Appendix G

Paleontological Resource Assessment

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January 31, 2023

Josh Malhi
Synergy Consulting CA
On behalf of VVLIG US Holdings LP
9040 Leslie Street, Suite 7
Richard Hill, ON L4B-3M4

RE: Paleontological Resource Assessment for the Cardova Complex Project, Town of Apple Valley, San Bernardino County, California

Dear Jessica Haughton,

At the request of Synergy Consulting CA (Synergy), PaleoWest, LLC (PaleoWest) conducted a paleontological resource assessment for the Cardova Complex Project (Project), in the town of Apple Valley, San Bernardino County, California. The goal of the assessment was to identify the geologic units that may be impacted by the development of the Project, determine the paleontological sensitivity of geologic units within the Project area, assess the potential for impacts to paleontological resources from the development of the Project, and recommend mitigation measures to avoid or mitigate impacts to scientifically significant paleontological resources, as necessary.

This paleontological resource assessment included a fossil locality records search conducted by the San Bernardino County Museum (SBCM). The records search was supplemented by a review of existing geologic maps and primary literature regarding fossiliferous geologic units within the proposed Project vicinity and region. This technical memorandum, which was written in accordance with the guidelines set forth by the Society of Vertebrate Paleontology (SVP) (2010), has been prepared to support environmental review under the California Environmental Quality Act (CEQA).

PROJECT LOCATION AND DESCRIPTION

The proposed Project involves the development of a warehouse complex. The Project area encompasses approximately 82 acres of vacant land within Assessor's Parcel Numbers (APNs) 0463-213-05, -07, -08, -09, -16, -33, -34, -35, and -36 in the town of Apple Valley in San Bernardino County, California (Figure 1). The Project area is bounded to the north by Cardova Road, to the west by Dachshund Avenue, to the south by Shepard Road, and to the east by Navajo Road. The Project area is within the southeastern quarter of Section 16 of Township (T) 6 North (N), Range (R) 3 West (W), San Bernardino Baseline and Meridian (SBBM), as depicted on the 1975 Apple Valley North, California 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle map (Figure 2). The elevation of the Project area ranges from approximately 3060–3080 feet (ft) above mean sea level (amsl).

Figure 1. Project vicinity map.

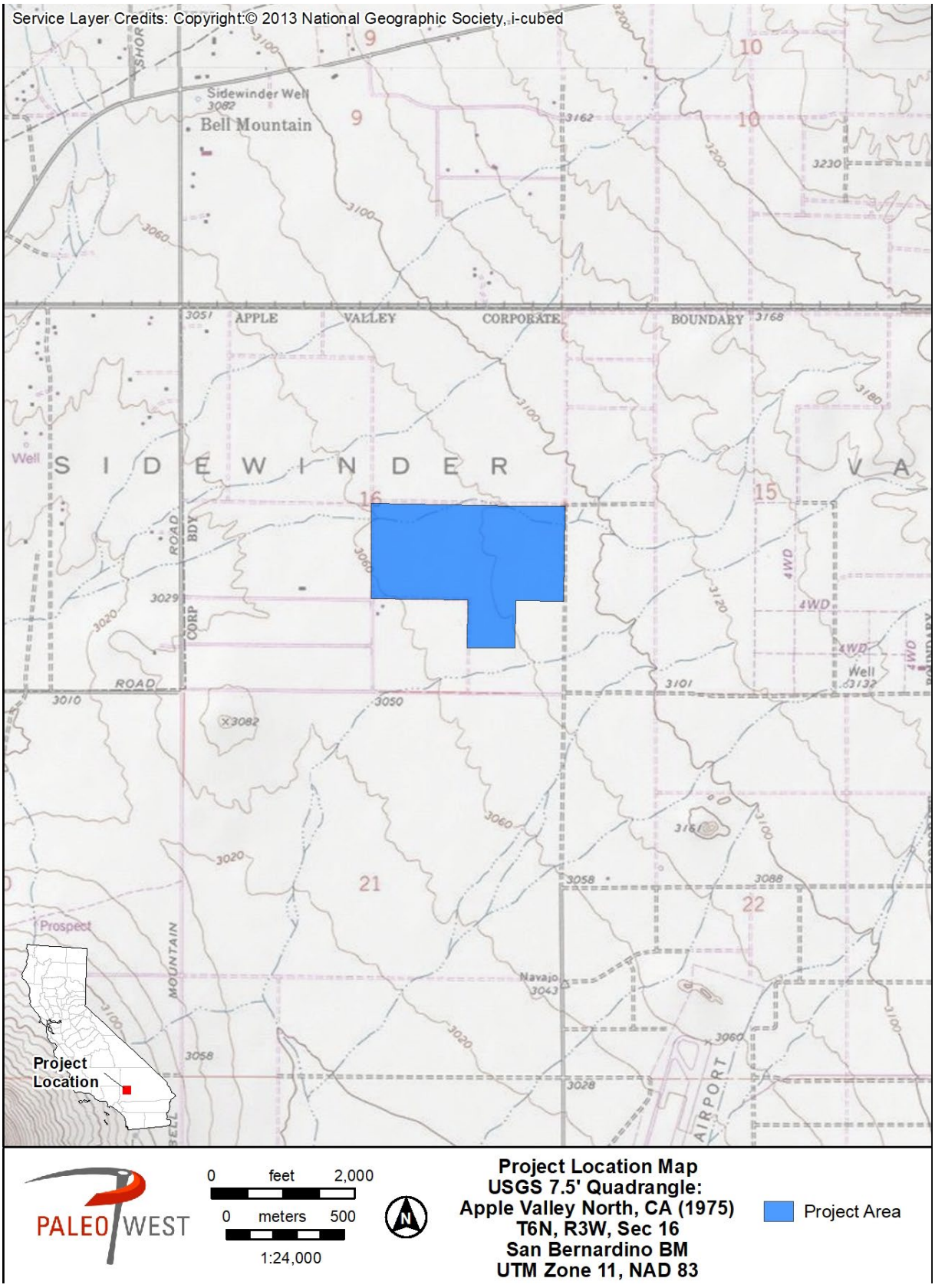


Figure 2. Project location map, Cardova Road Site Project is to the southwest.

REGULATORY CONTEXT

Paleontological resources (i.e., fossils) are considered nonrenewable scientific resources because once destroyed, they cannot be replaced. As such, paleontological resources are afforded protection under various federal, state, and local laws and regulations. Laws pertinent to this Project are discussed below.

STATE LAWS AND REGULATIONS

California Environmental Quality Act

CEQA requires that public agencies and private interests identify the potential environmental consequences of their Projects on any object or site of significance to the scientific annals of California (Division I, California Public Resources Code [PRC] Section 5020.1 [j]). Appendix G in Section 15023 provides an Environmental Checklist of questions (Section 15023, Appendix G, Section XIV, Part A) that includes the following: "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?"

CEQA does not define "a unique paleontological resource or site." However, the Society of Vertebrate Paleontology (SVP) has provided guidance specifically designed to support state and Federal environmental review. The SVP broadly defines significant paleontological resources as follows (SVP, 2010:11):

> "Fossils and fossiliferous deposits consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years)."

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, diagnostically important, or are common but have the potential to provide valuable scientific information for evaluating evolutionary patterns and processes, or which could improve our understanding of paleochronology, paleoecology, paleophylogeography, or depositional histories. New or unique specimens can provide new insights into evolutionary history; however, additional specimens of even well represented lineages can be equally important for studying evolutionary pattern and process, evolutionary rates, and paleophylogeography. Even unidentifiable material can provide useful data for dating geologic units if radiometric dating is possible. As such, common fossils (especially vertebrates) may be scientifically important, and therefore considered significant.

California Public Resources Code

Section 5097.5 of the Public Resources Code (PRC) states:

> "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, 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. As used in this PRC 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."

Consequently, public agencies are required to comply with PRC 5097.5 for their own activities, including construction and maintenance, as well as for permit actions (e.g., encroachment permits) undertaken by others.

LOCAL

The County of San Bernardino has goals and policies related to paleontological resource issues in their General Plan (County of San Bernardino, 2020). The following presents the countywide goal for paleontological resources and their associated policies and programs.

GOAL CR-2 Historic resources (buildings, structures, or archaeological resources) and paleontological resources that are protected and preserved for their cultural importance to local communities as well as their research and educational potential.

CR-2.1 National and state historic resources. We encourage the preservation of archaeological sites and structures of state or national significance in accordance with the Secretary of Interior's standards.

CR-2.2 Local historic resources. We encourage property owners to maintain the historic integrity of resources on their property by (listed in order of preference): preservation, adaptive reuse, or memorialization.

CR-2.3 Paleontological and archaeological resources. We strive to protect paleontological and archaeological resources from loss or destruction by requiring that new development include appropriate mitigation to preserve the quality and integrity of these resources. We require new development to avoid paleontological and archeological resources whenever possible. If avoidance is not possible, we require the salvage and preservation of paleontological and archeological resources.

CR-2.4 Partnerships. We encourage partnerships to champion and financially support the preservation and restoration of historic sites, structures, and districts.

CR-2.5 Public awareness and education. We increase public awareness and conduct education efforts about the unique historic, natural, tribal, and cultural resources in San Bernardino County through the County Museum and in collaboration with other entities and organizations.

PALEONTOLOGICAL RESOURCE POTENTIAL

Absent specific agency guidelines, most professional paleontologists in California adhere to the guidelines set forth by SVP (2010) to determine the course of paleontological mitigation for a given project. These guidelines establish protocols for the assessment of the paleontological resource potential of underlying geologic units and outline measures to mitigate adverse impacts that could result from project development. Using baseline information gathered during a paleontological resource assessment, the paleontological resource potential of the geologic unit(s) (or members thereof) underlying a Project area can be assigned to one of four categories defined by SVP (2010). Although these standards were written specifically to protect vertebrate paleontological resources, all fields of paleontology have adopted the following guidelines:

HIGH POTENTIAL (SENSITIVITY)

Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered have a high potential for containing significant non-renewable fossiliferous resources. These units include but are not limited to, sedimentary formations and some volcanic formations which contain significant nonrenewable.

LOW POTENTIAL (SENSITIVITY)

Sedimentary rock units that are potentially fossiliferous but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well documented and understood taphonomic, phylogenetic species and habitat ecology. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils prior to the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations. However, as excavation for construction gets underway it is possible that significant and unanticipated paleontological resources might be encountered and require a change of classification from Low to High Potential and, thus, require monitoring and mitigation if the resources are found to be significant.

UNDETERMINED POTENTIAL (SENSITIVITY)

Specific areas underlain by sedimentary rock units for which little information is available have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before programs of impact mitigation for such areas may be developed.

NO POTENTIAL

Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

METHODS

To assess whether a particular area has the potential to contain significant fossil resources at the subsurface, it is necessary to review published geologic mapping to determine the geology and stratigraphy of the area. Geologic units are considered "sensitive" for paleontological resources if they are known to contain significant fossils anywhere in their extent. Therefore, a search of pertinent local and regional museum repositories for paleontological localities within and nearby the Project area is necessary to determine whether fossil localities have been previously discovered within a particular rock unit. For this Project, a formal museum records search was conducted at SBCM. Informal records searches were also conducted of the online University of California Museum of Paleontology Collections and San Diego Natural History Museum Collections, the online Paleobiology Database and FAUNMAP, and other published and unpublished geological and paleontological literature of the area.

RESOURCE CONTEXT

GEOLOGIC SETTING

The Project area is in the southwestern portion of the Mojave Desert geomorphic province. The Mojave Desert is a broad interior region of isolated mountain ranges separated by expanses of desert plains, bordered and controlled by two prominent faults, the Garlock fault to the northwest and the San Andreas fault to the southwest (California Geological Survey, 2002). Locally, the Project area is in a valley basin surrounded by mountains of igneous intrusions (Dibblee, 1967). Sediments in the basin area are dominated by alluvial detritus from the surrounding mountains deposited in the Pleistocene and Holocene Epochs (Dibblee, 1967).

SITE SPECIFIC GEOLOGY AND PALEONTOLOGY

According to Hernandez and Tan (2007), the Project is predominantly on Old alluvial deposits (Qoa), composed of fine- to medium-grained sand and fine- to medium-grained gravel of inactive alluvial fans from the late Pleistocene Epoch (2.6 million years ago [mya] to 11,700 years ago). A small exposure of alluvial wash deposits (Qw) of the Holocene Epoch (11,700 years ago to today) is present in the northwest corner of the Project area, composed of unconsolidated fine- to coarse-grained sand and gravel (Figure 3). Locally, sediments are sourced from the Fairview Valley Formation, Sidewinder Volcanic series, and local plutonic intrusions, all of the of the Mesozoic Era (251–66 mya), (Dibblee and Minch, 2008; Hernandez and Tan, 2007). Holocene units are typically considered to have a low paleontological sensitivity, as they are too young to have accumulated and preserved significant biologic material, but often transition with depth into high sensitivity Pleistocene deposits. Elsewhere in San Bernardino County, Pleistocene deposits have produced remains of a diverse terrestrial fauna, including ground sloth, deer, mammoth, camel, horse, bison, badger, mole, rabbit, gray fox, coyote, snake, and rodent (Jefferson, 1991a, 1991b; Miller, 1971; Reynolds and Reynolds, 1991).

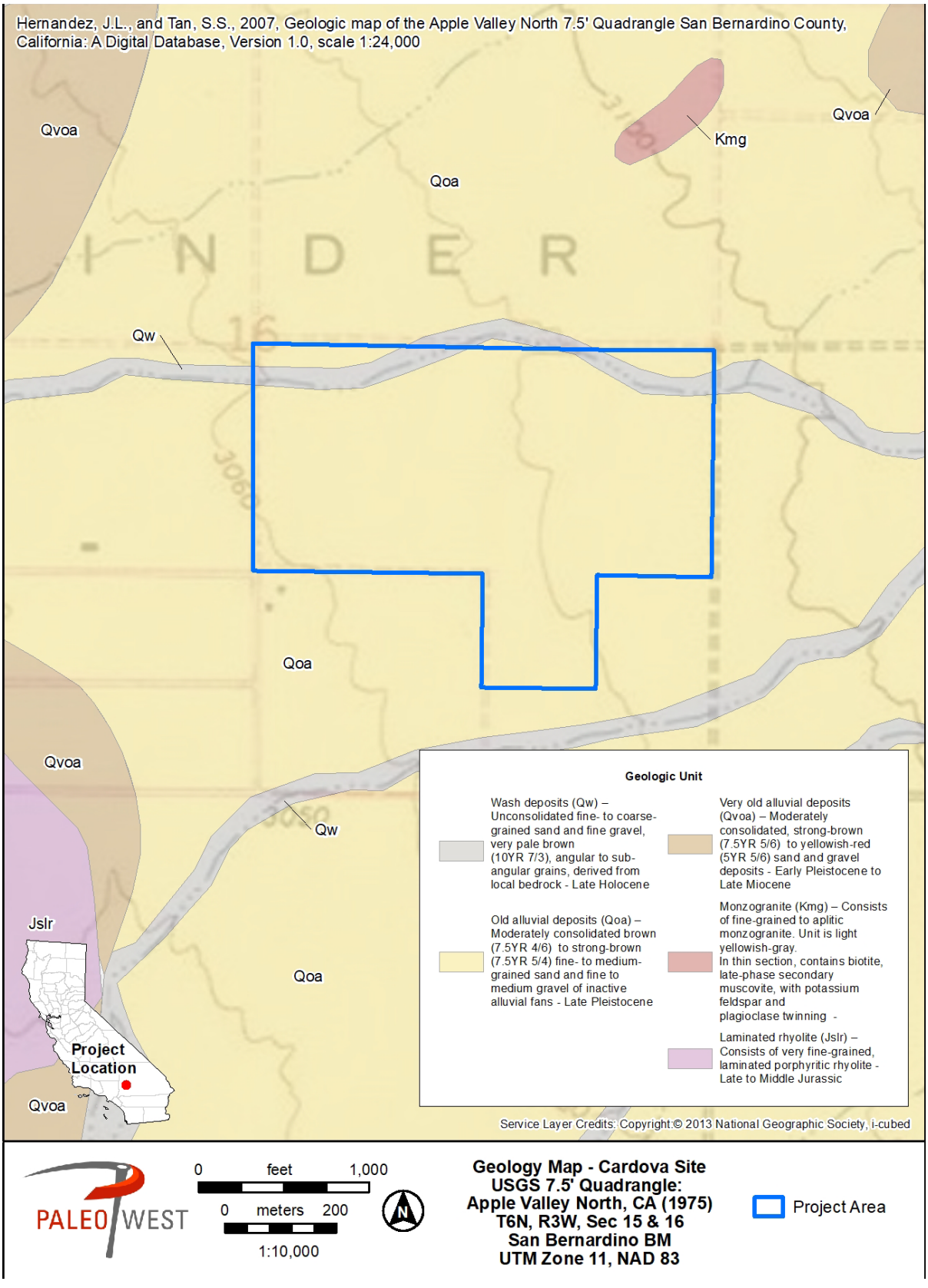


Figure 3. Geologic map of the Project area.

RECORDS SEARCH RESULTS

The SBCM records search did not produce any fossil localities from within the Project area, nor within five miles. The nearest fossil locality in Pleistocene deposits produced in the SBCM records search was eight miles west-southwest of the Project area near George Air Force Base (SBCM 1.114.33B) and produced remains of *Coleonyx variegatus* (Western banded gecko), Mammalia indet., *Lepus* sp. (hare), Rodentia indet., *Thomomys* sp. (Western pocket gopher), *Perognathus* cf. *longimembris* (little pocket mouse), *Neotoma* cf. *albigula* (white-throated wood rat), and Plantae root traces, all under Holocene deposits at an unspecified depth (Appendix A). Searches of online databases and other literature did not produce any additional fossil localities within three miles of the Project area.

FINDINGS

Based on the literature review and museum records search results, and in accordance with the SVP (2010) sensitivity scale, the Quaternary older alluvial deposits (Qoa) mapped in the Project area have high paleontological sensitivity because similar deposits have yielded Pleistocene vertebrate fossils in the vicinity. Wash deposits (Qw) mapped in the Project area have low paleontological sensitivity due to their young Holocene age, but they may transition into older Pleistocene age deposits at depth. Therefore, further paleontological resource management will be required during Project development.

Table 1. Geologic Units and their Paleontological Sensitivity

Geologic Unit[1]	Age	Fossils Present[2]	Paleontological Sensitivity
Quaternary wash deposits (Qw)	Late Holocene	None	Low
Quaternary old alluvial deposits (Qoa)	Late Pleistocene	Snake, lizard, hare, rodent, plant, ground sloth, deer, mammoth, camel, horse, bison, badger, mole, rabbit, gray fox, coyote	High

[1] Hernandez and Tan, 2007.
[2] Jefferson, 1991a, 1991b; Miller, 1971; Reynolds and Reynolds, 1991.

RECOMMENDATIONS

In general, the potential for a given project to result in negative impacts to paleontological resources is directly proportional to the amount of ground disturbance associated with the project; thus, the higher the amount of ground disturbances within geological deposits with a known paleontological sensitivity, the greater the potential for negative impacts to paleontological resources. Since this Project entails excavation for a warehouse complex, new ground disturbances are anticipated. The presence of Pleistocene deposits at the surface, and potentially at depth in the Project area, suggests that ground disturbance may result in significant impacts under CEQA to paleontological resources, such as destruction, damage, or loss of scientifically important paleontological resources. A professional paleontologist should be retained to develop and implement the measures recommended below. These measures

have been developed in accordance with SVP guidelines; if implemented, these measures will satisfy the requirements of CEQA.

WORKER'S ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

Prior to the start of the proposed Project activities, all field personnel will receive a worker's environmental awareness training on paleontological resources. The training will provide a description of the laws and ordinances protecting fossil resources, the types of fossil resources that may be encountered in the Project area, the role of the paleontological monitor, outline steps to follow if a fossil discovery is made, and provide contact information for the Project Paleontologist. The training will be developed by the Project Paleontologist and can be delivered concurrent with other training including cultural, biological, safety, et cetera.

PALEONTOLOGICAL MITIGATION MONITORING

Prior to the commencement of ground disturbing activities, a professional paleontologist will be retained to prepare and implement a paleontological mitigation plan for the Project. The plan will describe the monitoring required during ground disturbing activities as described in the sections below.

Paleontological Monitoring

All construction activities that disturb undisturbed Pleistocene deposits should be monitored on a full-time basis by a qualified paleontological monitor who will work under the supervision of the professional paleontologist and following the SVP (2010) guidelines. Full-time monitoring is defined as a paleontological monitor being present during 100 percent of ground disturbing activities that include excavation and grading. Ground disturbing activity that only impacts Holocene deposits will not require monitoring. Work activities that do not involve ground disturbances do not require monitoring (i.e., laydown yards, etc.).

All paleontological work will be directed by the professional paleontologist and reported daily on a Daily Monitoring Record using an electronic tablet. At a minimum, information on the form will include areas monitored, monitor name(s), a summary of monitoring activities, and a description of the disturbed geologic units including their stratigraphic context. Cut exposures will be examined and observed geologic features will be recorded. Recording of stratigraphic data will be an ongoing task during monitoring to provide context for any eventual fossil discoveries. The goal of this work is to define the nature of fossil-bearing sedimentary units within the Project area, determine their areal extent and depositional contacts, and record any evidence of sedimentary structures or deformation. Standard geologic and stratigraphic data collected include lithologic descriptions (i.e., color, sorting, texture, structures, and grain size, and compositional percentages), stratigraphic relationships (i.e., bedding type, thickness, and contacts), and geographic position (i.e., Universal Transverse Mercator [UTM] coordinates). Stratigraphic sections will be routinely measured in areas where paleontological resources are recovered.

Matrix Sampling and Microfossil Screening

Monitoring is largely a visual inspection of sediments; therefore, the most likely fossils to be observed will be macrofossils of vertebrates (bones, teeth, tusk) or invertebrates (shells). Most microfossils (diatoms, pollen) are too small to be seen with the naked eye. However, at the discretion of the professional paleontologist, the monitor will periodically screen sediments to check for the presence of microfossils that can be seen with the aid of a hand lens (i.e., microvertebrates). Should microvertebrate fossils be encountered during the screening process, then bulk matrix samples will be taken for processing off site. For each fossiliferous horizon or paleosol, a standard sample (4.0 cubic yards or 6,000 pounds) will be collected for subsequent "wet-screening" per SVP (2010) guidelines. All samples will be accompanied by pertinent geologic and stratigraphic information recorded on a field collection tag. Data will include the following: Project name/Project number, sample number and date, geologic formation (and unit, if applicable) and age, lithologic description, stratigraphic data, UTM coordinates and elevation, other locational data.

Equipment and Supplies

The paleontological monitor will have a mobile tablet equipped with technical software, including Global Positioning System (GPS) applications, a digital camera, compass, and reporting applications. The monitor will also be supplied with a tool kit that contains specimen containers, matrix bags, field labels, tools (shovel, pick, awls, chisels, dental picks, pin vises, brushes, etc.), chemical preservatives (e.g., Vinac), and plaster. The monitor will also have fluorescent flagging tape and survey stakes to delineate temporary construction exclusion zones. For microfossil screening, the monitor will have hand sieves, 5-gallon buckets, and an eye loupe. At all times, the monitor will wear the appropriate personal protective equipment (PPE) in compliance with on-site contractor PPE work rules, including a hard hat, heavy footwear, sleeved shirt, long pants, safety glasses, and a high-visibility safety vest.

FOSSIL DISCOVERIES

If a paleontological resource is discovered, the monitor will have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and, if appropriate, collected. If the resource is determined to be of scientific significance, the Project Paleontologist shall complete the following:

Salvage of Fossils

If fossils are discovered, all work in the immediate vicinity should be halted to allow the paleontological monitor, and/or Project Paleontologist to evaluate the discovery and determine if the fossil may be considered significant. If the fossils are determined to be potentially significant, the monitor will collect the fossil specimen(s) and associated data. For this Project, the SVP (2010) criteria of scientific significance will be used to make this determination in the field. In general, small unidentifiable vertebrate fossils will not be collected and only well preserved or representative invertebrates or plants will be salvaged if avoidance is not feasible.

Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case the

paleontologist should have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner. A temporary construction exclusion zone, consisting at a minimum of lath and flagging tape, will be erected around the discovery. The exclusion zone acts as a buffer around the discovery and is maintained for safety. The monitor will immediately report the discovery to the Site Superintendent and the professional paleontologist so that appropriate notifications can be immediately issued to the City. The size of the buffer may be increased or decreased once the monitor adequately explores the discovery to determine its size and significance.

At each fossil locality, the monitor will document UTM coordinates, describe the encasing sediments in detail, record stratigraphic context and fossil orientation, and photographically document the fossil(s). The fossil(s) will then be collected and placed in bags or trays for transport to a paleontology laboratory. At the discretion of the professional paleontologist, matrix samples also may be collected for subsequent laboratory studies (i.e., microfossil analysis). Immediately following fossil collection, the temporary construction exclusion zone will be removed and the monitor or professional paleontologist will notify the Site Superintendent that excavation activities may resume in the area of the find.

Unanticipated Fossil Discovery

An unanticipated fossil discovery consists of fossils that are found while a paleontological monitor is not on-site, for example while construction activities are occurring in the upper 9 ft of sediments where a paleontological monitor is not required to be onsite. If potentially significant fossils are discovered by construction personnel, construction activity should cease in the immediate area of the discovery site (50-ft radius is usually sufficient), and the discovery should be immediately reported to the lead site superintendent, who will notify the professional paleontologist and a paleontological monitor. The paleontological monitor will inspect the fossil(s) and in coordination with the professional paleontologist, will determine if additional mitigation (collection and curation) is required. If the paleontological resource(s) at the discovery site are deemed to be scientifically important, ground disturbing construction activities should not resume in the immediate area of the paleontological resource until the fossil(s) has been recovered and associated data recorded.

FOSSIL PREPARATION AND CURATION

The paleontological mitigation plan will identify the museum that has agreed to accept fossils that may be discovered during Project related excavations. Upon completion of fieldwork, all significant fossils collected will be prepared in a properly equipped laboratory to a point ready for curation. Preparation will include the careful removal of excess matrix from fossil materials using manual devices such as dental picks or pin vises; for harder materials, a pneumatic air scribe may be used. For microfossil screening, chemicals such as detergents or weak acids may be used to further break down the matrix so that it can be picked for fossils under a microscope. All fossil specimens will be stabilized with glues and consolidants as needed and repaired, as necessary. Especially fragile specimens may need a support cradle constructed out of specialty plaster. Microvertebrates may require pin-mounting, a process by which the specimen is mounted using glue or wax onto a pinhead that is embedded in a cork and stored in a glass vial.

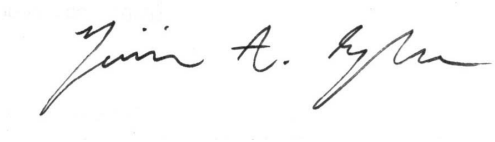
During preparation and inventory, the fossils specimens will be identified to the lowest taxonomic level practical prior to curation at an accredited museum. Following laboratory preparation, all fossil specimens will be cataloged, and inventoried into an electronic database. The fossil specimens must be delivered to the accredited museum or repository no later than 90 days after all fieldwork is completed. The fossil specimens will be accompanied by field notes, photographs, locality data, a signed deed of gift from the Project owner, and a copy of the final technical report. The cost of curation will be assessed by the repository and will be the responsibility of the client.

FINAL PALEONTOLOGICAL MITIGATION REPORT

Upon completion of ground disturbing activity (and curation of fossils, if necessary) the Project Paleontologist should prepare a final mitigation and monitoring report outlining the results of the mitigation and monitoring program. The report should include discussion of the location, duration and methods of the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated. A map will be appended to the report depicting areas that were monitored for paleontological resources and will delineate any Project areas that will require monitoring should any future site developments occur. The report will be submitted to City within 60 business days following completion of monitoring and laboratory work. If the monitoring efforts produced fossils, then a copy of the report will also be submitted to the designated museum repository.

Thank you for contacting PaleoWest for this Project. If you have any questions, please do not hesitate to contact us.

Sincerely,



Benjamin Scherzer, M.S. | Senior Paleontologist
PALEOWEST

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Attachment A.
SBCM Record Search Results

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SAN BERNARDINO COUNTY

Museum
Division of Earth Science

Scott Kottkamp
Curator of Earth Science

6 September, 2022

PaleoWest
Attn: Heather Clifford
517 S. Ivy Avenue
Monrovia, CA 91016

PALEONTOLOGY RECORDS REVIEW for proposed site of Quarry Road and Cordova Road Survey 22-0512, Apple Valley, San Bernardino County, California

Dear Ms. Clifford,

The Division of Earth Science of the San Bernardino County Museum (SBCM) has completed a record search for the above-named project in San Bernardino County, California. The proposed project site (Fontana Distribution Facility) is in the city of Apple Valley, California as shown on the United States Geological Survey (USGS) 7.5 minute Apple Valley North quadrangle.

Geologic mapping of that region done by Hernandez and Tan (2007) indicates the entire western project area is located atop late Pleistocene alluvial deposits (Qoa). Qoa regionally consists of brown colored fine to medium grained sand, as well as brown clay. Surface exposures are smooth in texture, have slight desert varnish, and are composed of the aforementioned sand as well as angular fine-to-medium gravel clasts. These sediments are mostly sourced from the Fairview Valley Formation, the Sidewinder Volcanic series, and minor plutonic clasts (Hernandez and Tan 2007). Similar Pleistocene age alluvial deposits have been found to be highly fossiliferous throughout San Bernardino County, yielding the remains of mastodons, mammoths, camels, horses, bison, and ground sloths, as well as microfossils including rodents (Reynolds and Reynolds 1991). The north end and southwest corner of the eastern project area are also situated atop Qoa, as is most of the half mile project buffer.

Qoa overlies older alluvial deposits of early Pleistocene back to possibly late Miocene age (Qvoa; Hernandez and Tan 2007). Qvoa is a moderately consolidated, strong-brown to yellow-red sand and fine to coarse gravel, with rare boulders. Sediments are from the same sources as Qoa, but can be distinguished by color, absence of clay, maximum size of gravel clasts, strong desert varnish, and caliche-coated gravel clasts. Qvoa is possibly fossiliferous, and occurs at the surface over much of the eastern project area, as well as immediately east and northwest of that area. Qvoa in turn directly overlies Cretaceous monzogranite units (Kmg), of which there is a surface exposure within the half mile buffer (Hernandez and Tan 2007). Kmg is nonfossiliferous. Other nearby and potentially underlying Mesozoic units are likewise of igneous origin and not fossiliferous.

For this review, I conducted a search of the Regional Paleontological Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no paleontological resources have been discovered within the proposed project site, nor within 5 miles of the project site. Pleistocene alluvial sediments like those at the project site are highly fossiliferous in Victorville, Adelanto, and southern Apple Valley, and thus the absence of nearby recorded fossil localities is likely because of lack of data rather than lack of fossils. The nearest paleontological locality is SBCM 1.114.33B, approximately 8 miles west-southwest of the project site. SBCM 1.114.33B occurs within mid to late Pleistocene (Irvingtonian to early Rancholabrean) fine-grained lacustrine clay, silt, and gravel. Taxa found at the locality include: *Coleonyx variegatus*; Mammalia indet.; *Lepus* sp.; Rodentia indet.; *Thomomys* sp.; *Perognathus* cf. *longimembris*; *Neotoma* cf. *albigula*; and Plantae root traces. Bones are moderately permineralized while the rhizoliths are predominately preserved as casts. Fossils were recovered from eroding surface exposures of Qoa, as well as from subsurface Qoa from unspecified depth beneath Qa, during paleontological surveying near George Air Force Base in the 1980s. SBCM 1.114.33B is one example of a much larger series of paleontological localities found around the Mojave River east of what is now Southern California Logistics Airport. Other nearby localities produced fossils including Insecta shells/casings, Teleostei, Camelidae, and wide variety of terrestrial vertebrate microfossils.

This records search covers only the paleontological records of the San Bernardino County Museum. 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.

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

Sincerely,

Scott KottKamp

Scott Kottkamp, Curator of Earth Science
Division of Earth Science
San Bernardino County Museum

Literature Cited

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REDLANDS, CALIFORNIA
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January 31, 2023

Josh Malhi
Synergy Consulting CA
On behalf of VVLIG US Holdings LP
9040 Leslie Street, Suite 7
Richard Hill, ON L4B-3M4

RE: Paleontological Resource Assessment for the Quarry/Pawnee Complex Project, Town of Apple Valley, San Bernardino County, California

Dear Jessica Haughton,

At the request of Synergy Consulting CA (Synergy), PaleoWest, LLC (PaleoWest) conducted a paleontological resource assessment for the Quarry/Pawnee Complex Project (Project), in the town of Apple Valley, San Bernardino County, California. The goal of the assessment was to identify the geologic units that may be impacted by the development of the Project, determine the paleontological sensitivity of geologic units within the Project area, assess the potential for impacts to paleontological resources from the development of the Project, and recommend mitigation measures to avoid or mitigate impacts to scientifically significant paleontological resources, as necessary.

This paleontological resource assessment included a fossil locality records search conducted by the San Bernardino County Museum (SBCM). The records search was supplemented by a review of existing geologic maps and primary literature regarding fossiliferous geologic units within the proposed Project vicinity and region. This technical memorandum, which was written in accordance with the guidelines set forth by the Society of Vertebrate Paleontology (SVP) (2010), has been prepared to support environmental review under the California Environmental Quality Act (CEQA).

PROJECT LOCATION AND DESCRIPTION

The proposed Project involves the development of a warehouse complex The Project area encompasses approximately 80 acres of vacant land within Assessor's Parcel Numbers (APNs) 0453-214-06, -07, -08, and -09 in the town of Apple Valley in San Bernardino County, California (Figure 1 1). The Project area is bounded to the north by Quarry Road, to the west by Needham Avenue, to the south by Cardova Road, and to the east by Pawnee Road. The Project is within the eastern half of the northwest quarter of Section 15 of Township (T) 6 North (N), Range (R) 3 West (W), San Bernardino Baseline and Meridian (SBBM), as depicted on the 1975 Apple Valley North, California 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle map (Figure 1 2). The elevation of the Project area ranges from approximately 3120–3160 feet (ft) above mean sea level (amsl).

Figure 1. Project vicinity map.

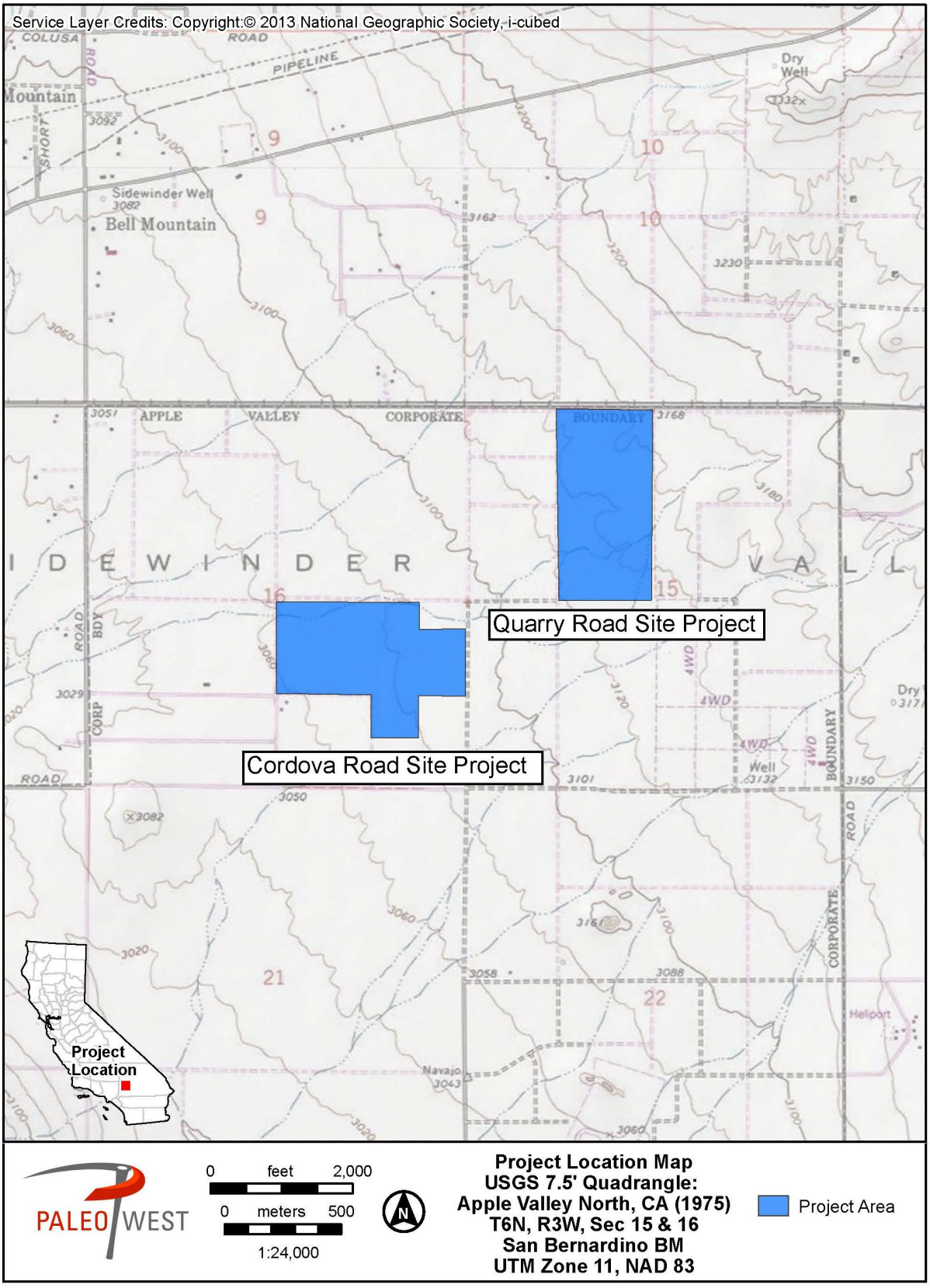


Figure 2. Project location map, Quarry Road Site is to the northeast.

REGULATORY CONTEXT

Paleontological resources (i.e., fossils) are considered nonrenewable scientific resources because once destroyed, they cannot be replaced. As such, paleontological resources are afforded protection under various federal, state, and local laws and regulations. Laws pertinent to this Project are discussed below.

STATE LAWS AND REGULATIONS

California Environmental Quality Act

CEQA requires that public agencies and private interests identify the potential environmental consequences of their projects on any object or site of significance to the scientific annals of California (Division I, California Public Resources Code [PRC] Section 5020.1 [j]). Appendix G in Section 15023 provides an Environmental Checklist of questions (Section 15023, Appendix G, Section XIV, Part A) that includes the following: "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?"

CEQA does not define "a unique paleontological resource or site." However, the Society of Vertebrate Paleontology (SVP) has provided guidance specifically designed to support state and Federal environmental review. The SVP broadly defines significant paleontological resources as follows (SVP, 2010:11):

> "Fossils and fossiliferous deposits consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years)."

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, diagnostically important, or are common but have the potential to provide valuable scientific information for evaluating evolutionary patterns and processes, or which could improve our understanding of paleochronology, paleoecology, paleophylogeography, or depositional histories. New or unique specimens can provide new insights into evolutionary history; however, additional specimens of even well represented lineages can be equally important for studying evolutionary pattern and process, evolutionary rates, and paleophylogeography. Even unidentifiable material can provide useful data for dating geologic units if radiometric dating is possible. As such, common fossils (especially vertebrates) may be scientifically important, and therefore considered significant.

California Public Resources Code

Section 5097.5 of the Public Resources Code (PRC) states:

> "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, 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. As used in this PRC 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."

Consequently, public agencies are required to comply with PRC 5097.5 for their own activities, including construction and maintenance, as well as for permit actions (e.g., encroachment permits) undertaken by others.

LOCAL

The County of San Bernardino has goals and policies related to paleontological resource issues in their General Plan (County of San Bernardino, 2020). The following presents the countywide goal for paleontological resources and their associated policies and programs.

GOAL CR-2 Historic resources (buildings, structures, or archaeological resources) and paleontological resources that are protected and preserved for their cultural importance to local communities as well as their research and educational potential.

CR-2.1 National and state historic resources. We encourage the preservation of archaeological sites and structures of state or national significance in accordance with the Secretary of Interior's standards.

CR-2.2 Local historic resources. We encourage property owners to maintain the historic integrity of resources on their property by (listed in order of preference): preservation, adaptive reuse, or memorialization.

CR-2.3 Paleontological and archaeological resources. We strive to protect paleontological and archaeological resources from loss or destruction by requiring that new development include appropriate mitigation to preserve the quality and integrity of these resources. We require new development to avoid paleontological and archeological resources whenever possible. If avoidance is not possible, we require the salvage and preservation of paleontological and archeological resources.

CR-2.4 Partnerships. We encourage partnerships to champion and financially support the preservation and restoration of historic sites, structures, and districts.

CR-2.5 Public awareness and education. We increase public awareness and conduct education efforts about the unique historic, natural, tribal, and cultural resources in San Bernardino County through the County Museum and in collaboration with other entities and organizations.

PALEONTOLOGICAL RESOURCE POTENTIAL

Absent specific agency guidelines, most professional paleontologists in California adhere to the guidelines set forth by SVP (2010) to determine the course of paleontological mitigation for a given project. These guidelines establish protocols for the assessment of the paleontological resource potential of underlying geologic units and outline measures to mitigate adverse impacts that could result from project development. Using baseline information gathered during a paleontological resource assessment, the paleontological resource potential of the geologic unit(s) (or members thereof) underlying a Project area can be assigned to one of four categories defined by SVP (2010). Although these standards were written specifically to protect vertebrate paleontological resources, all fields of paleontology have adopted the following guidelines:

HIGH POTENTIAL (SENSITIVITY)

Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered have a high potential for containing significant non-renewable fossiliferous resources. These units include but are not limited to, sedimentary formations and some volcanic formations which contain significant nonrenewable.

LOW POTENTIAL (SENSITIVITY)

Sedimentary rock units that are potentially fossiliferous but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well documented and understood taphonomic, phylogenetic species and habitat ecology. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils prior to the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations. However, as excavation for construction gets underway it is possible that significant and unanticipated paleontological resources might be encountered and require a change of classification from Low to High Potential and, thus, require monitoring and mitigation if the resources are found to be significant.

UNDETERMINED POTENTIAL (SENSITIVITY)

Specific areas underlain by sedimentary rock units for which little information is available have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before programs of impact mitigation for such areas may be developed.

NO POTENTIAL

Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

METHODS

To assess whether a particular area has the potential to contain significant fossil resources at the subsurface, it is necessary to review published geologic mapping to determine the geology and stratigraphy of the area. Geologic units are considered "sensitive" for paleontological resources if they are known to contain significant fossils anywhere in their extent. Therefore, a search of pertinent local and regional museum repositories for paleontological localities within and nearby the Project area is necessary to determine whether fossil localities have been previously discovered within a particular rock unit. For this Project, a formal museum records search was conducted at the SBCM. Informal records searches were also conducted of the online University of California Museum of Paleontology Collections and San Diego Natural History Museum Collections, the online Paleobiology Database and FAUNMAP, and other published and unpublished geological and paleontological literature of the area.

RESOURCE CONTEXT

GEOLOGIC SETTING

The Project area is in the southwestern portion of the Mojave Desert geomorphic province. The Mojave Desert is a broad interior region of isolated mountain ranges separated by expanses of desert plains, bordered and controlled by two prominent faults, the Garlock fault to the northwest and the San Andreas fault to the southwest (California Geological Survey, 2002). Locally, the Project area is in a valley basin surrounded by mountains of igneous intrusions (Dibblee, 1967). Sediments in the basin area are dominated by alluvial detritus from the surrounding mountains deposited in the Pleistocene and Holocene Epochs (Dibblee, 1967).

SITE SPECIFIC GEOLOGY AND PALEONTOLOGY

According to Hernandez and Tan (2007), the Project is underlain by Very old alluvial deposits (Qvoa) of sand and gravel from the early Pleistocene Epoch (2.6 million years ago [mya] to 11,700 years ago; Hernandez and Tan [2007] are uncertain of the age limit of the oldest Qvoa and place the oldest deposits at possibly the latest Miocene Epoch [23 mya to 5.3 mya]). Old alluvial deposits (Qoa) are composed of fine- to medium-grained sand and fine- to medium-grained gravel of inactive alluvial fans from the late Pleistocene Epoch, and Wash deposits (Qw) of the Holocene Epoch (11,700 years ago to today) are composed of unconsolidated fine- to coarse-grained sand and gravel (Figure 3). All units are sourced from the Fairview Valley Formation, Sidewinder Volcanic series, and local plutonic intrusions, all of the Mesozoic Era (251–66 mya) (Hernandez and Tan 2007). Holocene units are typically considered to have a low paleontological sensitivity, as they are too young to have accumulated and preserved significant biologic material, but often transition with depth into high sensitivity Pleistocene deposits. Elsewhere in San Bernardino County, Pleistocene deposits have produced remains of a diverse terrestrial fauna, including ground sloth, deer, mammoth, camel, horse, bison, badger, mole, rabbit, gray fox, coyote, snake, and rodent (Jefferson, 1991a, 1991b; Miller, 1971; Reynolds and Reynolds, 1991).

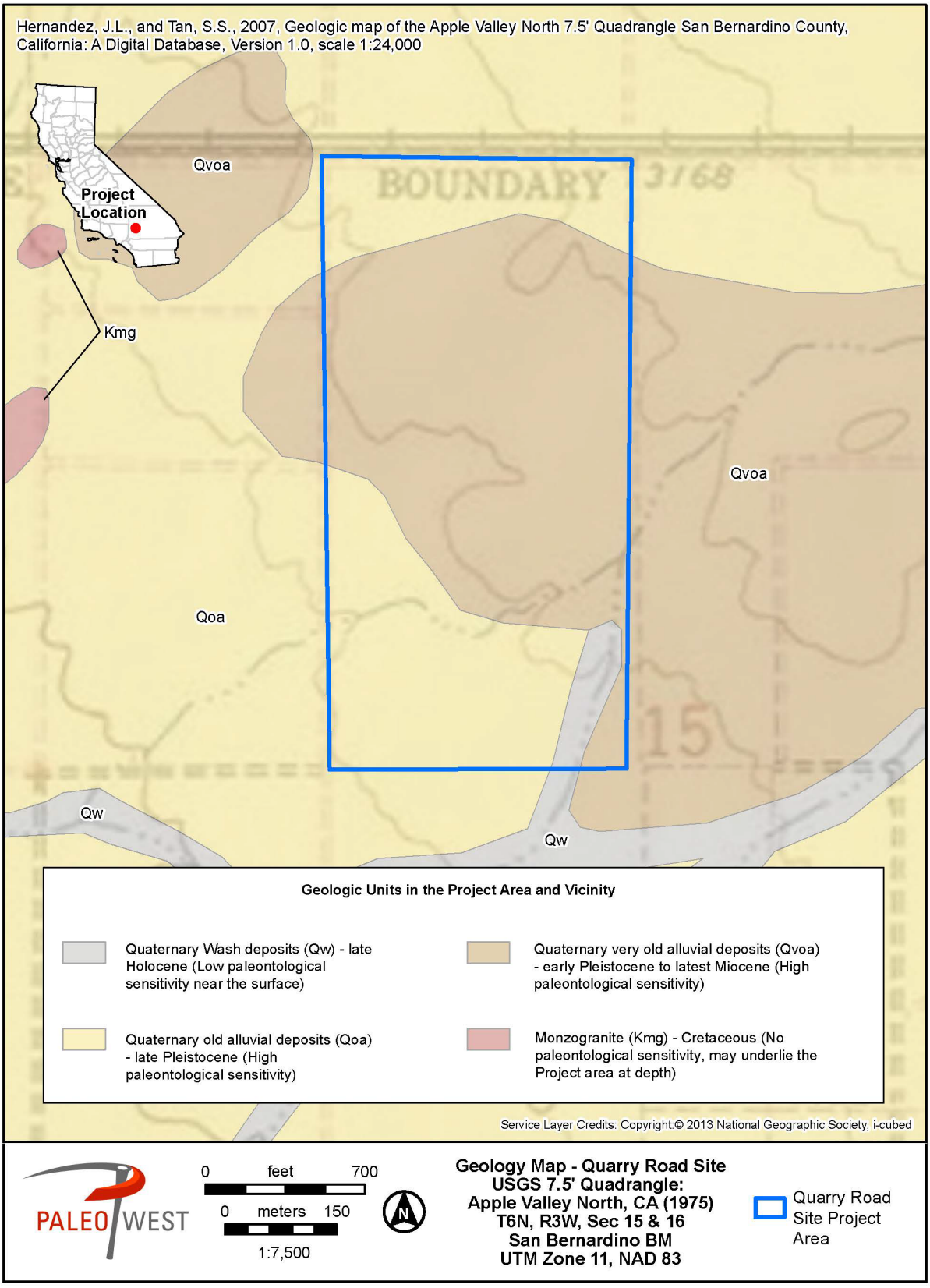


Figure 3. Geologic map of the Project area.

RECORDS SEARCH RESULTS

The SBCM records search did not produce any fossil localities from within the Project area, nor within five miles. Pleistocene alluvial sediments like those in the Project area are highly fossiliferous in Victorville, Adelanto, and southern Apple Valley, and the nearest fossil locality in Pleistocene deposits produced in the SBCM records search was eight miles west-southwest of the Project area near George Air Force Base (SBCM 1.114.33B), and produced remains of *Coleonyx variegatus* (Western banded gecko), Mammalia indet., *Lepus* sp. (hare), Rodentia indet., *Thomomys* sp. (Western pocket gopher), *Perognathus* cf. *longimembris* (little pocket mouse), *Neotoma* cf. *albigula* (white-throated wood rat), and Plantae root traces, all under Holocene deposits at an unspecified depth (Appendix A). Searches of online databases and other literature did not produce any additional fossil localities within three miles of the Project area.

FINDINGS

Based on the literature review and museum records search results, and in accordance with the SVP (2010) sensitivity scale, the Quaternary older alluvial deposits mapped in the Project area have high paleontological sensitivity because similar deposits have yielded Pleistocene vertebrate fossils in the vicinity. Qw mapped in the Project area is Holocene age at the surface but may transition into Pleistocene age deposits with depth. According to SVP (2010), Holocene deposits have a low paleontological sensitivity, but the older Pleistocene deposits, Qoa and Qvoa, would have a high paleontological sensitivity. Due to the presence of Pleistocene age fossil localities in the vicinity, Project related ground disturbance has the potential to impact paleontological resources in the Qvoa, Qoa, and at depth in the Qw.

Table 1. Geologic Units and their Paleontological Sensitivity

Geologic Unit[1]	Age	Fossils Present[2]	Paleontological Sensitivity
Quaternary wash deposits (Qw)	Late Holocene	None	Low
Quaternary old alluvial deposits (Qoa)	Late Pleistocene	Snake, lizard, hare, rodent, plant, ground sloth, deer, mammoth, camel, horse, bison, badger, mole, rabbit, gray fox, coyote	High
Quaternary very old alluvial deposits (Qvoa)	Early Pleistocene		High

[1] Hernandez and Tan, 2007.
[2] Jefferson, 1991a, 1991b; Miller, 1971; Reynolds and Reynolds, 1991.

RECOMMENDATIONS

In general, the potential for a given project to result in negative impacts to paleontological resources is directly proportional to the amount of ground disturbance associated with the project; thus, the higher the amount of ground disturbances within geological deposits with a known paleontological sensitivity, the greater the potential for negative impacts to paleontological resources. Since this Project entails excavation for a warehouse complex, new ground disturbances are anticipated. The presence of Pleistocene-age sediment at the surface, and potentially at depth in the Project area, suggests that ground disturbance may result in

significant impacts under CEQA to paleontological resources, such as destruction, damage, or loss of scientifically important paleontological resources. A qualified paleontologist should be retained to develop and implement the measures recommended below. These measures have been developed in accordance with SVP guidelines; if implemented, these measures will satisfy the requirements of CEQA.

WORKER'S ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

Prior to the start of the proposed Project activities, all field personnel will receive a worker's environmental awareness training on paleontological resources. The training will provide a description of the laws and ordinances protecting fossil resources, the types of fossil resources that may be encountered in the Project area, the role of the paleontological monitor, outline steps to follow if a fossil discovery is made, and provide contact information for the Project Paleontologist. The training will be developed by the Project Paleontologist and can be delivered concurrent with other training including cultural, biological, safety, et cetera.

PALEONTOLOGICAL MITIGATION MONITORING

Prior to the commencement of ground disturbing activities, a professional paleontologist will be retained to prepare and implement a paleontological mitigation plan for the Project. The plan will describe the monitoring required during ground disturbing activities as described in the sections below.

Paleontological Monitoring

All construction activities that disturb undisturbed Pleistocene deposits should be monitored on a full-time basis by a qualified paleontological monitor who will work under the supervision of the professional paleontologist and following the SVP (2010) guidelines. Full-time monitoring is defined as a paleontological monitor being present during 100 percent of ground disturbing activities that include excavation and grading. Ground disturbing activity that only impacts Holocene deposits will not require monitoring. Work activities that do not involve ground disturbances do not require monitoring (i.e., laydown yards, etc.).

All paleontological work will be directed by the professional paleontologist and reported daily on a Daily Monitoring Record using an electronic tablet. At a minimum, information on the form will include areas monitored, monitor name(s), a summary of monitoring activities, and a description of the disturbed geologic units including their stratigraphic context. Cut exposures will be examined and observed geologic features will be recorded. Recording of stratigraphic data will be an ongoing task during monitoring to provide context for any eventual fossil discoveries. The goal of this work is to define the nature of fossil-bearing sedimentary units within the Project area, determine their areal extent and depositional contacts, and record any evidence of sedimentary structures or deformation. Standard geologic and stratigraphic data collected include lithologic descriptions (i.e., color, sorting, texture, structures, and grain size, and compositional percentages), stratigraphic relationships (i.e., bedding type, thickness, and contacts), and geographic position (i.e., Universal Transverse Mercator [UTM] coordinates). Stratigraphic sections will be routinely measured in areas where paleontological resources are recovered.

Matrix Sampling and Microfossil Screening

Monitoring is largely a visual inspection of sediments; therefore, the most likely fossils to be observed will be macrofossils of vertebrates (bones, teeth, tusk) or invertebrates (shells). Most microfossils (diatoms, pollen) are too small to be seen with the naked eye. However, at the discretion of the professional paleontologist, the monitor will periodically screen sediments to check for the presence of microfossils that can be seen with the aid of a hand lens (i.e., microvertebrates). Should microvertebrate fossils be encountered during the screening process, then bulk matrix samples will be taken for processing off site. For each fossiliferous horizon or paleosol, a standard sample (4.0 cubic yards or 6,000 pounds) will be collected for subsequent "wet-screening" per SVP (2010) guidelines. All samples will be accompanied by pertinent geologic and stratigraphic information recorded on a field collection tag. Data will include the following: Project name/Project number, sample number and date, geologic formation (and unit, if applicable) and age, lithologic description, stratigraphic data, UTM coordinates and elevation, other locational data.

Equipment and Supplies

The paleontological monitor will have a mobile tablet equipped with technical software, including Global Positioning System (GPS) applications, a digital camera, compass, and reporting applications. The monitor will also be supplied with a tool kit that contains specimen containers, matrix bags, field labels, tools (shovel, pick, awls, chisels, dental picks, pin vises, brushes, etc.), chemical preservatives (e.g., Vinac), and plaster. The monitor will also have fluorescent flagging tape and survey stakes to delineate temporary construction exclusion zones. For microfossil screening, the monitor will have hand sieves, 5-gallon buckets, and an eye loupe. At all times, the monitor will wear the appropriate personal protective equipment (PPE) in compliance with on-site contractor PPE work rules, including a hard hat, heavy footwear, sleeved shirt, long pants, safety glasses, and a high-visibility safety vest.

FOSSIL DISCOVERIES

If a paleontological resource is discovered, the monitor will have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and, if appropriate, collected. If the resource is determined to be of scientific significance, the Project Paleontologist shall complete the following:

Salvage of Fossils

If fossils are discovered, all work in the immediate vicinity should be halted to allow the paleontological monitor, and/or Project Paleontologist to evaluate the discovery and determine if the fossil may be considered significant. If the fossils are determined to be potentially significant, the monitor will collect the fossil specimen(s) and associated data. For this Project, the SVP (2010) criteria of scientific significance will be used to make this determination in the field. In general, small unidentifiable vertebrate fossils will not be collected and only well preserved or representative invertebrates or plants will be salvaged if avoidance is not feasible.

Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case the

paleontologist should have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner. A temporary construction exclusion zone, consisting at a minimum of lath and flagging tape, will be erected around the discovery. The exclusion zone acts as a buffer around the discovery and is maintained for safety. The monitor will immediately report the discovery to the Site Superintendent and the professional paleontologist so that appropriate notifications can be immediately issued to the City. The size of the buffer may be increased or decreased once the monitor adequately explores the discovery to determine its size and significance.

At each fossil locality, the monitor will document UTM coordinates, describe the encasing sediments in detail, record stratigraphic context and fossil orientation, and photographically document the fossil(s). The fossil(s) will then be collected and placed in bags or trays for transport to a paleontology laboratory. At the discretion of the professional paleontologist, matrix samples also may be collected for subsequent laboratory studies (i.e., microfossil analysis). Immediately following fossil collection, the temporary construction exclusion zone will be removed and the monitor or professional paleontologist will notify the Site Superintendent that excavation activities may resume in the area of the find.

Unanticipated Fossil Discovery

An unanticipated fossil discovery consists of fossils that are found while a paleontological monitor is not on-site, for example while construction activities are occurring in the upper 9 ft of sediments where a paleontological monitor is not required to be onsite. If potentially significant fossils are discovered by construction personnel, construction activity should cease in the immediate area of the discovery site (50-ft radius is usually sufficient), and the discovery should be immediately reported to the lead site superintendent, who will notify the professional paleontologist and a paleontological monitor. The paleontological monitor will inspect the fossil(s) and in coordination with the professional paleontologist, will determine if additional mitigation (collection and curation) is required. If the paleontological resource(s) at the discovery site are deemed to be scientifically important, ground disturbing construction activities should not resume in the immediate area of the paleontological resource until the fossil(s) has been recovered and associated data recorded.

FOSSIL PREPARATION AND CURATION

The paleontological mitigation plan will identify the museum that has agreed to accept fossils that may be discovered during Project related excavations. Upon completion of fieldwork, all significant fossils collected will be prepared in a properly equipped laboratory to a point ready for curation. Preparation will include the careful removal of excess matrix from fossil materials using manual devices such as dental picks or pin vises; for harder materials, a pneumatic air scribe may be used. For microfossil screening, chemicals such as detergents or weak acids may be used to further break down the matrix so that it can be picked for fossils under a microscope. All fossil specimens will be stabilized with glues and consolidants as needed and repaired, as necessary. Especially fragile specimens may need a support cradle constructed out of specialty plaster. Microvertebrates may require pin-mounting, a process by which the specimen is mounted using glue or wax onto a pinhead that is embedded in a cork and stored in a glass vial.

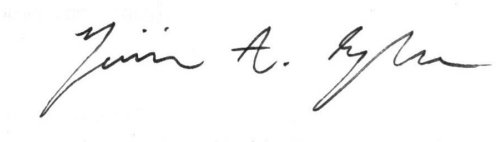
During preparation and inventory, the fossils specimens will be identified to the lowest taxonomic level practical prior to curation at an accredited museum. Following laboratory preparation, all fossil specimens will be cataloged, and inventoried into an electronic database. The fossil specimens must be delivered to the accredited museum or repository no later than 90 days after all fieldwork is completed. The fossil specimens will be accompanied by field notes, photographs, locality data, a signed deed of gift from the Project owner, and a copy of the final technical report. The cost of curation will be assessed by the repository and will be the responsibility of the client.

FINAL PALEONTOLOGICAL MITIGATION REPORT

Upon completion of ground disturbing activity (and curation of fossils, if necessary) the Project Paleontologist should prepare a final mitigation and monitoring report outlining the results of the mitigation and monitoring program. The report should include discussion of the location, duration and methods of the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated. A map will be appended to the report depicting areas that were monitored for paleontological resources and will delineate any Project areas that will require monitoring should any future site developments occur. The report will be submitted to City within 60 business days following completion of monitoring and laboratory work. If the monitoring efforts produced fossils, then a copy of the report will also be submitted to the designated museum repository.

Thank you for contacting PaleoWest for this Project. If you have any questions, please do not hesitate to contact us.

Sincerely,



Benjamin Scherzer, M.S. | Senior Paleontologist
PALEOWEST

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Attachment A.
SBCM Record Search Results

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SAN BERNARDINO COUNTY

Museum
Division of Earth Science

Scott Kottkamp
Curator of Earth Science

6 September, 2022

PaleoWest
Attn: Heather Clifford
517 S. Ivy Avenue
Monrovia, CA 91016

PALEONTOLOGY RECORDS REVIEW for proposed site of Quarry Road and Cordova Road Survey 22-0512, Apple Valley, San Bernardino County, California

Dear Ms. Clifford,

The Division of Earth Science of the San Bernardino County Museum (SBCM) has completed a record search for the above-named project in San Bernardino County, California. The proposed project site (Fontana Distribution Facility) is in the city of Apple Valley, California as shown on the United States Geological Survey (USGS) 7.5 minute Apple Valley North quadrangle.

Geologic mapping of that region done by Hernandez and Tan (2007) indicates the entire western project area is located atop late Pleistocene alluvial deposits (Qoa). Qoa regionally consists of brown colored fine to medium grained sand, as well as brown clay. Surface exposures are smooth in texture, have slight desert varnish, and are composed of the aforementioned sand as well as angular fine-to-medium gravel clasts. These sediments are mostly sourced from the Fairview Valley Formation, the Sidewinder Volcanic series, and minor plutonic clasts (Hernandez and Tan 2007). Similar Pleistocene age alluvial deposits have been found to be highly fossiliferous throughout San Bernardino County, yielding the remains of mastodons, mammoths, camels, horses, bison, and ground sloths, as well as microfossils including rodents (Reynolds and Reynolds 1991). The north end and southwest corner of the eastern project area are also situated atop Qoa, as is most of the half mile project buffer.

Qoa overlies older alluvial deposits of early Pleistocene back to possibly late Miocene age (Qvoa; Hernandez and Tan 2007). Qvoa is a moderately consolidated, strong-brown to yellow-red sand and fine to coarse gravel, with rare boulders. Sediments are from the same sources as Qoa, but can be distinguished by color, absence of clay, maximum size of gravel clasts, strong desert varnish, and caliche-coated gravel clasts. Qvoa is possibly fossiliferous, and occurs at the surface over much of the eastern project area, as well as immediately east and northwest of that area. Qvoa in turn directly overlies Cretaceous monzogranite units (Kmg), of which there is a surface exposure within the half mile buffer (Hernandez and Tan 2007). Kmg is nonfossiliferous. Other nearby and potentially underlying Mesozoic units are likewise of igneous origin and not fossiliferous.

For this review, I conducted a search of the Regional Paleontological Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no paleontological resources have been discovered within the proposed project site, nor within 5 miles of the project site. Pleistocene alluvial sediments like those at the project site are highly fossiliferous in Victorville, Adelanto, and southern Apple Valley, and thus the absence of nearby recorded fossil localities is likely because of lack of data rather than lack of fossils. The nearest paleontological locality is SBCM 1.114.33B, approximately 8 miles west-southwest of the project site. SBCM 1.114.33B occurs within mid to late Pleistocene (Irvingtonian to early Rancholabrean) fine-grained lacustrine clay, silt, and gravel. Taxa found at the locality include: *Coleonyx variegatus*; Mammalia indet.; *Lepus* sp.; Rodentia indet.; *Thomomys* sp.; *Perognathus* cf. *longimembris*; *Neotoma* cf. *albigula*; and Plantae root traces. Bones are moderately permineralized while the rhizoliths are predominately preserved as casts. Fossils were recovered from eroding surface exposures of Qoa, as well as from subsurface Qoa from unspecified depth beneath Qa, during paleontological surveying near George Air Force Base in the 1980s. SBCM 1.114.33B is one example of a much larger series of paleontological localities found around the Mojave River east of what is now Southern California Logistics Airport. Other nearby localities produced fossils including Insecta shells/casings, Teleostei, Camelidae, and wide variety of terrestrial vertebrate microfossils.

This records search covers only the paleontological records of the San Bernardino County Museum. 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.

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

Sincerely,

Scott KottKamp

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