

5.6 Geology and Soils

5.6.1 INTRODUCTION

This section addresses potential environmental effects of the Proposed Project related to paleontological resources. Impacts related to geology and soils were analyzed in the Initial Study, included as EIR Appendix A, and were determined to be less than significant. The impacts examined within this EIR include impacts related to paleontological resources. The analysis in this section is based, in part, on the following documents and resources:

- *Paleontological Assessment for the Port of Los Angeles Truck Lot Project*, Brian F. Smith and Associates, Inc., 2023, provided as EIR Appendix E.
- *City of Los Angeles General Plan Conservation Element*, Adopted September 2001

Paleontological Resources Terminology

Paleontological resources are the remains of prehistoric life that have been preserved in the geologic strata. These remains are called fossils and include bones, shells, teeth, and plant remains (including their impressions, casts, and molds) in the sedimentary matrix, as well as trace fossils such as footprints and burrows. Fossils are considered older than 5,000 years of age (middle Holocene) (SVP, 2010) but may include younger remains (subfossils) when viewed in the context of local extinction of the organism or habitat, for example.

Paleontological resources provide information about the history of life on earth. Significant paleontological resources are defined as fossils or assemblages of fossils that are unique, unusual, rare, uncommon, or important to define a particular time frame or geologic strata, or that add to an existing body of knowledge in specific areas, in local formations, or regionally. The following standards from the Society of Vertebrate Paleontology determine the paleontological sensitivity of a geologic unit:

- **High potential:** Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered.
- **Undetermined Potential:** Rock units for which little information is available concerning their paleontological context, geologic age, and depositional environment, and that further study is needed to determine the potential of the rock unit.
- **Low Potential:** Rock units that are poorly represented by fossil specimens in institutional collections or based on a general scientific consensus that only preserve fossils in rare circumstances.
- **No Potential:** Rock units that have no potential to contain significant paleontological resources, such as high-grade metamorphic rocks and plutonic igneous rocks.

5.6.2 REGULATORY SETTING

5.6.2.1 State Regulations

Public Resources Code (PRC)

Requirements for paleontological resource management are included in the PRC Division 5, Chapter 1.7, Section 5097.5, and Division 20, Chapter 3, Section 30244, which 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 expressed permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. These statutes prohibit the removal, without permission, of any paleontological site or feature from lands under the jurisdiction of the State or any city, county, district, authority, or public corporation, or any agency thereof. As a result, local agencies are required to comply with PRC Section 5097.5 for their own activities, including construction and maintenance, as well as for permit actions (e.g., encroachment permits) undertaken by others. PRC Section 5097.5 also establishes the removal of paleontological resources as a misdemeanor and requires reasonable mitigation of adverse impacts to paleontological resources from developments on public (State, county, city, and district) lands.

5.6.2.2 Local Regulations

City of Los Angeles General Plan

The City of Los Angeles General Plan Conservation Element contains the following policies related to paleontological resources that are applicable to the Proposed Project (City of Los Angeles, 2001).

Archaeological and Paleontological Objective, Policy and Program

Objective	Protect the city's archaeological and paleontological resources for historical, cultural, research and/or educational purposes.
Policy	Continue to identify and protect significant archaeological and paleontological sites and/or resources known to exist or that are identified during land development, demolition, or property modification activities.
Program	Permit processing, monitoring, enforcement and periodic revision of regulations and procedures.

5.6.3 ENVIRONMENTAL SETTING

Regional Setting

The Project site is within the Peninsular Ranges Geomorphic province of California. The Peninsular Ranges consist of several northwesterly-trending ranges in southwestern California. The province is truncated to the north by the east-west trending Transverse Ranges. Prior to the mid-Mesozoic period, the region was covered by seas and thick marine sedimentary and volcanic sequences were deposited. The bedrock geology that dominates the elevated areas of the Peninsular Ranges consists of high-grade metamorphic rocks intruded by Mesozoic plutons. During the Cretaceous period, extensive mountain building occurred during the emplacement of the southern California batholith.

Within the Peninsular Ranges, the Project site is situated in the Los Angeles Basin, an approximately 800-square-mile sedimentary basin that extends from Cahuenga Peak south to the Pacific coast, and from Topanga Canyon southeast to the Aliso Creek region (BFSA, 2023b – EIR Appendix E).

Site Setting

The Paleontological Assessment details that the geology mapped within the Project site and along John S. Gibson Boulevard consists of late to middle Pleistocene-aged old shallow marine deposits on wave-cut surface. The old shallow marine deposits in this area have been further defined as consisting of a cover of non-marine terrace deposits that overlie the Palos Verdes Sand. The non-marine terrace deposits consist of

poorly sorted sand and gravel representing cliff talus, stream fan and channel, slope wash deposits. The Palos Verdes Sand are predominately coarse sands and fossiliferous basal sandy gravels and silty sands that overly the coarser materials. The Paleontological Assessment describes that the Palos Verdes Sand are thought to be late to middle Pleistocene in age and consist of two fossiliferous deposits: the older 125,000-year-old deposits in “northern” San Pedro and younger, approximately 80,000-year-old deposits in “southern” San Pedro. These deposits occupy the same marine terrace in the Project area (BFSA, 2023b – EIR Appendix E).

The Paleontological Assessment also describes that San Pedro Sand which unconformably underlies the Palos Verdes Sand with outcrops mapped along the edges of the Palos Verdes Sand. The San Pedro Sand includes fossiliferous, cross-bedded sands that was deposited during the middle Pleistocene, dating to approximately 450,000 to 300,000 years ago.

The Paleontological Assessment (BFSA, 2023b - EIR Appendix E) notes that both the Palos Verdes Sand and the San Pedro Sand – and presumably the upper non-marine deposits – are exposed on the Project site at the existing cut above John S. Gibson Boulevard.

Unique Geologic Feature

Unique geologic features refer to unique physical features or structures on the earth’s crust. The Project site does not contain any unique geologic features. The site is an undeveloped area that has been previously utilized for agricultural and urban development uses and has been previously graded various times. Aerial photographs from 1952 through 1963 show that between those years, the entire Project site had been developed, then cleared and then eventually graded again for the development of I-110 freeway. Currently, the Project site slopes upwards to the east abutting the I-110 freeway along its eastern edge and has a maximum elevation of approximately 65 feet above mean sea level. The Paleontological Assessment describes that the original landform and soil have been impacted by previous uses.

As described previously, the site is underlain with late Pleistocene to Holocene in age marine deposits on wave-cut surface. The geologic processes that occurred on the Project site and in the vicinity are consistent with those throughout the Port and the coastal areas of Los Angeles.

Paleontological Resources

The paleontological records search conducted for the Project site identified several fossil localities that were found within the Project site, including invertebrate fossils (shells) and fossil bones of a whale found within both the Palos Verdes Sand and the San Pedro Sand. In addition, fossil localities were recorded within the vicinity of the Project site, which included fish, mammals, and mollusks. The paleontological survey that was conducted for the Project identified remnant evidence of an unconsolidated prehistoric (cultural) shell scatter at the flattened, top surface of soils on the site. Shells were also observed on the site’s slope mixed into a thin cover of modern, slope wash sediments. Some shells appeared bleached and without color, suggesting a pre-modern (Pleistocene) age (BFSA, 2023b – EIR Appendix E).

The overlaying non-marine terrace deposits, consisting of Holocene alluvium, are generally considered to be too geologically young to contain significant paleontological resources and are, therefore, assigned a low paleontological sensitivity. The Pleistocene-aged non-marine deposits that overlie the Palos Verdes Sand were assigned an undetermined potential, due to lack of information available on their paleontological content, geologic age, and depositional environment (BFSA, 2023b – EIR Appendix E). However, fossils have been collected from similar Pleistocene aged deposits known as the Palos Verdes Sand and the San Pedro Sand for over a century within Los Angeles County. Therefore, the Palos Verdes Sand and San Pedro deposits found within the Project site are classified as having a high potential for paleontological sensitivity due to the presence of significant fossil localities in the general Project vicinity within the same/similar geologic units

as these deposits on-site. As noted in the *Port of Los Angeles Master Plan Update Final Program EIR*, invertebrate fossils found in marine sediments are not usually considered significant resources by paleontologists, due to their abundance and predictability along coastal areas (LAHD, 2013). Geologic formations containing vertebrate fossils are considered more significant, and such fossils typically originate from non-marine, upland deposits (LAHD, 2013).

5.6.4 THRESHOLDS OF SIGNIFICANCE

Appendix G of the State CEQA Guidelines indicates that a project could have a significant effect if it were to:

PAL-1 Directly or indirectly destroy a unique paleontological resource, site, or unique geologic feature.

5.6.5 METHODOLOGY

A Paleontological Assessment (BFSA, 2023b – EIR Appendix E) was prepared to determine the Proposed Project's potential impacts to paleontological resources. The analysis included a site survey and record searches of past identified resources, consideration of the types of soils that exist, and the paleontological sensitivity of those soils. The analysis combines these factors to identify the potential of the proposed construction to impact unknown paleontological resources on the site. As described in the Paleontological Assessment, a resource records search was conducted at the Los Angeles County Museum of Natural History to identify any previously discovered fossil localities in or near the Project site.

5.6.6 ENVIRONMENTAL IMPACTS

IMPACT PAL-1: WOULD THE PROJECT DIRECTLY OR INDIRECTLY DESTROY A UNIQUE PALEONTOLOGICAL RESOURCE, SITE, OR UNIQUE GEOLOGIC FEATURE?

Less-than-Significant Impact with Mitigation Incorporated. The Proposed Project would construct a truck and chassis parking lot on a currently vacant site that has been previously disturbed by urban agricultural and development activities. The Project related earthmoving activities, including grading and trenching activities, are anticipated to extend to approximately 15 feet below the existing ground surface (LGC, 2019) and would have the potential to disturb previously unknown paleontological resources. As detailed previously, the majority of the Project site is overlain by non-marine terrace deposits which have a low to unknown paleontological sensitivity. However, the Paleontological Assessment states that paleontological resources (Invertebrate fossils and whale bones) have been previously found on site and within the Project vicinity and that the Project site is underlain by late to middle Pleistocene-aged shallow marine deposits (Palos Verdes Sand), which have been recorded to be fossiliferous. Therefore, the Palos Verdes Sands onsite have a high potential to yield paleontological resources (Appendix E).

Although unique paleontological resources are not anticipated to be found within any fossils found on site, Mitigation Measure PAL-1 is included to require preparation of a Paleontological Resources Impact Mitigation Plan (PRIMP) and that ground disturbing activities be monitored by a qualified paleontologist to identify, salvage, and recover any potential paleontological resources, such as significant fossil remains. With implementation of Mitigation Measure PAL-1, potential impacts to paleontological resources from implementation of the Proposed Project would be less than significant.

5.6.7 CUMULATIVE IMPACTS

Paleontological Resources: The geographic area of potential cumulative impacts related to paleontological resources includes areas that are underlain by similar geologic units from the same time period. A cumulative impact could occur if development projects incrementally result in the loss of the same types of unique paleontological resources. As detailed previously, the coastal area of Los Angeles County, including the Project site and the cumulative projects listed in Table 5-1, *Cumulative Project List*, in Section 5.0, *Environmental Impact Analysis*, is underlain by marine deposited sediments that are sensitive to paleontological resources. Therefore, all projects within the Los Angeles coastal area that involve grading or disturbance to native, undisturbed geologic units have the potential to result in significant impacts to paleontological resources.

Incorporation of Mitigation Measure PAL-1, which includes paleontological monitoring and implementation of a PRIMP to preserve the quality and integrity of any identified resources, reduces the Proposed Project's impacts to a less-than-significant level. Impacts from the Proposed Project would not be cumulative considerable.

5.6.8 LEVEL OF SIGNIFICANCE BEFORE MITIGATION

Without mitigation, the following impacts would be **potentially significant**:

- Impact PAL-1: Project implementation could uncover subsurface paleontological resources.

5.6.9 MITIGATION MEASURES

MM PAL-1: Paleontological Monitoring. Prior to the issuance of grading permits, the Applicant shall provide a letter to the City of Los Angeles Planning Department, or designee, from a professional paleontologist, stating that a qualified paleontologist (who meets the Society of Vertebrate Paleontology's (SVP, 2010) definition for qualified profession paleontologist) has been retained to provide services for the Project. The paleontologist shall develop a Paleontological Resources Impact Mitigation Plan (PRIMP), consistent with the provisions of CEQA and Society of Vertebrate Paleontology's Guidelines, to mitigate the potential impacts to unknown buried paleontological resources that may exist onsite. The PRIMP shall be provided to the City for review and approval. The PRIMP shall require that the paleontologist be present at the pre-grading conference to establish procedures for paleontological resource surveillance and provide worker training regarding paleontological monitoring. The PRIMP shall also require full-time paleontological monitoring by a qualified paleontological monitor starting at the ground surface (below any disturbed/artificial fill deposits) during grading, excavation, or utility trenching activities.

In the event paleontological resources are encountered, ground disturbing activity within 50 feet of the area shall cease. The paleontologist shall examine the materials encountered, assess the nature and extent of the find, and recommend a course of action to further investigate and protect or recover and salvage those resources that have been encountered pursuant to the guidelines of the Society of Vertebrate Paleontology (SVP, 2010).

Criteria for discarding specific fossil specimens shall be made explicit in the PRIMP. If the qualified paleontologist determines that impacts to a sample containing significant paleontological resources cannot be avoided by Project construction, then recovery techniques may be applied as identified within the PRIMP. Actions include recovering a sample of the fossiliferous material prior to construction, monitoring construction activities and halting construction if a significant fossil needs to be recovered, and/or cleaning, identifying, and cataloging fossil specimens for curation and research purposes. Recovery, salvage, and treatment shall

be done at the Applicant's expense. All recovered and salvaged resources shall be prepared to the point of identification and permanent preservation by the paleontologist. Resources shall be identified and curated into an established accredited professional repository. The paleontologist shall have a repository agreement in hand prior to initiating recovery of the resource. If no institution accepts the fossil(s), they shall be donated to a local school in the area for educational purposes. Accompanying notes, maps, and photographs shall also be filed at the repository and/or school. A report documenting the results of the monitoring, including any salvage activities and the significance of any fossils, will be prepared and submitted to the City of Los Angeles Planning Department, or designee.

Prior to commencement of grading activities, the City of Los Angeles Planning Department, or designee, shall verify that all Project grading and construction plans specify the requirements herein related to the PRIMP and the unanticipated discovery of paleontological resources.

5.6.10 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Compliance with existing regulatory requirements and with implementation of Mitigation Measure PAL-1, impacts to paleontological resources would be less than significant. Therefore, no significant unavoidable adverse impacts related to paleontological resources would occur.

5.6.11 REFERENCES

Brian F. Smith and Associates (BFSA). (2023b). *Paleontological Assessment for the Water and Harvill Project*. **(EIR Appendix E)**

City of Los Angeles. (2001). *Conservation Element of the Los Angeles City General Plan*. Retrieved August 2023 from https://planning.lacity.org/odocument/28af7e21-ffdd-4f26-84e6-dfa967b2a1ee/Conservation_Element.pdf

LGC Geotechnical, Inc. (LGC). (2019). *Preliminary Geotechnical Evaluation and Response to City Review Comments for Proposed San Pedro Distribution Center, 1599 W. John S. Gibson Boulevard, Los Angeles, California*. **(EIR Appendix F)**

Los Angeles Harbor Department (LAHD). (2013). *Port of Los Angeles Master Plan Update Final Program Environmental Impact Report* (State Clearinghouse Number 2012071081). Retrieved August 2023 from <https://www.portoflosangeles.org/environment/environmental-documents>

Society of Vertebrate Paleontology (SVP). (2010). *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*. Retrieved August 2023 from https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf