5.6 GEOLOGY AND SOILS

This section describes the existing regulatory and environmental conditions related to the geologic, soil, and seismic characteristics within the City of Yorba Linda and its Sphere of Influence (collectively referred herein has the General Plan Planning Area or Planning Area) and identifies potential impacts that could result from implementation of the General Plan Update (project), and recommends mitigation measures to avoid or lessen impacts.

5.6.1 Regulatory Setting

Federal

International Building Code

The International Building Code (IBC) is the national model building code providing standardized requirements for construction. The IBC replaced earlier regional building codes (including the Uniform Building Code) in 2000 and established consistent construction guidelines for the nation. In 2006, the IBC was incorporated into the 2007 California Building Code, and currently applies to all structures being constructed in California. The 2015 IBC is the most recent addition of the IBC. The national model codes are therefore incorporated by reference into the building codes of local municipalities, such as the California Building Code discussed below. The California Building Code includes building design and construction criteria that take into consideration the State's seismic conditions.

Disaster Mitigation Act of 2000

This Act requires state and local governments to create mitigation plans in the event of a natural disaster, as a precondition for disaster assistance. States that are judged to have demonstrated commitment to mitigation planning receive extra disaster assistance funding through the Hazard Mitigation Grant Program.

Soil and Water Resources Conservation Act

The Soil and Water Resources Conservation Act of 1977 is intended to protect or restore the functions of the soil on a permanent sustainable basis. Protection and restoration activities include prevention of harmful soil changes, rehabilitation of the soil of contaminated sites and of water contaminated by such sites, and precautions against negative soil impacts. If impacts are made on the soil, disruptions of its natural functions and of its function as an archive of natural and cultural history should be avoided, as far as practicable. In addition, the requirements of the Federal Water Pollution Control Act (also referred to as the Clean Water Act through the National Pollution Discharge Elimination System permit) provide guidance for protection of geologic and soil resources.

Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act of 1977 established the National Earthquake Hazards Reduction Program (NEHRP). Under the NEHRP, four federal agencies have responsibility for long-term earthquake risk reduction: the U.S. Geological Survey (USGS), the National Science Foundation (NSF), the Federal Emergency Management Agency (FEMA), and the National Institute of Standards and Technology (NIST). NEHRP's mission includes improved understanding, characterization, and prediction of hazards and vulnerability; improvements of building codes and land use practices; risk reduction through post-

earthquake investigation and education; development and improvement of design and construction techniques; improvement of mitigation capacity; and accelerated application of research results.

State of California

California Building Code

California building standards are published in the California Code of Regulations, Title 24, also known as the California Building Standards Code (CBC). The CBC, which applies to all applications for building permits, consists of 11 parts that contain administrative regulations for the California Building Standards Commission for all State agencies that implement or enforce building standards. Local agencies must ensure the development complies with the guidelines contained beyond the CBC. Cities and counties have the ability to adopt additional building standards beyond the CBC. CBC Part 2, named in the California Building Code is based upon the 2012 International Building Code with necessary California amendments, and Part 11, named the California Green Building Standards Code, and is also called the CalGreen Code.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) was passed in 1972 order to mitigate surface fault rupture hazards along known active faults (Public Resources Code [PRC] § 2621 et seq.). The main purpose of the Alquist-Priolo Act is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Alquist-Priolo Act only addresses the hazard of structure fault rupture and is not directed toward other earthquake hazards. It requires the State Geologist to establish regulatory zones, known as “Earthquake Fault Zones,” around the surface traces of active faults and to issue appropriate maps. Local agencies must regulate most development projects within these zones. Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across an active fault. An evaluation and written report of a specific site must be prepared by a licensed geologist. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault (typically 50 feet set backs are required).

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (PRC, §§ 2690-2699) directs the California Department of Conservation, Division of Mines and Geology [now called California Geological Survey (CGS) to delineate Seismic Hazard Zones. The purpose of the Act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards. Cities, counties, and State agencies are directed to use seismic hazard zone maps developed by CGS in their land-use planning and permitting processes. The Act requires that site specific geotechnical investigations be performed prior to permitting most urban development projects within seismic hazard zones.

Real Estate Disclosure Act

Since June 1, 1998, the Natural Hazards Disclosure Act has required that sellers of real property and their agents provide prospective buyers with a Natural Hazard Disclosure Statement when the property being sold lies within one or more State-mapped hazard areas. If a property is located in a Seismic Hazard Zone as shown on a map issued by the State Geologist, the seller or the seller's agent must disclose this fact to potential buyers. The law specifies two ways that this disclosure can be made. One is to use the Natural Hazards Disclosure Statement as provided in Section 1102.6c of the California Civil Code.

The other way is to use the Local Option Real Estate Disclosure Statement as provided in Section 1102.6a of the California Civil Code. The Local Option Real Estate Disclosure Statement can be substituted for the Natural Hazards Disclosure Statement only if the Local Option Statement contains substantially the same information and substantially the same warning as the Natural Hazards Disclosure Statement.

Regional and Local

City of Yorba Linda General Plan Health and Safety Element

The primary goal of the Health and Safety Element is the protection of human life. Through the investigation of hazard risks, and careful land use planning to reduce or restrict development in high risk areas, the potential for disaster can be reduced. The Public Health and Safety Element seeks to sustain and improve the City's commitment to safety through proactive and comprehensive police, fire, building, and code enforcement services that encourage community outreach and education, maintain local agency partnerships, promote prevention, and enhance the technical, logistical, and technological systems to prepare for and respond to public safety needs.

City of Yorba Linda Municipal Code

The City of Yorba Linda Municipal Code (YLMC) includes various chapters that address geology and soils:

- YLMC Chapter 2.32 (Emergency Organizations and Functions), provides for the preparation of persons and property within the City in the event of an emergency (including earthquakes); the direction of the emergency organization; and the coordination of the emergency functions of the City with all other public agencies, corporations, organizations and affected private persons.
- YLMC Chapter 16.04 (Water Quality Control), participates in the improvement of water quality and complies with federal requirements for the control of urban pollutants of storm water runoff, which enters the network of storm drains throughout Orange County.
- YLMC Chapter 15.04 (Building Code), adopts by reference the California Building Code, 2013 Edition, with certain appendices and amendments, which incorporates and amends the International Building Code, 2012 Edition, with certain appendices and amendments, the California Historical Building Code, 2013 Edition, and the California Existing Building Code, 2013 Edition, as the Building Code of the City.
- YLMC Chapter 15.40 (Grading) addresses best practices during the construction phase of development so as to prevent or minimize erosion during these activities. This includes measures undertaken that would protect slopes as well as drainage.

5.6.2 Environmental Setting

The following issues were examined when evaluating potential geologic impacts of project implementation.

Soils and Geology

The Planning Area is located within the central, northernmost portion of the Santa Ana Mountains, which are part of the Peninsular Ranges Geomorphic Province. It is located in Santa Ana Canyon on a low rolling plain formed by streams that drain the Puente Hills. The Puente Hills (also known as the Chino Hills) extend beyond the Planning Area to the north and east while the Santa Ana River forms a natural southern

boundary. Yorba Linda can be divided into three terrain provinces: the eroded plain, the Santa Ana River floodplain, and the Puente Hills.

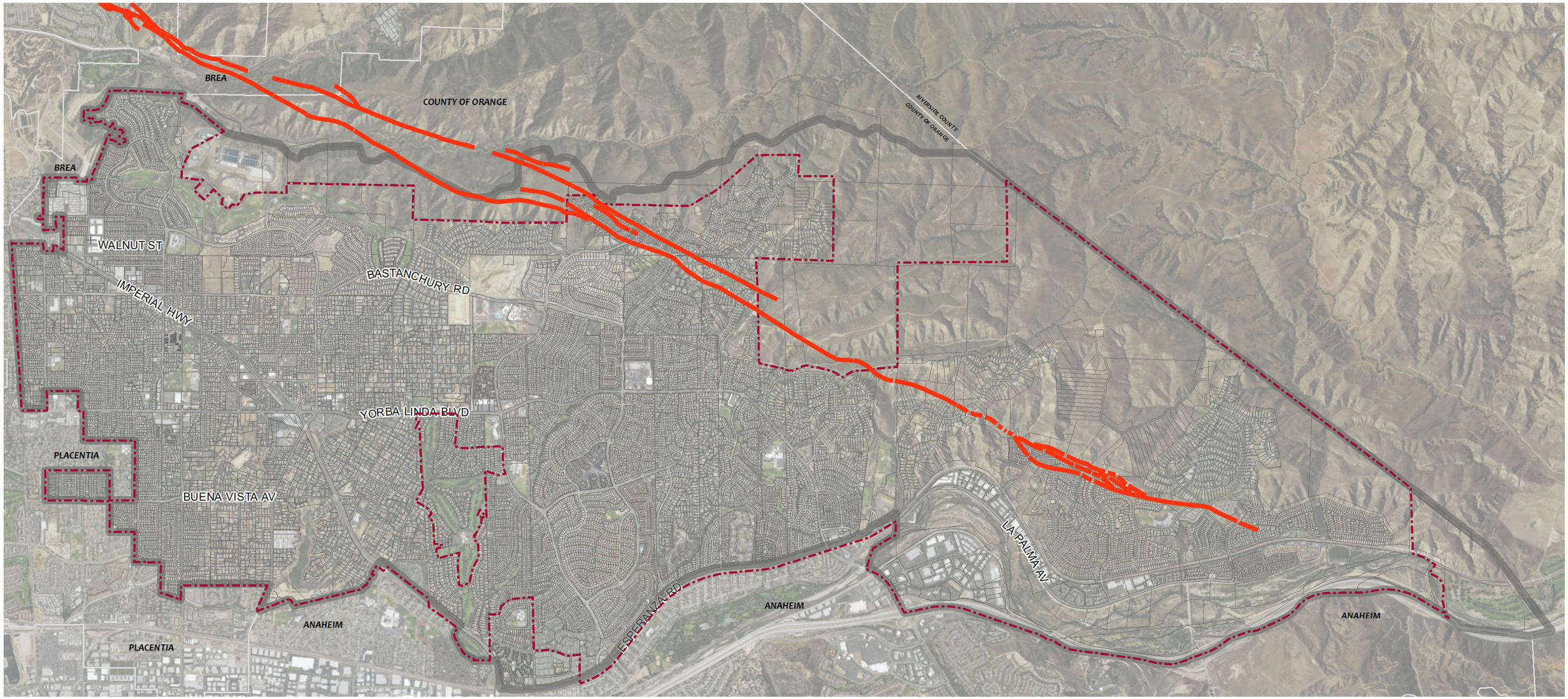
The majority of the Planning Area is underlain by the eroded plain area, extending from the edge of the Puente Hills to the Santa Ana River. It is characterized by low rounded ridges and knolls, separated by generally northeast-and southeast trending gullies and ravines. Old alluvial fans in the canyon bottoms are comprised of highly varied and discontinuous units of silt, mud, gravel, and boulders. The Santa Ana floodplain is the relatively flat area between the Santa Ana Mountains and the floodplain to the north. The floodplain is covered by relatively recent deposits of course-grained sand and gravel.

The Puente Hills area is characterized by semi-to-well-rounded hills with rather deeply gashed drainage channels. The Puente Hills are mostly underlain by Cenozoic sedimentary bedrock formations consisting of sandstone, silt-stone, and shale. The eastern Puente Hills are made up of marine sedimentary rock units overlain in some areas by terrestrial sediments. Reviews of geologic maps indicate that sediments from the Late Miocene Yorba and Sycamore Canyon Members of the Puente Formation, Quaternary landslides, and older and younger Quaternary Alluvium underlie the eastern Puente Hills.

Faults and Seismicity

A fault is defined as a fracture or zone of closely associated fractures along which rocks on one side have been displaced with respect to those on the other side. Most faults are the result of repeated displacement that may have taken place suddenly and/or by slow creep. A fault zone is a zone of related faults that commonly are braided and subparallel, but may be branching and divergent. An active fault is defined by the State Mining and Geology Board as one which has had surface displacement within Holocene time (approximately the last 11,000 years). A fault that has ruptured during the last 1.8 million years (Quaternary time), but is not proven by direct evidence to have moved or not moved within the Holocene, is considered to be potentially active. Any fault older than Pleistocene (1.8 million years) is considered inactive.

The Planning Area is located in a seismically active region of Southern California. As with most of Southern California, the Planning Area would is subject to ground shaking (ground motion) as a result of movement along active and potentially active fault zones in the region. There are several large active faults in the Southern California region that could potentially impact the City of Yorba Linda including the San Joaquin Hills Thrust Fault, the Newport-Inglewood Fault, the San Andreas Fault, the Peralta Hills Fault and the Whittier-Elsinore Fault. **Figure 5.6-1, Regional Faults**, depicts the Whittier Fault Zone which extends through the Planning Area. Faults that have the potential to affect the Planning Area are discussed below. **Table 5.6-1, Regional Faults**, identifies and their approximate distances from the Planning Area.



Whittier-Elsinore Fault

City Boundary

Sphere of Influence

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City of Yorba Linda
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Figure 5.6-1
Regional Fault Map

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Table 5.6-1 Regional Faults		
Fault	**Category[1]**	**Estimated Maximum Magnitude[2]**
Whittier	Active	7.0
Elsinore	Active	7.3
Chino	Potentially Active	6.5
Peralta Hills	Active	6.5
Newport/Inglewood	Active	7.0
San Jacinto	Active	7.5
San Andreas	Active	8.25

Notes:
1. Active faults are known to have surface displacements within Holocene times (past 11,000 years). Potentially active faults have evidence of surface faulting within Quaternary time (past 2-3 million years).
2. Maximum magnitude based on estimated rupture length and empirical relationships between historical rupture and earthquake magnitude.

Whittier-Elsinore Fault Zone. The Whittier-Elsinore Fault Zone is a major north-northwest trending structure that generally parallels the San Andreas Fault. The Whittier fault extends over 20 miles from the Whittier Narrows near Whittier, southeast to the Santa Ana River, where it merges with the southeasterly trending Elsinore fault. Collectively, these two faults combined with smaller faults are known as the Whittier-Elsinore Fault Zone. The Whittier Fault Zone segment extends roughly from Whittier Narrows in Los Angeles County on the northwest, to south of Santa Ana Canyon in the southeast, where it joins with the Chino Fault; the fault system is referred to as the Elsinore Fault Zone southeast of this juncture. The Whittier Fault Zone traverses the Planning Area in a generally northwest to southeast direction. Regional seismicity records indicate that the Whittier Fault Zone is seismically active. It is capable of generating earthquakes with magnitudes between M 6.0 to 7.2, and has had surface displacement within the Holocene period.

San Andreas Fault Zone. The San Andreas Fault Zone is located approximately 30 miles northeast of the Planning Area at its closest point. This fault separates the Pacific and North American plates and, as it is capable of producing earthquakes of magnitude (M) 8.0 or more, is the most severe geologic threat to the City. San Andreas Fault Zone is the best known of all California faults due mainly to its known historic seismic activity and destructive capabilities. The center section of the fault ruptured the ground surface in the 1857 Fort Tejon earthquake, causing considerable damage from ground shaking over thousands of square miles.

Sierra Madre Fault Zone. This fault zone lies roughly 20 miles to the northwest of the City, and was responsible for 1971 San Fernando earthquake. It is considered potentially active.

Seismic Hazards

Earthquakes generate both primary and secondary hazards. Primary hazards involve fault rupture, strong seismic ground shaking, and resultant failure of structures. Secondary hazards result from the interaction of seismic ground shaking with existing ground instabilities and include liquefaction, lateral spreading,

subsidence, settlement, and landslides. Tsunamis are also a secondary hazard resulting from earthquakes but because of the distance of the Planning Area to the Pacific Ocean are not of concern. The following addresses potential seismic hazards in the Planning Area:

Surface Fault Rupture. Fault rupture is the surface displacement that occurs when movement on a fault deep within the earth breaks through to the surface. The Alquist-Priolo Earthquake Fault Zoning Act delineates fault rupture zones approximately 1,000 feet wide, or 500 feet on either side of an active fault trace. Fault rupture and displacement almost always follows preexisting faults, which are zones of weakness; however, not all earthquakes result in surface rupture, (i.e., earthquakes that occur on blind thrusts do not result in surface fault rupture). Rupture may occur suddenly during an earthquake or slowly in the form of fault creep. In addition to damage caused by ground shaking from an earthquake, fault rupture is damaging to buildings and other structures due to the differential displacement and deformation of the ground surface that occurs from the fault offset. This leads to damage or collapse of structures across this zone.

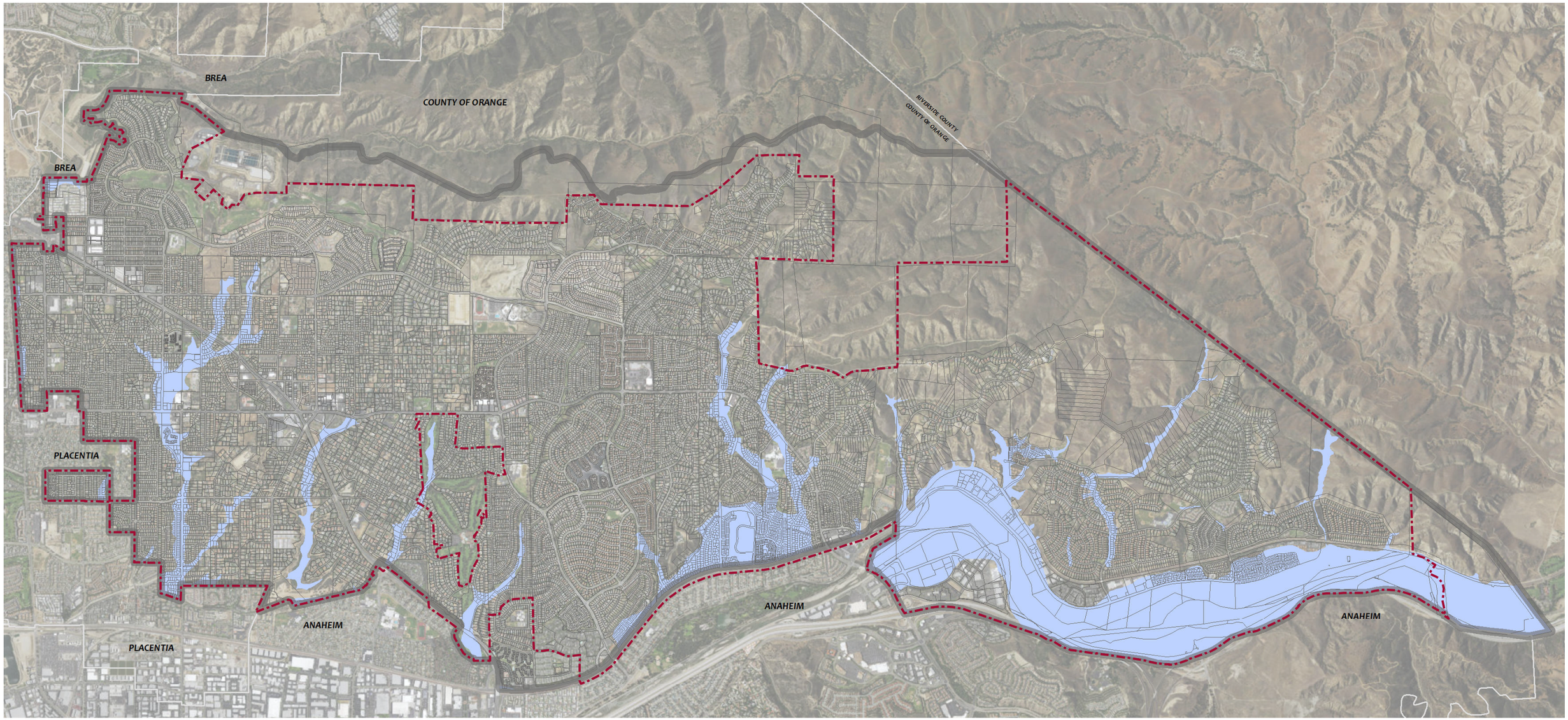
Seismic Ground Shaking. An earthquake is classified by the amount of energy released, which traditionally has been quantified using the Richter scale (M_L). Currently, however, seismologists most commonly use the Moment Magnitude (Mw) scale because it provides a more accurate measurement of the size of major and great earthquakes. For earthquakes of less than M 7.0, the Moment and Richter Magnitude scales are nearly identical. For earthquake magnitudes greater than M 7.0, readings on the Moment Magnitude scale are slightly greater than a corresponding Richter Magnitude.

The intensity of the seismic shaking, or strong ground motion, during an earthquake is dependent upon the distance between the project site and the epicenter of the earthquake, the magnitude of the earthquake, and the geologic conditions underlying and surrounding the project site. Earthquakes occurring on faults closest to the project site would most likely generate the largest ground motion.

In the event of an earthquake the primary threat to humans is the collapse of structures. The most susceptible to failure are those constructed of unreinforced masonry. As a result, the State of California passed the Unreinforced Masonry Building Law in 1986. This was essentially designed to identify and ultimately mitigate hazards present as a result of such buildings.

Liquefaction. Liquefaction zones within the Planning Area are shown on **Figure 5.6-2**, **Liquefaction Areas**. Liquefaction tends to occur in loose, saturated fine grained sands, course silts, or clays with low plasticity. The liquefaction process typically occurs at depths less than 50 feet below the ground surface, although liquefaction can occur at deeper intervals, given the right conditions. The most susceptible zone occurs at depths shallower than 30 feet below the ground surface. For liquefaction to occur, there must be the proper soil type, soil saturation, and cyclic accelerations of sufficient magnitude to progressively increase the water pressures within the soil mass. Non-cohesive soil shear strength is developed by the point-to-point contact of the soil grains. As the water pressures increase in the void spaces surrounding the soil grains, the soil particles become supported more by the water than the point-to-point contact. When the water pressures increase sufficiently, the soil grains begin to lose contact with each other resulting in the loss of shear strength and continuous deformation of the soil where the soil begins to liquefy.

Liquefaction can lead to several types of ground failure, depending on slope conditions and the geological and hydrological settings, of which the four most common types of ground failure are lateral spreads, flow failures, ground oscillation, and loss of bearing strength.



City Boundary
Sphere of Influence
Liquefaction Zones

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Figure 5.6-2
Liquefaction Areas

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Seismic-Related Landslides. Landslide zones within the Planning Area are shown on **Figure 5.6-3**, **Landslide Zones**. A landslide is the descent of earth and rock down a slope. Landslides often occur along pre-existing zones of weakness within bedrock (i.e., previous failure surfaces). Landslides have the potential to occur on over-steepened slopes, especially where weak layers, such as thin clay layers, are present. Landslides can also occur on anti-dip slopes, along other planes of weakness such as faults or joints. Local folding of bedrock or fracturing due to faulting can add to the potential for slope failure. Groundwater is very important in contributing to slope instability and landslides. Additionally, other factors that contribute to slope failure include undercutting by stream action and subsequent erosion, as well as the mass movement of slopes caused by seepage or cyclical wetting and drying.

Lateral Spreading. Lateral spreading is the finite, lateral displacement of gently sloping ground as a result of pore pressure build-up or liquefaction in a shallow underlying deposit during an earthquake. The conditions occur when blocks of mostly intact surficial soil are displaced downslope along a sheer zone that has formed within liquefied sediment. Lateral spreads most commonly occur on gentle sloping ground, and can have lateral displacement of several feet. Large displacement can occur if soil conditions have the potential for liquefaction and if seismically induced ground shaking is of a sufficient duration. Liquefaction zones in the Planning Area have the potential for lateral spreading.

Subsidence. Subsidence hazards involve either the sudden collapse of the ground to form a depression or the slow subsidence or compaction of the sediments near the Earth's surface. Settlement of under-consolidated soils may occur during earthquake shaking. This process can result in a slight lowering of the ground surface which can vary in amount from place to place.

5.6.3 Significance Threshold Criteria

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

GEO-1 Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

a) 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.

b) Strong seismic ground shaking.

c) Seismic-related ground failure, including liquefaction.

d) Landslides.

GEO-2 Result in substantial soil erosion or the loss of topsoil.

GEO-3 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.

GEO-4 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.

GEO-5 Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

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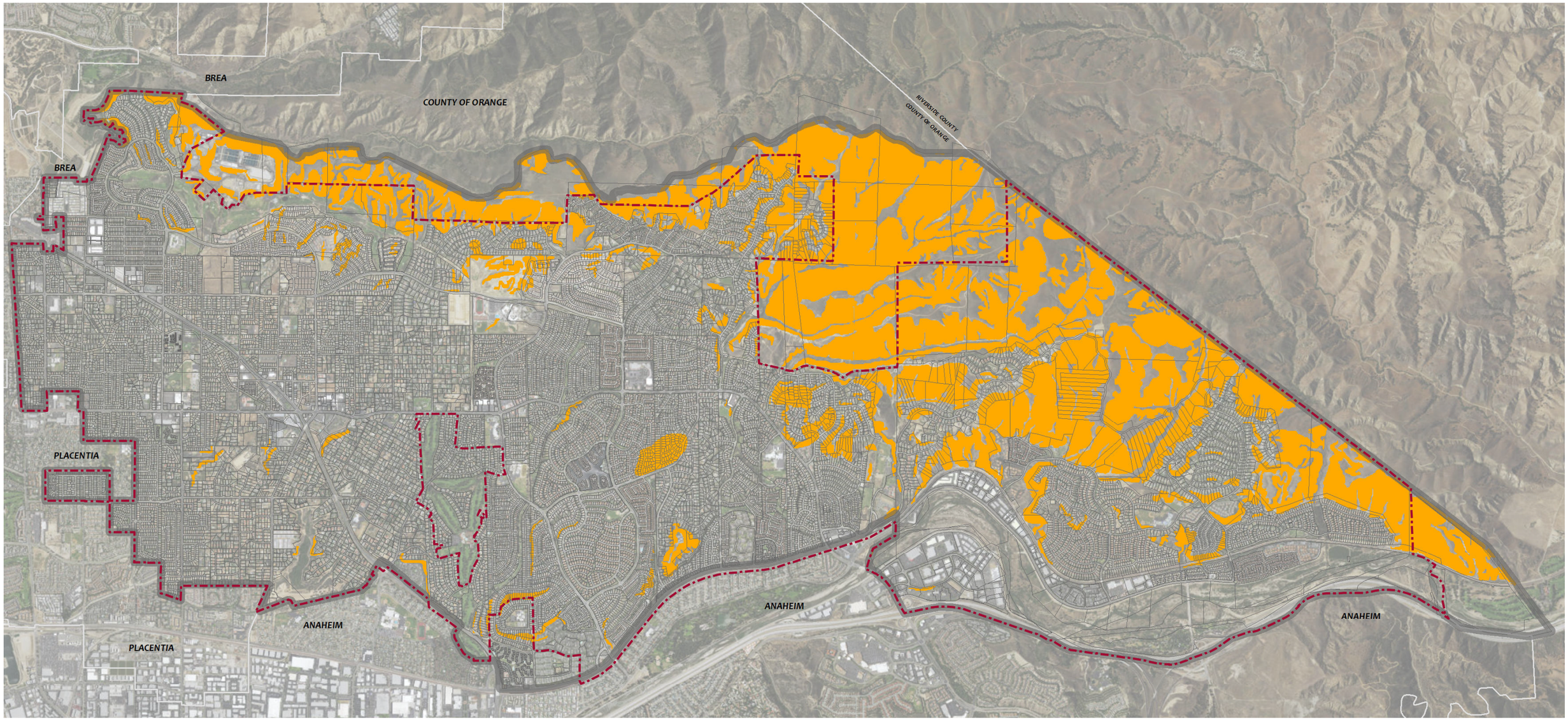

City Boundary
Sphere of Influence
Landslide Zones

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City of Yorba Linda
General Plan Update Program EIR

Figure 5.6-3
Landslide Zones

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5.6.4 Impacts and Mitigation Measures

Applicable goals and policies of the General Plan Update are as follows:

Impact 5.6-1: The proposed General Plan Update would not expose either people or structures to increased adverse effects as the result of any geologic or soils activity. [Threshold GEO-1]

Impact Analysis

The implementation of the proposed General Plan Update would allow for construction of over 1,000 new residential units, as well as a commercial and industrial expansion in certain Focus Areas of the Planning Area. With the exception of the Cielo/Esperanza Focus Area (located with the City's Sphere of Influence), the types of uses, locations of uses, and intensity/density of these uses reflects the 1993 General Plan in terms of land use and zoning. Replacement of existing residential and non-residential uses in the Planning Area could also occur. Both the Cielo and Esperanza projects have been subject to CEQA review by the County of Orange as the Lead Agency.

Project implementation could expose people and structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking, seismic-related ground failure (i.e., liquefaction, lateral spreading, subsidence, and settlement), and seismic-related landslides.

The Planning Area is located in a seismically active area and the Whittier Fault Zone traverses the Planning Area in a northwest to southeast direction. Development built on or in the near vicinity of the Whittier Fault Zone could potentially be exposed to a fault rupture risk because this fault system is sufficiently active to produce earthquakes and potentially rupture (Figure 5.6-1).

The County of Orange Safety Element indicates that portions of the Planning Area could experience shaking intensities of up to VI on the Modified Mercalli Scale. This scale is detailed in **Table 5.6-2, Richter and Modified Mercalli Scale Comparison**. Such intensities would likely be felt in the event of a maximum credible earthquake on the San Andreas or Newport-Inglewood faults.

The proposed General Plan Update contains goals and policies that directly address development processes in the City as they relate to potential seismic activity, including ground shaking. This includes siting new construction away from potentially active faults, ensuring that construction and renovation includes engineering for seismic hazards in particular, and promotion of earthquake survival and post-disaster functioning.

Goal PS-3, and its accompanying policies, of the Public Health and Safety Element of the proposed General Plan Update address community protection from hazards associated with geologic instability and seismic events. Specifically, Policy PS-3.1 requires that geologic conditions must be reviewed in all development decisions. PS-3.2 requires that both known and potential geologic hazards that could affect the City, including surface rupture, must be monitored. PS-3.3 ensures that all engineering and construction activities in the City be required to mitigate the potential for landslides and seismic hazards.

Table 5.6-2 Richter and Modified Mercalli Scale Comparison	
Magnitude on Richter Scale	**Effects at Different Levels of Intensity**
Below 3.0	I. Not felt by most people; only instruments detect the earthquake.
3.0-3.9 Distance felt: (approx. miles) 15	II. People lying down might feel the earthquake. III. People on the upper floors of the building will feel it, but may not know it is an earthquake. Hanging objects may swing.
4.0-4.9 Distance felt: (approx. miles) 30	IV. People indoors will probable feel it, but those outside may not. Houses may creak. V. Nearly everyone feels it. Sleepers are awakened. Doors swing, pictures move, things tip over.
5.0-5.9 Distance felt: (approx. miles) 70	VI. Everyone feels the earthquake. It is hard to walk. Windows and dishes are broken. Books fall from shelves.
6.0-6.9 Distance felt: (approx. miles) 125	VII. It is hard to stand. Plaster, bricks, and tiles fall from buildings. Small landslides. VIII. People will not be able to drive cars. Poorly built buildings may collapse and chimneys may fall.
7.0-7.9 Distance felt: (approx. miles) 250	IX. Most foundations are damaged. Masonry heavily damaged. Pipes are broken. The ground cracks. X. Most buildings are destroyed. Water is thrown out of rivers and lakes. Large landslides.
8.0-8.9	XI. Rails are bent. Bridges and underground pipelines are unusable. XII. Large rock masses displaced. Large objects may be thrown into air. Most things are leveled.
Source: County of Orange, *General Plan 2005, Safety Element*.	

In addition, the General Plan Update also requires that structures in the City have high performance seismic standards, discourages the siting of habitable facilities close to active or potentially active fault zones, and promotes the use of earthquake survival and disaster response in the siting, design, and construction of structures within the City (Policies PS-3.4 – 3.7).

The seismic design of structures within the Planning Area would be required to comply with California Building Code (CBC) criteria. The CBC addresses General Design Requirements, including but not limited to regulations governing seismically resistant construction and construction to protect people and property from hazards associated with excavation cave-ins and falling debris or construction materials. Compliance with State laws and local ordinances as well as the policies of the General Plan Update are set forth to ensure that adverse effects caused by seismic and geologic hazards (such as strong seismic ground shaking) are identified and mitigated, as needed, to protect public health and safety from substantial risks through appropriate engineering practices. Potential impacts would be less than significant.

Because there are several faults that could impact the City in the event of a seismic event, liquefaction-induced ground failure is a potentially major cause of earthquake damage in the Planning Ara. Areas most susceptible to liquefaction-induced damage are generally underlain by loose, water-saturated, granular

sediment within 50 feet of the ground surface. These geological conditions are present beneath much of the Planning Area.

Although additional residential, commercial, and industrial development could occur upon adoption of the proposed General Plan Update, the scale of such development would not be such that it would affect the City on a large scale in the event of a liquefaction event. Further, there are no land use designation changes that would occur as a result of the implementation of the General Plan Update so there would be no change in status for areas that are currently suitable for new development. In addition, State and local regulations and General Plan policies regarding protection from seismic hazards are applicable with respect to potential liquefaction impacts. Therefore, impacts would be less than significant.

Landslides, like ground shaking and liquefaction, are a major contributor to damage from earthquakes. These events occur in areas of steep slopes underlain by loose rock and weak soil. Figure 5.6-2 details potential liquefaction areas in and around the City. Steep slopes are found in the northern and northeastern portions of the Planning Area. In addition to the steepness of the slopes, most of these areas are underlain by silt- and sandstone, material which is known to be prone to landslides. Telegraph Canyon, oriented east-west, and other canyons running the same direction, is particularly prone to landslides as the underlying soil is similarly susceptible to downslope movement.

Although the risk of landslides in portions of the Planning Area is present, this threat would not be greater than associated with development assumptions set forth in the 1993 General Plan. The General Plan Update encourages development to avoid areas at risk of seismic activity, which can result in events such as landslides, and requires a site-specific geological study on any new building site in order to determine risk associated with construction. Compliance with State and local requirements for ongoing development within the Planning Area would result in impacts that are considered less than significant.

Proposed General Plan Update Goals and Policies

Public Health and Safety Element

Goal PS-3 – A community protected from hazards associated with geologic instability and seismic events.

Policy PS-3.1 - Ensure stable soil and geologic conditions in the review of development decisions, especially in regards to type of use, size of facility, and ease of evacuation of occupants.

Policy PS-3.2 – Monitor known and potential geologic hazards in the City.

PolicyPS-3.3 - Mitigate the potential for landslides and seismic hazards in the engineering and construction of structures within the City.

Policy PS-3.4 - Promote high standards for seismic performance of structures.

Policy PS-3.5 - Promote the collection of relevant data on groundwater levels and soil types in regard to liquefaction susceptibility, landslide potential and subsidence risks.

Policy PS-3.6 - Discourage the siting of habitable facilities and structures close to an active or potentially active fault.

Policy PS-3.7 - Promote the use of earthquake survival and efficient post-disaster functioning in the siting, design and construction standards for structures and facilities.

Conservation Element

Policy CN-3.3 – Ensure the practice of proper soil management techniques to reduce erosion, sedimentation, and other soil-related problems during the construction and operation of new development.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

Impact 5.6-2: The proposed project does not include elements that would lead to the loss of topsoil or other types of soil erosion as the General Plan Update contains provisions for the preservation of soils and is not a departure from the General Plan currently in place. [Threshold GEO-2]

Future development under the General Plan Update could cause impacts associated with soil erosion resulting in increased fugitive dust that affects air quality and water quality degradation due to increased sedimentation. With respect to potential air quality impacts related to erosion, please refer to Section 5.3, Air Quality. For a discussion of sedimentation, please refer to Section 5.9, Hydrology and Water Quality.

Erosion of topsoil results in the loss of nutrient-rich soils that support the establishment and continuance of vegetation. Wind-driven erosion can occur where barren surfaces are exposed to high-velocity winds. Where vacant parcels contain native or non-native vegetation, there is less potential for wind-blown erosion because the vegetation stabilizes soil, preventing it from leaving a site. Developed sites preclude wind-driven erosion due to the presence of buildings, parking lots, other impervious surfaces, and landscaping, etc. Landscaping stabilizes soil in the same manner that vegetation does, thereby minimizing windblown erosion. Wind-blown erosion in the Planning Area would continue to decrease as new development replaces any areas of exposed soil.

The provisions of the City's General Plan and Municipal Code regarding soil management and preservation, would continue to ensure that these resources are not lost as a result of construction or other activities. Further development in the Planning Area including but not limited to new commercial, residential, and industrial construction could occur under the General Plan Update, however existing measures required to prevent soil erosion would continue to be in effect (e.g., compliance with Stormwater Pollution Prevention Plans. Impacts would be less than significant.

Proposed General Plan Update Goals and Policies

Conservation Element

Policy CN-3.3 – Ensure the practice of proper soil management techniques to reduce erosion, sedimentation, and other soil-related problems during the construction and operation of new development.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

Impact 5.6-3: The proposed General Plan Update would not allow construction on areas that are geologically unstable. [Threshold GEO-3]

Impact Analysis

Goal PS-3 of Public Health and Safety Element of the General Plan Update directly addresses concerns related to construction of buildings underlain by unstable soils or of geologic nature such that construction would result in landslides, subsidence, or other negative effects. Specifically, site-specific geologic conditions must be reviewed in all development decisions, known and potential geologic hazards must be monitored, and all engineering and construction activities in the Planning Area must be required to mitigate the potential for landslides and other geologic hazards. As a result of these policies, impacts as a result of construction atop unstable ground would be less than significant.

Proposed General Plan Update Goals and Policies

Please refer to the General Plan Update goals and policies addressed in this section.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

Impact 5.6-4: Construction on expansive soils would not be permitted under the proposed General Plan Update. [Threshold GEO-4]

Impact Analysis

The General Plan Update would not directly subject people or structures to hazards associated with expansive soils because it does not authorize any construction projects. Impacts associated with expansive soils are generally structurally related, including cracked walls and foundations. Avoiding the development of new structures in areas subject to expansive soils is the best way to avoid any potential impacts. Soils testing to determine expansive characteristics is required for new development, pursuant to the CBC. Mitigation of expansive conditions is also required and must be fully defined in the routine building and grading permit process. The City's continued compliance with State and local regulations would avoid significant impacts.

Proposed General Plan Update Goals and Policies

Please refer to the General Plan Update goals and policies addressed in this section.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

Impact 5.6-5: Areas of future development under the proposed General Plan would be able to be connected to the City sewer system. [Threshold GEO-5]

Impact Analysis

New development that could occur under the proposed General Plan Update would occur in areas that are either connected or would be connected to the City of Yorba Linda sewer system. In addition, there are not areas of soil within the City that are incapable of supporting septic systems. No impacts would occur.

Proposed General Plan Update Goals and Policies

Please refer to the General Plan Update goals and policies addressed in this section.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

5.6.5 Cumulative Impacts

Future development in the Planning Area could occur under the proposed General Plan Update, however this document includes policies that would preclude negative impacts associated with geologic hazards.

Seismic, geologic, and soil conditions in the region would vary by location and their suitability for development would not be uniform. Future development sites may exhibit constraints to development that would be addressed at the project level. Short-term cumulative impacts such as erosion would occur. Ongoing development would incrementally increase the number of people and/or structures potentially subject to seismic or geologic hazards. Where seismic, geologic, and soil conditions occur, these potential impacts would be evaluated on a project-by-project basis in accordance with CEQA. Such exposure would be minimized through strict engineering guidelines for development at each respective development site. Future development would be subject to compliance with the provisions of the General Plan Update, the Municipal Code, and all applicable regulations. Mitigation would be incorporated on a project-by-project basis to reduce cumulative seismic, geologic, and soil impacts to a less than significant level. If a specific site were determined to create a significant impact that could not be feasibly mitigated, it is likely that the site would be found to be not appropriate for development. These processes, along with compliance with General Plan Update goals and policies, regulations, local building codes, and public safety standards would result in less than significant cumulative impacts related to potential seismic, geologic, and soil hazards. Therefore, the General Plan Update's contribution to these impacts would not be cumulatively considerable and cumulative impacts associated with geology and soils within the region would be less than significant.

5.6.6 Mitigation Measures

No further mitigation is required beyond compliance with applicable State and local regulations and the proposed General Plan Update policies.

5.6.7 Significant Unavoidable Impacts

No significant unavoidable impacts are identified.