3.6 - Geology, Soils, and Seismicity

3.6.1 - Introduction

This section describes the existing geology, soils, and seismicity setting and potential effects from project implementation on the site and its surrounding area. Descriptions and analysis in this section are based on the Engineering Geology and Preliminary Geotechnical Planning Study prepared by Kleinfelder, Inc. and included in this EIR as Appendix E.1. Additional information was provided in the Percolation Feasibility Testing Report, prepared by GeoSolutions and included in this EIR as Appendix E.2.

3.6.2 - Environmental Setting

Regional Geology

The City of Atascadero lies within the Salinas Valley, in the Coast Range Geomorphic Province of California. The Coast Range Province is divided into two major blocks: the Salinian block and the Coastal block. The City lies within the Salinian block, which consists of a crystalline basement complex of plutonic and metamorphic blocks. The basement rock units are overlain by Miocene to early Pleistocene-age sedimentary rocks and surficial deposits. The Salinian block is separated from the Coastal block to the west by the Nacimiento Fault zone and is bounded to the east by the San Andreas Fault. The Rinconada Fault trends through the northern part of the central region of the block.

Seismicity

The term seismicity refers to the location, frequency, magnitude and other characteristics of earthquakes. To understand the implications of seismic events, a discussion of faulting and seismic hazards is provided below.

Faulting

Faults form in rocks when stresses overcome the internal strength of the rock, resulting in a fracture. Large faults develop in response to large regional stresses operating over a long time, such as those stresses caused by the relative displacement between tectonic plates. According to the elastic rebound theory, these stresses build up in the earth’s crust until enough stress has built up to exceed the strength along a fault and cause a brittle failure. The rapid slip between the two stuck plates or coherent blocks generates an earthquake. Following an earthquake, stress will build once again until the occurrence of another earthquake. The magnitude of slip is related to the maximum allowable stress that can be built up along a particular fault segment. The greatest buildup in stress due to the largest relative motion between tectonic plates or fault blocks over the longest period will generally produce the largest earthquakes. The distribution of these earthquakes is a study of much interest for both hazard prediction and the study of active deformation of the earth’s crust. Deformation is a complex process and strain caused by tectonic forces is not only accommodated through faulting, but also by folding, uplift, and subsidence, which can be gradual or in direct response to earthquakes.
Faults are mapped to determine earthquake hazards, since they occur where earthquakes tend to recur. A historic plane of weakness is more likely to fail under stress than a previously unbroken block of crust. Faults are, therefore, a prime indicator of past seismic activity, and faults with recent activity are presumed to be the best candidates for future earthquakes. However, since slip is not always accommodated by faults that intersect the surface along traces, and since the orientation of stress and strain in the crust can shift, predicting the location of future earthquakes is complicated. Earthquakes sometimes occur in areas with previously undetected faults or along faults previously thought inactive.

Mapped lateral faults in the vicinity of Atascadero include the potentially active Rinconada fault and the Nacimiento fault zone. The Rinconada fault (and associated Jolon fault) is mapped east of the Salinas River trending northwest. The 6-mile-wide Nacimiento fault zone (trending northwest in the Santa Lucia Range southwest of the City) is classified as inactive but appears to coincide with an historic earthquake epicenter. A subsurface thrust fault (Black Mountain) is believed to lie a few miles east of the City. The closest active faults nearest to Atascadero are summarized in Table 3.6-1.

<table>
<thead>
<tr>
<th>Fault</th>
<th>Distance from Atascadero</th>
<th>Maximum Credible Earthquake*</th>
<th>Slip Rate (millimeters/year)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rinconada</td>
<td>2.5</td>
<td>7.5</td>
<td>1.0</td>
<td>Potentially Active</td>
</tr>
<tr>
<td>Los Osos</td>
<td>13</td>
<td>7.0</td>
<td>0.5</td>
<td>Active</td>
</tr>
<tr>
<td>San Luis Range (S. Margin)</td>
<td>30</td>
<td>7.0</td>
<td>0.2</td>
<td>Potentially Active</td>
</tr>
<tr>
<td>Hosgri</td>
<td>32</td>
<td>7.5</td>
<td>2.5</td>
<td>Active</td>
</tr>
<tr>
<td>San Juan</td>
<td>40</td>
<td>7.1</td>
<td>1.0</td>
<td>Potentially Active</td>
</tr>
<tr>
<td>San Andreas</td>
<td>47</td>
<td>7.8</td>
<td>34.0</td>
<td>Active</td>
</tr>
<tr>
<td>Casmalia (Orcutt Frontal)</td>
<td>57</td>
<td>6.5</td>
<td>0.3</td>
<td>Potentially Active</td>
</tr>
<tr>
<td>Lions Head</td>
<td>64</td>
<td>6.6</td>
<td>0.02</td>
<td>—</td>
</tr>
<tr>
<td>Los Alamos—W. Baseline</td>
<td>82</td>
<td>6.9</td>
<td>3.0</td>
<td>—</td>
</tr>
</tbody>
</table>

Note: * Moment magnitude
Sources: City of Atascadero, 2004; County of San Luis Obispo, 2005.

**Seismic Hazards**

Seismic hazards pose a substantial danger to property and human safety and are present because of the risk of naturally occurring geologic events and processes affecting human development. Therefore, the hazard risk is equally influenced by the condition and location of human development as by the frequency and distribution of major geologic events. Seismic hazards present in California include ground rupture along faults, strong seismic shaking, liquefaction, ground failure, and slope failure.
Fault Rupture
Fault rupture is a seismic hazard that affects structures sited above an active fault. The hazard from fault rupture is the movement of the ground surface along a fault during an earthquake. Typically, this movement takes place during the short time of an earthquake, but it also can occur slowly over many years in a process known as creep. Most structures and underground utilities cannot accommodate the surface displacements of several inches to several feet commonly associated with fault rupture or creep.

Ground Shaking
The severity of ground shaking depends on several variables such as earthquake magnitude, epicenter distance, local geology, thickness, and seismic wave-propagation properties of unconsolidated materials, groundwater conditions, and topographic setting. Ground shaking hazards are most pronounced in areas near faults or with unconsolidated alluvium.

The most common type of damage from ground shaking is structural damage to buildings, which can range from cosmetic cracks to total collapse. The overall level of structural damage from a nearby large earthquake would likely be moderate to heavy, depending on the characteristics of the earthquake, the type of ground, and the condition of the building. Besides damage to buildings, strong ground shaking can cause severe damage from falling objects or broken utility lines. Fire and explosions are also hazards associated with strong ground shaking.

Ground Failure
Ground failure includes liquefaction and the liquefaction-induced phenomena of lateral spreading, and lurching.

Liquefaction is a process by which sediments below the water table temporarily lose strength during an earthquake and behave as a viscous liquid rather than a solid. Liquefaction is restricted to certain geologic and hydrologic environments, primarily recently deposited sand and silt in areas with high groundwater levels. The process of liquefaction involves seismic waves passing through saturated granular layers, distorting the granular structure and causing the particles to collapse. This causes the granular layer to behave temporarily as a viscous liquid rather than a solid, resulting in liquefaction.

Liquefaction can cause the soil beneath a structure to lose strength, which may result in the loss of foundation-bearing capacity and which could cause a structure to settle or tip. Liquefaction can also result in the settlement of large areas due to the densification of the liquefied deposit. Where structures are located within liquefied deposits, the liquefaction can result in the structure to rise as a result of buoyancy.

Lateral spreading is lateral ground movement, with some vertical component, as a result of liquefaction. In effect, the soil rides on top of the liquefied layer. Lateral spreading can occur on relatively flat sites with slopes less than 2 percent, under certain circumstances, and can cause ground cracking and settlement.
Lurching is the movement of the ground surface toward an open face when the soil liquefies. An open face could be a graded slope, stream bank, canal face, gully, or other similar feature.

Landslides and Slope Failure
Landslides and other forms of slope failure form in response to the long-term geologic cycle of uplift, mass wasting, and disturbance of slopes. Mass wasting refers to a variety of erosional processes from gradual downhill soil creep to mudslides, debris flows, landslides, and rock fall. These processes are commonly triggered by intense precipitation. Seismic activity can also trigger landslides and rockfalls.

Often, various forms of mass wasting are grouped together as landslides, which are generally used to describe the downhill movement of rock and soil. Geologists classify landslides into several different types that reflect differences in the type of material and type of movement. The four most common types of landslides are translational, rotational, earth flow, and rock fall. Debris flows and earth flows are another type of landslide that are characterized by soil and rock particles in suspension with water and which often move with considerable speed. Debris flows often refer to flows that contain coarser soil and rock materials while earth flows frequently refer to slides that are predominantly finer materials. Mudslide is a term that appears in non-technical literature to describe a variety of shallow, rapidly moving earth flows.

Soils
The United States Department of Agriculture Soil Conservation Service indicates that several soil types exist on site. The soil properties are summarized in Table 3.6-2.

Table 3.6-2: Soil Summary

<table>
<thead>
<tr>
<th>Soil Name</th>
<th>Acres Within Project Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arbuckle fine sandy loam, 2 to 9 percent slopes</td>
<td>19.38</td>
</tr>
<tr>
<td>Concepcion sandy loam, 2 to 9 percent slopes</td>
<td>1.05</td>
</tr>
<tr>
<td>Dibble clay loam, 15 to 30 percent slopes</td>
<td>63.79</td>
</tr>
<tr>
<td>Gaviota-Rock outcrop complex, 30 to 75 percent slopes</td>
<td>19.91</td>
</tr>
<tr>
<td>Gazos shaly clay loam, 30 to 50 percent slopes</td>
<td>307.16</td>
</tr>
<tr>
<td>Gazos shaly clay loam, 9 to 30 percent slopes</td>
<td>109.97</td>
</tr>
<tr>
<td>Lockwood shaly loam, 0 to 2 percent slopes</td>
<td>30.69</td>
</tr>
<tr>
<td>Lockwood shaly loam, 2 to 9 percent slopes</td>
<td>33.92</td>
</tr>
<tr>
<td>Lompico-McMullin complex, 50 to 75 percent slopes</td>
<td>143.92</td>
</tr>
<tr>
<td>Lompico loam, 30 to 50 percent slopes</td>
<td>133.01</td>
</tr>
<tr>
<td>Los Osos-Rock outcrop complex, 30 to 50 percent slopes</td>
<td>602.01</td>
</tr>
<tr>
<td>McMullin-Rock outcrop complex, 50 to 75 percent slopes</td>
<td>315.41</td>
</tr>
<tr>
<td>Millsholm-Dibble complex, 15 to 30 percent slopes</td>
<td>3.72</td>
</tr>
</tbody>
</table>
Table 3.6-2 (cont.): Soil Summary

<table>
<thead>
<tr>
<th>Soil Name</th>
<th>Acres Within Project Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millsholm-Dibble complex, 30 to 50 percent slopes</td>
<td>618.79</td>
</tr>
<tr>
<td>Millsholm-Rock outcrop complex, 50 to 75 percent slopes</td>
<td>252.62</td>
</tr>
<tr>
<td>Nacimiento-Los Osos complex, 30 to 50 percent slopes</td>
<td>25.17</td>
</tr>
<tr>
<td>Nacimiento-Los Osos complex, 9 to 30 percent slopes</td>
<td>107.13</td>
</tr>
<tr>
<td>Rincon clay loam, 2 to 9 percent slopes</td>
<td>82.21</td>
</tr>
<tr>
<td>Rock outcrop-Gaviota complex, 30 to 75 percent slopes</td>
<td>330.98</td>
</tr>
<tr>
<td>San Andreas-Arujo complex, 9 to 15 percent slopes</td>
<td>20.08</td>
</tr>
<tr>
<td>San Andreas sandy loam, 15 to 30 percent slopes</td>
<td>10.42</td>
</tr>
<tr>
<td>Santa Lucia-Gazos complex, 50 to 75 percent slopes</td>
<td>80.12</td>
</tr>
<tr>
<td>Santa Lucia-Lopez complex, 15 to 50 percent slopes</td>
<td>34.54</td>
</tr>
<tr>
<td>Shimmon-Dibble association, very steep</td>
<td>34.55</td>
</tr>
<tr>
<td>Still clay loam, 0 to 2 percent slopes</td>
<td>54.74</td>
</tr>
<tr>
<td>Still clay loam, 2 to 9 percent slopes</td>
<td>0.00</td>
</tr>
<tr>
<td>Water</td>
<td>1.10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,436.41</strong></td>
</tr>
</tbody>
</table>

Note: Acreage shown in table slightly differs from project site acreage (3,457) due to level of precision with soil mapping technology. Source: FCS, 2015.

Subsurface Conditions

The Engineering Geology and Preliminary Geotechnical Planning Study indicates that Eagle Ranch is underlain by quaternary units consisting of alluvium soils and landslide deposits; followed by tertiary units consisting of Santa Margarita Formation sandstone, Monterey Formation, and Vaqueros sandstone; followed by crustaceous units consisting of unnamed marine sedimentary rocks, Toro formation, Franciscan formation, and other unnamed ultramafic rocks.

3.6.3 - Regulatory Framework

State

Alquist-Priolo Earthquake Fault Zoning Act

In response to the severe fault rupture damage of structures by the 1971 San Fernando earthquake, the State of California enacted the Alquist-Priolo Earthquake Fault Zoning Act in 1972. This act required the State Geologist to delineate Earthquake Fault Zones along known active faults that have a relatively high potential for ground rupture. Faults that are zoned under the Alquist-Priolo Act must meet the strict definition of being “sufficiently active” and “well-defined” for inclusion as an
Earthquake Fault Zones. The Earthquake Fault Zones are revised periodically, and they extend 200 to 500 feet on either side of identified fault traces. No structures for human occupancy may be built across an identified active fault trace. An area of 50 feet on either side of an active fault trace is assumed to be underlain by the fault, unless proven otherwise. Proposed construction in an Earthquake Fault Zone is permitted only following the completion of a fault location report prepared by a California Registered Geologist.

**California Building Standards Code**


The State of California provides minimum standards for building design through the California Building Standards Code (California Code of Regulations, Title 24). Where no other building codes apply, Chapter 29 regulates excavation, foundations, and retaining walls. Finally, the California Building Standards Code regulates grading activities, including drainage and erosion control and construction on unstable soils, such as expansive soils and areas subject to liquefaction.

**Local**

**City of Atascadero**

*General Plan*

The General Plan establishes the following goals and policies related to geology, soils, and seismicity that are applicable to the proposed project:

**Chapter 4: Safety and Noise Element**

- **Goal SFN-4**: Minimize the potential for loss of life and property resulting from geologic and seismic hazards.
- **Policy 4.1**: Ensure that developments, structures, and public facilities adequately address geologic and seismic hazards.
- **Policy 4.2**: Ensure that structures are designed and located to withstand strong ground shaking, liquefaction, and seismic settlement.
- **Policy 4.3**: Avoid development in areas at risk for slope failure when possible, and ensure that hillside developments employ appropriate design and construction techniques.

**Municipal Code**

Atascadero Municipal Code Section 8-6.102 sets forth standards for the installation of new septic systems. The section requires that an on-site investigation be performed by a registered engineer competent in sanitary engineering to determine the suitability of a particular site for a private sewage disposal system. A percolation test is required prior to issuance of a permit for all new, replacement or enlarged private sewage disposal systems. Percolation tests must be conducted.
within the soil that will be used for the leachfield. The section establishes performance standards for the size of the septic system based on the size and intensity of the land use activity in question.

3.6.4 - Methodology

The descriptions and analysis contained in this section are based on two technical studies, described as follows:

Kleinfelder, Inc. prepared two Engineering Geology and Preliminary Geotechnical Planning Reports in 2005 to evaluate the project site’s susceptibility to geologic, seismic, and soil hazards. The reports summarized the findings of the research, reconnaissance, geologic mapping, and geo-planning overlays. Reconnaissance included field observations of surface conditions relative to the potential presence of subsurface geologic or geotechnical conditions that may influence the proposed development. Both reports are provided in Appendix E.1.

GeoSolutions prepared a Percolation Feasibility Testing Report in 2013 to evaluate the project site’s suitability to support septic systems. GeoSolutions excavated pits at approximately 15 feet below ground surface, and three holes at 5 feet below ground surface at 20 locations throughout the project site to obtain an adequate representation of the site’s geology. Test excavations were saturated 24 hours prior to the start of the actual testing. The tests occurred over a 6-hour period or until percolation rates stabilize over three consecutive readings with a water level reading obtained approximately every half hour. In sandy soils in which two consecutive measurements show that 6 inches of water seeps away in less than 25 minutes, the tests were run for an additional hour with measurements taken every 10 minutes. The complete report is provided in Appendix E.2.

3.6.5 - Thresholds of Significance

According to Appendix G, Environmental Checklist, of the CEQA Guidelines, geology, soils, and seismicity impacts resulting from the implementation of the proposed project would be considered significant if the project would:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:
   i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.
   ii. Strong seismic ground shaking?
   iii. Seismic-related ground failure, including liquefaction?
   iv. Landslides?

b) Result in substantial soil erosion or the loss of topsoil?

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?
d) 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?

e) 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?

3.6.6 - Project Impacts and Mitigation Measures

This section discusses potential impacts associated with the development of the project and provides mitigation measures where appropriate.

Seismic Hazards

| Impact GEO-1: | Development of the proposed project may expose persons or structures to seismic hazards. |

Impact Analysis

This impact evaluates the proposed project’s potential exposure to seismic hazards (fault rupture, ground shaking, ground failure, and landsliding).

Fault Rupture

The project site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone. Since no known surface expression of active faults is believed to cross the site, fault rupture through the site is not anticipated. No impacts would occur.

Strong Ground Shaking

The project site may be exposed to strong ground shaking during an earthquake in the general region. Mitigation Measure GEO-1a requires the applicant to prepare and submit a design-level geotechnical study that complies with all applicable seismic design standards of the California Building Standards Code. Seismic design standards account for peak ground acceleration, soil profile, and other site conditions, and they establish corresponding design standards intended to protect public safety and minimize property damage. This measure provides certainty that the proposed project would not be at risk of ground shaking hazards.

Ground Failure and Liquefaction

Liquefaction occurs when saturated soil loses shear strength and deforms as a result of increased pore water pressure induced by strong ground shaking during an earthquake. As the excess pore pressure dissipates, volume changes are produced within the liquefied soil layer, which can manifest at the ground surface as settlement of structures, floating of buried structures, and failure of retaining walls. Soil types most susceptible to liquefaction are saturated, loose, sandy soils.

According to the Geotechnical Report, there are areas within the project site that contain recent alluvium soils that are vulnerable to liquefaction. Plate 8 of the Geotechnical Report shows the areas that are susceptible.

Mitigation Measure GEO-1 requires the applicant to prepare and submit a design-level geotechnical study that complies with all liquefaction standards of the California Building Standards Code.
Implementation of Mitigation Measure GEO-1a would reduce impacts of liquefaction to a level that is less than significant.

Landslides
The Geotechnical Report indicates that the most unstable slopes mapped on-site tend to form a northwest-southeast trending band across the central portion of the site. Moderately unstable formations and slopes occupy most of the rest of the site, with the exception of the cherts and hard sandstones mapped in the northeast part of the site.

Mitigation Measure GEO-1 requires the applicant to prepare and submit a design-level geotechnical study that complies with all landslide standards of the California Building Standards Code. Implementation of Mitigation Measure GEO-1a would reduce impacts of liquefaction to a level that is less than significant.

Additionally, roadway construction activities would require grading activities in areas where landslides have previously occurred. As such, Mitigation Measure GEO-1b requires that all roadway construction plans comply with the applicable requirements of the Caltrans Highway Design Manual (or equivalent design document) to ensure that landslide hazards are adequately abated. With the implementation of mitigation, impacts would be reduced to a level of less than significant.

Level of Significance Before Mitigation
Potentially significant impact.

Mitigation Measures

MM GEO-1a Prior to issuance of building permits for each structure that meets City requirements for a design-level geotechnical study, the project applicant shall submit a design-level geotechnical study and building plans to the City of Atascadero for review and approval. The building plans shall demonstrate that they incorporate all applicable recommendations of the design-level geotechnical study and comply with all applicable requirements of the most recent version of the California Building Standards Code. A licensed professional engineer shall prepare the plans, including those that pertain to soil engineering and structural foundations. The approved plans shall be incorporated into the proposed project. All on-site soil engineering activities shall be conducted under the supervision of a licensed Geotechnical Engineer or Certified Engineering Geologist.

MM GEO-1b Prior to issuance of grading permits for each phase within the Specific Plan, the project applicant shall submit subdivision improvement plans to the City of Atascadero for review and approval. The building plans shall demonstrate that roadway sections comply with all adopted plans and emergency access standards. The approved plans shall be incorporated into the proposed project. All on-site soil engineering activities associated with roadway construction shall be conducted under the supervision of a licensed Geotechnical Engineer or Certified Engineering Geologist.
**Level of Significance After Mitigation**

Less than significant impact.

**Erosion and Siltation**

<table>
<thead>
<tr>
<th>Impact GEO-2:</th>
<th>Construction activities associated with the proposed project have the potential to create erosion and sedimentation.</th>
</tr>
</thead>
</table>

**Impact Analysis**

Construction activities associated with the proposed project would involve vegetation removal, grading, and excavation activities that could expose barren soils to sources of wind or water, resulting in the potential for erosion and sedimentation on and off the project site. National Pollutant Discharge Elimination System (NPDES) stormwater permitting programs regulate stormwater quality from construction sites, which includes erosion and sedimentation. Under the NPDES permitting program, the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) are required for construction activities that would disturb an area of 1 acre or more. The SWPPP must identify potential sources of erosion or sedimentation that may be reasonably expected to affect the quality of stormwater discharges as well as identify and implement Best Management Practices (BMPs) that ensure the reduction of these pollutants during stormwater discharges. Typical BMPs intended to control erosion include sand bags, detention basins, silt fencing, storm drain inlet protection, street sweeping, and monitoring of water bodies.

These requirements have been incorporated into the proposed project as Mitigation Measure HYD-1. The implementation of a SWPPP and its associated BMPs would reduce potential erosion impacts to a level of less than significant.

Refer to Impact HYD-1 for further discussion of water quality.

**Level of Significance Before Mitigation**

Potentially significant impact.

**Mitigation Measures**

Implement Mitigation Measure HYD-1.

**Level of Significance After Mitigation**

Less than significant impact.

**Unstable geologic units or soils**

<table>
<thead>
<tr>
<th>Impact GEO-3:</th>
<th>The proposed project may expose persons or structures to hazards associated with unstable geologic units or soils.</th>
</tr>
</thead>
</table>

**Impact Analysis**

Compressible soils are those that are subject to compression or consolidation with or without future proposed loads. Compressible soils are typically restricted to geologically young deposits that have little time to develop cementation and or densification such as rock or ancient formations. Potential
compressible soils were mapped. As shown on Plate 8 of the Geotechnical Report, the younger formations of alluvium (Qa, including older alluvium) and landslide deposits (QIs) were mapped as high potential for the presence of compressible soils and all others were considered to be relatively low in this potential.

These areas will need to be explored and evaluated during future geotechnical studies, such as that included in Mitigation Measure GEO-1a. This process would involve removal of unsuitable soils, the placement of engineered fill, and compaction in order to ensure that the proposed structures are adequately supported. These practices would ensure that the proposed project is located on stable soils and geologic units and would not be susceptible to settlement or ground failure. Mitigation Measure GEO-1 would mitigate the impacts of unstable soils to a level that is considered less than significant.

Additionally, roadway construction activities would require grading activities in areas where unstable geologic units and soils have been documented to occur. As such, Mitigation Measure GEO-1b requires that all roadway construction plans comply with the applicable requirements of the Caltrans Highway Design Manual (or equivalent design document) to ensure that unstable geologic units and soil hazards are adequately abated. With the implementation of mitigation, impacts would be reduced to a level of less than significant.

Note that the potential for naturally occurring asbestos to be encountered is addressed in Section 3.3, Air Quality and Greenhouse Gas Emissions.

**Level of Significance Before Mitigation**
Potentially significant impact.

**Mitigation Measures**
Implement Mitigation Measure GEO-1a.

**Level of Significance After Mitigation**
Less than significant impact.

**Expansive Soils**

<table>
<thead>
<tr>
<th>Impact GEO-4:</th>
<th>Development of the proposed project may expose persons or structures to hazards associated with expansive soils.</th>
</tr>
</thead>
</table>

**Impact Analysis**
Expansive soils, also known as shrink-swell soils, refer to the potential of soil to expand when wet and contract when dry. Expansive soils generally pose a moderate risk to Atascadero. The City is fairly evenly distributed between highly expansive soils and moderately expansive soils. The highly expansive soils mainly occur in the western and southwestern portion of the City. The moderately expansive soils occur mostly in the western and central parts of the City. According to Table 1 of the Geotechnical Report, soils within the project site contain low, medium, and highly expansive soils.
Mitigation Measure GEO-1a is proposed, requiring the project applicant to submit a design-level geotechnical study to the City of Atascadero identifying measures to abate expansive soil conditions. A provision in the measure requires that the recommendations from the City-approved study be incorporated into the proposed project. With the implementation of this mitigation measure, impacts would be reduced to a level of less than significant.

Note that the potential for naturally occurring asbestos to be encountered is addressed in Section 3.3, Air Quality and Greenhouse Gas Emissions.

**Level of Significance Before Mitigation**

Potentially significant impact.

**Mitigation Measures**

Implement Mitigation Measure GEO-1a.

**Level of Significance After Mitigation**

Less than significant impact.

**Septic Tanks or Alternative Wastewater Systems**

| Impact GEO-5: | Development of the proposed project would not result in the use of septic tanks or alternative wastewater disposal systems in areas where soils are incapable of adequately supporting such systems. |

**Impact Analysis**

The project applicant is proposing the use of on-site septic systems on single-family residential lots 1 acre in size or larger. (Smaller lots would be served by the City of Atascadero's municipal sewer systems.) To assess whether the project site contains suitable geology to support septic systems, GeoSolutions conducted a Percolation Feasibility Testing Report (Appendix E.2). GeoSolutions concluded that all percolation tests yielded results that were within Central Coast Regional Water Quality Control Board standards for percolation. As such, on-site soil conditions appear to be suitable to support septic systems.

Lots that employ septic systems would be subject to setbacks to protect sensitive resources (e.g., creeks). Exhibit 3.6-1 depicts the septic system setback areas.

Atascadero Municipal Code Section 8-6.102 sets forth standards for the installation of new septic systems. The section requires that an on-site investigation be performed by a registered engineer competent in sanitary engineering to determine the suitability of a particular site for a private sewage disposal system. A percolation test is required prior to issuance of a permit for all new, replacement, or enlarged private sewage disposal systems. Accordingly, individual property owners who seek to pursue use of on-site septic systems would be required to prepare a site-specific percolation test to determine if their property is suitable for such a system. Should the test yield negative results, the property owner would have the ability to pursue alternative options, which may include off-site septic system disposal on a neighboring property or extension of the City's municipal sewer system to the subject site.
Exhibit 3.6-1
Septic Setback Areas
Compliance with the Municipal Code requirements would ensure that impacts would be less than significant. If extension and additional connections to City’s sewer system are proposed beyond those analyzed in this EIR (Section 3.14, Utility Systems), the additional flows and loading would be required to be evaluated to ensure they would not impact the downstream collection system and City Wastewater Reclamation Facility.

**Level of Significance Before Mitigation**
Less than significant impact.

**Mitigation Measures**
No mitigation is necessary.

**Level of Significance After Mitigation**
Less than significant impact.
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