2.3 Geology and Soils

This section of the Program Environmental Impact Report (PEIR) describes the existing geology, soils, and seismic conditions in San Diego County and analyzes the potential physical environmental impacts to people and property related to seismic hazards, underlying soil characteristics, slope stability, erosion, and excavation and export of soils. This section is based on desktop research performed by HELIX Environmental Planning, Inc., the *County of San Diego Guidelines for Determining Significance – Geologic Hazards* (County 2007c), *County of San Diego Guidelines for Determining Significance – Paleontological Resources* (County 2009a), *County of San Diego Guidelines for Determining Significance – Unique Geology* (County 2007d), and Appendix G of the California Environmental Quality Act (CEQA) Guidelines.

2.3.1 Existing Conditions

Natural geologic processes that represent an existing or future hazard to life, health, or property are called geologic hazards. Natural geologic hazards that affect people and property in San Diego County include earthquakes (which can cause surface fault rupture, ground shaking, and liquefaction), expansive soils, weathering, and mass wasting phenomena such as landslides or rockfalls. San Diego County contains active faults, steep topography, and other geological characteristics that pose public safety concerns and constrain physical development.

General Geologic Setting

San Diego County is along the Pacific Rim, an area characterized by island arcs with subduction zones forming mountain ranges and deep oceanic trenches, active volcanoes, and earthquakes. The U.S. Geological Survey defines a subduction zone as any area where one lithospheric plate sinks under another. This occurs when plates move toward each other or converge.

As a result of the region's geologic history, four general rock types are found within the county: (1) Cretaceous Age crystalline and Upper Jurassic metavolcanics, (2) Mesozoic Age metamorphic rocks, (3) Tertiary Age sedimentary rocks, and (4) recent alluvium.

Cretaceous Age crystalline rocks, including granites, diorites, gabbros, and Upper Jurassic metavolcanics, underlie most of the mountainous terrain in the central portion of the county. These rocks are associated with the Peninsular Ranges Region batholith of Southern California and Baja California. Mesozoic Age metamorphic rocks include marble, schist, and gneiss outcrops that are found in the western foothills and mountains of the Peninsular Ranges Region and in the desert east of the mountains. Tertiary Age sedimentary rocks include sandstone, conglomerate, and mudstone and are found in the western portion of the county, as well as in the eastern portion of the Desert Basin. Deposits of recent alluvium, including sand, gravel, silt, and clay, are found in river and stream valleys, around lagoons, in intermountain valleys, and in the desert basins.

Additionally, the *Natural Resources Inventory of San Diego County* identified 67 unique geologic features in the entire county, primarily for scientific research purposes (County 2007d). The inventory includes stratigraphic formations, igneous rocks, fossil locations, and structural features. A unique feature may be the best example of its kind locally or regionally, it may illustrate a geologic principle, it may provide a key piece of geologic information, it may be the "type locality" of a fossil or formation, or it may have high aesthetic appeal. Unique geologic features may be exposed or created from natural weathering and erosion processes or from human-made excavations. Geologic formations, their structure, and the fossils within them provide information

about past environments. Therefore, rocks provide aesthetic, scientific, educational, and recreational value.

Geographic Regions

San Diego County has three distinctive geographic regions, from west to east: the low-lying Coastal Plain, the mountainous Peninsular Ranges Region, and the Desert Basin (Salton Trough).

The Coastal Plain

The Coastal Plain ranges in elevation from sea level to approximately 600 feet above mean sea level (AMSL) and lies mostly within incorporated cities in San Diego County. The Coastal Plain Region is an area characterized by interbedded marine and nonmarine sedimentary rock units deposited over the last 75 million years. The sedimentary rocks overlie a buried topography of plutonic crystalline rocks typically composed of granite or granodiorite. Many of the level surfaces in the coastal areas, including most of the mesa tops and coastal benches, are elevated marine terraces, and these, as well as the broad, level floodplains of river valleys, are characteristic features of the Coastal Plain region.

Peninsular Ranges Region

The lower Peninsular Ranges Region in San Diego County is made up of foothills that span in elevation from 600 to 2,000 feet AMSL. It is characterized by rolling to hilly uplands that contain frequent narrow, winding valleys. This area is traversed by several rivers and a number of intermittent drainages. The foothills are developed with various urban, suburban, and rural land uses, including the communities of Bonsall, Fallbrook, Ramona, Lakeside, Crest/Dehesa, Valle de Oro, Spring Valley, and Otay.

The higher elevations of 2,000 to 6,000 feet AMSL are dominated by steep mountains typically covered with granitic boulders and chaparral vegetation on the western slopes, evergreen and temperate forests at and near the top, and desert chaparral on the eastern slopes. The largely undeveloped mountain areas of San Diego County surround scattered rural communities, including Alpine, Pine Valley, Jamul/Dulzura, Campo, and Julian.

The Peninsular Ranges Region is primarily underlain by plutonic igneous rocks that formed from the cooling of molten magmas deep within Earth's crust. Younger under-formed sedimentary rocks occur in various areas of the Peninsular Ranges Region. The Peninsular Ranges Region contains Quaternary alluvial and alluvial fan deposits in many of the mountain valleys. Some of the more southern mountain valleys contain Quaternary peat deposits.

Desert Basin (Salton Trough)

The Desert Basin is generally within the far eastern portion of San Diego County. Elevations range from sea level to 3,000 feet AMSL, and the terrain includes mountains, alluvial fans, and desert floor. Most of the region is within the Anza-Borrego Desert State Park. Development within this area includes the small desert communities of Borrego Springs, Ocotillo Wells, and Shelter Valley.

The desert is undergoing active deformation related to faulting along the San Jacinto and Elsinore fault zones, which are related to the San Andreas Fault system and described below. Since the early Miocene (~24 million years ago), the Salton Trough has been filling with sediments, which

are now up to 5 miles thick. The major source of the sediments on the San Diego County side of the trough is erosion of the Peninsular Ranges Region. Dry lake beds, filled with sediments, are notable features of the region.

General Paleontological Setting

Paleontological resources are the remains and/or traces of prehistoric life (exclusive of human remains, artifacts or features) that include the localities where fossils are collected and the sedimentary rock formations in which they were formed. The defining character of fossils is their geologic age. Fossils or fossil deposits are generally regarded as being older than 10,000 years, marking the end of the late Pleistocene and the beginning of the Holocene.

Fossils result from the preservation of organic remains, which requires a unique combination of physical and biological factors. Skeletal tissue with a high percentage of mineral matter is the most readily preserved, while soft tissues not intimately connected with the skeletal parts are least likely to be preserved. For this reason, the fossil record contains a biased selection not only of types of organisms but also of parts of organisms. Much of the paleontological knowledge about mammals is based on teeth alone, the teeth being generally more durable than other parts of the skeleton. The best-preserved fossils are of those organisms that lived within a sedimentary depositional environment or were buried by sediment shortly after death, thus partially insulating them from destructive chemical and physical processes.

The majority of San Diego County fossils are represented by shells and/or tests (hard coverings) of marine invertebrates (corals, mollusks, crustaceans, and echinoderms). However, important skeletal remains of terrestrial vertebrates (reptiles, birds, and mammals) characterize certain geologic rock units and time intervals. The local terrestrial fossil record also consists of remains and impressions of plants including leaf assemblages and petrified wood.

A geologic formation is a body of rock identified by its lithic characteristics (e.g., grain size, texture, color, mineral content) and stratigraphic position. Formations are mapped at Earth's surface or traced in the subsurface and are formally named and described in the geologic literature. The fossil content may also be a characteristic of a formation. There is a direct relationship between fossils and the geologic formations within which they are enclosed; therefore, with sufficient knowledge of the geology and stratigraphy of a particular area and the paleontological resource potential, it is possible to reasonably predict where fossils might or might not be found. This is the case in San Diego County where a general overview of the geologic setting provides a basis for reasonably predicting the location of paleontological resources.

In San Diego County, the geologic record is most complete for parts of the past 75 million years, represented by the Cretaceous Period, the Eocene, Oligocene, and Pliocene Epochs of the Tertiary Period, and the Pleistocene Epoch of the Quaternary Period.

Resource Potential Ratings and Sensitivity of Paleontological Resources

Sensitivity levels are rated for individual geologic formations, as it is the formation that contains the fossil remains. The sensitivity levels are the same as the resource potential ratings. For example, a formation with a high potential for containing important fossils has high sensitivity. The resource potential ratings and geologic formation sensitivity levels are described below.

High

High resource potential and high sensitivity are assigned to geologic formations known to contain paleontological localities with rare, well-preserved, critical fossil materials for stratigraphic or paleoenvironmental interpretation, and fossils providing important information about the paleoclimatic, paleobiological and/or evolutionary history (phylogeny) of animal and plant groups. In general, formations with high resource potential are considered to have the highest potential to produce unique invertebrate fossil assemblages or unique vertebrate fossils and are, therefore, highly sensitive.

Moderate

Moderate resource potential and moderate sensitivity are assigned to geologic formations known to contain paleontological localities. These geologic formations are judged to have a strong, but often unproven, potential for producing unique fossil remains.

Low

Low resource potential and low sensitivity are assigned to geologic formations that, based on their relatively young age and/or high-energy depositional history, are judged unlikely to produce unique fossil remains. Low resource potential formations rarely produce fossil remains of scientific importance and are considered to have low sensitivity. However, when fossils are found in these formations, they are often very significant additions to the geologic understanding of the area.

Marginal

Marginal resource potential and marginal sensitivity are assigned to geologic formations that are composed either of volcaniclastic (derived from volcanic sources) or of metasedimentary rocks, but that nevertheless have a limited probability for producing fossils from certain formations at localized outcrops. Volcaniclastic rock can contain organisms that were fossilized by being covered by ash, dust, mud, or other debris from volcanoes. Sedimentary rocks that have been metamorphosed by heat and/or pressure caused by volcanoes or plutons are called metasedimentary. If the sedimentary rocks had paleontological resources within them, those resources may have survived the metamorphism and still be identifiable within the metasedimentary rock, but since the probability of this occurring is so limited, these formations are considered marginally sensitive.

No Potential

No resource potential is assigned to geologic formations that are composed entirely of volcanic or plutonic igneous rock, such as basalt or granite, and therefore do not have any potential for producing fossil remains. These formations have no paleontological resource potential; therefore, they are not considered to be sensitive resources.

Faults and Seismicity

Regional Seismic Setting

The faulting and seismicity of Southern California is dominated by the compressionary regime associated with the “Big Bend” of the San Andreas Fault Zone. The San Andreas Fault Zone separates two of the major tectonic plates of Earth’s crust. West of the San Andreas Fault Zone

lies the Pacific Plate, which is moving in a northwesterly direction relative to the North American Plate, which is east of the San Andreas Fault Zone. This relative movement between the two plates is the driving force of fault ruptures on the west coast of California. The San Andreas Fault generally trends northwest to southeast and is to the northeast of San Diego County.

A series of sub-parallel faults are to the west of the San Andreas Fault Zone including the active San Jacinto, Elsinore, and Rose Canyon Fault Zones, which each traverse through San Diego County. North of the Transverse Ranges Province, generally between Santa Barbara and Joshua Tree National Park, the San Andreas Fault trends more in an east to west direction (the Big Bend), causing the fault's right-lateral strike-slip movement to produce north–south compression between the two plates. This compression has produced rapid uplift of many of the mountain ranges in Southern California. This crustal shortening is accommodated by faulting (mainly reverse faulting) and causes a large potential for seismicity throughout most of Southern California. Faults of the northern Peninsular Ranges Province generally reflect reverse and strike-slip faulting patterns since the province is in a transitionary position between areas dominated by strike-slip movement and by compression.

Local Faults and Seismicity

Several major active faults and fault zones are present within San Diego County. These active fault zones are San Jacinto Fault Zone, including Coyote Creek Fault, Elsinore Fault Zone and the nearby Earthquake Valley Fault, and Rose Canyon Fault Zone, including a series of unnamed faults trending from Downtown San Diego across San Diego Bay to the City of Coronado.

Seismic Hazards

Earthquake-related geologic hazards pose a significant threat to San Diego County and can impact extensive regions of land. Earthquakes can produce fault rupture and strong ground shaking, and can trigger landslides, rockfalls, soil liquefaction, tsunamis, and seiches. In turn, these geologic hazards can lead to other hazards such as fires, dam failures, and toxic substance releases. Primary effects of earthquakes include violent ground motion, and sometimes permanent displacement of land associated with surface rupture. Secondary effects of earthquakes include near-term phenomena, such as liquefaction, landslides, fires, tsunamis, seiches, and floods. Long-term effects associated with earthquakes include phenomena such as regional subsidence or emergence of landmasses and regional changes in groundwater levels.

Fault Rupture

During earthquakes, the ground can rupture at or below the surface. Ground rupture occurs when two lithospheric plates heave past each other, sending waves of motion across Earth. The lithosphere is approximately 75 miles thick and consists of the upper continental and oceanic crusts and the rigid mantle layer that is directly beneath the crust. Earthquakes can cause large vertical and/or horizontal displacement of the ground along the fault.

Alquist-Priolo Earthquake Fault Zones

In 1972, the State passed the Alquist-Priolo Earthquake Zoning Act to help identify areas subject to severe ground shaking. Earthquake faults are categorized as active, potentially active, and inactive. A fault is classified as active if it is included as an Alquist-Priolo Earthquake Fault Zone (movement within the past 11,000 years). The purpose of this act is to prohibit the placement of most structures for human occupancy across the traces of active faults, thereby mitigating the

hazard of fault ruptures. Alquist-Priolo zones serve as an official notification of the probability of ground rupture for future earthquakes.

The Alquist-Priolo zones that the State of California has designated along active faults in San Diego County are the Elsinore Fault, Earthquake Valley Fault, San Jacinto Zone, and Rose Canyon Fault Zone.

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.

Liquefaction

Liquefaction occurs primarily in saturated, loose, fine to medium-grained soils in areas where the groundwater table is generally 50 feet or less below the surface. When these sediments are shaken during an earthquake, a sudden increase in pore water pressure causes the soils to lose strength and behave as a liquid. In general, three types of lateral ground displacement are generated from liquefaction: (1) flow failure, which generally occurs on steeper slopes; (2) lateral spread, which generally occurs on gentle slopes; and (3) ground oscillation, which occurs on relatively flat ground. In addition, surface improvements on liquefiable areas may be prone to settlement and related damage in the event of a large earthquake on a regionally active fault. The primary factors that control the type of failure that is induced by liquefaction (if any) include slope, and the density, continuity, and depth of the liquefiable layer.

Within the county, there may be a potential for liquefaction in areas with loose sandy soils combined with a shallow groundwater table, which typically are in alluvial river valleys/basins and floodplains.

Landslides

A landslide is the down slope movement of soil and/or rock. Landslides can range in speed from very rapid to an imperceptible slow creep. Landslides can be caused by ground shaking from an earthquake or 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 ground shaking, blasting, or a gradual loosening of their contact with the surface. The likelihood of a landslide depends on an area’s geologic formations, topography, ground shaking potential, and influences of humans. Improper or excessive grading can increase the probability of a landslide. Land alterations such as excavation, filling, removing of vegetative cover, and introducing the concentration of water from drainage, irrigation, or septic systems may contribute to the instability of a slope and increase the likelihood of a landslide. Undercutting support at the base of a slope or adding too much weight to the slope can also produce a landslide.

Significant landslides have occurred within incorporated portions of the county along coastal bluffs and in other areas. Previous landslides and landslide-prone sedimentary formations are mostly in the western portion of the unincorporated county. Landslides have also occurred in the granitic terrain in the eastern portion of the county, although they are less prevalent. Reactivations of

existing landslides can be triggered by situations such as heavy rainfall or irrigation, seismic shaking, and/or grading.

Subsidence and Settlement

Subsidence, which can be caused by groundwater depletion, seismic activity, and other factors, refers to elevation changes of the land whether slow or sudden. Subsidence can cause a variety of problems including broken utility lines, blocked drainage, or distorted property boundaries and survey lines. According to the *Multi-Jurisdictional Hazard Mitigation Plan* (URS 2004), the underlying geologic formations in the county are mostly granitic, which has a very low potential of subsidence.

Expansive Soils

Certain types of clay soils expand when they are saturated and shrink when dried. These are called expansive soils and can pose a threat to the integrity of structures built on them without proper engineering. Areas of highly expansive soils within San Diego County occur predominately in the coastal plains, an area of dissected marine terraces and uplands. They can also be found in valleys and on slopes in the foothills and mountains of the Peninsular Ranges Region and, to a lesser extent, in the desert.

The expansion and contraction of the soil varies with the soil moisture content (wet or dry) and can be aggravated by the way a property is maintained or irrigated. Human activities can increase the moisture content of the soils and the threat of expansive soil damage. For example, a subdivision of homes that continually irrigates the landscaping or removes significant amounts of native vegetation could create this condition.

Soil Erosion

Erosion of soils can occur from both wind and water sources. Wind erosion physically removes the lighter, less dense soil constituents such as organic matter, clays, and silts, which are often the most fertile part of the soil. Surface water runoff erodes agricultural land and undercuts road banks, landfills, and riverbanks. Wind moves exposed loose soils off site and can contribute to reduced air quality. Eroded materials fill reservoirs, ponds, and drainage ditches and silt up harbors, streams, and rivers.

2.3.2 Regulatory Setting

2.3.2.1 *Federal*

U.S. Geological Survey Landslide Hazard Program

In fulfillment of the requirements of Public Law 106-113, the U.S. Geological Survey created the Landslide Hazard Program in the mid-1970s. According to the U.S. Geological Survey, the primary objective of the National Landslide Hazard Program is to reduce long-term losses from landslide hazards by improving our understanding of the causes of ground failure and suggesting mitigation strategies. The federal government takes the lead role in funding and conducting this research, whereas the reduction of losses due to geologic hazards is primarily a State and local responsibility. In San Diego County, the Unified Disaster Council is the governing body of the Unified San Diego County Emergency Services Organization. The primary purpose of the Unified

Disaster Council and the Emergency Services Organization is to provide for the coordination of plans and programs designed for the protection of life and property in San Diego County.

2.3.2.2 *State*

Alquist-Priolo Earthquake Fault Zoning Act

The California Legislature passed this law in 1972 to help identify areas subject to severe ground shaking. This State law requires that proposed developments incorporating tracts of four or more dwelling units investigate the potential for ground rupture within Alquist-Priolo zones. These zones serve as an official notification of the probability of ground rupture during future earthquakes. Where such zones are designated, no building may be constructed on the line of the fault, and before any construction is allowed, a geologic study must be conducted to determine the locations of all active fault lines in the zone.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was passed by the State in 1990 to address non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides. Guidelines for Evaluation and Mitigating Seismic Hazards in California (Special Publication 117) were adopted by the State Mining and Geology Board on March 13, 1997 (revised and re-adopted on September 11, 2008, as Special Publication 117a), in accordance with the Seismic Hazards Mapping Act of 1990. The publication contains the guidelines for evaluating seismic hazards other than surface fault rupture (landslides and liquefaction), and for recommending mitigation measures to minimize impacts. A Lead Agency may determine when the investigation required by the guidelines and the Seismic Hazards Mapping Act would occur for a project. Investigation can occur before, during, or after the CEQA process.

State Water Code, Section 13282

On-site wastewater treatment systems (OWTS) discharge pollutants to groundwater and, therefore, are regulated by the State Water Code. Section 13282 of the State Water Code allows the Regional Water Quality Control Board to authorize a local public agency to issue permits for and to regulate OWTS “to ensure that systems are adequately designed, located, sized, spaced, constructed and maintained.” The San Diego Regional Water Quality Control Board, with jurisdiction over San Diego County, authorizes the County Department of Environmental Health and Quality to issue certain OWTS permits.

2.3.2.3 *Local*

County Special Studies Zones

The Alquist-Priolo Act provides that a city or county may establish more restrictive policies than those in the Alquist-Priolo Act, if desired. The County established Special Study Zones that include late-Quaternary faults mapped by the California Division of Mines and Geology in the county. Late-Quaternary faults (movement during the past 700,000 years) were mapped based on geomorphic evidence similar to that of Holocene faults except that tectonic features are less distinct. As indicated by the California Division of Mines and Geology, these faults may be younger, but the lack of younger overlying deposits precludes more accurate age classification. Traces of faults within Special Study Zones are treated by the County as active unless a fault investigation can prove otherwise.

On-Site Wastewater System Groundwater Separation Policy

The purposes of this County Department of Environmental Health and Quality policy are to (1) protect groundwater quality by ensuring proper treatment of sewage effluent prior to its entering into groundwater, (2) protect the public health from failing on-site wastewater systems caused by high groundwater, and (3) provide a methodology for the evaluation of potential building sites using on-site wastewater systems.

San Diego County Code

Section 68.301 of the County Code is the OWTS Ordinance, which establishes the requirements for OWTS in the county. It also makes it unlawful for any person to cause, suffer, or permit the disposal of sewage, human excrement, or other liquid wastes in any place or manner except through and by means of an approved plumbing and drainage system and an approved sewage disposal system installed and maintained in accordance with the provisions of Division 3 of Title 5 of the County Plumbing Code and OWTS Ordinance.

San Diego County Zoning Ordinance Fault Displacement Area Regulations

The County Zoning Ordinance, Sections 5400 through 5406, implement the requirements of the Alquist-Priolo Act. The provisions of Sections 5400 through 5406 outline the allowable development, permitting requirements, and construction limitations within Fault Rupture Zones, as designated by the Alquist-Priolo Act. The County generally requires geologic reports for development proposed in Alquist-Priolo zones (Section 5406[b], Zoning Ordinance).

County of San Diego Code of Regulatory Ordinances

Chapter 4 of the County Grading Ordinance (which starts at Section 87.101 of the County Code) includes requirements for the maximum slope allowed for cut and fill slopes, requirement for drainage terraces on cut or fill slopes exceeding 40 feet in height, expansive soil requirements for cuts and fills, minimum setback requirements for buildings from cut or fill slopes, and reporting requirements including a soil engineer's report and a final engineering geology report by an engineering geologist, which includes specific approval of the grading as affected by geological factors.

County of San Diego Code of Regulatory Ordinances, Sections 87.101–87.804, Grading, Clearing, and Watercourses Ordinance

Section 87.430 of the County's Grading and Clearing Ordinance provides for the requirement of a paleontological monitor at the discretion of the County. In addition, the suspension of grading operation is required upon the discovery of fossils greater than 12 inches in any dimension. The ordinance also requires notification of the County Official (e.g., Permit Compliance Coordinator). The ordinance gives the County Official the authority to determine the appropriate resource recovery operations, which shall be carried out prior to the County Official's authorization to resume normal grading operations.

Other Agency Regulations and Plans

In addition to the unincorporated areas, there are 18 incorporated cities within San Diego County: Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana

Beach, and Vista. Incorporated cities within the county may have their own plans and policies related to geology, soils, and paleontological resources.

Integrated Vector Management Program Best Management Practices

The Integrated Vector Management Program (IVMP or Proposed Project) follows the best management practices (BMPs) described in State guidance documents, such as the *Best Management Practices for Mosquito Control in California* (CDPH 2012), *Best Management Practices for Mosquito Control on California State Properties* (CDPH 2008a), and *California Mosquito-Borne Virus Surveillance and Response Plan* (CDPH 2021), which detail vector control and pesticide application procedures. In addition, the County integrates BMPs into the IVMP serving as a comprehensive management framework for implementation of individual activities. BMPs implemented as part of the IVMP demonstrate the County's commitment to avoid or minimize impacts to the maximum extent feasible. The following BMPs have been developed by the VCP in combination with the above-referenced sources and will be implemented to reduce geologic hazards:

- B2: When accessing sensitive habitat, Vector Control Program staff will minimize the use of motorized vehicles to the extent feasible by conducting activities on foot with handheld equipment and remain in previously disturbed areas when vehicle use is needed. Aerial surveillance or control (e.g., helicopter or drone[1]) will also be used when feasible and appropriate during pesticide applications and identification of potential vector sites, respectively.

- B3: Vehicles will only be driven on existing roadways, access roads, and existing unpaved access paths. Vehicles driven on levees to travel near aquatic areas (such as tidal marshes, sloughs, or channels) for surveillance or treatment activities will travel at speeds slow enough to avoid or minimize noise and the production of dust, typically 15 miles per hour or less.

- B10: Vegetation trimming or removal, when necessary to provide access to vector habitat for surveillance and control activities, will be conducted by hand using handheld tools rather than gas-powered equipment or heavy machinery to minimize negative environmental effects. Vegetation trimming or removal activities will be conducted outside the general bird breeding season (February 15 to September 15, including riparian for general birds; January 15 to July 15 for raptors) to the greatest extent feasible.

- B12: Any staging of equipment or materials will occur in developed/disturbed areas outside existing wetlands, non-wetland waters, and native or rare upland areas.

- B14: Where heavy equipment or machinery is necessary, measures will be taken, such as reducing turns by track-type vehicles, taking a minimum number of passes with equipment, identifying multiple points of entry, driving vehicles at low speed, and avoiding or minimizing operating on open mud and other soft areas.

[1] For the purposes of this PEIR, "drone" is intended to generically mean a remotely piloted or unpiloted aircraft. As of this writing, the Federal Aviation Administration's official terminology is Unmanned Aircraft Systems; however, Federal Aviation Administration is transitioning toward gender-neutral terminology such as drone operator, certificated remote pilot, model aircraft flyer, and advanced air mobility operator.

2.3.3 Analysis of Project Effects and Determination as to Significance

Appendix G of the CEQA Guidelines and the *County of San Diego Guidelines for Determining Significance, Geologic Hazards, Unique Geology, and Paleontological Resources* (County 2007c, 2007d, 2009a) provide guidance for evaluating adverse environmental effects associated with geology, soils, and paleontological resources. The Proposed Project would result in a significant impact if it would lead to any of the following:

1. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving the rupture of a known earthquake fault, strong seismic ground shaking, liquefaction, or landslides.

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

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.

4. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.

5. 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.

6. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

The following sections analyze impacts from the IVMP's surveillance and monitoring, source reduction (i.e., physical control), and source treatment (i.e., biological and chemical controls). There would be no impact from the IVMP's public education and outreach and disease diagnostics activities; therefore, public education and outreach and disease diagnostics are not discussed further in this section.

2.3.3.1 *Exposure to Seismic-Related Hazards*

Guidelines for the Determination of Significance

Based on Appendix G of the CEQA Guidelines and the *County of San Diego Guidelines for Determining Significance for Geologic Hazards* (2007c), impacts related to the exposure to seismic-related hazards would be significant if:

a. The project proposes any building or structure to be used for human occupancy over or within 50 feet of the trace of an Alquist-Priolo Fault or County Special Study Zone Fault.

b. The project proposes the following uses within an Alquist-Priolo zone which are prohibited by the County:

    i. Uses containing structures with a capacity of 300 people or more. Any use having the capacity to serve, house, entertain, or otherwise accommodate 300 or more persons at any one time.

ii. Uses with the potential to severely damage the environment or cause major loss of life. Any use having the potential to severely damage the environment or cause major loss of life if destroyed, such as dams, reservoirs, petroleum storage facilities, and electrical power plants powered by nuclear reactors.

iii. Specific civic uses. Police and fire stations, schools, hospitals, rest homes, nursing homes, and emergency communication facilities.

The Proposed Project would result in a significant impact from ground shaking if the Service Area[2] is within Seismic Design Categories E and F of the California Building Code and the Proposed Project does not conform to the California Building Code.

The Proposed Project would have the potential to expose people or structures to substantial adverse effects from liquefaction if:

a. The Service Area contains potentially liquefiable soils;

b. The potentially liquefiable soils are saturated or have the potential to become saturated; or

c. In-situ soil densities are not sufficiently high to preclude liquefaction.

The Proposed Project would result in a significant impact from landslide risk if:

a. The Service Area would expose people or structures to substantial adverse effects, including the risk of loss, injury, or death involving landslides;

b. The project is located on a geologic unit or soil that is unstable, or would become unstable as a result of the project, and potentially result in an on- or off-site landslide; or

c. The Service Area lies directly below or on a known area subject to rockfall which would result in collapse of structures.

Impact Analysis

Implementation of the IVMP, including its surveillance and monitoring, source reduction (i.e., physical control), and source treatment (i.e., biological and chemical controls) activities would not require the construction of buildings or other structures that would be subject to human occupancy.

IVMP activities have the potential to be implemented across the county, including in areas determined to be Alquist-Priolo zones. IVMP fieldwork in these zones would be required under the Proposed Project's source reduction and source treatment activities. Although some source reduction activities may require the use of construction equipment and minor earthwork activities, IVMP activities do not have the potential to severely damage the environment or cause major loss

[2] Service Area is synonymous with Assessment Area, which is defined in the *Engineer's Report* (County 2022a) as the area in which an annual levy provides funding for essential vector control services, including those properties that may request and/or receive direct and more frequent service and are located within the scope of the vector surveillance area. As such, Native American reservation land, as a Sovereign Nation, is excluded from the Service Area along with federally owned lands that receive minimal to no services.

of life. Similarly, the Proposed Project's source reduction activities would not require the construction of structures that would be susceptible to liquefaction, landslides, fault rupture, or unstable soils. Therefore, impacts related to the exposure of seismic-related hazards would be less than significant.

In conclusion, impacts related to the exposure to seismic-related hazards would be less than significant and no mitigation is required.

2.3.3.2 *Soil Erosion or Topsoil Loss*

Guidelines for the Determination of Significance Analysis

Based on Appendix G of the CEQA Guidelines, the Proposed Project would have a significant impact if it would result in substantial soil erosion or the loss of topsoil.

Impact Analysis

Topsoil is the uppermost layer of soil, usually composed of the top 6 to 8 inches below the ground surface. It has the highest concentration of organic matter and microorganisms and is where most biological soil activity occurs. Plants generally concentrate their roots in, and obtain most of their nutrients from, this layer of soil. Topsoil erosion is of concern when the topsoil layer is blown or washed away. This creates an environment that does not support plants and animals otherwise present in topsoil, which can disrupt the food chain and local ecosystem.

Surveillance and Monitoring

The Proposed Project's surveillance and monitoring activities include evaluation of mosquito-breeding areas by conducting surveys via ground vehicles, aircraft (including piloted and drones), watercraft, and remote sensing equipment; trapping of mosquitoes and rodents; and testing of collected samples for vector-borne diseases. Surveillance activities generally occur along existing access routes that have already been established and are regularly maintained. Minor trimming of vegetation along existing access routes and paths may be required to provide access to the mosquito-breeding source. Trimming of vegetation would only be implemented on an as-needed basis and would be the minimum amount necessary to provide safe access. Impacts from minor trimming of vegetation would not affect large areas and would not significantly disturb existing topsoil because no individual plants would be removed. Furthermore, the IVMP has identified BMPs to reduce impacts to vegetation and undeveloped areas, including restricting vehicles to existing roadways and unpaved access paths (B2), requiring the use of handheld equipment (B10). Through the implementation of BMPs to reduce impacts to undisturbed areas, impacts to topsoil from source reduction activities would be less than significant.

Source Reduction

Similar to the surveillance and monitoring activities, implementation of the IVMP's source reduction activities would require access to various locations throughout the county, including in areas without paved roads and on relatively undisturbed soils. Source reduction activities involve physical control techniques to eliminate or reduce standing water. These techniques include but are not limited to ground disturbance (e.g., grading); vegetation management, including trimming and removal of vegetation; removal of sediment; water control; and other maintenance activities.

Minor ground disturbance would be one component of source reduction activities but would not be the primary technique to reduce vector breeding sources. Grading activities would disturb soils in the areas where it is required to reduce standing water, such as to remove impediments to the movement of water. However, these activities would be limited in scope and scale. Furthermore, as mentioned above, the IVMP has identified BMPs to reduce impacts to undeveloped areas, including restricting vehicles to existing roadways and unpaved access paths (B2), using handheld equipment (B10), staging equipment and materials on developed/disturbed areas (B12), and minimizing operating on open mud and other soft areas (B14). Ground-disturbing activities would similarly adhere to these BMPs. As such, source reduction activities would have minimal disturbance to existing topsoil, and impacts would be less than significant.

Source Treatment

Similar to source reduction, implementation of the Proposed Project's source treatment activities would result in potential vegetation removal and require access to relatively undisturbed soils during biological control and chemical control applications. Disturbance to topsoil would be avoided because vegetation removal would be limited to the area immediately surrounding individual plants. Furthermore, as mentioned above, the IVMP has identified BMPs to reduce impacts to undeveloped areas, including restricting vehicles to existing roadways and unpaved access paths (B2), using handheld equipment (B10), staging equipment and materials on developed/disturbed areas (B12), and minimizing operating on open mud and other soft areas (B14). Impacts would be less than significant.

In conclusion, with implementation of BMPs impacts related to soil erosion or topsoil loss would be less than significant and no mitigation is required.

2.3.3.3 *Soil Stability*

Guidelines for the Determination of Significance

Based on Appendix G of the CEQA Guidelines and the *County of San Diego Guidelines for Determining Significance, Geologic Hazards* (2007c), the Proposed Project would have a potentially significant impact if it would be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Proposed Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

Impact Analysis

Surveillance and Monitoring

As described in Section 2.3.3.2, *Soil Erosion, and Topsoil Loss*, the Proposed Project's surveillance and monitoring activities involve evaluation of mosquito-breeding areas by conducting surveys via ground vehicles. Minor trimming of vegetation along existing access routes and paths may be required to provide access. IVMP activities have the potential to be in geologic units or soils that are unstable. However, the IVMP surveillance and monitoring activities would not require significant earthmoving activities that could result in an off-site landslide, lateral spreading, subsidence, liquefaction, or collapse, and impacts would be less than significant.

Source Reduction

Similar to the surveillance and monitoring activities, implementation of the IVMP's source reduction activities would require access to various locations throughout the county, including areas that could be classified as unstable. The IVMP's source reduction activities do not propose the construction of structures such as buildings or major earthworks.

Minor grading activities would be required to reduce standing water, such as to remove impediments to the movement of water. However, these activities would be limited in scope and would not be conducted on a large scale or in such a way to affect soil stability. Furthermore, the IVMP has identified BMPs to reduce impacts to undeveloped areas, including restricting vehicles to existing roadways and unpaved access paths (B3) using handheld equipment (B10), staging equipment and materials on developed/ disturbed areas (B12), and minimizing operating on open mud and other soft areas (B14). Ground-disturbing activities would similarly adhere to these BMPs. As such, source reduction activities would have minimal disturbance to existing soil stability, and impacts would be less than significant.

Source Treatment

Similar to source reduction, implementation of the Proposed Project's source treatment activities would result in potential vegetation removal and require access to relatively undisturbed areas during biological control and chemical control applications. These applications would not involve heavy equipment or the construction of structures or large earthworks. Impacts to soil stability would be less than significant.

In conclusion, with implementation of BMPs impacts related to soil stability would be less than significant and no mitigation is required.

2.3.3.4 *Expansive Soils*

Guidelines for the Determination of Significance

Based on Appendix G of the CEQA Guidelines and the *County of San Diego Guidelines for Determining Significance, Geologic Hazards* (2007c), the Proposed Project would have a potentially significant impact if it would 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.

Impact Analysis

Certain types of clay soils expand when they are saturated and shrink when dried. These are called expansive soils and can pose a threat to the integrity of structures built on them without proper engineering. The Proposed Project's surveillance and monitoring, source reduction (i.e., physical control), and source treatment (i.e., biological and chemical controls) would not involve the construction of buildings or structures. No impact to expansive soils would occur.

2.3.3.5 *Wastewater Disposal Systems*

Guidelines for the Determination of Significance

Based on Appendix G of the CEQA Guidelines, the Proposed Project would have a significant impact if it would 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.

Impact Analysis

The IVMP does not propose the construction of structures or buildings or wastewater disposal systems. Existing wastewater disposal systems would be used during IVMP activities, including the use of portable toilets, if needed. No impacts would occur.

2.3.3.6 *Unique Geologic Features*

Guidelines for the Determination of Significance

Based on Appendix G of the CEQA Guidelines and the *County of San Diego Guidelines for Determining Significance, Unique Geology* (2007d), the Proposed Project would have a significant impact if it would directly or indirectly destroy a unique geologic feature. Specifically, the Proposed Project would result in a significant impact if it would materially impair a unique geologic feature by destroying or altering those physical characteristics that convey the uniqueness of the resource. A geologic feature is unique if it meets one of the following criteria:

a. Is the best example of its kind locally or regionally;

b. Embodies the distinctive characteristics of a geologic principle that is exclusive locally or regionally;

c. Provides a key piece of geologic information important in geology or geologic history;

d. Is a “type locality” of a formation;

e. Is a geologic formation that is exclusive locally or regionally;

f. Contains a mineral that is not known to occur elsewhere in the county; or

g. Is used repeatedly as a teaching tool.

Impact Analysis

Surveillance and Monitoring

As described under Topic 2, the IVMP’s surveillance and monitoring activities involve evaluation of mosquito-breeding areas by conducting surveys via ground vehicles. Minor trimming of vegetation along existing access routes and paths may be required to provide access and would not impact unique geologic features. IVMP activities have the potential to be in areas within or adjacent to unique geologic features. However, the IVMP surveillance and monitoring activities would not require significant earthmoving activities, and impacts would be less than significant.

Source Reduction

Similar to the surveillance and monitoring activities, implementation of the IVMP’s source reduction activities would require access to various locations throughout the county. IVMP activities may occur within the vicinity of areas considered to be unique geologic features. Minor grading activities would be required to reduce standing water, such as to remove impediments to

the movement of water. However, as mentioned above, these activities would be limited, would not be conducted on a large scale, and are not anticipated to require removal of unique geologic features. Furthermore, the IVMP has identified BMPs to reduce impacts to undeveloped areas, including restricting vehicles to existing roadways and unpaved access paths (B3), using handheld equipment (B10) and staging equipment and materials on developed/disturbed areas (B12). As such, source reduction activities would have minimal disturbance to existing unique geologic features, and impacts would be less than significant.

Source Treatment

Similar to source reduction, implementation of the IVMP's source treatment activities would result in potential vegetation removal and require access to relatively undisturbed areas during biological control and chemical control applications. Source treatments would not involve heavy equipment or the construction of structures or large earthworks. Impacts would be less than significant.

In conclusion, with implementation of BMPs impacts to unique geologic features would be less than significant and no mitigation is required.

2.3.3.7 *Paleontological Resources*

Guidelines for the Determination of Significance

Based on Appendix G of the CEQA Guidelines, the Proposed Project would have a significant impact if it would directly or indirectly destroy a unique paleontological resource or site.

The *County of San Diego Guidelines for Determining Significance – Paleontological Resources* (2009a) further explain that a significant impact to paleontological resources[3] may occur as a result of the Proposed Project if project-related grading or excavation will disturb the substratum or parent material below the major soil horizons in any paleontologically sensitive area of the county, as shown on the San Diego County Paleontological Resources Potential and Sensitivity Map.

Impact Analysis

Impacts to paleontological resources generally occur from the physical destruction of fossil remains by excavation operations that cut into geologic formations. When such activities occur, potential impacts are limited to the immediate area of disturbance. Because paleontological resources are typically underground and, therefore, not apparent until revealed by excavation, the potential for significant impacts to paleontological resources is based on the extent that a geologic formation would be disturbed and the potential for those geologic formations to contain fossils.

Surveillance and Monitoring

The IVMP's surveillance and monitoring activities involve evaluation of mosquito-breeding areas by conducting surveys via ground vehicles. Minor trimming of vegetation along existing access routes and paths may be required to provide access and would not impact ground features

[3] A unique paleontological resource is defined by the *County of San Diego Guidelines for Determining Significance – Paleontological Resources* (County 2009a) as any fossil or assemblage of fossils, paleontological resource site, or formation that meets certain criteria defined in the County Guidelines.

including paleontological resources. IVMP activities have the potential to be in areas with high paleontological resource sensitivity. However, the IVMP surveillance and monitoring activities would not require the disturbance of soils and impacts would be less than significant.

Source Reduction

IVMP's source reduction activities would require the access to various locations throughout the county, including areas with high paleontological resource sensitivity. The Proposed Project's source reduction activities do not propose the construction of structures such as buildings or major earthworks.

Minor grading activities may occur to reduce standing water, such as to remove impediments to the movement of water. IVMP activities may occur within paleontologically sensitive areas. Activities would be the minimum necessary to reduce or eliminate vector habitat and would not be conducted on a large scale. However, since specific site locations cannot be defined at this time, it is anticipated that source reduction could require earthmoving activities that could disturb the substratum or parent material below major soil horizons. This would create a potential to cause a substantial adverse change in the significance of a paleontological resource, resulting in a **potentially significant impact (GE-1)**.

Source Treatment

Similar to source reduction, source treatment activities would result in potential vegetation removal and require access to relatively undisturbed areas during biological control and chemical control applications. Source treatments would not involve heavy equipment or the construction of structures or large earthworks. Impacts would be less than significant.

In conclusion, implementation of the IVMP could result in **significant impacts** to paleontological resources through earthmoving activities that could disturb the substratum or parent material below major soil horizons **(GE-1)**. Implementation of mitigation measures **M-GE-1a** and **M-GE-1b** would reduce impacts to paleontological resources to less than significant.

2.3.4 Cumulative Impact Analysis

The geographic scope of cumulative impact analysis for geology, soils, and paleontological resources includes the entirety of San Diego County. Cumulative projects include countywide residential and non-residential land development, open space and recreation, and agricultural activities that have the potential for ground disturbance, vegetation removal, and pesticide use. As with cumulative projects, the Proposed Project would be required to comply with applicable federal, State, and local regulations for the protection of geology, soils, and significant paleontological resources in the Service Area.

Exposure to Seismic-Related Hazards

Most of Southern California is in an area of relatively high seismic activity, including cumulative projects in San Diego County. The geographic scope of cumulative impact analysis for seismic-related hazards is limited to the immediate area of the geologic constraint because site-specific developments and activities do not compound cumulative risks from seismic hazards. Cumulative projects, including the Proposed Project, would be subject to the Alquist-Priolo Earthquake Fault Zone Act and other applicable regulations addressing seismic activity. These regulations restrict development on active fault traces and address seismic-related hazards. Cumulative seismic-

related hazards would be less than significant. Therefore, implementation of the IVMP would not result in a cumulatively considerable contribution to cumulative seismic-related hazards.

Soil Erosion or Topsoil Loss

Cumulative projects would have the potential to result in substantial soil erosion or the loss of topsoil through construction activities such as grading and excavation that may result in hydromodification or exposure of topsoil to wind that would result in topsoil being washed or blown away. Most cumulative projects are subject to State and local runoff and erosion prevention requirements that would be required to be implemented prior to a project's approval. Additionally, the Proposed Project would result in less than significant impacts to soil erosion and topsoil loss through the implementation of BMPs. As a result, cumulative erosion and topsoil impacts would be less than significant. Therefore, implementation of the IVMP would not result in a cumulatively considerable contribution to cumulative erosion and topsoil impacts.

Soil Stability

The geographic scope of cumulative impact analysis for soil stability is limited to the immediate area of the geologic constraint because site-specific developments and activities do not compound cumulative soil stability risks. Cumulative projects that would have the potential to be on geologic units or soils that are unstable would be required to undergo analysis of geological and soil conditions applicable to the development site. Cumulative project compliance with applicable regulations would ensure that a significant cumulative impact would not occur. Additionally, the Proposed Project would result in less than significant impacts to soil stability. Therefore, implementation of the IVMP would not result in a cumulatively considerable contribution to cumulative soil stability impacts.

Expansive Soils

Some cumulative projects and activities throughout San Diego County may occur in areas that are prone to expansive soils. The geographic scope of cumulative impact analysis for expansive soils is limited to the immediate area of the geologic constraint because site-specific developments and activities do not compound cumulative expansive soils risks. A cumulative impact would occur if future cumulative development would contribute to risks associated with expansive soils. Cumulative project compliance with applicable regulations would ensure that a significant cumulative impact associated with expansive soils would not occur. Additionally, the Proposed Project would result in less than significant impacts related to expansive soils. Therefore, implementation of the IVMP would not result in a cumulatively considerable contribution to cumulative expansive soils impacts.

Wastewater Disposal Systems

The geographic scope for wastewater disposal is San Diego County. Cumulative development and activities would be required to comply with applicable regulations related to wastewater treatment and disposal. Additionally, the Proposed Project does not involve the construction of structures or the installation of wastewater disposal systems, and implementation of the IVMP would result in no impact to water disposal systems. Therefore, implementation of the IVMP would not result in a cumulatively considerable contribution to cumulative wastewater disposal systems impacts.

Unique Geologic Features

The geographic scope of cumulative impact analysis for unique geologic features is limited to the immediate area of the geologic feature because site-specific developments and activities do not compound risks to unique geologic features. It is anticipated that most cumulative development within San Diego County would be subject to protections for unique geologic features established through the jurisdiction's general plan or other regulations. Additionally, the Proposed Project would not impact unique geologic features. Therefore, implementation of the IVMP would not result in a cumulatively considerable contribution to cumulative impacts related to unique geologic features.

Paleontological Resources

The geographic scope of cumulative impact analysis for paleontological resources is limited to the immediate area of the paleontological resource because additional development does not compound risks to paleontological resources. It is anticipated that development within San Diego County would be subject to protections for paleontological resources established through the jurisdiction's general plan or other regulations. In addition, due to the nature and scale of the activities that could be implemented under the IVMP, the Proposed Project would be required to comply with all applicable federal, State, and local regulations. The Proposed Project would also implement mitigation measures and standard operating procedures and protocols to avoid or reduce impacts to paleontological resources. Therefore, the Proposed Project would not result in a cumulatively considerable contribution to cumulative archaeological resources impacts.

2.3.5 Significance of Impacts Prior to Mitigation

The Proposed Project would not result in impacts to geology or soils; however, the Proposed Project could result in potentially significant impacts to paleontological resources prior to mitigation.

GE-1 Ground-disturbing activities have the potential to disturb the substratum or parent material below the major soil horizons in a paleontologically sensitive area, which would result in a potentially significant impact to paleontological resources.

2.3.6 Mitigation Measures

Although ground-disturbing activities associated with the Proposed Project are expected to generally be minor in scale, source reduction activities could potentially result in direct or indirect impacts to paleontological resources. As such, the following mitigation measures are identified for individual activities that would involve ground-disturbing work to guide the identification, evaluation, and mitigation of potential impacts to paleontological resources, if encountered.

M-GE-1a IVMP activities that are within **high or moderate paleontologically sensitive areas where excavation is *greater* than 2,500 cubic yards** pursuant to *County of San Diego Guidelines for Determining Significance – Paleontological Resources* shall implement a monitoring program during excavation/grading activities. A Project Paleontologist and Paleontological Resources Monitor shall be retained as defined by the County Guidelines.

The Project Paleontologist shall attend the pre-grading/pre-construction meeting to consult with grading contractors regarding the requirement of monitoring for

paleontological resources, the potential importance and uniqueness of fossils and other paleontological resources that could be found during grading and excavation for the Proposed Project, and the regulations that govern the protection of paleontological resources.

The Project Paleontologist and Paleontological Resources Monitor shall monitor the original cutting (grading and excavation activities) of previously undisturbed formations of sedimentary rocks that may contain paleontological resources for unearthed fossils. The frequency of monitoring depends upon the rate of excavation, the materials excavated, and the abundance of fossils.

In the event paleontological resources are found, construction activities shall be diverted or temporarily halted in the area where the resources were found to allow for recovery/salvage.

Upon conclusion of grading or excavation activities, a Paleontological Resources Mitigation Report shall be prepared, even if no resources are found during the monitoring. The report shall summarize the results of the mitigation program, including field and laboratory methodology, monitoring dates, location and geologic and stratigraphic setting, monitoring efforts, conclusions, and references cited, as well as if paleontological resources were found, lists of collected fossils and their paleontological significance and descriptions of any analyses.

M-GE-1b Integrated Vector Management Program activities that are within **low or marginal** paleontologically sensitive areas or within **high or moderate paleontologically sensitive areas where excavation is *less* than 2,500 cubic yards** pursuant to *County of San Diego Guidelines for Determining Significance – Paleontological Resources* shall implement a monitoring program during excavation/grading activities. A Standard Monitor shall be retained as defined by County Guidelines.

If a fossil of greater than 12 inches in any dimension, including circumference, is encountered during excavation or grading, all excavation operations in the area where the fossil was found shall be suspended immediately, the County Department of Environmental Health and Quality shall be notified, and a Project Paleontologist shall be retained to assess the significance of the find and, if the fossil is significant, to oversee the salvage program, including salvaging, cleaning, and curating the fossils and documenting the find.

2.3.7 Conclusion

Exposure to Seismic-Related Hazards

Implementation of the Proposed Project would not result in exposure to seismic-related hazards. A less than significant impact would occur, and mitigation is not required.

Soil Erosion or Topsoil Loss

With implementation of BMPs, the Proposed Project would not result in significant impacts related to soil erosion or topsoil loss. A less than significant impact would occur, and mitigation is not required.

Soil Stability

With implementation of BMPs, the Proposed Project would not result in impacts related to soil stability. A less than significant impact would occur, and mitigation is not required.

Expansive Soils

The Proposed Project does not involve the construction of buildings or structures and implementation of the IVMP would result in no impact to expansive soils. No mitigation is required.

Wastewater Disposal Systems

The Proposed Project does not involve the installation of wastewater disposal systems and implementation of the IVMP would result in no impacts to wastewater disposal systems. No mitigation is required.

Unique Geologic Features

With implementation of BMPs, the Proposed Project would not result in impacts to unique geologic features. A less than significant impact would occur and mitigation is not required.

Paleontological Resources

Implementation of the Proposed Project would result in ground-disturbing activities that could have the potential to cause a substantial adverse change in the significance of a paleontological resource. However, the mitigation measures identified above would mitigate the Proposed Project's potentially significant impacts related to paleontological resources to a less than significant level. With program-level mitigation and compliance with applicable federal, State, and local regulations for the protection of paleontological resources, the Proposed Project would not contribute to a cumulatively considerable paleontological resources impact.