DOCKETED	
Docket Number:	21-AFC-02
Project Title:	Gem Energy Storage Center
TN #:	240751-14
Document Title:	Section 5_8_Paleontological Resources_Gem Energy Storage Center
Description:	This section presents the potential effects to paleontological resources from the construction and operation of the Gem Energy Storage Center (GESC) in unincorporated Kern County, California.
Filer:	Kari Miller
Organization:	Golder Associates USA Inc.
Submitter Role:	Applicant Representative
Submission Date:	12/1/2021 3:07:04 PM
Docketed Date:	12/1/2021

5.8 Paleontological Resources

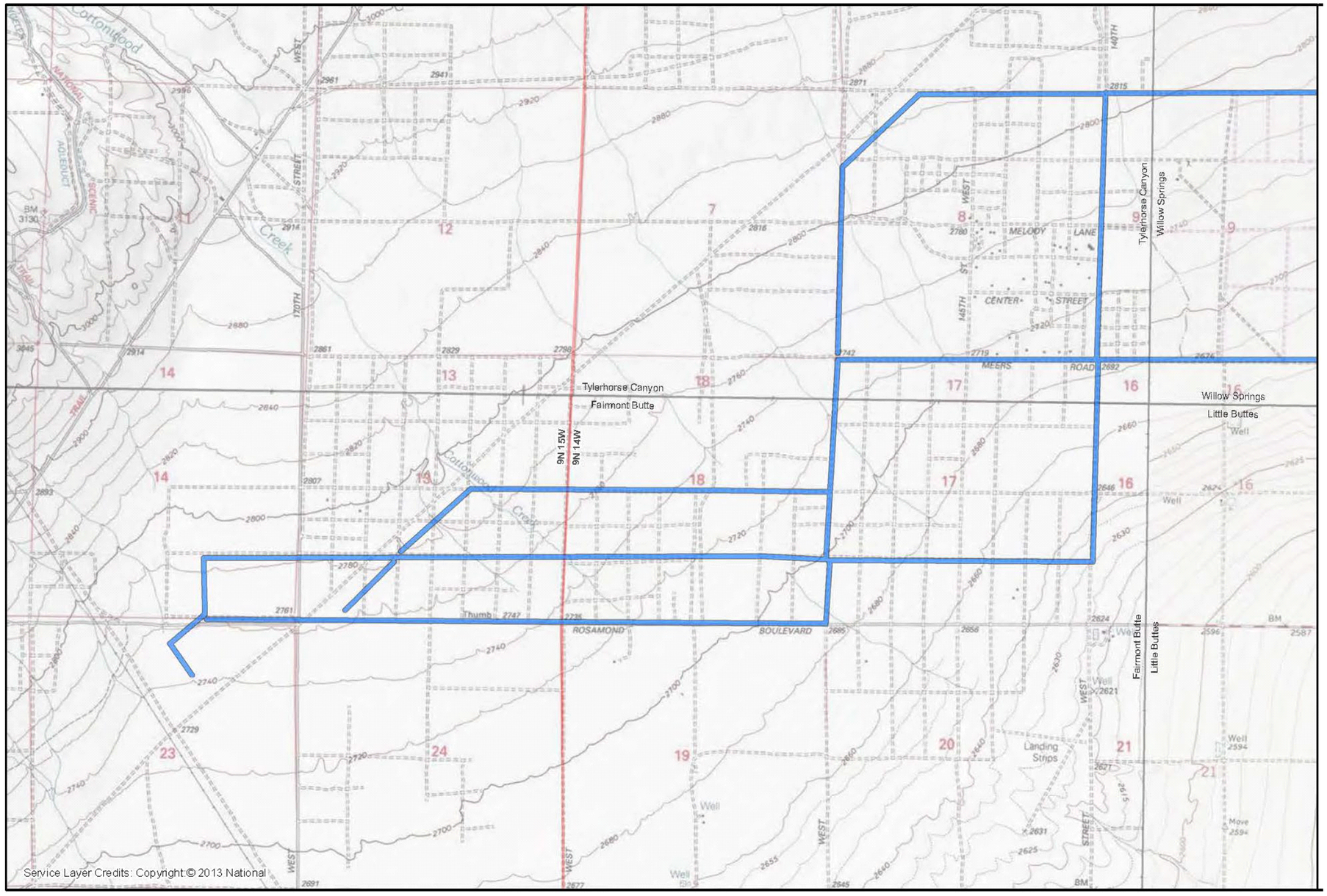
This section presents the potential effects to paleontological resources from the construction and operation of the Gem Energy Storage Center (GESC) in unincorporated Kern County, California. This section of the Application for Certification (AFC) meets all siting regulations of the California Energy Commission (CEC) and conforms to the recommendations of the Society of Vertebrate Paleontology (SVP). The CEC and SVP regulations and recommendations address the assessment of and mitigating impacts to paleontological resources resulting from earthmoving activities (CEC 2000; CEC 2007; and SVP 2010). Paleontology is the scientific study of life in the geologic past, based on examination of fossilized remains of once living organisms. Fossilized remains include traces of organisms' existence, plants, invertebrates, vertebrates, and microfossils. Microfossils are very small organisms that require magnification to identify.

The paleontological resources inventory and impact assessment for the GESC project was prepared by Benjamin Scherzer, M.S. of PaleoWest, LLC. Mr. Scherzer received his Bachelor of Science degree in Geosciences from Earlham College and his Master of Science in Earth Sciences from Montana State University-Bozeman. He has over 15 years of experience in leading and conducting paleontological and geological studies across the western United States. Mr. Scherzer has extensive experience in fieldwork, paleontology, sedimentology, and stratigraphy. He also has experience in fossil preparation and curation (PaleoWest 2021). This evaluation of paleontological resources within the study area includes the following elements:

- Section 5.8.1 discusses the affected environment, including the resource inventory and its results.
- Section 5.8.2 presents the environmental analysis and impact assessment.
- Section 5.8.3 considers cumulative effects to paleontological resources,
- Section 5.8.4 presents the Applicant's proposed mitigation measures,
- Section 5.8.5 discusses applicable laws, ordinances, regulations, and standards (LORS),
- Section 5.8.6 lists involved agencies,
- Section 5.8.7 lists permits, and
- Section 5.8.8 provides the references consulted.

5.8.1 Affected Environment

This section describes the affected environment for paleontological resources. **Figures 5.8-1 and 5.8-2** present the project study area for this paleontological resource inventory and impact assessment. This section begins by describing the physiographic and geological context of the project area, and then continues by describing the nature and types of fossil resources that occur near the GESC. It concludes by providing an assessment of the scientific importance of fossils that construction workers may be encounter during the construction of the GESC.



Source: PaleoWest 2021.

Project Location

REFERENCE

COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET

CLIENT
HYDROSTOR, INC.

PROJECT
GEM ENERGY STORAGE CENTER

TITLE
PROJECT LOCATION MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-09-29
PREPARED	MR
DESIGN	MR
REVIEW	JP
APPROVED	DS

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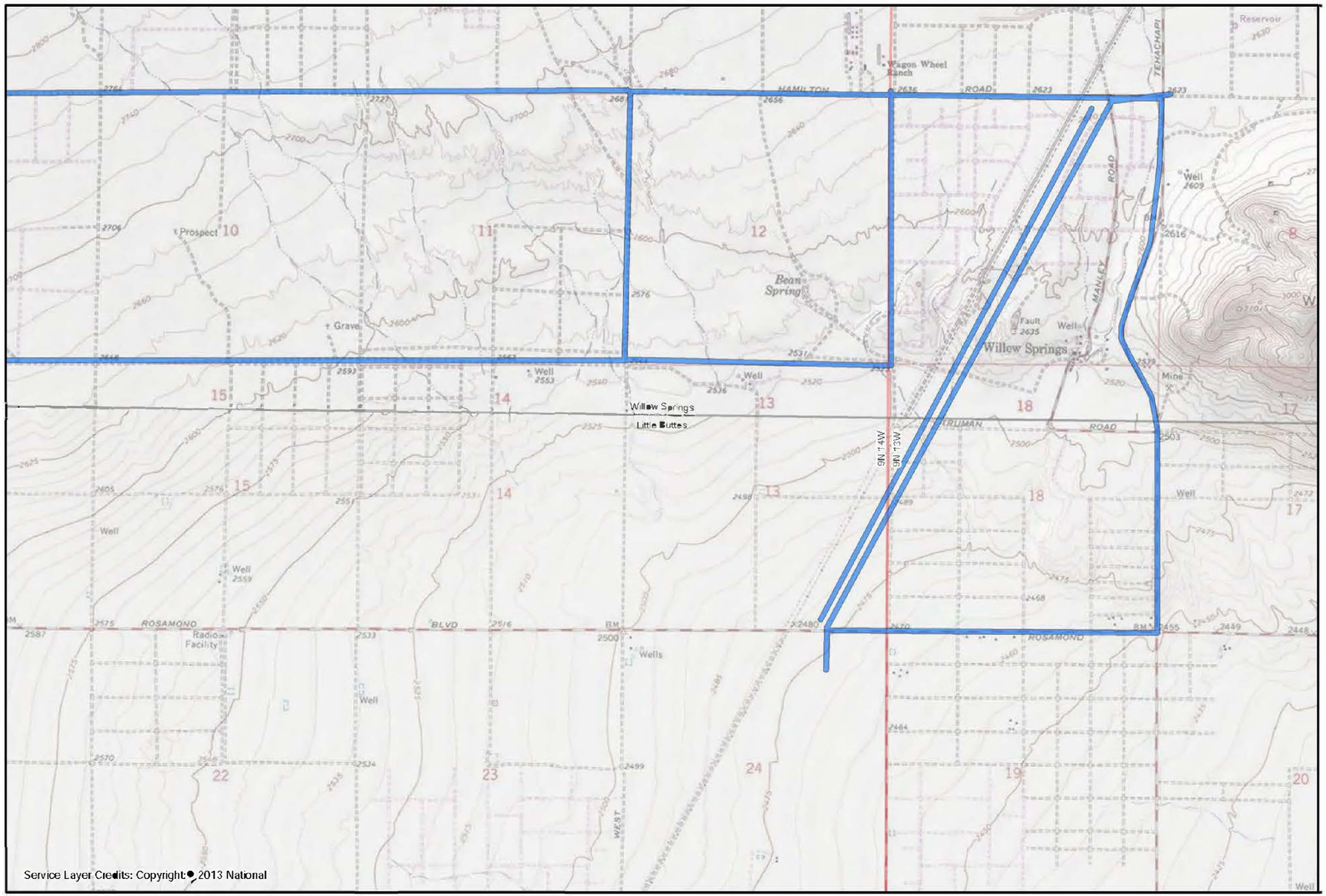

Source: PaleoWest 2021.

LEGEND

- Project Area
- USGS Quadrangle Boundary
- Township Boundary

Project Location

REFERENCE

COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET

CLIENT
HYDROSTOR, INC.

PROJECT
GEM ENERGY STORAGE CENTER

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5.8.1.1 Physiographic and Geologic Setting

The GESC project area is in the western region of the Mojave Desert geomorphic province (Mojave Desert) in southern California (Norris and Webb 1990). A geomorphic province is a region of unique topography and geology that geologist can readily distinguish from other regions based on its landforms and tectonic history. The Mojave Desert is bounded to the northwest by the Transverse Ranges and to the southeast by the Colorado Desert. The Sierra Nevada province and Basin and Ranges province bound the Mojave Desert's northern extent. Finally, the California-Nevada border and Colorado river establish the Mojave Desert's eastern boundary (Norris and Webb 1990). The Mojave Desert is wedged between the Garlock Fault running easterly along the southern side of the Sierra Nevada and extending into the Basin and Range province as well as, the San Andreas Fault running northwest along the Mojave Desert's western extent.

The western Mojave Desert contains three major rock groups, two of which relate to the presence of fossil deposition within the region. The following describes the two major rock groups that relate to the presence of fossil deposition:

- **Cenozoic-Age Rocks**: This rock group is from 65 million to 2 million years old. This rock group is mainly comprised of terrestrial sediments and volcanic rocks consisting of conglomerates, sandstones, shales, carbonates, tuffs, breccias, and intrusive and extrusive igneous rocks. These terrestrial sediments and volcanic rocks are related to a period of intense volcanism and extensional faulting. The collision of the North American continental plate with and overriding the Gulf of California Spreading Center caused the intense volcanism and extensional faulting (Dellinger 1988).
- **Quaternary-Age Rocks**: This rock group is from 2 million years old to present time. This rock group is mainly comprised of alluvial, fluvial and playa or lakebed deposits, primarily derived from the San Gabriel and Sierra Nevada Mountains. These deposits signify a transition into a period of uplift along the western extent of the region creating playa valleys with semi-arid climates where seasonal flooding eroded and carried large quantities of sediment downslope before depositing the material in thick layers on top of Cenozoic and older rocks (Dellinger 1988).

5.8.1.1 Physiographic and Geologic Setting

5.8.1.1.1 Resource Inventory Methods

Soil does not contain paleontological resources; however, geologic deposits and bedrock that underly the soil layer do contain said resources. Therefore, to ascertain whether a particular study area has the potential to contain significant fossil resources at the subsurface, it is necessary to review relevant scientific literature and geologic mapping to determine the geology and stratigraphy of the area. To delineate the boundaries of an area's paleontological sensitivity, it is necessary to determine the extent of the entire geologic unit. This is because paleontological sensitivity is not solely limited to surface exposures of fossil material.

To determine if prior discoveries of fossil localities have occurred within the Project area or a particular rock unit, Mr. Scherzer searched the following pertinent local and regional museum repositories for paleontological localities:

- The Natural History Museum of Los Angeles County (NHMLAC),
- University of California Museum of Paleontology Database (internet)
- San Diego Natural History Museum Collection Database (internet),
- The Paleobiology Database (internet),

- The Quaternary Faunal Mapping Project (FAUNMAP), and
- Other published geologic and paleontological literature that includes the Project area.

In addition to a review of reference and source material, Mr. Scherzer and his team performed a combination windshield and pedestrian survey of the Project area.

5.8.1.1.1 Resource Inventory Results

The paleontological resource potential of geologic units mapped within the Project area was assessed in accordance with the SVP 2010 classification systems.

5.8.1.1.1 Geological Units in the Mojave Desert

The GESC project consists of a series of linear segments across the playa in the community of Willow Springs, California. Willow Springs is northwest of Lancaster, California. According to published geologic maps, the GESC project area contains one geologic unit at the surface, *Holocene-aged Surficial Alluvial Deposits* (Dibblee 1963). Holocene-aged surficial alluvial deposits are unconsolidated alluvial sand, silt, and gravel. The ages of Holocene deposits are between 11,700 years old and present time (Dibblee 1963). In general, Holocene-aged units are too young to contain scientifically significant paleontological resources and as such, have low paleontological sensitivity.

In addition to Holocene-aged sediments, this area of the Mojave Desert may have Pleistocene-aged sediments below the ground surface (bgs). Pleistocene-aged sediments are between 2.6 million and 11,700 years old. The depth to these Pleistocene-aged sediments is highly variable depending on the thickness of the Holocene alluvial units. Pleistocene-aged deposits have the possibility to contain multiple fossil localities of terrestrial vertebrates, marine vertebrates, and invertebrates. Due to GESC's location and topography, the Holocene units are likely as thin as three feet in thickness within the project area (Mendieta and Daitch 2021).

Figure 5.8-3 presents the geologic units within the Willow Springs area. The following summarizes the geological units illustrated on Figure 5.8-3:

- **Quaternary alluvium**: This geologic unit is a Holocene-aged alluvial deposit, derived primarily from the Tehachapi Mountains to the northwest, forming an unconsolidated layer of alluvial sand, silt, and gravel across the Project area. Due to its young age, Quaternary alluvium are unlikely to contain significant fossil resources and have a low paleontological sensitivity. This unit has only produced one fossil locality.
- **Quaternary alluvial gravel and sand**: This geologic unit is a Pleistocene-aged alluvial deposit, also derived from the Tehachapi Mountains to the northwest, forming a more coarse-grained unconsolidated layer across the topographically higher foothills of the Mountains. Pleistocene-aged deposits have a high paleontological sensitivity based on fossils recovered from similar Pleistocene deposits throughout southern and central California.
- **Miocene-Pliocene Gem Hill:** This formation is a collection of Pliocene-aged or Miocene-aged felsite and porphyritic felsite, porphyry, and tuff, tuff-breccia, and tuffaceous sandstone. The Pliocene-aged geologic unit is between 5.3 million years and 2.5 million years old while, the Miocene-aged geologic unit is between 22 million years and 5.3 million years old. An exposure of the Miocene-Pliocene Gem Hill formation occurs on the Willow Springs Mountain. The location of the geologic unit's exposure is immediately outside the eastern edge of the GESC project area. Igneous rock units are typically not conducive to fossil preservation and have no paleontological sensitivity, however, the volcaniclastic members, particularly the tuffaceous sandstone, may have an undetermined or low paleontological sensitivity.

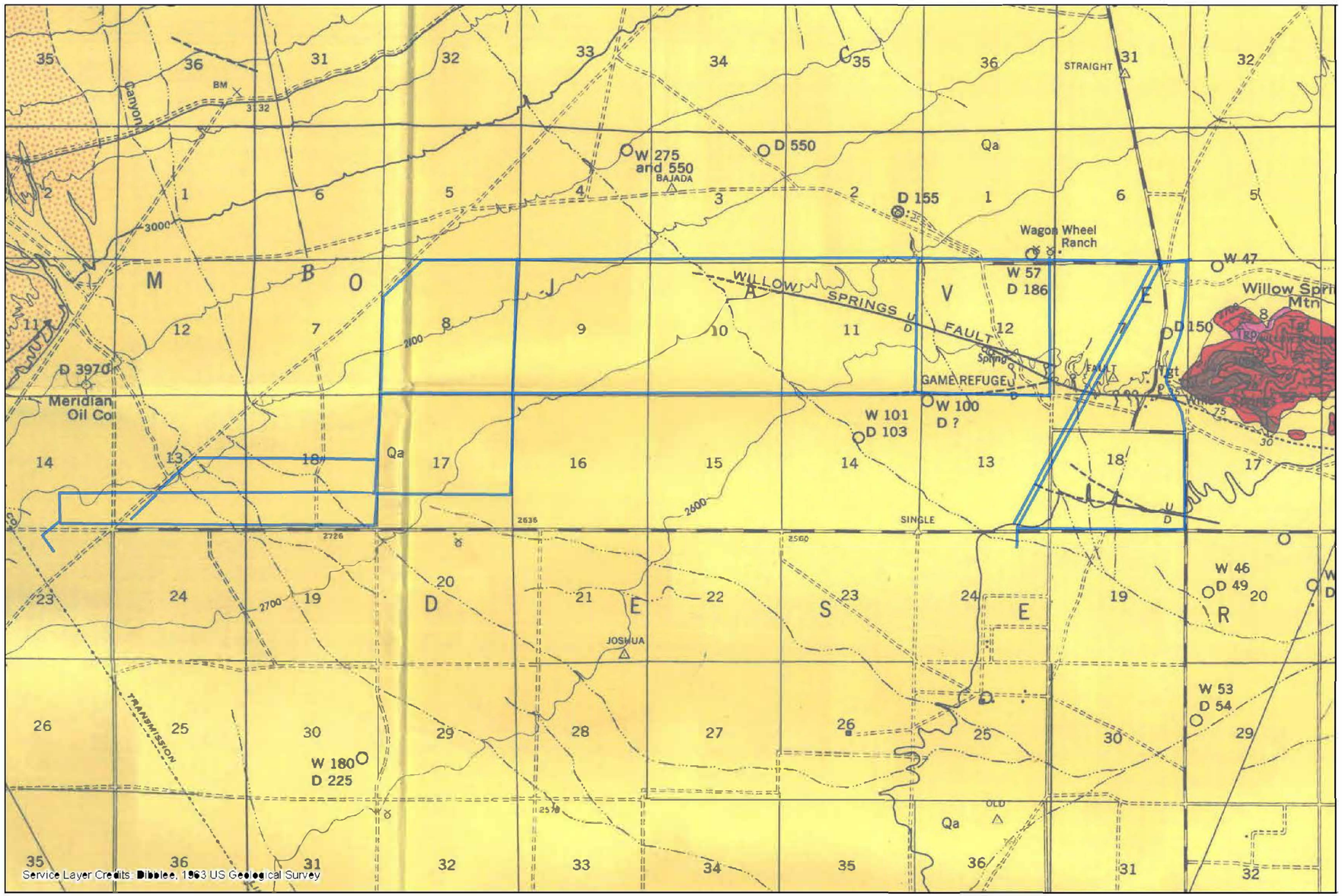
5.8.1.1.1 Results of the Records Search and Literature Review

The NHMLAC does not have any previously recorded vertebrate localities within the GESC project boundaries. They do report multiple fossil localities nearby in Pleistocene-aged deposits like those underlying the Project area (PaleoWest 2021). **Table 5.8-1** provides the results of the records search from NHMLAC.

Table 5.8 - 1: Records Search Results from Natural History Museum of Los Angeles County

ID	Taxon	Common Name	ERA	ID	Location
LACM VP 7891	Hemiauchenia	Lamine camelid	Pleistocene	Unknown	21 feet (ft) bgs
LACM VP 7853	Camelidae (camel), others not specified	Fish, amphibian, reptile, small mammal, camel	Pleistocene	Unknown (sandy loess under a dune deposit strand, sandy siltstone, siltstone to clayey siltstone)	3–11 ft bgs.
LACM VP 7884	Camelops hesternus	Camel	Pleistocene	Unknown (fluvial brown clayey silt)	4 ft bgs
LACM VP 445	Not specified	Invertebrate	Upper Pleistocene	Unknown (lacustrine deposits)	Unknown
LACM I 445	Not specified	Invertebrate	Pleistocene	Unknown	Unknown
LACM VP 5942-5952	Lampropeltis, Gambelia wislizenii, Sylvilagus, Chaetodippus, Dipodomys, Pituophis	Kingsnake, Pocket gopher, rabbit, Pocket mouse, Kangaroo Rat, snake	Holocene	Unknown	0–3 m bgs
LACM VP 7786	Microtus mexicanus	Vole	Unknown	Unknown alluvium (moderately indurated fined to medium grained silty sandstone)	10-11 ft bgs
LACM VP 3722	Equus	Horse	Pleistocene	Unknown	Unknown

Source: PaleoWest 2021.



Source: PaleoWest 2021.

LEGEND

USGS 7.5' Quadrangles: Tylerhorse Canyon, Ca (1966), Fairmont Butte, Ca (1975), Willow Springs, Ca (1977) & Little Buttes, Ca (1975)
T9N R15W, Secs 13-14 & 23-24; T9N R14W, Secs 1-4, 8-12 & 16-18; T9N R13W, Secs 7-8, 17-19 & 24

San Bernardino Baseline and Meridian
UTM Zone 11, NAD 83

- Project Area
- Qa
- Oa
- Gem Hill Formation

feet 5,000
meters 1,520
1:48,000

Project Location

REFERENCE

COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET

CLIENT
HYDROSTOR, INC.

PROJECT
GEM ENERGY STORAGE CENTER

TITLE
GEOLOGY MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-09-29
PREPARED	MR
DESIGN	MR
REVIEW	JP
APPROVED	DS

PROJECT No. 20449449 5.8 | CONTROL --- | Rev. --- | FIGURE **5.8-3**

5.8.1.1.1 Results of the Field Survey

Mr. Scherzer performed a combination pedestrian and windshield survey of the GESC project area. Mr. Scherzer applied the windshield survey methodology when the proposed gen-tie line was located along existing roadways. When the proposed gen-tie lines did not follow existing roadways, Mr. Scherzer applied a pedestrian survey methodology using 15-meter transects. Additionally, Mr. Scherzer surveyed the proposed Los Angeles Department of Water and Power (LADWP) Rosamond Substation and existing Southern California Edison (SCE) Whirlwind Substation for paleontological resources. The locations of the proposed and existing substations were surveyed using the pedestrian methodology.

The team paid special attention to road cuts and washes with stratigraphic exposure. Visibility ranged from 20 percent to 80 percent, largely depending on coverage by dry scrub and other vegetation. The surficial sediment in the GESC project area was a consistent unconsolidated, massive silt to gravel. As such, the surficial sediment is consistent with Quaternary alluvium. Mr. Scherzer observed abundant volcanic rock fragments on the eastern end of the GESC project area, bordering Willow Springs Mountain. Mr. Scherzer did not observe any paleontological resources during the assessment's field survey (PaleoWest 2021).

5.8.1.1.1 Paleontological Sensitivity of the GESC Right-of-Way

This report utilizes the SVP system to assess paleontological sensitivity and the level of effort required to manage potential impacts to significant fossil resources. SVP 2010 describes sedimentary rock units as having high, low, undetermined, or no potential for containing significant nonrenewable paleontological resources. This criterion is based on rock units in which significant fossils have been determined by previous studies to be present or likely to be present. While SVP published these standards to protect vertebrate paleontological resources, all fields of paleontology have adopted these sensitivity guidelines. The following defines each of the sensitivity guidelines:

i) **High Potential**: 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.

ii) **Low Potential**: 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.

iii) **Undetermined Potential**: 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.

iv) **No Potential**: Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources (SVP 2010).

Using the SVP system, the sensitivity of geologic units within the GESC project area was determined based on the relative abundance and risk of adverse impacts to vertebrate fossils and significant invertebrates and plants. **Table 5.8-2** presents the identified geologic unit and relative sensitivity.

Table 5.8-2: Paleontological Resource Sensitivity

Geologic Unit	Age	Typical Fossils	Paleontological Sensitivity
Quaternary alluvium	Holocene	Occasional terrestrial vertebrates	Low
Quaternary alluvial sand and gravel	Pleistocene	Abundant terrestrial vertebrates, occasional marine vertebrates, occasional invertebrates	High
Gem Hill Formation	Miocene-Pliocene	None	Undetermined to none

Source: PaleoWest 2021.

5.8.1 Environmental Analysis

The subsurface of the GESC area consists of Holocene alluvial deposits. Offsite linear components of the project cross the same types of geological contexts. The following subsections present the environmental effects to paleontological resources from construction and operation of the GESC.

5.8.1.1 Paleontological Resource Significance Criteria

Guidelines for the implementation of the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Sections 15000 et seq.) include, among the other questions to be answered in the Environmental Checklist (Section 15023, Appendix G), the following:

- "Would the project directly or indirectly destroy a unique paleontological resource or site?" and
- "Does the project have the potential to …eliminate important examples of the major periods of California…pre-history?"

These questions are answered in the affirmative based on the data and considerations provided above. In its standard guidelines for assessment and mitigation of adverse impacts to paleontological resources, the SVP 2010 notes that an individual fossil specimen is considered scientifically important and significant if it meets any of the following criteria:

> *identifiable, complete, well preserved, age-diagnostic, useful in paleoenvironmental reconstruction, a member of a rare species, a species that is part of a diverse assemblage, and a skeletal element different from, or a specimen more complete than, those now available for that species (SVP 2010).*

For example, the SVP considers identifiable land mammal or terrestrial plant fossils scientifically important because of their potential use in determining the age and paleoenvironment of the sediments in which they occur. Fossil plants are particularly important in this regard as they are organisms anchored in place, which make them a more sensitive indicator of their paleoenvironment.

For marine and shoreline sediments, invertebrate mega-fossils are scientifically important for the same reasons that land fossils are valuable in terrestrial deposits. Mollusks and cephalopods are examples of invertebrate mega-fossils. Marine microfossils such as *foraminifera* or *radiolaria* are much more common, and consequently

paleontologist do not usually consider them for resource protection because of their relative abundance. The value or importance of different fossil groups varies depending on the age and depositional environment of the stratigraphic unit that contains the fossils, their abundance in the record, and their degree of preservation.

Using these criteria and the sensitivity ratings provided above, Mr. Scherzer assessed the significance of potentially adverse impacts of earthmoving activities to paleontological resources. Any unmitigated impact on a fossil site, or on a fossil-bearing rock unit of high or moderate paleontological sensitivity, would be considered under CEQA's criteria to be significant.

5.8.1.1 Paleontological Resource Impact Assessment

5.8.1.1.1 Quaternary alluvium

The GESC project area is underlain entirely by Quaternary alluvium that is too young to preserve fossil resources and has been recommended to have a low paleontological sensitivity. As such, no impacts to paleontological resources will occur during excavations within these shallower sediments (PaleoWest 2021).

5.8.1.1.1 Quaternary alluvial gravel and sand

The Quaternary alluvium may transition into Quaternary alluvial gravel and sand, which has a recommended high paleontological sensitivity, as soon as 3 feet bgs. If workers encounter Quaternary alluvial gravel and sand, implementation of the recommended mitigation measures will reduce the potential impacts to a level less than significant (PaleoWest 2021).

5.8.1.1.1 Miocene-Pliocene Gem Hill Formation

The Gem Hill Formation may underlie the Quaternary alluvium at depth in the northeastern portion of the project area, but these deposits are largely igneous and have a recommended undetermined to no paleontological sensitivity. As such, no to minor impacts to paleontological resources will occur during excavations of material from this geologic unit (PaleoWest 2021).

Note that the operations and maintenance of the GESC will not require excavations in paleontologically sensitive sediments and as such, no impacts to paleontological resources will occur from the facility's operational phase.

5.8.1 Cumulative Effects

Reasonably foreseeable projects within or near the project area, as well as those permitted or in a permitting process but not constructed at this time, do not involve major excavations in geological formations with a high potential for containing significant fossils. Although GESC has some potential to encounter sediments of high paleontological sensitivity during construction of the facility, the mitigation measures proposed in the following subsections will reduce potential impacts to a level less than significant. Therefore, potential for impacts on paleontological resources from GESC to combine with those of other projects to reach a cumulatively considerable impact is very low.

5.8.1 Mitigation Measures

The mitigation measures proposed below comply with CEC environmental guidelines and conform to SVP standard guidelines for mitigating adverse construction-related impacts to paleontological resources. Implementation of these mitigation measures will further assure that potential impacts from project-related ground disturbance to paleontological resources will be insignificant (CEC 2000; CEC 2007; and SVP 2010).

5.8.1.1 Project Paleontological Resources Specialist

Prior to construction, the Applicant will submit the name and resume of a qualified Paleontological Resource Specialist (PRS) to the CEC for review and approval. The Applicant will provide the name and contact information of the PRS to the construction management team, cultural resource monitors, and project compliance manager. The PRS will prepare a paleontological resources awareness module (PRAM) as part of the worker education program. The Applicant will make the PRS available during ground-disturbing activities in case there is an unanticipated paleontological discovery.

5.8.1.1 Construction Personnel Education

The PRS will present PRAM training to all construction personnel involved in earthmoving activities and their supervisors prior to their working on the GESC. The PRS will inform workers that they may encounter fossils and will provide workers with information on the appearance of fossils, the role of paleontological monitors, and proper notification procedures. Construction personnel may receive subsequent paleontological trainings via video presentation and/or hard-copy training materials.

5.8.1.1 Develop and Implement a Paleontological Resources Monitoring and Mitigation Plan

Before the start of construction, the Applicant will submit for review to the CEC a Paleontological Resources Monitoring and Mitigation Plan (PRMMP). This plan will be prepared by the PRS and outline monitoring procedures and protocols that workers will follow if they discover paleontological resources during the construction of GESC. The PRMMP will stipulate that if workers encounter paleontological resources, all work in the immediate area of the find will stop and the Applicant's construction management team will notify the paleontological resource monitor. Construction will not resume near the paleontological find until the PRS releases the area.

The PRMMP will outline monitoring protocols and reporting requirements. The PRMMP will stipulate the following:

- Monitoring requirements are to be determined by the PRS, and
- Monitoring requirements will be based solely on the PRS's judgement of the paleontological sensitivity of the sediments disturbed by construction and the PRS's professional assessment regarding the ongoing potential of impacts to said resource.

5.8.1.1 Develop a Final Paleontological Resources Report

At the conclusion of GESC's construction, the PRS will prepare a final Paleontological Resources Report. If the project discovers no paleontological resources, the report will present documentation of monitoring activities and state that workers and monitors discovered no fossils. If project personnel do discover fossils, the report will include the nature of these fossils, tentative identifications (if possible), and the repository's name that the PRS deposited the fossils into. The Applicant will submit the final Paleontological Resources Report to the CEC as well as, Kern County.

5.8.1 Laws, Ordinances, Regulations, and Standards

Paleontological resources are nonrenewable scientific resources. Several federal, state, and local LORS govern their preservation. Such LORS include the federal Antiquities Act of 1906 and CEQA Section 15064.5 (California Office of Historic reservation 1983; Scott and Springer 2003; Fisk and Spencer 1994). In addition to legislative actions, the SVP have established professional standards for assessment and mitigation of adverse impacts to paleontological resources.

The Applicant will design, construct, and operate the GESC in accordance with all LORS applicable to paleontological resources. **Table 5.8-3** summarizes the federal, state, and local LORS applicable to paleontological resources. The following subsections include a discussion regarding each of the identified LORS and professional standards for paleontological resources assessment and impact mitigation.

Table 5.8 - 3: LORS Applicable to Paleontological Resources

Jurisdiction	LORS	Applicability	Application for Certification Reference	Project Conformity
Federal	Antiquities Act of 1906	Not applicable – No federal land involved, or federal entitlement required	Not applicable	Not applicable
Federal	National Environmental Policy Act	Not applicable – No federal land involved, or federal entitlement required	Not applicable	Not applicable
State	CEQA, Appendix G	Applicable – Requires assessment of the potential to affect paleontological resources during earthmoving activities	Sections 5.8.2, 5.8.3, and 5.8.5	Conformity Confirmed
State	PRC, Sections 5097.5/5097.9	Not applicable – Applies to state-owned land	Not applicable	Not applicable
Kern County	Kern County General Plan Land Use, Open Space, and Conservation Element. Policy 25.	The County will promote the preservation of cultural and historic resources which provide ties with the past and constitute a heritage value to residents and visitors.	Section 5.8.5.3	Conformity Confirmed

5.8.1.1 Federal LORS

Federal legislative protection for paleontological resources stems from the Antiquities Act of 1906 (Public Law [P.L.] 59-209; 16 United States Code 431 et seq.; 34 Stat. 225). The Antiquities Act of 1906 calls for protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal land. The Antiquities Act of 1906 forbids disturbance of any object of antiquity on federal land without a permit issued by the responsible managing agency. This act also establishes criminal sanctions for unauthorized appropriation or destruction of antiquities. The Federal Highways Act of 1958 clarified that the Antiquities Act applied to paleontological resources and authorized the use of funds appropriated under the Federal Highways

Act of 1956 for paleontological salvage in compliance with the Antiquities Act and any applicable state laws. In addition to the Antiquities Act of 1906, the National Environmental Policy Act of 1969 (P.L. 91-190, 31 Stat. 852, 42 U.S.C. 4321-4327) requires that important natural aspects of our national heritage be considered in assessing the environmental consequences of any project. Since the GESC project will not occur on federal lands or require federal approval, federal LORS do not apply.

5.8.1.1 State LORS

The CEC environmental review process under the Warren-Alquist Act is equivalent to that of CEQA (PRC Sections 21000 et seq.). CEQA requires that public agencies and private interests identify the environmental consequences of their proposed projects on any object or site of significance to the scientific annals of California (Division I, California PRC: 5020.1 [b]). The CEQA Guidelines in Public Resource Code (PRC) Sections 15000 et seq., define procedures, types of activities, persons, and public agencies required to comply with CEQA. Appendix G in Section 15023 of CEQA provides an Environmental Checklist of questions that a lead agency should normally address if relevant to a project's environmental impacts. PRC Section 21081.6, entitled Mitigation Monitoring Compliance and Reporting, requires that the CEQA lead agency demonstrate project compliance with mitigation measures developed during the environmental impact review process.

California PRC Chapter 1.7, Section 5097.5/5097.9 (Stats. 1965, c. 1136, p. 2792) entitled Archaeological, Paleontological, and Historical Sites provides other state requirements for paleontological resource management. This statute defines any unauthorized disturbance or removal of a fossil site or remains on public land as a misdemeanor, and it specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources. PRC Section 5097.5/5097.9 does not apply to GESC because construction or other related project impacts will not occur on state-owned or managed lands and because no state agency is intended to obtain ownership of project lands during the term of the project license.

5.8.1.1 Local LORS

Policy 25 of the Kern County General Plan Land Use, Open Space, and Conservation Element states that the County will promote the preservation of cultural and historic resources which provide ties with the past and constitute *a heritage* value to residents and visitors. In areas of known paleontological resources, the County should address the preservation of these resources where feasible.

5.8.1.1 Professional Standards

The SVP, an international organization of professional paleontologists, has established standard guidelines that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing paleontologists in the nation follow the SVP's guidelines and extend those to address other types of fossils of scientific significance such as invertebrate fossils and paleobotanical specimens.

5.8.1 Agencies and Agency Contacts

There are no agencies having blanket jurisdiction over paleontological resources. The CEC has jurisdiction over paleontological resources for this project. The Kern County General Plan requires that paleontological resources assessments and mitigation be performed by a professional paleontologist. If encountered, the Applicant's PRS will submit scientifically significant fossil specimens and associated site records to the closest regional repository in operation, which is the NHMLAC. **Table 5.8-4** presents the agency contacts for the NHMLAC.

Table 5.8-4: Agency Contacts for Paleontological Resources

Issue	Agency	Contact
Paleontological Resources Documentation and Specimen Repository	Natural History Museum of Los Angeles County	John M. Cahoon Collections Manager, History (Seaver Center for Western History Research) 900 Exposition Blvd. Los Angeles, CA 90007 Phone: (213) 763-3325 jcahoon@nhm.org

5.8.1 Permits and Permit Schedule

No state, county, or city agency requires a paleontological collecting permit to allow for the recovery of fossil remains discovered because of construction-related earthmoving on this project site.

5.8.1 References

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