As a side effect of the increased number of missions in Southern California, native neophytes attempted to escape missions by running away and seeking refuge with interior tribes, such as in the Southern San Joaquin Valley or the Mojave Desert and adjacent mountains. This impacted the existing tribes in these areas because forays into these regions were made by the Spanish on numerous occasions to recapture these people, and some tribes became mixed with the influx of natives from different tribal territories. This tribal intermixing continued after the end of the mission system in 1834. With the reduction in the native populations, tribal interaction spheres necessarily increased and territorial boundaries became blurred.

The Mexican Period (1821–1846)

During the period of Mexican rule (1821–1846), the Antelope Valley remained relatively outside the frontier of Mexican settlement. The closest Mexican settlement was the Rancho San Francisquito in the Santa Clarita–Newhall area, located approximately 20 miles south of Antelope Valley. After the secession to the United States in 1848, however, this situation would change dramatically.

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[179] California Office of Historic Preservation. Accessed November 2007. Web site. "California Historical Landmarks: Kern County." Available at: http://ohp.parks.ca.gov/default.asp?page_id=21423

[180] City of Mojave. Accessed 4 November 2007. Web site. "Mojave's History." Available at: www.mojave.ca.us/history_IL.htm

[181] Earle, D. 1997. Ethnohistoric Overview of the Edwards Air Force Base Region and the Western Mojave Desert. Prepared for: AFFTC/EMXR, Edwards Air Force Base, CA. Prepared by: Earle and Associates, Palmdale, CA, p. 44.

The American Period (1850–present)

The beginning of the Euro-American period is marked by the establishment of the state of California in 1850. In the following years, the Antelope Valley witnessed increased numbers of expeditions and explorations by Hispanic and American graziers, miners, and adventurers. A U.S. Army survey party was sent to the area in 1853 to search for possible railway routes that would connect the San Joaquin and Antelope Valleys. Fort Tejon was established soon thereafter in Grapevine Canyon on the west end of the Tehachapi Mountains. This signaled the opening of Euro-American settlement into the San Joaquin Valley and Tehachapi Mountains.[182]

Euro-American prospectors were drawn to the western Mojave Desert in the late 19th century by the mining potential of the Antelope Valley. Copper was first discovered in the area in 1884. Throughout the 1890s, the Antelope Valley experienced a series of successive rushes though the high costs associated with milling and transporting ore and the scarcity of water limited the success of these endeavors. One of the largest booms in the Antelope Valley occurred in 1894 following the discovery of gold by Ezra M. Hamilton at Tropico Hill north of Rosamond. After Hamilton's initial discovery, other miners found gold in the western Mojave Desert at Standard Hill and Soledad Mountain.[183,184,185] Mining towns such as Randsburg and Oro Grande were established in the Antelope Valley during this period, with Rosamond, Barstow, and Mojave serving as major suppliers for the mining operations.[186]

Euro-American settlers were also drawn to the western Mojave Desert by the agricultural potential of the area. In the late 1880s and early 1890s, rainfall was unusually plentiful, and farms in the Antelope Valley produced large crops of wheat, barley, and other grains.[187] A number of irrigation districts were established at this time, which provided water for the cultivation of a variety of fruit and nut trees. A severe drought between 1894 and 1904 devastated a number of these newly established farms and forced many settlers to abandon their land. An agricultural resurgence occurred in the Antelope Valley following the end of the drought. This resurgence was spurred by the introduction of gasoline-powered pumps, which enabled farmers to dig shallow wells for irrigation agriculture rather than relying solely on artesian water sources. The use of these pumps not only allowed for the replanting of crops that had previously thrived but also enabled the large-scale cultivation of alfalfa, which by 1920 was the Antelope Valley's major crop.

Although there is evidence of cattle grazing in the Antelope Valley as early as the 1860s, ranching activities did not become prevalent until the late 1880s, when the influx of miners and speculators led to an increased demand for beef. The Rosamond area developed into an industrial center for

[182] Earle, D. 1997. Ethnohistoric Overview of the Edwards Air Force Base Region and the Western Mojave Desert. Prepared for: AFFTC/EMXR, Edwards Air Force Base, CA. Prepared by: Earle and Associates, Palmdale, CA, p. 50.

[183] Settle, Glen. 1965. Bears, Borax, and Gold. Rosamond, CA: The Kern-Antelope Historical Society, Inc.

[184] Miller, Ronald D., and Peggy J. Miller. 1976. Mines of the Mojave. Glendale, CA: La Siesta Press.

[185] Vredenburgh, Larry M., Gary L. Shumway, and Russell D. Hartill. 1981. Desert Fever: An Overview of Mining in the California Desert. Canoga Park, CA: Living West Press.

[186] Earle, D., K. Lark, C.J. Parker, M. Ronning, and J. Underwood. 1998. Cultural Resources Overview and Management Plan for Edwards Air Force Base, California, Vol. 2, Overview of Historic Cultural Resources. Prepared by: Computer Sciences Corporation, Edwards Flight Test Center, Edwards Air Force Base, CA, p. 8.

[187] Stickel, E. Gary, and Lois J. Weinman-Roberts. 1980. An Overview of the Cultural Resources of the Western Mojave Desert. Environmental Research Archaeologists, Los Angeles. Prepared for: U.S. Department of the Interior, Bureau of Land Management, California Desert Planning Program, Riverside, CA.

cattle ranching.[188] By the 1920s, there was a dramatic decline in cattle ranching activities due to the growing population of the valley and disputes with sheep herders and alfalfa growers. Other livestock activities undertaken in the area include the seasonal grazing of sheep, which occurred as flocks were driven from the San Bernardino Valley to summer pastures in the nearby mountains.

As mining and ranching operations developed in the area in the late 1800s, a need arose for the transportation of goods and passengers between the desert towns and the main points of commerce. The first stagecoaches began operating in Kern County soon after Fort Tejon was established in 1854.[189] One of the most utilized stagecoach routes in the Antelope Valley went from El Monte and Los Angeles to Tehachapi via Willow Springs. According to Barras, lighter wagons utilized this route to get to Kern River country, while heavier teams may have traveled by way of Jawbone Canyon and Kelso Valley further to the east.[190] Another popular stagecoach route that crossed the Antelope Valley took travelers from Los Angeles to the San Joaquin Valley; this route followed the southern edge of the valley over the Tejon Pass.[191]

The construction of the Southern Pacific Railway across Antelope Valley began in the mid-1800s and was part of an inland route that ran between San Francisco and Los Angeles. Completed in 1876, the rail line changed the Antelope Valley from an isolated region to a magnet for settlers. The Southern Pacific Railroad established a number of towns in the area at this time, including Rosamond, Lancaster, and Mojave.[192]

Another important development in the history of the area was the construction of the Los Angeles Aqueduct. In the early 1900s, city leaders recognized that the water needs of the growing population of Los Angeles had exceeded the capacity of local sources. In 1904, the Owens Valley was identified as a likely source for additional water. After obtaining necessary water and land rights and approving a bond measure to fund construction, the City of Los Angeles began work in 1908 on the 233-mile-long aqueduct. In addition to building the aqueduct itself, the development of new infrastructure was required to support the project. The entire construction of the aqueduct required thousands of laborers, housed in camps alongside the aqueduct route, which left an imprint on the local economies. Becoming the country's largest municipal water system at the time, the Los Angeles Aqueduct was completed in 1913. In order to divert the full amount of authorized water, the City of Los Angeles later constructed a second aqueduct, completed in 1970, which largely parallels the course of the First Los Angeles Aqueduct.

The military arrived in the western Mojave Desert in 1928 when the dry lakebed near Muroc became an area for general aviation practices. In 1942, the facility was named Army Air Base, Lake Muroc, which later became Muroc Air Force Base in 1948. In 1949, the base was renamed Edwards Air Force Base.[193]

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[188] Settle, Glen A. 1967. Along the Rails from Lancaster to Mojave. Rosamond, CA: The Kern-Antelope Historical Society, Inc.

[189] Burmeister, Eugene. 1977. The Golden Empire: Kern County, California. Beverly Hills, CA: Autograph Press, p. 70.

[190] Barras, Judy. 1976. The Long Road to Tehachapi. Tehachapi, CA: The Tehachapi Heritage League, pp. 21–25.

[191] Barras, Judy. 1976. The Long Road to Tehachapi. Tehachapi, CA: The Tehachapi Heritage League, pp. 21–25.

[192] Settle, Glen A. 1967. Along the Rails from Lancaster to Mojave. Rosamond, CA: The Kern-Antelope Historical Society, Inc.

[193] Greenwood, R.S., and M. McIntyre. 1980. Cultural Resources Overview for Edwards Air Force Base. Pacific Palisades, CA: Greenwood and Associates.

In the period following World War II, a fundamental shift occurred in the Antelope Valley's economy. Groundwater depletion, increased energy costs, and inflated land prices made irrigation farming increasingly difficult. As agriculture declined in importance in the 1950s, the expansion of Edwards Air Force Base and the establishment of Air Force Plant 42, a federally owned military aerospace facility, transformed the Antelope Valley into a hub of military aircraft design, testing, and production. Population boomed in the area throughout the following decades, with increased housing prices in the region resulting in the valley becoming a bedroom community to the Greater Los Angeles area. The 1980s and 1990s were marked by periods of rapid growth with the development of major housing tracts dramatically increasing the population of both Palmdale and Lancaster. Since 2000, the Antelope Valley has continued to expand as residential developments, small businesses, and light industry gradually replace the remaining agricultural fields and native desert scrubland.

Santa Clarita Valley

European Discovery and the Mission Period (1769–1821)

The first Europeans to pass through the Santa Clarita Valley were a group of Spanish explorers on their way to Monterey Bay from San Diego. Under the leadership of Gaspar de Portolá, the exploration party entered the Santa Clarita Valley on August 8, 1769, after previously crossing the Santa Monica Mountains and San Fernando Valley. The explorers named a river they encountered after St. Clare, thus giving the name of the Santa Clarita Valley and community. The group then headed north on their way to Santa Barbara.

In August 1795, an exploration party set out to identify a site for a new mission, to be located between the San Gabriel Mission and the San Buenaventura Mission. The requirements included that the land be viable for crops, be near a source of abundant water, and have an indigenous population that could be converted to Catholicism. With these objectives met, a site for the new mission was decided upon in the upper half of the Los Encinos Valle, as the San Fernando Valley was then called. The San Fernando Mission was established on September 8, 1797, and was the seventeenth mission founded by the Catholic Church in California. Father Fermin Francisco Lausen was appointed in charge of the mission. The name given to the mission honored King Ferdinand III of Spain (1217–1251). In order to assist in the establishment of the San Fernando Mission, several other California missions sent nearly 1,000 animals that included cattle, horses, mules, and sheep. Many native inhabitants of the Santa Clarita Valley, such as the Tataviam, were forcibly taken to the newly constructed mission. While living at the mission, they were under the direction of the priests who required the Native Americans to farm (wheat, barley, corn, beans, peas, and fruit trees); raise cattle; cure hides; tend vineyards; make wine; and practice a trade, such as carpentry, masonry, tailoring, or shoemaking. The mission's ranch lands eventually grew to include the Santa Clarita Valley.

The Mexican Period (1821–1846)

In 1821, when Mexico declared its independence from Spain, initially little changed for the missions. At that time there were approximately 1,000 Native Americans living and working at the San Fernando Mission. However, in 1834, the Mexican government secularized the California Missions, which resulted in the San Fernando Mission being turned over to Don Pedro Lopez, who acted as mission majordomo (governor of the mission). Between 1840 and 1846, six separate land grants were carved out of the former Rancho Misión San Fernando Rey de España. Eulogio de Célis was the first to acquire the entire 116,858-acre ranch for an estimated $14,000. Further

encroachments on mission lands in the valley included Tujunga (1840), El Escorpión (1845), El Encino (1845), La Providencia (1845), and Cahuenga (1846). In 1846, California governor Pio Pico authorized the sale of remaining mission land to raise money to defend Mexican California from an inevitable American takeover.

Up to this period, gold was thought to be a myth in California. Native Americans told Spanish explorers they were familiar with gold, but for the entirety of Spanish California and the majority of Mexican California, none had been discovered. However, in 1842 the first gold in California in was discovered at Placerita Canyon, near Santa Clarita, by Francisco Lopez, Manuel Cota, and Domingo Bermudez.[194] The discovery set off a miniature gold rush in the Santa Clarita Valley, sending hundreds of local residents to the canyon in search of riches; however, the first shipment of gold from California only contained 18.3 ounces.[195]

The American Period (1850–present)

After Californian statehood was established in 1850, mining developed into a major presence in the Santa Clarita Valley region. In 1861, mines began operating in Soledad Canyon, initially pursuing copper but eventually switching to produce the majority of gold recovered in Los Angeles County.[196] Soledad Canyon mines include the Red Rover, Don, and Emma mines. Iron, quartz, and titanium were additionally mined periodically from Soledad Canyon. Beginning during the first half of the twentieth century, mining in the Santa Clarita Valley began to shift toward aggregate production and continues to the present.[197] Petroleum was another natural resource to have an impact on the Santa Clarita Valley. Beginning in the 1860s, Los Angeles–based residents began prospecting for oil in the Santa Clarita Valley. On September 26, 1876, one of the first commercially successful oil wells on the west coast of the United States began producing at Pico Canyon in southwest Santa Clarita Valley.[198] The discovery led to an oil boom, creating the boom town of Mentryville, named after the owner of the successful well. The town included a school, blacksmith, machine shop, and bakery, but began to collapse at the turn of the century as new oil fields were quickly appearing.[199] Oil production in the Santa Clarita Valley continues into the early part of the 21st century.

The construction of the Los Angeles Aqueduct was also important to the development of the Santa Clarita Valley. The entire construction of the aqueduct required thousands of laborers, housed in camps alongside the aqueduct route, which left an imprint on the local economies. Becoming the country's largest municipal water system at the time, the Los Angeles Aqueduct was completed in 1913. Obtaining water continued to have an impact on the Santa Clarita Valley, but the St. Francis

[194] Guinn, J.M. An Extended A History of California and an Extended History of Los Angeles and Environs. Historic Record Company. Los Angeles. 1915.

[195] Guinn, J.M. An Extended A History of California and an Extended History of Los Angeles and Environs. Historic Record Company. Los Angeles. 1915.

[196] Blanchard, Hugh. "Mines of the Soledad." http://www.lagoldmines.com/index.php?page=143075.txt. Accessed October 8, 2014.

[197] Santa Clarita Historical Society. "Soledad Canyon Mining Operations." http://www.scvhistory.com/scvhistory/jk0017.htm. Accessed October 8, 2014.

[198] Worden, Leon. "The Story of Mentryville: California's Pioneer Oil Town." 1997. http://www.scvhistory.com/mentryville/mstory.htm. Accessed October 8, 2014.

[199] Worden, Leon. "The Story of Mentryville: California's Pioneer Oil Town." 1997. http://www.scvhistory.com/mentryville/mstory.htm. Accessed October 8, 2014.

Dam, completed in 1926, was to have a devastating impact on the region. The St. Francis Dam was constructed in San Francisquito Canyon in an ambitious plan to secure water for the growing Los Angeles metropolitan region. On the night of March 12/13, 1928, the dam failed catastrophically, unleashing an incredible volume of water on the Santa Clarita Valley.[200] The resulting flood killed 432 people, not including an unknown amount of migrant workers, and caused extensive damage to the Santa Clarita Valley. The failure of the St. Francis Dam is the largest engineering catastrophe in United States during the 20th century.

5.3 CULTURAL RESOURCES CHARACTERIZATION

5.3.1 Historical Resources

An abbreviated literature review and records search was conducted at the SCCIC on April 29, 2014. The abbreviated records search included a review of spatial data and basic information for all known relevant previous investigation and previous reported cultural resources within the seven subareas of the proposed initiative (Figure 4.3.1-1, *Cultural Resources Records Search Area*). The HRI, California Point of Historical Interest (SPHI), California Historical Landmarks (SHL), CRHR, and NRHP were searched to determine whether known historical resources are located within the seven subareas of the proposed initiative. The literature and records search was abbreviated due to the large size of the combined subareas for the proposed initiative. The information reviewed includes sufficient data necessary to determine the level of cultural sensitivity for each subarea. Based on the information collected, there are no listed or eligible for listing NRHP properties within the subareas of the proposed initiated. However, six historical resources in three of the subareas, all archaeological, are listed or considered eligible for listing on the CRHR (Table 5.3.1-1, *California Register Eligible and Listed Resources within the Proposed Initiative Subareas*).

TABLE 5.3.1-1
CALIFORNIA REGISTER ELIGIBLE AND LISTED RESOURCES WITHIN THE PROPOSED INITIATIVE SUBAREAS

Initiative Subarea	CRHR Eligible/Listed
Antelope Valley Northeast	0
Lancaster Northeast	0
Lake Hughes/Gorman/West of Lancaster	3
Castaic/Santa Clarita/Agua Dulce	2
Acton	0
Lake Los Angeles/Llano/Valyermo/Little Rock	1
East San Gabriel Mountains	0

5.3.2 Archaeological Resources

An abbreviated literature review and archaeological records search was conducted at the SCCIC on April 29, 2014. The search included a review of spatial data and basic information of known relevant cultural resource survey and excavation reports, and previous reported cultural resources to ascertain the presence of known prehistoric and historic archaeological resources within the seven subareas. The literature and records search was abbreviated due to the large size of the

[200] Rogers, JD. "The 1928 St. Francis Dam Failure and Its Impact on American Civil Engineering." http://web.mst.edu/~rogersda/st_francis_dam/St-Francis-Dam-for-ASCE-Press.pdf. Accessed October 8, 2014.

combined subareas for the proposed initiative. The information reviewed includes sufficient data necessary to determine the level of archaeological sensitivity for each subarea. Based on the information obtained, approximately 659 previous cultural resources investigations have been conducted within the seven subareas, and approximately 637 cultural resources have been identified (Appendix A, *Locations of Previously Recorded Resources within the Proposed Initiative Records Search Area*). Based on the record search results, no historic period built environment resources were identified as listed or eligible for listing on the CRHR. Table 5.3.2-1, *Documented Cultural Resources and Reports within the Proposed Initiative Subareas*, provides a breakdown of the reports and resources identified within each subarea.

TABLE 5.3.2-1
DOCUMENTED CULTURAL RESOURCES AND REPORTS WITHIN THE PROPOSED INITIATIVE SUBAREAS

Initiative Subarea	Investigations	Cultural Resources
Antelope Valley Northeast	2	1
Lancaster Northeast	79	44
Lake Hughes/Gorman/West of Lancaster	213	433
Castaic/Santa Clarita/Agua Dulce	159	86
Acton	108	23
Lake Los Angeles/Llano/Valyermo/Little Rock	97	49
East San Gabriel Mountains	1	1

5.3.3 Human Remains

Concurrent with record search data obtained by the SCCIC, the County of Los Angeles Local Management System, containing records for 63,000 categorized locations, was analyzed for the presence of any cemeteries or burials within the proposed initiative area. Concomitantly, coordination was initiated with the NAHC in association with the proposed initiative on April 21, 2014.[201] The NAHC was requested to conduct a records search from their Sacred Lands File for the presence of Native American traditional cultural properties, sacred sites, or human remains within each of the seven subareas. Written responses on three subareas were received by Sapphos Environmental, Inc. on May 7, 2014.[202] The responses indicated that although one subarea had resources nearby, the Sacred Lands File failed to indicate the presence of Native American cultural resources within the proposed initiative area.

The records searches and consultation revealed that there are known cemeteries or burial sites within the record search area (Table 5.3.3-1*, NAHC Results and Known Burial or Cemeteries within the Subareas Affected by the Proposed Initiative*).

[201] Thomas, Roberta, Sapphos Environmental, Inc., Pasadena, CA. 21 April 2014. Letter to Dave Singleton, Native American Heritage Commission, Sacramento, CA.

[202] Singleton, Dave, Native American Heritage Commission, Sacramento, CA. 7 May 2014. Letter response to Roberta Thomas, Sapphos Environmental, Inc., Pasadena, CA.

TABLE 5.3.3-1
NAHC RESULTS AND KNOWN BURIAL OR CEMETERIES WITHIN THE SUBAREAS AFFECTED BY THE PROPOSED INITIATIVE

Initiative Subarea	NAHC SLF Results	Known Burial or Cemetery
Antelope Valley Northeast	Negative	Negative
Lancaster Northeast	Negative	Negative
Lake Hughes/Gorman/West of Lancaster	Negative	Positive
Castaic/Santa Clarita/Agua Dulce	Negative	Positive
Acton	Negative	Positive
Lake Los Angeles/Llano/Valyermo/Little Rock	Negative (resources located nearby)	Positive
East San Gabriel Mountains	To be supplied by the NAHC	Negative

5.4 IMPACT ANALYSIS

The State CEQA Guidelines recommend the consideration of four questions when addressing the potential for significant impacts to cultural resources. Would the proposed initiative have any of the following effects:

(a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5 of the State CEQA Guidelines?

The proposed initiative would have the potential to result in impacts to historical resources related to a substantial adverse change in the significance of a historical resource previously known and unknown. The literature and records search identified six historic resources (Table 5.3.1-1) that have been previously documented within three of the seven subareas. However, the absence of previously documented historical resources in the remaining four subareas does not preclude the potential for such resources to be present. Some of these areas may not have not been previously surveyed and/or the existing cultural resources present may not been evaluated for significance pursuant to CEQA. Although the current zoning allows for development of single-family residences, in accordance with the County's building permit process, the current zoning does not require a cultural resources assessment prior to permitting single-family residential development. As such, the potential for the proposed initiative to impact historical resources (known and unknown) exists and constitutes a potentially significant impact, requiring the consideration of mitigation measures and alternatives to avoid or reduce impacts to below the level of significance.

(b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

The proposed initiative would have the potential to result in impacts to cultural resources related to a substantial adverse change in the significance of an archaeological resource. The records search and literature review identified 637 previously recorded archaeological resources within all seven subareas of the proposed initiative (Table 5.3.2-1). Six of these were identified in the record search as being listed or eligible for listing on the CRHR (Table 5.3.1-1). Additionally, because not all areas have been previously surveyed for archaeological resources, there is the potential for additional archaeological resources to be present. Although the current zoning allows for development of single-family residences, in accordance with the County's building permit process, the current zoning does not require a cultural resources assessment prior to permitting single-family residential development. As such, the potential for the proposed initiative to impact archaeological

resources (known and unknown) does exists, and constitutes a potentially significant impact, including the consideration of mitigation measures and alternatives to avoid or reduce impacts to below the level of significance.

(c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The proposed initiative would have the potential to result in impacts to paleontological resources related directly or indirectly to the destruction of a unique paleontological resource or unique geologic feature. As previously outlined, all subareas of the proposed initiative have geological units that could contain significant paleontological resources. Although the current zoning allows for development of single-family residences, in accordance with the County's building permit process, the current zoning does not require a cultural resources assessment prior to permitting single-family residential development. As such, the potential for the proposed initiative to impact paleontological resources (known and unknown) does exist, and constitutes a potentially significant impact, requiring the consideration of mitigation measures and alternatives to avoid or reduce impacts to below the level of significance.

(d) Disturb any human remains, including those interred outside of formal cemeteries?

The proposed initiative may have the potential to disturb human remains, including those interred outside of formal cemeteries. The record search conducted at the SCCIC revealed known areas with possible burials, and because not all areas have been surveyed for cultural resources, there remains a possibility for human remains to exist. Although the current zoning allows for development of single-family residences, in accordance with the County's building permit process, the current zoning does not require a cultural resources assessment prior to permitting single-family residential development. As such the potential for the proposed initiative to impact human remains (known and unknown) does exist, and constitutes a potentially significant impact, requiring the consideration of mitigation measures and alternatives to avoid or reduce impacts to below the level of significance.

SECTION 6.0
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APPENDIX A
PREVIOUSLY RECORDED RESOURCES WITHIN THE PROPOSED INITIATIVE RECORDS SEARCH AREA

The location data for cultural resources will not be circulated for public review. To protect the sites from unauthorized excavation, looting, and/or vandalism, the County of Los Angeles has been notified of the need to keep confidential the location of known resources beyond what is necessary. Records in the information centers are exempt from the California Public Records Act (Government Code Section 6250 et seq.). Government Code Section 6254.19 states that "nothing in this chapter requires disclosure of records that relate to archaeological sites information maintained by the Department of Parks and Recreation, the State Historical Resources Commission, or the State Lands Commission." Government Code Section 6254 explicitly authorizes public agencies to withhold information from the public relating to "Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission." Due to the sensitive nature of cultural resources described herein, this report is confidential and meant for the exclusive use of the County of Los Angeles and other trustee and responsible agencies related to planning, construction, operation, maintenance, and management of the proposed initiative.