
Appendix J

Paleontological Resources Inventory Report

Paleontological Resources Inventory
Memorandum

Ventura Compressor Station

MARCH 2023

Prepared for:

Southern California Gas Company

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Subject: Paleontological Resources Inventory Memorandum for the Ventura Compressor Station Project

In accordance with federal, state, and the Society of Vertebrate Paleontology (SVP 2010) guidelines, Dudek conducted a paleontological resources inventory for the Southern California Gas Company (SoCalGas) Ventura Compressor Station Project (Project) in the City of Ventura, California (Figure 1 – Project Location) (Figures are provided at the end of this memorandum). The inventory included a Natural History of Los Angeles County (LACM) paleontological records search and a review of geological mapping and geological and paleontological literature. The results of the paleontological records search indicated that there are no previously recorded fossil localities that appear directly within the Project site; however, the LACM reported fossil localities nearby from the same geological units that potentially underlie the Project site at depth.

As portions of the Project site have never been developed, and the Project site is underlain by a geological unit with low paleontological sensitivity that increases to high with depth, there is a potential to encounter intact subsurface paleontological resources at depth. However, the geotechnical report prepared by Wood (2019) indicated the Holocene wash deposits, which are mapped on the surface of the project site and have low paleontological sensitivity, extend to a depth of at least 75.5 feet below the surface. Therefore, a paleontological monitoring program is not necessary since construction activities associated with the Project are not anticipated to extend beyond this depth. This memorandum was prepared by Michael Williams, Ph.D., with editorial comments by Sarah Siren, M.Sc. Dr. Williams and Ms. Siren are qualified Principal Investigators (PIs) for Paleontology in accordance with federal and state CEQA guidelines and SVP (2010) standards.

1 Project Description

The Project includes installation of four reciprocating compressors (two gas engine driven with non-selective catalytic reduction emission control equipment and two electric motor driven) with an approximate combined 8,800 HP nominal as the electric motors have not been selected, one emergency gas-fired generator engine with enclosure, compressor building, office building and warehouse building. The compressor building (approximately 10,458 SF) will house the four compressors and will have an overhead crane for maintenance. The office building (approximately 4,641 SF) and the warehouse building (approximately 5,459 SF) will be pre-engineered metal buildings (PEMBs). Additional ancillary equipment will be installed which includes emergency shutdown stack, compressor area oily waste tanks, waste oil storage tank, engine oil storage tank, oily waste storage tank, compressor area oil waste tanks and coolant storage tanks. The main stormwater component which includes sumps and catch pits will be interconnected with underground piping that will drain to the detention pond.

The old facility will be decommissioned one year after the new facility is fully operational. No road improvements, pipeline extensions, or other permanent off-site infrastructure would be necessary to construct the Project.

2 Project Location

The existing 8.42-acre Project site is located at 1555 North Olive Street (Assessor Parcel Number [APN] 0680142030) in the City of Ventura (City) slightly west of State Route 33. Regional access to the Project site is via

U.S. Route 101. Industrial uses surround the Project site on the north, west, and south. A privately owned property (1675 North Olive Street, APN 0680090340) is located adjacent to the northwest corner of the Project site fronting North Olive Street.¹ The E.P. Foster Elementary School is located across North Olive Street to the east of the Project site. An approximately 2.53-acre temporary construction staging area would be located adjacent to the west side of the Project site.

3 Paleontological Resources

Paleontological resources are the remains or traces of plants and animals that are preserved in earth’s crust, and per the SVP (2010) guidelines, are older than written history or older than approximately 5,500 years. They are limited, nonrenewable resources of scientific and educational value, which are afforded protection under state laws and regulations. This analysis also complies with guidelines and significance criteria specified by SVP (2010). Table 1 provides definitions for high, low, undetermined, and no paleontological resource potential, or sensitivity, as set forth in and by the SVP (2010) guidelines.

Table 1. Paleontological Resource Sensitivity Criteria

Resource Sensitivity / Potential	Definition
High	Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Rock units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcanoclastic formations (e.g., ashes or tephtras), and some low-grade metamorphic rocks that contain significant paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils (e.g., middle Holocene and older, fine-grained fluvial sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstones, fine-grained marine sandstones). Paleontological potential consists of both (1) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils and (2) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data. Rock units that contain potentially datable organic remains older than late Holocene, including deposits associated with animal nests or middens, and rock units that may contain new vertebrate deposits, traces, or trackways are also classified as having high potential.
Low Potential	Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some rock units have low potential for yielding significant fossils. Such rock units will be poorly represented by fossil specimens in institutional collections or, based on general scientific consensus, only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule; e.g., basalt flows or Recent colluvium. Rock units with low potential typically will not require impact mitigation measures to protect fossils.

¹ Although APN 0680090340 is zoned and designated for industrial/manufacturing uses, the parcel appears to include a single-family residence on the northern half of the property (City of Ventura 2023). According to site reconnaissance and a Google Earth desktop analysis, the southern half of the APN 0680090340 includes a storage container, several ancillary non-habitable structures, and a vehicle storage/parking area (Google Earth 2023).

Table 1. Paleontological Resource Sensitivity Criteria

Resource Sensitivity / Potential	Definition
Undetermined Potential	Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine whether these rock units have high or low potential to contain significant paleontological resources. A field survey by a qualified professional paleontologist to specifically determine the paleontological resource potential of these rock units is required before a paleontological resource impact mitigation program can be developed. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.
No Potential	Some rock units have no potential to contain significant paleontological resources; for instance, high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Rock units with no paleontological resource potential require neither protection nor impact mitigation measures relative to paleontological resources.

Source: SVP (2010)

4 Regulatory Framework

Paleontological resources are considered non-renewable resources with scientific and educational value and thus are protected by federal, state and local laws and regulations.

4.1 Federal Laws

Paleontological Resources Preservation Act of 2009

The Omnibus Public Land Management Act, Paleontological Resource Preservation Subtitle (16 U.S.C. 470aaa et seq.) directs the Secretaries (Interior and Agriculture) to manage and protect paleontological resources on federal land using scientific principles and expertise. (This act is known by its common name, the Omnibus Act or the Paleontological Resources Preservation Act [PRPA].) The PRPA incorporates most of the recommendations of the report of the Secretary of the Interior titled “Assessment of Fossil Management on Federal and Indian Lands” to formulate a consistent paleontological resources management framework. In passing the PRPA, Congress officially recognized the scientific importance of paleontological resources on some federal lands by declaring that fossils from these lands are federal property that must be preserved and protected. The PRPA codifies existing policies of the BLM, National Park Service (NPS), U.S. Forest Service (USFS), Bureau of Reclamation, and the U.S. Fish and Wildlife Service, and provides the following:

- Uniform criminal and civil penalties for illegal sale and transport, and theft and vandalism of fossils from federal lands.
- Uniform minimum requirements for paleontological resource-use permit issuance (terms, conditions, and qualifications of applicants).

- Uniform definitions for “paleontological resources” and “casual collecting.”
- Uniform requirements for curation of federal fossils in approved repositories.

Federal legislative protections for scientifically significant fossils apply to projects that take place on federal lands (with certain exceptions, such as the Department of Defense, which continue to protect paleontological resources under the Antiquities Act). Such protections involve federal funding, require a federal permit, or involve crossing state lines.

Antiquities Act of 1906 (16 U.S.C. 431-433)

The Antiquities Act of 1906 states, in part:

... any person who shall appropriate, excavate, injure or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States, without the permission of the Secretary of the Department of the Government having jurisdiction over the lands on which said antiquities are situated, shall upon conviction, be fined in a sum of not more than five hundred dollars or be imprisoned for a period of not more than ninety days, or shall suffer both fine and imprisonment, in the discretion of the court.

Although there is no specific mention of natural or paleontological resources in the Antiquities Act, or in the act’s uniform rules and regulations (43 Code of Federal Regulations [CFR] 3]), “objects of antiquity” has been interpreted to include fossils by the NPS, BLM, USFS, and other federal agencies. Permits to collect fossils on lands administered by federal agencies are authorized under this act. Therefore, projects involving federal lands will require permits for both paleontological resource evaluation and mitigation efforts.

Archaeological and Paleontological Salvage (23 U.S.C. 305)

Statute 23 U.S.C. 305 amends the Antiquities Act of 1906. Specifically, it states:

Funds authorized to be appropriated to carry out this title to the extent approved as necessary, by the highway department of any State, may be used for archaeological and paleontological salvage in that state in compliance with the Act entitled “An Act for the preservation of American Antiquities,” approved June 8, 1906 (PL 59-209; 16 U.S.C. 431-433), and State laws where applicable.

This statute allows funding for mitigation of paleontological resources recovered pursuant to federal aid highway projects, provided that “excavated objects and information are to be used for public purposes without private gain to any individual or organization” (Federal Register [FR] 46[19]: 9570).

National Registry of Natural Landmarks (16 U.S.C. 461-467)

The National Natural Landmarks (NNL) program, established in 1962, is administered under the Historic Sites Act of 1935. Regulations were first published in 1980 under 36 CFR 1212 and the program was re-designated as 36 CFR 62 in 1981. A National Natural Landmark is defined as:

... an area designated by the Secretary of the Interior as being of national significance to the United States because it is an outstanding example(s) of major biological and geological features found within the boundaries of the United States or its Territories or on the Outer Continental Shelf (36 CFR 62.2).

National significance describes:

... an area that is one of the best examples of a biological community or geological feature within a natural region of the United States, including terrestrial communities, landforms, geological features and processes, habitats of native plant and animal species, or fossil evidence of the development of life (36 CFR 62.2).

Federal agencies and their agents should consider the existence and location of designated NNLs, and of areas found to meet the criteria for national significance, in assessing the effects of their activities on the environment under Section 102(2)(c) of the National Environmental Policy Act (NEPA) (42 U.S.C. 4321). The NPS is responsible for providing requested information about the National Natural Landmarks Program for these assessments (36 CFR 62.6[f]). However, other than consideration under NEPA, NNLs are afforded no special protection. Furthermore, there is no requirement to evaluate a paleontological resource for listing as an NNL. Finally, project proponents (state and local) are not obligated to prepare an application for listing potential NNLs, should such a resource be encountered during project planning and delivery.

Examples of geological and paleontological NNLs in California include:

- *Imperial Sand Hills*: Imperial Sand Hills is one of the largest dune patches in the United States. It is an outstanding example of dune geology and ecology in an arid land. (Designated: 1966. Ownership: federal, private.)
- *Eureka Dunes*: Eureka Dunes, located within Death Valley National Park, is an excellent example of aeolian (wind) geological processes. It is the tallest dune complex in the Great Basin biophysiological province. The site contains an endangered grass genus, one species of which is the only plant capable of surviving on and stabilizing the steep dune slopes. (Designated: 1983. Ownership: federal.)
- *Amboy Crater*: Amboy Crater is an excellent example of a recent volcanic cinder cone with an unusually flat crater floor. (Designated: 1973. Ownership: federal, private.)
- *Rainbow Basin*: Comprised of deep erosion canyons with rugged rims, Rainbow Basin is an outstanding example of geologic processes. The site also contains significant fossil remains and traces (e.g., footprints) of Miocene plants, insects, and land mammals. (Designated: 1966. Ownership: federal.)

National Historic Preservation Act of 1966 (NHPA; 16 U.S.C. 470)

Section 106 of the NHPA does not apply to paleontological resources unless the paleontological specimens are found in culturally related contexts (e.g., fossil shell included as a mortuary offering in a burial or a culturally related site such as petrified wood locale used as a chipped stone quarry). In such instances the materials are considered cultural resources and are treated in the manner prescribed for the site in question; mitigation being almost exclusively limited to sites determined eligible for, or listed on, the National Register of Historic Places. Cooperation between the cultural resource and paleontological disciplines is expected in such instances.

4.2 State Laws

California Environmental Quality Act

Paleontological resources are afforded protection under CEQA, which require lead agencies to disclose the potential environmental impacts of their discretionary actions. One of the screening questions in Appendix G of the CEQA

Guidelines asks: “Would the project directly or indirectly destroy a unique paleontological resource or site or a unique geologic feature?”

Public Resources Code Section 5097.5

California’s Public Resources Code (PRC) Section 5097.5 states that:

No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on [lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof], except with the express permission of the public agency having the jurisdiction over the lands. Violation of this section is a misdemeanor.

California Code of Regulations

Two sections of the California Code of Regulations (14 CCR Division 3, Chapter 1), applicable to lands administered by State Parks, address paleontological resources:

Section 4307: Geological Features—

“No person shall destroy, disturb, mutilate, or remove earth, sand, gravel, oil, minerals, rocks, paleontological features, or features of caves.”

Section 4309: Special Permits—

[California Department of Parks and Recreation] may grant a permit to remove, treat, disturb, or destroy plants or animals or geological, historical, archaeological or paleontological materials; and any person who has been properly granted such a permit shall to that extent not be liable for prosecution for violating the foregoing.

5 Methods

This section describes the techniques employed to identify and evaluate paleontological resources within the Project site and determine the potential for paleontological resources to be recovered during Project implementation. All methods conform to federal and state regulations and SVP (2010) guidelines for assessment and mitigation of impacts to significant paleontological resources.

5.1 Geological Map and Literature Review

Published geological mapping and literature and published and unpublished reports and paleontological literature were reviewed to identify geological formations/units within the Project site, glean information on their stratigraphic sequence, and determine their paleontological sensitivity.

5.2 Paleontological Records Search

A paleontological records search request was sent to the LACM on January 30, 2023, and the results were received on February 19, 2023. The purpose of the museum records search was to determine whether there are any known

fossil localities in or near the Project site, assist in determining the potential for the Project to destroy paleontological resources, and aide in determining whether a paleontological mitigation program is warranted to avoid or minimize potential adverse effects of construction on paleontological resources.

6 Results

6.1 Geological Map and Literature Review

The Project site is situated within the Transverse Ranges geomorphic province, which extends from Point Conception in the west to the San Bernardino Mountains in the east. The province also includes the San Gabriel, Santa Monica, and Santa Ynez Mountains and the offshore San Miguel, Santa Rosa, and Santa Cruz Islands. (CGS 2002; Morton and Miller 2006). This geomorphic province structure is east-west trending and is oblique to the normal northwest trend of coastal California.

More specifically, surficial geological mapping by Tan et al. (2003) at a 1:24,000 scale and the geotechnical investigation conducted by Wood (2019), indicated the Project site is underlain by Holocene (<11,700 years ago; Cohen et al. [2022]) historically active wash deposits (map unit Qw1) (Figure 2 – Geological Map). Holocene wash deposits typically consist of variable amounts of clays, silts, sands, and gravels that are unconsolidated (Tan et al. 2003). The geotechnical investigation reported artificial fill to a maximum depth of 40 feet below the ground surface (bgs) in some areas of the Project site, which is underlain by Holocene deposits consisting predominantly of sand and gravel with some thin clay interbeds, to the maximum depth explored of 75.5 feet (Wood 2019).

Given their young age, Holocene wash deposits do not usually preserve fossils and are assigned low paleontological sensitivity on the surface, increasing with depth, where they may be underlain by Pleistocene and older, fossiliferous geological units (Table 2). Jefferson (1991) reported numerous Pleistocene fossil vertebrates from Ventura County, including but not limited to horse (*Equus* sp.), mammoth (*Mammuthus* sp.), sloth (*Paramylodon* sp.), and camel (*Camelops* sp.).

6.2 Paleontological Records Search

The LACM records search results letter was received on February 19, 2023. No fossil localities were reported from within the Project site; however, the LACM did report one locality from an unknown Pleistocene formation, seven localities from the Las Posas sandstone (Formation), and two localities from the Pleistocene Saugus Formation (map unit Qs) (Confidential Appendix A). The unknown Pleistocene formation, Las Posas sandstone (Formation), and Saugus Formation do not underlie the Project site for at least 75.5 feet as indicated on the geotechnical report (Wood 2019). The LACM localities are detailed in Table 3 below.

Table 2. LACM Paleontological Records Search Results

Locality Number	Location	Formation or Unit	Taxa	Depth
LACM IP 7373	Hill in Ventura	Unknown Pleistocene unit	Unspecified invertebrates	Unknown

Table 2. LACM Paleontological Records Search Results

Locality Number	Location	Formation or Unit	Taxa	Depth
LACM VP (CIT) 583	West side of Main Aliso Canyon	Las Posas	Horse (<i>Equus</i>)	Surface
LACM VP (CIT) 584	West of Sexton Canyon, NE of junction of Sexton & Lake Canyons	Las Posas	Horse (<i>Equus</i>)	Surface
LACM IP 42051- 42054, 42915	North and west of the City of Ventura, near Mile Post 32.2, along Highway 101	Las Posas	Unspecified invertebrates collected from a shell bed	Unknown
LACM VP 3204	Bluffs on west side of Harmon Canyon	Saugus Formation	Horse (Equidae)	Unknown
LACM VP 6470	Long Canyon, NW of where Long Canyon enters the Santa Clara Valley	Saugus Formation	Horse (Equidae)	Unknown

VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; CIT, California Institute of Technology; bgs below the ground surface

7 Summary and Management Recommendations

As a result of this paleontological inventory, which included an LACM paleontological records search and a desktop geological map and geological and paleontological literature review, a total of ten paleontological resource localities were identified in the vicinity of the Project site and paleontological sensitivities of the geological units mapped within the Project site were determined. The LACM fossil localities are from geological units/formations that are not anticipated to be impacted based on geotechnical borings conducted for the Project.

Based on the records search results and map and literature review, the Project site has low potential to produce scientifically significant paleontological resources during future construction activities, and therefore, no paleontological mitigation is necessary. In the unlikely event that paleontological resources (e.g., fossils) are exposed during construction activities for the project, it is recommended that all construction work occurring within 50 feet of the find immediately stop until a qualified paleontologist meeting the professional standards of the Society of Vertebrate Paleontology can evaluate the significance of the find and determine whether or not additional study is warranted. If the discovery is clearly not significant, the paleontologist may document the find and allow work to continue. If the discovery proves potentially significant under CEQA, additional work such as preparation of a paleontological treatment plan and monitoring in the area of the find may be warranted.

Should you have any questions relating to this report and its findings please contact Michael Williams (mwilliams@dudek.com) or Sarah Siren (ssiren@dudek.com).

Respectfully Submitted,



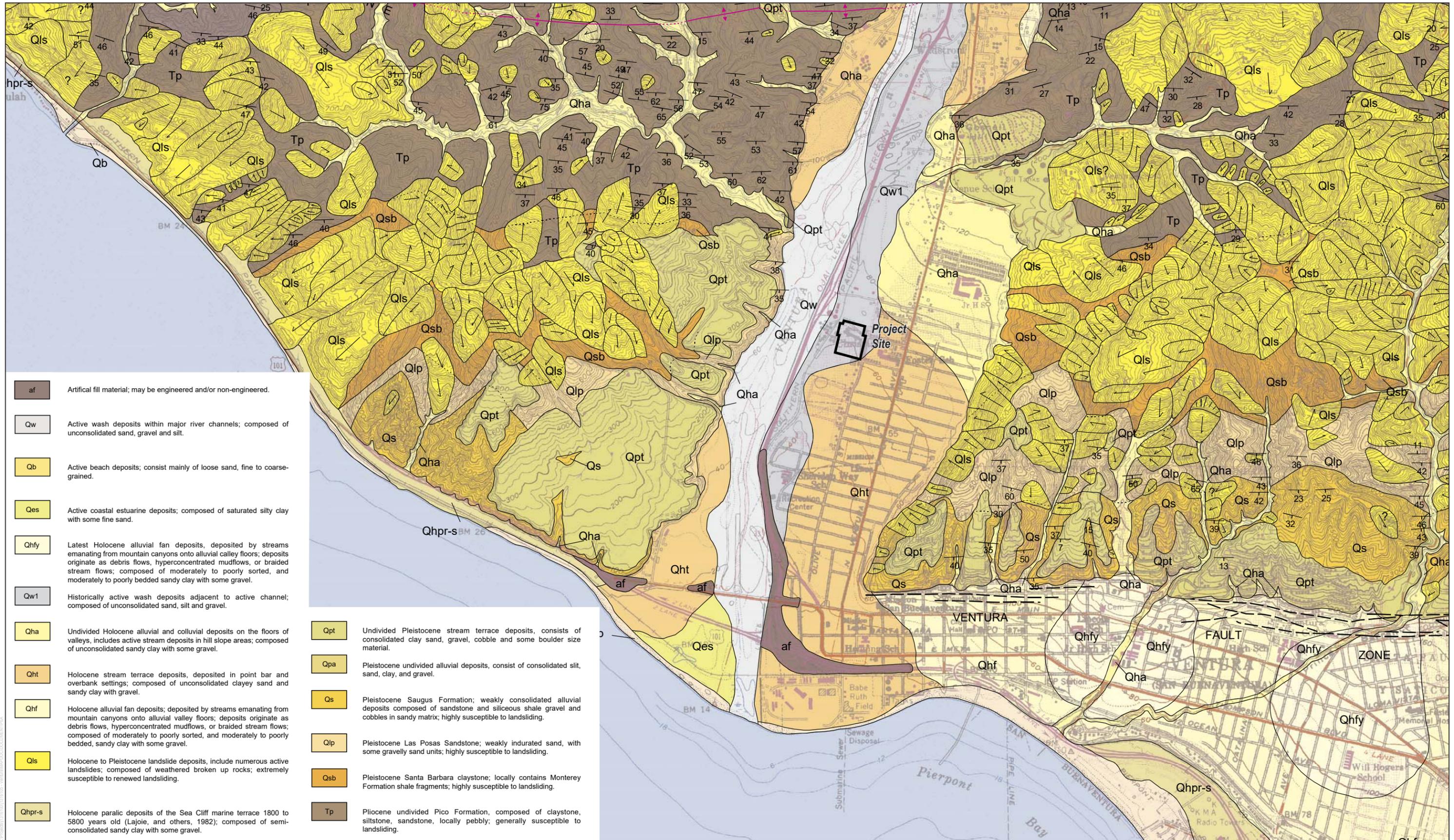
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Att.: *Figure 1, Regional Location Map*
Figure 2, Geological Map
Attachment A, Confidential LACM Paleontological Records Search Results

cc: *Sarah Siren, Dudek*
Kristen Starbird, Dudek
Ronelle Candia, Dudek

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SOURCE: USGS Geologic Map of the Ventura 7.5' Quadrangle

DUDEK



FIGURE 2

Site Geology

Ventura Compressor Station Modernization Project

Confidential Attachment A

LACM Records Search Results (Confidential)

