IV. Environmental Impact Analysis
D. Geology and Soils

1. Introduction

This section of the Draft EIR provides an analysis of the Project's potential impacts to paleontological resources. The analysis of paleontological resources is based on the *Paleontological Resources Technical Report*,[1] which is included as Appendix E of this Draft EIR.

The Project's potential impacts related to the balance of geology and soils issues (e.g., faulting, seismicity, landslides, soil erosion, etc.) were fully evaluated in the Initial Study prepared for the Project included in Appendix A of this Draft EIR, and as summarized in Section VI, Other CEQA Considerations, of this Draft EIR, were found to be less than significant.

2. Environmental Setting

a. Regulatory Framework

There are several plans, regulations, and programs that include policies, requirements, and guidelines regarding paleontological resources at the federal, state, regional, and local levels. As described below, these plans, guidelines, and laws include the following:

- Society for Vertebrate Paleontology Standard Guidelines
- California Penal Code Section 622.5
- California Public Resources Code (PRC) Section 5097.5
- General Plan Conservation Element

[1] *SWCA, Paleontological Resources Technical Report for the East End Studios Arts District Los Angeles Project, Los Angeles, California, March 2023.*

(1) Federal

(a) Society for Vertebrate Paleontology Standard Guidelines

Paleontologic resources are considered to be older than recorded history and/or older than 5,000 years BP [before present]. The Society for Vertebrate Paleontology (SVP) has established standard guidelines[2] that outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. The Paleontological Resources Preservation Act (PRPA) of 2009 calls for uniform policies and standards that apply to fossils on all federal public lands. All federal land management agencies are required to develop regulations that satisfy the stipulations of the PRPA. As defined by the SVP,[3] significant paleontological resources are:

> *Fossils and fossiliferous deposits, here defined as 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).*

Based on the significance definition of the SVP,[4] all identifiable vertebrate fossils are considered to have significant scientific value. This position is adhered to because vertebrate fossils are relatively uncommon, and only rarely will a fossil locality yield a statistically significant number of specimens of the same genus. Therefore, every vertebrate fossil found has the potential to provide significant new information on the taxon it represents, its paleoenvironment, and/or its distribution. Furthermore, all geologic units in which vertebrate fossils have previously been found are considered to have high sensitivity. This is because paleontological sites indicate that the containing rock unit or formation is fossiliferous. Therefore, the limits of the entire rock unit, both areal and stratigraphic, define the extent of paleontological potential. Identifiable plant and invertebrate fossils are considered significant if found in association with vertebrate fossils or if defined as significant by project paleontologists, specialists, or local government agencies.

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[2] *Society of Vertebrate Paleontology, Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources, 2010.*

[3] *Society of Vertebrate Paleontology, Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources, 2010.*

[4] *Society of Vertebrate Paleontology, Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources, 2010.*

(2) State

(a) California Penal Code Section 622.5

California Penal Code Section 622.5 provides the following: "Every person, not the owner thereof, who willfully injures, disfigures, defaces, or destroys any object or thing of archeological or historical interest or value, whether situated on private lands or within any public park or place, is guilty of a misdemeanor."

(b) California PRC Section 5097.5

California PRC Section 5097.5 provides protection for paleontological resources on public lands, where PRC Section 5097.5(a) states, in part, 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 public lands, except with the express permission of the public agency having jurisdiction over the lands.*

(3) Local

(a) City of Los Angeles General Plan Conservation Element

The City's General Plan Conservation Element, adopted in September 2001, recognizes paleontological resources in Section 3: "Archeological and Paleontological" and identifies site protection as important, stating, "Pursuant to CEQA, if a land development project is within a potentially significant paleontological area, the developer is required to contact a bona fide paleontologist to arrange for assessment of the potential impact and mitigation of potential disruption of or damage to the site. Section 3 of the Conservation Element, includes policies for the protection of paleontological resources. As stated therein, it is the City's objective that paleontological resources be protected for historical, cultural research, and/or educational purposes. Section 3 sets as a policy to continue the identification and protection of significant paleontological sites and/or resources known to exist or that are identified during "land development, demolition, or property modification activities."

b. Existing Conditions

Paleontology is the study of fossils, which are the remains of ancient life forms. As discussed above and in the Paleontology Technical Report, the Project Site is underlain by soils that range in thickness from 1 to 3 feet, though it is possible that some areas may be underlain by fill soils of different thicknesses. As further discussed in the Paleontology

Technical Report, late Pleistocene older young alluvium is present within the Project Site, and early Pleistocene to Pliocene Fernando Formation and/or early Pliocene to late Miocene Puente Formation are also likely present at moderate depths (i.e., 30 to 80 feet below ground surface [bgs]).

(1) Paleontological Records Search

On February 19, 2023, a Project-site specific paleontological records search was conducted through the Natural History Museum of Los Angeles County (NHMLA) to determine the potential impacts of paleontological resources. The results of the paleontological records search indicate that the NHMLA does not possess records of paleontological resources existing within the Project Site; however, several fossil localities have been recorded in the vicinity of the Project Site from unnamed Pleistocene deposits at varying depths from 20 to 43 feet below ground surface, as well as unrecorded depths. Additionally, 17 invertebrate fossil localities were recorded in the vicinity of the Project Site from the early Pleistocene to Pliocene Fernando Formation from moderate to deep depths varying from 30 to 80 feet below ground surface, and one fossil locality in the vicinity of the Project Site was recorded from the early Pliocene to late Miocene Puente Formation at an unrecorded depth. Table IV.D-1 on page IV.D-5 summarizes the results of the NHMLA records search. These results include specimens of a variety of invertebrates and Teleostei fish, mastodon (*Mammut*), sabertooth cat (*Smilidon*), horse (*Equus*), deer (*Odocoileus*), turkey (*Meleagris*), bison (*Bison antiquus*), and mammoth (*Mammuthus*), located between 0.9 and 4.1 miles from the Project Site.

(2) Regional Geology

The Project Site is located in the southern extent of the Transverse Ranges Geomorphic Province within the northern Los Angeles Basin. The Project Site is located within the northeastern Central Block, which is bounded by the Hollywood, Santa Monica, and Whittier faults on the north; the Whittier and Elsinore faults and Elysian and Repetto hills on the east; the San Joaquin Hills and Huntington and Newport Mesas on the south; and the Newport-Inglewood Fault Zone, Dominguez Hills, and Baldwin Hills on the west. Within the Central Block, sedimentary strata overlaying basement rocks consist of mostly marine and nonmarine sedimentary rocks, with the geologic history of the strata spanning from the Cretaceous period to the Holocene epoch.

(3) Local Geology and Paleontology

The surface of the Project Site is mapped as late Pleistocene older young alluvium, also named young alluvium, Unit 2. However, based on previous site development during construction of the existing structures, previous geotechnical evaluations, and the Geotechnical Desktop Review, included as Appendix E of this Draft EIR, the Project Site contains unmapped recent artificial fill at the surface to depths of 1 to 3 feet below ground surface, likely partially

Table IV.D-1
Natural History Museum Fossil Localities Near the Project Site

Locality Number	Approximate Distance from the Project Site	Formation	Taxa	Approximate Depth (bgs)
LACM IP localities	0.92 to 1.48 miles	Early Pleistocene to Pliocene Fernando Formation	Invertebrates, including *Crepidula princeps* and *C. grandis*; *Haliotis*; *Mitraidae*; and others	30–80 feet
LACM VP 5961, 7990	1.22 miles	Early Pliocene to late Miocene Puente Formation	Teleostei fish, including viperfish (*Chauliodus*); cod (*Gadiformes*); herring/shad/ sardines (*Clupeidae*); mackerel/tuna/bonito (*Scombridae*); slickheads (*Alepocephalidae*); smelts (*Argentinidae*); scaly dragonfish (*Stomiatidae*); bristlemouths (*Gonostomatidae*)	Unrecorded
LACM VP 2032	1.93 miles	Unspecified Pliestocene deposits	Mastodon (*Mammut*)	20–35 feet
LACM VP 1023	2.1 miles	Unspecified Pleistocene deposits	Sabertooth cat (*Smilodon*); horse (*Equus*); deer (*Odocoileus*); Turkey (*Meleagris*)	Unrecorded
LACM VP 1755	3.9 miles	Unspecified Pleistocene deposits	Horse (*Equus*)	43 feet
LACM VP 1893	4.1 miles	Unspecified Pleistocene deposits	Bison (*Bison antiquus*); mammoth (*Mammuthus*)	Unrecorded

Source: SWCA, Paleontological Resources Technical Report for the East End Studios Arts District Los Angeles Project, 2023.

replacing the uppermost strata of the late Pleistocene older young alluvium. Although not all mapped at the surface within the boundaries of the Project Site or its immediate vicinity, early Pleistocene to Pliocene Fernando Formation and/or early Pliocene to late Miocene Puente Formation are variably present at moderate depths throughout central Los Angeles Basin, often underlying younger alluvial deposits. Although not identified in the borehole logs during the geotechnical investigations, nearby fossil records indicate that the Fernando Formation and/or the Puente Formation may be present at moderate depth. These geological units are described in geochronological order below.

(a) Recent Artificial Fill

As discussed above, the unmapped Recent artificial fill is present at the surface of the Project Site to depths of 1 to 3 feet below ground surface, partially replacing the uppermost strata of "native" sediments of late Pleistocene older young alluvium. Within the Project Site, artificial fill consisted of silty sand with some gravel. Artificial fill sediments typically consist of reworked and recompacted sediments originating either from within a project site during its construction or from outside a project site as imported sediments that are delivered from other regions and recompacted at a project site. Previously disturbed sediments or artificial fill may contain fossils, but any such fossil from these deposits has been removed from its original stratigraphic, taphonomic, or paleoenvironmental context (provenance), making it scientifically invalid. Recent artificial fill is unlikely to yield significant paleontological resources and has low paleontological sensitivity; however, artificial fill deposits are underlain by undisturbed "native" sediments that may have the potential to contain significant paleontological resources.

(b) Late Pleistocene Older Young Alluvium

Late Pleistocene older young alluvium is mapped at the surface of the Project Site. As previously discussed, the surface of the Project Site is capped with artificial fill to depths of 1 to 3 feet below ground surface, partially replacing the uppermost "native" strata of late Pleistocene older young alluvium. Based on previous geotechnical evaluations and the Geotechnical Desktop Review, late Pleistocene older young alluvium is likely present at shallow depths below the artificial fill and likely extends from moderate to deep depths. The borehole logs of the geotechnical studies do not differentiate between the alluvial deposits and the underlying "bedrock" formations (i.e., Fernando Formation and/or Puente Formation); however, based on the results of the NHMLA records search discussed above, Pleistocene-age fossils have been recovered from depths of approximately 43 feet below ground surface in the vicinity of the Project Site, suggesting that late Pleistocene older young alluvium may extend in the subsurface of the Project Site to similar depths.

Late Pleistocene older young alluvium in the region consists of silt, sand, and gravel deposited on flood plains via fluvial systems and are regarded as unconsolidated and generally friable. Medium- to fine-grained alluvial deposits, such as gravel, sand, silt, and clay present within the Project Site, are typically deposited in a relatively lower energy environment conducive to the burial and subsequent preservation of intact organic remains as fossils. Pleistocene alluvial deposits have a rich fossil history in Southern California, especially in the Los Angeles Basin. The most common Pleistocene terrestrial mammal fossils include the bones of mammoth, bison, deer, and small mammals, but other taxa, including horse, lion, cheetah, wolf, camel, antelope, peccary, mastodon, capybara, and giant ground sloth, as well as reptiles, snakes, frogs, and salamanders, have been reported. In addition to recognizing the striking differences between Southern California in the Pleistocene and Southern California today, the abundant fossil records available have been vital in studies of extinction, ecology,

and climate change. Therefore, late to middle Pleistocene older young alluvium has a high paleontological sensitivity.

(c) Early Pleistocene to Pliocene Fernando Formation

Although not mapped at the surface within the Project Site or its immediate vicinity, the early Pleistocene to Pliocene Fernando Formation is mapped at the surface near downtown Los Angeles and is present at depth throughout the Los Angeles Basin. The results of the NHLA records search documents 17 fossil localities from the Fernando Formation at depths ranging from 30 to 80 feet below ground surface in an area approximately 0.92 mile to 1.48 miles northwest of the Project Site, suggesting that the Fernando Formation may be present at depths as shallow as 30 feet below ground surface within the Project Site. The Fernando Formation may "pinch out" or interfinger with the similarly aged Puente Formation in this portion of the Los Angeles Basin. Nonetheless, the early Pleistocene to Pliocene Fernando Formation may be present at moderate depths within the Project Site, underlying the late Pleistocene older young alluvium and overlying or interfingering with the early Pliocene to late Miocene Puente Formation.

The Fernando Formation has yielded marine and nonmarine fossils and is generally regarded as fossiliferous. Fossil localities from this unit have yielded foraminiferans, sponges, corals, brachiopods, bryozoans, scaphopods (tusk shells), gastropods (snails, slugs, sea slugs), bivalves (clams, oysters, scallops, mussels), cephalopods (squid, octopuses), fiddler crabs, sea urchins, sharks, bony fish, bird, unidentifiable mammals, and plants. Therefore, the early Pleistocene to Pliocene Fernando Formation has a high paleontological sensitivity.

(d) Early Pliocene to Late Miocene Puente Formation

Although not mapped at the surface within the Project Site or its immediate vicinity, the late Miocene to early Pliocene Puente Formation is mapped at the surface approximately 1.2 miles northwest of the Project Site. The Puente Formation is widespread within the subsurface near downtown Los Angeles, where it mostly underlies the Fernando Formation if/when the Fernando Formation is present at depth. The Puente Formation has a history of preserving terrestrial fossil taxa, such as rhinoceros (*Rhinocerotidae*), mastodons, rabbits (*Oryctolagus cuniculus*), rodents, and insects, and marine fossil taxa, such as pinnipeds (seals), demostylids, whales (*Cetacea*), sharks (*Selachimorpha*), bony fish (*Osteichthyes*), crustaceans, cephalopods, bivalves, sponges, and foraminifers. Therefore, the early Pliocene to late Miocene Puente Formation has a high paleontological sensitivity.

3. Project Impacts

a. Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, a project would have a significant impact related to geology and soils if it would:

Threshold (a): Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

- ***i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.***
- ***ii. Strong seismic ground shaking.***
- ***iii. Seismic-related ground failure, including liquefaction.***
- ***iv. Landslides.***

Threshold (b): Result in substantial soil erosion or the loss of topsoil.

Threshold (c): Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

Threshold (d): Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.

Threshold (e): Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

Threshold (f): Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

As previously noted above in the Introduction subsection, this section of the Draft EIR provides an analysis of the Project's potential impacts to paleontological resources. The Project's potential impacts related to the balance of the geology and soils issues identified in the Initial Study (e.g., faulting, seismicity, landslides, soil erosion, etc. in Thresholds a through e) were fully evaluated in the Initial Study included as Appendix A of this Draft EIR and were found to be less than significant.

For this analysis, the Appendix G Threshold listed above is relied upon. The analysis utilizes factors and considerations identified in the City's 2006 *L.A. CEQA Thresholds Guide*, as appropriate, to assist in answering the Appendix G Threshold question.

The *L.A. CEQA Thresholds Guide* identifies the following criteria to evaluate impacts to paleontological resources:

- Whether, or the degree to which, the project might result in the permanent loss of, or loss of access to, a paleontological resource; and
- Whether the paleontological resource is of regional or statewide significance.

b. Methodology

To address potential impacts to paleontological resources, a Paleontological Resources Technical Report (Paleontology Technical Report) was prepared by SWCA to assess the paleontological sensitivity of the Project Site and vicinity. This analysis included a review of geologic maps, scientific literature, museum records search results, and other relevant site-specific geologic information. In addition, SCWA reviewed the results of several geological investigations conducted at the Project Site. A formal paleontological records search was also conducted by the Natural History Museum of Los Angeles. The results of the paleontological records search were received on February 19, 2023. In addition, previous disturbances within the Project Site and the anticipated depths of grading were considered to determine the potential for uncovering paleontological resources. As discussed in the Paleontology Technical Report, the paleontological potential (also referred to as paleontological sensitivity) is derived from the known fossil data collected from the entire geologic unit. In Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010:1–2), the SVP defines four categories of paleontological sensitivity for rock units: high, low, undetermined, and no potential, as follows:

(1) High Potential

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. Rocks units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcaniclastic formations (e.g., ash or tephra), and some low-grade metamorphic rocks which 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 sandstone, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstone, fine-grained marine sandstone, etc.). Rock units which contain potentially datable organic remains older than late Holocene, including deposits

associated with animal nests or middens, and rock units which may contain new vertebrate deposits, traces, or trackways are also classified as having high potential.

(2) Low Potential

Reports in 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.

(3) 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 if 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.

(4) 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 potential require no protection or impact mitigation measures relative to paleontological resources.

c. Project Design Features

No specific project design features are proposed with regard to paleontological resources.

d. Analysis of Project Impacts

Threshold (a): Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42?

As discussed in Section VI, Other CEQA considerations, of this Draft EIR, and evaluated in the Initial Study prepared for the Project, included in Appendix A of this Draft EIR, the Project Site is not located within a City-designated Fault Rupture Study Area or an Alquist-Priolo Earthquake Fault Zone as mapped by the California Geological Survey. No active faults with the potential for surface fault rupture are known to pass directly beneath the Project Site, and the potential for surface rupture due to faulting occurring beneath the Project Site, is considered low. **Therefore, as determined in the Initial Study, the Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death related to rupture of a known earthquake fault. As such, impacts with respect to Threshold (a)(i) would be less than significant. No further analysis is required.**

Threshold (a): Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

ii. Strong seismic ground shaking?

As discussed in Section VI, Other CEQA considerations, of this Draft EIR, and evaluated in the Initial Study prepared for the Project, included in Appendix A of this Draft EIR, the design and construction of the Project would comply with all applicable existing regulatory requirements, the applicable provisions of the Los Angeles Building Code relating to seismic safety, and the application of accepted and proven construction engineering practices, including the specific geotechnical design recommendations set forth for the Project in a final design-level Geotechnical Report. **Therefore, as determined in the Initial Study, through compliance with regulatory requirements and implementation of, site-specific geotechnical recommendations contained in a final design-level geotechnical engineering report, the Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death related to strong seismic ground shaking. As such, impacts with respect to Threshold a(ii) would be less than significant. No further analysis is required.**

Threshold (a): Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

iii. Seismic-related ground failure, including liquefaction?

As discussed in Section VI, Other CEQA considerations, of this Draft EIR, and evaluated in the Initial Study prepared for the Project, included in Appendix A of this Draft EIR, The Project Site is not located within an area identified by the City of Los Angeles, County of Los Angeles,

or California Geological Survey as having a potential for liquefaction. **Therefore, as determined in the Initial Study, the Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. As such, impacts with respect to Threshold a(iii) would be less than significant. No further analysis is required.**

Threshold (a): Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

iv. Landslides?

As discussed in Section VI, Other CEQA considerations, of this Draft EIR, and evaluated in the Initial Study prepared for the Project, included in Appendix A of this Draft EIR, the Project Site and surrounding area are fully developed, and the Project Site is generally characterized by relatively level topography. Given the largely impervious (developed/paved) nature of the Project Site, large areas of exposed soil or rocks that could slide or become loose are not present. In addition, the Project Site is not located in a landslide area as mapped by the State or the City, nor is the Project Site mapped as a landslide area by the City of Los Angeles. **Therefore, as determined in the Initial Study, the Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. As such, no impact with respect to Threshold a(iv) would occur. No further analysis is required.**

Threshold (b): Would the project result in substantial soil erosion or the loss of topsoil?

As discussed in Section VI, Other CEQA considerations, of this Draft EIR, and evaluated in the Initial Study prepared for the Project, included in Appendix A of this Draft EIR, all grading activities would require grading permits from the City of Los Angeles Department of Building and Safety (LADBS), which would include requirements and standards designed to limit potential effects associated with erosion to acceptable levels. In addition, on-site grading and site preparation would comply with all applicable provisions of LAMC Chapter IX, Article 1, which addresses grading, excavations, and fills. Furthermore, the Project would be required to comply with the City's LID Ordinance and implement standard erosion controls to limit stormwater runoff, which can contribute to erosion. Regarding soil erosion during Project operations, the potential for erosion is low since the Project Site would be fully developed and no soils would be left exposed. **Therefore, as determined in the Initial Study, the Project would not result in substantial soil erosion or the loss of topsoil. As such, impacts with respect to Threshold (b) would be less than significant. No further analysis is required.**

Threshold (c): Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially

result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

As discussed in Section VI, Other CEQA considerations, of this Draft EIR, and evaluated in the Initial Study prepared for the Project, included in Appendix A of this Draft EIR, the Project would not be located on a geologic unit or soil that is unstable, which could potentially result in lateral spreading. In addition, dewatering operations are not expected during construction. Moreover, no large-scale extraction of groundwater, gas, oil, or geothermal energy is occurring, or is planned at the Project Site. Therefore, there is little to no potential for ground subsidence due to withdrawal of fluid or gas at the Project Site. Additionally, due to the type and density of the soils underlying the Project Site, the Project Site soils would not be considered collapsible soils. **Therefore, as determined in the Initial Study, the Project would not be located on and or exacerbate a geologic unit or soil that is unstable or that would become unstable as a result of the Project and potentially result in collapse. As such, impacts with respect to Threshold (c) would be less than significant. No further analysis is required.**

Threshold (d): Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Expansive soils are typically associated with fine-grained clayey soils that have the potential to shrink and swell with repeated cycles of wetting and drying. As discussed in the Geotechnical Desktop Review, as previously evaluated in the geotechnical evaluation conducted in 2015, the soils encountered had an expansion index of 6, which represents a very low expansion potential. The Project would not exacerbate the expansion potential of the on-site soils because it would not create or import soils with a higher expansion potential. As such, the Project would not be located on expansive soil, which could create substantial risks to life or property. **Therefore, impacts related to expansive soils would be less than significant, and no mitigation measures are required.**

Threshold (e): Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of wastewater?

As discussed in Section VI, Other CEQA considerations, of this Draft EIR, and evaluated in the Initial Study prepared for the Project, included in Appendix A of this Draft EIR, the Project Site is located within a community served by existing wastewater infrastructure. As such, the Project would not require the use of septic tanks or alternative wastewater disposal systems. **Therefore, as determined in the Initial Study, the Project would have no impact related to the ability of soils to support septic tanks or alternative wastewater disposal systems. As such, no impact with respect to Threshold (e) would occur. No further analysis is required.**

Threshold (f): Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

(1) Impact Analysis

As previously discussed, according to a records search of the paleontological specimen and locality records held by the NHMLA Vertebrate Paleontology Department and the Paleontology Technical Report prepared by SWCA, there are no previously encountered fossil vertebrate localities located within the Project Site. However, localities have been documented elsewhere in the area from the same geologic units that are known to occur, as well as those that are anticipated to occur, beneath portions of the Project Site, and several of these localities are located within 4.1 miles. These include specimens of a variety of invertebrates and Teleostei fish, mastodon, sabertooth cat, horse, deer, turkey, bison, and mammoth. Previously discovered fossils in the area have been found in the older Pleistocene alluvium, unnamed Pleistocene deposits, and the Early Pliocene to late Miocene Puente Formation, which all have the potential to yield scientifically significant vertebrate fossils. As discussed above, the Project Site is primarily underlain by Late Pleistocene older young alluvium and the Early Pliocene to late Miocene Puente Formation may be present at depth. Additionally, the Early Pleistocene to Pliocene Fernando Formation may also be present at depth and has the potential to yield scientifically significant vertebrate fossils as well. Therefore, while the Project would not include any subterranean parking, and excavations within the Project Site would be limited to approximately 11 feet below grade for the placement of building footings, previously undiscovered paleontological resources could potentially be disturbed during shallow grading and excavations. **Therefore, potential impacts to unique paleontological resources would be potentially significant.**

With regard to unique geologic features, given that the Project Site is located in a highly developed urban area, there are no unique geologic features on the Project Site. **Therefore, as determined in the Initial Study, the Project would not directly or indirectly destroy a unique geologic feature. No impact with respect to the destruction of a unique geologic feature would occur, and no further analysis is required.**

(2) Mitigation Measures

The following mitigation measures are proposed to reduce impacts to paleontological resources:

Mitigation Measure GEO-MM-1: The Project Applicant shall retain a Qualified Professional Paleontologist (Qualified Paleontologist/Project Paleontologist/ Principal Paleontologist), who meets or exceeds the SVP definition, to carry out all regulatory compliance measures and protocols related to paleontological resources. The Qualified Paleontologist shall obtain a curatorial arrangement with a qualified repository (e.g., LACM) prior to

construction in the event of significant paleontological resource discoveries during construction.

Mitigation Measure GEO-MM-2: The Qualified Paleontologist shall develop Worker Environmental Awareness Program training to educate the construction crew on the legal requirements for preserving fossil resources, as well as the procedures to follow in the event of a fossil discovery. This training program shall be given to the crew before ground-disturbing work commences and shall include handouts to be given to new workers as needed.

Mitigation Measure GEO-MM-3: Full-time paleontological monitoring shall occur during ground-disturbing activities that impact previously undisturbed sediments at depths of 5 feet bgs or greater that have relatively higher paleontological sensitivity, including late to middle Pleistocene older alluvial fan deposits, early Pleistocene to Pliocene Fernando Formation, and/or early Pliocene to late Miocene Puente Formation. Monitoring shall not be required when ground-disturbing activities are less than 5 feet bgs or when impacting only previously disturbed sediments and/or Recent artificial fill regardless of depth. Monitoring shall be conducted by a qualified paleontological monitor who meets the standards of the SVP (2010) and who shall be supervised by the Qualified Paleontologist. The Qualified Paleontologist may periodically inspect construction activities to adjust the level of monitoring in response to subsurface conditions. Monitoring efforts can be increased, reduced, or ceased entirely if determined adequate by the Qualified Paleontologist. Paleontological monitoring shall include inspection of exposed sedimentary units during active excavations within sensitive geologic sediments. The monitor shall have authority to temporarily divert activity away from exposed fossils to evaluate the significance of the find and, should the fossils be determined significant, professionally and efficiently recover the fossil specimens and collect associated data. The monitor shall record pertinent geologic data and collect appropriate sediment samples from any fossil localities. Recovered fossils shall be prepared to the point of curation, identified by qualified experts, listed in a database to facilitate analysis, and deposited in a designated paleontological repository (e.g., NHMLA).

Mitigation Measure GEO-MM-4: Upon conclusion of ground-disturbing activities, the Qualified Paleontologist overseeing paleontological monitoring shall prepare a final monitoring report that documents the paleontological monitoring efforts for the Project and describes any paleontological resources discoveries observed and/or recorded during the life of the Project. If paleontological resources are curated, the final monitoring report and any associated data pertinent to the curated specimen(s) shall be submitted to the designated repository. A copy of the final monitoring report shall be filed with the Department of City Planning.

(3) Level of Significance After Mitigation

As determined in the Paleontology Technical Report, with the implementation of Mitigation Measures GEO-MM-1 through GEO-MM-4, Project-level impacts to unique paleontological resources would be reduced to a less-than-significant level.

e. Cumulative Impacts

(1) Impact Analysis

Impacts related to paleontological resources are generally site-specific since the potential for discovery of such resources relate to the particular underlying conditions of a specific site. The Project Site is located within a highly urbanized area that has been disturbed and developed over time. Therefore, many subsurface paleontological resources in the area have likely been disturbed by present development. As with the Project, as part of the environmental review processes for the related projects, it is expected that mitigation measures would be established as necessary to address potential impacts to paleontological resources. **Therefore, the Project and related projects would not result in significant cumulative impacts to paleontological resources. As such, the Project's contribution would not be cumulatively considerable, and cumulative impacts would be less than significant.**

(2) Mitigation Measures

Cumulative impacts related to geology and soils, including expansive soils and paleontological resources, would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Cumulative impacts related to geology and soils, including expansive soils and paleontological resources, were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.