

# PALEONTOLOGICAL ASSESSMENT FOR THE IPT MENIFEE WAREHOUSE PROJECT

**TR 31856  
MENIFEE, RIVERSIDE COUNTY, CALIFORNIA**

**APNs 330-210-010, -011, -013, and -065**

**Prepared for:**

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**Submitted to:**

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*January 26, 2023*



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**Report Date:** January 26, 2023

**Report Title:** Paleontological Resource Impact Mitigation Program for the IPT Menifee Warehouse Project, TR 31856, Menifee, Riverside County

**Prepared on Behalf of:** EPD Solutions  
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**USGS Quadrangle:** *Romoland, California (7.5 minute)*

**Assessor's Parcel Numbers:** 330-210-010, -011, -013, and -065

**Study Area:** 28.27 acres

**Key Words:** High paleontological resource sensitivity; City of Menifee; Quaternary very old alluvial fan deposits; full-time monitoring.

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## **I. INTRODUCTION AND LOCATION**

A paleontological resource assessment has been completed for the IPT Menifee Warehouse (Tract Map [TR] No. 31856) Project, located west of Murrieta Road, east of Geary Street, south of Floyd Avenue, and north of McLaughlin Road in the city of Menifee, Riverside County, California (Figures 1 and 2). The IPT Menifee Warehouse Project consists of the development of 29.69 acres (Assessor's Parcel Numbers [APNs] 330-210-010, -011, -013, -065) situated within Section 17 of the USGS 7.5-minute *Romoland, California* topographic quadrangle (Township 5 South, Range 3 West) (see Figure 2). The property is generally flat, with elevations ranging between 1,420 and 1,440 feet above mean sea level, and currently includes agricultural land. The project proposes the construction of an approximately 596,960-square-foot industrial building with a 6,720-square-foot mezzanine, associated parking, landscaping, and utility improvements.

As the lead agency, the City of Menifee has required the preparation of a paleontological assessment to evaluate the project's potential to yield paleontological resources. The paleontological assessment of the project included a review of paleontological literature and fossil locality records in the area; a review of the underlying geology; and recommendations to mitigate impacts to potential paleontological resources, if necessary.

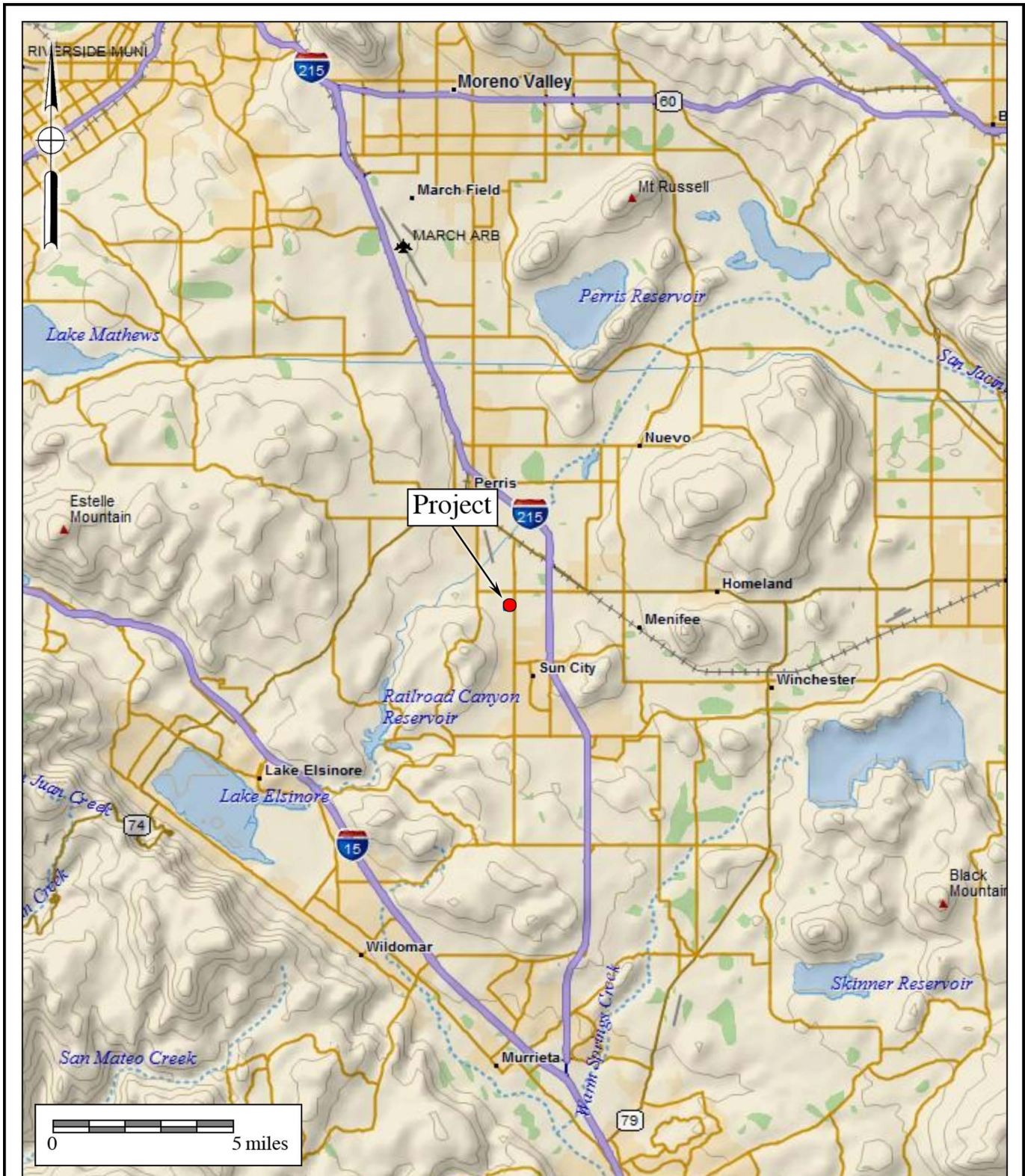
## **II. REGULATORY SETTING**

The California Environmental Quality Act (CEQA), which is patterned after the National Environmental Policy Act, is the overriding environmental policy that sets the requirement for protecting California's paleontological resources. CEQA mandates that governing permitting agencies (lead agencies) set their own guidelines for the protection of nonrenewable paleontological resources under their jurisdiction.

### *State of California*

Under "Guidelines for Implementation of the California Environmental Quality Act," as amended in December 2018 (California Code of Regulations [CCR] Title 14, Division 6, Chapter 3, Sections 15000 et seq.), procedures define the types of activities, persons, and public agencies required to comply with CEQA. Section 15060 of State CEQA Guidelines provides a process by which a lead agency may review a project's potential impact to the environment, whether the impacts are significant, and provide recommendations, if necessary.

In CEQA's Environmental Checklist Form, one of the questions to answer is, "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (Appendix G, Section VII, Part f). This is to ensure compliance with California Public Resources Code Section 5097.5, the law that protects nonrenewable resources including fossils, which is stated below:

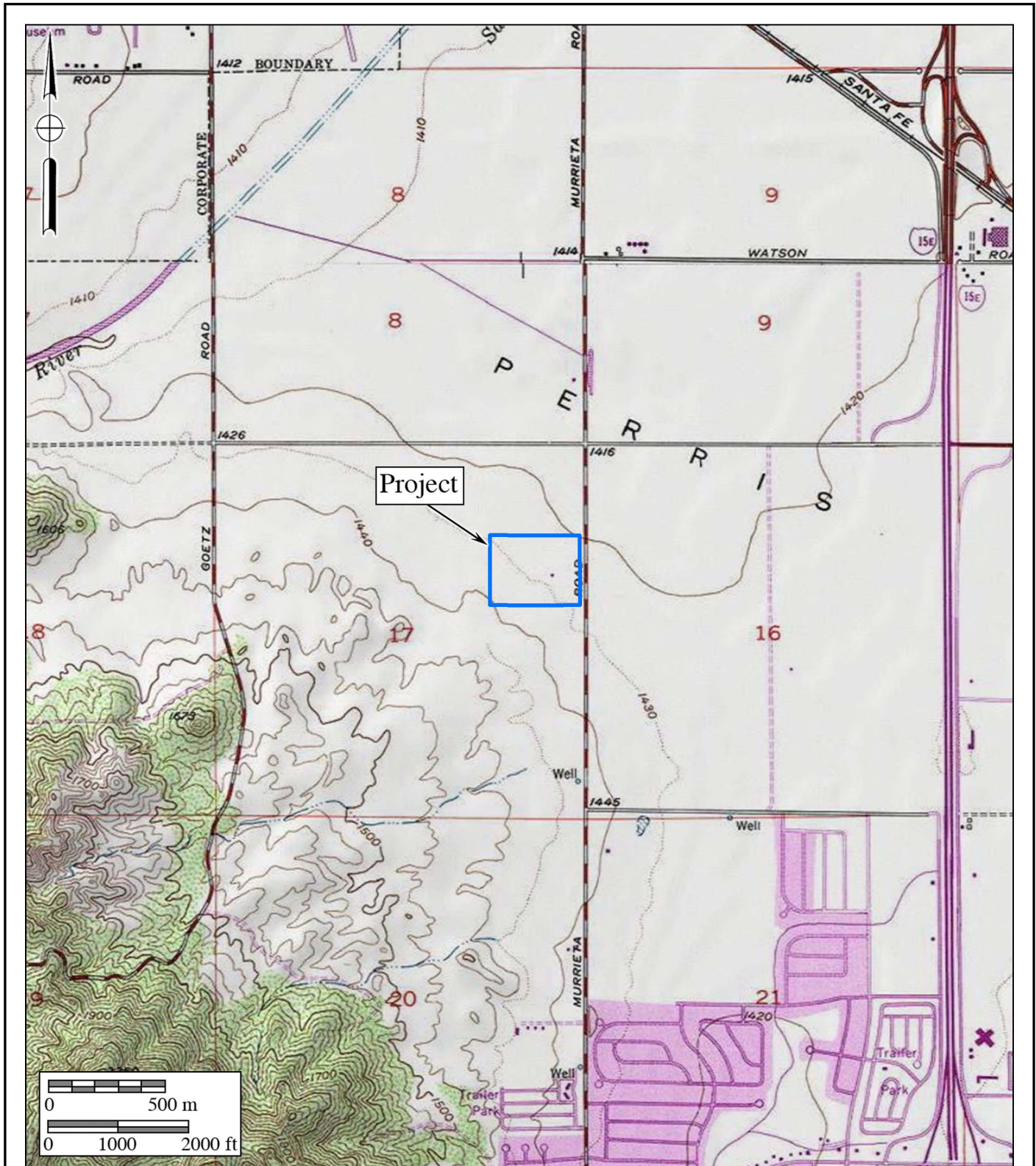


**Figure 1**  
**General Location Map**

The IPT Menefee Warehouse Project

DeLorme (1:250,000)





**Figure 2**  
**Project Location Map**

The IPT Menifee Warehouse Project

USGS Romoland and Perris Quadrangles (7.5-minute series)



- a) A person shall not knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands.
- b) As used in this section, “public lands” means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.
- c) A violation of this section is a misdemeanor, punishable by a fine not exceeding ten thousand dollars (\$10,000), or by imprisonment in a county jail not to exceed one year, or by both that fine and imprisonment.

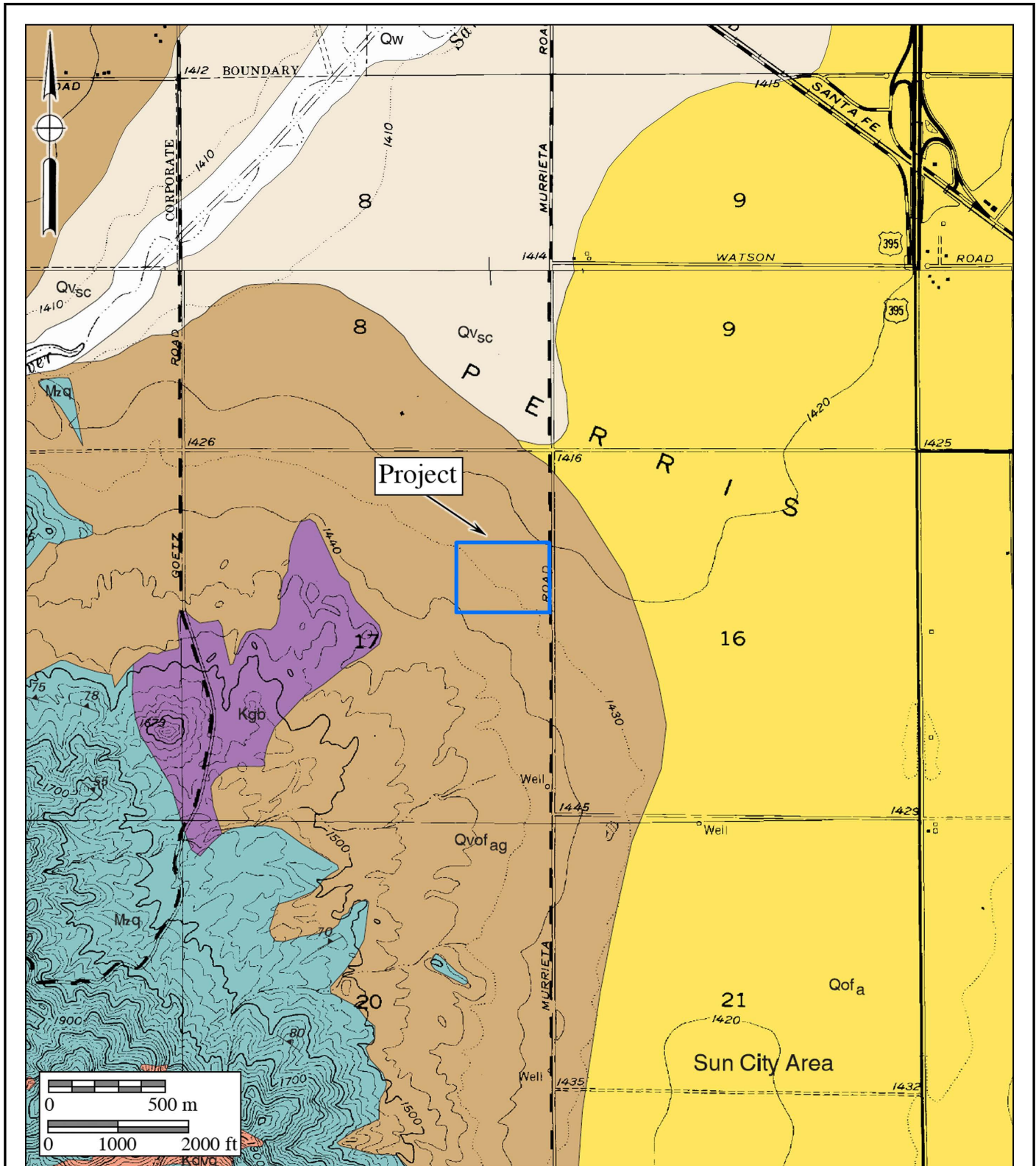
*City of Menifee*

The City of Menifee has allocated guidelines addressing paleontological resources in the Open Space and Conservation Element (Exhibit OSC-4) of the City’s General Plan (City of Menifee 2013). Exhibit OSC-4 identifies the level of paleontological resource sensitivity of the mapped geologic formations within the city limits and their potential to yield nonrenewable paleontological resources (fossils). However, the exhibit does not provide any specific guidance or other definitions, such as monitoring depth thresholds.

**III. GEOLOGY**

Regionally, the property lies within the central part of the Perris Block, a structural block bounded on the west by the Elsinore fault zone and on the east by the San Jacinto fault zone. The hills surrounding the region consist of eroded masses of exhumed Cretaceous and older crystalline and metamorphic rocks separated by flat valleys filled with geologically young sediments. The property is located on middle to early Pleistocene (approximately 0.5 to 1.8 million years old) very old alluvial fan sediments, consisting of well-dissected, well-indurated, reddish-brown alluvial fan deposits of sand and gravel (areas colored brown and labeled “Qvof<sub>ag</sub>” on Figures 3A and 3B, after Morton 2003). According to Woodford et al. (1971), the thickness of the alluvial deposits overlying the granitic bedrock basement beneath the property is thin, roughly 30 feet.





**Figure 3A**  
**Geologic Map**

The IPT Menifee Warehouse Project  
Geology after Morton (2003a and 2003b)





## DESCRIPTION OF MAP UNITS

### *Holocene*

**Qw** **Very young wash deposits (late Holocene)**—Unconsolidated bouldery to sandy alluvium of active and recently active washes

**Qv** **Very young alluvial valley deposits (late Holocene)**—Active and recently active fluvial deposits along valley floors. Consists of unconsolidated sandy, silty, or clay-bearing alluvium

### *Late to middle Pleistocene*

**Qof** **Old alluvial fan deposits (late to middle Pleistocene)**—Reddish brown, gravel and sand alluvial fan deposits; indurated, commonly slightly dissected. In places includes thin alluvial fan deposits of Holocene age

### *Middle to early Pleistocene*

**Qvof** **Very old alluvial fan deposits (middle to early Pleistocene)**—Mostly well-dissected, well-indurated, reddish-brown alluvial fan deposits. Grain size chiefly sand and gravel

### *Cretaceous crystalline rocks*

**Kgb** **Gabbro (Cretaceous)**—Mainly hornblende gabbro. Includes Virginia quartz-norite and gabbro of Dudley (1935), and San Marcos gabbro of Larsen (1948). Typically brown-weathering, medium-to very coarse-grained hornblende gabbro; very large poikilitic hornblende crystals are common, and very locally gabbro is pegmatitic. Much is quite heterogeneous in composition and texture. Includes noritic and dioritic composition rocks

### *Mesozoic metamorphic rocks*

**Meq** **Quartz-rich rocks (Mesozoic)**—Quartzite and quartz-rich metasandstone

Ancient soil zones (paleosols) developed within Pleistocene sedimentary deposits such as alluvial fans are not uncommon in the Menifee and Perris areas, and are characterized in these areas by a reddish coloration at a certain interval(s) below the surface. Stewart et al. (2012) and Raum et al. (2014) report on occurrences of paleosols in Riverside County yielding Pleistocene vertebrate fossils. Instances of fossiliferous paleosols have also been recently documented in Kern County (Stewart and Hakel 2019) and San Bernardino County (Stewart and Hakel 2016, 2017). Fossils yielded by Pleistocene paleosols are covered in Section V of this report.

#### **IV. PALEONTOLOGICAL RESOURCES**

##### *Definition*

Paleontological resources are the remains of prehistoric life that have been preserved in geologic strata. These remains are called fossils and include bones, shells, teeth, and plant remains (including their impressions, casts, and molds) in the sedimentary matrix, as well as trace fossils such as footprints and burrows. Fossils are considered older than 5,000 years of age (Society of Vertebrate Paleontology 2010) but may include younger remains (subfossils) when viewed in the context of local extinction of the organism or habitat, for example. Fossils are considered a nonrenewable resource under state and local guidelines (Section II of this report).

##### *Fossil Locality Record Search*

A paleontological locality records search was conducted for the IPT Menifee Warehouse Project by the Western Science Center (WSC; Radford 2021 [see Appendix B]). The records search found that the nearest fossil locality held by the WSC is located at the Diamond Valley Lake Reservoir Project approximately five to seven miles southeast of the proposed project, which consists of hundreds of specimens of Pleistocene mammal bones (Radford 2021). Construction associated with the Diamond Valley Lake Reservoir yielded vast numbers of terrestrial Ice Age vertebrate fossils (*e.g.*, Anderson et al. 2002; Springer et al. 1999, 2009) that are now housed in the WSC in Hemet. These fossils were derived from the same types of alluvial fan deposits as mapped within the current property.

An older paleontological literature review and collections and records search was conducted for the City of Menifee's General Plan in 2010 (Scott 2010 [see Appendix B]). The report identified 22 fossil localities in the northeast part of Menifee and one additional locality on the east side of the city. The fossils include the remains of an extinct camel, small mammals such as rabbits and rodents, and lizards. These localities are located approximately three miles east of the IPT Menifee Warehouse Project. Based on numerous previously recorded vertebrate fossil localities from Pleistocene alluvial and alluvial fan deposits across western Riverside County (*e.g.*, Jefferson 1991), the San Bernardino County Museum and the WSC both regard Pleistocene old alluvial fan sediments as having a high potential to contain significant paleontological resources, and therefore, would recommend that a program be implemented to "mitigate impacts to [potential] nonrenewable paleontological resources" (Scott 2010).

### Field Survey

Under the direction of Principal Investigator Todd A. Wirths, a Brian F. Smith and Associates, Inc. (BFS) technician conducted a pedestrian survey of the IPT Menifee Warehouse Project on May 17, 2021. The field methodology employed for the project included walking evenly spaced survey transects set approximately 10 meters apart while visually inspecting the ground surface. Survey conditions were generally fair with poor ground visibility throughout the property due to dense non-native grasses and weeds. The entire property has been disturbed in the past by either cultivation or residential use. Rodent spoil piles and patches of turned soil were closely inspected for evidence of small vertebrate fossils. No evidence of paleontological resources was observed at the property.

## **V. PALEONTOLOGICAL SENSITIVITY**

### Overview

The degree of paleontological sensitivity of any particular area is based on a number of factors, including the documented presence of fossiliferous resources on a site or in nearby areas, the presence of documented fossils within a particular geologic formation or lithostratigraphic unit, and whether or not the original depositional environment of the sediments is one that might have been conducive to the accumulation of organic remains that might have become fossilized over time. Holocene alluvium is generally considered to be geologically too young to contain significant nonrenewable paleontological resources (*i.e.*, fossils) and is thus typically assigned a low paleontological sensitivity. Pleistocene (over 11,700 years old) alluvial and alluvial fan deposits in western Riverside County and the Inland Empire, however, often yield important terrestrial vertebrate fossils, such as extinct mammoths, mastodons, giant ground sloths, extinct species of horse, bison, camel, saber-toothed cats, and others (Jefferson 1991). These Pleistocene sediments are thus accorded a high paleontological resource sensitivity.

### Professional Standards

The Society of Vertebrate Paleontology (2010) has drafted guidelines that include four categories of paleontological sensitivity for geologic units (formations) that might be impacted by a proposed project, as listed below:

- 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, and that further study is needed to determine the potential of the rock unit.
- Low Potential: Rock units that are poorly represented by fossil specimens in institutional collections or based on a general scientific consensus that only preserve fossils in rare circumstances.

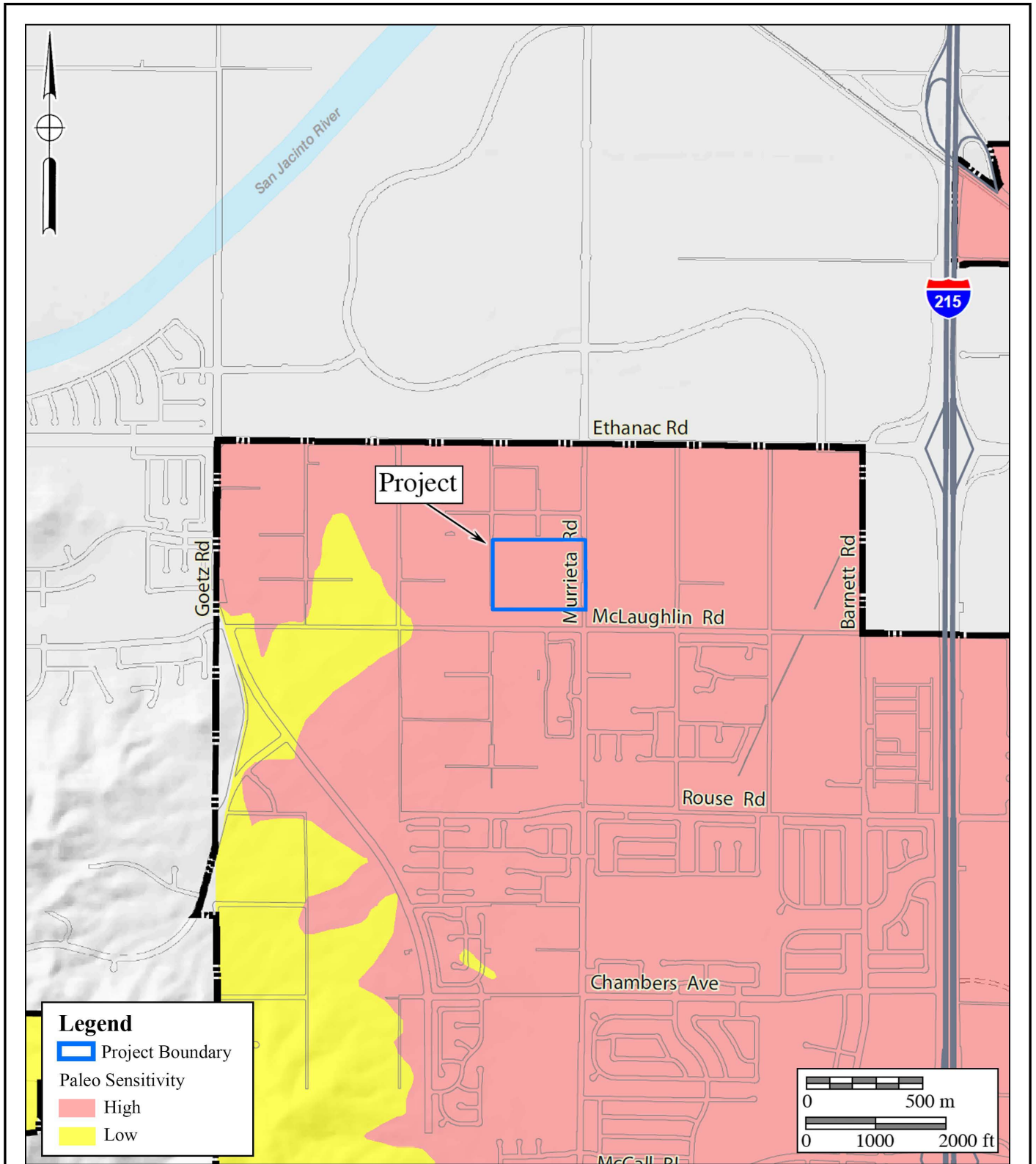
- *No Potential:* Rock units that have no potential to contain significant paleontological resources, such as high-grade metamorphic rocks and plutonic igneous rocks.

Using these criteria, based on the age of the sedimentary geologic formation at the project and the fossil record of similar deposits in the region, the very old alluvial deposits project may be considered to have a high potential to yield significant paleontological resources.

*City of Menifee Sensitivity*

Exhibit OSC-4 of the Open Space and Conservation Element of the City of Menifee General Plan (City of Menifee 2013) assigns a “High Paleologic [Paleontologic] Sensitivity” to the project area, where very old alluvial fan deposits are mapped at the surface (Figure 4). However, no specific guidance or monitoring depth thresholds are provided.





**Figure 4**  
**Paleontological Sensitivity Map**  
 The IPT Menifee Warehouse Project  
 After City of Menifee General Plan (2013)

## **VI. CONCLUSIONS AND RECOMMENDATIONS**

Research has confirmed the existence of the potentially fossiliferous Pleistocene very old alluvial fan deposits in the eastern portion of the property. The occurrence of terrestrial vertebrate fossils from Pleistocene alluvial fan deposits in western Riverside County is well documented. The “High” paleontological sensitivity rating assigned to these formations by the City of Menifee for yielding paleontological resources supports the recommendation that paleontological monitoring be implemented during mass grading and excavation activities in these deposits to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources. Full-time monitoring of undisturbed very old alluvial fan deposits at the property is warranted starting at five feet below the surface. A Paleontological Resource Impact Mitigation Program (PRIMP) is suggested below that should be approved and implemented before the issuance of the grading permit.

### **Suggested PRIMP**

The following guidelines, outlined below, are based on the findings stated above, which are consistent with the provisions of CEQA, the City of Menifee, and the guidelines of the Society of Vertebrate Paleontology (2010) for any mass grading and excavation-related activities, including utility trenching, during construction within the property. This suggested PRIMP, when implemented, would reduce potential impacts to paleontological resources to a level below significant:

1. Monitoring of mass grading and excavation activities in areas identified as likely to contain paleontological resources shall be performed by a city-qualified paleontologist or paleontological monitor supervised by a city-qualified paleontologist. Starting at five feet below the surface, monitoring will be conducted full-time in areas of grading or excavation in undisturbed Pleistocene very old alluvial fan deposits.
2. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or, if present, are determined upon exposure and examination by qualified paleontological personnel to have low potential to contain fossil resources. The monitor shall notify the project paleontologist, who will then notify the concerned parties of the discovery.
3. Paleontological salvage during trenching and boring activities is typically from the generated spoils and does not delay the trenching or drilling activities. Fossils are collected and placed in cardboard flats or plastic buckets and identified by field

- number, collector, and date collected. Notes are taken on the map location and stratigraphy of the site, which is photographed before it is vacated and the fossils are removed to a safe place. On mass grading projects, discovered fossil sites are protected by flagging to prevent them from being overrun by earthmovers (scrapers) before salvage begins. Fossils are collected in a similar manner, with notes and photographs being taken before removing the fossils. If the site involves remains from a large terrestrial vertebrate, such as large bone(s) or a mammoth tusk, that is/are too large to be easily removed by a single monitor, a fossil recovery crew shall excavate around the find, encase the find within a plaster and burlap jacket, and remove it after the plaster is set. For large fossils, use of the contractor's construction equipment may be solicited to help remove the jacket to a safe location.
4. Particularly small invertebrate fossils typically represent multiple specimens of a limited number of organisms, and a scientifically suitable sample can be obtained from several five-gallon buckets of fossiliferous sediment. If it is possible to dry screen the sediment in the field, a concentrated sample may consist of one or two buckets of material. For vertebrate fossils, the test is usually the observed presence of small pieces of bones within the sediments. If present, as multiple five-gallon buckets of sediment can be collected and returned to a separate facility to wet-screen the sediment.
  5. In accordance with the "Microfossil Salvage" section of the SVP guidelines (2010:7), bulk sampling and screening of fine-grained sedimentary deposits (including carbonate-rich paleosols) must be performed if the deposits are identified to possess indications of producing fossil "microvertebrates" to test the feasibility of the deposit to yield fossil bones and teeth.
  6. In the laboratory, individual fossils are cleaned of extraneous matrix, any breaks are repaired, and the specimen, if needed, is stabilized by soaking in an archivally approved acrylic hardener (*e.g.*, a solution of acetone and Paraloid B-72).
  7. Recovered specimens are prepared to a point of identification and permanent preservation (not display), including screen-washing sediments to recover small invertebrates and vertebrates. Preparation of individual vertebrate fossils is often more time-consuming than for accumulations of invertebrate fossils.
  8. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage (*e.g.*, the WSC) shall be conducted. The paleontological program should include a written repository agreement prior to the initiation of mitigation activities. Prior to curation, the lead agency (the City of Menifee) will be consulted on the repository/museum to receive the fossil material.
  9. A final report of findings and significance will be prepared, including lists of all fossils recovered and necessary maps and graphics to accurately record their original

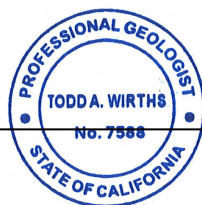
location(s). The report, when submitted to, and accepted by, the appropriate lead agency, will signify satisfactory completion of the project program to mitigate impacts to any potential nonrenewable paleontological resources (*i.e.*, fossils) that might have been lost or otherwise adversely affected without such a program in place.

## **VII. CERTIFICATION**

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this paleontological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief, and have been compiled in accordance with CEQA criteria.



Todd A. Wirths  
Senior Paleontologist  
California Professional Geologist No. 7588



January 26, 2023

Date

## **VIII. REFERENCES**

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**APPENDIX A**

**Qualifications of Key Personnel**

# Todd A. Wirths, MS, PG No. 7588

## Senior Paleontologist

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## Education

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**Master of Science, Geological Sciences, San Diego State University, California** 1995

**Bachelor of Arts, Earth Sciences, University of California, Santa Cruz** 1992

## Professional Certifications

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California Professional Geologist #7588, 2003

Riverside County Approved Paleontologist

San Diego County Qualified Paleontologist

Orange County Certified Paleontologist

OSHA HAZWOPER 40-hour trained; current 8-hour annual refresher

## Professional Memberships

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Board member, San Diego Geological Society

San Diego Association of Geologists; past President (2012) and Vice President (2011)

South Coast Geological Society

Southern California Paleontological Society

## Experience

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Mr. Wirths has more than a dozen years of professional experience as a senior-level paleontologist throughout southern California. He is also a certified California Professional Geologist. At BFSA, Mr. Wirths conducts on-site paleontological monitoring, trains and supervises junior staff, and performs all research and reporting duties for locations throughout Los Angeles, Ventura, San Bernardino, Riverside, Orange, San Diego, and Imperial Counties. Mr. Wirths was formerly a senior project manager conducting environmental investigations and remediation projects for petroleum hydrocarbon-impacted sites across southern California.

## Selected Recent Reports

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2019 *Paleontological Assessment for the 10575 Foothill Boulevard Project, City of Rancho Cucamonga, San Bernardino County, California.* Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Assessment for the MorningStar Marguerite Project, Mission Viejo, Orange County, California.* Prepared for T&B Planning. Report on file at Brian F. Smith and Associates, Inc., Poway, California.



- 2019 *Paleontological Monitoring Report for the Nimitz Crossing Project, City of San Diego.* Prepared for Voltaire 24, LP. Report on file at Brian F. Smith and Associates, Inc., Poway, California.
- 2019 *Paleontological Resource Impact Mitigation Program (PRIMP) for the Jack Rabbit Trail Logistics Center Project, City of Beaumont, Riverside County, California.* Prepared for JRT BP 1, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.
- 2020 *Paleontological Monitoring Report for the Oceanside Beachfront Resort Project, Oceanside, San California.* Prepared for S.D. Malkin Properties. Report on file at Brian F. Smith and Associates, Inc., Poway, California.
- 2020 *Paleontological Resource Impact Mitigation Program for the Nakase Project, Lake Forest, Orange County, San California.* Prepared for Glenn Lukos Associates, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.
- 2020 *Paleontological Resource Impact Mitigation Program for the Sunset Crossroads Project, Banning, Riverside County.* Prepared for NP Banning Industrial, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.
- 2020 *Paleontological Assessment for the Ortega Plaza Project, Lake Elsinore, Riverside County.* Prepared for Empire Design Group. Report on file at Brian F. Smith and Associates, Inc., Poway, California.
- 2020 *Paleontological Resource Record Search Update for the Green River Ranch III Project, Green River Ranch Specific Plan SP00-001, City of Corona, California.* Prepared for Western Realco. Report on file at Brian F. Smith and Associates, Inc., Poway, California.
- 2020 *Paleontological Assessment for the Cypress/Slover Industrial Center Project, City of Fontana, San Bernardino County, California.* Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.
- 2020 *Paleontological Monitoring Report for the Imperial Landfill Expansion Project (Phase VI, Segment C-2), Imperial County, California.* Prepared for Republic Services, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.
- 2021 *Paleontological Assessment for the Manitou Court Logistics Center Project, City of Jurupa Valley, Riverside County, California.* Prepared for Link Industrial. Report on file at Brian F. Smith and Associates, Inc., Poway, California.
- 2021 *Paleontological Resource Impact Mitigation Program for the Del Oro (Tract 36852) Project, Menifee, Riverside County.* Prepared for D.R. Horton. Report on file at Brian F. Smith and Associates, Inc., Poway, California.
- 2021 *Paleontological Assessment for the Alessandro Corporate Center Project (Planning Case PR-2020-000519), City of Riverside, Riverside County, California.* Prepared for OZI Alessandro, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.
- 2021 *Paleontological Monitoring Report for the Boardwalk Project, La Jolla, City of San Diego.* Prepared for Project Management Advisors, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

**APPENDIX B**

**Paleontological Records Searches**



Brian F. Smith and Associates  
Todd Wirths  
14010 Poway Road, Suite A  
Poway, CA 92064

June 1, 2021

Dear Mr. Wirths,

This letter presents the results of a record search conducted for the Ethanac and Murrieta Project in the city of Perris, Riverside County, California. The project site is located south of Ethanac Road and west of Murrieta Road in Section 17 of Township 5 South and Range 3 West on the *Romoland, CA* USGS 7.5 minute topographic quadrangle.

The geologic unit underlying the project area is mapped entirely as very old alluvial fan deposits dating from the middle to late Pleistocene epoch (Morton, Bovard, and Morton, 2003). Pleistocene alluvial units are considered to be of high paleontological sensitivity. The Western Science Center does not have localities within the project area or a one mile radius, but does have numerous localities within similarly mapped alluvial sediments throughout the region, including those associated with the Diamond Valley Lake Project located roughly 5 to 7 miles southeast. 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 the Ethanac and Murrieta Project area 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](mailto:dradford@westerncentermuseum.org)

Sincerely,

A handwritten signature in black ink, appearing to read 'Darla Radford', written in a cursive style.

Darla Radford  
Collections Manager