

5.6 GEOLOGY AND SOILS

This section discusses the existing geologic and paleontological setting of the Project Site and assesses the Project's potential impacts related to geologic resources and hazards and paleontological resources.

5.6.1 SUMMARY OF PREVIOUS ENVIRONMENTAL DOCUMENTATION

The Disneyland Resort EIR No. 311

Analysis of potential impacts related to earth resources in EIR No. 311, certified by the City in 1993, indicated implementation of The Disneyland Resort Project would expose people to seismic risks that are typical of Southern California. It was determined that potential impacts related to soil erosion, loss of topsoil, and expansive soils could occur. These risks and potential impacts were considered less than significant with implementation of mitigation measures MM 3.6-1 through MM 3.6-5 listed below. EIR No. 311 also addressed potential impacts related to liquefaction and ground failure, landslides, unstable geologic units or soil, and use of septic tanks or alternative wastewater disposal systems and found that no mitigation was required to reduce impacts. EIR No. 311 determined that there were no known paleontological resources within or near The Disneyland Resort; however, EIR No. 311 required implementation of mitigation measure MM 3.13-2, which is provided below, to ensure less than significant impacts related to paleontological resources.

EIR No. 311 Mitigation Measures

EIR No. 311 and Modified MMP No. 0067¹ required implementation of the following mitigation measures (MM) regarding geology and soils and paleontological resources to reduce potential impacts associated with full build-out of The Disneyland Resort Project to less than significant levels.

- MM 3.6-1** Prior to the approval of each grading plan, the property owner/developer shall submit a thorough soils and geological report for the area to be graded, based on proposed grading and prepared by an engineering geologist and geotechnical engineer. The report shall comply with Title 17 of the Anaheim Municipal Code.
- MM 3.6-2** Prior to the issuance of each building permit, the property owner/developer shall submit for review and approval detailed foundation design information for the subject buildings prepared by a civil engineer based on recommendations by a geotechnical engineer.
- MM 3.6-3** Prior to issuance of each foundation permit, the property owner/developer shall submit a report prepared by a geotechnical engineer for review and approval which shall investigate the subject foundation excavations to determine if soft layers are present immediately beneath the footing site and to ensure that compressibility does not underlie the footing.
- MM 3.6-4** Prior to issuance of each building permit, the property owner/developer shall submit plans showing that the proposed structure has been analyzed for earthquake loading and designed according to the most recent seismic standards in the Uniform Building Code adopted by the City of Anaheim.

¹ Addendum No. 1 to EIR No. 311, which the City approved in 1996, modified MMP No. 0067.

MM 3.6-5 Ongoing during project operations, the property owner/developer shall coordinate earthquake training with the Fire Department for hotel staff and cast members.

MM 3.6-6 Prior to final building and zoning inspection, for hotels, the property owner/developer shall submit an earthquake emergency response plan for review and approval. That plan shall require posted notices in all hotel rooms on earthquake safety procedures.

(Note: Environmental equivalent approved on 1/15/99 to change the timing of the measure from prior to issuance of each building permit to prior to final building and zoning inspections.)

MM 3.13-2 Prior to approval of each grading plan, the property owner/developer shall submit a letter identifying the certified paleontologist that has been hired to ensure that the following actions are implemented:

- a. The paleontologist must be present at the pregrading conference in order to establish procedures to temporarily halt or redirect work to permit the sampling, identification, and evaluation of fossils if potentially significant paleontological resources are uncovered. If artifacts are uncovered and found to be significant, the paleontological observer shall determine appropriate actions in cooperation with the property owner/developer for exploration and/or salvage.
- b. Specimens that are collected prior to or during the grading process will be donated to an appropriate educational research institution.
- c. Any paleontological work at the site shall be conducted under the direction of the certified paleontologist. If any fossils are discovered during grading operations when the paleontological monitor is not present, grading shall be diverted around the area until the monitor can survey the area.
- d. A final report detailing the findings and disposition of the specimens shall be submitted. Upon completion of the grading, the paleontologist shall notify the City as to when the final report will be submitted.

Anaheim Resort Specific Plan SEIR No. 340

SEIR No. 340, certified by the City in 2012, is a supplemental EIR that reevaluated environmental changes in and around The Anaheim Resort since certification of EIR No. 313 in 1994. SEIR No. 340 identified active and potentially active faults in the region that could result in seismic-related impacts to future development projects associated with the buildout of the ARSP Project. Seismic events along these faults have the potential to result in strong ground motion. SEIR No. 340 concluded that potential impacts related to seismic ground shaking would be reduced to less than significant levels with implementation of the MM 5.5-1 through MM 5.5-6, below, conformance with the applicable requirements listed in the Anaheim Municipal Code, and conformance to the California Building Code (CBC).

As noted in SEIR No. 340, the ARSP area is located in a relatively flat area with minimal potential for erosion impacts due to the high amount of urban development and low amount of bare ground. However, during demolition and construction activities when areas are exposed to erosion and loss of topsoil, adherence to local and State codes and requirements for erosion control and grading, compliance with the National Pollutant Discharge Elimination System (NPDES) permit, and the subsequent development of a Storm Water Pollution Prevention Plan (SWPPP) would ensure that impacts would be less than significant.

Additionally, expansive soils are known to exist in the ARSP area; however, implementation of mitigation requiring adherence to measures requiring detailed foundation design and preparation of a report to analyze foundation excavations would reduce potential impacts to less than significant levels.

SEIR No. 340 found that grading and construction activities associated with build out of the ARSP Project could impact unanticipated paleontological resources, which would be considered significant. This impact would be mitigated to a less than significant level with implementation of mitigation measure MM 5.4-2.

SEIR No. 340 Mitigation Measures and Standard Requirements

SEIR No. 340 required implementation of the following mitigation measures (MM) and standard requirement (SR) regarding geology and soils, including paleontology, to reduce potential impacts associated with full build-out of the ARSP Project to less than significant levels.

MM 5.4-2 Prior to issuance of each grading permit, the property owner/developer shall submit a letter identifying the certified paleontologist that has been hired to ensure that the following actions are implemented:

- a. The paleontologist must be present at the pre-grading conference in order to establish procedures to temporarily halt or redirect work to permit the sampling, identification, and evaluation of fossils if potentially significant paleontological resources are uncovered. If artifacts are uncovered and found to be significant, the paleontological observer shall determine appropriate actions in cooperation with the property owner/developer for exploration and/or salvage.
- b. Specimens that are collected prior to or during the grading process will be donated to an appropriate educational or research institution.
- c. Any paleontological work at the site shall be conducted under the direction of the certified paleontologist. If any fossils are discovered during grading operations when the paleontological monitor is not present, grading shall be diverted around the area until the monitor can survey the area.

MM 5.5-1 Prior to issuance of each building permit, the property owner/developer shall submit to the Planning and Building Department, Building Services Division for review and approval, detailed foundation design information for the subject building(s), prepared by a civil engineer, based on recommendations by a geotechnical engineer.

MM 5.5-2 Prior to issuance of each foundation permit, the property owner/developer shall submit a report prepared by a geotechnical engineer to the Planning and Building Department, Building Services Division for review and approval, which shall investigate the subject foundation excavations to determine if soft layers are present immediately beneath the footing site and to ensure that compressibility does not underlie the footing.

MM 5.5-3 Prior to issuance of each building permit, the property owner/developer shall submit plans to the Planning Department, Building Services Division for review and approval showing that the proposed structure has been analyzed for earthquake loading and designed according to the most recent seismic standards in the California Building Code adopted by the City of Anaheim.

- MM 5.5-4** Prior to the final building and zoning inspection for a hotel/motel, the property owner/developer shall submit an earthquake emergency response plan for review and approval by the Fire Department. The plan shall require posted notices in all hotel rooms on earthquake safety procedures and incorporate ongoing earthquake training for hotel staff to the satisfaction of the Fire Department.
- MM 5.5-5** Ongoing during grading activities, the property owner/developer shall implement standard practices for all applicable codes and ordinances to prevent erosion to the satisfaction of the Planning and Building Department, Building Services Division.
- MM 5.5-6** Prior to issuance of building or grading permits, the property owner/developer shall submit to the Planning and Building Department, Building Services Division geologic and geotechnical investigations in areas of potential seismic or geologic hazards and provide a note on plans that all grading operations will be conducted in conformance with the recommendations contained in the applicable geotechnical investigation.
- SR 5.5-1** All grading operations will be conducted in conformance with the Anaheim Municipal Code, Title 17, Land Development and Resources, and the most recent version of the California Building Code.

5.6.2 ENVIRONMENTAL SETTING

The following discussion details the existing conditions at the time the City published the NOP for Subsequent EIR No. 352; however, consistent with CEQA's subsequent review standards, the previously approved projects serve as the baseline for the CEQA analysis, and Subsequent EIR No. 352 compares the effects of the Project changes to the previously approved projects with the effects of the previously analyzed and approved projects, as detailed in EIR No. 311 and SEIR No. 340.

A. Existing Conditions

Regional Physiography, Topography and Geology

The City of Anaheim is situated in the Peninsular Ranges Geomorphic Province. The geomorphic province encompasses an area that extends approximately 900 miles from the Transverse Ranges and the Los Angeles Basin, south to the southern tip of Baja California. The province varies in width from approximately 30 to 100 miles. In general, the province consists of a northwest-southeast oriented complex of blocks separated by similar trending faults. The basement bedrock complex includes Jurassic-age metavolcanic and metasedimentary rocks, and Cretaceous-age igneous rocks of the Southern California batholith.

The City of Anaheim extends from the southerly portion of the Los Angeles Basin easterly into the northern portions of the Santa Ana Mountains. The western portions of Anaheim, including the Project Site, are located in the Central Block of the Los Angeles Basin. The Central Block is characterized by thick layers of alluvium overlying predominantly sedimentary rock of the Quaternary through Cretaceous ages. The depths to crystalline basement rocks are known from petroleum well logs and geophysical data. The total thickness of the sedimentary section is roughly 13,000 feet near the southern end of the Los Angeles basin.

Existing Local Geological Setting

The distribution of geologic units at the surface within the City reflects the geography and can be divided into two general areas: west and east. The broad alluvial plain area in the western half of the City, including the Project Site, is generally mantled by Holocene-age (up to 11,000 years old) alluvial deposits, which become increasingly older with depth. East of the Project area, Pleistocene-age (11,000 to 2.6 million years old) terrace deposits are present on elevated terraces along the upper edges of the alluvial plains and the lower benches of the hillside areas.

Undifferentiated Holocene Alluvium is composed primarily of unconsolidated gravel, sand, silt, and clay. The more recent alluvial deposits (less than 1,000 years old) are generally found along active stream and river courses (Anaheim 2004a). The majority of the flat, alluvial plain areas outside the active stream channels are underlain by alluvial deposits that are considered to have been deposited between 1,000 and 10,000 years ago. As shown on Exhibit 5.6-1, Paleontologic Map, the Project Site is underlain by Qvof, or very old alluvial-fan deposits that are considered to be high paleontological sensitivity and with a high likelihood to contain fossils and paleontological resources, according to the California Department of Conservation (2021).

Geologic Hazards

The following sections summarize potential geologic hazards in the Project area, including seismicity and faulting. The State regulates development within California to reduce or mitigate potential hazards from earthquakes or other geologic hazards. Development in seismically active areas is also governed by the Alquist-Priolo Earthquake Fault Zoning Act and the Seismic Hazards Mapping Act. Each of these acts serves to promote, preserve, and to safeguard against major structural failure or loss of life in earthquake or ground-shaking events (Anaheim 2004a). The CBC regulates the design and construction of excavations, foundations, building frames, retaining walls, and other building elements to mitigate the effects of seismic shaking.

Faulting and Seismicity

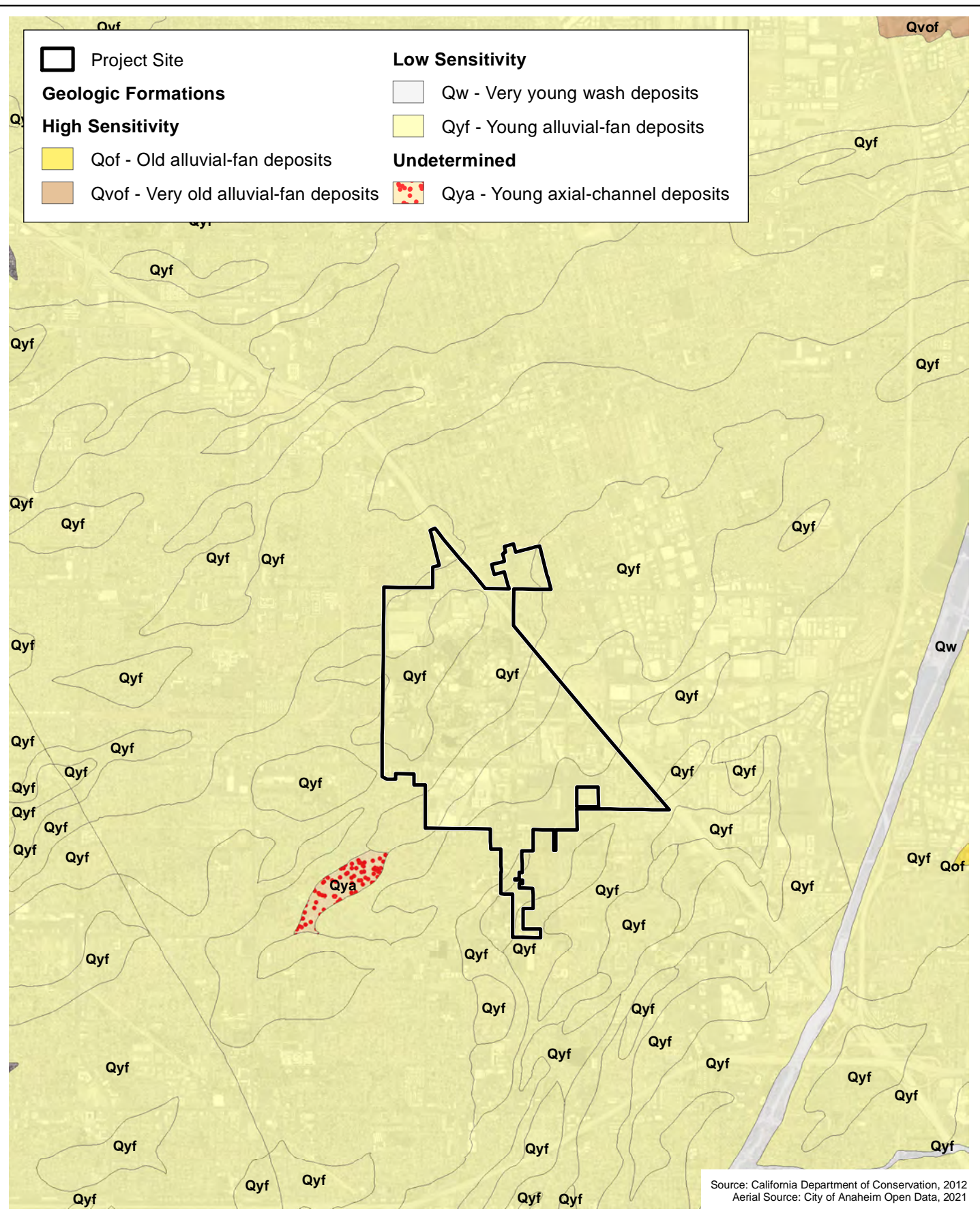
As with all of Southern California, the Project Site is located within a seismically active region. The primary seismic parameters to be considered when discussing the potential for earthquake-related hazards are (1) the distance(s) to the causative fault(s), (2) earthquake magnitudes, and (3) expected ground accelerations.

There are no known active or potentially active faults traversing the Project Site, and the Project Site is not included within an Alquist-Priolo Earthquake Fault Zone (CGS 2021).

Earthquakes from several active and potentially active faults in the region could affect future developments within the Project area. The San Andreas fault is the primary feature of the San Andreas fault system, and is capable of causing a large magnitude earthquake. Additionally, there are over one hundred smaller active faults in the region around the City that can cause damaging earthquakes (CEA 2023a).

Strong Ground Motion

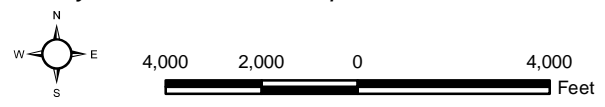
Seismic activity along nearby or more distant fault zones is likely to cause ground shaking within the City limits. The City of Anaheim, including the Project Site, has an up to 20 percent probability of a magnitude (M) 6.7 or greater earthquake in the next 20 years along the numerous faults in Southern California. The highest potential for a large earthquake is along the San Andreas fault, located approximately 39 miles east of the City. Peralta Hills fault is the closest fault, located approximately 1.5 miles from the City, and has less than a 1 percent probability of generating a



Paleontologic Map

DisneylandForward Subsequent EIR

Exhibit 5.6-1



6.7M or greater earthquake. The Project Site is located in an area with a Shake Potential of between 0.75g² and 1.05g, which means Anaheim could experience strong shaking throughout most of the community, including at the Project Site (City of Anaheim 2023a). Distances from Anaheim to active faults within a 100km distance are presented in Table 5.6-1 below.

**TABLE 5.6-1
PRINCIPAL ACTIVE FAULTS**

Fault	Approximate Distance to City Limits (Miles)
Elsinore – Whittier	0.7
Elsinore – Glen Ivy	1.3
Chino-Central Avenue	2.0
Newport-Inglewood (L.A. Basin)	7.0
San Jose	13.0
Newport-Inglewood (offshore)	15.0
Palos Verdes	15.0
Cucamonga	19.0
Sierra Madre (central)	19.0
Raymond	21.0
Verdugo	22.0
Clamshell – Sawpit	23.0
Hollywood	23.5
San Jacinto – San Bernardino	25.0
San Jacinto – San Jacinto Valley	27.0
Santa Monica	28.5
San Andreas – Southern	31.0
Elsinore – Temecula	33.0
Malibu Coast	33.0
San Andreas – 1857 Rupture	33.0
Cleghorn	33.5
Sierra Madre (San Fernando)	35.0
San Gabriel	37.0
North Frontal Fault Zone (West)	38.0
Coronado Bank	39.0
Anacapa – Dume	40.5
San Jacinto – Anza	43.5
Santa Susana	44.0
Elsinore – Julian	40.0
Holister	50.0
Rose Canyon	53.0
Oak Ridge (onshore)	55.0
Simi – Santa Rosa	55.0
Helendate – South Lockhardt	57.8
San Cayentano	60.0
Source: City of Anaheim 2012.	

² g = gravitation force equivalent, or commonly g-force

In the recorded past, the City of Anaheim has not experienced a major destructive earthquake. However, several major earthquakes have been recorded within approximately 100 kilometers of the Project area as shown in Table 5.6-2 below.

**TABLE 5.6-2
MAJOR EARTHQUAKES**

Date	Location	Maximum Magnitude (M)^a	Approximate Epicentral Distance (miles)
7/28/1769	Los Angeles Basin	6.0	10
11/22/1800	San Diego Basin	6.5	52
12/8/1812	Wrightwood	7.0	41
7/11/1855	Los Angeles Region	6.0	40
12/16/1858	San Bernardino Region	6.0	23
7/30/1894	Lytle Creek Region	6.0	37
4/21/1918	San Jacinto	6.9	43
7/23/1923	San Bernardino Region	6.0	56
3/11/1933	Long Beach	6.3	16
2/9/1971	San Fernando	6.5	51
10/1/1987	Whittier Narrows	5.8	20
1/17/1994	Northridge	6.7	45
11/9/2001	West Hollywood	4.2	50
7/29/2008	Chino Hills	5.4	25
3/17/2014	Westwood	4.4	54
3/28/2014	La Habra	5.1	12
9/18/2020	South El Monte	4.5	27

^a Magnitudes listed are "summary magnitudes". Prior to 1898, these are adjusted intensity magnitudes and after 1898, are surface wave magnitudes.

Source: City of Anaheim 2012, CEA 2023b.

B. Regulatory Framework

Due to the ever-evolving nature of building regulations and regulatory documents, property owners/developers are required to comply with all current applicable codes at the time of permit issuance.

Federal

International Building Code

The International Building Code (IBC) is the national model building code providing standardized requirements for construction. The IBC establishes consistent construction guidelines for the nation, and has been adopted with amendments into the CBC. The IBC contains codes related to geology and soils, including Chapter 16 (structural design) and Chapter 18 (soils and foundations) (ICC 2021).

State

California Green Building Standards Code

The 2022 California Green Building Standards Code (CBC; 24 CCR, Part 11), also known as the CALGreen code, is promulgated under the California Code of Regulations, Title 24 (Parts 1 through 12), and is administered by the California Building Standards Commission. CALGreen includes regulations for energy efficiency, water efficiency, and conservation, material conservation and resources efficiency, and environmental quality. The code is applicable to commercial, residential, and public school buildings, with residential and nonresidential provisions provided in separate chapters. (CBSC 2022).

California Building Code

The national model code standards adopted into Title 24 apply to all occupancies in California except for modifications adopted by State agencies and local governing bodies. The CBC establishes general standards for the design and construction of buildings, including provisions related to seismic safety. The CBC provides standards that must be met to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures in its jurisdiction. Chapter 18 of the CBC, Soils and Foundations, specifies the level of soil investigation required by law in California. Requirements in Chapter 18 apply to building and foundations systems and consider reduction of potential seismic hazards.

Alquist-Priolo Earthquake Fault Zoning Act of 1972

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) was adopted by the State of California in 1972 in order to mitigate surface fault rupture hazards along known active faults (California Public Resources Code [PRC] Section 2621, et seq.). The purpose of the Alquist-Priolo Act is to reduce the threat to life and property—specifically from surface fault rupture—by preventing the construction of buildings used for human occupancy on the surface trace of active faults. Under the Alquist-Priolo Act, the California Geological Survey (CGS) has defined an “active” fault as one that has had surface displacement during the past 11,000 years (Holocene time). This law directs the State Geologist to establish Earthquake Fault Zones (known as “Special Studies Zones” prior to January 1, 1994) to regulate development in designated hazard areas. In accordance with the Alquist-Priolo Act, the State has delineated “Earthquake Fault Zones” along identified active faults throughout California. City and County jurisdictions must require a geologic investigation to demonstrate that a proposed development project, which includes structures for human occupancy, is adequately set back (generally at least 50 feet) from an active fault prior to permitting. The Project Site is not within an Earthquake Fault Zone (CSG 2020).

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act (SHMA) was passed in 1990 and directs the California Geological Survey (formerly the California Division of Mines and Geology) to identify and map areas subject to earthquake hazards such as liquefaction, earthquake-induced landslides, and amplified ground shaking (PRC Sections 2690–2699.6). Passed by the State legislature after the 1989 Loma Prieta Earthquake, the SHMA is aimed at reducing the threat to public safety and minimizing potential loss of life and property in the event of a damaging earthquake event. Seismic Hazard Zone Maps are a product of the resultant Seismic Hazards Mapping Program and are produced to identify Zones of Required Investigation; most developments designed for human occupancy in these zones must conduct site-specific geotechnical investigations to identify the hazard and to develop appropriate mitigation measures prior to permitting by local jurisdictions.

The SHMA establishes a statewide public safety standard for the mitigation of earthquake hazards, including providing guidance for the evaluation and mitigation of earthquake-related hazards for projects in designated zones of required investigations.

California Public Resources Code

California Public Resources Code Section 5097.5 provides for the protection of cultural and paleontological resources and prohibits the removal, destruction, injury, or defacement of archaeological and paleontological features on any lands under the jurisdiction of State or local authorities.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires all projects to consider potential impacts related to unique paleontological resources or geologic features.

Local

Anaheim Municipal Code

The City of Anaheim has adopted the 2019 CBC, as amended, and the 2019 California Green Building Standards Code, as amended, which are both codified at Title 15, Buildings and Housing, of the Anaheim Municipal Code (City of Anaheim 2023b). The City reviews construction plans to ensure design compliance with applicable codes.

The Anaheim Municipal Code also includes Title 17, Land Development and Resources, which provides guidelines related to grading, excavation and fills.

City of Anaheim General Plan's Green Element and Safety Element

There are two specific areas in the City of Anaheim General Plan that address the issue of geology: the Green Element and the Safety Element. The Green Element comprehensively addresses topics concerning hillside grading, including minimization of grading, and completion of erosion and sediment control plans (Anaheim 2004a). The Safety Element establishes policies and programs to protect the community from risks associated with potential seismic and geologic hazards in an attempt to avoid or minimize exposure to these potential hazards. Applicable goals and policies from the Green Element and the Safety Element that are related to geology and soils and applicable to the Project are provided in Table 5.10-1 in Section 5.10, Land Use and Planning, with a Project consistency analysis.

5.6.3 PROJECT IMPACT ANALYSIS

A. Methodology

Paleontological Resources Records Search and Literature Review

The analysis in this section is based on review of information available in the City of Anaheim General Plan (Anaheim 2004a), EIR No. 311, and SEIR No. 340, and A Catalogue of Late Quaternary Vertebrates from California: Part Two (Jefferson 1991, 2006).

A paleontological resources records search and literature review was also conducted by Dr. Samuel A. McLeod at the Los Angeles County Natural History Museum on June 10, 2021. The records search letter can be found in Appendix F.

B. Thresholds of Significance

The following significance criteria are derived from the City of Anaheim Environmental Checklist. The Project would result in a significant impact related to geology and soils if it would:

- Threshold 5.6a:** *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*
- Threshold 5.6b:** *Result in substantial soil erosion or the loss of topsoil.*
- Threshold 5.6d:** *Be located on expansive soils, as defined in Section 1803.5.3 of the California Building Code (2010), creating substantial direct or indirect risks to life or property.*
- Threshold 5.6f:** *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.*

Geology and soils resource thresholds a(iii) (liquefaction), a(iv) (landslides), c (unstable soil or geologic unit), and e (septic tanks or alternative wastewater disposal system) were evaluated in Section 3.7 of the Initial Study prepared for this Project. The Initial Study concluded that the Project would have no impact or a less than significant impact related to these thresholds. Therefore, these thresholds are not discussed in this Subsequent EIR.

C. Standard Requirements

- SR GEO-1** All grading operations will be conducted in conformance with the Anaheim Municipal Code, Title 17, Land Development and Resources, and the most recent version of the California Building Code (**SEIR No. 340, SR 5.5-1**).
- SR HWQ -1** Development projects that will result in soil disturbance of one (1) or more acres of land shall comply with the State's Construction General Permit by filing a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) and implementing a Storm Water Pollution Prevention Plan (SWPPP). Prior to the issuance of preliminary or precise grading permits, the property owner/developer shall provide the City Engineer with evidence that an NOI has been filed with the SWRCB by providing a copy of the NOI invoice and the assigned Waste Discharger Identification (WDID) No. for the project. The SWPPP shall include Best Management Practices (BMPs) designed with a goal of preventing a net sediment load increase in storm water discharges relative to preconstruction levels and shall prohibit during the construction period discharges of storm water or non-storm water at levels which would cause or contribute to an exceedance of applicable water quality standards contained in the Basin Plan. The BMPs shall address erosion control, sediment control, wind erosion control, tracking control, non-storm water management and waste management and materials pollution control during all phases of construction, including a sampling and analysis plan for sediment and non-visible storm water pollutants. The property owner/developer

shall be responsible for proper implementation of the SWPPP. (**SEIR No. 340, SR 5.8-1**)

- SR HWQ -2** Prior to issuance of the precise grading permit, the property owner/developer shall prepare Water Quality Management Plans (WQMPs) for review and approval by the Public Works, Development Services. The WQMP shall identify permanent site design, source control and treatment control Best Management Practices (BMPs) that will be used on the site to control predictable pollutant runoff. The WQMP shall also describe the long-term operation and maintenance requirements for the treatment control BMPs and the mechanism for funding the BMPs. The WQMP shall be recorded against the property to ensure long-term compliance. (**SEIR No. 340, SR 5.8-2**)

D. Impact Analysis

Threshold 5.6a: *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 Special Publication 42.***
- (ii) ***Strong seismic ground shaking?***

No New Impact from EIR No. 311; No New Impact from SEIR No. 340 – Project Impact Less Than Significant With Mitigation. EIR No. 311 concluded that the potential for damage from groundshaking is not unusually severe compared to general conditions in Southern California and would be less than significant with mitigation. Similarly, ground rupture from fault movement was not expected and buildout of The Disneyland Resort Project would be in compliance with the Alquist-Priolo Special Studies Zone Act. SEIR No. 340 found that impacts related to rupture of a known earthquake fault would be less than significant and concluded that, while the ARSP area would be exposed to seismic ground shaking, impacts would be less than significant with mitigation.

The Project Site is located in the highly seismic Southern California region in the influence area of several fault systems. However, the Project Site does not occur within the boundaries of an Earthquake Fault Zone as defined by the State of California in the Alquist-Priolo Earthquake Fault Zoning Act (CGS 2021). The Newport-Inglewood-Rose Canyon Fault Zone is located approximately 9.7 miles from the Project Site in the coastal cities of Long Beach, Sunset Beach, and Huntington Beach. The Whittier Fault Zone occurs approximately 8.9 miles north of the Project Site generally between the cities of Whittier and Yorba Linda. Construction on the Project Site has historically occurred in a manner consistent with City and State codes. Consistent with the findings of EIR No. 311 and SEIR No. 340, impacts related to exposure of people or structures to seismic-related hazards would be potentially significant. Future development associated with the Project would comply with **SR GEO-1** requiring all grading operations to be conducted in conformance with the Anaheim Municipal Code, Title 17, Land Development and Resources, and the most recent version of the CBC (City of Anaheim 2022). As such, the Project would not directly or indirectly cause substantial adverse effects involving rupture of a known earthquake fault or strong seismic ground shaking. Additionally, potential impacts associated with exposure to these hazards would be reduced to less than significant levels with implementation of the following mitigation measures: **MM GEO-1** requiring the property owner/developer to submit for review and

approval a thorough soils and geological report for the area to be graded; **MM PS-10** requiring the property owner/developer to coordinate emergency evacuation training with the Fire Department for hotel staff and cast members; and **MMs GEO-2** through **MM GEO-5** requiring adherence to measures requiring detailed foundation design, adherence to seismic standards, and preparation of a report to analyze foundation excavations.

The Project would result in a less than significant impact with mitigation. This impact would not be new or substantially more severe when compared with the impact analyses in EIR No. 311 and SEIR No. 340.

Threshold 5.6b: Would the project result in substantial soil erosion or the loss of topsoil?

No New Impact from EIR No. 311; No New Impact from SEIR No. 340 – Project Impact Less Than Significant With Mitigation. According to EIR No. 311, the potential for erosion was not significant; however, potential short-term impacts to the storm drains from silt in the runoff from the site would be less than significant with mitigation. SEIR No. 340 concluded that impacts related to erosion or loss of topsoil during demolition and/or construction activities would be less than significant with mitigation.

As described in more detail in response to Threshold 5.9a in Section 5.9, Hydrology and Water Quality, of this Draft Subsequent EIR, the Project has the potential to result in soil erosion and loss of topsoil during construction and operations. Project construction would expose soils on the Project Site, which could result in increased soil erosion and the loss of topsoil if not implemented consistent with regulatory requirements. A primary source of erosion and topsoil loss is uncontrolled drainage during storms. The National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into “waters of the U.S.”. All construction activities must be conducted in compliance with the statewide NPDES General Permit for Storm Water Discharges Associated with the Construction and Land Disturbance Activities (Order No 2012-0006-DWQ, NPDES No. CAS000002), adopted by the State Water Resources Control Board (SWRCB) on July 17, 2012. In compliance with the NPDES permit for the Disney Properties, erosion potential during construction of the Project would be managed with Best Management Practices (BMPs) implemented on the Project Site as part of a SWPPP during construction activities in accordance with NPDES requirements. Compliance with **SR HWQ-1** and **SR HWQ-2**, detailed in Section 5.9, Hydrology and Water Quality, of this Draft Subsequent EIR, requiring preparation of a SWPPP and WQMP and compliance with the NPDES, and implementation of **MM GEO-6** related to erosion control standard practices would minimize construction impacts from continued development on the Project Site through implementation of BMPs.

Also, once built, the Project may result in a minor increase in impervious surface coverage on the Project Site, which could lead to erosion and loss of topsoil if stormwater is not conveyed and dissipated appropriately. The Disneyland Resort Master Water Quality Management Plan (Master WQMP) was prepared for The Disneyland Resort Project by LaRoc Environmental (2014) and included as Appendix H-1, covers the Disney Properties, and would be applicable to the Project. The Master WQMP describes structural source control BMPs to achieve long-term water quality protection from potential degradation by the Project. With implementation of a SWPPP during construction as well as construction and maintenance of the BMPs specified in Master WQMP for The Disneyland Resort, impacts related to erosion would be less than significant with mitigation.

The Project would result in a less than significant impact with mitigation. This impact would not be new or substantially more severe when compared with the impact analyses in EIR No. 311 and SEIR No. 340.

Threshold 5.6d: *Would the project be located on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2010), creating substantial direct or indirect risks to life or property?*

New Impact from EIR No. 311; No New Impact from SEIR No. 340 – Project Impact Less Than Significant With Mitigation. EIR No. 311 did not directly address the topic of expansive soils within The Disneyland Resort. As noted in SEIR No. 340, expansive soils are known to exist in the ARSP area; however, impacts were less than significant with mitigation.

Expansive soils shrink or swell as the moisture content decreases or increases; the shrinking can shift, crack, or break structures built on such soils. According to the EIR No. 330 prepared for the Anaheim General Plan Update, expansive soils in the City range from low to high in expansion potential; therefore, there is potential for expansive soils be encountered on the Project Site (Anaheim 2004b). To mitigate potential impacts, the Project would include the implementation of **MM GEO-1** through **MM GEO-6** requiring the property owner/developer to submit for review and approval geotechnical reports with recommendations.

The Project would result in a less than significant impact with mitigation. This impact would be new when compared with the impact analysis in EIR No. 311, which did not address expansive soils. This impact would not be new or substantially more severe when compared with the impact analysis in SEIR No. 340.

Threshold 5.6f: *Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

No New Impact from EIR No. 311; No New Impact from SEIR No. 340 – Project Impact Less Than Significant With Mitigation. EIR No. 311 found that potential impacts related to prehistoric resources would be less than significant with mitigation. SEIR No. 340 also concluded that impacts would be less than significant with mitigation.

A paleontological records search was requested from the Natural History Museum of Los Angeles County, Vertebrate Paleontology Department, and results were received on June 10, 2021. The results indicate there are no fossil localities that lie directly within the Project Site. Therefore, the Project would not impact known paleontological resources; however, there are RanchoLabrean fossil localities nearby from the same sedimentary deposits (fossil-bearing unit Qyf) that occur in the Project Site, either at the surface or at depth. These resources include, but are not limited to bison (*Bison*), camel (*Camelops hesternus*), dire wolf (*Canis dirus*), dwarf pronghorn (*Capromeryx*), Horse (*Equus*), mammoth (*Mammuthus*), and mastodon (*Mamut*). Additional RanchoLabrean paleontological resources from this area were identified (Jefferson 1991, 2006). These include a range of RanchoLabrean fossil localities similar to the specimens identified by the NHM, such as bison, camel, dire wolf, mammoth, and saber-toothed cat (*Smilodon fatalis*).

All data considered, the Project would not impact known paleontological resources; however, surface sediments at and surrounding the Project Site consist of Alluvium (Pleistocene) to unanticipated formations (Pleistocene, silty sandstones; sandy silt shot through with caliche. These sediments have high paleontological sensitivity due to their older age and fossils recorded from these units in other locations within the County). Deep excavation that involves disturbance of native soils could result in the disturbance and/or destruction of paleontological resources that may be present in deeper Pleistocene alluvial deposits that underlie the Project Site. Due to the potential to impact unanticipated fossil discoveries, potential impacts associated with construction would be significant. However, implementation of **MM GEO-7** requiring the retention of a qualified paleontologist prior to the initiation of grading activities would reduce this potential impact to a less than significant level.

The Project would result in a less than significant impact with mitigation. This impact would not be new or substantially more severe when compared with the impact analyses in EIR No. 311 and SEIR No. 340.

5.6.4 CUMULATIVE IMPACTS

According to EIR No. 311 geologic and seismic impacts associated with implementation of The Disneyland Resort Project in association with surrounding development were not considered cumulatively significant with implementation of mitigation. According to SEIR No. 340, implementation of the ARSP was determined to not result in a cumulatively significant impact related to geotechnical and soil resources.

Geology and soils impacts are generally site-specific and there is typically little, if any, cumulative relationship between the development of a project and development within a larger cumulative area (e.g., city-wide development). For example, development at the Project Site would not alter geologic events or soil features/characteristics (such as ground shaking, seismic intensity, or settlement) at other locations; therefore, the Project would not directly affect the level of intensity at which a seismic event or geologic hazard on an adjacent site is experienced. However, while development of the Project and future development in the City of Anaheim (City) may expose more persons to seismic hazards, compliance with all requirements and standards for seismic activity would reduce the potential impacts.

The Project and any other development projects would be required to comply with the applicable State and local agency grading manuals and ordinances. As with the Project, future development would also be required to have site-specific geotechnical investigations to identify the geologic and seismic characteristics on a site and provide recommendations for engineering design and construction to ensure the structural integrity of proposed development. These recommendations would be incorporated into project design. Compliance of individual projects with the recommendations of the applicable geotechnical investigation would prevent cumulatively significant hazards associated with seismic conditions, unstable soils, lateral spreading, liquefaction, soil collapse, expansive soil, soil erosion, and other geologic issues. Therefore, the Project's contribution to cumulative geology and soils impacts would not be cumulatively considerable and the Project would not create a significant cumulative impact with implementation of **MM GEO-1** through **MM GEO-6** and compliance with applicable seismic design criteria in the CBC and the City's grading regulations.

It is likely that most, if not all, of the cumulative projects would result in native ground disturbance that could encounter and affect paleontological resources. During each projects' entitlement process, it is the responsibility of the CEQA Lead Agency reviewing each of the cumulative projects to identify potentially significant impacts, including potential paleontological resource impacts, and to require mitigation measures if needed, such as paleontological resources if appropriate; therefore, the Project's contribution would not be cumulatively considerable and the Project would not create a significant cumulative impact with implementation of **MM GEO-7**.

The Project would result in a less than significant cumulative impact with mitigation. This impact would not be new or substantially more severe when compared with the impact analyses in EIR No. 311 and SEIR No. 340.

5.6.5 MITIGATION PROGRAM

Mitigation Measures

EIR No. 311 and SEIR No. 340 presented mitigation measures (MM), Project Design Features (PDF), and standard requirements (SR) to reduce potential impacts associated with The Disneyland Resort Project and the ARSP Project, respectively. As appropriate, the measure number and section from EIR No. 311 and/or SEIR No. 340 are listed in parentheses. Modifications to the original measure are shown as ~~striketrough~~ for deleted text and **bold** for new, inserted text.

- MM GEO-1** Prior to approval of each grading plan, the property owner/developer shall submit **to the Public Works Department, Development Services Division, for review and approval** a thorough soils and geological report for the area to be graded, based on proposed grading and prepared by an engineering geologist and geotechnical engineer. The report shall comply with Title 17 of the Anaheim Municipal Code. **(EIR No. 311, MM 3.6-1)**
- MM GEO-2** Prior to issuance of each building permit, the property owner/developer shall submit to the Planning and Building Department, Building Services Division for review and approval, detailed foundation design information for the subject building(s), prepared by a civil engineer, based on recommendations by a geotechnical engineer. **(EIR No. 311, MM 3.6-2; SEIR No. 340, MM 5.5-1)**
- MM GEO-3** Prior to issuance of each foundation permit, the property owner/developer shall submit a report prepared by a geotechnical engineer to the Planning and Building Department, Building Services Division for review and approval, which shall investigate the subject foundation excavations to determine if soft layers are present immediately beneath the footing site and to ensure that compressibility does not underlie the footing. **(EIR No. 311, MM 3.6-3; SEIR No. 340, MM 5.5-2)**
- MM GEO-4** Prior to issuance of each building permit, the property owner/developer shall submit plans to the Planning and Building Department, Building Services Division for review and approval showing that the proposed structure has been analyzed for earthquake loading and designed according to the most recent seismic standards in the California Building Code adopted by the City of Anaheim. **(EIR No. 311, MM 3.6-4; SEIR No. 340, MM 5.5-3)**
- MM GEO-5** Prior to issuance of building or grading permits, the property owner/developer shall submit to the Planning and Building Department, Building Services Division geologic and geotechnical investigations in areas of potential seismic or geologic hazards and provide a note on plans that all grading operations shall be conducted in conformance with the recommendations contained in the applicable geotechnical investigation. **(SEIR No. 340, MM 5.5-6)**
- MM GEO-6** Ongoing during grading activities, the property owner/developer shall implement standard practices for all applicable codes and ordinances to prevent erosion to the satisfaction of the Planning and Building Department, Building Services Division. **(SEIR No. 340, MM 5.5-5)**
- MM GEO-7** Prior to issuance of each grading permit, the property owner/developer shall submit a letter identifying the certified paleontologist **meeting the Society of**

Vertebrate Paleontology (SVP) standards that has been hired to ensure that the following actions are implemented:

- a. The paleontologist must be present at the pre-grading conference in order to establish procedures **for paleontological monitoring, as well as for** temporarily halting or redirecting work to permit the sampling, identification, and evaluation of fossils if potentially significant paleontological resources are uncovered. If ~~artifacts-fossils~~ fossils are uncovered and found to be significant, the paleontological observer ~~monitor~~ shall determine appropriate actions in cooperation with the property owner/developer for exploration and/or salvage **shall administer appropriate actions based on SVP protocols³.**
- b. Specimens that are collected prior to or during the grading process ~~will~~ **shall** be ~~donated to~~ **reposited in** an appropriate educational or research institution. **Preparation, storage and curation shall be funded by the property owner/developer.**
- c. Any paleontological work at the site shall be conducted under the direction of the certified paleontologist. If any fossils are discovered during grading operations when the paleontological monitor is not present, grading shall be diverted around the ~~area~~ **discovery by a buffer of at least 50 feet. Construction shall not resume** until the ~~monitor can survey the area~~ **paleontological monitor has given the order to proceed in that location once a determination on the significance of the fossil discovery has been made.**
- d. A final report detailing the findings and disposition of the specimens shall be submitted. Upon completion of the grading, the paleontologist shall notify the City as to when the final report will be submitted. **(EIR No. 311, MM 3.13-2; SEIR No. 340, MM 5.4-2)**

MM PS-10 Prior to the final building and zoning inspection for a hotel/motel, the property owner/developer shall submit an ~~earthquake~~ emergency **evacuation** response plan for review and approval by the Fire Department. The plan shall require posted notices in all hotel rooms on ~~emergency evacuation~~ **emergency evacuation** earthquake safety procedures and incorporate ongoing ~~emergency evacuation~~ **emergency evacuation** earthquake training for hotel staff to the satisfaction of the Fire Department. **(EIR No. 311, MM 3.6-5 and MM 3.6-6; SEIR No. 340, MM 5.5-4)**

5.6.6 IMPACT SUMMARY

Threshold 5.6a: *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*

³ Society of Vertebrate Paleontology (SVP), Guidelines from the Ethics Education Committee for Collecting, Documenting and Curating Fossils (last updated 2021). <https://vertpaleo.org/wp-content/uploads/2021/01/Guidelines-from-the-Ethics-Education-Committee.pdf> (accessed August 18, 2023).

Impact Summary: The Project would result in a less than significant impact with mitigation. This impact would not be new or substantially more severe when compared with the impact analyses in EIR No. 311 and SEIR No. 340.

Threshold 5.6b: Result in substantial soil erosion or the loss of topsoil.

Impact Summary: The Project would result in a less than significant impact with mitigation. This impact would not be new or substantially more severe when compared with the impact analyses in EIR No. 311 and SEIR No. 340.

Threshold 5.6d: Be located on expansive soils, as defined in Section 1803.5.3 of the California Building Code (2010), creating substantial direct or indirect risks to life or property.

Impact Summary: The Project would result in a less than significant impact with mitigation. This impact would be new when compared with the impact analysis in EIR No. 311, which did not address expansive soils. This impact would not be new or substantially more severe when compared with the impact analysis in SEIR No. 340.

Threshold 5.6f: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Impact Summary: The Project would result in a less than significant impact with mitigation. This impact would not be new or substantially more severe when compared with the impact analyses in EIR No. 311 and SEIR No. 340.

Cumulative Impacts

Impact Summary: The Project would result in a less than significant cumulative impact with mitigation. This impact would not be new or substantially more severe when compared with the impact analyses in EIR No. 311 and SEIR No. 340.

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