Section 3.6
Geology and Soils

This section discusses the environmental setting, existing conditions, regulatory context, and potential impacts of the project in relation to geology and soils. The information and analysis in this section is based on the *Preliminary Geotechnical Engineering Report* prepared by Terracon Consultants, Inc. (2018; see **Appendix G**), which was peer reviewed by Michael Baker International.

ENVIRONMENTAL SETTING

GEOLOGIC SETTING

The project site is situated within the Mojave Desert Geomorphic Province in Southern California. Geologic structures in this province trend mostly northwest, in contrast to the prevailing east–west trend in the neighboring Transverse Ranges Geomorphic Province to the west. The Mojave Desert Province extends into lower California and is bounded by the Garlock fault to the north, the San Andreas fault to the west, and the Nevada and Arizona borders to the east. Surficial geologic units on the site consist mainly of alluvium deposits in the western portion of the site and dune sands of Recent Quaternary Age in the eastern portion.

FAULTS AND SEISMICITY

Active Faults

The US Geological Survey (2018) defines an active fault as a fault that has had surface displacement within Holocene times (about the last 11,000 years) and therefore is considered more likely to generate a future earthquake. The 1994 Alquist-Priolo Earthquake Fault Zoning Act requires the California State Geologist to establish regulatory zones (known as earthquake fault zones) around the surface traces of active faults that pose a risk of surface ground rupture. The act also requires that the State Geologist issue appropriate maps in order to mitigate the hazard of surface faulting to structures for human occupancy and to prevent the construction of buildings used for human occupancy on the surface trace of active faults (CGS 2018). The project site is not located within an Alquist-Priolo Earthquake Fault Zone (Terracon 2018).

Ground Shaking

Ground shaking is the earthquake effect that produces the vast majority of damage. Several factors control how ground motion interacts with structures, making the hazard of ground

shaking difficult to predict. Earthquakes, or earthquake-induced landslides, can cause damage near and far from fault lines. The potential damage to public and private buildings and infrastructure can threaten public safety and result in significant economic loss. Ground shaking is the most common effect of earthquakes that adversely affects people, animals, and constructed improvements. Seismic waves propagating through the earth's crust are responsible for the ground vibrations normally felt during an earthquake. Seismic waves can vibrate in any direction and at different frequencies, depending on the frequency content of the earthquake rupture mechanism and the path and material through which the waves are propagating. The earthquake rupture mechanism is the distance from the earthquake source, or epicenter, to an affected site.

Although no mapped active faults traverse the project site, there are several mapped, active faults in the proximity. The closest one is the Calico fault (part of the Calico Fault Zone), a right-lateral strike-slip fault, approximately 2 miles northeast of the project site.

Groundwater

Groundwater was not observed in any of the borings at the time of field exploration at the site. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times or other locations. Groundwater conditions can change with varying seasonal and weather conditions, and other factors. Based on a monitoring well at Barstow-Daggett Airport, identified by the California Department of Water Resources, recent groundwater levels are approximately 143 to 150 feet below ground surface (bgs).

REGULATORY FRAMEWORK

STATE

The Alquist-Priolo Earthquake Fault Zoning Act of 1972

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (formerly the Special Studies Zoning Act), regulates the development and construction of buildings intended for human occupancy to avoid hazards associated with surface fault rupture. In accordance with this law, the California Geological Survey maps active faults and designates Earthquake Fault Zones along mapped faults. This act groups faults into categories (i.e., active, potentially active, or inactive). Historic and Holocene faults are considered active, Late Quaternary and Quaternary faults are considered potentially active, and pre-Quaternary faults are considered inactive. These classifications are qualified by conditions. For example, a fault must be shown to be "sufficiently active" and "well defined" through detailed site-specific geologic explorations to determine whether building setbacks should be established. Any project that involves the construction of buildings or

structures for human occupancy, such as an operations and maintenance building, is subject to review under the Alquist-Priolo Earthquake Fault Zoning Act, and any structures for human occupancy must be located at least 50 feet from any active fault.

The Seismic Hazards Mapping Act of 1990

In accordance with the Public Resources Code Division 2, Chapter 7.8, the California Geological Survey is directed to delineate seismic hazard zones. The purpose of the act is to reduce the threat to public health and safety and minimize the loss of life and property by identifying and mitigating seismic hazards, such as those associated with strong ground shaking, liquefaction, landslides, other ground failures, or other hazards caused by earthquakes. Cities, counties, and state agencies are directed to use seismic hazard zone maps developed by the California Geological Survey in their land use planning and permitting processes. In accordance with the Seismic Hazards Mapping Act, site-specific geotechnical investigations must be performed prior to permitting most urban development projects within seismic hazard zones.

California Building Code

The State of California establishes minimum standards for building design and construction through the California Building Code (CBC) (California Code of Regulations, Title 24). The CBC is based on the Uniform Building Code, which is used widely throughout the United States (generally adopted on a state-by-state or district-by-district basis) and has been modified for conditions in California. State regulations and engineering standards related to geology, soils, and seismic activity in the Uniform Building Code are reflected in the CBC requirements.

The CBC contains specific requirements for seismic safety, excavation, foundations, retaining walls, and site demolition. It also regulates grading activities, including drainage and erosion control.

LOCAL

San Bernardino County General Plan

The San Bernardino County 2007 General Plan includes policies and programs that are intended to address geology and soils and guide future development in a way that lessens impacts. For instance, the Safety Element addresses issues related to protecting the community from any unreasonable risks associated with seismically induced surface rupture, ground shaking, ground failure, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence, liquefaction, and other seismic hazards identified on seismic hazard maps; other known geologic hazards; flooding; and wildland and urban fires. Safety Element policies and goals that are relevant to geology and soils include:

GOAL S 1 The County will minimize the potential risks resulting from exposure of County residents to natural and man-made hazards in the following priority: loss of life or injury, damage to property, litigation, excessive maintenance and other social and economic costs.

Policy S 1.1 Inform and educate the public of the risks from natural and man-made hazards, methods available for hazard abatement, prevention, mitigation, avoidance, and procedures to follow during emergencies.

Policy S 1.2 Continuously integrate data on natural and man-made hazards into adopted land use and overlay maps, policies, and review procedures for land use proposals and enforcement of development standards.

Policy S 1.3 Support and expand emergency preparedness and disaster response programs and establish comprehensive procedures for post-disaster planning in affected areas.

GOAL S 7 The County will minimize exposure to hazards and structural damage from geologic and seismic conditions.

Policy S 7.1 Strive to mitigate the risks from geologic hazards through a combination of engineering, construction, land use, and development standards.

Policy S 7.2 Minimize the risk of potential seismic disaster in areas where inadequate structures exist.

Policy S 7.3 Coordinate with local, regional, state, federal, and other private agencies to provide adequate protection against seismic hazards to County residents.

Policy S 7.4 Designate areas identified by the Alquist-Priolo Earthquake Fault Zoning Act (Public Resource Code, Division 2, Chapter 7.5) on the Hazard Overlay Maps to protect occupants and structures from high level of risk caused by ground rupture during earthquake.

Policy S 7.5 Minimize damage cause by liquefaction, which can cause devastating structural damage and a high potential for saturation exists when the groundwater level is within the upper 50 feet of alluvial material.

Policy S 7.6 Protect life and property from risks resulting from landslide, especially in San Bernardino and San Gabriel Mountains that have high landslide potential.

San Bernardino County Emergency Operations Plan

The San Bernardino County Emergency Operations Plan (EOP) is a comprehensive, single source of guidance and procedures for the County to prepare for and respond to significant or catastrophic natural, environmental, or conflict-related risks that result in situations requiring coordinated response. The EOP further provides guidance regarding management concepts relating to the County's response to and abatement of various emergency situations, identifies organizational structures and relationships, and describes responsibilities and functions necessary to protect life and property.

The plan is consistent with the requirements of the Standardized Emergency Management System (SEMS) as defined in Government Code Section 8607(a) and the National Incident Management System (NIMS) as defined by presidential executive orders for managing response to multi-agency and multi-jurisdictional emergencies. As such, the plan is flexible enough to use in all emergencies and will facilitate response and short-term recovery activities. SEMS/NIMS incorporate the use of the Incident Command System (ICS), mutual aid, the operational area concept, and multi/interagency coordination.

San Bernardino County Hazard Mitigation Plan

The Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) is a "living document" that should be reviewed, monitored, and updated to reflect changing conditions and new information. As required, the MJHMP must be updated every 5 years to remain in compliance with regulations and federal mitigation grant conditions. The plan includes information regarding hazards being faced by the County, the San Bernardino County Fire Protection District, the San Bernardino County Flood Control District, and those board-governed special districts administered by the San Bernardino County Special Districts Department.

IMPACT ANALYSIS AND MITIGATION MEASURES

THRESHOLDS FOR DETERMINATION OF SIGNIFICANCE

A project would result in a significant impact if it would:

- Expose people or structures to potentially substantial adverse effects, including the risk of loss, injury, or death involving:
    - 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).

- Strong seismic ground shaking.
- Seismic-related ground failure, including liquefaction.
- Landslides.

- Result in substantial soil erosion or the loss of topsoil.
- 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.
- 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.
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

PROJECT IMPACTS AND MITIGATION

EXPOSURE TO EARTHQUAKE FAULTS

Impact 3.6-1a	**The project would not expose people or structures to potentially substantial adverse effects, including the risk of loss, injury, or death involving 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). Impacts would be less than significant.**

Southern California, including the project site, is subject to the effects of seismic activity because of the active faults that traverse the region. Active faults are defined as those that have experienced surface displacement within Holocene time (approximately the last 11,000 years) and/or are in a State-designated Alquist-Priolo Earthquake Fault Zone. The type and magnitude of seismic hazards affecting the site are dependent on the distance to causative faults and on the intensity and magnitude of the seismic event.

The geotechnical report documents that the site is not located within an Alquist-Priolo Earthquake Fault Zone or a fault zone identified by the County of San Bernardino. In addition, according to the California Department of Conservation, California Geologic Survey regulatory mapping, there are no faults or fault zones that transect the project site (CGS 1988a, 1988b,

1995a, 1995b). Accordingly, no significant impacts related to seismic ground rupture (and related effects) are anticipated from implementation of the proposed project. Therefore, impacts related to seismic ground rupture would be less than significant.

Mitigation Measures: None required.

Level of Significance: Less than significant.

EXPOSURE TO STRONG SEISMIC GROUND SHAKING

Impact 3.6-1b	**The project could expose people or structures to potentially substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Impacts would be less than significant with mitigation.**

Seismic activity poses two types of potential hazards for people and structures, categorized as either primary or secondary hazards. Primary hazards include ground rupture, ground shaking, ground displacement, subsidence, and uplift from earth movement. Secondary hazards include ground failure (lurch cracking, lateral spreading, and slope failure), liquefaction, water waves (seiches), movement on nearby faults (sympathetic fault movement), dam failure, and fires. The project site is located in a seismically active area and could experience ground shaking associated with an earthquake along nearby faults. The site is susceptible to primary and secondary hazards related to seismic activity.

Although no mapped active faults traverse the project site, there are several mapped, active faults in the proximity. The closest one is the Calico fault (part of the Calico Fault Zone), a right-lateral strike-slip fault, approximately 2 miles northeast of the project site.

In order for structural engineers to employ proper design methods in seismically active locations, the International Building Code (IBC), ASCE 7-02, and ASCE 7-05 define six site classes, which are based on the upper 100 feet of soil and rock. Typically, buildings on soft or loose soils sustain substantially more damage than comparable buildings on stiff soil or rock. Soil deposits amplify the level of ground shaking relative to the level of shaking of bedrock.

The amount of ground-motion amplification depends on the wave-propagation characteristics of the soils, which can be estimated from the measurements of the shear-wave velocity. Soft soils with slower shear-wave velocities generally produce greater amplification than stiff soils with faster shear-wave velocities. Therefore, the site classes of the IBC, ASCE 7-02, and ASCE 7-05 are defined in terms of shear-wave velocity. The IBC, ASCE 7-02, and ASCE 7-05 define six site classes, Site Class A through Site Class F (Kelly 2006). Site Classes A and B are rock sites, while Site Classes

C through F are soil sites (**Table 3.6-1**). According to the geotechnical report, a seismic Site Class D is considered suitable for the project site.

Table 3.6-1:
Site Class Definition

Site Class	Site Profile Name
A	Hard rock
B	Rock
C	Very dense soil and soft rock
D	Stiff soil
E	Soft clay soil
F	Soil requires site response analysis

Source: Kelly 2006

All new development and redevelopment is required to comply with the CBC, which includes provisions for buildings to structurally survive an earthquake without collapsing. Additionally, the geotechnical study recommends that building structure and improvements be designed using Site Class D and includes seismic design parameters in accordance with the CBC. Implementation of mitigation measure **GEO-1** would reduce potential ground shaking impacts to a less than significant level because the project applicant would be required to demonstrate to County planning and engineering staff that the recommendations in the geotechnical report have been incorporated into project design and that the project complies with all applicable requirements of the CBC. Therefore, adherence to CBC requirements and the incorporation of recommendations outlined in the geotechnical report will reduce impacts to levels less than significant.

Mitigation Measures:

GEO-1 Prior to the issuance of grading permits, the project proponent/operator shall retain a California registered and licensed engineer to design the proposed project facilities to withstand probable seismically induced ground shaking at the project site. All grading and construction on site shall adhere to the specifications, procedures, and site conditions contained in the final design plans, which shall be fully compliant with the seismic recommendations of the California-registered and licensed professional engineer and consistent with the recommendations in the *Preliminary Geotechnical Engineering Report* prepared by Terracon Consultants, Inc. (2018).

Level of Significance: Less than significant with mitigation.

EXPOSURE TO SEISMIC-RELATED GROUND FAILURE

Impact 3.6-1c	**The project would not expose people or structures to potentially substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. Impacts would be less than significant with mitigation.**

Liquefaction of cohesionless soils can be caused by strong vibratory motion due to earthquakes. Liquefaction is characterized by a loss of shear strength in the affected soil layers, thereby causing the soils to behave as a viscous liquid. Susceptibility to liquefaction is based on geologic data. River channels and floodplains are considered most susceptible to liquefaction, while alluvial fans have a lower susceptibility. Depth to groundwater is another important element in susceptibility. Groundwater shallower than 30 feet results in high to very high susceptibility to liquefaction, while deeper water results in lower susceptibility. According to the geotechnical report (**Appendix G**), groundwater levels are approximately 143 to 150 feet bgs (Terracon 2018). Therefore, the potential for liquefaction at the site is considered low.

Regardless, the project applicant will be required to demonstrate to County planning, engineering, and building staff that the recommendations in the geotechnical report have been incorporated into the project design as required by mitigation measure **GEO-1** and that the proposed project complies with all applicable requirements of the CBC. Therefore, adherence to CBC and local requirements and the incorporation of engineering design outlined in the geotechnical report will ensure that the project does not result in exposure of people or structures to potentially substantial adverse effects involving seismic-related ground failure, including liquefaction. Impacts would be less than significant.

Mitigation Measures: Implement mitigation measure **GEO-1**.

Level of Significance: Less than significant with mitigation.

EXPOSURE TO LANDSLIDES

Impact 3.6-1d	**The project would not expose people or structures to potentially substantial adverse effects, including the risk of loss, injury, or death involving landslides. Impacts would be less than significant.**

Non-seismically induced landslides can be caused by water from rainfall, septic systems, landscaping, or other origins that infiltrate slopes with unstable material. Boulder-strewn hillsides can pose a boulder-rolling hazard from blasting or a gradual loosening of their contact with the surface. Due to the relatively level terrain found at the project site, landslide hazards

are considered low (Terracon, 2018). Therefore, impacts associated with landslides are considered less than significant.

Mitigation Measures: None required.

Level of Significance: Less than significant.

SOIL EROSION OR LOSS OF TOPSOIL

Impact 3.6-2	**The project would not result in substantial soil erosion or the loss of topsoil. Impacts would be less than significant.**

Soil erosion may result during construction of the proposed project, as grading and construction can loosen surface soils and make soils susceptible to the effects of wind and water movement across the surface. However, all construction activities related to the proposed project would be subject to compliance with the CBC. Additionally, all development associated with the project would be subject to compliance with the requirements set forth in the National Pollutant Discharge Elimination System (NPDES) Storm Water General Construction Permit (Order No. 99-08-DWQ) for construction activities. Compliance with the CBC and the NPDES would minimize effects from erosion and ensure consistency with Lahonton Regional Water Quality Control Board requirements, which establish water quality standards for the groundwater and surface water of the region.

A stormwater pollution prevention plan (SWPPP) is required as part of the grading permit submittal package. The SWPPP will provide a schedule for the implementation and maintenance of erosion control measures, and a description of the erosion control measures, including appropriate design details, to be implemented during the construction phase. The SWPPP would consider the full range of erosion control best management practices (BMPs) with consideration for any additional site-specific and seasonal conditions, as appropriate.

Erosion control BMPs include but are not limited to the application of straw mulch, hydroseeding, the use of geotextiles, plastic covers, silt fences, and erosion control blankets, as well as construction site entrance/outlet tire washing. The State General Permit also requires that those implementing SWPPPs meet prerequisite qualifications that demonstrate the skills, knowledge, and experience necessary to implement those plans. NPDES requirements would substantially reduce the potential for erosion or topsoil loss to occur in association with new development. Water quality features intended to reduce construction-related erosion impacts will be clearly noted on the grading plans for implementation by the construction contractor.

The potential for erosion to occur during project construction would be minimized by limiting certain construction activities to dry weather, covering exposed excavated dirt during periods of

rain, and protecting excavated areas from flooding with temporary berms. As a result, the project would comply with required erosion and runoff control measures included as part of the approval of a grading plan. With conformance to applicable federal, state, and local regulations, and implementation of appropriate BMPs as required by same, the project would not result in substantial soil erosion or the loss of topsoil**.** Impacts would be less than significant.

Mitigation Measures: None required.

Level of Significance: Less than significant.

UNSTABLE GEOLOGIC CONDITIONS

Impact 3.6-3	**The project would not 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. Impacts would be less than significant.**

Refer also to Impact 3.6-1, above. Subsidence refers to the sudden sinking or gradual downward settling and compaction of soil and other surface material with little or no horizontal motion. Subsidence may be caused by a variety of human and natural activities, including earthquakes. According to the geotechnical report, based on the depth of the groundwater and encountered subsurface conditions, the impact of subsidence is considered low.

Earth movement is estimated at 5,900,000 cubic yards of soil that would be redistributed throughout the project site. Proper placement and compaction of backfill and adherence to CBC guidelines would minimize the risk of unstable soil conditions at the project site. Compliance with the requirements of the CBC ensures a more rigorous seismic design and construction to provide an acceptable risk to the public and better seismic resistance, thereby reducing impacts associated with unstable soils. Therefore, in combination with the planned grading and landscaping to avoid soil erosion, as discussed above, implementation of these requirements would ensure that proposed structures are located on stable soils and geologic units and would not be susceptible to settlement or ground failure. Impacts would be less than significant.

Mitigation Measures: None required.

Level of Significance: Less than significant.

EXPANSIVE SOILS

Impact 3.6-4	**The project could 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. Impacts would be less than significant with mitigation.**

Expansive soils contain significant amounts of clay particles that swell considerably when wetted and shrink when dried. Foundations constructed on these soils are subjected to uplifting forces caused by the swelling. Without proper measures taken, heaving and cracking of both building foundations and slabs-on-grade could occur. Based on the results of the on-site borings, subsurface conditions within the depth of exploration on the project site can be generalized as loose to very dense sand with variable amounts of gravel, silt, and clay.

Based on laboratory test results, the project site has soils that have medium plasticity and are expected to have low to medium expansive potential (Terracon 2018). The project would comply with the design standards found in CBC Chapter 18, Soils and Foundation, which includes requirements for development consistent with the conditions found on the project site. Additionally, the geotechnical report includes foundation design recommendations to ensure foundation designs match vertical load.

During the building permit application process, County staff will verify that the type of construction proposed is consistent with the actual soils present on the proposed project site and that the recommendations found in the geotechnical report have been incorporated into the site design as required by mitigation measure **GEO-1**. Based on on-site conditions and development requirements outlined in the CBC, as well as the recommendations in the geotechnical report, impacts associated with expansive soils are considered less than significant with mitigation.

Mitigation Measures: Implement mitigation measure **GEO-1**.

Level of Significance: Less than significant with mitigation.

SEPTIC TANKS

Impact 3.6-5	**The project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater. Impacts would be less than significant.**

Sanitary facilities for operations would be provided at the O&M building located on approximately 1.5 acres within the project footprint. The O&M facility would be equipped with a septic tank to adequately treat wastewater. Since subsurface soil treatment and disposal relies

upon gradual seepage of wastewater into the surrounding soils, these systems can only be considered where favorable soil characteristics and geology exist for treatment and subsequent disposal of the treated wastewater into the environment (EPA 1999). The project applicant is required to submit a percolation report and plot plans to the San Bernardino County Department of Environmental Health Services for review and approval and also obtain permits through San Bernardino County Building and Safety.

For effective wastewater treatment, perspective soils should be relatively permeable (EPA 1999). As shown in **Exhibit 3.2-1, Soils Map** (see Section 3.2, Agricultural Resources), onsite soils consist of those from the Cajon Series, Halloran Series, Kimberlina Loamy Fine Sand, and Nebona-Cuddeback Complex. As shown in **Table 3.6-2**, **Onsite Soils Types**, the Cajon and Nebona Series soils have rapid permeability and the Halloran series soils have moderately slow permeability. These soil types are appropriate and can accommodate septic systems because they are sandy loam and well-drained. Therefore, impacts would be less than significant.

Table 3.6-2:
On-site Soils Types

Series	Soil Type	Drainage and Permeability
Cajon	Cajon Sand	Somewhat excessively drained; negligible to low runoff; rapid permeability. Cajon soils with sandy loam surface textures have moderately rapid over rapid permeability.
	Cajon Gravelly Sand	
	Cajon Loamy Sand	
Halloran	Halloran Sandy Loam	Moderately well drained; slow runoff with some ponding during flooding after heavy rainstorms; moderately slow permeability.
	Halloran-Duneland Complex	
Nebona	Nebona-Cuddeback Complex	Well drained; medium to rapid runoff; moderately rapid permeability in the upper part but very slow in the duripan.

Source: US Department of Agriculture 2018

Mitigation Measures: None required.

Level of Significance: Less than significant.

CUMULATIVE IMPACTS

Impact 3.6-6 **The project could result in cumulative impacts related to geology and soils. Impacts would be less than significant with mitigation.**

As discussed above, like much of Southern California, the proposed project is in a seismically active area. All areas of San Bernardino County are considered seismically active, to a less or greater extent depending on their proximity to active regional faults. Impacts of the proposed project would be cumulatively considerable if the project, in combination with related projects,

would result in significant cumulative impacts. Other projects include solar projects and some residential, commercial, and industrial development. The majority of the cumulative projects are similar to the proposed project regarding construction and operational activities. Related projects would also be subject to similar seismic hazards since they are located in the project vicinity. However, the effects of these projects are not of a nature to cause cumulatively significant effects from geologic impacts, or on soils, because such impacts are site-specific and would only have the potential to combine with impacts of the proposed project if they occurred in the same location.

Additionally, on-site soils are located on fairly level slopes, which generally limits erosion potential because runoff across flat surfaces does not have a substantially high velocity. Although construction activities have the potential to result in erosion on the project site, adherence to the recommendations in the geotechnical report and other grading and building requirements will mitigate erosion impacts to less-than-significant levels. Other cumulative scenario projects would be required to adhere to similar requirements, thereby minimizing cumulative scenario erosion impacts. Specifically, all planned projects in the vicinity of the proposed project are subject to environmental review and would be required to conform to the County General Plan and Building Code. With implementation of mitigation measure **GEO-1** and other grading and building requirements, the proposed project would not contribute to cumulative impacts for geologic, seismic hazards or related events because the proposed project and other cumulative projects in the area would be required to demonstrate compliance with local, state, and federal building and safety standards prior to County issusance of grading and/or building permits. As a result, with implementation of mitigation, cumulative impacts related to geology and soils would be less than significant.

Mitigation Measures: Implement mitigation measure **GEO-1**.

Level of Significance: Less than significant.