

# PALEONTOLOGICAL ASSESSMENT FOR THE NISQUALLI ROAD TRAILER LOT EXPANSION PROJECT

CITY OF VICTORVILLE  
SAN BERNARDINO COUNTY, CALIFORNIA

APN 3090-571-04

*Prepared on Behalf of:*

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*Prepared for:*

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*May 22, 2023; Revised July 12, 2023*



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## **Paleontological Database Information**

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***Report Date:*** May 22, 2023; Revised July 12, 2023

***Report Title:*** Paleontological Assessment for the Nisqualli Road Trailer Lot Expansion Project, City of Victorville, San Bernardino County, California

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***Assessor's Parcel Number:*** 3090-571-04

***USGS Quadrangle:*** Section 27, Township 5 North, Range 4 West of the USGS *Hesperia, California* (7.5-minute) Quadrangle.

***Study Area:*** 10.04 acres

***Key Words:*** Paleontological assessment; Pleistocene deposits of ancient Mojave River; high sensitivity; mammoths; City of Victorville.

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## **I. INTRODUCTION AND LOCATION**

A paleontological resource assessment has been completed for the Nisqualli Road Trailer Lot Expansion Project, located east of Enterprise Way, between Nutro Way and Nisqualli Road in the city of Victorville, San Bernardino County, California (Figures 1 and 2). The 10.04-acre project site includes Assessor's Parcel Numbers 3090-571-04. On the United States Geological Survey 7.5-minute, 1:24,000-scale *Hesperia, California* topographic quadrangle map, the project site is situated in Section 27, Township 5 North, Range 4 West. The project will include the construction of a tractor-trailer parking lot.

As the lead agency, the City of Victorville has required the preparation of a paleontological assessment to evaluate the project site's potential to yield paleontological resources. The paleontological assessment of the project site 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.

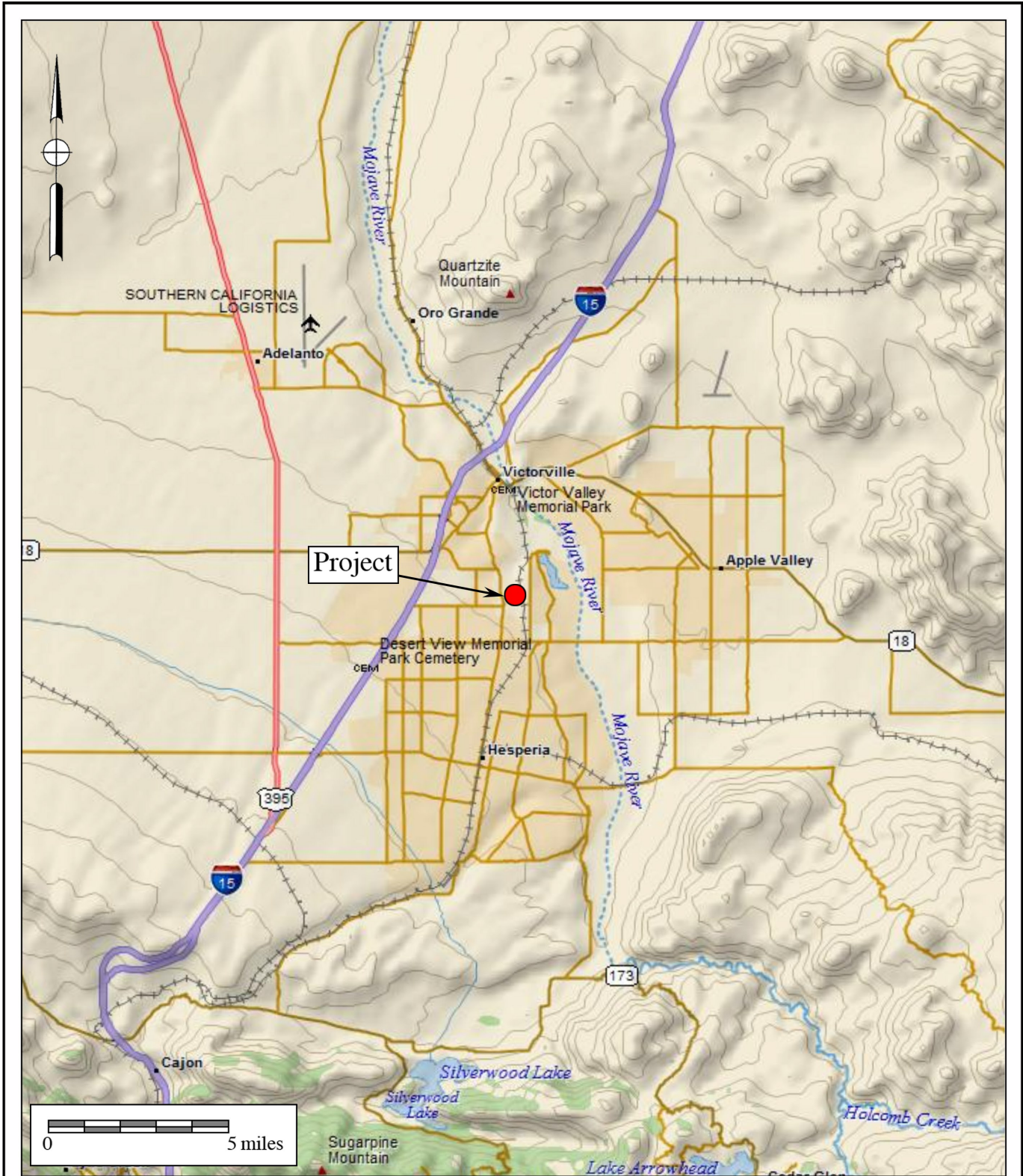
## **II. REGULATORY SETTING**

The California Environmental Quality Act (CEQA), which is patterned after the National Environmental Policy Act, is the overriding regulation that sets the requirement for protecting California's cultural and paleontological resources. CEQA does not establish specific rules that must be followed but 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 15063 of the CCR 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.

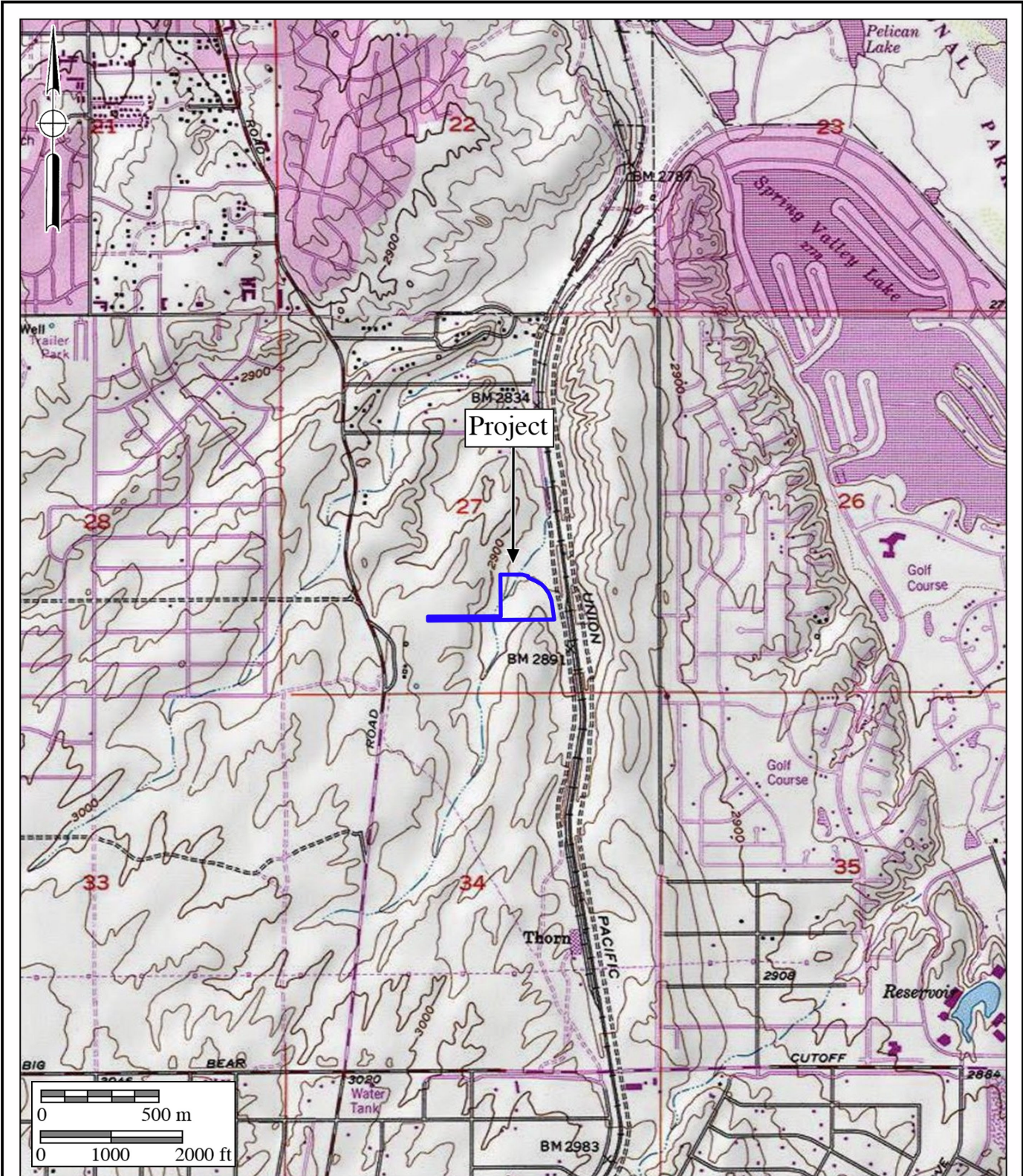
In CEQA's Environmental Checklist Form, one of the questions to answer is, "would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (Appendix G, Section VII, Part f). This is to ensure compliance with California Public Resources Code Section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



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

The Nisqualli Road Trailer Lot Expansion Project  
 DeLorme (1:250,000 series)





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

The Nisqualli Road Trailer Lot Expansion Project  
 USGS *Hesperia* Quadrangle (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.

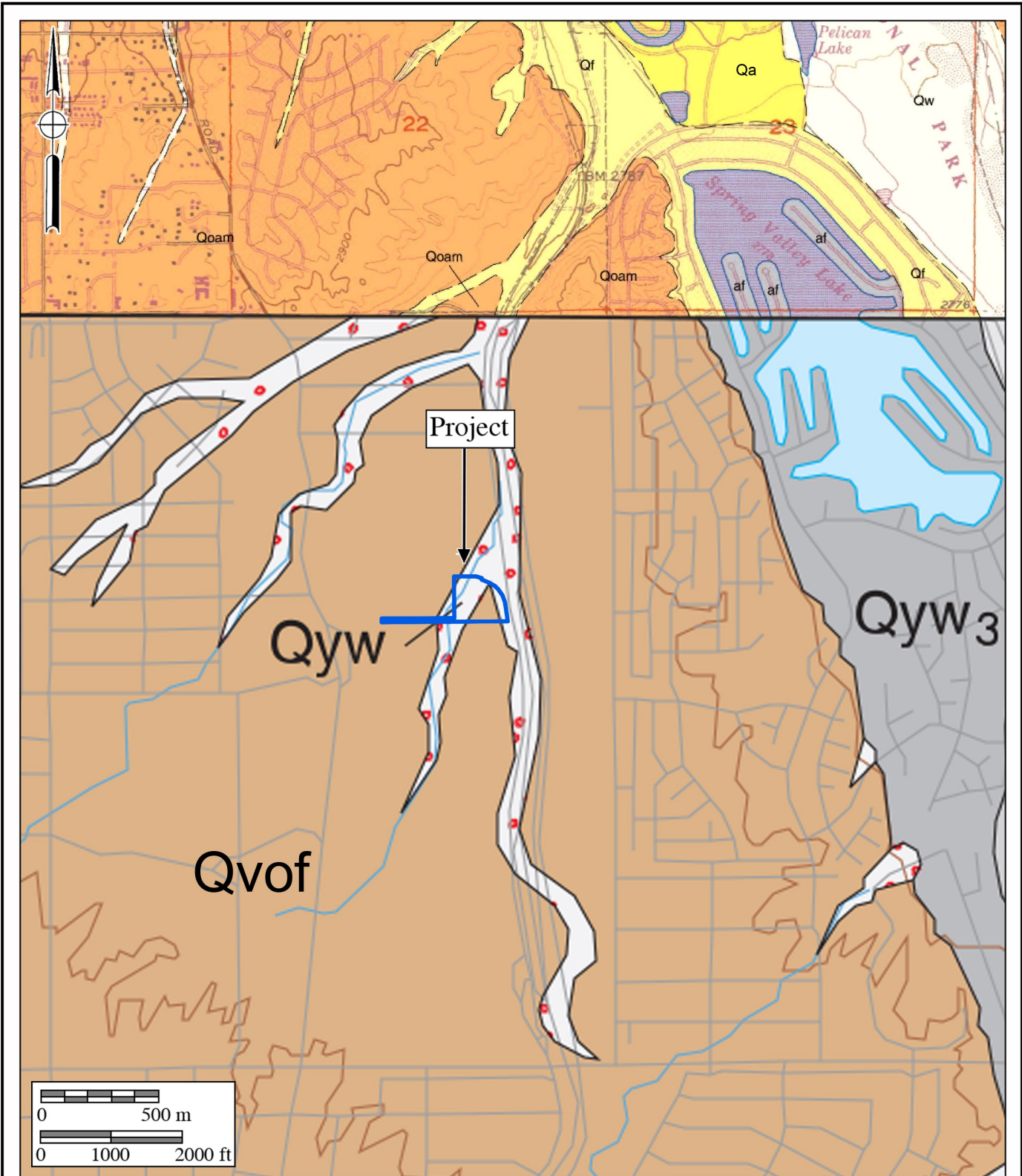
### **City of Victorville**

In the Final Environmental Impact Report (EIR) of the City of Victorville General Plan, paleontological resource mitigation measures are specified in CUL-1. For previously undeveloped properties greater than one acre, mitigation measure CUL-1 must be implemented before construction starts (City of Victorville 2008a). The measure is as follows:

CUL-1: The applicant shall provide for an on-site paleontological/archaeological inspector to monitor all grading operations, or a letter from said licensed professional indicating that monitoring is not necessary during grading. Further, if disturbed resources are required to be collected and preserved, the applicant shall be required to participate financially up to the limits imposed by Public Resources Code Section 21083.2. The results of said monitoring shall be filed with the Development Director or his designee prior to the final approval of the development. (City of Victorville 2008a)

### **III. GEOLOGY**

The project site is situated in the drainage basin of the Mojave River. The current configuration of the Mojave River has evolved gradually over a span of at least one million years. About 60 to 70 thousand years ago, the ancestral Mojave River began incising its modern canyon between Victorville and Barstow (Cox et al. 2003). As shown on Figure 3A, most of the project site is crossed by shallow drainage channels lined with Holocene-aged deposits of sand and gravel (“Qyw” and “Qf” on Figures 3A and 3B). The Holocene channel and wash deposits overly middle to early Pleistocene very old alluvial-fan deposits (brown areas labeled as “Qvof,” after Morton and Miller 2006). In the upper one-fourth of Figure 3A, more accurate mapping by Hernandez et al. (2008) indicates the project site overlies the Pleistocene and Pliocene-aged “alluvium of the ancestral Mojave River” (orange areas labeled as “Qoam” on Figure 3). The deposits are characterized as:











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

The Nisqualli Road Trailer Lot Expansion Project  
Geology after Morton and Miller (2006) and Hernandez et al. (2008)





Santa Ana and San Bernadino Quadrangle by Morton and Miller (2006)	Victorville Quadrangle by Hernandez et al. (2008)
 Young wash deposits (Holocene and late Pleistocene)	 Artificial fill and disturbed areas (Holocene)
 Young wash deposits, Unit 3 (early Holocene)	 Wash deposits (late Holocene)
 Very old alluvial fan deposits (middle to early Pleistocene)	 Modern alluvium of the Mojave River (Holocene)
	 Modern alluvial fan deposits (Holocene)
	 Alluvium of the ancestral Mojave River (Pleistocene and Pliocene)

**Figure 3B**  
**Geologic Map Key**

The Nisqualli Road Trailer Lot Expansion Project  
Geology after Morton and Miller (2006) and Hernandez et al. (2008)

Loose to well-consolidated yellowish-gray to light-yellowish-brown sand, silt, and pebble-cobble gravel. Unit underlies a deeply dissected high alluvial terrace lying about 60-78 m above the active channel of the Mojave River. The sediments mainly consist of silicic plutonic detritus like that in the modern channel of the Mojave River (unit Qa). Therefore, the unit evidently was deposited by the northward-flowing ancestral Mojave River. (Hernandez et al. 2008)

According to Cox et al. (2003), sediments of the ancient Mojave River underlying the surface of the project site belong to the “upper fluvial unit,” a “texturally heterogeneous, but compositionally homogeneous, succession of granitic sand, silt, and gravel.” The unit approaches 200 feet thick in the area of the project site and thickens southward. These deposits range from approximately 1.95 million years to 65 thousand years old (early to late Pleistocene age).

#### **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 [SVP] 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 (see Section II of this report).

##### **Fossil Locality Search**

A review of published and unpublished literature was conducted for potential paleontological resources that are known in the vicinity of the project site. The sources reviewed did not indicate the presence of any known fossil localities within the project site. However, in the greater Victorville area, there are many recorded Pleistocene vertebrate fossil localities (Jefferson 1986, 1991, 2009; Cox et al. 2003; Romero and Hillburn 2006; City of Victorville 2008b; and several sources by R.E. Reynolds not reviewed). Most of the specimens and records recovered from these localities are held by the San Bernardino County Museum (SBCM). All the localities discussed below are derived from the alluvium of the ancestral Mojave River of Hernandez et al. (2008) and Cox et al. (2003), except SBCM locality (loc.) 1.114.38 (Reynolds and Reynolds 1994).

Four localities are one mile or less north and south of the project site, recovered from Eureka Street, Dean Place, Shrides Road, and Hesperia Road/Jasmine Street (the Southern California Edison office) (SBCM localities [locs.] 01.114.7, 01.114.31, 01.114.32, and 1.114.38, respectively; Jefferson 1986, 1991, 2009; Reynolds and Reynolds 1994). These localities include

the remains of mammoths, camels, extinct horses, a hare, and several species of rodents. Northeast of the project site, between four to six miles distant, are several more known localities. Tusks of the mammoth species *Mammuthus* sp., cf. *M. meridionalis* were recovered during mitigation monitoring northwest of the intersection of Tawney Ridge Lane and Amargosa Road (Romero and Hillburn 2006; Jefferson 2009) and are on display at the Mojave River Valley Museum in Barstow. More mammoth (*M. meridionalis*) remains, consisting of the skull, mandible, pelvis, and several ribs (SBCM loc. 01.114.28), were recovered near the intersection of Village Drive and Jurassic Place (Jefferson 1986, 1991, 2009), and were estimated to be approximately 375,000 years old (Cox et al. 2003). In the neighborhood of Turner Springs north of Air Base Road, fossils of hare (*Lepus* sp.) and freshwater invertebrates were found (SBCM locs. 01.114.24-26; Jefferson 1986, 1991, 2009). Several other Pleistocene-aged localities in the Victorville/George Air Force Base area listed by Jefferson (1986, 1991, 2009) could not be precisely located, but included mammoth, camel, llama, horse, mastodon, and rodent species.

### **Field Survey**

BFSA staff, under the supervision of paleontological principal investigator Todd A. Wirths, conducted a site visit on April 24, 2023. The survey included a careful inspection of all exposed ground surfaces, including any rodent burrows and disturbed areas. The survey of the property was an intensive reconnaissance consisting of a series of parallel survey transects spaced at approximately 10-meter intervals. The entire property was accessible, with visibility characterized as moderate to good. Vegetation present consisted primarily of creosote bushes and non-native plants found along the periphery of the property. Some areas within the center of the project site were obscured by parked trailers and gravel. The survey confirmed that the property had been subjected to previous clearing and minor grading. No paleontological resources, or evidence of paleontological resources, were identified as a result of the survey.

## **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 therefore typically assigned a low paleontological sensitivity. Pleistocene (greater than 11,700 years old) alluvial and alluvial fan deposits in the Inland Empire and Mojave Desert, however, often yield important Ice Age terrestrial vertebrate fossils, such as extinct mammoths, mastodons, giant ground sloths,

extinct species of horse, bison, and camel, saber-toothed cats, and others (Jefferson 1991). Therefore, these Pleistocene sediments are accorded a high paleontological resource sensitivity.

### **Professional Standards**

The Society of Vertebrate Paleontology (SVP) has drafted guidelines that include four categories of paleontological sensitivity for geologic units (formations) that might be impacted by a proposed project, as paraphrased 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, the presence of nearby significant fossil localities and the strong likelihood that the nearby fossil localities originated from the same geologic formation as that of the project site, the Pleistocene alluvium of the ancestral Mojave River can be considered to have a high potential to yield paleontological resources.

### **City of Victorville Assessment**

Section 5.5.1.2 of the City of Victorville’s Draft EIR for the general plan (City of Victorville 2008b) describes the paleontologic resources within the city. Based on Pleistocene vertebrate fossils recovered from sediments deposited by the ancestral Mojave River, areas mapped at such are assigned a “moderate to high sensitivity” for the potential to yield significant paleontological resources (City of Victorville 2008b [Sections 5.5-29, 5.5-30]).

In Section 5.5.4, “Project Impacts,” of the City of Victorville’s Draft EIR for the general plan (City of Victorville 2008b), mitigation of potentially significant impacts to significant nonrenewable resources is required if identified in program-level paleontological assessments. Implementation Measure 5.1.2.4 “Require[s] paleontologic monitoring of land alteration projects involving excavation into native geologic materials known to have a high sensitivity for the presence of paleontologic resources” (City of Victorville 2008b [Section 5.5-22]).

## **VI. CONCLUSIONS AND RECOMMENDATIONS**

Research has confirmed the existence of potentially fossiliferous Pleistocene to Pliocene-aged alluvium of the ancestral Mojave River (“Qvof” and “Qoam” on Figures 3A and 3B) that are mapped at the surface of the project site; the known occurrence of significant terrestrial vertebrate fossils at shallow depths from deposits of the ancient Mojave River across Victorville; and the “moderate to high” paleontological sensitivity rating assigned to deposits of the ancient Mojave River for yielding paleontological resources all support paleontological monitoring be implemented during mass grading and excavation activities in undisturbed Pleistocene to Pliocene-aged alluvium of the ancestral Mojave River in order to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources. Full-time monitoring of undisturbed alluvium of the ancestral Mojave River at the project site is warranted, starting at the surface. Monitoring of the shallow drainage deposits (“Qyw” and “Qf” on Figures 3A and 3B) is not recommended since these deposits are likely too young to yield fossils; however, it is anticipated that these deposits constitute just a thin veneer that overlies the older deposits.

Full-time monitoring is recommended starting at the surface during earth disturbance activities, in accordance with city of Victorville guidelines (City of Victorville 2008a, 2008b). A Paleontological Resource Impact Mitigation Project (PRIMP) should be implemented prior to the approval of the project’s grading permits by the City of Victorville, which would describe monitoring and fossil collection procedures. When implemented with the provisions of CEQA, and the guidelines of the Society of Vertebrate Paleontology (2010), an approved PRIMP would mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources (fossils), if present, to a level below significant. A PRIMP for the project is outlined below:

### **PRIMP Elements**

1. Monitoring of mass grading and excavation activities shall be performed by a qualified paleontologist or paleontological monitor. Full-time monitoring for paleontological resources from the surface will be conducted in areas where grading, excavation, or drilling activities occur in alluvium of the ancestral Mojave River to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources.
2. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediment that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt or divert equipment to allow for the removal of abundant or large specimens in a timely manner. The monitor shall notify the project paleontologist, who will then notify the concerned parties of the discovery. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface,

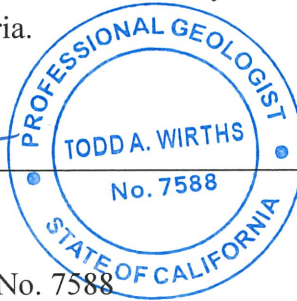
- or if they are present, are determined upon exposure and examination by qualified paleontological personnel to have low potential to contain fossil resources.
3. Preparation of recovered specimens to a point of identification and permanent preservation will be conducted, including screen-washing sediments to recover small vertebrates and invertebrates if indicated by the results of test sampling. Preparation of any individual vertebrate fossils is often more time-consuming than for accumulations of invertebrate fossils.
  4. All fossils must be deposited in an accredited institution (university or museum) that maintains collections of paleontological materials. The San Bernardino County Museum in Redlands, California, is the preferred institution by the County of San Bernardino. All costs of the paleontological monitoring and mitigation program, including any one-time charges by the receiving institution, are the responsibility of the developer.
  5. Preparation of a final monitoring and mitigation report of findings and significance will be completed, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location(s). A letter documenting receipt and acceptance of all fossil collections by the receiving institution must be included in the final report. The report, when submitted to and accepted by the appropriate lead agency (e.g., the City of Victorville), will signify satisfactory completion of the project program to mitigate impacts to any nonrenewable paleontological resources.

## **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



July 12, 2023

Date

## **VIII. REFERENCES**

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Romero, D., and Hillburn, R. 2006. Come look: Mojave river mammoths. *In*, Reynolds, R.E., ed., Making tracks across the southwest; abstract, page 78. The 2006 Desert Symposium, California State University, Desert Studies Consortium and LSA Associates, Inc.

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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.