PALEONTOLOGICAL ASSESSMENT FOR THE HARLEY KNOX 2021 PROJECT

220-280 EAST NANCE STREET PERRIS, CALIFORNIA 92571

APNs 302-100-020, -030, and -031

Submitted to:

City of Perris
Planning and Development
135 North D Street
Perris, California 92570

Prepared for:

Proficiency Capital, LLC
11777 San Vicente Boulevard, Suite 780
Los Angeles, California 90049

Prepared by:

Brian F. Smith and Associates, Inc.
14010 Poway Road, Suite A
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June 10, 2021

Paleontological Database Information

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Consulting Firm:	Brian F. Smith and Associates, Inc. 14010 Poway Road, Suite A Poway, California 92064 (858) 679-8218
Report Date:	June 10, 2021
Report Title:	Paleontological Assessment for the Harley Knox 2021 Project, 220-280 East Nance Street, Perris, California 92571
Prepared for:	Proficiency Capital, LLC 11777 San Vicente Boulevard, Suite 780 Los Angeles, California 90049
Submitted to:	City of Perris Planning and Development 135 North D Street Perris, California 92570
Assessor's Parcel Numbers:	302-100-020, -030, and -031
USGS Quadrangle:	*Perris, California* (7.5-minute)
Study Area:	6.4 acres
Key Words:	Paleontological assessment; Quaternary very old alluvial fan deposits; High paleontological sensitivity; City of Perris; full-time monitoring recommended starting at a depth of five feet below the surface.

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I. INTRODUCTION AND LOCATION

A paleontological resource assessment has been completed for the Harley Knox 2021 Project (Assessor's Parcel Numbers [APNs] 302-100-020, -030, and -031) located at 220-280 East Nance Street, between Harley Knox Boulevard, Perris Boulevard, Nance Street, and Redlands Avenue in the city of Perris, Riverside County, California (Figures 1 and 2). On the U.S. Geological Survey, 7.5-minute, 1:24,000-scale *Perris, California* topographic quadrangle map, the project is located in Section 5, Township 4 South, Range 3 West, San Bernardino Base and Meridian (see Figure 2). The 6.4-acre project proposes the construction of a warehouse with associated loading docks, parking, and infrastructure. Offsite improvements include a three-foot diameter storm drain with a depth of approximately eight feet installed beneath Nance Street, leading from the project to Redlands Avenue.

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 the Implementation of CEQA, as amended in December 2018 (California Code of Regulations [CCR] Title 14, Division 6, Chapter 3, Sections 15000 et seq.), procedures define the type 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 the Environmental Checklist, 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). California Public Resources Code Section 5097.5 states:

> a) No person shall 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. Violation of this section is a misdemeanor.

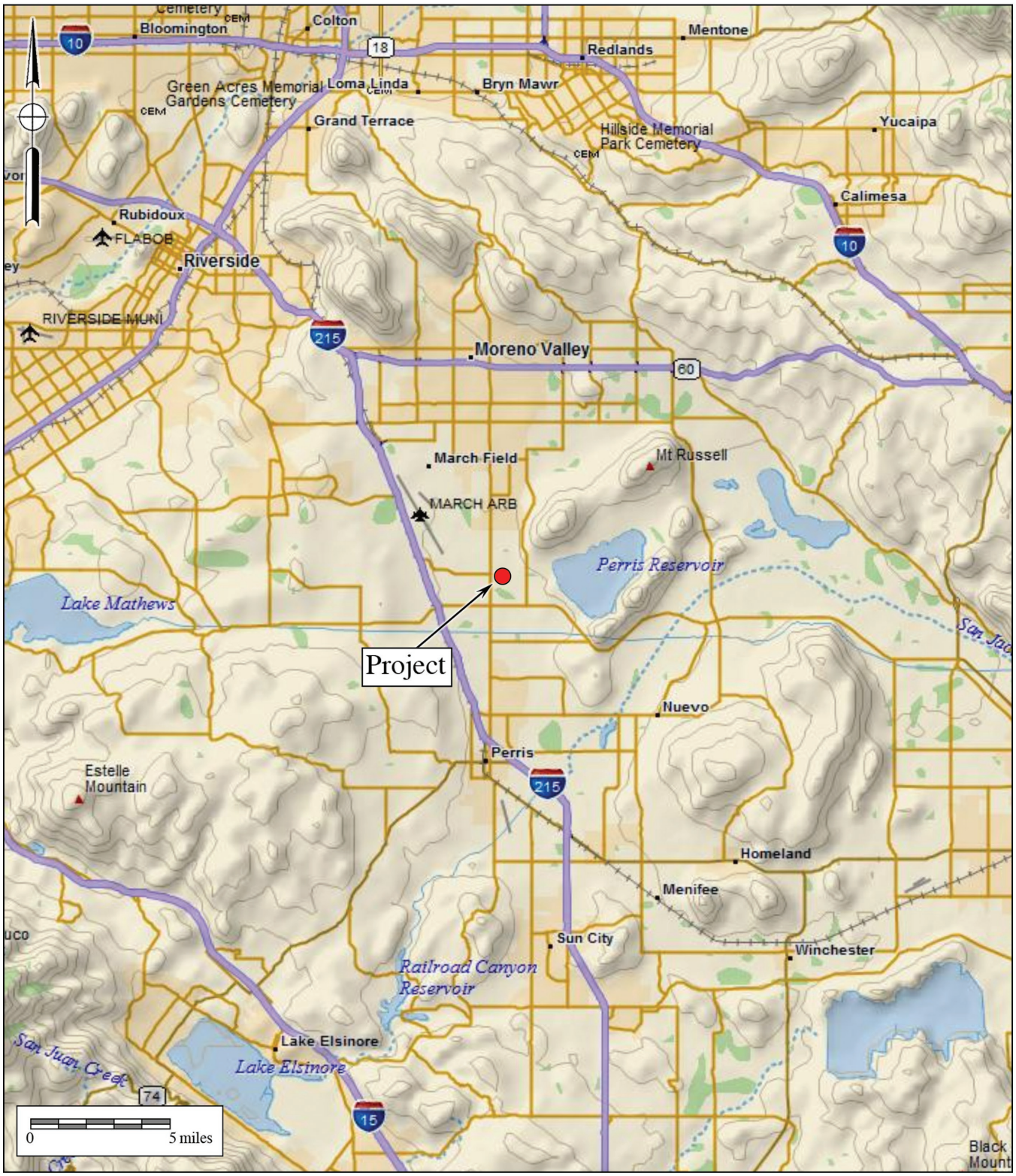


Figure 1

General Location Map

The Harley Knox 2021 Project

DeLorme (1:250,000)

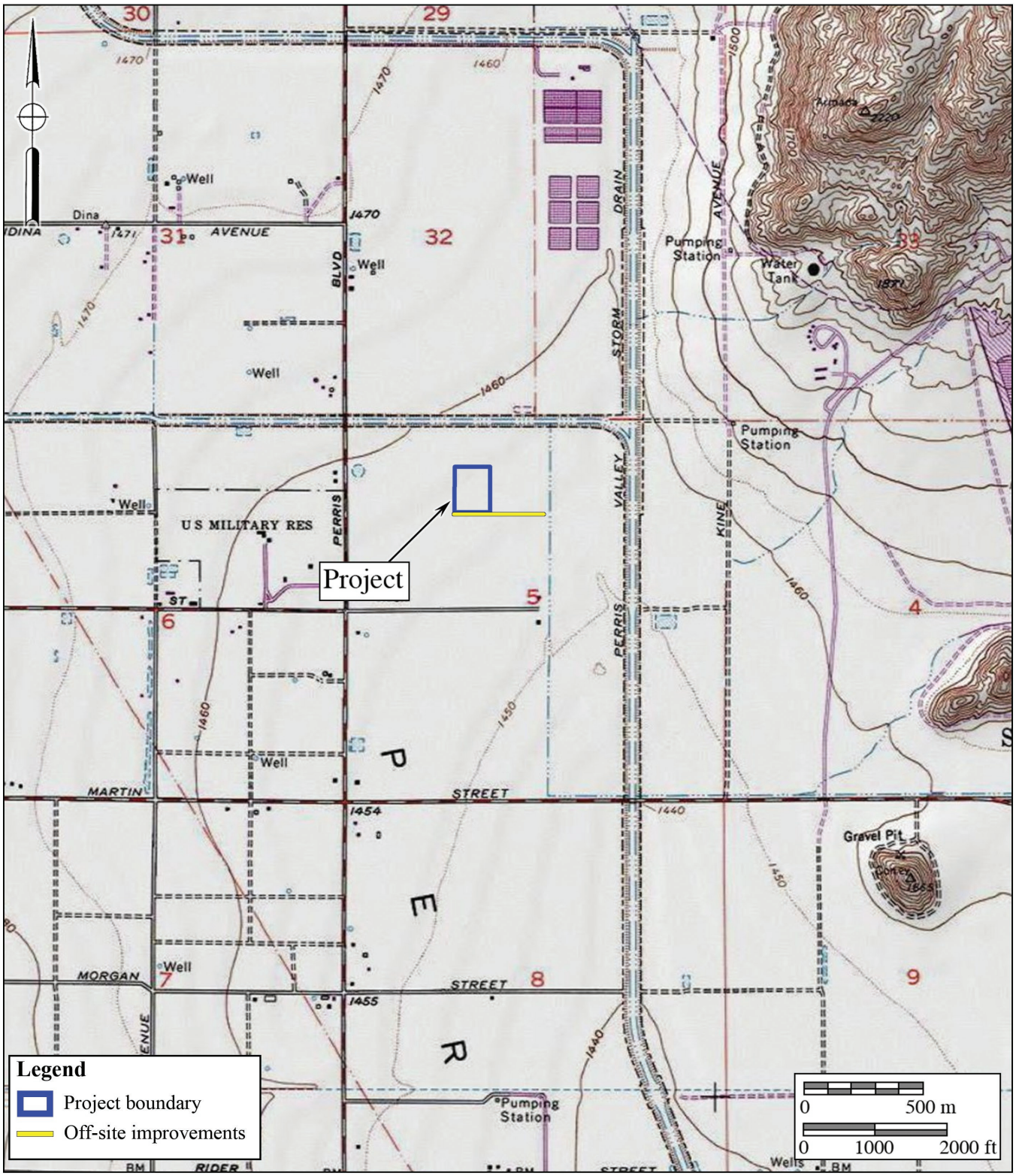


Figure 2

Project Location Map

The Harley Knox 2021 Project

USGS *Perris* Quadrangle (7.5-minute series)

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.

City of Perris

The City of Perris has allocated requirements addressing paleontological resources in the Conservation Element of the City's General Plan (City of Perris 2005:26–27 [Exhibit CN-7]). The Conservation Element "provides goals and policies as a framework for the management, preservation, and use of the City's resources" (City of Perris 2005). Goals, policies, and implementation measures specific to paleontological resources are as follows:

> Measure IV.A.4: In Area 1 and Area 2 shown on the Paleontological Sensitivity Map [Exhibit CN-7], paleontological monitoring of all projects requiring subsurface excavations will be required once any excavation begins. In Areas 4 and 5, paleontological monitoring will be required once subsurface excavations reach 5 feet in depth, with monitoring levels reduced if appropriate, at the discretion of a certified Project Paleontologist. (City of Perris 2005:47)

Based upon the Paleontological Sensitivity Map (Exhibit CN-7) in the Conservation Element of the City's General Plan (City of Perris 2005), the Harley Knox 2021 Project is located within Area 4, which requires paleontological monitoring beginning at a depth of five feet.

Perris Valley Commerce Center Specific Plan

The Harley Knox 2021 Project is located within the boundaries of a "specific plan" prepared by the City of Perris called the Perris Valley Commerce Center Specific Plan (PVCCSP) (City of Perris 2011). The PVCCSP includes Environmental Impact Report mitigation measures addressing cultural resource impacts, which include paleontological resources. In the PVCCSP, Mitigation Measure (MM) Cultural 1 outlines the requirements for preparation of a Phase I cultural resources study (City of Perris 2011), which has been completed through the preparation of this assessment. MM Cultural 5 would be applicable to the proposed Harley Knox 2021 Project should a Mitigation Monitoring and Reporting Program (MMRP) be proposed (City of Perris 2011). Since an MMRP is outlined in this assessment for the project, MM Cultural 5 is satisfied but must be approved prior to the issuance of grading permits. MM Cultural 5 is presented below:

> Prior to grading for projects requiring subsurface excavation that exceeds five (5) feet in depth, proponents of the subject implementing development projects shall retain a professional paleontologist to verify implementation of the mitigation measures identified in the approved Phase I Cultural Resources Study and to monitor the subsurface excavation that exceed five (5) feet in depth. Selection of

the paleontologist shall be subject to the approval of the City of Perris Planning Manager and no grading activities shall occur at the site until the paleontologist has been approved by the City.

Monitoring should be restricted to undisturbed subsurface areas of older alluvium, which might be present below the surface. The paleontologist shall be prepared to quickly salvage fossils as they are unearthed to avoid construction delays. The paleontologist shall also remove samples of sediments which are likely to contain the remains of small fossil invertebrates and vertebrates. The paleontologist shall have the power to temporarily halt or divert grading equipment to allow for removal of abundant or large specimens.

Collected samples of sediments shall be washed to recover small invertebrate and vertebrate fossils. Recovered specimens shall be prepared so that they can be identified and permanently preserved. Specimens shall be identified and curated and placed into an accredited repository (such as the Western Science Center or the Riverside Metropolitan Museum) with permanent curation and retrievable storage.

A report of findings, including an itemized inventory of recovered specimens, shall be prepared upon completion of the steps outlined above. The report shall include a discussion of the significance of all recovered specimens. The report and inventory, when submitted to the City of Perris Planning Division, will signify completion of the program to mitigate impacts to paleontological resources. (City of Perris 2011)

III. GEOLOGY

The geology of the project and immediately surrounding areas is shown on the published geologic map of the *Perris* Quadrangle (Figure 3, after Morton 2003). The map indicates that the project is located on Holocene and late Pleistocene young alluvial valley deposits (Qyv_{sa}, shown in light yellow on Figure 3), which likely overlie at depth, older, early Pleistocene very old alluvial fan deposits ($Qvof_a$, shown in light brown on Figure 3). According to Woodford et al. (1971), the alluvium overlying the granitic bedrock below the project is approximately 450 feet thick.

A geotechnical investigation indicated that the project is covered by one to one and one-half feet of disturbed soils, overlying undisturbed, mostly sandy silt and clayey sands, to a total depth explored of 51.5 feet. The fill soils (one to one and one-half feet below the surface) were recommended for removal to the level of competent native materials (Tucker and Barone 2021).

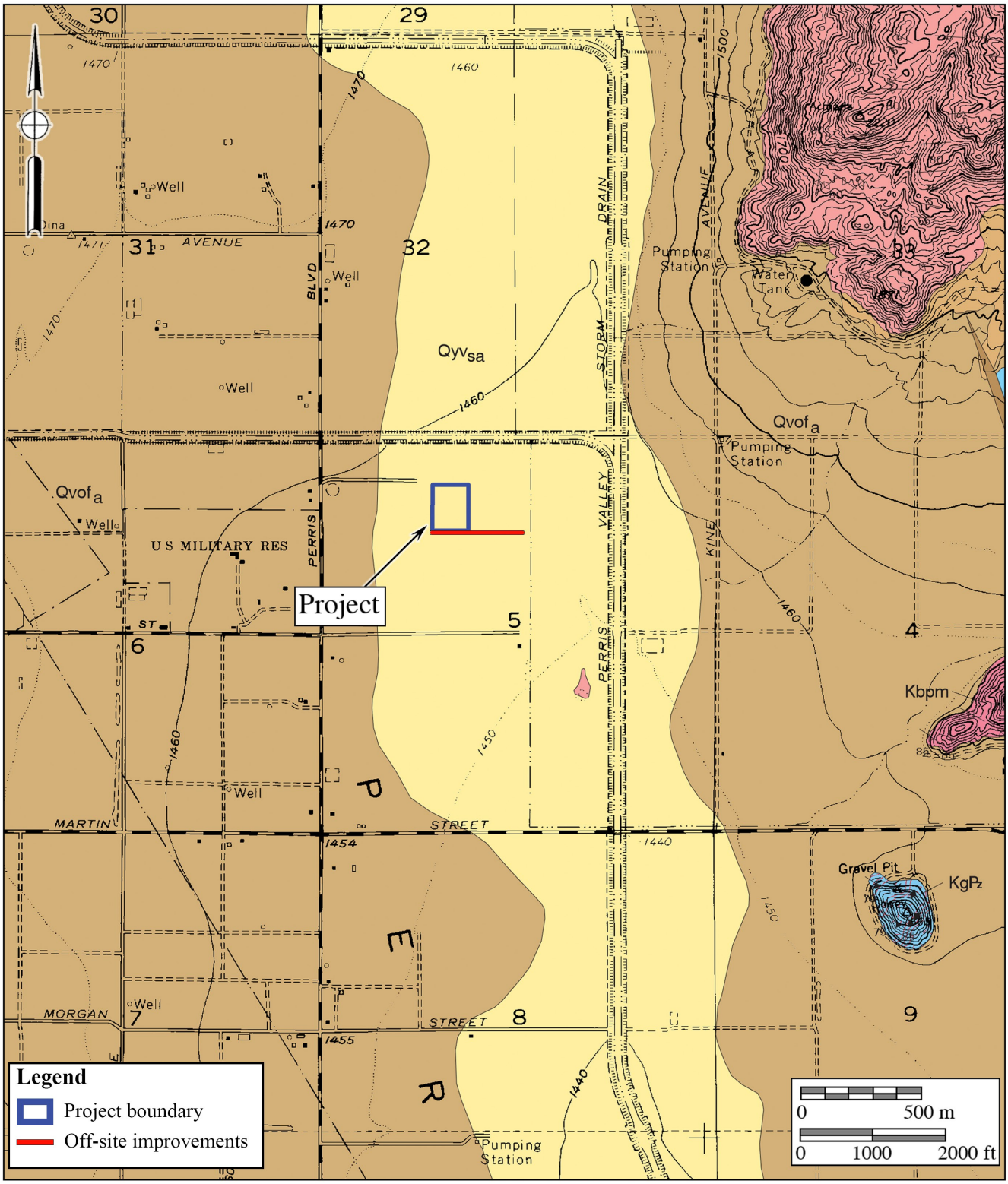


Figure 3

Geologic Map

The Harley Knox 2021 Project

Geology after Morton (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), for example, when viewed in the context of local extinction of the organism or habitat. Fossils are considered a nonrenewable resource under state, county (County of Riverside 2015), and local guidelines (see Section II of this report, above).

Fossil Records Search

A prior fossil locality record search was performed for the Perris Circle Development Project, located along the eastern boundary of the Harley Knox 2021 Project, by the Vertebrate Paleontology Section of the Los Angeles County Museum of Natural History (LACM; see McLeod 2017 in Appendix B). According to the record search, the nearest fossil localities held by the LACM are several miles east and south of the project.

The closest known fossil localities to the Harley Knox 2021 Project are reported in a paleontological literature review and collections and records search that was conducted for a nearby project (the Ecos Energy, LLC, Nuevo Solar Array Project [Ecos Energy Project]) located in the Lakeview Hot Springs area on the southeast side of the Perris Reservoir. The records search was conducted by a vertebrate paleontologist in the Division of Geological Sciences at the San Bernardino County Museum (SBCM) in Redlands (see Scott 2013 in Appendix B). The Ecos Energy Project is located about three miles east of the Harley Knox 2021 Project and is underlain by some of the same sedimentary deposits (Morton 2003). Fossil vertebrates collected from these localities, within one-quarter to one-half mile of the Ecos Energy Project, include mammoths, extinct horses, and extinct bison (SBCM localities 5.3.151 and 5.3.153; see Scott 2013 in Appendix B).

The records search report indicates that older Pleistocene alluvial fan deposits (including deposits of $Qvof_a$ mapped on Figure 3) have a high potential to contain significant nonrenewable paleontological resources (*i.e.*, fossils) and were therefore assigned a "high paleontological resource sensitivity" by Scott (2013). Similar sediments throughout the lowland (valley) areas of western Riverside County and the Inland Empire have been reported to yield significant fossils of extinct terrestrial mammals from the last Ice Age (see references in Scott 2013), such as mammoths, mastodons, giant ground sloths, dire wolves, short-faced bears, saber-toothed cats, large and small horses, camels, and bison.

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. Older Pleistocene (greater than 11,700 years old) alluvial and alluvial fan deposits in the Inland Empire, 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 (see Scott 2013 in Appendix B). These Pleistocene sediments are therefore accorded a High paleontological resource sensitivity.

Professional Standard

The Society of Vertebrate Paleontology drafted guidelines outlining procedures that include:

> [E]valuating the potential for impacts of a proposed action on paleontological resources and for mitigating those impacts. Impact mitigation includes pre-project survey and salvage, monitoring and screen washing during excavation to salvage fossils, conservation and inventory, and final reports and specimen curation. The objective of these procedures is to offer standard methods for assessing potential impacts to fossils and mitigating these impacts. (Society of Vertebrate Paleontology 2010)

The guidelines 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.

City of Perris Paleontological Sensitivity Assessment

On the Paleontological Sensitivity Map in the Conservation Element of the City's General Plan (City of Perris 2005 [Exhibit CN-7]), the Harley Knox 2021 Project is located within Area 4 and assigned a "low to high" paleontological sensitivity based on the presence of the Pleistocene older valley deposits (high sensitivity) underlying young alluvium at the surface (low sensitivity). Sites located within Area 4 require that paleontological monitoring be initiated once subsurface excavations reach five feet below the surface, with a stipulation that monitoring "levels" be reduced at the discretion of the project paleontologist, if appropriate (City of Perris 2005 [Goal IV.A.4]). However, because the project is also located within the area covered by the PVCCSP, it is subject to those specified mitigation measure guidelines (City of Perris 2011). Similar to the City's General Plan, MM Cultural 5 of the PVCCSP restricts the monitoring of paleontological resources to excavations exceeding five feet deep in subsurface areas of undisturbed older alluvium (City of Perris 2011).

VI. RECOMMENDATIONS

Research has confirmed the existence of potentially fossiliferous Pleistocene alluvial fan deposits mapped as underlying the Harley Knox 2021 Project ($Qvof_a$ on Figure 3) and the occurrence of terrestrial vertebrate fossils at shallow depths from Pleistocene older alluvial fan sediments across the Inland Empire of western Riverside County has been documented. The "High" paleontological sensitivity typically assigned to Pleistocene alluvial fan sediments for yielding paleontological resources supports the recommendation that paleontological monitoring be required during mass grading, trenching, and excavation activities in undisturbed Pleistocene alluvial fan sediments in order to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources.

Full-time monitoring is recommended starting at a depth of five feet below the surface during earth disturbance activities, as required by the City of Perris (City of Perris 2005) and the PVCCSP. The proposed MMRP is detailed below. When implemented with the provisions of CEQA, Scott (2013; see Appendix B), and the guidelines of the Society of Vertebrate Paleontology (2010), this MMRP would mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources (fossils), if present, to a level below significant.

Proposed Paleontological MMRP

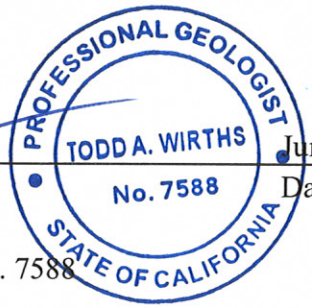
1. Monitoring of mass grading and excavation activities in areas identified as likely to contain paleontological resources shall be performed by a qualified paleontologist or paleontological monitor. Full-time monitoring for paleontological resources will be

conducted in areas where grading, excavation, or drilling activities occur at five feet or deeper in order to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources. Monitoring of artificial fill and disturbed soils is not warranted.

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. 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, 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 Western Science Center in Hemet, California, is the preferred institution by the County of Riverside and the PVCCSP. 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, 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 Perris), 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.



June 10, 2021

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

Date

VIII. REFERENCES CITED

City of Perris. 2005. Conservation Element, City of Perris General Plan. Electronic document, http://www.cityofperris.org/city-hall/general-plan/Conservation_Element_01-08-09.pdf, accessed January 20, 2021.

City of Perris. 2011. Perris Valley Commerce Center Specific Plan Draft EIR. Electronic document, http://www.cityofperris.org/city-hall/specific-plans/PVCC/PVCC-DEIR% 2007-20-11 .pdf, accessed April 26, 2021.

County of Riverside. 2015. Environmental Impact Report No. 521. Public Review Draft. Electronic document, http://planning.rctlma.org/Portals/0/genplan/general_plan_2015/ DEIR521/04-09_Cultural AndPaleoResrcs.pdf, accessed April 26, 2021.

Morton, D.M. 2003. Preliminary geologic map of the Perris 7.5' quadrangle, Riverside County, California: U.S. Geological Survey Open-File Report 03-270, scale 1:24,000.

Scott, E.G. 2013. Paleontology literature and records review, Ecos Nuevo project, Lakeview Hot Springs region, Riverside County, California. Unpublished report prepared for Brian F. Smith and Associates, Inc., Poway, by the Division of Geological Sciences, San Bernardino County Museum, Redlands.

Society of Vertebrate Paleontology. 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources; by the SVP Impact Mitigation Guidelines Revision Committee. Electronic document, http://vertpaleo.org/Membership/Member-Ethics/SVP_Impact_Mitigation_Guidelines .aspx, accessed January 20, 2021.

Tucker, K.D., and Barone, M. 2021. Geotechnical investigation, proposed warehouse development, 220 to 280 East Nance Street, Perris, California. Unpublished consulting

report for Harley Knox 2021 LLC, Los Angeles, California, by NorCal Engineering, Los Alamitos, California.

Woodford, A.O., Shelton, J.S., Doehring, D.O., and Morton, R.K. 1971. Pliocene-Pleistocene history of the Perris Block, southern California. Geological Society of America Bulletin, v. 82, p. 3421–3448, 18 figs.

APPENDIX A

Qualifications of Key Personnel

Todd A. Wirths, MS, PG No. 7588

Senior Paleontologist

Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
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.

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 Search

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
ROBERT L. McKERNAN
Director

2 April 2013

Brian F. Smith and Associates
attn: George L. Kennedy, Ph.D., Senior Paleontologist
14010 Poway Road, Suite A
Poway, CA 92064

re: **PALEONTOLOGY LITERATURE AND RECORDS REVIEW, ECOS NUEVO PROJECT, LAKEVIEW HOT SPRINGS REGION, RIVERSIDE COUNTY, CALIFORNIA**

Dear Dr. Kennedy,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named project in the Lakeview Hot Springs region of Riverside County, California. The proposed project property is located in the southeastern quadrant of section 12, Township 4 South, Range 3 West, San Bernardino Base and Meridian, as seen on the Perris, California 7.5' United States Geological Survey topographic quadrangle map (1967 edition).

Previous geologic mapping (Rogers, 1965; Morton, 2003) indicates that the proposed project property is situated entirely upon active valley deposits of recent age (= unit $\mathbf{Qv_{sc}}$) associated with the present-day San Jacinto River. These sediments have low potential to contain significant nonrenewable paleontologic resources in a reliable stratigraphic context, and so are assigned low paleontologic sensitivity. However, these sediments overlie older Pleistocene alluvium (= $\mathbf{Qvof_{a}}$) that has high paleontologic sensitivity. Similar older Pleistocene sediments throughout Riverside and San Bernardino Counties and the Inland Empire have been previously reported to yield significant fossils of plants and extinct animals from the Ice Age (Jefferson, 1991; Reynolds and Reynolds, 1991; Anderson and others, 2002; Springer and others, 2009, 2010; Scott, 2010). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, short-faced bears, sabre-toothed cats, large and small horses, large and small camels, and bison (Jefferson, 1991; Reynolds and Reynolds, 1991; Springer and others, 2009, 2010; Scott, 2010).

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that two previously-known paleontologic resource localities are recorded by the SBCM within ¼ to ½ mile of portions of the proposed study area. These localities, SBCM 5.3.151 and 5.3.153, yielded fossils of late Pleistocene vertebrates including

mammoths, horses, and bison from Pleistocene older alluvium. The proximity of these localities to the proposed project demonstrates the high paleontologic sensitivity of Pleistocene older alluvium at the surface and in the subsurface in this region.

Recommendations

The results of the literature review and the search of the RPLI at the SBCM demonstrate that the above named study area is located on subsurface Pleistocene alluvial sediments with high potential to contain paleontologic resources. A qualified vertebrate paleontologist must develop a program to mitigate impacts to nonrenewable paleontologic resources. This mitigation program must be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations implemented by the County of Riverside. This program should include, but not be limited to:

1. Monitoring of excavation into rock units having high potential to contain significant nonrenewable paleontologic resources. Based upon the results of this review, all Pleistocene older alluvial sediments present within the area of potential effect are considered to have high potential to contain such resources. 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.

2. 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).

3. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage. 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 complete until such curation into an established, accredited museum repository has been fully completed and documented.

4. 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, will signify completion of the program to mitigate impacts to paleontologic resources.

References

Anderson, R.S., M.J. Power, S.J. Smith, K.B. Springer and E. Scott, 2002. Paleoecology of a Middle Wisconsin deposit from southern California. Quaternary Research 58(3): 310-317.

Jefferson, G.T., 1991. A catalogue of late Quaternary vertebrates from California: Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, No. 7.

Morton, D.M., 2003. Preliminary geologic map of the Perris 7.5' quadrangle, Riverside County, California, version 1.0. United States Geological Survey Open-File Report 03-270. Digital preparation by K.R. Bovard and R.M. Alvarez.

Reynolds, S.F.B. and R.L. Reynolds, 1991. The Pleistocene beneath our feet: near-surface Pleistocene fossils in inland southern California basins. *In* M.O. Woodburne, S.F.B. Reynolds, and D.P. Whistler (eds.), Inland Southern California: the last 70 million years. Redlands: San Bernardino County Museum Special Publication 38(3&4), p. 41-43.

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

Scott, E., 2010. Extinctions, scenarios, and assumptions: changes in latest Pleistocene large herbivore abundance and distribution in western North America. *In* E. Scott and G. McDonald (eds.), Faunal dynamics and extinction in the Quaternary: Papers honoring Ernest L. Lundelius, Jr. Quaternary International 217: 225-239.

Scott, E. and S.M. Cox, 2008. Late Pleistocene distribution of *Bison* (Mammalia; Artiodactyla) in the Mojave Desert of southern California and Nevada. *In* X. Wang and L.G. Barnes (eds.), Geology and vertebrate paleontology of western and southern North America: Contributions in honor of David P. Whistler. Natural History Museum of Los Angeles County Science Series No. 41, p. 359 - 382.

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

Scott, E., K. Springer and J.C. Sagebiel, 2004. Vertebrate paleontology in the Mojave Desert: the continuing importance of "follow-through" in preserving paleontologic resources. In M.W. Allen and J. Reed (eds.) The human journey and ancient life in California's deserts: Proceedings from the 2001 Millennium Conference. Ridgecrest: Maturango Museum Publication No. 15, p. 65-70.

Springer, K., E. Scott, J.C. Sagebiel, and L.K. Murray, 2009. The Diamond Valley Lake local fauna: late Pleistocene vertebrates from inland southern California. *In* L.B. Albright III (ed.), Papers on geology, vertebrate paleontology, and biostratigraphy in honor of Michael O. Woodburne. Museum of Northern Arizona Bulletin 65:217-235.

Springer, K., E. Scott, J.C. Sagebiel, and L.K. Murray, 2010. Late Pleistocene large mammal faunal dynamics from inland southern California: the Diamond Valley Lake local fauna. *In* E. Scott and G. McDonald (eds.), Faunal dynamics and extinction in the Quaternary: Papers honoring Ernest L. Lundelius, Jr. Quaternary International 217: 256-265.

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

Sincerely,

Eric Scott, Curator of Paleontology
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21 November 2017

Psomas
3 Hutton Centre Drive, Suite 200
Santa Ana, CA 92707-8794

Attn: Melissa Macias, Paleontologist

re: Paleontological Resources for the proposed Perris Circle development Project, in the City of Perris, Riverside County, project area

Dear Melissa:

I have conducted a thorough search of our Vertebrate Paleontology records for the proposed Perris Circle development Project, in the City of Perris, Riverside County, project area as outlined on the portion of the Perris USGS topographic quadrangle map that you sent to me via e-mail on 9 November 2017. We do not have any fossil localities directly within the proposed project area, but we do have fossil localities from the same type of sediments that probably occur as subsurface deposits in the proposed project area, although at some distance.

The entire proposed project area has surficial deposits of Quaternary Alluvium, derived primarily as alluvial fan deposits from the hills immediately to the northeast and also to the west. These Quaternary alluvial fan deposits are unlikely to contain significant fossil vertebrates, at least in the uppermost layers. Deeper and older Quaternary deposits that may well contain significant fossil vertebrate remains probably underlie the surficial Quaternary Alluvium, however. Our closest vertebrate fossil locality from somewhat similar older Quaternary deposits is LACM 4540, from the gravel pits just west of Jack Rabbit Trail on the western side of Mt. Eden east-northeast of the proposed project area, that produced a specimen of fossil horse, *Equus*. Our next closest fossil vertebrate localities from these older Quaternary deposits are LACM 5168, south-southwest of the proposed project area around Railroad Canyon Reservoir, and LACM (CIT) 572 and LACM 6059, slightly further south-southwest of the proposed project

area just northeast and east of the current Lake Elsinore, that produced fossil specimens of horse, *Equus*, and camel, *Camelops hesternus.*

The uppermost layers of soil and Quaternary Alluvium in the proposed project area are unlikely to contain significant fossil vertebrates. Excavations that extend down into older and perhaps finer-grained Quaternary deposits, however, may well encounter significant fossil vertebrate remains. Therefore, any substantial excavations in the proposed project area should be monitored closely to quickly and professionally collect any vertebrate fossil remains without impeding development. Also, sediment samples from the proposed project area should also be collected and processed to determine the small fossil potential of the site. Any fossils collected during mitigation activities should be placed in an accredited scientific institution for the benefit of current and future generations.

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, Ph.D.
Vertebrate Paleontology

enclosure: invoice