PALEONTOLOGICAL ASSESSMENT FOR THE NEVADA STREET PROJECT

REDLANDS, SAN BERNARDINO COUNTY, CALIFORNIA

APNs 0292-041-08, -38, and -44

Prepared for:

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Submitted to:

County of San Bernardino
385 North Arrowhead Avenue
San Bernardino, California 92415

Prepared by:

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January 3, 2022

Paleontological Database Information

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Report Date:	January 3, 2022
Report Title:	Paleontological Assessment for the Nevada Street Project, Redlands, San Bernardino County, California (APNs 292-041-08, -38, and -44)
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USGS Quadrangle:	Township 1 South, Range 3 West (projected) of the *Redlands, California* (7.5-minute) USGS Quadrangle
Study Area:	17.75 acres
Key Words:	Paleontological assessment; Holocene axial-valley deposits; low paleontological resource sensitivity; no monitoring recommended.

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I. INTRODUCTION AND LOCATION

A paleontological resource assessment has been completed for the Nevada Street Project, located northeast of Nevada Street and Palmetto Avenue just outside the Redlands city limits in unincorporated San Bernardino County, California (Figures 1 and 2). The project is located southeast of the Interstate 15/Interstate 215 interchange, adjacent to historic Route 66, north of the city of San Bernardino, and consists of Assessor's Parcel Numbers (APNs) 292-041-08, -38, and -44 totaling 17.75 acres. The project is situated within the unsectioned San Bernardino Land Grant (Township 1 South, Range 3 West [projected]) in the USGS *Redlands, California* Quadrangle (Figure 2). The project proposes to develop a concrete tilt-up industrial warehouse. Plans for earth disturbance activities include 49,231 cubic yards of cut at the project, with no export or import of soils.

As the lead agency, the County of San Bernardino 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 regulation 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 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.

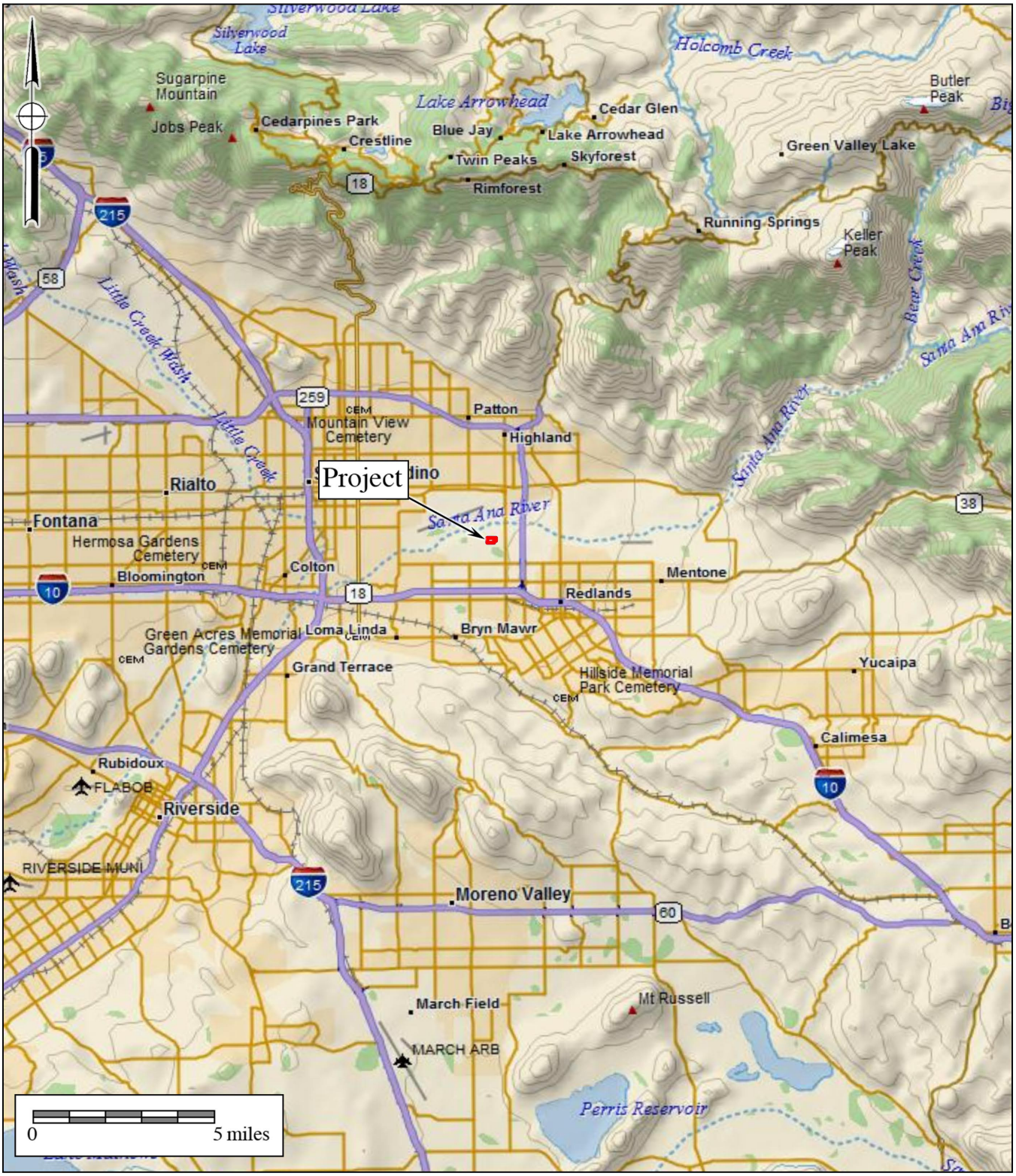


Figure 1

General Location Map

The Nevada Street Project

DeLorme (1:250,000)

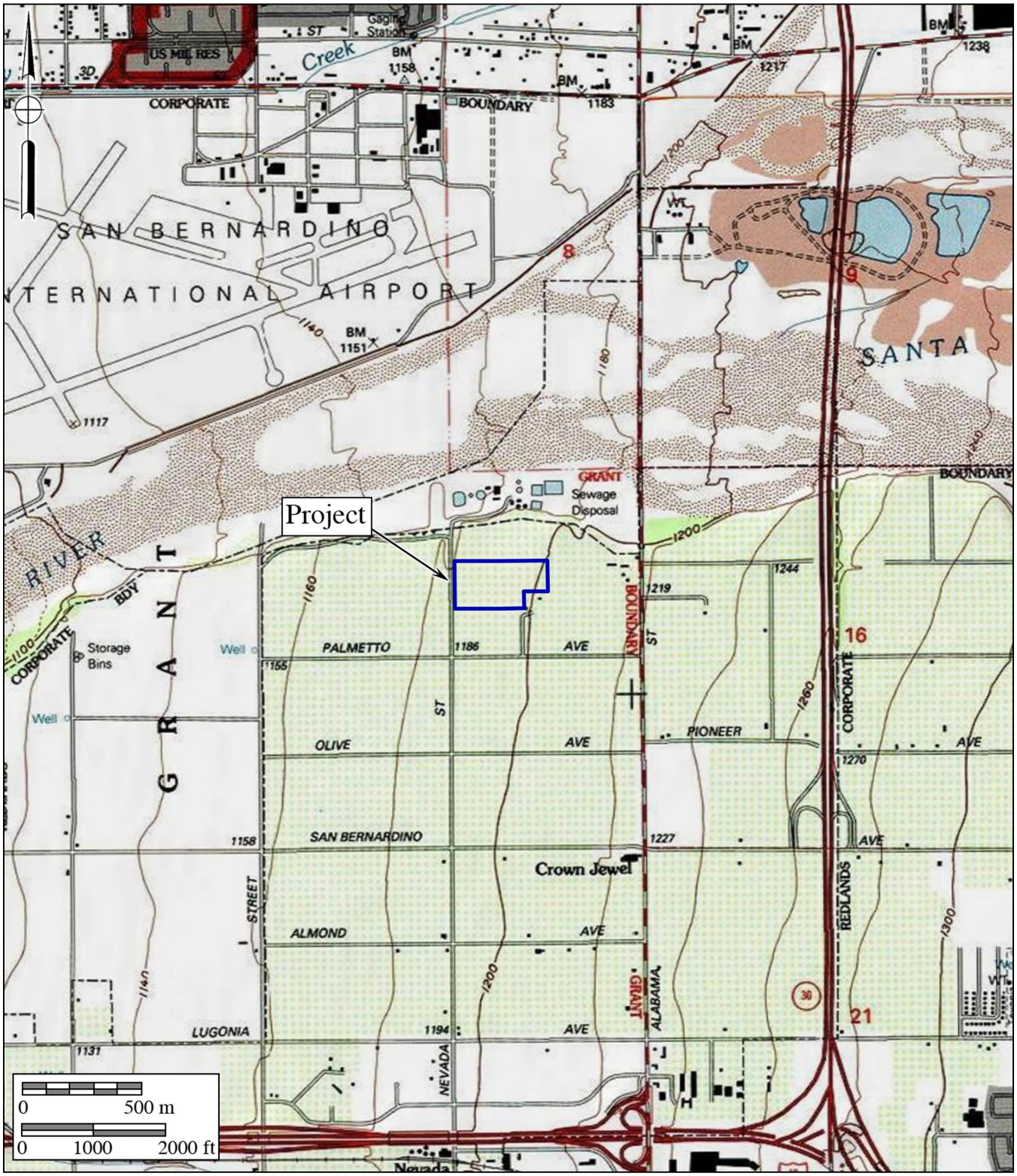


Figure 2

Project Location Map

The Nevada Street Project

USGS *Redlands* Quadrangle (7.5-minute series)

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 paraphrased below:

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.

County of San Bernardino

The County of San Bernardino 2007 Development Code has developed criteria for applying guidelines to preserve and protect nonrenewable paleontological resources (County of San Bernardino 2019). In Chapter 82.20, "Paleontologic Resources (PR) Overlay," of the Development Code, Purpose, Location Requirements, Development Standards, and Paleontologist Qualifications are described in Sections 82.20.010 through 82.20.040, respectively (County of San Bernardino 2019).

III. GEOLOGY

The Nevada Street Project lies within the broad, fault-bounded alluvial valley of the Santa Ana Wash between the San Bernardino Mountains to the north and the San Timoteo Badlands to the south (Matti et al. 2003). The San Andreas Fault lies at the foot of the San Bernardino Mountains and the Banning Fault lies approximately two miles south-southwest of the project. The project is positioned within one quarter mile of the ephemeral Santa Ana Riverbed (Figure 3, after Matti et al. 2003). Stratigraphically, the project overlies middle Holocene Young axial-valley deposits, Unit 3 (labeled as "Qya_3" on Figure 3). These sedimentary deposits are characterized as fine- to coarse-grained sands and pebbly sands that coarsen eastward. The unit is capped by weak to moderate A/AC soils. Based on borings and terrace wall exposures in the Santa Ana Wash, these deposits are at least 10 to 15 meters thick (equivalent to approximately 33 to 49 feet) (Matti et al. 2003).

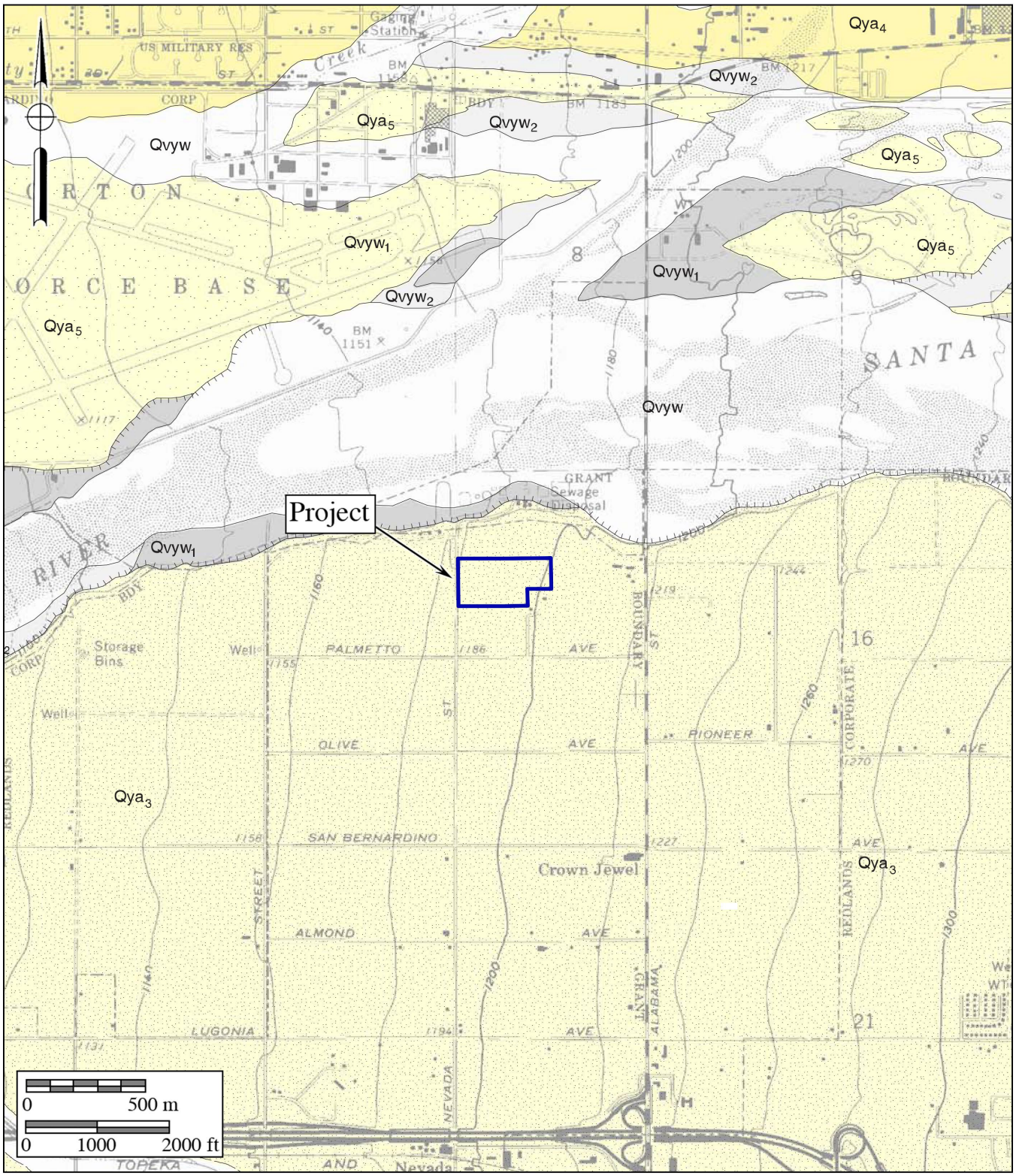


Figure 3

Geologic Map

The Nevada Street Project

Geology after Matti et al. (2003)

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 literature review and collections and locality records search was conducted for the project using records obtained from prior projects at Brian F. Smith and Associates, Inc. from the Division of Geological Sciences at the San Bernardino County Museum, the Los Angeles County Museum of Natural History, the Western Science Center in Hemet, and data from published and unpublished paleontological literature (Jefferson 1986, 1991, 2009). The resulting locality records search did not identify any previously recorded fossil localities from within the boundaries of the project. The closest-known locality is located about 10 miles southeast of the project in Calimesa, consisting of the Pleistocene-aged "Shutt Ranch fauna" (Reynolds 2017). Fossil remains from the Shutt Ranch fauna include bones from two species of rabbits, several species of rodents, giant ground sloth, possible dire wolf, and gomphothere (a type of mastodon) (Jefferson 2009; Reynolds and Reeder 1986).

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 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 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 young geologic age of the sediments mapped at the project, their thickness, and the lack of nearby significant fossil localities, the Holocene axial-valley deposits can be considered to have a low potential to yield significant paleontological resources.

County Assessment

The County of San Bernardino applies its PR Overlay guideline to those areas where paleontological resources are known to occur or are likely to be present, by using fossil location criteria reported by the San Bernardino County Museum, the University of California Museum of Paleontology [Berkeley], the Los Angeles County Natural History Museum, or other institutions (County of San Bernardino 2019, Section 82.20.020). Since a low paleontological resource sensitivity has been, and can be, applied to the geologic strata beneath the project (Society of Vertebrate Paleontology 2010), and no known fossil resources have been found in the area of the Nevada Street Project (Section IV, above), the application of the County's PR Overlay criteria (Section 82.20.030) does not appear necessary (County of San Bernardino 2019).

VI. CONCLUSIONS AND RECOMMENDATIONS

The existence of Holocene axial-valley deposits at the project, and the lack of any known fossil specimens or fossil localities from within a several-mile radius encompassing the subject property support the recommendation that paleontological monitoring need *not* be required during earth disturbance activities at the Nevada Street Project. However, if fossils of any sort are discovered during grading and earthmoving activities, a paleontologist must be retained to develop

a paleontological Mitigation Monitoring and Reporting Program (MMRP) consistent with the provisions of CEQA, those of the County of San Bernardino (2019), and those of the guidelines of the Society of Vertebrate Paleontology (2010). Implementation of the paleontological MMRP would mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources, if present, to a level below significant.

Paleontological MMRP

The following MMRP guidelines, outlined below, are based on the findings stated above. Paleontological monitoring may be reduced on the observations and recommendations of the professional-level project paleontologist. The following MMRP, when implemented, would reduce potential impacts of paleontological resources to a level below significant:

1. If paleontological resources are discovered during earth disturbance activities, the discovery shall be cordoned off with a 100-foot radius buffer so as to protect the discovery from further potential damage, and a county-qualified paleontologist shall be consulted to assess the discovery.

If the discovery is determined to be significant by the paleontologist, an MMRP shall be initiated, which will include notification of appropriate personnel involved and monitoring of earth disturbance activities:

1. Monitoring of mass grading and excavation activities in areas identified as likely to contain paleontological resources shall be performed by a qualified paleontologist or paleontological monitor. Monitoring will be conducted full-time in areas of grading or excavation in undisturbed sedimentary 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 on 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. Precise location of the site is determined with the use of handheld GPS units. 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.

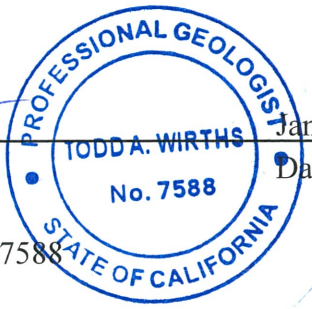
4. Isolated fossils are collected by hand, wrapped in paper, and placed in temporary collecting flats or five-gallon buckets. Notes are taken on the map location and stratigraphy of the site, which is photographed before it is vacated, and the fossils are removed to a safe place.
5. Particularly small invertebrate fossils typically represent multiple specimens of a limited number of organisms, and a scientifically suitable sample can be obtained from one to 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 many as 20 to 40 five-gallon buckets of sediment can be collected and returned to a separate facility to wet-screen the sediment.
6. In accordance with the "Microfossil Salvage" section of the Society of Vertebrate Paleontology 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.
7. 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).
8. 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.
9. 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 San Bernardino County Museum) 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 (*e.g.*, the County of San Bernardino) will be consulted on the repository/museum to receive the fossil

material.

10. 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.



January 3, 2022

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

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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Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: twirths@bfsa-ca.com

Education

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

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

Professional Certifications

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

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

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

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.

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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.

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