Appendix F

Update to Paleontological Resources Assessment Report

for the

Thermal Ranch Specific Plan

prepared by

CRM TECH, Inc., October 20, 2022.

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

October 20, 2022

John D. Criste, Principal
Terra Nova Planning & Research, Inc.
42635 Melanie Place, Suite 101
Palm Desert, CA 92211

Re: Update to Paleontological Resources Assessment Report
Thermal Ranch Specific Plan (SP No. 00401)
APNs 751-020-002, -003, -006, and -007
Thermal Area, Riverside County, California
CRM TECH Contract No. 3892A

Dear Mr. Criste:

At your request, CRM TECH has completed a paleontological resources assessment on approximately 640 acres of agricultural land near the unincorporated community of Thermal, Riverside County, California. The subject property of the study consists of Assessor's Parcel Numbers 751-020-002, -003, -006, and -007, bounded by Harrison Street on the west, Avenues 62 on the north, Tyler Street on the east, and the extension of Avenue 64 on the south (Figs. 1, 2). It encompasses essentially the entirety of Section 5, Township 7 South, Range 8 East, San Bernardino Baseline and Meridian, as depicted in the United States Geological Survey (USGS) Valerie, California, 7.5' quadrangle (Fig. 1).

The study is part of the environmental review process for a proposed multi-use development on the property, including both single- and multi-family residences, an extended stay hotel, a recreational vehicle park, retail spaces, and an equestrian facility, as well as other associated amenities and infrastructure improvements. The County of Riverside, 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 County with the necessary information and analysis to determine whether the project would potentially disrupt or adversely affect any paleontological resources, as mandated by CEQA, and to design a paleontological salvage program for the project, if necessary.

Background

As you know, the project area was previously the subject of a standard paleontological resources assessment that CRM TECH completed in 2006 (Quinn and Ballester 2006; see Attachment A). The scope of that study included records searches at the San Bernardino County Museum and the Natural History Museum of Los Angeles County, a paleontological literature review, and a systematic field survey of the project area, in accordance with the guidelines of the Society of Vertebrate Paleontology.

Based on the results of these research procedures, the sensitivity of the project area for paleontological resources was determined to range from moderate to high, especially for Holocene-

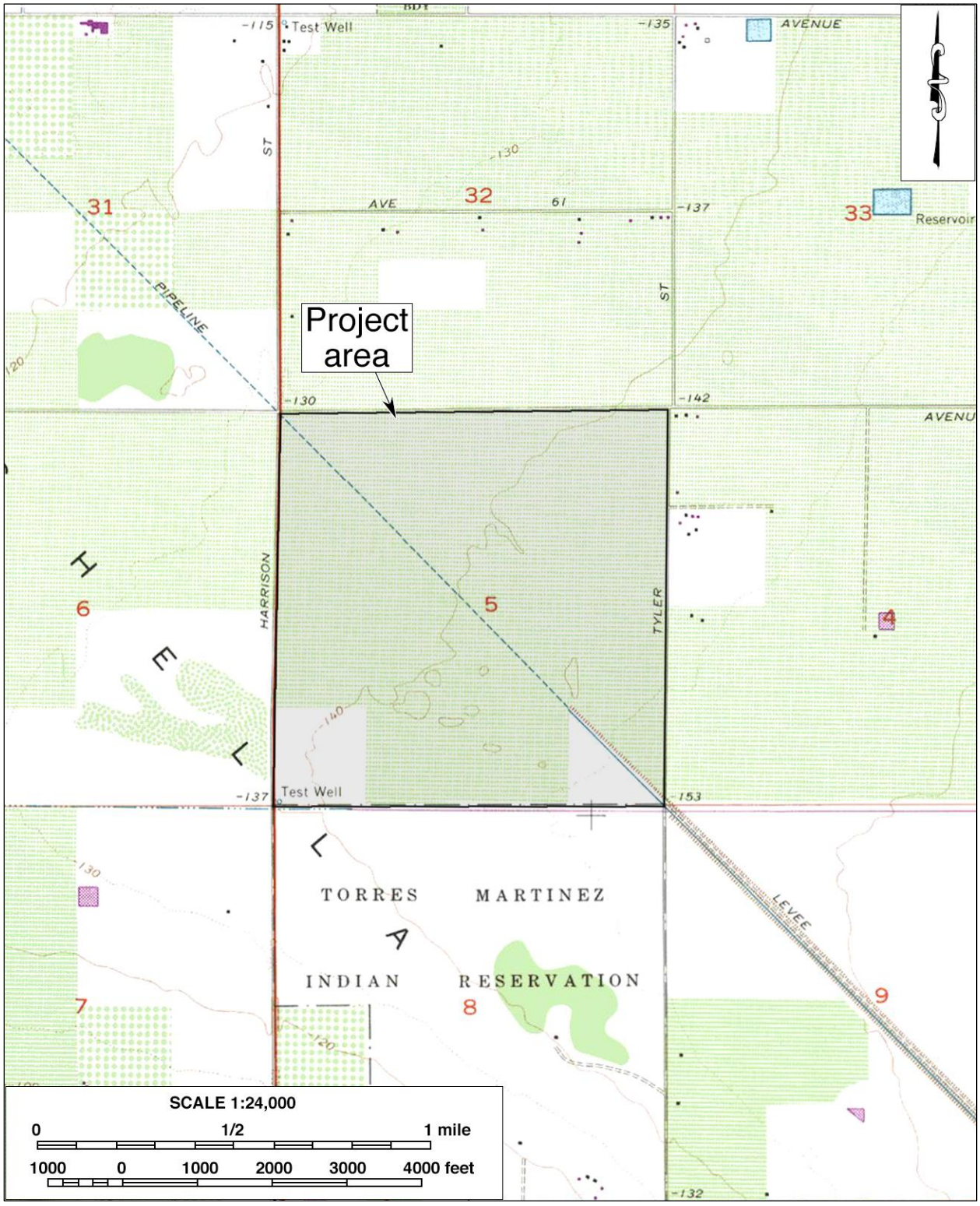


Figure 1. Project location. (Based on USGS Valerie, Calif., 7.5' quadrangle, 1972 edition)

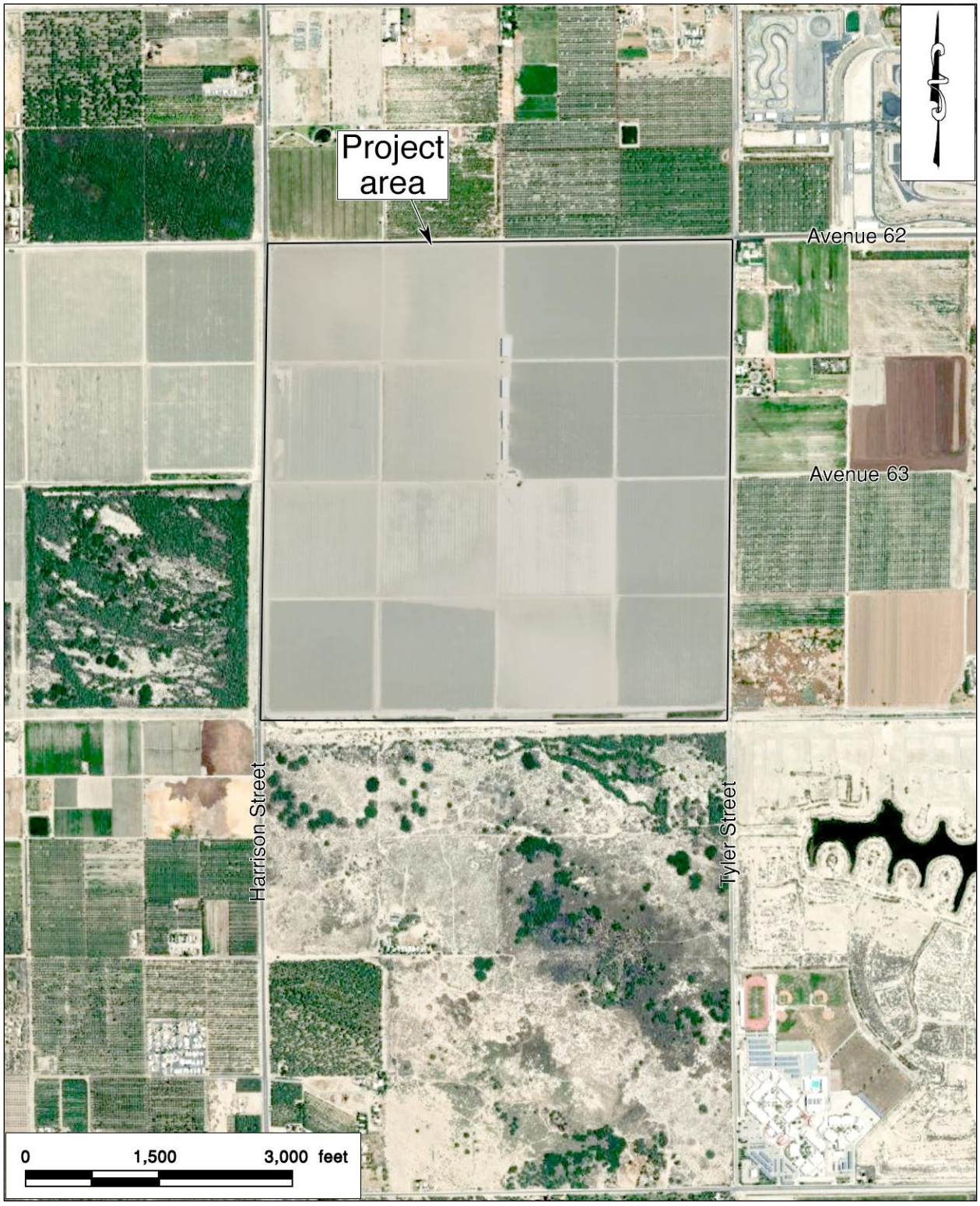


Figure 2. Recent satellite image of the project area.

age invertebrate fossils (Quinn and Ballester 2006:7). Therefore, CRM TECH recommended that a surface collection of freshwater mollusk remains be accomplished prior to, or at the beginning of, earth-moving activities. In addition, paleontological monitoring was recommended for all earth-moving activities reaching beyond the depth of two feet, along with a program to mitigate impacts to the resources that are unearthed (*ibid*.).

Since the 2006 study on the project area is now 16 years old and thus considered out of date for statutory compliance purposes today, the present study was designed and implemented as an update to reexamine and confirm the findings and conclusions of that study. Research procedures completed during this study include a new records search at the Western Science Center, an updated literature review, and a field reconnaissance. A summary of the methods and results of these procedures is presented below, along with the final conclusion of the study.

Records Search

The paleontological records search service for this study was provided by the Western Science Center (WSC) in Hemet, which maintains files on paleontological localities in the region as well as supporting maps and documents. The records search results were used to identify previously performed paleontological resource assessments and known paleontological localities within a one-mile radius of the project area. A copy of the records search results is attached to this report in Attachment B.

According to the WSC, the project area lies entirely upon alluvial sand and clay deposits dating to the Holocene period (Stoneburg 2022; see Attachment B). The WSC did not identify any known paleontological localities within the project area or within a one-mile radius. However, the WSC noted that Pleistocene alluvial sediments, considered to be of high paleontological sensitivity, are potentially present at substantial depths below the surface within the project area. Therefore, the WSC concluded that any fossil specimen recovered from the project area would be scientifically significant. Although it is considered unlikely for paleontologically sensitive soils to be encountered during construction activities, the WSC stated that "caution during development should be observed" (*ibid*.).

Supplementary Literature Review

As a part of this study, the Riverside County GIS database on paleontological sensitivity was consulted, while geological literature pertaining to the project vicinity and aerial/satellite photographs that have become available since 2006 were also examined for additional information. Riverside County paleontological sensitivity map classifies the project location as High Sensitivity ("High A"; RCIT n.d.). According to the County's general plan,

> High A is based on geologic formations or mapped rock units that are known to contain or have the correct age and depositional conditions to contain significant paleontological resources. These include rocks of Silurian or Devonian age and younger that have potential to contain remains of fossil fish, and Mesozoic and Cenozoic rocks that contain fossilized body elements and trace fossils such as tracks, nests and eggs. (County of Riverside 2015:4.9-11).

The surface sediments within the project area have been mapped by Dibblee (2008) as "alluvial sand and clay of valley areas," dating from the Holocene. Taken between 1953 and 2021, the aerial and satellite photographs, available at the Nationwide Environmental Title Research (NETR) Online website and through the Google Earth software, reveal that the northeastern quarter of the project area was under cultivation at least by 1953, and that the farming operations had expanded to nearly the entire project area by the 1970s (NETR Online 1953-1975). Since then, agricultural activities have continued on the property to the present time, but the property has remained otherwise undeveloped (NETR Online 1975-2020).

Field Reconnaissance

The field inspection of the project area was carried out on June 29, 2022, by CRM TECH field director/paleontological surveyor Daniel Ballester, M.S. The survey was completed at a reconnaissance level by inspecting on foot various locations where representative types of surface soils are exposed, such as along various unpaved access roads, across some of the recently disked fields, and along the project boundaries. Ground visibility was excellent (90-100%) throughout the project area since the entire field is currently fallow and most of the ground surface had been disked (Fig. 3).

Figure 3. Current condition of the project area. (Photograph taken on June 29, 2022; view to the northwest)

As during the 2006 field survey, scattered shells and shell fragments from freshwater snails that once prospered in Holocene Lake Cahuilla, such as *Gyraulus* sp., *Physa* sp., and *Tryonia* sp., were observed in abundance in the areas surveyed. Also present on the surface were shell fragments of the freshwater mussel, *Anodonta* sp. These freshwater mollusk remains provide additional evidence that sediments that can be attributed to the Holocene Lake Cahuilla lakebed sequence are present in the project area. No fish bone or other vertebrate fossil remains were observed during the survey.

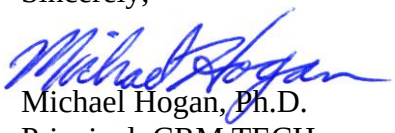
Conclusion and Recommendations

In summary, the results of the present study have confirmed the 2006 conclusion that the proposed project's potential impact on paleontological resources appears to be moderate to high, especially for Holocene-age invertebrate fossils. Therefore, CRM TECH reiterates the recommendations made at the completion of the 2006 study (see Quinn and Ballester 2006:7 for further details):

- A bulk surface sample of freshwater shells should be collected prior to any earth-moving activities in the project area. Additional bulk samples should be taken from various depths during grading.
- Monitoring of earth-moving activities should be implemented below the depth of two feet, along with a program to mitigate impacts to the resources that might be unearthed..

Thank you for this opportunity to be of service. If you have any questions regarding the findings of this study or need any additional information, please feel free to contact our office.

Sincerely,



Michael Hogan, Ph.D.
Principal, CRM TECH

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NETR (Nationwide Environmental Title Research) Online
1953-2020 Aerial and satellite photographs of the project vicinity; taken in 1953, 1972, 1975, 1984, 1996, 2002, 2005, 2009, 2010, 2012, 2014, 2016, 2018, and 2020. http://www.historicaerials.com.

Quinn, Harry M., and Daniel Ballester
2006 Paleontological Resources Assessment Report: Assessor's Parcel Number 751-020-002, -003, 006, and -007, near the City of La Quinta, Riverside County, California. (Attachment A)

RCIT (Riverside County Information Technology)
n.d. Map My County. https://gis1.countyofriverside.us/Html5Viewer/?viewer=MMC_Public.
Stoneburg, Brittney Elizabeth
2022 Letter of findings, paleontological resources records search for the proposed project. Prepared by Western Science Center, Hemet, California. (Attachment B)

ATTACHMENT A

2006 PALEONTOLOGICAL RESOURCES ASSESSMENT

PALEONTOLOGICAL RESOURCES ASSESSMENT REPORT

ASSESSOR'S PARCEL NOS. 751-020-002, -003, -006, AND -007

Near the City of La Quinta
Riverside County, California

Submitted to:

Thomas G. Olsen
Thomas Olsen Associates, Inc.
2829 S. State St.
Hemet, CA 92543

Submitted by:

Harry M. Quinn, Paleontologist/Geologist
Daniel Ballester, Paleontological Surveyor
CRM TECH
4472 Orange Street
Riverside, CA 92501

Michael Hogan, Principal Investigator
Bai Tang, Principal Investigator

March 28, 2006
Revised June 14, 2006

CRM TECH Contract #1747P
Approximately 628 Acres
USGS Valerie, Calif., 7.5' Quadrangle
Section 5, T7S R8E, San Bernardino Base Meridian

MANAGEMENT SUMMARY

Between November 2005 and March 2006, at the request of Thomas Olsen Associates, Inc., CRM TECH performed a paleontological resource assessment on approximately 628 acres of agricultural land in an unincorporated area near the City of La Quinta, Riverside County, California. The subject property of the study consists of a total of four parcels, Assessor's Parcel Nos. 751-020-002, -003, -006, and -007, located on the south side of Avenue 62 between State Route 86 (Harrison Street) and Tyler Street. It encompasses essentially the entire area within Section 5 of T7S R8E, San Bernardino Base Meridian. The study is part of the environmental review process for a proposed development project known tentatively as La Quinta 628. The County of Riverside, as 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 County of Riverside 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, and to design a paleontological salvage program for the project, if necessary. 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 records searches at the San Bernardino County Museum and the Natural History Museum of Los Angeles County, conducted a literature search, and carried out a 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 impact on paleontological resources is determined to be moderate to high, especially for Holocene-age invertebrate fossils. Therefore, CRM TECH recommends that a surface collection of freshwater mollusk remains be accomplished prior to, or at the beginning of, earth-moving activities. In addition, paleontological monitoring is recommended for all earth-moving activities below the depth of two feet, along with a program to mitigate impacts to the resources that are unearthed.

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INTRODUCTION

Between November 2005 and March 2006, at the request of Thomas Olsen Associates, Inc., CRM TECH performed a paleontological resource assessment on approximately 628 acres of agricultural land in an unincorporated area near the City of La Quinta, Riverside County, California (Fig. 1). The subject property of the study consists of a total of four parcels, Assessor's Parcel Nos. 751-020-002, -003, -006, and -007, located on the south side of Avenue 62 between State Route 86 (Harrison Street) and Tyler Street (Fig. 2). It encompasses essentially the entire area within Section 5 of T7S R8E, San Bernardino Base Meridian (Fig. 2). The study is part of the environmental review process for a proposed development project known tentatively as La Quinta 628. The County of Riverside, as 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 County of Riverside 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, and to design a paleontological salvage program for the project, if necessary. 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 records searches at the San Bernardino County Museum and the Natural History Museum of Los Angeles County, conducted a literature search, and carried out a field survey of the project area, in accordance with the guidelines of the Society of Vertebrate Paleontology. The following report is a complete account of the methods, results, and final conclusion of this study.

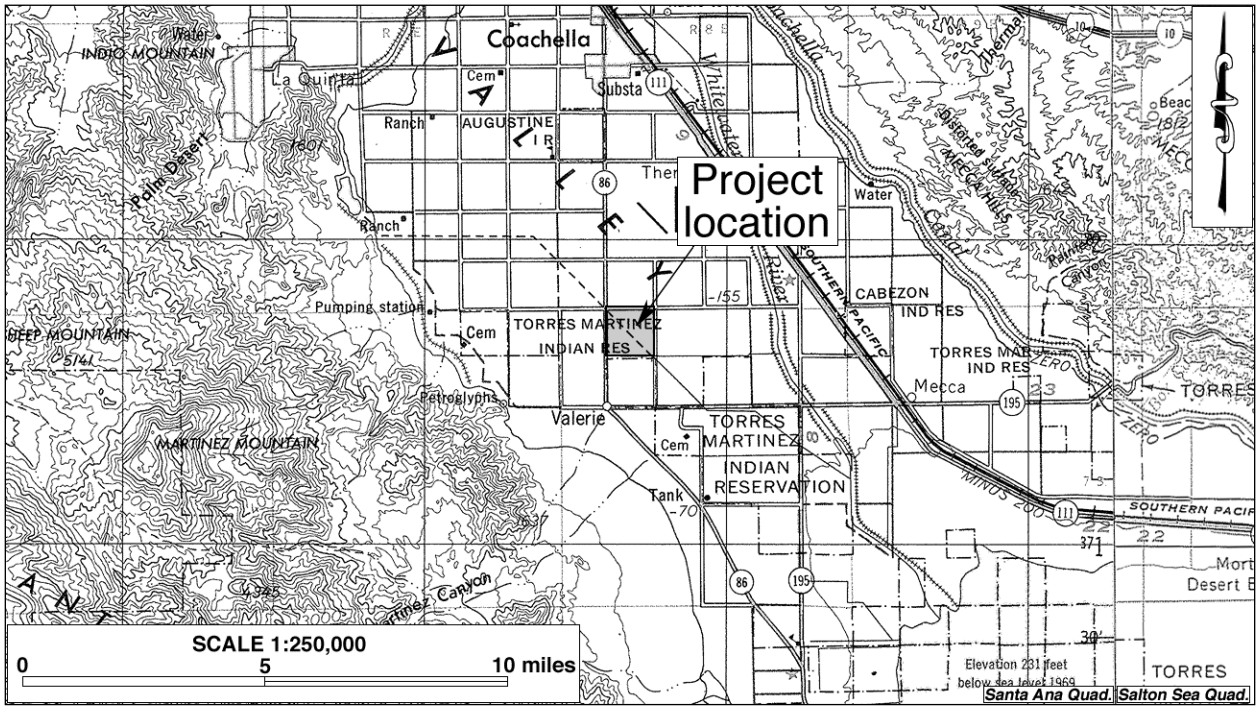

Figure 1. Project vicinity. (Based on USGS Santa Ana and Salton Sea, Calif.-Ariz., 1:250,000 quadrangles)

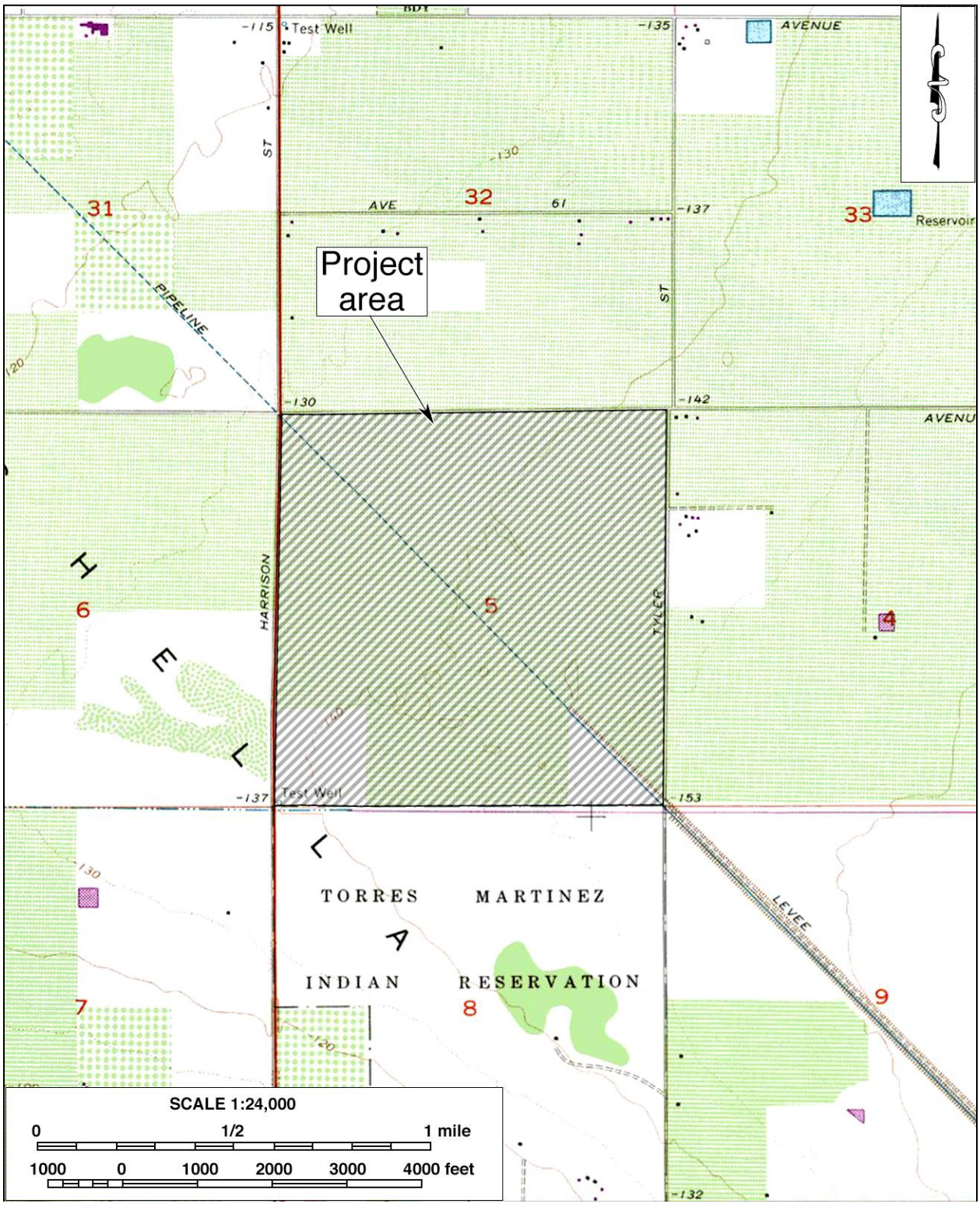

Figure 2. Project area. (Based on USGS Valerie Calif., 1:24,000 quadrangle)

SETTING

The project area is located in the Coachella Valley, which occupies the northwestern portion of the Colorado Desert geomorphic province (Jenkins 1980:40-41). The Colorado Desert province is bounded on the southwest side by the Peninsular Ranges province, on the north by the eastern Transverse Ranges province, and on the northeast by the southern portion of the Mojave Desert province (*ibid*.). The Colorado Desert province widens to the southeast through the Imperial Valley and into Mexico.

One of the major features found within the Colorado Desert province is the Salton Trough, a 290-kilometer-long (approx. 180 miles) structural depression containing the present-day Salton Sea and the Holocene-age Lake Cahuilla. It extends from the San Gorgonio Pass area southward into Mexico and, during the late Miocene and early Pliocene, constituted a northward extension of the Gulf of California (Powell 1995). Since elevations within the Colorado Desert province tend to be low while those of the adjacent provinces can be quite high, the northwestern portion of the Salton Trough was filled with more than 4,000 feet of sediments by late Pleistocene and Holocene times (Proctor 1968). Though such coarse, fluvial-derived clastic sediments afford only local environments for the preservation of vertebrate remains, some scattered vertebrate fossils have been found in them.

While the term "Salton Trough" refers to the entire structural depression from the San Gorgonio Pass to the Gulf of California, "Salton Basin" is used to describe the portion of the area that drains directly into the Salton Sea (Harms 1996). The Salton Sea, therefore, occupies the Salton Basin portion of the Salton Trough (*ibid*.). Holocene Lake Cahuilla occupied a much larger portion of the Salton Basin than the present-day Salton Sea (Rogers 1965). The shoreline of the last ancient lake can be seen today as a line along the base of the Santa Rosa Mountains at an elevation of approximately 42 feet above mean sea level (Waters 1983; Wilke 1978). However, there were a number of earlier in-fillings of the Salton Trough, each leaving behind lacustrine sediment deposits. When the lake was dry or drying, fluvial sediments were deposited in the same area.

Figure 3. Overview of the current natural setting of the project area. *Left*: agricultural field (view to north); *right:* metal sheds, concrete irrigation structures, and utility poles in the project area (view to the east). (Photos taken on December 2, 2005)

The project area is bounded by State Route 86 on the west, Avenue 62 on the north, Tyler Street on the east, and a portion of the Torres Martinez Indian Reservation on the south. Elevations on the property range between approximately 130 and 150 feet below mean sea level. The land is relatively level, with a slight decline to the southeast. It is currently used for agricultural purposes, lettuce and broccoli being the main crops. The property is divided into 16 agricultural fields, with each one measuring approximately 40 acres. Dirt roads separate each of the agricultural fields. Some of these were covered with dense growth of crops at the beginning of this study (Fig. 3), but all crops have been harvested since then. Soils on the property consist of a light-gray fine sand, with scattered freshwater shells. There are several structures and utility features near the center of the property, including a well, metal sheds, irrigation standpipes, and power poles (Fig. 3).

METHODS AND PROCEDURES

RECORDS SEARCHES

The records search service was provided by the San Bernardino County Museum in Redlands and the Natural History Museum of Los Angeles County in Los Angeles. These institutions maintain files of regional paleontological localities, as well as supporting maps and documents. The records search results identify any known paleontological localities within the project area and in the general vicinity.

LITERATURE REVIEW

In addition to the records searches, a literature search was conducted using materials in the CRM TECH library, including unpublished reports produced during surveys of other properties in the area, and the personal library of CRM TECH geologist/paleontologist Harry M. Quinn.

FIELD SURVEY

The intensive-level, on-foot field survey of the project area was initiated on December 2, 2005. Due to such impeding factors as ground cover and pesticide application, portions of the project area could not be surveyed adequately at the time, and the survey was eventually completed in March 2006. The survey was conducted by CRM TECH paleontological surveyor/field director Daniel Ballester (see App. 1 for qualifications) with the assistance of, on various days, various field crew members who have also been cross-trained as paleontological surveyors and monitors.

As mentioned above, the project area comprises a total of 16 approximately 40-acre patches of agricultural fields, six of which were surveyed on December 2, 2005, nine on March 2, 2006, and the last one on March 28, 2006. During the survey, the field team walked across each field along parallel north-south transects spaced 10-15 meters (approximately 33-50 feet) apart. Ground visibility was excellent in each field at the time of the survey, after the crops were harvested. 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.

RESULTS AND FINDINGS

RECORDS SEARCHES

The paleontology records searches conducted by the Natural History Museum of Los Angeles County and the San Bernardino County Museum for this property reported that no paleontological localities have been previously recorded within the boundaries of the project area (McLeod 2005; Scott 2005; see Appendix 2). Several paleontological localities have been reported in the vicinity, but more than one mile away. Some of these localities produced fossils from sediment lithologies similar to those known to exist in the project area (McLeod 2005; Scott 2005). Based on these discoveries, the San Bernardino County Museum assigned the project area a "high paleontologic sensitivity" and declared the proposed project to have a "high potential to impact significant nonrenewable fossil resources," primarily Holocene-age lacustrine invertebrate fossils (Scott 2005).

LITERATURE REVIEW

Dibblee (1954) mapped the site geology as Qal, or Recent alluvial-fan, floodplain, swamp, lake, and sand dune deposits. The onsite geology has been mapped by Rogers (1965) as Ql and Qal, or Lake beds and Recent alluvium. The original surface soils in the project area have been mapped as GcA, It, and Ir, with some Sb in the southwest portion (Knecht 1980). The GcA soils belong to the Gilman Series, specifically the Gilman fine sandy loam, wet, zero to two percent slopes (*ibid.*:18). These soils form in areas of gently sloping areas at the edges of alluvial fan and valley fill, contain a few freshwater shells, and usually have a water table of less than 60 inches (*ibid.*).

The It and Ir soils belong to the Indio Series, specifically the Indio very fine sandy loam, wet, and the Indio fine sandy loam, wet, respectively (*ibid.*:21). These soils form in areas of nearly level alluvium. They contain a few freshwater shells, and are found in areas with shallow groundwater, commonly less than five feet below the surface (*ibid.*). The substratum below 40 inches commonly contains lenses of silty clay (*ibid.*). The Sb soils belong to the Salton Series, specifically the Salton silty clay loam (*ibid.*:27). These soils form in poorly drained areas, on nearly flat alluvium. The soils are strongly alkaline and can be strongly saline (*ibid.*).

While the lakebed sediments are often called the Quaternary Lake Cahuilla beds (Rogers 1965; Dibblee 1954:Plate 3), no Pleistocene-age fossil localities have been reported from these lakebeds or their equivalent strata within the Coachella Valley. A preliminary study of soil borings drilled for engineering purposes indicates that at least the upper 25 feet (ca. 7.6 meters) of sediments within the lower Coachella Valley are Holocene in age. A few borings have been drilled to 50 feet (ca. 15.2 meters) below grade in some areas of the valley without encountering any definable Pleistocene sediments.

The nearest known Pleistocene age and older fossil bearing sediments are along the up-thrown side of the San Andreas Fault System, such as in the Indio and Mecca Hills (Dibblee 1954; Proctor 1968). A small number of early- to middle-Pleistocene vertebrate fossils have been found there as float and in outcrop. It is therefore doubtful that any Pleistocene fossils, vertebrate or invertebrate, will be recovered from the lower Coachella Valley area, including the project area, during normal grading operations.

Whistler et al. (1995) reports the discovery of terrestrial and freshwater vertebrate remains at a locality some distance to the northwest of this property and from similar sediment lithologies as mapped by Rogers (1965). This fossil locality is characterized by interbedded sediments of lacustrine and fluvial origin (Whistler et al. 1995) with the terrestrial vertebrate remains apparently coming from the fluvial sediments.

Many Holocene paleontological localities are known from the ancient Lake Cahuilla sediments. However, specimens from these localities usually consist only of freshwater mollusks. In one instance, invertebrates, such as gastropods (snails) and pelecypods (clams and mussels), were found in association with vertebrate remains of fish, birds, mammals, reptiles, and amphibians (McLeod 2005). Some plant spores and pollens were also recovered from this locality (*ibid.*). However, the freshwater mollusks are usually the only large fossils found within the lakebed sediments themselves.

The shells and shell fragments of *Physa* sp., *Anodonta* sp., and *Tryonia* sp. are among the most common mollusks to be found in the lakebed sediments. While these shells and shell fragments are light and can be blown about by the same winds that create the shifting sand dunes, when they are found in an apparent living position, such as closed paired valves for *Anodonta* sp. and clusters of *Physa* sp. and *Tryonia* sp., they are good paleoenvironmental indicators. Based on the literature review, the project area is determined to have a low to moderate potential for Holocene vertebrate fossil remains and a high potential for significant nonrenewable Holocene invertebrate remains such as *Physa* sp., *Anodonta* sp., and *Tryonia* sp.

FIELD SURVEY

During the field survey, scattered shells and shell fragments of the freshwater snails *Gyraulus* sp., *Physa* sp., and *Tryonia* sp. were observed in the areas surveyed. Also present on the surface were shell fragments of the freshwater mussel, *Anodonta* species. The freshwater mollusk remains provide additional evidence that sediments that can be attributed to the Holocene Lake Cahuilla lakebed sequence are present in the project area. No fish bone or other vertebrate fossil remains were observed during the survey.

DISCUSSION

The information presented above indicates that the project area contains sediments deposited within the bed of Holocene Lake Cahuilla. Many Holocene paleontological localities are known from the ancient Lake Cahuilla sediments. Specimens from these localities usually consist only of freshwater mollusks. In one instance, invertebrates, such as gastropods (snails) and pelecypods (clams and mussels), were found in association with the vertebrate remains of fish, birds, reptiles, and amphibians. Some plant spores and pollens were also found. However, the freshwater mollusks are usually the only fossils found within the lakebed sediments themselves; vertebrate fossils are, usually, not found in the lakebed sediments.

Both the Natural History Museum of Los Angeles County and the San Bernardino County Museum report the presence of paleontological resource localities in the same stratigraphic sequences as those

found at the project site (Scott 2005; McLeod 2005). However, no precise location for these localities is provided. These localities have produced mainly freshwater mollusks from Holocene Lake Cahuilla, but also listed are some other invertebrate, plant and vertebrate fossils. Hence,, undisturbed lakebed soils approximately two feet below the surface at this location should be considered sensitive for paleontological remains.

RECOMMENDATIONS

Based on the findings of this study, the proposed project's potential impact on paleontological resources is determined to be moderate to high, especially for Holocene-age invertebrate fossils. A bulk surface sample of freshwater shells should be collected prior to any earth-moving activities in the project area. Additional bulk samples should be taken from various depths during grading. All samples need to be processed, with the specimens identified and curated and placed into a repository with permanent retrievable storage.

Monitoring of earth-moving activities for paleontological resources is recommended below the depth of two feet, along with a program to mitigate impacts to the resources that might be exposed or unearthed. Such a program should be developed in accordance with the provisions of CEQA and the proposed guidelines of the Society of Vertebrate Paleontology, and should include, but not be limited to the following as outlined by Scott (2005):

1. The excavation of areas identified as likely to contain paleontologic resources should be monitored by a qualified paleontological monitor. Monitoring should be restricted to undisturbed Lake Cahuilla beds and any older undisturbed subsurface older alluvium, which might be present below the surface and which will be determined by the qualified paleontological monitor. The monitor should be prepared to quickly salvage fossils as they are unearthed to avoid construction delays. The monitor should also remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must have the power to temporarily halt or divert grading equipment to allow for removal of abundant or large specimens. Since paleontological resources may be present in one area but not in another, and since it is not possible to predict the location of these resources, paleontological monitoring is recommended when undisturbed Lake Cahuilla beds and any older undisturbed subsurface older alluvium are being impacted.
2. Collected samples of sediments should be washed to recover small invertebrate and vertebrate fossils. Recovered specimens should be prepared so that they can be identified and permanently preserved.
3. Specimens should be identified and curated and placed into a repository with permanent retrievable storage.
4. A report of findings, including an itemized inventory of recovered specimens, should be prepared upon completion of the steps outlined above. The report should include a discussion of the significance of all recovered specimens. The report and inventory, when submitted to the County of Riverside, would signify completion of the program to mitigate impacts to paleontologic resources.

CONCLUSION

CEQA Appendix G provides that a project may be deemed to have a significant effect on the environment if it will disrupt or adversely affect a paleontological site except as a part of a scientific study. 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 findings from these research procedures, the proposed project's potential impact on paleontological resources is determined to be moderate to high, especially for Holocene-age invertebrate fossils. Therefore, CRM TECH recommends that a surface collection of the freshwater mollusk remains be accomplished prior to the commencement of the project. In addition, paleontological monitoring is recommended for all earth-moving activities below the depth of two feet, along with a program to mitigate impacts to the resources that are unearthed.

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APPENDIX 1

PERSONNEL QUALIFICATIONS

PROJECT GEOLOGIST/PALEONTOLOGIST
Harry M. Quinn, M.S.

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 North Palm Springs, 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-Present Project/Field Paleontologist, CRM TECH, Riverside, California.
l998-Present Project/Field Archaeologist, CRM TECH, Riverside, 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

1969-73 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; Canadian Society of Petroleum Geologists; 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.

PALEONTOLOGICAL SURVEYER/FIELD DIRECTOR
Daniel Ballester, B.A.

Education

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, CRM TECH, Riverside.
- Report writing, site record preparation, and supervisory responsibilities over all aspects of fieldwork and field crew.

1999-2002 Project Archaeologist/Field Paleontologist, CRM TECH, Riverside.
- Survey, testing, data recovery, monitoring, and mapping.

1998-1999 Field Crew, K.E.A. Environmental, San Diego.
- Two and a half months of excavations on Topomai village site, Marine Corp Air Station, Camp Pendleton.

1998 Field Crew, A.S.M. Affiliates, Encinitas.
- Two weeks of excavations on a site on Red Beach, Camp Pendleton, and two weeks of survey in Camp Pendleton, Otay Mesa, and Encinitas.

1998 Field Crew, Archaeological Research Unit, University of California, Riverside.
- Two weeks of survey in Anza Borrego Desert State Park and Eureka Valley, Death Valley National Park.

APPENDIX 2

RECORDS SEARCHES RESULTS

SAN BERNARDINO COUNTY MUSEUM
2024 Orange Tree Lane • Redlands, California USA 92374-4560
(909) 307-2669 • Fax (909) 307-0539 • www.sbcountymuseum.org

COUNTY OF SAN BERNARDINO
PUBLIC AND SUPPORT
SERVICES GROUP

ROBERT L. McKERNAN
Director

22 November 2005

CRM Tech
attn: Laura Hensley Shaker
4472 Orange Street
Riverside, CA 92501

re: **PALEONTOLOGY RECORDS REVIEW, "LA QUINTA 628", CITY OF LA QUINTA, RIVERSIDE COUNTY, CALIFORNIA**

Dear Laura,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named ~620-acre development in the City of La Quinta, Riverside County, California. Specifically, the property is the entirety of section 5, Township 7 South, Range 8 East, San Bernardino Base and Meridian, as seen on the Valerie, California 7.5' United States Geological Survey topographic quadrangle map (1956 edition).

The study area lies within the Salton Trough, a northward extension of the Sea of Cortez (McKibben, 1993). The Salton Trough lies below sea level, and is an active continental rift underlain by the landward extension of the East Pacific Rise; it is surrounded on three sides by mountains and bounded to the southeast by the Colorado River delta. Since the beginning of the Holocene Epoch [± 11,000 years before present (ybp)], the Colorado River delta has blocked marine water from entering the Salton Trough from the Sea of Cortez. Freshwater lakes have existed intermittently in the deeper parts of the basin that developed landward of the Colorado River delta (Van de Kamp, 1973; Waters, 1983; Maloney, 1986; Whistler and others, 1995).

Geologic mapping (Rogers, 1965) indicates that the study area is located upon Quaternary lake sediments deposited below the 12-meter high shoreline of ancient Lake Cahuilla, which existed intermittently from 470 ybp to at least ± 6,000 ybp (Van de Kamp, 1973; Waters, 1983; Whistler and others, 1995). These lacustrine sediments were deposited during each of at least seven high stands of Lake Cahuilla, each high stand resulting from flooding of the Salton Trough by inflow from the Colorado River (Waters, 1983). Fluvial sediments in the area were laid down during intervening lake low stands when the lake bed was dry. These alternating lacustrine and fluvial sediments, termed the Lake Cahuilla beds, have previously yielded fossil remains representing diverse freshwater diatoms, land plants, sponges, ostracods, molluscs, fish, and small terrestrial vertebrates. As these remains are not associated with evidence of human activity, they are considered paleontological rather than archaeological. For this reason, the Lake Cahuilla beds are interpreted to have high potential to contain significant nonrenewable fossil resources.

For this review, Stephanie Fluitt, Project Assistant for the Division of Geological Sciences, conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously-known paleontologic resource localities are recorded by the SBCM from the study area, nor from at least one mile in any direction. However, Whistler and others (1995) discussed paleontologic resource localities from the La Quinta region that have produced fossils from sediment lithologies mapped (Rogers, 1965) as similar to those within the boundaries of the proposed property. Five sampling sites yielded diatoms, land plants, sponges, molluscs, ostracods, bony fish, reptiles, birds and small mammals (Whistler and others, 1995). The lowest stratigraphic unit in this region was radiometrically dated to 5,890 ± 60 ybp, which indicated a high stand of ancient Lake Cahuilla older than any described previously.

Recommendations

The results of the literature review and the check of the RPLI at the SBCM demonstrate that excavation within the boundaries of the proposed property in La Quinta has high potential to impact significant nonrenewable fossil resources. This property is therefore assigned high paleontologic sensitivity. A qualified vertebrate paleontologist must develop a program to mitigate impacts to nonrenewable paleontologic resources. This mitigation program should be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of Riverside and the proposed guidelines of the Society of Vertebrate Paleontology. This program should include, but not be limited to:

1. Prior to the initiation of excavation activities, a field reconnaissance of the entire project property shall be conducted, to assess paleontologic sensitivity in more detail and to recover any exposed paleontologic remains.

2. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Based upon the results of this review, areas of concern include any undisturbed surface or subsurface sediments of the Lake Cahuilla beds. Paleontologic monitoring is recommended only for those undisturbed sediments wherein fossil plant or animal remains are found with no associated evidence of human activity or an archaeological context. Should archaeological materials or other evidence of human presence be encountered, sites yielding this evidence should be treated as archaeological rather than as paleontological.

   Paleontologic monitors should be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced if the potentially-fossiliferous units described herein are not present, or if present are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

3. Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential in order to fully mitigate adverse impacts to the resources (Scott and others, 2004).

4. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage (e.g., SBCM). These procedures are also essential steps in effective paleontologic mitigation (Scott and others, 2004) and CEQA compliance (Scott and Springer, 2003). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not considered complete until such curation into an established museum repository has been fully completed and documented.

5. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, would signify completion of the program to mitigate impacts to paleontologic resources.

References

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McKibben, M.A., 1993. The Salton Trough rift. *In* S.F.B. and J. Reynolds (eds.), Ashes, faults and basins. San Bernardino County Museum Association Special Publication 93-1: 76-80.

Rogers, T.H., 1965. Geologic map of California, Santa Ana sheet. California Division of Mines and Geology. Scale 1:250,000.

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

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Whistler, D.P., E.B. Lander and M.A. Roeder, 1995. A diverse record of microfossils and fossil plants, invertebrates, and small vertebrates from the late Holocene Lake Cahuilla beds, Riverside County, California. *In* P. Remeika and A. Sturz (eds.), Paleontology and Geology of the Western Salton Trough Detachment, Anza-Borrego Desert State Park, California, p. 109-118.

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

Sincerely,

Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

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

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

23 November 2005

CRM Tech
4472 Orange Street
Riverside, CA 92501

Attn: Laura Hensley Shaker

re: Paleontological resources for the proposed La Quinta 628, near the City of La Quinta, Riverside County, Paleo, project area

Dear Laura:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed La Quinta 628, near the City of La Quinta, Riverside County, Paleo, project area as outlined on the section of the Valerie USGS topographic quadrangle map that you faxed to me on 22 November 2005. We do not have any vertebrate fossil localities that lie directly within the proposed project boundaries, but we do have localities nearby from the same deposits that occur in the proposed project area.

Below the uppermost soil layers, that are unlikely to contain significant vertebrate fossils, the entire proposed project area has surficial lacustrine and fluvial [lake and stream channel] deposits of Late Pleistocene or Holocene age [the latter less than 10,000 years before present] known as the Lake Cahuilla beds. West-northwest of the proposed project area on both sides of Madison Street north of 58th Avenue but higher in elevation, we have several fossil localities in these Lake Cahuilla beds. These localities were collected during mitigation activities for the construction of the PGA West Tom Weiskopf Signature Golf Course. LACM 6252, 6253, and 6255 were collected in a single trench site west of Madison Street. They produced a significant fauna of terrestrial and freshwater vertebrates (see attachment) as well as diatoms, land plants, clams, snails and crustaceans. A trench to the east of Madison Street produced a similar fauna so was not collected. A single jaw of the bighorn sheep *Ovis canadensis* was recovered from LACM 6256, another locality to the east of Madison Street.

Any significant subsurface excavation below the uppermost layers of soil and younger Quaternary Alluvium may well encounter significant fossil remains from the Quaternary Lake

Cahuilla beds. Many of the fossil specimens collected from these deposits are small isolated elements of fossil organisms that were recovered from screen-washing sediment samples. Thus if any significant excavation below the soil and Quaternary Alluvium level is conducted on the proposed project site, it is recommended that in addition to monitoring the excavations to collect any larger fossil remains uncovered, sediment samples be collected and processed to determine the small fossil potential at the proposed project site. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations. Additional fossil locality information for the proposed project area may be available through the University of California at Riverside Department of Geology [collections and records now at the University of California at Berkeley Museum of Paleontology].

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

enclosures: attachment; invoice

Vertebrate fossil taxa from the PGA West Tom Weiskopf Signature Golf Course
Trench 1 sites - LACM 6252, 6253 and 6255

Osteichthyes		
Cypriniformes		
Catostomidae		
Xyrauchen	*texanus*	razorback sucker
Cyprinidae		
Gila	*elegans*	bonytail
Cyprinodon	*macularius*	desert pupfish
Reptilia		
Squamata		
Iguanidae		
Phrynosoma	*platyrhinos*	desert horned lizard
Sceloporus	*magister*	desert spiny lizard
Uma	*inornata*	Coachella Valley fringe-toed lizard
Urosaurus	*graciosus*	long-tailed brush lizard
Colubridae		
Chionactis	*occipitalis*	western shovel-nosed snake
Hypsiglena	*torquata*	night snake
Pituophis	*melanoleucus*	gopher snake
Sonora	*semiannulata*	western ground snake
Crotalidae		
Crotalus	*cerastes*	sidewinder rattlesnake
Aves		
Passeriformes		advanced land birds
Mammalia		
Lagomorpha		
Leporidae		
Sylvilagus		cottontail rabbit
Rodentia		
Cricetidae		
Neotoma	*lepida*	desert wood rat
Peromyscus		white-footed mouse
Heteromyidae		
Dipodomys		kangaroo rat
Perognathus	*longimembris*	pocket mouse
Sciuridae		
Ammospermophilus	*leucurus*	antelope ground squirrel

ATTACHMENT B

RECORDS SEARCH RESULTS

WESTERN SCIENCE CENTER

May 21, 2022

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

Dear Ms. Gallardo,

This letter presents the results of a record search conducted for the Proposed Smith Development Project in the Thermal Area of Riverside County, California. The project site is located south of 62nd Avenue and between Harrison and Tyler Streets in Township 7 South, Range 8 East SB, Section 5 on the *Valerie, CA* USGS 7.5 minute quadrangle.

The geologic units underlying this project are mapped entirely as alluvial sand and clay deposits dating from the Holocene period (Dibblee and Minch, 2008). Holocene alluvial units are considered to be of high preservation value, but material found is unlikely to be fossil material due to the relatively modern associated dates of the deposits. However, if development requires any substantial depth of disturbance, the likelihood of reaching Pleistocene alluvial sediments would increase. The Western Science Center does not have localities within the project area or within a 1 mile radius.

While the presence of any fossil material is unlikely, if excavation activity disturbs deeper sediment dating to the earliest parts of the Holocene or Late Pleistocene periods, the material would be scientifically significant. Excavation activity associated with the development of the project area is unlikely to be paleontologically sensitive, but caution during development should be observed.

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

Sincerely,

Brittney Elizabeth Stoneburg
Collections Technician

Proposed Smith Development Project

project area + 1 mile radius

Legend

- 1 Mile Radius
- Proposed Smith Development Project
- Q: Quaternary alluvium and marine deposits (Pliocene to Holocene)

BMW Performance Center West

The Thermal Club

Desert Pipeline

Sunbird Mobile Home Park

Google Earth

N

5000 ft