

PALEONTOLOGICAL RESOURCES ASSESSMENT REPORT

SECOND STREET IMPROVEMENT PROJECT

**City of Beaumont
Riverside County, California**

For Submittal to:

City of Beaumont
550 East Sixth Street
Beaumont, CA 92223

Prepared for:

Cozad & Fox, Inc.
151 South Girard Street
Hemet, CA 92544

Prepared by:

Ben Kerridge, Paleontologist/Report Writer
CRM TECH
1016 East Cooley Drive, Suite A/B
Colton, CA 92324

Bai “Tom” Tang, Principal Investigator
Michael Hogan, Principal Investigator

October 11, 2021

CRM TECH Contract No. 3725
Approximately 2,850 linear feet
USGS Beaumont, Calif., 7.5' (1:24,000) quadrangle
Sections 10 and 11, T3S R1W, San Bernardino Baseline and Meridian

EXECUTIVE SUMMARY

Between April and October 2021, at the request of Cozad and Fox, Inc., CRM TECH performed a paleontological resource assessment for the proposed Second Street Improvement Project in the City of Beaumont, Riverside County, California. The project includes extending Second Street from its current terminus to Pennsylvania Avenue, widening Second Street from the current terminus to the westerly boundary of the Home Depot shopping center, and associated drainage improvements along the roadway. The project area measures approximately 2,850 linear feet in length and encompasses roughly 5.5 acres, lying across the boundary between Sections 10 and 11, T3S R1W, San Bernardino Baseline and Meridian.

The study is a part of the environmental review process for the project. The City of Beaumont, 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 repositories, conducted a literature review, and carried out a systematic field survey.

The results of these research procedures indicate that no paleontological localities were previously found in the project area, and no surface manifestation of any fossil remains were observed during the field survey. Sources disagree on the prevailing sediments in the project area, but they all recognize the presence of Pleistocene-age alluvium, which generally has a high potential to contain significant, nonrenewable fossil remains. Due to past ground disturbance and heavy vegetation growth at the time of the survey, an accurate assessment of the paleontological sensitivity of the native soil was difficult to ascertain.

Based on these findings, CRM TECH concludes that the proposed project's potential to impact significant, nonrenewable paleontological resources appears to be high in the undisturbed native soils below surface and 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 in the project area should be monitored by a qualified paleontological monitor. Under this condition, the proposed project may be cleared to proceed in compliance with CEQA provisions on paleontological resources.

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INTRODUCTION

Between April and October 2021, at the request of Cozad and Fox, Inc., CRM TECH performed a paleontological resource assessment for the proposed Second Street Improvement Project in the City of Beaumont, Riverside County, California (Figure 1). The project includes extending Second Street from its current terminus to Pennsylvania Avenue, widening Second Street from the current terminus to the westerly boundary of the Home Depot shopping center, and associated drainage improvements along the roadway. The project area measures approximately 2,850 linear feet in length and encompasses roughly 5.5 acres, lying across the boundary between Sections 10 and 11, T3S R1W, San Bernardino Baseline and Meridian (Figures 2, 3).

The study is a part of the environmental review process for the project. The City of Beaumont, 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 repositories, conducted a literature review, and carried out a systematic field survey. The following report is a complete account of the methods, results, and final conclusion of the study. Personnel who participated in the study are named in the appropriate sections below, and their qualifications are provided in Appendix 1.

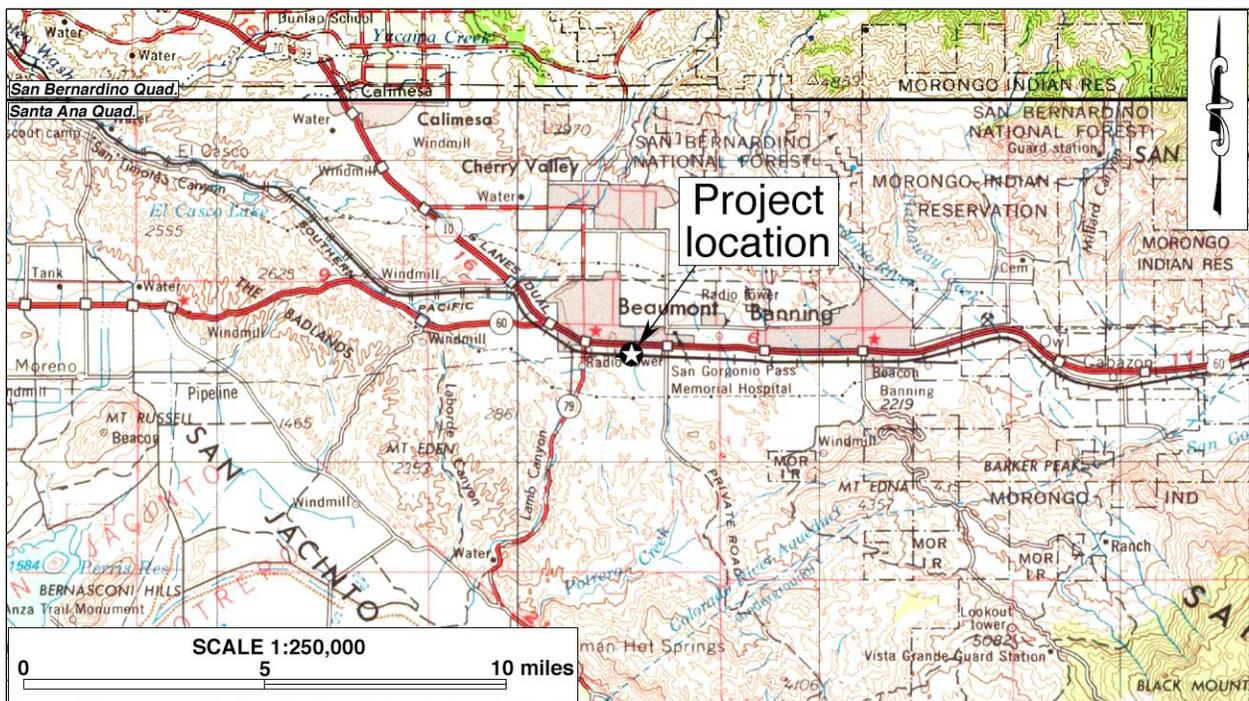


Figure 1. Project vicinity. (Based on USGS San Bernardino and Santa Ana, Calif., 120'x60' quadrangles 1969-1979 edition)

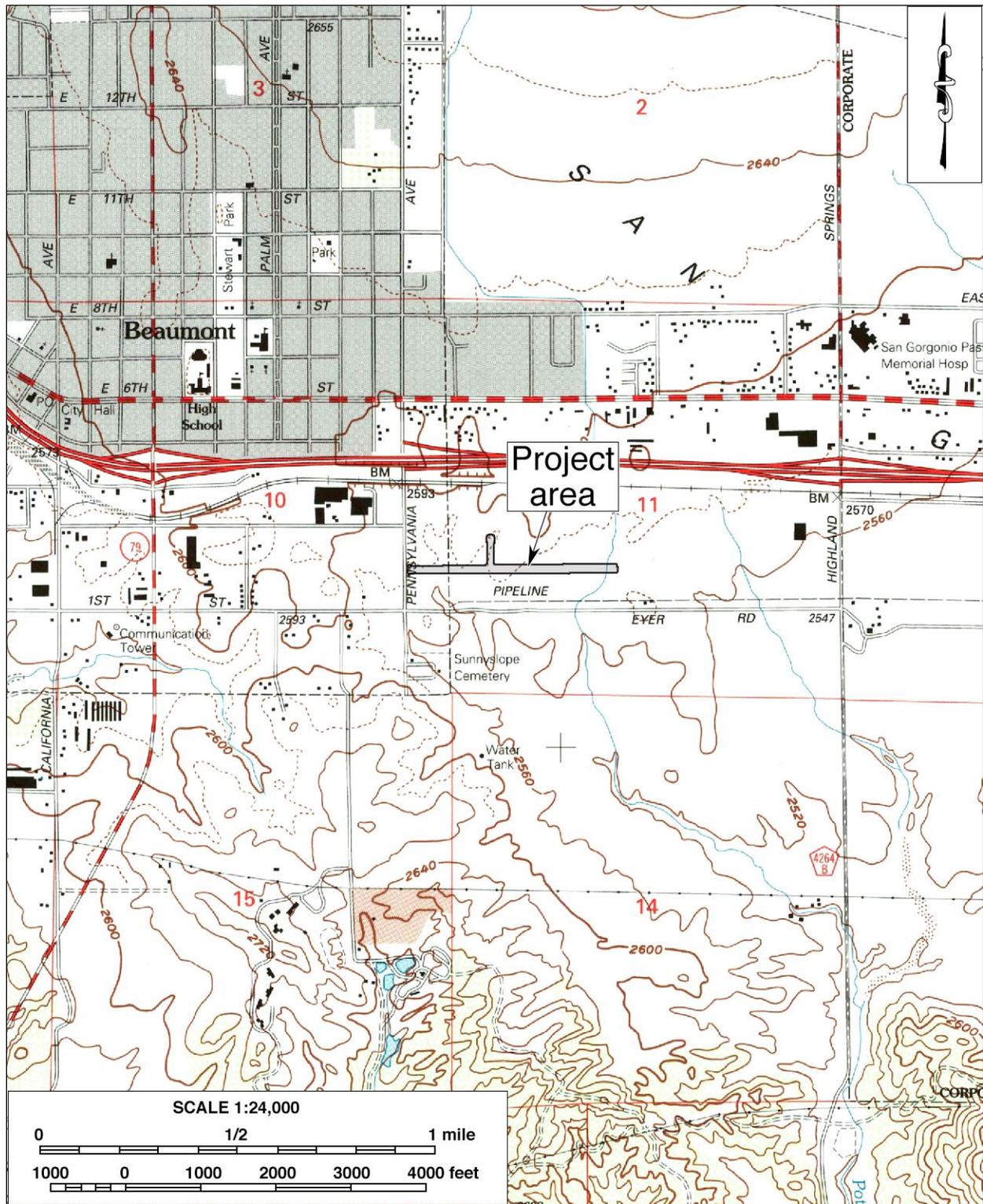


Figure 2. Project location. (Based on USGS Beaumont, Calif., 7.5' quadrangle, 1996 edition)



Figure 3. Aerial image of the project area.

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, 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 Beaumont is located in the northern portion of the Peninsular Ranges province, which 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 (Jenkins 1980:40-41; Harms 1996:131). The Peninsular Ranges province extends southward to the southern tip of Baja California and is made up of a series of northwest-southeast trending structural blocks consisting of uplifted mountains that are separated by valley basins developed along the intervening fault zones (Jahns 1954; Harden 2004:465).

The mountains in this region are made up 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 province consist of both metavolcanic and metasedimentary rocks that are mostly 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 eastern portions and consist mainly of Mesozoic-age granitic rocks with some scattered gabbroic intrusions (*ibid.*:466-468). The intervening valley basins are filled primarily with Pliocene to Recent nonmarine sedimentary rocks (Woodford et al. 1971:3421).

Russell (1932:Map 1) shows the project area to be within the San Gorgonio Pass portion of the Peninsular Ranges province, an east-west-trending narrow valley between the San Bernardino Mountains on the north and the San Jacinto Mountains on the south. He describes the Beaumont Plain as an area of older rocks that are not greatly affected by recent deposition but are being eroded by more recent weathering (*ibid.*:69-74). The San Gorgonio Pass, in fact, separates the Peninsular Range Province from the Transverse Range Province (Jenkins 1980:40-41; Harms 1996:131).

The project area lies on the southeastern outskirts of downtown Beaumont, along one of the main north-south venues (Figures 2, 3). Elevations within the project area range from 2,576 feet to 2,593



Figure 4. Overview of the current natural setting of the project area. (Photograph taken on July 1, 2021; view to the southwest)

feet above mean sea level. The west-east portion of the project area has recently undergone weed abatement, with visible tracks of heavy equipment still visible. For the most part, the north and south sides of the project area extend into open terrain overgrown with foxtails (Figure 4). Both sides adjacent to the project area also exhibit small amounts of wild mustard, and datura. The surface soil in the vicinity is composed primarily of a moderately packed silty-clay loam, brown in color.

Although the terrain is generally level, there is a small area on the western portion of the project area where two small drainages cross the proposed road alignment, both descending to the south, with a maximum depth of approximately 10 feet. The floors of the drainages are covered mainly by coarse-grained sand. The eastern end of the project area extends into the edge of the existing shopping center, where the ground surface is partially paved, while the western portion of the project area retains a rural, undeveloped landscape (Figure 3).

METHODS AND PROCEDURES

RECORDS SEARCHES

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

LITERATURE REVIEW

In conjunction with the records searches, CRM TECH paleontologist Ben Kerridge pursued a literature review on the project area and vicinity. Sources consulted during the review include primarily topographic, geologic, and soil maps of the Beaumont area, published geologic literature pertaining to the project location, the Riverside County General Plan and Geographic Information System, satellite and aerial images available at the Nationwide Environmental Title Research (NETR) Online website and through the Google Earth software, and other materials in the CRM TECH library, including unpublished reports produced during similar surveys in the vicinity.

FIELD SURVEY

On July 1, 2021, CRM TECH paleontological surveyor Salvadore Z. Boites carried out the field survey of the project area. During the survey, Boites walked parallel transects spaced 15 meters (approximately 50 feet) apart along either side of the project alignments. In this way, the ground surface of the project area was systematically examined to determine soil types, verify the geological formations, and search for indications of paleontological remains. Ground visibility was excellent (greater than 90 percent) along the east-west alignment of the project area but was poor (close to 0 percent) along the north-south alignment, which was overgrown with dried foxtails.

RESULTS AND FINDINGS

RECORDS SEARCHES

Neither the SBCM nor the WSC identified any known paleontological localities within the project area (Cortez 2021; Radford 2021; see Appendix 2). However, the SBCM found ten localities approximately two miles to the south of the project location (Cortez 2021), while the WSC reported “numerous” localities in the region from similar alluvial sediments to those known to be present in the project area (Radford 2021).

The SBCM describes the surface soils in the project area as Quaternary younger alluvial fan deposits of Holocene age, which are low in paleontological sensitivity, but notes that these soils sit atop older Pleistocene fan deposits, which are much more fossiliferous and have previously yielded the remains of a wide variety of extinct mammals (Cortez 2021). In contrast, the WSC identified the surface geology of the project area as entirely Pleistocene alluvial fan deposits of high paleontological sensitivity (Radford 2021).

LITERATURE REVIEW

Rogers (1965) mapped the surface geology in the project area as *Qc*, or nonmarine sediments from the Pleistocene age. Dibblee (2003) mapped it as *Qf*, or alluvial fan of San Gorgonio Pass, which is derived from sand and gravel of plutonic and gneissic detritus originating from the San Bernardino Mountains to the north, Pleistocene in age (Figure 5). Riverside County paleontological sensitivity maps classified the project location as Undetermined Sensitivity (RCIT 2021). According to definitions outlined in the County’s General Plan:

Areas underlain by sedimentary rocks for which literature or unpublished studies are not available have undetermined potential for containing significant paleontological resources. These areas need to be inspected by a qualified vertebrate paleontologist before a specific determination of high potential or low potential can be assigned. (County of Riverside 2015:4.9-11)

FIELD SURVEY

Throughout the course of the field survey, no surface manifestation of any paleontological remains was observed within the project area. It was noted during the survey that the ground surface in the east-west portion of the project area had been extensively disturbed by heavy machinery, and ground visibility in the north-south portion was poor during the survey, which prevented an accurate assessment of the paleontological sensitivity of the native soils in much of the project area.

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

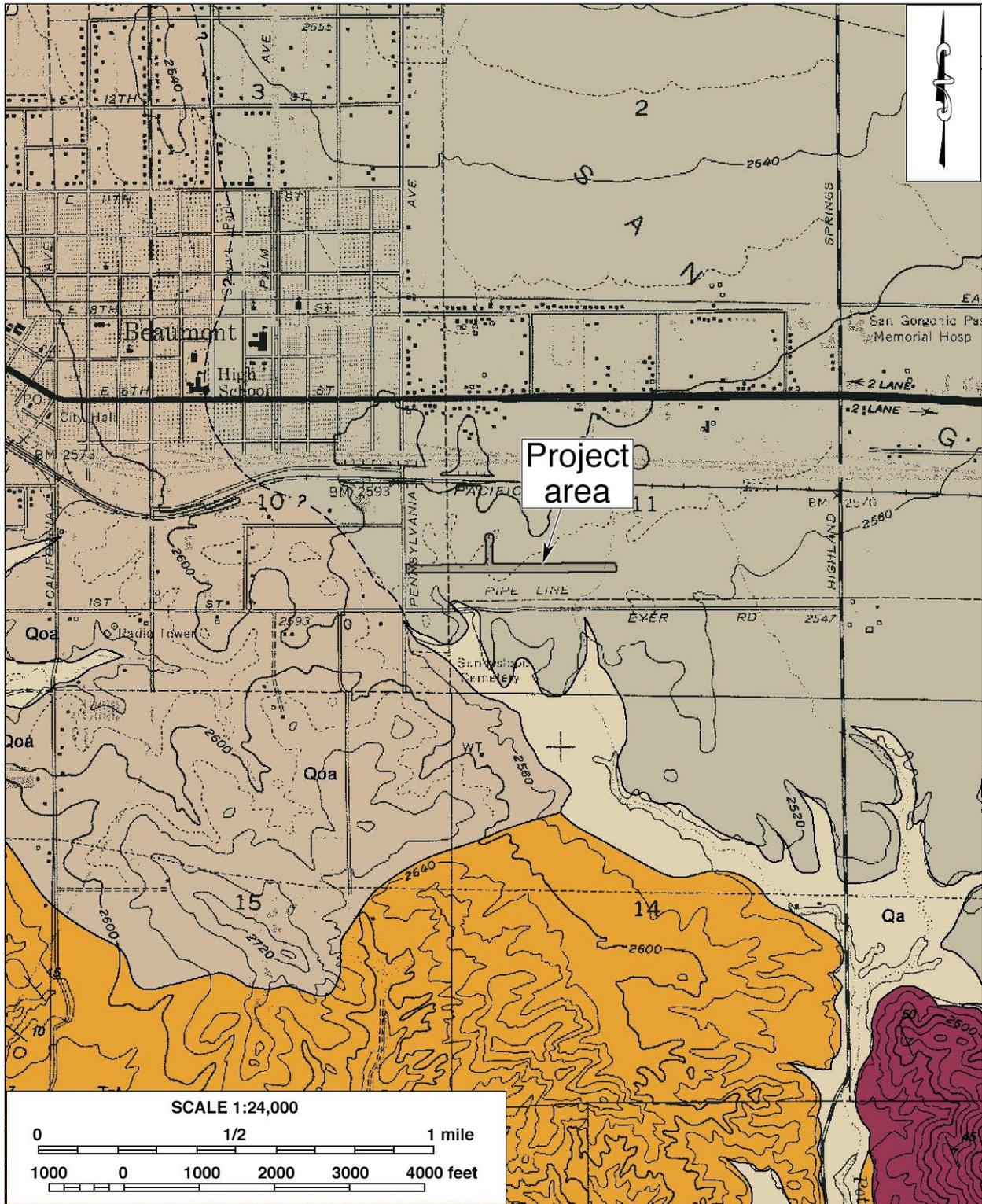


Figure 5. Geologic map of the project vicinity. (Based on Dibblee 2003)

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.

In summary of the research results presented above, no paleontological localities were previously found in the project area, and no surface manifestation of any fossil remains were observed during the field survey. Sources disagree on the prevailing sediments in the project area, but they all recognize the presence of Pleistocene-age alluvium, which generally has a high potential to contain significant, nonrenewable fossil remains. Due to past ground disturbance and heavy vegetation growth at the time of the survey, an accurate assessment of the paleontological sensitivity of the native soil was difficult to ascertain.

Based on these findings, CRM TECH concludes that the proposed project's potential to impact significant, nonrenewable paleontological resources appears to be high in the undisturbed native soils below surface and 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. 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 associated with the project 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 invertebrates. 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 submitted to the City of Beaumont, would signify completion of the program to mitigate potential impacts on paleontological resources.

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

REFERENCES

County of Riverside

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APPENDIX 1
PERSONNEL QUALIFICATIONS

PROJECT PALEONTOLOGIST/REPORT WRITER
Ben Kerridge, M.A.

Education

- 2019-2020 Physical Geology, California Geology, and Historical Geology Coursework, Fullerton College, Fullerton, California.
- 2014 Geoarchaeological Field School, Institute for Field Research, Kephallenia, Greece.
- 2010 M.A., Anthropology, California State University, Fullerton.
- 2004 B.A., Anthropology, California State University, Fullerton.

Professional Experience

- 2015- Project Archaeologist/Paleontologist/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.
- 2006-2009 Technical Publishing Specialist, CH2M HILL, Santa Ana, California.
- 2002-2006 English Composition/College Preparation Tutor, various locations, California.

PALEONTOLOGICAL SURVEYOR
Salvadore Z. Boites, M.A.

Education

- 2013 M.A., Applied Anthropology, California State University, Long Beach.
- 2003 B.A., Anthropology/Sociology, University of California, Riverside.
- 1996-1998 Archaeological Field School, Fullerton Community College, Fullerton, California.

Professional Experience

- 2014- Project Archaeologist, CRM TECH, Colton, California.
- 2010-2011 Adjunct Instructor, Anthropology, Everest College, Anaheim, California.
- 2003-2008 Project Archaeologist, CRM TECH, Riverside/Colton, California.
- 2001-2002 Teaching Assistant, Moreno Elementary School, Moreno Valley, California.
- 1999-2003 Research Assistant, Anthropology Department, University of California, Riverside.

APPENDIX 2

RECORDS SEARCH RESULTS

(Confidential)

MUSEUM
Division of Earth Sciences

Crystal Cortez
Curator of Earth Sciences

14 April, 2021

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

PALEONTOLOGY RECORDS REVIEW for Proposed 2nd Street Improvement
Project (CRM TECH Contract No. 3725P), Beaumont, California

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 San Bernardino County, California. The Proposed 2nd Street Improvement Project (CRM TECH Contract No. 3725P) is located near in the City of Beaumont, California as shown on the United States Geological Survey (USGS) 7.5-minute Beaumont, California quadrangles.

Geologic mapping of that region indicates that the proposed development is located on Quaternary younger alluvial deposits from the San Gorgonio pass of Holocene (recent) age (Dibblee and Minch, 2003). These sediments have low potential to contain significant paleontological resources. However, these sediments may overlay older Pleistocene fan deposits. These potentially-fossiliferous sediments were deposited between ~1.8 million years ago to ~11,000 years ago. Older Pleistocene deposits in the area have been found to be highly fossiliferous yielding the remains of ground sloths, bison and horse.

For this review, I conducted a search of the Regional Paleontological Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no paleontological resources have been discovered within the proposed project. However, ten (10) localities are present approximately two miles south of the site (SBCM 5.3.79, 5.3.80, 5.3.81, 5.3.82, 5.3.83, 5.3.84,

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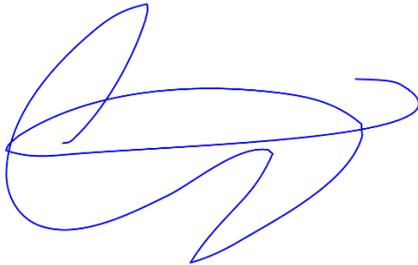
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Chief Executive Officer

5.3.85, 5.3.86, 5.3.88, and SBCM 5.3.129). Several of these sites yielded Plantae and Algae remains from the dark shale, and silty sand facies of the San Timoteo Formation (SBCM 5.3.79, 5.3.80, 5.3.81, 5.3.82, 5.3.83 and 5.3.129). Sites 5.3.84, 5.3.85 and 5.3.86 yielded fragmentary material of large mammals along with enamel of a possible proboscidean (SBCM 5.3.86). SBCM 5.3.88, recovered fossil remains of Telesotei, Gastropods, Plantae, and *Calamites* sp. from a silty shale deposit. In addition, 4.5 miles north of the project is another fossil locality (SBCM 1.95.5) of a Pleistocene in age sandy loam with specimens of *Tracheophyta* and *Camelops* sp.

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,

A handwritten signature in blue ink, consisting of several overlapping loops and a long horizontal stroke, likely representing the name Crystal Cortez.

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



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

April 28, 2021

Dear Ms. Gallardo,

This letter presents the results of a record search conducted for the Proposed 2nd Street Improvement Project in the city of Beaumont, Riverside County, California. The project site is located north of 1st Street, east of Pennsylvania Avenue, south of Interstate 10, and west of Highland Springs Avenue in Section 10 and 11 of Township 3 South, Range 1 West on the *Beaumont, CA* USGS 7.5 minute topographic quadrangle.

The geologic unit underlying the project area is mapped entirely as alluvial fan of the San Gorgonio Pass deposits dating to the Pleistocene epoch (Dibblee and Minch, 2003). Pleistocene alluvial units are considered to be of high paleontological sensitivity. The Western Science Center does not have localities within the project area, but does have numerous localities within similarly mapped alluvial sediments throughout the region. Pleistocene alluvial deposits in southern California are well documented and known to contain abundant fossil resources including those associated with Columbian mammoth (*Mammuthus columbi*), Pacific mastodon (*Mammut pacificus*), Sabertooth cat (*Smilodon fatalis*), Ancient horse (*Equus sp.*) and many other Pleistocene megafauna.

Any fossils recovered from Proposed 2nd Street Improvement Project would be scientifically significant. Excavation activity associated with development of the area has the potential to impact the paleontologically sensitive Pleistocene alluvial units and it is the recommendation of the Western Science Center that a paleontological resource mitigation plan be put in place to monitor, salvage, and curate any recovered fossils associated with the current study area.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Darla Radford', is written over a white background.

Darla Radford
Collections Manager

2nd Street Improvement Project

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

Legend

-  Project area and one mile radius
-  Qf: Alluvial fan (Pleistocene)

