APPENDIX 3D

Paleontological Report (Rancho Bonito)

PALEONTOLOGICAL RESOURCES ASSESSMENT REPORT

RANCHO BONITO PROJECT

City of Menifee
Riverside County, California

For Submittal to:

Community Development Department
City of Menifee
29995 Evans Road, West Annex
Menifee, CA 92586

Prepared for:

Sherman & Garbani, LLC
31103 Rancho Viejo Road, #535
San Juan Capistrano, CA 92675

Prepared by:

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Michael Hogan, Principal Investigator
Bai "Tom" Tang, Principal Investigator

February 19, 2016
Revised September 1, 2016

CRM TECH Contract #3027
Approximately 18 Acres
Assessor's Parcel Number 360-350-006
USGS Romoland, Calif., 7.5' (1:24,000) Quadrangle
Section 15, T6S R3W, San Bernardino Baseline and Meridian

MANAGEMENT SUMMARY

Between December 2015 and February 2016, at the request of Sherman & Garbani, LLC, CRM TECH performed a paleontological resource assessment on approximately 18 acres of vacant land in the City of Menifee, Riverside County, California. The subject property of the study, Assessor's Parcel Numbers 360-350-006, is located on the south side of Garbani Road between Huan Road and Sherman Road, in the northeast quarter of Section 15, T4S R5E, San Bernardino Baseline and Meridian. The study is part of the environmental review process for a proposed mixed-use development project known as Rancho Bonito, which entails the construction of a 210-unit townhome community and a neighborhood shopping center with two commercial buildings. The City of Menifee, as the lead agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA).

The purpose of the study is to provide the City of Menifee with the necessary information and analysis to determine whether the proposed project would potentially disrupt or adversely affect any significant paleontological resources, as mandated by CEQA. In order to identify any paleontological resource localities that may exist in or near the project area and to assess the possibility for such resources to be encountered in future excavation and construction activities, CRM TECH initiated a records search at the Natural History Museum of Los Angeles County, conducted a literature search, and carried out a systematic field survey of the project area, in accordance with the guidelines of the Society of Vertebrate Paleontology.

Based on the findings from these research procedures, the proposed project's potential to impact significant paleontological resources is determined to be low in the coarse-grained surface sediments but high in the finer-grained older Pleistocene sediments potentially present at depth, especially for significant vertebrate fossils. Therefore, CRM TECH recommends that a paleontological resource impact mitigation program be developed and implemented during the project to prevent such impacts or reduce them to a level less than significant. As the primary component of the mitigation program, all earth-moving operations at or below the depth of two feet, or at shallower depths if the paleontologically sensitive soils are encountered, should be monitored for any evidence of significant, nonrenewable paleontological resources.

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INTRODUCTION

Between December 2015 and February 2016, at the request of Sherman & Garbani, LLC, CRM TECH performed a paleontological resource assessment on approximately 18 acres of vacant land in the City of Menifee, Riverside County, California (Fig. 1). The subject property of the study, Assessor's Parcel Numbers 360-350-006, is located on the south side of Garbani Road between Huan Road and Sherman Road, in the northeast quarter of Section 15, T4S R5E, San Bernardino Baseline and Meridian (Fig. 2). The study is part of the environmental review process for a proposed mixed-use development project known as Rancho Bonito, which entails the construction of a 210-unit townhome community and a neighborhood shopping center with two commercial buildings. The City of Menifee, as the lead agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA; PRC §21000, et seq.).

The purpose of the study is to provide the City of Menifee with the necessary information and analysis to determine whether the proposed project would potentially disrupt or adversely affect any paleontological resources, as mandated by CEQA. In order to identify any paleontological resource localities that may exist in or near the project area and to assess the possibility for such resources to be encountered in future excavation and construction activities, CRM TECH initiated a records search at the Natural History Museum of Los Angeles County, conducted a literature search, and carried out a systematic field survey of the project area, in accordance with the guidelines of the Society of Vertebrate Paleontology (Society of Vertebrate Paleontology 2010). The following report is a complete account of the methods, results, and final conclusion of this study.

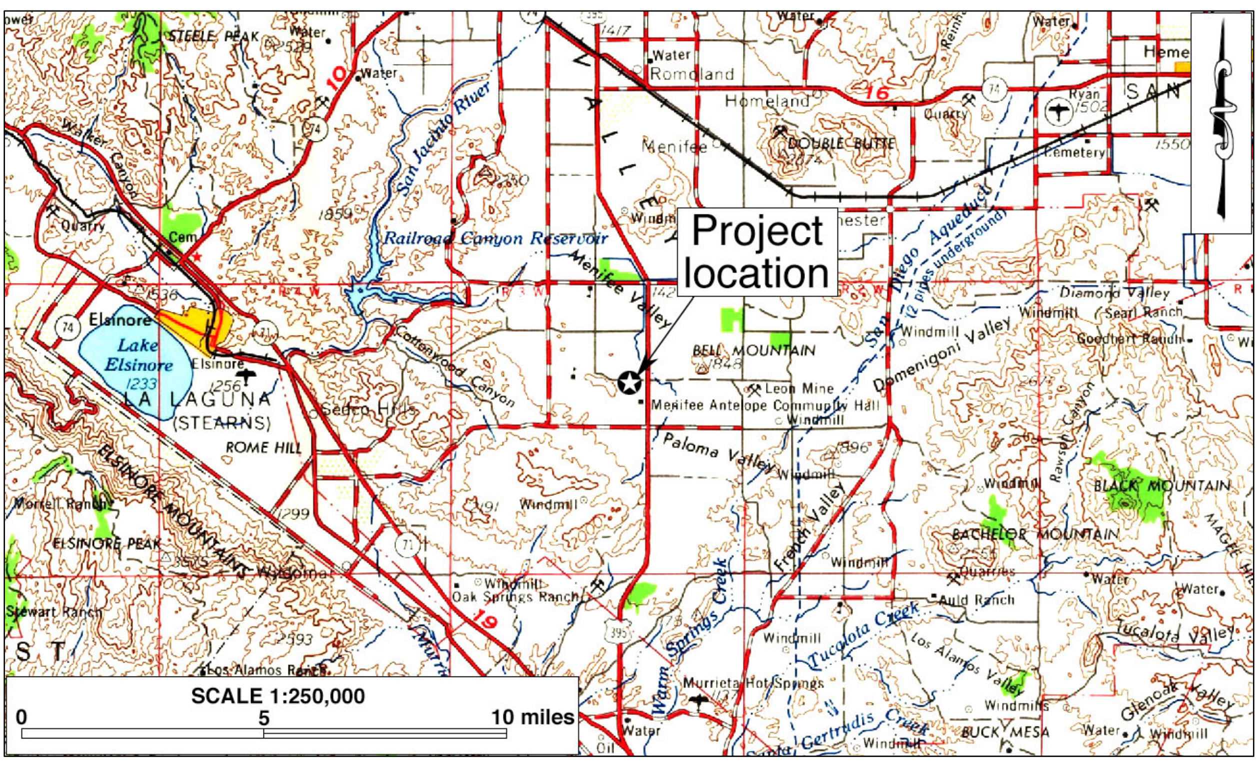

Figure 1. Project vicinity. (Based on USGS Santa Ana, Calif., 1:250,000 quadrangle, 1979 edition)

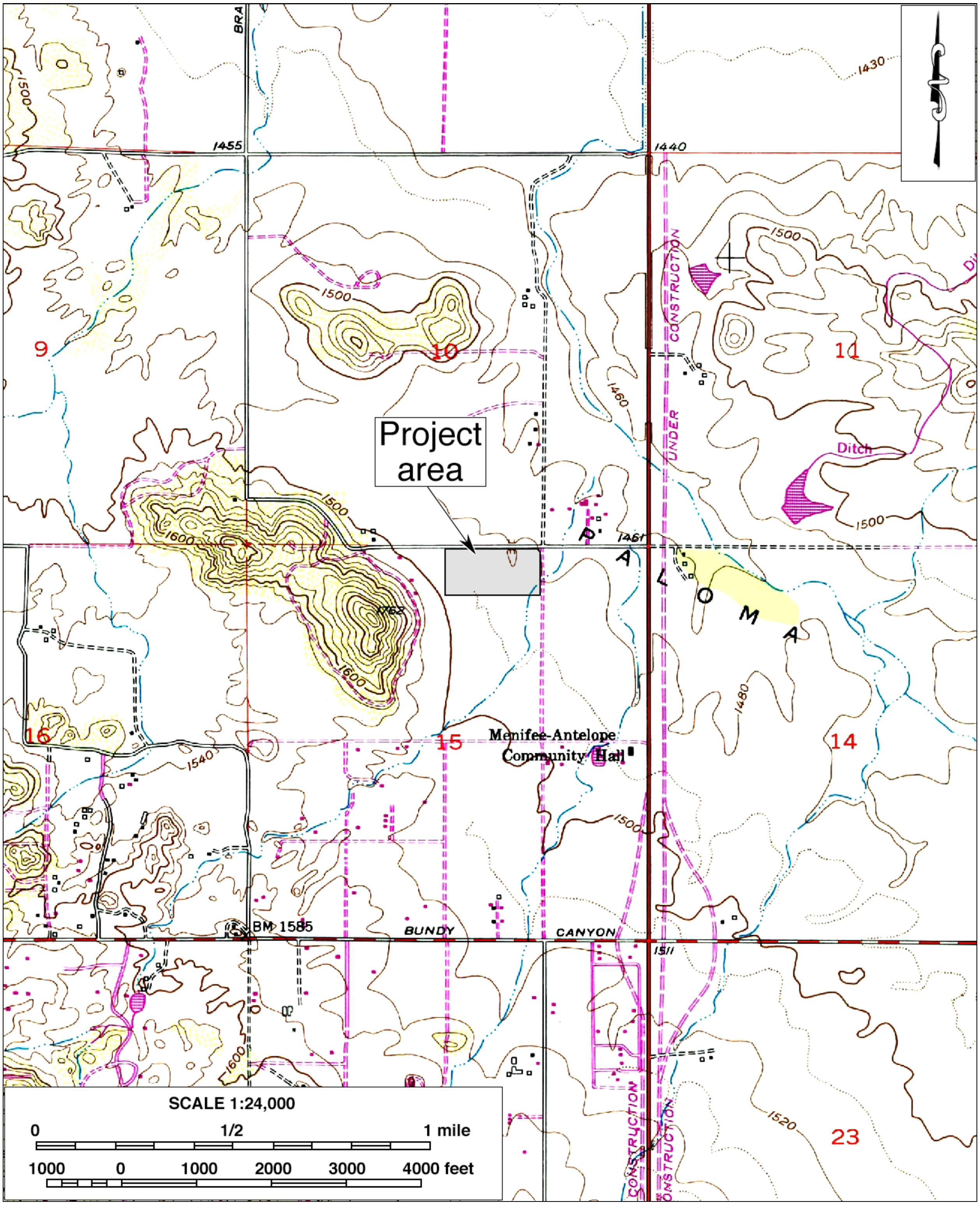

Figure 2. Project area. (Based on USGS Romoland, Calif., 1:24,000 quadrangle, 1979 edition)

PALEONTOLOGICAL RESOURCES

DEFINITION

Paleontological resources represent the remains of prehistoric life, exclusive of any human remains, and include the localities where fossils were collected as well as the sedimentary rock formations in which they were found. The defining character of fossils or fossil deposits is their geologic age, which is typically regarded as older than approximately 12,000 years, the generally accepted temporal boundary marking the end of the last late Pleistocene (circa 2.6 million to 12,000 years B.P.) glaciation and the beginning of the current Holocene epoch (circa 12,000 years B.P. to the present).

Common fossil remains include marine shells; the bones and teeth of fish, amphibians, reptiles, and mammals; leaf assemblages; and petrified wood. Fossil traces, another type of paleontological resource, include internal and external molds (impressions) and casts created by these organisms. These items can serve as important guides to the age of the rocks and sediments in which they are contained, and may prove useful in determining the temporal relationships between rock deposits from one area and those from another as well as the timing of geologic events. They can also provide information regarding evolutionary relationships, development trends, and environmental conditions.

Fossil resources generally occur only in areas of sedimentary rock (e.g., sandstone, siltstone, mudstone, limestone, claystone, or shale). Because of the infrequency of fossil preservation, fossils, particularly vertebrate fossils, are considered nonrenewable paleontological resources. Occasionally fossils may be exposed at the surface through the process of natural erosion or because of human disturbances; however, they generally lay buried beneath the surficial soils. Thus, the absence of fossils on the surface does not preclude the possibility of their being present within subsurface deposits, while the presence of fossils at the surface is often a good indication that more remains may be found below the surface.

SIGNIFICANCE CRITERIA

According to guidelines proposed by Eric Scott and Kathleen Springer (2003) of the San Bernardino County Museum, paleontological resources can be considered to be of significant scientific interest if they meet one or more of the following criteria:

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

PALEONTOLOGICAL SENSITIVITY

The fossil record is unpredictable, and the preservation of organic remains is rare, requiring a particular sequence of events involving physical and biological factors. Skeletal tissue with a high percentage of mineral matter is the most readily preserved within the fossil record; soft tissues not intimately connected with the skeletal parts, however, are the least likely to be preserved (Raup and Stanley 1978). For this reason, the fossil record contains a biased selection not only of the types of organisms preserved but also of certain parts of the organisms themselves. As a consequence, paleontologists are unable to know with certainty, the quantity of fossils or the quality of their preservation that might be present within any given geologic unit.

Sedimentary units that are paleontologically sensitive are those geologic units (mappable rock formations) with a high potential to contain significant nonrenewable paleontological resources. More specifically, these are geologic units within which vertebrate fossils or significant invertebrate fossils have been determined by previous studies to be present or are likely to be present. These units include, but are not limited to, sedimentary formations that contain significant paleontological resources anywhere within their geographical extent as well as sedimentary rock units temporally or lithologically amenable to the preservation of fossils.

A geologic formation is defined as a stratigraphic unit identified by its lithic characteristics (e.g., grain size, texture, color, and mineral content) and stratigraphic position. There is a direct relationship between fossils and the geologic formations within which they are enclosed and, with sufficient knowledge of the geology and stratigraphy of a particular area, it is possible for paleontologists to reasonably determine the formation's potential to contain significant nonrenewable vertebrate, invertebrate, marine, or plant fossil remains.

The paleontological sensitivity for a geologic formation is determined by the potential for that formation to produce significant nonrenewable fossils. This determination is based on what fossil resources the particular geologic formation has produced in the past at other nearby locations. Determinations of paleontologic sensitivity must consider not only the potential for yielding vertebrate fossils but also the potential of yielding a few significant fossils that may provide new and significant taxonomic, phylogenetic, and/or stratigraphic data.

The Society of Vertebrate Paleontology issued a set of standard guidelines intended to assist paleontologists to assess and mitigate any adverse effects/impacts to nonrenewable paleontological resources. The guidelines defined four categories of paleontological sensitivity for geologic units that might be impacted by a proposed project, as listed below (Society of Vertebrate Paleontology 2010:1-2):

- **High Potential**: Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered.
- **Undetermined Potential**: Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment.
- **Low Potential**: Rock units that are poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances.
- **No Potential**: Rock units that have no potential to contain significant paleontological resources, such as high-grade metamorphic rocks and plutonic igneous rocks.

ENVIRONMENTAL SETTING

GEOLOGIC SETTING

The project area is located in the Menifee Valley, which occupies the northwestern portion of the Peninsular Ranges province (Jenkins 1980:40-41; Harms 1996:150). One of 11 geomorphic provinces in the state of California, the Peninsular Ranges province is bounded by the Colorado Desert province on the northeast, the Transverse Ranges province on the north, and the Pacific Ocean on the west (*ibid*.). It extends southward to the southern tip of Baja California (Jahns 1954).

The Menifee Valley lies in the southern portion of the Perris Valley, along the eastern side of an outcropping ridge of basement rocks. The Perris Valley is one of the many tectonically controlled valleys within the valley-and-ridge systems in the Perris Block. These structurally depressed troughs are filled with sediments of upper Pliocene through Recent ages (Mann 1955:Plate 1; Kennedy 1977:5), and the ridges are composed of plutonic igneous rocks, metasedimentary rocks, and late-stage intrusive dikes.

English (1926) defined the Perris Block as the region between the San Jacinto and Elsinore-Chino fault zones, bounded on the north by the Cucamonga (San Gabriel) Fault and on the south by a vaguely delineated boundary near the southern end of the Temecula Valley. This structural block is known to have been active since Pliocene time (Woodford et al. 1971:3421).

CURRENT NATURAL SETTING

The project area consists of rectangular-shaped parcel of agricultural land that is currently fallow. It is surrounded mostly by other parcels of open land, but adjoins an existing residential neighborhood to the north, across Garbani Road (Fig. 3). Elevations in the project area range approximately from 1,470 feet to 1,500 feet above mean sea level. The terrain is relatively level, with a gradual incline towards a large hill located approximately 450 feet to the west (Fig. 3). The project area has been

Figure 3. Overview of the project area. (View to the west; photo taken on December 3, 2015)

graded and its vegetation removed, leaving a light regrowth of Russian thistle and buckwheat. The soil contains a significant amount of small to large rocks, with the highest concentrations in the northeast corner.

METHODS AND PROCEDURES

RECORDS SEARCH

The records search for this study was conducted by Dr. Samuel A. McLeod, Vertebrate Paleontology Collections Manager at the Natural History Museum of Los Angeles County (NHMLAC). The NHMLAC is one of the designated paleontological repositories that maintain regional records on file, along with supporting maps and documents[1]. The objective of the records search is to identify known paleontological localities in or near the project area. In addition, the Riverside County Land Information System was also consulted for information on the County's overall paleontological sensitivity assessment of the project location.

LITERATURE REVIEW

In addition to the records searches, CRM TECH geologist/paleontologist Harry M. Quinn, California Professional Geologist #3477 (see App. 1 for qualifications), pursued a literature review on the project area. Sources consulted during the research include primarily topographic, geologic, and soil maps of the Menifee Valley area, published geologic literature pertaining to the project location, and other materials in the CRM TECH library, including unpublished reports produced during similar surveys in the vicinity.

FIELD SURVEY

On December 3, 2015, CRM TECH paleontological surveyors Ben Kerridge and John D. Goodman II (see App. 1 for qualifications) carried out the field survey of the project area under the direction of Harry M. Quinn. The survey was completed on foot by walking parallel north-south transects spaced 15 meters (approximately 50 feet) apart. In this way, the ground surface in the entire project area was systematically and carefully examined to determine the soil types, to verify the geological formations, and to look for any indications of paleontological remains. Ground visibility ranged from good (80%) to excellent (90%) due to the sparsity of vegetation growth.

RESULTS AND FINDINGS

RECORDS SEARCH

The records search by the NHMLAC identified no known paleontological localities within the project area (McLeod 2016:1; see App. 2). However, several paleontological localities have been reported in the surrounding area from sediment lithologies similar to those that may occur at depth at

[1] A second repository that was frequently consulted in the past, the San Bernardino County Museum, is not providing records search services at this time.

this location, namely fine-grained Quarternary deposits (*ibid*.). Based on these previous discoveries, the NHMLAC states that the older deposits beneath the coarse alluvial fan Quaternary deposits on the surface may contain significant fossil vertebrate fossils (*ibid*.). Therefore, the NHMLAC recommends that any significant excavations within the project area be monitored for fossil remains.

According to the Riverside County Land Information System, the majority of the project area is assigned a "High B" sensitivity for paleontological resources, which is interpreted by the County as being sensitive for significant fossil resources at the depth of four feet or more below the current ground surface (County of Riverside n.d.). The southwest corner of the project area has been assigned a low potential for significant paleontological resources (*ibid*.). Sensitivity analyses for such large-scale planning documents, however, are usually completed at a regional overview level, and more detailed analysis may be needed to refine the assessment for each specific location.

LITERATURE REVIEW

The surface geology within the project area was mapped by Rogers (1965) as **Qal**, or alluvium of Holocene age. This is the same material mapped as the surface material in the Domenigoni Valley, the site of important vertebrate paleontological finds in recent decades (Springer and Scott 1994:47A; Springer et al. 1998:79A; Springer et al. 1999:77A). Most of these fossil remains were recovered from depths greater than ten feet below the surface (Scott 2004). They were found because of the deep excavation required for a major reservoir construction, which is much deeper than normally required for typical development projects. One exception may be deep cuts used to develop on-site retention basins or to install utility lines.

Miller et al. (1991:Plate 1B) mapped the surface geology within the project area as **Qo**, defined as older alluvium of early Holocene age. It consists of poorly consolidated sand, gravel, and silt associated with essentially inactive drainages and alluvial fans (*ibid*.). Morton (1991) mapped the surface sediments in the project area as **Qia**, or alluvium of intermediate age (Holocene or Pleistocene). It is described as unconsolidated to well-indurated, brownish, sandy alluvium that in large part appears intermediate in age between **Qya** and **Qoa** (*ibid*.).

Morton (2003) later re-mapped the surface geology as $\mathbf{Qof_a}$, or old alluvial fan deposits of late to middle Pleistocene age, which is described as "reddish brown, gravel and sand deposits; indurated, commonly slightly dissected" that in places includes "thin alluvial fan deposits of Holocene age" (Fig. 4). Dibblee (2008) mapped the surface sediments in the project area as **Qa**, or alluvium of Holocene age. It is described as alluvial sand and gravel of valley areas and in places covered with gray clay soil.

Knecht (1971:Map Sheet 129) mapped the surface soils at the project location as mainly **YbC** and **LaC**, with a minor amount of **LaC2**. The **YbC**-type soils belong to the Yokohl Series and develop on old alluvial fans and terraces (*ibid*.:69). The **LaC**- and **LaC2**-type soils belong to the Las Posas Series and form on uplands with sediments composed of basic igneous rock material (*ibid*.:42).

While no vertebrate fossil locality has been reported in the immediate vicinity of the project location, the fine-grained Pleistocene deposits that may be present at depth in this area have yielded vertebrate fossil remains elsewhere in southwestern Riverside County. One known fossil locality from similar

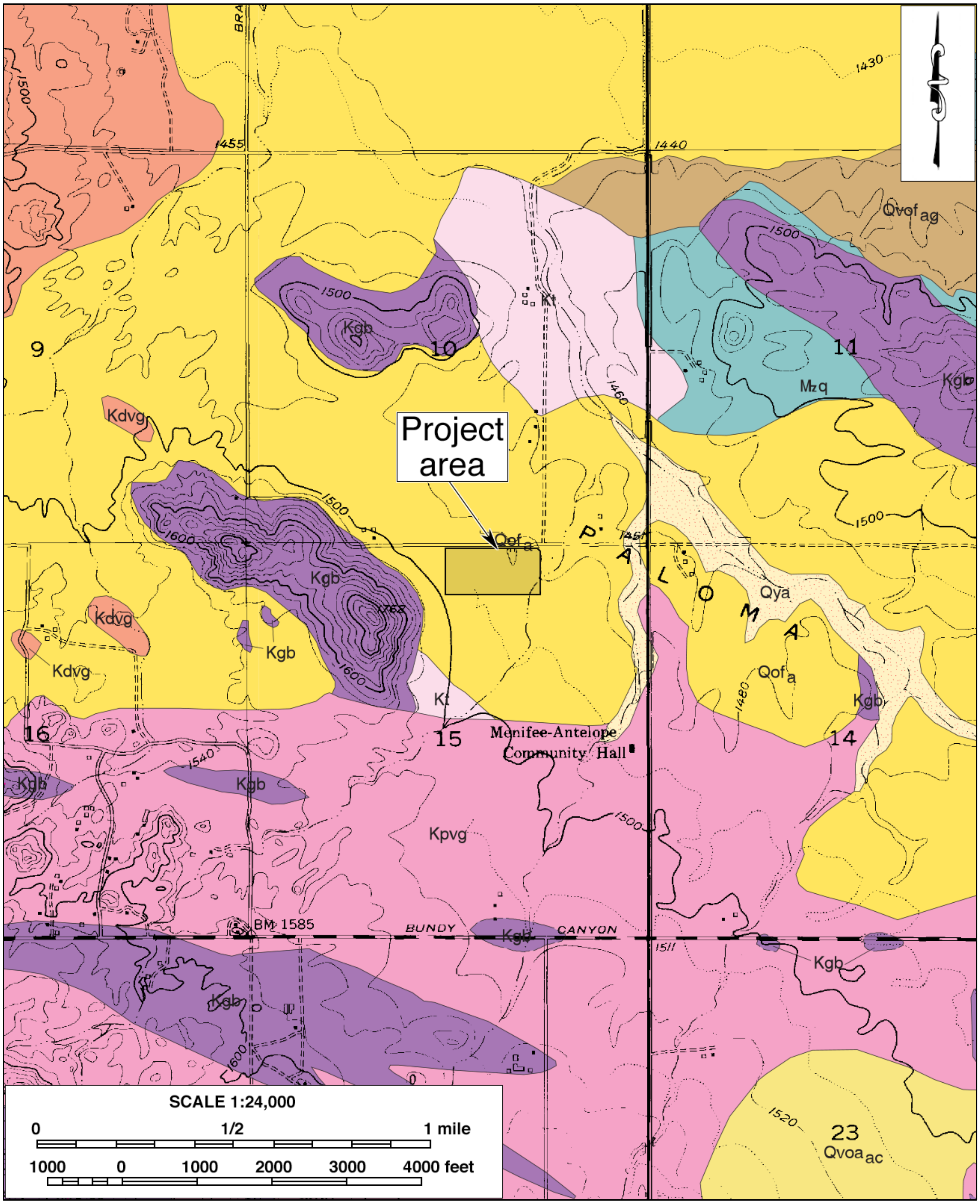

Figure 4. Geologic map of the project vicinity. (Based on Morton 2003)

sediments, LACM 5168, near the Railroad Canyon reservoir, produced a specimen of prehistoric horse (*Equus*), while another similar locality, LACM 6059, near Lake Elsinore, produced a specimen of prehistoric camel (*Camelops hesternus*; McLeod 2016:1).

FIELD SURVEY

The field survey encountered no surficial indications of any fossil remains within or adjacent to the project area, nor were any paleontologically sensitive sediments evident on the surface. It was observed during the survey that the surface soil in the project area has been extensively disturbed in the past, and contains a significant amount of small to large rocks, with the highest concentrations in the northeast corner of the property. The area was used extensively for dry-farming and animal grazing in the past. In addition, the area exhibits evidence of brush fires in the past, which have oxidized minerals in the surface soil and altered its color. As a result, the current condition of the surface soil is not expected to be a reliable reflection on that of the subsurface sediments.

DISCUSSION

The results of the records search and the literature research indicate that the soils in the project area are sedimentary materials of Pleistocene (circa 2.6 million to 12,000 years B.P.) or Holocene (circa 12,000 years B.P. to the present) age. In many areas the younger surface sediments are known to rest directly on top of older Pleistocene sediments, but usually at depths greater than 10 feet (Scott 2004). Irish et al. (2003:18) shows that most of the fossils recovered from similar situations have been found deeper than 10 feet, but can be found as shallow as three feet near the base of the hills.

The surface soils in this project area have evidently been farmed in the past, and the upper one to two feet have been disturbed, as observed during the field survey. Based on available information, the older sediments that are present at the surface may not be of a facies that normally contains fossil materials. The older sediments in this area are alluvial fan and terrace deposits. To date, the Pleistocene alluvial fan deposits have proven to be less fossiliferous than Pleistocene fluvial and lacustrine deposits. This may be due to the coarser nature of the sediments and/or the open area of alluvial fans that left animal remains available to scavengers. Burial of these remains would have been slow, whereas rapid burial is needed to best preserve fossil remains.

CONCLUSION AND RECOMMENDATIONS

CEQA guidelines (Title 14 CCR App. G, Sec. V(c)) require that public agencies in the State of California determine whether a proposed project would “directly or indirectly destroy a unique paleontological resource” during the environmental review process. The present study, conducted in compliance with this provision, is designed to identify any significant, non-renewable paleontological resources that may exist within or adjacent to the project area, and to assess the possibility for such resources to be encountered in future excavation and construction activities.

Based on the research results presented above, the proposed project’s potential to impact significant paleontological resources is determined to be low in the coarse-grained surface sediments but high in the finer-grained older Pleistocene sediments potentially present at depth, especially for significant vertebrate fossils. Therefore, CRM TECH recommends that a paleontological resource impact mitigation program be developed and implemented during the project to prevent such impacts or reduce them to a level less than significant.

As the primary component of the mitigation program, all earth-moving operations at or below the depth of two feet, or at shallower depths if the paleontologically sensitive soils are encountered, should be monitored for any evidence of significant, nonrenewable paleontological resources. The mitigation program should be developed in accordance with the provisions of CEQA as well as the proposed guidelines of the Society of Vertebrate Paleontology (2010), and should include but not be limited to the following:

1. Earth-moving operations in sedoments identified as likely to contain paleontologic resources, such as any undisturbed older subsurface alluvium, should be monitored by a qualified paleontological monitor. The monitor should be prepared to quickly salvage paleontological remains as they are unearthed to avoid construction delays, but must have the power to temporarily halt or divert construction equipment to allow for the removal of abundant or large specimens.
2. Samples of sediments should be collected and processed to recover small fossil remains.
3. Recovered specimens should be identified and curated at a repository with permanent retrievable storage that would allow for further research in the future.
4. A report of findings, including an itemized inventory of recovered specimens and a discussion of their significance when appropriate, should be prepared upon completion of the research procedures outlined above. The approval of the report and the inventory by the City of Menifee would signify completion of the mitigation program.

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APPENDIX 1

PERSONNEL QUALIFICATIONS

PROJECT GEOLOGIST/PALEONTOLOGIST
Harry M. Quinn, M.S., California Professional Geologist #3477

Education

1968 M.S., Geology, University of Southern California, Los Angeles, California.
1964 B.S, Geology, Long Beach State College, Long Beach.
1962 A.A., Los Angeles Harbor College, Wilmington, California.

- Graduate work oriented toward invertebrate paleontology; M.S. thesis completed as a stratigraphic paleontology project on the Precambrian and Lower Cambrian rocks of Eastern California.

Professional Experience

2000-	Project Paleontologist, CRM TECH, Riverside/Colton, California.
1998-	Project Archaeologist, CRM TECH, Riverside/Colton, California.
1992-1998	Independent Geological/Geoarchaeological/Environmental Consultant, Pinyon Pines, California.
1994-1996	Environmental Geologist, E.C E.S., Inc, Redlands, California.
1988-1992	Project Geologist/Director of Environmental Services, STE, San Bernardino, California.
1987-1988	Senior Geologist, Jirsa Environmental Services, Norco, California.
1986	Consulting Petroleum Geologist, LOCO Exploration, Inc. Aurora, Colorado.
1978-1986	Senior Exploration Geologist, Tenneco Oil E & P, Englewood, Colorado.
1965-1978	Exploration and Development Geologist, Texaco, Inc., Los Angeles, California.

Previous Work Experience in Paleontology

1969-1973 Attended Texaco company-wide seminars designed to acquaint all paleontological laboratories with the capability of one another and the procedures of mutual assistance in solving correlation and paleo-environmental reconstruction problems.

1967-1968 Attended Texaco seminars on Carboniferous coral zonation techniques and Carboniferous smaller foraminifera zonation techniques for Alaska and Nevada.

1966-1972, 1974, 1975 Conducted stratigraphic section measuring and field paleontological identification in Alaska for stratigraphic controls. Pursued more detailed fossil identification in the paleontological laboratory to establish closer stratigraphic controls, mainly with Paleozoic and Mesozoic rocks and some Tertiary rocks, including both megafossil and microfossil identification, as well as fossil plant identification.

1965 Conducted stratigraphic section measuring and field paleontological identification in Nevada for stratigraphic controls. Pursued more detailed fossil identification in the paleontological laboratory to establish closer stratigraphic controls, mainly with Paleozoic rocks and some Mesozoic and Tertiary rocks. The Tertiary work included identification of ostracods from the Humboldt and Sheep Pass Formations and vertebrate and plant remains from Miocene alluvial sediments.

Memberships

Society of Vertebrate Paleontology; American Association of Petroleum Geologists; Association of Environmental Professionals; Rocky Mountain Association of Geologists, Pacific Section; Society of Economic Paleontologists and Mineralogists; San Bernardino County Museum.

Publications in Geology

Five publications in Geology concerning an oil field study, a ground water and earthquake study, a report on the geology of the Santa Rosa Mountain area, and papers on vertebrate and invertebrate Holocene Lake Cahuilla faunas.

REPORT WRITER
Deirdre Encarnación, M.A.

Education

2003	M.A., Anthropology, San Diego State University, California.
2000	B.A., Anthropology, minor in Biology, with honors; San Diego State University, California.
1993	A.A., Communications, Nassau Community College, Garden City, N.Y.
2001	Archaeological Field School, San Diego State University.
2000	Archaeological Field School, San Diego State University.

Professional Experience

2004-	Project Archaeologist/Report Writer, CRM TECH, Riverside/Colton, California.
2001-2003	Part-time Lecturer, San Diego State University, California.
2001	Research Assistant for Dr. Lynn Gamble, San Diego State University.

PALEONTOLOGICAL SURVEYOR
Ben Kerridge, M.A.

Education

2014	Archaeological Field School, Institute for Field Research, Kephallenia, Greece.
2010	M.A., Anthropology, California State University, Fullerton.
2009	Project Management Training, Project Management Institute/CH2M HILL.
2004	B.A., Anthropology, California State University, Fullerton.

Professional Experience

2015-	Project Archaeologist/Report Writer, CRM TECH, Colton, California.
2015	Teaching Assistant, Institute for Field Research, Kephallenia, Greece.
2009-2014	Publications Delivery Manager, CH2M HILL, Santa Ana, California.
2010-	Naturalist, Newport Bay Conservancy, Newport Beach, California.
2009-2010	Senior Commentator, GameReplays.org.
2006-2009	Technical Publishing Specialist, CH2M HILL, Santa Ana, California.
2002-2007	Host and Head Writer, *The Rational Voice* Radio Program, Titan Radio, California State University, Fullerton.
2002-2006	English Composition/College Preparation Tutor, Various Locations, California.

Memberships

Society for California Archaeology; Pacific Coast Archaeological Society

PALEONTOLOGICAL SURVEYOR
John D. Goodman II, M.S.

Education

1993	M.S., Anthropology, University of California, Riverside.
1985	B.S., Anthropology, University of California, Riverside.
2005	Training Session on Senate Bill 18; sponsored by the Government Office of Planning and Research, Riverside, California.
2002	Protecting Heritage Resources under Section 106 of the National Historic Preservation Act; sponsored by the Advisory Council on Historic Preservation, Arcadia, California.
2000	Federal Historic Preservation Law for the Forest Service; sponsored by the Advisory Council on Historic Preservation, San Bernardino, California.
1994	National Environmental Policy Act workshop; Flagstaff, Arizona.

Professional Experience

2011-	Project Archaeologist/Artifact Analyst, CRM TECH, Colton, California.
2008-	Independent sub-contractor (faunal analyses and historical archaeology).
2006-2008	Project Director, Statistical Research, Inc., Redlands, California.
2003-2006	Project Manager/Principal Investigator, Stantec Consulting, Inc. (formerly The Keith Companies [TKC]), Palm Desert, California.
2000-2003	Supervisory Archaeologist, Heritage Resources Program, San Bernardino National Forest, United States Forest Service, Department of Agriculture.
1993-2000	Project Manager, Historical Archaeologist, Faunal Specialist, Human Osteologist, and Shell Specialist, SWCA Inc., Environmental Consultants, Flagstaff, Arizona.
1982-1993	Project Director, Staff Archaeologist, Physical Anthropologist, Faunal Specialist, and Lithic Specialist, Archaeological Research Unit, University of California, Riverside (part-time).

Research Interests

Subsistence practices and related technologies of both prehistoric and historical-period groups; special interest in Archaic sites of western states; ethnic/group markers; zooarchaeology/faunal analyses, lithic analyses, and historical archaeology.

Memberships

Society for American Archaeology.

APPENDIX 2

RECORDS SEARCHES RESULTS

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

tel 213.763.DINO
www.nhm.org

NATURAL HISTORY MUSEUM
LOS ANGELES COUNTY

Vertebrate Paleontology Section
Telephone: (213) 763-3325
Fax: (213) 746-7431
e-mail: smcleod@nhm.org

14 January 2016

CRM Tech
1016 East Cooley Drive, Suite B
Colton, CA 92324

Attn: Michael Hogan

re: Paleontological resources for the proposed Rancho Bonito Project, CRM Tech # 3027, in the City of Menifee, Riverside County, project area

Dear Michael:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed Rancho Bonito Project, CRM Tech # 3027, in the City of Menifee, Riverside County, project area as outlined on the portion of the Romoland USGS topographic quadrangle map that you sent to me via e-mail on 23 December 2015. We do not have any vertebrate fossil localities that lie directly within the proposed project area, but we do have localities farther afield from sedimentary deposits similar to those that may occur subsurface in the proposed project area.

The entire proposed project area has surface material composed of older Quaternary alluvial fan deposits. These deposits, so close to the source hills immediately to the west where the bedrock is composed of plutonic igneous rocks, tend to be coarse and are therefore unlikely to contain significant vertebrate fossils, but there may be finer-grained material at depth that may contain significant fossil vertebrate remains. Our closest vertebrate fossil locality from somewhat similar sedimentary deposits is LACM 5168, on the north side of Railroad Canyon Reservoir west-northwest of the proposed project area, that produced a specimen of fossil horse, *Equus*. In similar, analagous sediments, we also have locality LACM 6059, on the southeast side of Lake Elsinore almost dues west of the proposed project area, that contained a specimen of fossil camel, *Camelops hesternus*.

Shallow excavations in the older Quaternary alluvial fan deposits exposed throughout the proposed project area are unlikely to uncover any significant vertebrate fossils. Deeper excavations that extend down into older finer-grained sedimentary deposits, however, may well encounter significant fossil vertebrate remains. Any substantial excavations in the proposed project area, therefore, should be closely monitored to quickly and professionally collect any fossils discovered without impeding development. Sediment samples should also be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

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

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice