**PALEONTOLOGICAL RESOURCES ASSESSMENT REPORT**

# ASSESSOR'S PARCEL NUMBER 303-060-020

**City of Perris**
**Riverside County, California**

**For Submittal to:**

Development Services Department, Planning Division
City of Perris
101 North D Street
Perris, CA 92570

**Prepared for:**

Pacific Development Partners, LLC
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**Prepared by:**

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

April 1, 2020

CRM TECH Contract No. 3598
Approximately 16 Acres
USGS Perris, Calif., 7.5' (1:24,000) Quadrangle
San Jacinto Nuevo y Potrero Land Grant; T4S R3W, San Bernardino Baseline and Meridian

## EXECUTIVE SUMMARY

In February and March 2020, at the request of Pacific Development Partners, LLC, CRM TECH performed a paleontological resource assessment on approximately 16 acres of vacant land in the City of Perris, Riverside County, California. The subject property of the study, Assessor's Parcel Number 303-060-020, is located on the south side of the Ramona Expressway between the intersections with Indian Avenue and Perris Boulevard. It consists of a portion of the San Jacinto Nuevo y Potrero land grant lying within Township 4 South, Range 3 West, San Bernardino Baseline and Meridian.

The study is part of the environmental review process for the proposed construction of an industrial facility. The City of Perris, 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 with the necessary information and analysis to determine whether the proposed project would adversely affect any significant nonrenewable paleontological resources, as required by CEQA, and to design a paleontological mitigation program, if necessary.

In order to identify any paleontological resource localities that may exist in or near the project area and to assess the probability for such resources to be encountered during the project, CRM TECH initiated records searches at the appropriate regional repositories, conducted a literature review, and carried out a systematic field survey of the project area. The results of these research procedures indicate that the proposed project's potential to impact significant nonrenewable paleontological resources appears to be high, especially in the early Holocene to Pleistocene soils present subsurface at varying depths.

Based on these findings, CRM TECH recommends that a paleontological resource impact mitigation program be developed and implemented during the project to prevent adverse impacts on significant nonrenewable paleontological resources or reduce them to a level less than significant. 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, and should include but not be limited to the following components:

- All earth-moving operations within the project area should be monitored by a qualified paleontological monitor. The monitor should be prepared to quickly salvage fossils as they are unearthed to avoid construction delays and should collect samples of sediments that are likely to contain fossil remains of small vertebrates or in vertebrates. However, the monitor must have the power to temporarily halt or divert grading equipment to allow for the removal of abundant or large specimens.
- Collected samples of sediment should be processed to recover small fossils, and all recovered specimens should be identified and curated at a repository with permanent retrievable storage.
- A report of findings, including an itemized inventory of recovered specimens, should be prepared upon completion of the procedures outlined above. The report should include a discussion of the significance of the paleontological findings, if any. The report and the inventory, when approved by the City of Perris, would signify completion of the mitigation program.

Under this condition, the proposed project may be cleared to proceed in compliance with CEQA provisions on paleontological resources.

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## INTRODUCTION

In February and March 2020, at the request of Pacific Development Partners, LLC, CRM TECH performed a paleontological resource assessment on approximately 16 acres of vacant land in the City of Perris, Riverside County, California. The subject property of the study, Assessor's Parcel Number 303-060-020, is located on the south side of the Ramona Expressway between the intersections with Indian Avenue and Perris Boulevard. It consists of a portion of the San Jacinto Nuevo y Potrero land grant lying within Township 4 South, Range 3 West, San Bernardino Baseline and Meridian (Figures 1, 2).

The study is part of the environmental review process for the proposed construction of an industrial facility. The City of Perris, 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 with the necessary information and analysis to determine whether the proposed project would adversely affect any significant nonrenewable paleontological resources, as required by CEQA, and to design a paleontological mitigation program, if necessary.

In order to identify any paleontological resource localities that may exist in or near the project area and to assess the probability for such resources to be encountered during the project, CRM TECH initiated records searches at the appropriate regional repositories, conducted a literature review, and carried out a systematic field survey of the project area. The following report is a complete account of the methods, results, and final conclusion of this study. Personnel who participated in the study are named in the appropriate sections below, and their qualifications are provided in Appendix 1.

## 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.

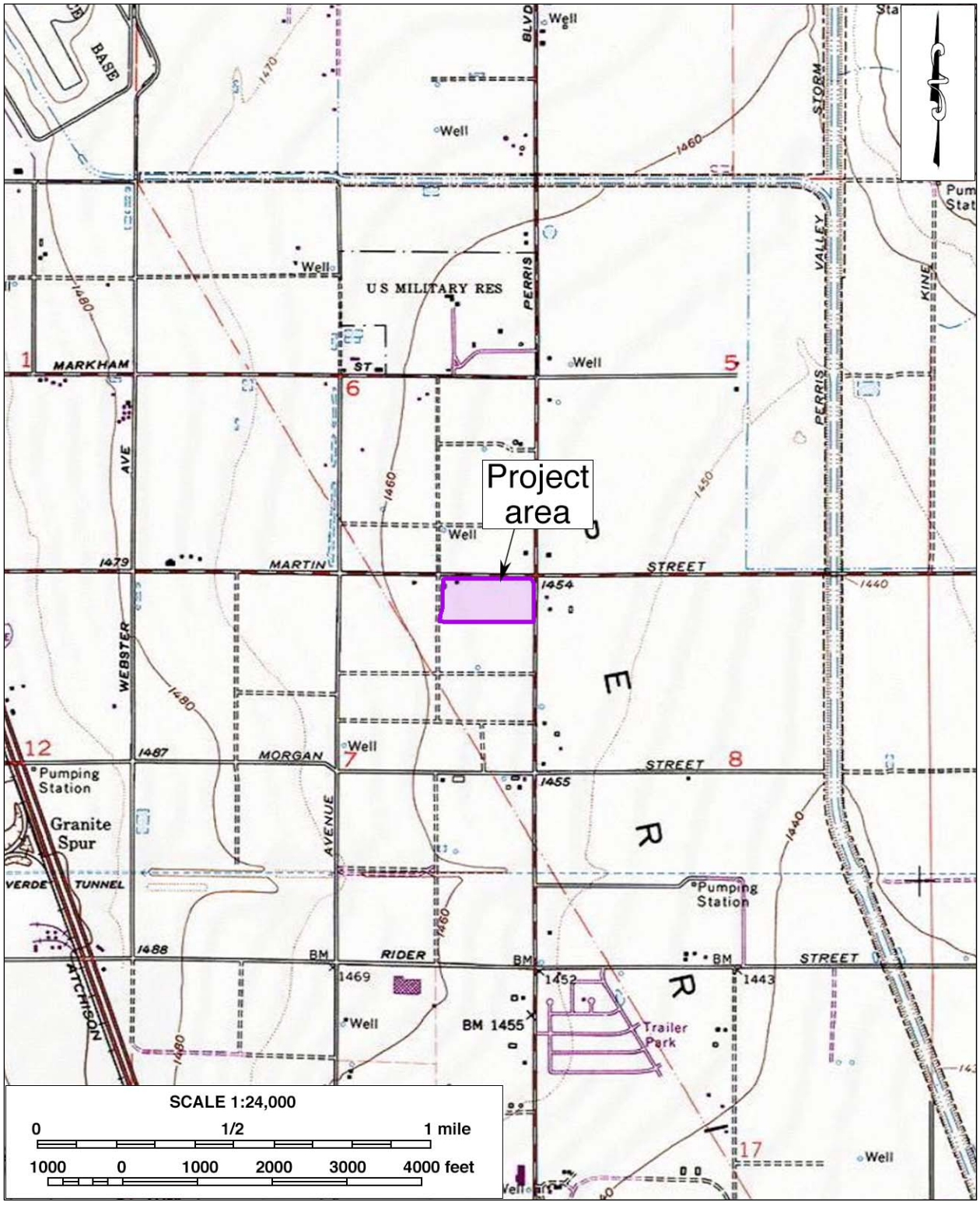


Figure 1. Project location. (Based on USGS Perris, Calif., 7.5' quadrangle, 1979 edition)

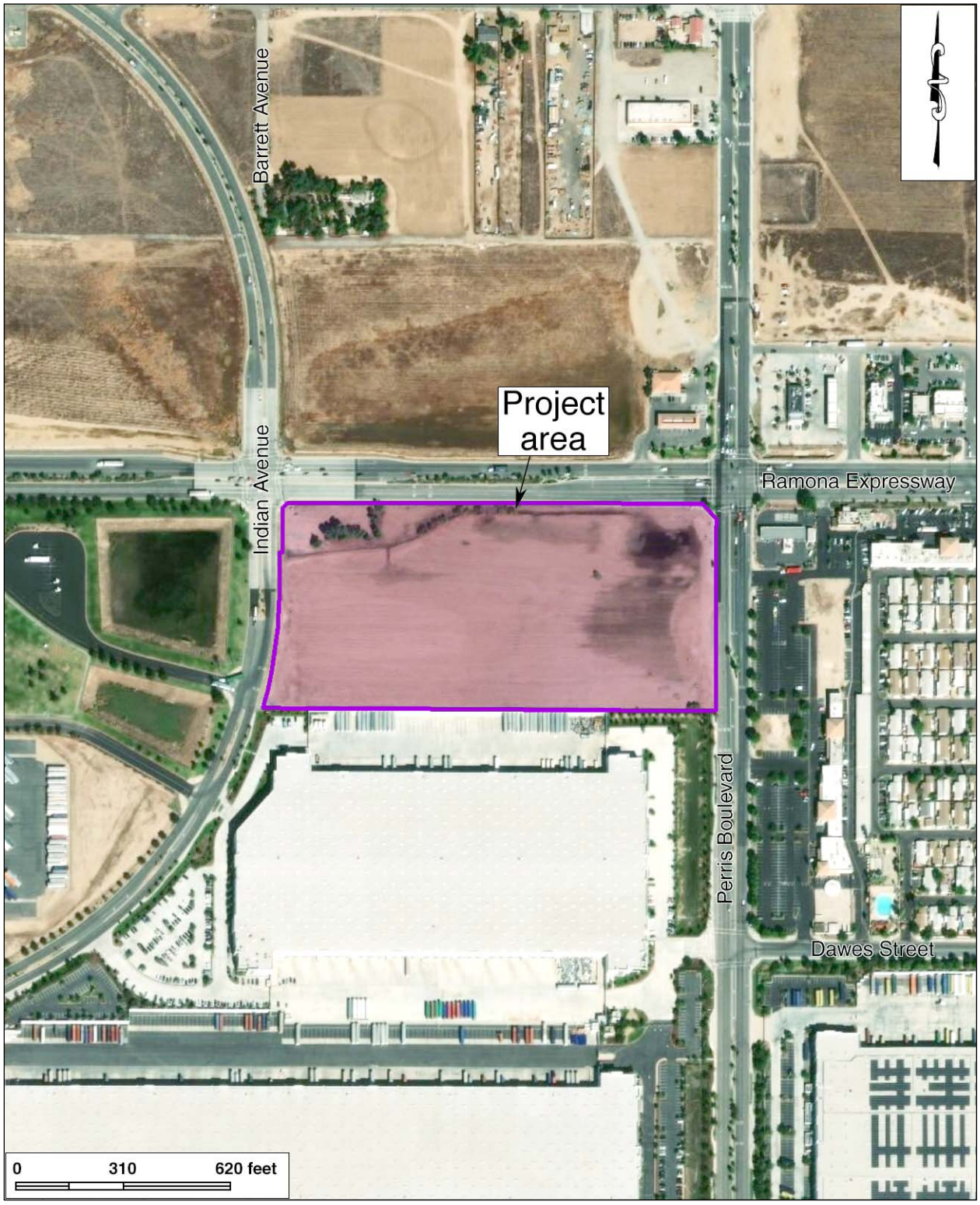


Figure 2. Aerial image of the project area.

Fossil resources generally occur only in areas of sedimentary rock (e.g., sandstone, siltstone, mudstone, 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 in the subsurface.

## 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 biota;
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.

## SETTING

The City of Perris is situated in the northern portion of the Peninsular Ranges Province, near where it adjoins the Transverse Ranges Province (Jenkins 1980:40-41; Harms 1996:131). The Peninsular Ranges Province is bounded on the north by the Transverse Ranges Province, on the northeast by the Colorado Desert Province, and on the west by the Pacific Ocean (*ibid.*). It extends southward to the southern tip of Baja California (Jahns 1954:Plate 3; Harden 2004:465).

The Peninsular Ranges Province is made up of a series of northwest-southeast trending structural blocks consisting of uplifted mountains that are separated by valley basins that have developed along the intervening fault zones. The mountains are composed mainly of igneous intrusive rocks, metasedimentary rocks, and some metavolcanic rocks (Harden 2004:466-468). The non-crystalline rocks in the western portion of the mountains consist of both metavolcanic and metasedimentary rocks that are mainly of Mesozoic age, while the eastern portion contains mainly metasedimentary rocks of Paleozoic and older age (*ibid.*:471-472). The crystalline basement rocks are present in both the western and the eastern portions and consist mainly of Mesozoic-age granitic rocks with some scattered gabbroic intrusions (*ibid.*:466-468).

The project area is located in the western portion of the Perris Valley, one of the many tectonically controlled valleys within the valley-and-ridge systems in the Perris Block, and roughly two miles from an outcropping of basement rocks that that form part of Mount Russell near the Perris Reservoir to the northeast. The Perris Block is situated 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 (English 1926).

The Perris Block is considered to have been active since Pliocene time (Woodford et al. 1971:3421). Colluvial/alluvial sediments of varying thickness derived from the erosion of the elevated portions of the region fill the low-lying areas of the Perris Block. These structurally depressed troughs are filled with nonmarine 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.

The roughly rectangular-shaped project area is surrounded by vacant land on the north, large warehouse complexes on the west and the south, and retail establishments on the east, with most of the existing developments dating to the past 20 years (NETR Online 1997-2016). Most of the property was used for agriculture prior to the 2010s, while an apparent farmstead and a water reservoir once occupied the northwestern and northeastern corners, respectively *(ibid.)*. Elevations in the project area range approximately from 1,455 feet to 1,460 feet above mean sea level, and the terrain is relatively level except for a small drainage ditch along the south side of Ramona Expressway (Figures 3, 4).

Figure 3. Overview of the current natural setting of the project area. (Photograph taken on March 18, 2020; view to the north)

Recent rainfall resulted in waterlogged areas on the property at the time of this survey, mainly in the northeastern and southeastern portions. The surface soil is composed of a brownish sandy loam with a mixture of silt in the inundated areas. Vegetation observed within the project boundaries consists predominantly of globe chamomile with small patches of invasive mustard, cheeseweed, dandelion, common fiddleneck, and other small shrubs and grasses (Figure 3).

## METHODS AND PROCEDURES

### RECORDS SEARCHES

The records search services for this study were provided by the Western Science Center (WSC) in Hemet and the San Bernardino County Museum (SBCM), Division of Earth Sciences, in Redlands. These institutions maintain files of regional paleontological localities as well as supporting maps and documents. The records search results were used to identify previously completed paleontological resource studies as well as known paleontological localities within a one-mile radius of the project area. Copies of the records search results are attached to this report in Appendix 2.

### LITERATURE REVIEW

In conjunction with the records searches, CRM TECH geologist/paleontologist Harry M. Quinn, California Professional Geologist #3477, pursued a literature review on the project vicinity. Sources consulted during the review include primarily topographic, geologic, soil maps of the Perris region, published geologic literature pertaining to the project location, geotechnical studies conducted in the vicinity, County of Riverside GIS database on paleontological sensitivity, and other materials in the CRM TECH library, including unpublished reports produced during similar surveys on nearby properties.

### FIELD SURVEY

On June 4, 2019, CRM TECH paleontological surveyor Daniel Ballester carried out the field survey of the project area under the direction of Harry M. Quinn. The survey was completed at an intensive level by walking a series of parallel north-south transects spaced 15 meters (approximately 50 feet) apart across the entire project area, except for a portion along the eastern boundary that was inundated by standing water. In this way, the ground surface in the entire project area was systematically examined to determine soil types, verify the geological formations, and search for indications of paleontological remains. Ground visibility was generally poor (20 to 30 percent) due to the presence of dense patches of vegetation.

## RESULTS AND FINDINGS

### RECORDS SEARCHES

The records searches by WSC and SBCM identified no known paleontological localities within the project area or the one-mile radius (Cortez 2020; Radford 2020; see Appendix 2). However, SBCM

reports two vertebrate fossil localities approximately two miles from the project location in clayey, silty, medium-coarse sand, while WSC reports "numerous fossil localities throughout the region from similarly mapped sediments" (*ibid.*). These localities were discovered in Pleistocene alluvium, which both institutions find to be present within the project area as well (*ibid.*).

WSC refers to the soils in the project area as very old alluvial fan units (Radford 2020), and the SBMC identifies the soils as surface exposures of both younger Holocene alluvium and Pleistocene-aged, older alluvium (Cortez 2020). Therefore, WSC considers any fossil specimen recovered from the project area to be potentially scientifically significant and recommends that a paleontological resource mitigation program be developed to monitor, salvage, and curate any fossil remains recovered during the project (Radford 2020).

## 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 on the surface in the nearby 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 10 feet below the surface (Scott 2004) and were exposed because of the deep excavation required for a major reservoir construction, which is much deeper than normally required for typical industrial development projects.

Morton (1971:Map Sheet 19) mapped the surface geology in the project area as entirely *Qao*, an indurated brown, clay-rich alluvium of Pleistocene age. Morton (2003) later re-mapped the surface geology at this location as *Qvofa*, namely alluvial fan deposits of early to middle Pleistocene age (Figure 4). Dibblee (2003) mapped the surface geology in the project area as entirely *Qa*, defined as alluvial sediments of Holocene age. According to Dibblee (*ibid.*), *Qa* rests directly on top of Pleistocene-age *Qoa* with an undetermined thickness. Dibblee (*ibid.*) showed *Qoa* to outcrop to the southwest and the northeast of the project location, which suggests that the thickness of *Qa* may vary dramatically in the area.

Riverside County paleontological sensitivity map classifies the project area as High Sensitivity (High B; RCIT n.d.). According to the County's General Plan:

> High B is a sensitivity equivalent to High A, but is based on the occurrence of fossils at a specified depth below the surface. This category indicates fossils that are likely to be encountered at or below 4 feet of depth and may be impacted during construction activities. (County of Riverside 2015:4.9-11)

The City of Perris General Plan identifies the project area as a part of Area #1, which is defined as Pleistocene-aged valley sediments and is considered to be of high paleontological sensitivity (City of Perris 2008:Exhibit CN-7).

## FIELD SURVEY

No surface manifestation of any paleontological remains was observed within the project area during the field survey.

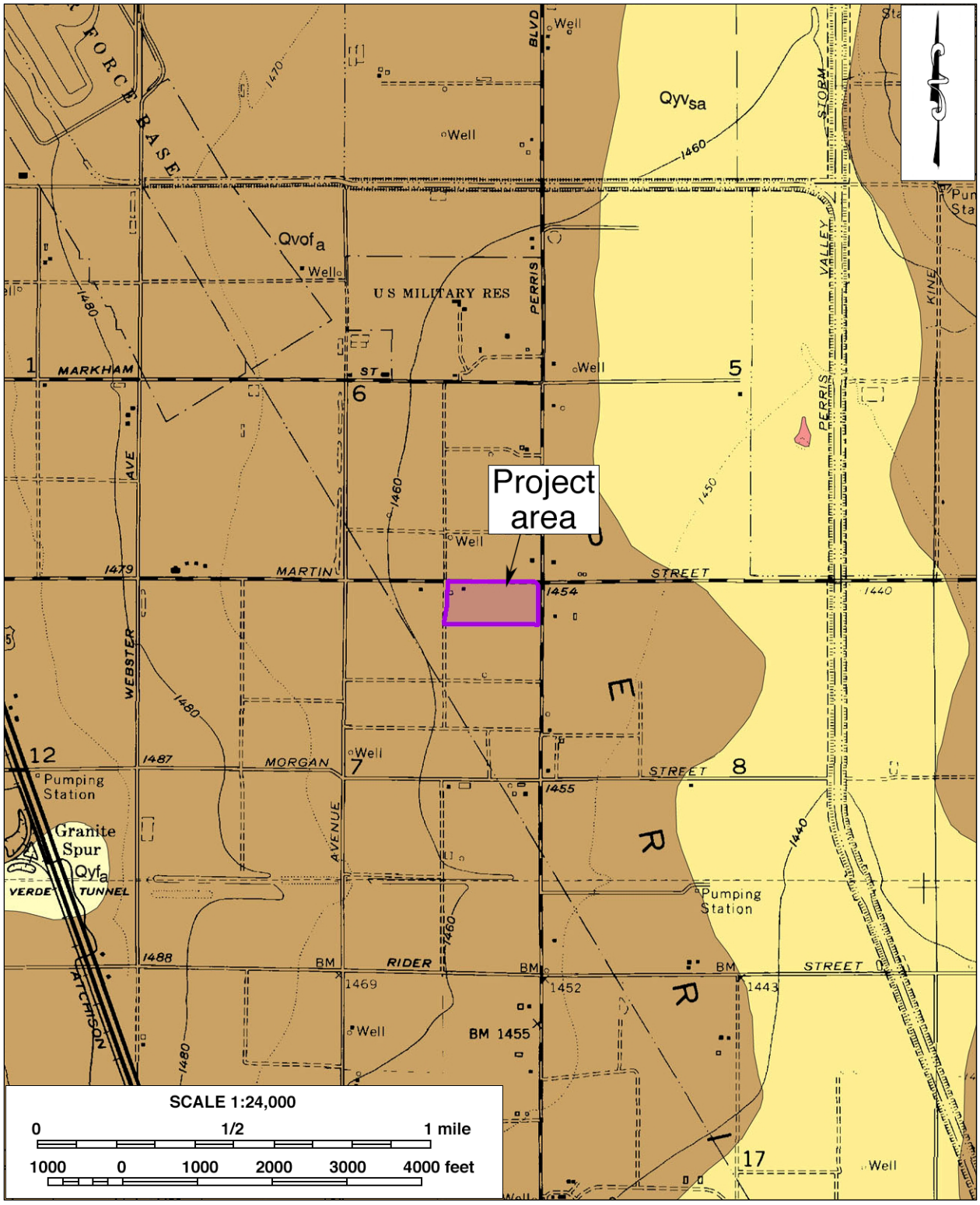


Figure 4. Geologic map of the project vicinity. (Based on Morton 2003)

## DISCUSSION

The results of the records search and the review of pertinent literature indicate that the project area is situated upon exposures of Holocene- to Pleistocene-age alluvium. These soils have a high potential to contain significant nonrenewable fossil remains, especially in the older sediments, and have yielded significant fossils elsewhere in Riverside County and in the Perris Valley area. Additionally, in their general plans the County of Riverside and the City of Perris have both found the sediments in the project vicinity to be high in paleontological sensitivity.

While no fossil localities were found within the project area, WSC and SBCM identified many vertebrate fossil localities in the surrounding area from similar soil units, and WSC considered the project area sensitive enough to recommend monitoring. Any earth-moving activities within the project area, therefore, may potentially disrupt or adversely affect paleontological resources.

## 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 nonrenewable paleontological resources appears to be high, especially in the early Holocene to Pleistocene soils present subsurface at varying depths. Therefore, CRM TECH recommends that a paleontological resource impact mitigation program be developed and implemented during the project to prevent adverse impacts on significant nonrenewable paleontological resources or reduce them to a level less than significant. The mitigation program should be developed in accordance with the provisions of CEQA (Scott and Springer 2003) as well as the proposed guidelines of the Society of Vertebrate Paleontology (2010), and should include but not be limited to the following components:

- All earth-moving operations within the project area should be monitored by a qualified paleontological monitor. The monitor should be prepared to quickly salvage fossils as they are unearthed to avoid construction delays and should collect samples of sediments that are likely to contain fossil remains of small vertebrates or in vertebrates. However, the monitor must have the power to temporarily halt or divert grading equipment to allow for the removal of abundant or large specimens.
- Collected samples of sediment should be processed to recover small fossils, and all recovered specimens should be identified and curated at a repository with permanent retrievable storage.
- A report of findings, including an itemized inventory of recovered specimens, should be prepared upon completion of the procedures outlined above. The report should include a discussion of the significance of the paleontological findings, if any. The report and the inventory, when approved by the City of Perris, would signify completion of the mitigation program.

Under this condition, the proposed project may be cleared to proceed in compliance with CEQA provisions on paleontological resources.

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**APPENDIX 1**

# PERSONNEL QUALIFICATIONS

**PRINCIPAL INVESTIGATOR**
**Michael Hogan, Ph.D., RPA***

## Education

| | |
|---|---|
| 1991 | Ph.D., Anthropology, University of California, Riverside. |
| 1981 | B.S., Anthropology, University of California, Riverside; with honors. |
| 1980-1981 | Education Abroad Program, Lima, Peru. |
| 2002 | Section 106—National Historic Preservation Act: Federal Law at the Local Level. UCLA Extension Course #888. |
| 2002 | "Recognizing Historic Artifacts," workshop presented by Richard Norwood, Historical Archaeologist. |
| 2002 | "Wending Your Way through the Regulatory Maze," symposium presented by the Association of Environmental Professionals. |
| 1992 | "Southern California Ceramics Workshop," presented by Jerry Schaefer. |
| 1992 | "Historic Artifact Workshop," presented by Anne Duffield-Stoll. |

## Professional Experience

| | |
|---|---|
| 2002- | Principal Investigator, CRM TECH, Riverside/Colton, California. |
| 1999-2002 | Project Archaeologist/Field Director, CRM TECH, Riverside. |
| 1996-1998 | Project Director and Ethnographer, Statistical Research, Inc., Redlands. |
| 1992-1998 | Assistant Research Anthropologist, University of California, Riverside |
| 1992-1995 | Project Director, Archaeological Research Unit, U. C. Riverside. |
| 1993-1994 | Adjunct Professor, Riverside Community College, Mt. San Jacinto College, U.C. Riverside, Chapman University, and San Bernardino Valley College. |
| 1991-1992 | Crew Chief, Archaeological Research Unit, U. C. Riverside. |
| 1984-1998 | Archaeological Technician, Field Director, and Project Director for various southern California cultural resources management firms. |

## Research Interests

Cultural Resource Management, Southern Californian Archaeology, Settlement and Exchange Patterns, Specialization and Stratification, Culture Change, Native American Culture, Cultural Diversity.

## Cultural Resources Management Reports

Author and co-author of, contributor to, and principal investigator for numerous cultural resources management study reports since 1986.

## Memberships

* Register of Professional Archaeologists; Society for American Archaeology; Society for California Archaeology; Pacific Coast Archaeological Society; Coachella Valley Archaeological Society.

**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**
**Ben Kerridge, M.A.**

**Education**

| | |
|---|---|
| 2014 | Geoarchaeological 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/Technical Editor, CRM TECH, Colton, California. |
| 2015 | Teaching Assistant, Institute for Field Research, Kephallenia, Greece. |
| 2009-2014 | Publications Delivery Manager, CH2M HILL, Santa Ana, California. |
| 2010- | Volunteer Naturalist, Newport Bay Conservancy, Newport Beach, California. |
| 2006-2009 | Technical Publishing Specialist, CH2M HILL, Santa Ana, California. |

**PALEONTOLOGICAL SURVEYOR/FIELD DIRECTOR**
**Daniel Ballester, M.S., RPA**

**Education**

| | |
|---|---|
| 2013 | M.S., Geographic Information System (GIS), University of Redlands, California. |
| 1998 | B.A., Anthropology, California State University, San Bernardino. |
| 1997 | Archaeological Field School, University of Las Vegas and University of California, Riverside. |
| 1994 | University of Puerto Rico, Rio Piedras, Puerto Rico. |

- Cross-trained in paleontological field procedures and identifications by CRM TECH Geologist/Paleontologist Harry M. Quinn.

**Professional Experience**

| | |
|---|---|
| 2002- | Field Director/GIS Specialist, CRM TECH, Riverside/Colton, California. |
| 2011-2012 | GIS Specialist for Caltrans District 8 Project, Garcia and Associates, San Anselmo, California. |
| 2009-2010 | Field Crew Chief, Garcia and Associates, San Anselmo, California. |
| 2009-2010 | Field Crew, ECorp, Redlands. |
| 1999-2002 | Project Archaeologist, CRM TECH, Riverside, California. |
| 1998-1999 | Field Crew, K.E.A. Environmental, San Diego, California. |
| 1998 | Field Crew, A.S.M. Affiliates, Encinitas, California. |
| 1998 | Field Crew, Archaeological Research Unit, University of California, Riverside. |

**APPENDIX 2**

# RECORDS SEARCH RESULTS

# WESTERN SCIENCE CENTER

CRM Tech
Nina Gallardo
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324

March 10, 2020

Dear Ms. Gallardo,

This letter presents the results of a record search conducted for the Proposed Ramona Expressway and Indian Avenue Industrial Project; Assessor's Parcel 303-060-020 (CRM Tech No. 3598P) in the city of Perris, Riverside County, California. The project site is located at the southwest intersection of Ramona Expressway and Perris Boulevard in Section 7 and San Jacinto Nuevo y Potero Land Grant of Township 4 South, and Range 3 West, on the Perris USGS 7.5 minute quadrangle.

The geologic units underlying the project area are mapped entirely as very old alluvial fan units dating to the early Pleistocene epoch (Morton, 1996). Pleistocene units are considered to be of high paleontological sensitivity, and while the Western Science Center does not have localities within the project area, we do have numerous fossil localities throughout the region from similarly mapped sediments.

Any fossil specimens recovered from the Proposed Ramona Expressway and Indian Avenue Industrial Project would be scientifically significant. Excavation activity associated with the development of the project area would impact the paleontologically sensitive Pleistocene alluvial units, and it is the recommendation of the Western Science Center that a paleontological resource mitigation program be put in place to monitor, salvage, and curate any recovered fossils from the study area.

If you have any questions, or would like further information, please feel free to contact me at dradford@westerncentermuseum.org

Sincerely,

Darla Radford
Collections Manager

# Proposed Ramona Expressway and Indian Avenue Industrial Project

Project area, one mile radius, geologic mapping, and any WSC fossil localities.

**Legend**

- Project area and one mile radius
- Qvofa: Very old alluvila fan deposits (Early Pleistocene)
- Qyv: Young alluvial fan deposits (Late Pleistocene to Holocene)

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www.SBCounty.gov

SAN BERNARDINO COUNTY

**San Bernardino County Museum**
**Division of Earth Sciences**

**Crystal Cortez**
Curator of Earth Sciences

**email**: Crystal.cortez@sbcm.sbcounty.org

16 March, 2020

CRM Tech
Attn: Nina Gallardo
1016 E. Cooley Drive, Suite B
Colton, CA 92324

PALEONTOLOGY RECORDS REVIEW for proposed Ramona Expressway and Indian Ave. Industrial project, Riverside, California (3598 P)

Dear Nina,

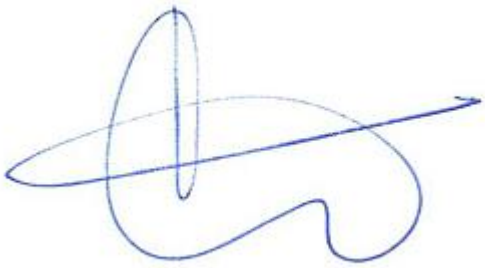
The Division of Earth Sciences of the San Bernardino County Museum (SBCM) has completed a records search for the above-named project in Riverside County, California. The proposed Ramona Expressway and Indian Avenue Industrial project is located in Section 7, Township 4S, Range 3W, as shown on the United States Geological Survey (USGS) 7.5 minute Perris, California quadrangle.

Previous geologic mapping (Dibble, T.W. and Minch, J.A., 2003) indicates the proposed area is situated upon surface exposures of younger Holocene alluvium and Pleistocene aged, older alluvium. For this review, I conducted a search of the Regional Paleontological Locality Inventory at SBCM. The results of this record search indicated that no previously recorded paleontological resources localities are known from within the boundaries of the proposed project site; however, there is two fossil sites located two miles South-East of the project. SBCM localities; 5.3.298 and 5.3.299 were recovered from a clayey silty medium coarse sand of older alluvium. Taxa discovered include a partial skull of *Mammut americanum*, *Actinemys* sp., *Bison* sp., and *Equus.*

This records search covers only the paleontological records of the San Bernardino County Museum. 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.

Please do not hesitate to contact us with any further questions that you may have.

Sincerely,



Crystal Cortez, Curator of Earth Sciences
Division of Earth Sciences
San Bernardino County Museum