IV. Environmental Impact Analysis
D. Geology and Soils

1. Introduction

This section evaluates potential existing geologic and soils hazards of the Project, including the potential for the Project to cause direct or indirect impacts associated with existing environmental conditions that could cause, in whole or in part, fault rupture, ground shaking, liquefaction of soils, expansion of soils, and/or landslide. Impacts regarding these topics are based on the Geotechnical Investigations prepared for the Project by Geocon West, Inc., dated September 2016 and August 17, 2020, respectively, both of which are included in Appendix G of this Draft EIR.[1,2] Based on comments received from the Los Angeles Department of Building and Safety (LADBS), a response to the soils report review letter (Soils Response Letter) was also prepared by Geocon West, Inc. in October 2021, which is also included in Appendix G of this Draft EIR. The Geotechnical Investigations were approved by LADBS in October 2016 and December 2021.[3,4] A supplemental letter confirming both geotechnical investigations are applicable to the Project as proposed is also provided as part of Appendix G. This section also evaluates the potential for the Project to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. This component of the analysis is in part based on a paleontological records search conducted by the Natural History Museum of Los Angeles County,[5] which is included as Appendix I of this Draft EIR.

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1 *Geocon West, Inc., Geotechnical Investigation, Proposed High-Rise Redevelopment 6254–6274 W. De Longpre Avenue 1334 & 1348–1360 N. Vine Street 6241–6265 W. Afton Place Los Angeles, California Tract: 1210, Block A, Lot: 11-23, September 2016. See Appendix G.1 of this Draft EIR.*

2 *Geocon West, Inc., Updated Geotechnical Investigation, Proposed High-Rise Redevelopment 6254–6274 W. De Longpre Avenue 1334 & 1348–1360 N. Vine Street 6241–6265 W. Afton Place Los Angeles, California Tract: 1210, Block A, Lot: 11-23, August 17, 2020. See Appendix G.2 of this Draft EIR.*

3 *City of Los Angeles, Department of Building and Safety, Soil Report Approval Letter, October 18, 2016. See Appendix H of this Draft EIR.*

4 *City of Los Angeles, Department of Building and Safety, Soil Report Approval Letter, December 1, 2021. See Appendix H of this Draft EIR.*

5 *Natural History Museum of Los Angeles County, Paleontological resources for the proposed 1360 North Vine Street Project, in the City of Los Angeles, Los Angeles County, project area, April 19, 2017. See Appendix I of this Draft EIR.*

2. Environmental Setting

a. Regulatory Framework

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

- Earthquake Hazards Reduction Act
- National Pollutant Discharge Elimination System (NPDES)
- Society for Vertebrate Paleontology Standard Guidelines
- Alquist-Priolo Earthquake Act
- Seismic Hazards Mapping Act
- California Building Code
- California Division of Oil, Gas, and Geothermal Resources (CalGEM)
- California Public Resources Code (PRC) Section 5097.5
- Los Angeles General Plan Safety Element
- General Plan Conservation Element
- Los Angeles Municipal Code (LAMC)

(1) Federal

(a) Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act was enacted in 1977 to "reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program." To accomplish this, the Earthquake Hazards Reduction Act established the National Earthquake Hazards Reduction Program (NEHRP). This program was substantially amended by the NEHRP Reauthorization Act of 2004 (Public Law 108-360).

NEHRP's mission includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improvement of building codes and land use practices; risk reduction through post-earthquake investigations and education; development and

improvement of design and construction techniques; improvement of mitigation capacity; and accelerated application of research results. The NEHRP designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns it several planning, coordinating, and reporting responsibilities. Programs under NEHRP help inform and guide local planning and building code requirements, such as emergency evacuation responsibilities, and seismic code standards, such as those to which a proposed project would be required to adhere.

(b) National Pollutant Discharge Elimination System

The NPDES Program has been responsible for substantial improvements to our nation's and state's water quality since 1972. The NPDES permit sets erosion control standards and requires implementation of nonpoint source control of surface drainage through the application of a number of Best Management Practices (BMPs). NPDES permits are required by Section 402 of the Clean Water Act.[6]

(c) Society for Vertebrate Paleontology Standard Guidelines

The Society for Vertebrate Paleontology (SVP) has established standard guidelines[7] 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,[8] significant nonrenewable paleontological resources are:

> *Fossils and fossiliferous deposits here are restricted to vertebrate fossils and their taphonomic and associated environmental indicators. This definition excludes invertebrate or paleobotanical fossils except when present within a given vertebrate assemblage. Certain invertebrate and plant fossils may be defined as significant by a project paleontologist, local paleontologist,*

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[6] *USEPA, Clean Water Act, Section 402: National Pollutant Discharge Elimination System, www.epa.gov/cwa-404/clean-water-act-section-402-national-pollutant-discharge-elimination-system, accessed November 30, 2021.*

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

[8] *Society of Vertebrate Paleontology, "Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines," Society of Vertebrate Paleontology News Bulletin 163:22 27, 1995.*

specialists, or special interest groups, or by lead agencies or local governments.

As defined by the SVP,[9] significant fossiliferous deposits are:

A rock unit or formation which contains significant nonrenewable paleontologic resources, here defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces, and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information (ichnites and trace fossils generated by vertebrate animals, e.g., trackways, or nests and middens which provide datable material and climatic information). Paleontologic resources are considered to be older than recorded history and/or older than 5,000 years BP [before present].

Based on the significance definitions of the SVP,[10] 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. 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.

(2) State

(a) Alquist-Priolo Earthquake Act

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act) was signed into law December 22, 1972 (revised in 1994), and codified into State law in the PRC as Division 2, Chapter 7.5 to address hazards from earthquake fault zones. The purpose of this law is to mitigate the hazard of surface fault rupture by regulating development near active faults. As required by the Alquist-Priolo Earthquake Fault Zoning Act, the State has delineated Earthquake Fault Zones (formerly Special

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[9] *Society of Vertebrate Paleontology, "Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines."*

[10] *Society of Vertebrate Paleontology, "Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines."*

Studies Zones) along known active faults in California, which vary in width around the fault trace from about 200 to 500 feet on either side of the fault trace. Cities and counties affected by the zones must regulate certain development projects within the zones. The State Geologist is also required to issue appropriate maps to assist cities and counties in planning, zoning, and building regulation functions. Local agencies enforce the Alquist-Priolo Earthquake Fault Zoning Act in the development permit process, where applicable, and may be more restrictive than State law requires. According to the Alquist-Priolo Earthquake Fault Zoning Act, before a project that is within an Alquist-Priolo Earthquake Fault Zone can be permitted, cities and counties shall require a geologic investigation, prepared by a licensed geologist, to demonstrate that buildings will not be constructed across active faults. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back a distance to be established by a California Certified Engineering Geologist. Although setback distances may vary, a minimum 50-foot setback is typically required.

(b) Seismic Hazards Mapping Act

In order to address the effects of strong ground shaking, liquefaction, landslides, and other ground failures due to seismic events, the State of California passed the Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6). Under the Seismic Hazards Mapping Act, the State Geologist is required to delineate "seismic hazard zones." Cities and counties must regulate certain development projects within these zones until the geologic and soil conditions of their project sites have been investigated and appropriate mitigation measures, if any, have been incorporated into development plans. The State Mining and Geology Board provides additional regulations and policies to assist municipalities in preparing the Safety Element of their General Plans and to encourage the adaptation of land use management policies and regulations to reduce and mitigate seismic hazards to protect public health and safety. Under PRC Section 2697, cities and counties must require, prior to the approval of a project located in a seismic hazard zone, submission of a geotechnical report defining and delineating any seismic hazard.

(c) California Building Code

The California Building Code (CBC), which is codified in Title 24 of the California Code of Regulations (CCR), Part 2, was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, means of egress facilities, and general stability of buildings. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under State law, all building standards must be centralized in Title 24 or those standards are not enforceable. The provisions of the CBC apply to the construction, alteration, movement, replacement,

location, and demolition of every building or structure, or any appurtenances connected or attached to such buildings or structures throughout California.

The 2019 edition of the CBC is based on the 2018 International Building Code (IBC) published by the International Code Council. The code is updated triennially, and the 2019 edition of the CBC was published by the California Building Standards Commission on July 1, 2019, and became effective January 1, 2020. Every three years, the State adopts new codes (known collectively as the California Building Standards Code) to establish uniform standards for the construction and maintenance of buildings, electrical systems, plumbing systems, mechanical systems, and fire and life safety systems. Sections 17922, 17958, and 18941.5 of the California Health and Safety Code require that the latest edition of the California Building Standards Code apply to local construction 180 days after publication. The significant changes to Title 24 in the 2019 edition can be found at California Department of General Services website.[11]

(d) California Division of Oil, Gas, and Geothermal Resources)

CalGEM regulates production of oil and gas, as well as geothermal resources, within the State of California. CalGEM requirements in preparation of environmental documents under CEQA are defined in CCR, Title 14, Division 2, Chapter 2. Staff also assists operators in avoiding or reducing environmental impacts from the development of oil, gas, and geothermal resources in California, including subsidence (pursuant to PRC Sections 3315 et seq.). CalGEM regulations, which are defined in CCR, Title 14, Division 2, Chapter 4, include well design and construction standards, surface production equipment and pipeline requirements, and well abandonment procedures and guidelines to ensure effectiveness in preventing migration of oil and gas from a producing zone to shallower zones, including potable groundwater zones, as well as subsidence.

(e) 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,*

[11] *California Department of General Services, California Building Standards Code, www.dgs.ca.gov/BSC/Codes#@ViewBag.JumpTo/, accessed November 30, 2021.*

except with the express permission of the public agency having jurisdiction over the lands.

(3) Local

(a) City of Los Angeles General Plan

(i) Safety Element

The City's General Plan Safety Element, which was adopted in 1996, addresses public safety risks due to natural disasters, including seismic events and geologic conditions, and sets forth guidance for emergency response during such disasters. The Safety Element also provides maps of designated areas within Los Angeles that are considered susceptible to earthquake-induced hazards, such as fault rupture and liquefaction.

(ii) 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) Los Angeles Municipal Code

Chapter IX of the LAMC contains the City's Building Code, which incorporates by reference the CBC, with City amendments for additional requirements. LADBS is responsible for implementing the provisions of the LAMC. To that end, LADBS issues building and grading permits for construction projects. Building permits are required for any building or structure that is erected, constructed, enlarged, altered, repaired, moved, improved, removed, converted, or demolished. Grading permits are required for all grading projects other than those specifically exempted by the LAMC. LADBS has the authority to withhold building permit issuance if a project cannot mitigate potential hazards to the project or which are associated with the project. Throughout the permitting, design, and construction phases of a building project, LADBS engineers and inspectors confirm that the

requirements of the LAMC pertaining specifically to geoseismic and soils conditions are being implemented by project architects, engineers, and contractors.

The function of the City's Building Code, is to protect life safety and ensure compliance with the LAMC. Chapter IX addresses numerous topics, including earthwork and grading activities, import and export of soils, erosion and drainage control, and general construction requirements that address flood and mudflow protection, landslides, and unstable soils. Additionally, the LAMC includes specific requirements addressing seismic design, grading, foundation design, geologic investigations and reports, soil and rock testing, and groundwater.

Specifically, LAMC Section 91.1803 requires a Final Geotechnical Report with final design recommendations prepared by a California-registered geotechnical engineer and submitted to the LADBS for review prior to issuance of a grading permit. Final foundation design recommendations must be developed during final project design, and other deep foundation systems that may be suitable would be addressed in the Final Geotechnical Report. All earthwork (e.g., excavation, site preparation, any fill backfill placement, etc.) must be conducted with engineering control under observation and testing by a Geotechnical Engineer and in accordance with LADBS.

b. Existing Conditions

(1) Regional Geology

Regionally, the Project Site is located in the northern portion of the Peninsular Ranges Geomorphic Province. This geomorphic province is characterized by northwest-trending physiographic and geologic features, such as the Newport-Inglewood Fault Zone located approximately 5.4 miles to the west.[12] The northern boundary of this province is the active Hollywood Fault, located approximately 0.5 mile to the north.

The Project Site is located in the northern portion of the Los Angeles Basin, which is a coastal plain bounded by the Santa Monica Mountains on the north, the Elysian Hills and Repetto Hills on the northeast, the Puente Hills and Whittier Fault on the east, the Palos Verdes Peninsula and Pacific Ocean on the west and south, and the Santa Ana Mountains and San Joaquin Hills on the southeast. The Los Angeles Basin is underlain by a deep structural depression, which has been filled by both marine and continental sedimentary deposits underlain by a basement complex of igneous and metamorphic composition.

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[12] *The 2016 Geotechnical Investigation identified the Newport-Inglewood Fault Zone as being located 6.0 miles southwest of the Project Site. However, based on new mapping information provided by CGS, the distance is estimated to be 5.4 miles.*

(2) Regional Faulting and Seismicity

The numerous faults in Southern California include Holocene-active, pre-Holocene, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey for the Alquist-Priolo Earthquake Fault Zone Program. By definition, a Holocene-active fault is one that has had surface displacement within Holocene time (about the last 11,700 years). A pre-Holocene fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years) but has had no known Holocene movement. Inactive faults are those that have not shown evidence of surface displacement within the last 1.6 million years.

The Project Site is not located within a State-designated Alquist-Priolo Earthquake Fault Zone or a city-designated Preliminary Fault Rupture Study Area for surface fault rupture hazards.[13,14] No Holocene-active or pre-Holocene faults with the potential for surface fault rupture are known to pass directly beneath the Project Site. Therefore, the potential for surface rupture due to faulting occurring beneath the Project Site during the design life of the proposed development is considered low. However, the Project Site is located in the seismically active Southern California region and could be subjected to moderate to strong ground shaking in the event of an earthquake on one of the many active Southern California faults.

The closest surface trace of a Holocene-active fault to the Project Site is the Hollywood Fault located approximately 0.5 mile to the north. Other nearby active faults include the Raymond Fault, the Newport-Inglewood Fault Zone, the Santa Monica Fault, and the Verdugo Fault located approximately 4.5 miles east, 5.4 miles west, 5.6 miles west, and 6.5 miles northeast of the Project Site, respectively. The active San Andreas Fault Zone is located approximately 33 miles north of the Project Site.

The closest potentially active fault to the site is the MacArthur Park Fault located approximately 1.1 miles to the southeast. Other nearby potentially active faults are the Overland Avenue Fault, the Charnock Fault, and the Coyote Pass Fault located approximately 6.9 miles southwest, 7.7 miles southwest, and 7.9 miles southeast of the site, respectively.

The Los Angeles Basin is also underlain by buried thrust faults, commonly referred to as blind thrust faults, which are faults that are not exposed at the ground surface and are

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[13] *California Geological Survey, Earthquake Zones of Required Investigation Hollywood Quadrangle, updated November 6, 2014.*

[14] *City of Los Angeles Department of City Planning, ZIMAS, Parcel Profile Report for Project Site.*

typically identified at depths greater than 3.0 kilometers. The October 1, 1987, Whittier Narrows earthquake (magnitude 5.9) was a result of movement on the Puente Hills Blind Thrust, and the January 17, 1994, Northridge earthquake (magnitude 6.7) was a result of movement on the Northridge Thrust. While blind thrust faults do not present a potential surface fault rupture hazard, these deep thrust faults are considered active features capable of generating future earthquakes that could result in moderate to significant ground shaking at the Project Site.

As described in the Geotechnical Investigations, recent historic earthquakes with epicenters within 40 miles of the Project Site include the 1933 Long Beach Earthquake (magnitude 6.4), 1971 San Fernando Earthquake (magnitude 6.6), 1987 Whittier Narrows Earthquake (magnitude 5.9), 1991 Sierra Madre Earthquake (magnitude 5.8), and 1994 Northridge Earthquake (magnitude 6.7).

(3) Local Geology

(a) Soil Conditions

According to the Geotechnical Investigations, the Project Site is underlain by artificial fill and slightly to moderately consolidated Pleistocene age deposits consisting of silt, sand, clay, and gravel. Artificial fill was encountered in field explorations to a maximum depth of 13 feet below existing ground surface with varied composition across the Project Site. Borings located in the northwestern corner of the Project Site included fill consisting of brown silty sand to sandy silt. A boring located in the southeastern portion of the Project Site included fill consisting of dark brown clay with trace fine-grained sand. The artificial fill is characterized as dry to slightly moist and loose to medium dense or very soft to soft, and is likely the result of past grading or construction activities at the Project Site. Deeper fill may exist between excavations and in other portions of the Project Site that were not directly explored.

Pleistocene age alluvium was encountered beneath the artificial fill and consists primarily of reddish brown, yellowish brown, and brown interbedded silty sand, clayey sand, sand with various amounts of silt and gravel, silty clay and sandy clay. The older alluvial soils are primarily slightly moist to wet and medium dense to very dense or firm to hard.

(b) Groundwater

According to the Geotechnical Investigations, the historic high groundwater level beneath the Project Site is approximately 45 feet beneath the ground surface. Boring investigations encountered groundwater at depths of 48 and 39 feet below the existing ground surface. These groundwater levels are not static groundwater levels but represent the first water encountered in the borings. The water levels encountered in the borings

likely represent perched water since they are approximately the same elevation or at a higher elevation than the historic high groundwater levels reported for the Project Site. Water encountered in one of the borings was immediately above a less permeable clayey sand bed that strongly suggested a perched water condition. In addition, it is not uncommon for groundwater levels to vary seasonally or for groundwater seepage conditions to develop where none previously existing, especially in impermeable fine-grained soils, which are heavily irrigated or after seasonal rainfall.

(c) Liquefaction

Liquefaction is a phenomenon in which loose, saturated, relatively cohesionless soil deposits lose shear strength during strong ground motions. Primary factors controlling liquefaction include intensity and duration of ground motion, gradation characteristics of the subsurface soils, in-situ stress conditions, and the depth to groundwater. Liquefaction is typified by a loss of shear strength in the liquefied layers due to rapid increases in pore water pressure generated by earthquake accelerations.

The current standard of practice requires liquefaction analysis to a depth of 50 feet below the lowest portion of the proposed structure.[15,16] Liquefaction typically occurs in areas where the soils below the water table are composed of poorly consolidated, fine to medium-grained, primarily sandy soil. In addition to the requisite soil conditions, the ground acceleration and duration of the earthquake must also be of a sufficient level to induce liquefaction. Liquefaction-related effects can include sand boils, excessive settlement, bearing capacity failures, and lateral spreading.[17]

The State of California Seismic Hazard Zone Map for the Hollywood Quadrangle and the City of Los Angeles NavigateLA indicate that the Project Site is not located in an area designated as having a potential for liquefaction.[18,19,20] However, the City of Los

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[15] *Southern California Earthquake Center (Organizer), Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California, March 1999.*

[16] *California Geological Survey, Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California, 2008.*

[17] *The term lateral spreading refers to landslides that commonly form on gentle slopes and have rapid fluid-like flow movement, like water. Source: United States Geological Survey, Earthquake Glossary, https://earthquake.usgs.gov/learn/glossary/?term=lateral%20spread%20or%20flow, accessed March 1, 2022.*

[18] *California Geological Survey, Earthquake Zones of Required Investigation Hollywood Quadrangle, updated November 6, 2014.*

[19] *California Geological Survey, Regulatory Maps Geo Application, https://maps.conservation.ca.gov/cgs/EQZApp/, accessed November 30, 2021.*

Angeles Safety Element identifies the Project Site as located in an area that has been identified as potentially susceptible to liquefaction.[21] The Geotechnical Investigations prepared for the Project concluded that based on the relatively dense to stiff older alluvial deposits underlying the site and the depth of the historic high groundwater level in the site vicinity (approximately 45 feet below ground surface), the potential for liquefaction and associated ground settlement and lateral spread to affect the Project Site is considered very low.

(d) Subsidence

Subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas. Soils that are particularly subject to subsidence include those with high silt or clay content. According to the Geotechnical Investigations, the Project Site is not located within an area of known ground subsidence. No large-scale extraction of groundwater, gas, oil, or geothermal energy is occurring or planned at the Project Site or general vicinity. Specifically, as noted in the Geotechnical Investigations, the Project Site is not located within an oil field and oil or gas wells are not documented in the immediate vicinity. There appears to be little or no potential for ground subsidence due to withdrawal of fluids or gases at the Project Site.

(e) Landslides

A landslide is defined as the movement of a mass of rock, debris, or earth down a slope.[22] According to the Geotechnical Investigations, the Project Site and surrounding area are fully developed and generally characterized by flat topography. The topography at the Project Site is relatively level, and the topography in the immediate site vicinity slopes gently to the south-southwest. According to the California Geological Survey (CGS), the Project Site is not located within a landslide zone or in an area identified as having a potential for seismic slope instability.[23,24] In addition, the County and City of Los Angeles do not identify the Project Site as being located within a landslide or hillside area.[25,26]

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[20] *City of Los Angeles, Department of Public Works, Bureau of Engineering, NavigateLA, www.ladbsservices2.lacity.org/OnlineServices/PermitReport/ParcelProfileDetail2?pin=147A189-166, accessed March 9, 2021.*

[21] *Los Angeles General Plan Safety Element, Exhibit B, Areas Susceptible to Liquefaction (November 1996), p. 49. Sources for Exhibit B also include the Los Angeles City General Plan Framework Element EIR, May 1995; and the County of Los Angeles, General Plan Safety Element Technical Appendix Vol. 2 plate 4 "Liquefaction Susceptibility," January 1990.*

[22] *United States Geological Survey, What is a landslide and what causes one?, www.usgs.gov/faqs/what-landslide-and-what-causes-one, accessed March 1, 2022.*

[23] *California Geological Survey, Regulatory Maps Geo Application, https://maps.conservation.ca.gov/cgs/EQZApp/, accessed November 30, 2021.*

(f) Expansive Soils

Expansive soils are soils that experience significant change in volume associated with changes in water content.[27] As set forth in the Geotech Investigations, soil borings were conducted to a depth of approximately 150½ feet below the existing ground surface. The Geotech Investigations concluded that, based on the depth of the proposed subterranean levels (i.e., up to 83 feet below grade), the Project would not be prone to the effects of expansive soils.

(4) Paleontological Resources

Paleontology is the study of fossils, which are the remains of ancient life forms. On April 19, 2017, a Project-specific paleontological records search was conducted through the Natural History Museum of Los Angeles County to determine the potential impacts of the Project on paleontological resources. The results of the paleontological records search, which are included in Appendix I of this Draft EIR, indicate there are no previously encountered fossil vertebrate localities located within the Project Site. However, the records search indicates that there are nearby fossil localities from sedimentary deposits that are similar to those that occur within the Project Site. The closest identified localities in proximity to the Project Site are LACM 6297-6300, collected at depths between 47 and 80 feet below the surface area along Hollywood Boulevard between US-101 and Western Avenue, less than a mile northeast of the Project Site. These localities produced horse (*Equus)*, bison *(Bison)*, camel *(Camelops),* and mastodon *(Mammut americanum)* fossil specimens. Additional localities include LACM 5845, located approximately 1.7 miles southeast of the Project Site near the intersection of Western Avenue and Council Street, which produced a fossil specimen of mastodon *(Mammutidae)* at a depth of 5 to 6 feet below the surface; LACM 3250, located approximately 2.4 miles southeast of the Project Site and approximately 1.2 miles east-northeast of LACM 5845, near the intersection of Madison Avenue and Middlebury Street, which produced a fossil specimen of mammoth (*Mammuthus)* at a depth of approximately 8 feet below street level; and LACM 3371,

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[24] *California Geological Survey, Earthquake Zones of Required Investigation Hollywood Quadrangle, updated November 6, 2014.*

[25] *City of Los Angeles General Plan Safety Element, Exhibit C, Landslide Inventory and Hillside Areas (November 1996), p. 51. Sources for Exhibit B also include the Los Angeles City General Plan Framework Element EIR, May 1995; and the County of Los Angeles, General Plan Safety Element Technical Appendix Vol. 2 plate 5 "Landslide Inventory," January 1990; County of Los Angeles, General Plan Safety Element Technical Appendix (Vol. 1), Hazard Reduction in Los Angeles County, December 1990.*

[26] *City of Los Angeles Department of City Planning ZIMAS, Parcel Profile Report for the Project Site.*

[27] *Jones, Lee D., and Ian Jefferson, Institution of Civil Engineers Manuals series, Chapter C5—Expansive Soils, p. 1.*

located approximately 2.0 miles southwest of the Project Site near the intersection of Sierra Bonita Avenue and Oakwood Avenue, which produced specimens of bison *(Bison antiques)* at a depth of 12 feet below the surface.

3. Project Impacts

a. Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, a Project would have a significant impact related to geology and soils if it would result in any of the following:

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[28] 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 wastewater.

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[28] *The Division of Mines and Geology is now the California Geological Survey.*

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

For this analysis, the Appendix G Thresholds listed above are 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 questions.

The *L.A. CEQA Thresholds Guide* identifies the following criteria to evaluate impacts related to geology and soils:

(1) Geologic Hazards

- Cause or accelerate geologic hazards, which would result in substantial damage to structures or infrastructure, or expose people to substantial risk of injury.

(2) Sedimentation and Erosion

- Constitute a geologic hazard to other properties by causing or accelerating instability from erosion; or
- Accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition which would not be contained or controlled on-site.

(3) 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 evaluate potential impacts relative to geology and soils, Geotechnical Investigations were prepared by Geocon West, Inc., as provided in Appendix G of this Draft EIR. Based on comments received from LADBS, the Soils Response Letter was prepared by Geocon West, Inc. in October 2021, which is also included in Appendix H of this Draft EIR. The Geotechnical Investigations included a review of published geologic data relevant to the Project Site, soils test borings, and data from previous geological investigations performed within and adjacent to the Project Site. A supplemental letter confirming both geotechnical investigations are applicable to the Project as proposed is also provided as part of Appendix G.

To address potential impacts associated with paleontological resources, a formal records search was conducted by the Natural History Museum of Los Angeles County to assess the paleontological sensitivity of the Project Site and vicinity. In addition, an evaluation of existing conditions and previous disturbances within the Project Site, the geology of the Project Site, and the anticipated depth of grading were evaluated to determine the potential for uncovering paleontological resources.

c. Project Design Features

No specific project design features are proposed with regard to geology and soils.

d. Analysis of Project Impacts

As set forth in Section II, Project Description, of this Draft EIR, the Project proposes two development options—the Residential Option and the Office Option.

The Residential Option would develop a new high-rise building with four levels of subterranean parking consisting of up to 429 new residential units, an approximately 55,000-square-foot grocery store, approximately 5,000 square feet of neighborhood-serving commercial retail uses, and 8,988 square feet of uses in the bungalows. The bungalows would be rehabilitated and adapted for reuse as either restaurants or 12 residential units, in which case the development would still propose a total of 429 residential units on-site. The new building would be 360 feet 4 inches in height when accounting for rooftop mechanical equipment. The estimated depth of excavation expected for the subterranean parking and building foundations would be up to approximately 45 feet below grade. It is estimated that approximately 142,000 cubic yards of export material (e.g., concrete and asphalt surfaces) and soil would be hauled from the Project Site during the demolition and excavation phase. Overall, the Residential Option would provide approximately 484,421 square feet of floor area within the Project Site.

The Office Option would develop a new high-rise building with eight levels of subterranean parking with approximately 463,521 square feet of office uses and 11,914 square feet of restaurant uses in the proposed building, as well as 8,988 square feet of uses in the bungalows. The bungalows would be rehabilitated and adapted for either reuse as restaurants or nine residential units. The new building would be 330 feet when accounting for rooftop mechanical equipment. The estimated depth of excavation expected for the 8 levels of subterranean parking and building foundations would be up to approximately 83 feet below grade. It is estimated that approximately 321,060 cubic yards of export material and soil would be hauled. Upon completion, the Office Option would provide approximately 484,423 square feet of floor area within the Project Site.

The following analysis accounts for both development options and the term "Project" is used to describe all development scenarios unless stated otherwise.

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 or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology[29] Special Publication 42.

(1) Impact Analysis

Ground rupture is the visible breaking and displacement of Earth's surface along the trace of a fault during an earthquake. As previously discussed, based on research of available literature and the findings of the Geotechnical Investigations, no known active or potentially active faults underlie the Project Site. In addition, the Project Site is not located within a State-designated Alquist-Priolo Earthquake Fault Zone or a city-designated Preliminary Fault Rupture Study Area for surface fault rupture hazards.[30,31] According to the Geotechnical Investigations, the closest active fault to the Project Site is the Hollywood Fault, located approximately 0.5 mile to the north. Therefore, 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. **Thus, the Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death related to fault rupture. Impacts associated with surface rupture from a known earthquake fault would be less than significant.**

(2) Mitigation Measures

Project-level impacts related to fault rupture would be less than significant. Therefore, no mitigation measures are required.

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[29] *The Division of Mines and Geology is now the California Geological Survey.*

[30] *California Geological Survey, Earthquake Zones of Required Investigation, Hollywood Quadrangle, updated November 6, 2014.*

[31] *City of Los Angeles Department of City Planning, ZIMAS, Parcel Profile Reports for the Project Site.*

(3) Level of Significant After Mitigation

Project-level impacts related to fault rupture were determined to be less than significant without mitigation. Therefore, no mitigation measures were required, and the impact level remains less than significant.

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?

(1) Impact Analysis

As previously discussed, the Project Site is located within the seismically active region of Southern California and would potentially be subject to strong seismic ground shaking if a moderate to strong earthquake occurs on a local or regional fault. However, State and local code requirements, as discussed above in the Regulatory Framework, ensure that buildings are designed and constructed in a manner that, although the buildings may sustain damage during a major earthquake, would reduce the substantial risk that buildings would collapse. Specifically, the State and City mandate compliance with numerous rules related to seismic safety, including the Alquist-Priolo Earthquake Fault Zoning Act, Seismic Safety Act, Seismic Hazards Mapping Act, the City's General Plan Safety Element, and the Los Angeles Building Code. As stated in the Geotechnical Investigations, the intent of the Building Code is to maintain "Life Safety" during a Maximum Considered Earthquake Ground Motion (MCE) event. MCE is the level of ground motion that has a 2-percent chance of exceedance in 50 years, with a statistical return period of 2,475 years. Based on MCE analyses in the Geotechnical Investigations, a predominant earthquake contributing to the MCE peak ground acceleration would be characterized as a 6.68–6.83 magnitude event occurring at a hypocentral distance of 5.2–6.95 kilometers from the Project Site. Thus, pursuant to the laws described above, the Project must demonstrate compliance with the applicable provisions of these safety requirements before permits can be issued for construction of the Project. Accordingly, 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 the Geotechnical Investigations.

Specifically, the Project would comply with the Los Angeles Building Code, which incorporates current seismic design provisions of the 2019 California Building Code, with City amendments, to minimize seismic impacts. The 2019 California Building Code incorporates the latest seismic design standards for structural loads and materials, as well as provisions from the National Earthquake Hazards Reduction Program to mitigate losses

from an earthquake and maximize earthquake safety. LADBS is responsible for implementing the provisions of the Los Angeles Building Code, and the Project would be required to comply with the plan review and permitting requirements of LADBS, including the recommendations provided in a final, site-specific geotechnical report subject to review and approval by LADBS. In accordance with these regulatory requirements, the Project would implement the recommendations prepared by the Geotechnical Investigations and approved by LADBS, which are included in Appendix G of this Draft EIR, and its final recommendations would be enforced by the LADBS for the construction of the Project.

Through compliance with regulatory requirements, including the implementation of the site-specific geotechnical recommendations contained in the Geotechnical Investigations and 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. Therefore, impacts related to strong seismic ground shaking would be less than significant.

(2) Mitigation Measures

With implementation of regulatory requirements, Project-level impacts related to strong seismic ground shaking would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Project-level impacts related to strong seismic ground shaking were determined to be less than significant without mitigation. Therefore, no mitigation measures were required, and the impact level remains less than significant.

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?

(1) Impact Analysis

As discussed above, the State of California Seismic Hazard Zone Map for the Hollywood Quadrangle indicates that the Project Site is not located in an area designated as having a potential for liquefaction.[32,33] However, the City of Los Angeles Safety Element

[32] *California Geological Survey, Earthquake Zones of Required Investigation Hollywood Quadrangle, updated November 6, 2014.*

identifies the Project Site as located in an area that has been identified as potentially susceptible to liquefaction.[34,35] Nevertheless, the Geotechnical Investigations prepared for the Project concluded that based on the relatively dense to stiff older alluvial deposits underlying the site and the depth of the historic high groundwater level in the site vicinity (approximately 45 feet below ground surface), the potential for liquefaction and associated seismic-related ground failure, including lateral spreading, to affect the Project Site is considered very low. **Therefore, the Project would not directly or indirectly result in substantial adverse effects, including the risk of loss, injury, or death related to seismic-related ground failure, including liquefaction. As such, Project impacts associated with liquefaction would be less than significant.**

(2) Mitigation Measures

Project-level impacts related to liquefaction would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Project-level impacts related to liquefaction were determined to be less than significant without mitigation. Therefore, no mitigation measures were required, and the impact level remains less than significant.

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

iv. Landslides?

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[33] *California Geological Survey, Regulatory Maps Geo Application, https://maps.conservation.ca.gov/cgs/EQZApp/, accessed November 30, 2021.*

[34] *Los Angeles General Plan Safety Element, Exhibit B, Areas Susceptible to Liquefaction (November 1996), p. 49. Sources for Exhibit B also include the Los Angeles City General Plan Framework Element EIR, May 1995; and the County of Los Angeles, General Plan Safety Element Technical Appendix Vol. 2 plate 4 "Liquefaction Susceptibility," January 1990.*

[35] *The State of California Seismic Hazard Zone Maps (1999 and 2014) are published by the CGS and indicate areas identified by CGS to have a potential for liquefaction. These maps are used by LADBS Grading Division to determine if liquefaction analysis is required. NavigateLA reports what is presented on the State's Seismic Hazard Zone maps. The City of Los Angeles Safety Element (1996) reports more generalized zones of potential liquefaction and was published before the State maps were published. Therefore, the State maps are those that will determine if liquefaction analysis is required for a project. In this case, the State maps indicate the Project Site is not within an area that requires liquefaction analysis by the City.*

(1) Impact Analysis

The Project Site and surrounding area are fully developed and generally characterized by flat topography. The topography at the Project Site is relatively level and the topography in the immediate site vicinity slopes gently to the south-southwest. According to the CGS, the Project Site is not located within a landslide zone or in an area identified as having a potential for seismic slope instability.[36,37] In addition, the County and City of Los Angeles do not identify the Project Site as being located within a landslide or hillside area.[38,39] The Project Site is not located near any known landslide areas or a path of any known or potential landslides. Accordingly, the Geotechnical Investigations concluded the potential for slope stability hazards to adversely affect the Project is considered low. **Therefore, the Project would not directly or indirectly result in substantial adverse effects, including the risk of loss, injury, or death involving landslides. As such, Project impacts associated with landslides would be less than significant.**

(2) Mitigation Measures

Project-level impacts related to landslides would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significant After Mitigation

Project-level impacts related to landslides were determined to be less than significant without mitigation. Therefore, no mitigation measures were required, and the impact level remains less than significant.

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

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[36] *California Geological Survey, Regulatory Maps Geo Application, https://maps.conservation.ca.gov/cgs/EQZApp/, accessed November 30, 2021.*

[37] *California Geological Survey, Earthquake Zones of Required Investigation Hollywood Quadrangle, updated November 6, 2014.*

[38] *City of Los Angeles General Plan Safety Element, Exhibit C, Landslide Inventory and Hillside Areas (November 1996), p. 51. Sources for Exhibit B also include the Los Angeles City General Plan Framework Element EIR, May 1995; and the County of Los Angeles, General Plan Safety Element Technical Appendix Vol. 2 plate 5 "Landslide Inventory," January 1990; County of Los Angeles, General Plan Safety Element Technical Appendix (Vol. 1), Hazard Reduction in Los Angeles County, December 1990.*

[39] *City of Los Angeles Department of City Planning ZIMAS, Parcel Profile Report for the Project Site.*

As discussed in the Initial Study prepared for the Project included in Appendix A of this Draft EIR, although Project development has the potential to result in the erosion of soils, this potential would be reduced by implementation of standard erosion controls imposed during site preparation and grading activities. All grading activities would require grading permits from LADBS, which would include requirements and standards designed to limit potential impacts 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. Regarding soil erosion during Project operations, the potential is relatively low since the Project Site would be fully developed with paving, structures, and landscaping. **Therefore, with compliance with applicable regulatory requirements, the Project would not result in substantial soil erosion or the loss of topsoil. Project impacts regarding Threshold (b) would be less than significant, and 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?

(1) Impact Analysis

As discussed above, the Project Site is not located in a landslide area as mapped by the State or the City. In addition, the Project would not alter exposed soils on a hill or inject water into the soil upslope that could cause a landslide downhill. Therefore, the potential for slope stability hazards to adversely affect the Project Site is considered low.

The Project's potential impacts associated with liquefaction are addressed above in Threshold (a)iii. As discussed therein and concluded in the Geotechnical Investigations, due to the relatively dense to stiff older alluvial deposits underlying the site and the depth of the historic high groundwater level in the site vicinity (approximately 45 feet below ground surface), the potential for liquefaction and associated ground settlement and lateral spread to affect the Project Site is considered very low.

In addition, as previously discussed, subsidence generally occurs when a large portion of land is displaced vertically, usually due to the rapid and intensive withdrawal of subterranean fluids such as groundwater or oil. According to the Geotechnical Investigations, the Project Site is not located within an area of known ground subsidence, and no large-scale extraction of gas, oil, or geothermal energy is occurring or is planned at the Project Site. However, based on the depth of excavation proposed (i.e., 45 feet for the Residential Option and 83 feet for the Office Option), the historic high groundwater level (i.e., approximately 45 feet below ground surface), and depth of groundwater encountered in the borings (i.e., 39 feet and 48 feet below ground surface) conducted at the Project Site,

temporary dewatering is anticipated during construction. As discussed in the Soils Response Letter, based on this data and the assumption that a static groundwater table is present at the Project Site, temporary shoring that can provide a relatively impermeable groundwater barrier, such as secant piles or a sheet pile wall, is recommended for the Project Site. This would reduce the extent of the drawdown curve and, therefore, the settlement associated with temporary dewatering. With implementation of a shoring and dewatering system following the recommendations of the Soils Response Letter, settlements resulting from temporary dewatering are anticipated to be less than 0.5 inch adjacent to the excavation and would decrease with increased distance away. These settlements are not anticipated to have an appreciable effect on the surrounding properties or structures or on the public right-of-way. As noted above, the Project would be required to comply with the plan review and permitting requirements of LADBS, including the recommendations provided in a final, site-specific geotechnical report subject to review and approval by LADBS. In accordance with these regulatory requirements, the Project would implement the recommendations included in the Geotechnical Investigations and Soils Response Letter approved by LADBS, and the final recommendations would be enforced by the LADBS for the construction of the Project.

Collapsible soils consist of loose, relatively low-density materials that collapse and compact under the addition of water or excessive loading.[40] According to the Geotechnical Investigations, the Project Site is underlain by artificial fill (to a maximum depth of 13 feet below ground) and slightly to moderately consolidated Pleistocene age deposits consisting of silt, sand, clay, and gravel. The artificial fill is characterized as dry to slightly moist and loose to medium dense or very soft to soft and is likely the result of past grading or construction activities at the Project Site. The older alluvial soils are characterized as primarily slightly moist to wet and medium dense to very dense or firm to hard. Due to the potential for high-moisture content soils at the excavation bottom, or if construction is performed during the rainy season and the excavation bottom becomes saturated, stabilization measures may have to be implemented to prevent excessive disturbance the excavation bottom. As such, in accordance with Los Angeles Building Code requirements, the Project would implement site-specific recommendations prepared by Geotechnical Engineer and approved by LADBS, including those for subgrade stabilization.

Through compliance with regulatory requirements, including the implementation of the site-specific geotechnical recommendations contained in the Geotechnical Investigations, Soils Response Letter, the Project would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of

[40] *Encyclopedia of Engineering Geology 2018 Edition, Collapsible Soils, https://link.springer.com/referenceworkentry/10.1007%2F978-3-319-73568-9_61, accessed November 30, 2021.*

the Project and could potentially result in on- or off-site landslide, lateral spreading, subsidence, or liquefaction. Thus, such impacts would be less than significant.

(2) Mitigation Measures

Project-level impacts related to landslides, subsidence, liquefaction, lateral spreading, and collapsible soils would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Project-level impacts related to landslides, subsidence, liquefaction, lateral spreading and collapsible soils were determined to be less than significant without mitigation. Therefore, no mitigation measures were required, and the impact level remains less than significant.

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 risks to life or property?

(1) Impact Analysis

As discussed in the Geotechnical Investigations, based on the depth of the subterranean levels, the Project would not be prone to the effects of expansive soils. In addition, in accordance with regulatory requirements, the Project would implement the recommendations set forth in the site-specific Geotechnical Investigations prepared by the Geotechnical Engineer and approved by LADBS. Accordingly, all trench and foundation excavation bottoms must be observed and approved in writing by the Geotechnical Engineer prior to placing bedding material, fill, steel, gravel or concrete. Furthermore, any imported fill shall be observed, tested, and approved by the Geotechnical Engineer prior to bringing soil to the Project Site. Soils would also be conditioned to optimum moisture content and proper compaction in accordance with LADBS requirements and ASTM (American Society for Testing and Materials) methods. **Thus, the Project would not be located on expansive soil creating substantial risks to life or property. Project impacts due to expansive soils would be less than significant.**

(2) Mitigation Measures

Project-level impacts related to expansive soils would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Project-level impacts associated with expansive soils were determined to be less than significant without mitigation. Therefore, no mitigation measures were required, and the impact level remains less than significant.

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 the Initial Study for the Project included as Appendix A of this Draft EIR, the Project Site is located within a community served by existing sewage infrastructure. The Project's wastewater demand would be accommodated by connections to the existing wastewater infrastructure. As such, the Project would not require the use of septic tanks or alternative wastewater disposal systems. **As determined in the Initial Study, the Project would not result in impacts related to the ability of soils to support septic tanks or alternative wastewater disposal systems. Therefore, no impacts 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

The Project Site is relatively flat and located within an urbanized area. It does not contain any unique geologic or topographic features (i.e., hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, or wetlands). As previously discussed, a records search conducted for the Project Site indicates there are no previously encountered fossil vertebrate localities located within the Project Site. The closest identified localities in proximity to the Project Site are LACM 6297-6300, collected at depths between 47 and 80 feet below the surface area along Hollywood Boulevard between US-101 and Western Avenue. These localities produced horse (*Equus)*, bison *(Bison)*, camel *(Camelops),* and mastodon *(Mammut americanum)* fossil specimens.

As discussed above, soils beneath the Project Site consist of artificial fill to a maximum depth of 13 feet, underlain by Pleistocene age alluvium. As concluded in the search conducted by the Natural History Museum, very shallow excavations in the older Quaternary Alluvium exposed throughout the Project Site are unlikely to uncover significant vertebrate fossils. However, deeper excavations that extend down into older deposits may encounter significant vertebrate fossil remains. As described in Section II, Project Description, of this Draft EIR, the estimated depth of excavation expected for the subterranean parking and building foundations would be approximately 45 feet below grade

for the Residential Option and approximately 83 feet for the Office Option. Thus, based on the above and as concluded in the search conducted by the Natural History Museum, excavations that extend down into older deposits may encounter significant vertebrate fossil remains.

However, the City has established a standard condition of approval to address inadvertent discovery of paleontological resources. Should paleontological resources be inadvertently encountered, this condition of approval provides for temporary halting construction activities near the encounter so the find can be evaluated. A paleontologist shall temporarily divert or redirect grading and excavation activities in the area of the exposed material to facilitate evaluation and, if necessary, salvage. The paleontologist shall then assess the discovered material(s) and prepare a survey, study or report evaluating the impact. The Applicant shall then comply with the recommendations of the evaluating paleontologist, and a copy of the paleontological survey report shall be submitted to the Los Angeles County Natural History Museum and the Department of City Planning. Ground-disturbing activities may resume once the paleontologist's recommendations have been implemented to the satisfaction of the paleontologist. In accordance with the condition of approval, all activities would be conducted in accordance with regulatory requirements.

Therefore, while development of the Project Site has a relatively low potential to encounter buried paleontological resources based on the soil types underlying the Project Site and depth of excavation, with implementation of the City's established condition of approval to address any inadvertent discovery of paleontological resources, the Project would not directly or indirectly destroy a unique paleontological resource or site or unique geological feature, and impacts would be less than significant.

(2) Mitigation Measures

Project-level impacts related to paleontological resources would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Project-level impacts related to 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.

e. Cumulative Impacts

(1) Impact Analysis

Due to the site-specific nature of geological conditions (i.e., soils, geological features, subsurface features, seismic features, etc.), geology impacts are typically assessed on a project-by-project basis, rather than on a cumulative basis. Nonetheless, cumulative growth through 2027, the Project's anticipated build-out year (inclusive of the 103 related projects identified in Section III, Environmental Setting, of this Draft EIR) would expose a greater number of people to seismic hazards. However, as with the Project, related projects and other future development projects would be subject to established guidelines and regulations pertaining to building design and seismic safety, including those set forth in the California Building Code and Los Angeles Building Code, as well as site-specific geotechnical evaluations that would identify potential effects related to the underlying geologic and soil conditions for a particular related project site. **Project impacts with regard to geology and soils would not be cumulatively considerable. With adherence to applicable regulations and any site-specific recommendations set forth in a required site-specific geotechnical evaluation, cumulative impacts related to geological and soils conditions would be less than significant.**

With regard to potential cumulative impacts related to paleontological resources, the Project vicinity is located within an urbanized area that has been disturbed and developed over time. Therefore, any subsurface paleontological resources have likely been disturbed by present development. As with the Project, each related project would be subject to the City's standard condition of approval to address the potential for uncovering of paleontological resources. **Therefore, based on the above, Project impacts with regard to paleontological resources would not be cumulatively considerable, and cumulative impacts to paleontological resources would be less than significant.**

(2) Mitigation Measures

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

(3) Level of Significance After Mitigation

Cumulative impacts with regard to geology and soils and paleontological resources were determined to be less than significant without mitigation. Therefore, no mitigation measures were required, and the impact level remains less than significant.