3A.7 GEOLOGY, SOILS, MINERALS, AND PALEONTOLOGICAL RESOURCES – LAND

This section contains a program-level evaluation of geology, soils, minerals, and paleontological resources. However, impacts to these resources would be the same under each individual development phase as under the program (entire SPA) analysis.

3A.7.1 AFFECTED ENVIRONMENT

GEOLOGY

Regional Geology

The SPA is located along the western margin of the Sierra Nevada Mountain Range (in the Sierra Nevada geomorphic province). The Sierra Nevada trends north-northwest from Bakersfield to Lassen Peak, and includes the Sierra Nevada mountain range and a broad belt of western foothills. The Sierra Nevada block is composed of northwest-trending belts of metamorphic, volcanic, and igneous rocks that have undergone intense deformation, faulting, and intrusion. Active faults that mark the eastern edge of the Sierra Nevada have resulted in upthrusting and tilting of the entire Sierra Nevada block in the last 5 million years—steeply on the eastern edge (adjacent to the Mono Basin), and gently along the western edge (where the SPA is located). The gently rolling Sierra Nevada foothills are comprised of metamorphosed sedimentary rocks that have been intruded by igneous rocks. The rock formations that make up the western edge of the Sierra Nevada block likely originally formed as a volcanic arc that was later accreted (added) to the western margin of the continent during the Jurassic period (Day 1992).

Local Geology

The SPA is located within the following U.S. Geological Survey (USGS) 7.5-Minute Quadrangles: Folsom SE, Clarksville, Folsom, and Buffalo Creek. The topography is gently rolling over most of the SPA, varying from approximately 245 feet above mean sea level (msl) in the northwestern portion of the SPA to approximately 400 feet above msl in the central portion of the SPA. However, the eastern portion of the SPA, located in the low foothills of the Sierra Nevada, contains steeper terrain that ranges from 500 feet to 810 feet above msl.

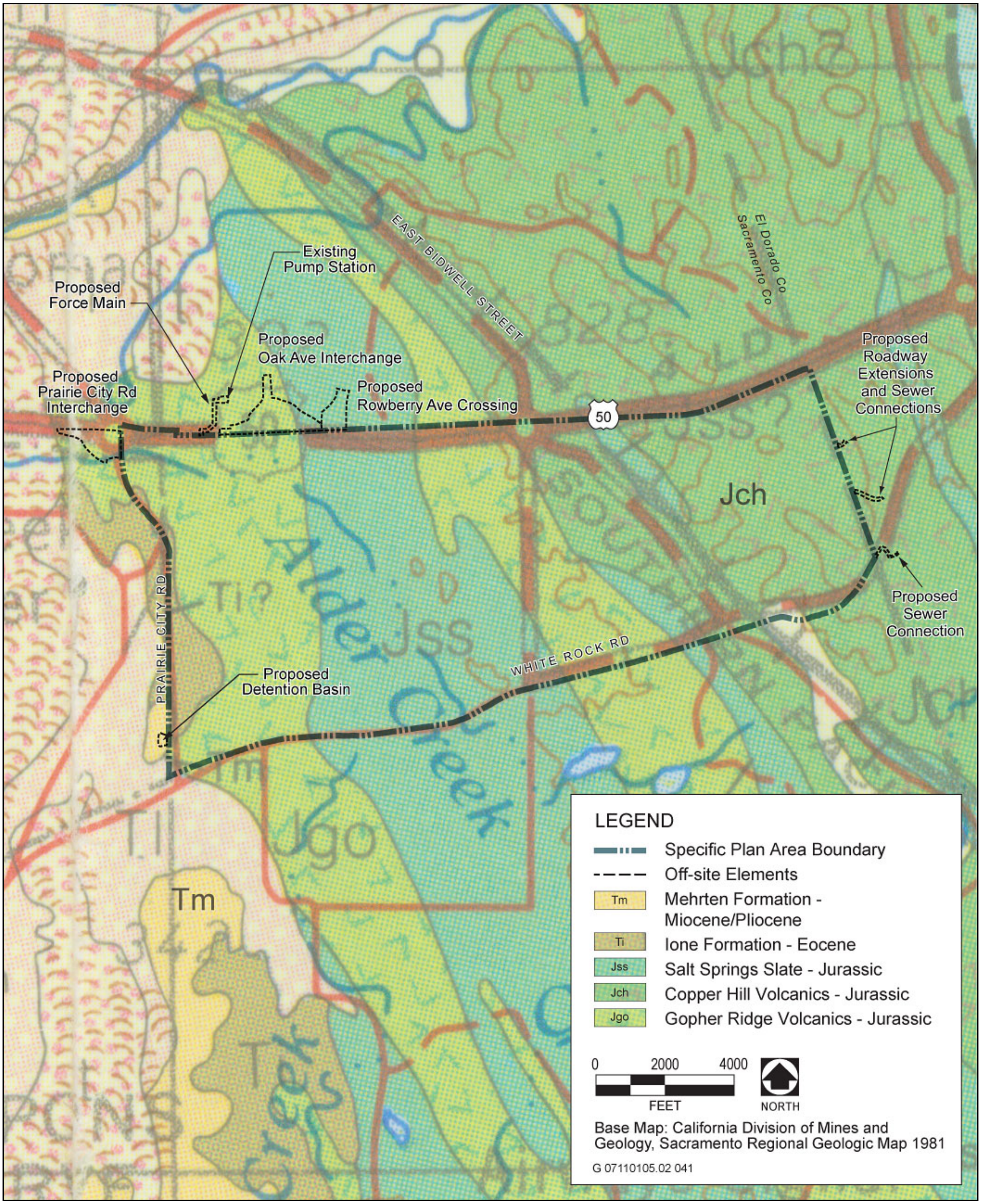
The SPA lies within the Western Sierra Metamorphic Belt, which contains primarily volcanic and sedimentary rocks that were added to the continental margin during the Jurassic period. These rocks are overlain by younger upper Cretaceous and Tertiary sedimentary rocks of the Central Valley. Exhibit 3A.7-1 shows the geologic formations in the SPA, discussed in detail below, based on the *Geologic Map of the Sacramento Quadrangle* (Wagner et al. 1987).

Mehrten Formation

The Mehrten Formation is of Pliocene-Miocene age (approximately 9 million year ago). It consists of sandstone, siltstone, and conglomerate that are interbedded with andesitic breccia from volcanic lava flows that occurred in the Sierra Nevada mountains and foothills.

Ione Formation

The Ione Formation occurs as a 200-mile-long series of isolated exposures along the western foothills of the Sierra Nevada, from Oroville south to Friant in Fresno County. The Ione was formed from fluvial, estuarine, and shallow marine deposits of Eocene age (approximately 35 to 55 million years ago). It consists of quartzose sandstone, conglomerate, and claystone. This formation is generally soft and deeply eroded. It occurs only in a small area of southwestern portion of the SPA.



Source: Wagner et al. 1987

Geologic Formations in the SPA and Vicinity **Exhibit 3A.7-1**

Salt Springs Slate, Copper Hill Volcanics, Gopher Ridge Volcanics

These formations are believed to have originated near an oceanic island volcanic arc that was later accreted (added) to the continental margin during the Jurassic period (approximately 150-200 million years ago) and subsequently deformed. Springer and Day (2005) believe that the Copper Hill and Gopher Ridge Volcanics are the same formations, and have also postulated a sequence of deposition, erosion, and burial of the volcanic arc.

Salt Springs Slate—This sedimentary/metasedimentary formation consists mainly dark gray slate, with some mica schist. The rocks originally consisted of shale, which was metamorphosed into slate approximately 159–151 million years ago.

Copper Hill Volcanics/Gopher Ridge Volcanics—These formations consist of metamorphosed pyroclastic rocks, pillow lava, and minor felsic porphyrite that may be 162 million years or older.

REGIONAL SEISMICITY AND FAULT ZONES

Potential seismic hazards resulting from a nearby moderate to major earthquake can generally be classified as primary and secondary. The primary effect is fault ground rupture, also called surface faulting. Common secondary seismic hazards include ground shaking, liquefaction, and subsidence. Each of these potential hazards is discussed below.

Fault Ground Rupture

Surface rupture is an actual cracking or breaking of the ground along a fault during an earthquake. Structures built over an active fault can be torn apart if the ground ruptures. Surface ground rupture along faults is generally limited to a linear zone a few yards wide. The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (see Section 3A.7.3, "Regulatory Framework," below) was created to prohibit the location of structures designed for human occupancy across the traces of active faults, thereby reducing the loss of life and property from an earthquake. The SPA is not located in an Alquist-Priolo Earthquake Fault Zone (California Geological Survey [CGS] 2007, Hart and Bryant 1999). The nearest fault zoned under the Alquist-Priolo Act is the northern segment of the Cleveland Hills Fault, located near Lake Oroville, approximately 50 miles north of the SPA. Research conducted by the California Department of Water Resources (DWR) indicates that the magnitude 5.7 earthquake that occurred on August 1, 1975 along the Cleveland Hills Fault mostly likely resulted from reservoir-induced stress (DWR 1979).

Seismic Ground Shaking

Ground shaking, motion that occurs as a result of energy released during faulting, could potentially result in the damage or collapse of buildings and other structures, depending on the magnitude of the earthquake, the location of the epicenter, and the character and duration of the ground motion. Other important factors to be considered are the characteristics of the underlying soil and rock and, where structures exist, the building materials used and the workmanship of the structures.

Faults in the Project Region

The West Branch of the Bear Mountains fault, within the Foothills fault system, is located approximately 5 miles east of the eastern property boundary; however, Jennings (1994) does not indicate that fault activity has occurred within the last 11,000 years, and the slip rate of the Foothills fault system is extremely low (0.05 millimeters per year), which is well below the planning threshold for major earthquakes (USGS 2000). With the exception of the Dunnigan Hills fault, located in the Woodland area, the Sacramento Valley has generally not been seismically active in the last 11,000 years (Holocene time). Faults with known or estimated activity during the Holocene are generally located in the San Francisco Bay Area to the west, or in the Lake Tahoe area to the east, as shown in

Table 3A.7-1. In addition, Table 3A.7-1 identifies the faults' approximate distance from the SPA, fault type, and maximum moment magnitude.

Table 3A.7-1
Faults with Evidence of Activity During Holocene Time in the Project Region

Fault Name	Approximate Distance from SPA (miles)	Fault Type[1]	Maximum Moment Magnitude[2]	Regional Location
Dunnigan Hills	40	NA	NA	Western Sacramento Valley
Cleveland Hills/Swain Ravine	50	N/A	6.5	Sierra Nevada Foothills
Great Valley Fault Zone Segment 4	60	B	6.6	Margin between Sacramento Valley and Coast Range
Great Valley Fault Zone Segment 5	65	B	6.5	Margin between Sacramento Valley and Coast Range
Green Valley	65	B	6.2	Coast Range
Greenville Fault Zone (includes Clayton and Marsh Creek sections)	65	B	6.6	Coast Range
Concord	70	B	6.2	Coast Range
West Tahoe/Dollar Point Fault Zone	60	NA	7.2	Lake Tahoe
North Tahoe/Incline Village Fault Zone	60	B	7.0	Lake Tahoe

Notes:
NA = not available or not known
[1] Faults with an "A" classification are capable of producing large magnitude (M) events (M greater than 7.0), have a high rate of seismic activity (e.g., slip rates greater than 5 millimeters per year), and have well-constrained paleoseismic data (e.g., evidence of displacement within the last 700,000 years). Class "B" faults are those that lack paleoseismic data necessary to constrain the recurrence intervals of large-scale events. Faults with a "B" classification are capable of producing an event of M 6.5 or greater.
[2] The moment magnitude scale is used by seismologists to compare the energy released by earthquakes. Unlike other magnitude scales, it does not saturate at the upper end, meaning that there is no particular value beyond which all earthquakes have about the same magnitude, which makes this scale a particularly valuable tool for assessing large earthquakes.
Source: Cao 2002, Jennings 1994, Mualchin 1996, Petersen et al. 1996, Ichinose et al. 1999, data compiled by AECOM in 2009

The intensity of ground shaking depends on the distance from the earthquake epicenter to the site, the magnitude of the earthquake, site soil conditions, and the characteristics of the source. Ground motions from seismic activity can be estimated by probabilistic method at specified hazard levels and by site-specific design calculations using a computer model. The CGS Probabilistic Seismic Hazards Assessment Model indicates a minimum horizontal acceleration of 0.109 g for soft rock and 0.1 g for firm rock conditions (where g is the percentage of gravity) in the SPA with a 10% probability of earthquake occurrence in a 50-year timeframe (also known as the "Design Basis Earthquake" [DBE]) for use in earthquake-resistant design (CGS 2008). Stated another way, these calculations indicated there is a 1-in-10 probability that an earthquake will occur within 50 years that would result in a peak horizontal ground acceleration exceeding 0.109 or 0.1*g*.

The California Building Standards Code (CBC) specifies more stringent design guidelines where a project would be located adjacent to a Class A or B fault as designated by the California Probabilistic Seismic Hazard Maps. As shown in Table 3A.7-1, the SPA is located approximately 60 miles from the nearest Class A or B fault.

Seismic Seiches

Earthquakes may affect open bodies of water by creating seismic sea waves and seiches. Seismic sea waves (often called “tidal waves”) are caused by abrupt ground movements (usually vertical) on the ocean floor in connection with a major earthquake. Because of the long distance of the SPA from the Pacific Ocean, seismic sea waves would not be a factor in the SPA. A seiche is a sloshing of water in an enclosed or restricted water body, such as a basin, river, or lake, which is caused by earthquake motion; the sloshing can occur for a few minutes or several hours. Although an 1868 earthquake along the Hayward fault in the San Francisco Bay Area is known to have generated a seiche along the Sacramento River, the affected area was located in the Sacramento–San Joaquin River Delta. Seiches are not likely to occur in the vicinity of the SPA.

Ground Failure/Liquefaction

Soil liquefaction occurs when ground shaking from an earthquake causes a sediment layer saturated with groundwater to lose strength and take on the characteristics of a fluid, thus becoming similar to quicksand. Factors determining the liquefaction potential are soil type, the level and duration of seismic ground motions, the type and consistency of soils, and the depth to groundwater. Loose sands and peat deposits are susceptible to liquefaction, while clayey silts, silty clays, and clays deposited in freshwater environments are generally stable under the influence of seismic ground shaking.

Liquefaction poses a hazard to engineered structures. The loss of soil strength can result in bearing capacity insufficient to support foundation loads, increased lateral pressure on retaining or basement walls, and slope instability.

Based on a review of information contained in (1) the Preliminary Geotechnical Engineering Reports prepared by Wallace Kuhl & Associates (2004, 2005, 2008) and Youngdahl Consulting Group (2003), (2) published geological maps and literature, and (3) a telephone conference with Wallace Kuhl & Associates (French, pers. comm., 2009), it unlikely that on- or off-site soils would be subject to liquefaction in the event of an earthquake because the SPA located in stable soil underlain at shall depths by bedrock, the potential seismic sources are a relatively long distance away, and the groundwater table is at least 100 feet below the ground surface.

Subsidence, Settlement, and Soil Bearing Capacity

Subsidence of the land surface can be induced by both natural and human phenomena. Natural phenomena that can cause subsidence can result from tectonic deformations and seismically induced settlements; from consolidation, hydrocompaction, or rapid sedimentation; from oxidation or dewatering of organic-rich soils; and from subsurface cavities. Subsidence related to human activity can result from withdrawal of subsurface fluids or sediment. Pumping of water for residential, commercial, and agricultural uses from subsurface water tables causes more than 80% of the identified subsidence in the United States (Galloway et al. 1999). Lateral spreading is the horizontal movement or spreading of soil toward an open face, such as a streambank, the open side of fill embankments, or the sides of levees. The potential for failure from subsidence and lateral spreading is highest in areas where the groundwater table is high, where relatively soft and recent alluvial deposits exist, and where creek banks are relatively high. Soil bearing capacity is the ability of soil to support the loads applied to the ground; where the bearing capacity is too low to support proposed structures, subsidence and settlement may occur.

Based on a review of Natural Resource Conservation Service (NRCS) (2009) soil survey data and the Preliminary Geotechnical Engineering Reports prepared by Wallace Kuhl & Associates (2004, 2005, 2008) and Youngdahl Consulting Group (2003), SPA soils would not be subject to hazards from subsidence or settlement, because the groundwater table is at least 100 feet below the SPA and because the SPA soils generally consist of older bedrock materials of adequate bearing strength.

Slope Stability

A landslide is the downhill movement of masses of earth material under the force of gravity. The factors contributing to landslide potential are steep slopes, unstable terrain, and proximity to earthquake faults. This process typically involves the surface soil and an upper portion of the underlying bedrock. Movement may be very rapid, or so slow that a change of position can be noted only over a period of weeks or years (creep). The size of a landslide can range from several square feet to several square miles.

The eastern portion of the SPA contains steep slopes; however, no landslides have been recorded in the SPA and vicinity. Preliminary grading plans (MacKay & Somps 2008) indicate that steep cuts and fills would be necessary in the eastern foothills, necessitating the construction of slopes that would vary from 16–32%. Without proper engineering controls, SPA soils could be subject to landslide potential during or after construction activities.

Soils

Table 3A.7-2 summarizes the generalized characteristics and Exhibit 3A.7-2 shows the locations of the soil types of the on- and off-site facilities.

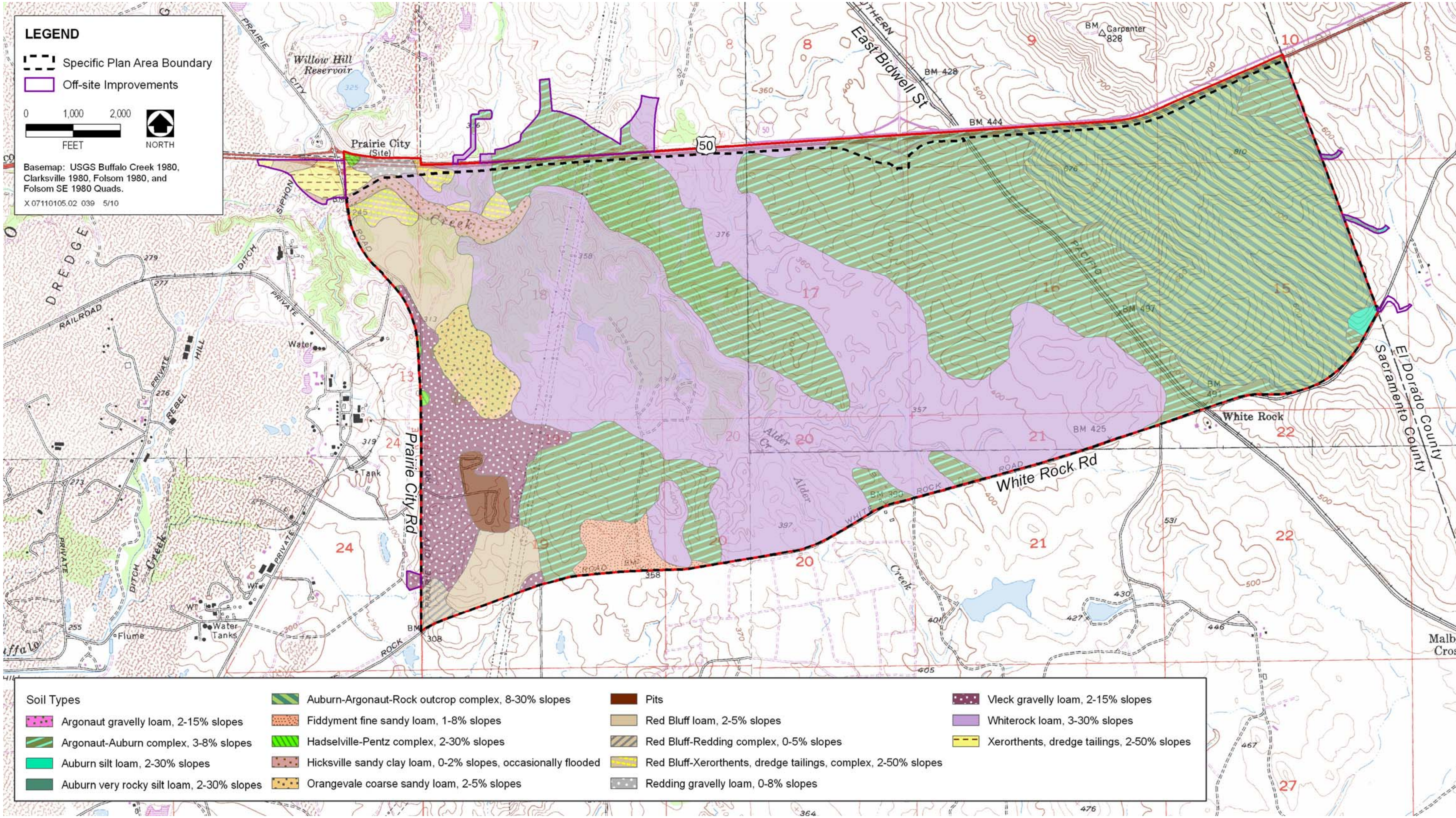
Subsurface Conditions

Based on data contained in the Preliminary Geotechnical Engineering Reports prepared by Wallace Kuhl & Associates (2004, 2005, and 2008) and Youngdahl Consulting Group (2003), the SPA is generally underlain by near surface soils that consist of sandy silts, silty clays, and sandy clays, and underlain at shallow depths by soft or firm bedrock. The groundwater table is at least 100 feet below the ground surface. Perched shallow water and seepage conditions are expected in the SPA, particularly during the winter months.

Naturally Occurring Asbestos

Asbestos is a term applied to several types of naturally occurring fibrous materials found in rock formations throughout California. Exposure and disturbance of rock and soil that contains asbestos can result in the release of fibers to the air and consequent exposure to the public. All types of asbestos are now considered hazardous and pose public health risks. Asbestos is commonly found in ultramafic rock, including serpentine. Two forms of asbestos are associated with serpentinite: chrysotile asbestos and tremolite/actinolite asbestos. In 2000, CGS published a report entitled *Areas more Likely to contain Natural Occurrences of Asbestos in Western El Dorado County, California* (Open-File Report 2000-002), following environmental concerns raised about potential exposures to airborne asbestos near areas where serpentinite was being disturbed in El Dorado County. The map contained in Open-File Report 2000-002 indicates that the proposed off-site roadways into El Dorado Hills from the Folsom Heights Property are located within an area called “Undesignated Map Areas that Probably Do Not Contain Asbestos.”

In 2004, after the Sacramento Metropolitan Air Quality Management District (SMAQMD) determined that naturally occurring asbestos (NOA) was present in the Folsom area, SMAQMD issued Advisory 04-05(2) and commissioned the CGS to perform a study published in 2006 entitled *Relative Likelihood for the Presence of Naturally Occurring Asbestos in Eastern Sacramento County, California* (Special Report 192). The map contained in Special Report 192 indicates that most of the SPA, as well as the proposed off-site Oak Avenue Interchange, Rowberry Drive Overcrossing, East Bidwell/Scott Road Interchange, and Empire Ranch Interchange, are designated “Areas Moderately Likely to Contain NOA.” These areas include metamorphic and igneous rocks. Therefore, the potential exists for NOA to be encountered in rocks of the Copper Hill Volcanics and the Gopher Ridge Volcanics geologic formations, which are present in the SPA.



Source: NRCS Soil Survey Geographic Database (SSURGO) 2007

Soil Types of On- and Off-Site Project Elements **Exhibit 3A.7-2**

Table 3A.7-2
On- and Off-Site Soil Characteristics

Soil Map Unit Name	Shrink-Swell Potential[1]	Permeability[2]	Water Erosion Hazard[3]	Wind Erosion Hazard[4]	Drainage	Concrete Corrosivity	Steel Corrosivity	Limitations
Argonaut gravelly loam, 2–15% slopes	Moderate	Moderately high	Moderate	6	Well drained	Moderate	High	**Buildings:** severe due to shrink-swell and steep slopes **Roads:** severe due to low soil strength, high shrink swell, and steep slopes **Septic Systems:** severe due to slow permeability, shallow depth to bedrock, slopes
Argonaut-Auburn complex, 3–8% slopes	Moderate	Moderately high	Moderate	5	Well drained	Moderate	High	**Buildings:** severe due to shallow bedrock, shrink-swell, and steep slopes **Roads:** severe due to shrink-swell and shallow, hard bedrock **Septic Systems:** severe due to restricted permeability, shallow depth to bedrock
Auburn silt loam, 2–30% slopes	Low	Moderately high	Moderate	5	Well drained	Moderate	Moderate	**Buildings and Roads:** severe due to steep slopes and shallow, hard bedrock **Septic Systems:** severe due to restricted permeability, shallow depth to bedrock, steep slopes
Auburn very rocky silt loam, 2–30% slopes	Low	Moderately high	Moderate	5	Well drained	Moderate	Moderate	**Buildings and Roads:** severe due to steep slopes and shallow, hard bedrock **Septic Systems:** severe due to restricted permeability, shallow depth to bedrock, steep slopes
Auburn-Argonaut-Rock outcrop complex, 8–30% slopes	Low	High	Moderate	5	Well drained	Moderate	Moderate	**Buildings and Roads:** severe due to shallow bedrock, shrink-swell (in the Argonaut soils), and steep slopes **Septic Systems:** severe due to restricted permeability, shallow depth to bedrock, steep slopes
Fiddyment fine sandy loam, 1–8% slopes	Low	Moderately high	Moderate	3	Well drained	Moderate	High	**Buildings:** moderate due to slopes **Roads:** severe due to low soil strength **Septic Systems:** severe due to slow permeability, shallow depth to hardpan, shallow depth to bedrock
Hadselville-Pentz complex, 2–30% slopes	Low	Moderately high	Moderately low	3	Moderately well drained	Moderate	Moderate	**Buildings and Roads:** severe due to steep slopes and shallow, soft bedrock **Septic Systems:** severe due to restricted permeability, shallow depth to bedrock, steep slopes, seepage in bottom layer
Hicksville sandy clay loam, 0–2% slopes	Moderate	Moderately high	Moderately low	5	Moderately well drained	Moderately well drained	Moderate	**Buildings:** severe due to water saturation and moderate shrink-swell **Roads:** severe due to saturation, flooding **Septic Systems:** severe due to flooding, low permeability, shallow depth to bedrock, saturation at shallow depths
Orangevale coarse sandy loam, 2-5% slopes	Moderate	High	Moderately low	3	Well drained	Low	Moderate	**Buildings and Roads:** moderate due to shrink-swell and slopes **Septic Systems:** severe due to low permeability, seepage in bottom layer
Pits	--	--	--	--	--	--	--	**Buildings and Roads:** no limitations **Septic Systems:** no limitations
Red Bluff loam, 2–5% slopes	Moderate	Moderately high	Moderate	5	Well drained	High	High	**Buildings and Roads:** moderate due to shrink-swell and slopes
Red Bluff-Redding complex, 0–5% slopes	Moderate	Moderately high	Moderate	5-6	Well drained	High	High	**Buildings and Roads:** moderate due to shrink-swell and slopes **Septic Systems:** severe due to low permeability
Red Bluff-Xerorthents complex dredge tailings, 2–50% slope	Moderate	Moderately high	--	--	Well drained	--	--	**Buildings and Roads:** severe due to high shrink-swell, steep slopes **Septic Systems:** severe due to low permeability (in the Red Bluff soils), steep slopes (in the Xerorthents soils
Redding gravelly loam, 0–8% slopes	Moderate	Moderately high	Moderately low	6	Moderately well drained	Moderate	High	**Buildings and Roads:** moderate due to shrink-swell and slopes **Septic Systems:** severe due to low permeability, shallow depth to hardpan
Vleck gravelly loam, 2–15% slopes	Moderate	Moderately high	Moderate	6	Moderately well drained	Moderate	High	**Buildings:** severe due to shallow bedrock, shrink-swell, and steep slopes **Roads:** severe due to low soil strength and shrink-swell **Septic Systems:** severe due to low permeability, shallow depth to hardpan, shallow depth to bedrock, slopes
Whiterock loam, 3–30% slopes	Low	High	Moderate	5	Somewhat excessively drained	High	High	**Buildings and Roads:** severe due to shallow bedrock and steep slopes **Septic Systems:** severe due to restricted permeability, shallow depth to bedrock, steep slopes
Xerorthents dredge tailings, 2–50% slopes	Low	Very high	--	--	Somewhat excessively drained	--	--	**Septic Systems:** severe due to extremely high permeability and poor filter, steep slopes, seepage in bottom layer

Notes: Because the dredge tailings are disturbed and reworked, representative characteristics are not available.

1 Based on percentage of linear extensibility. Shrink-swell potential ratings of "moderate" to "very high" can result in damage to buildings, roads, and other structures.

2 Based on standard U.S. Department of Agriculture (USDA) saturated hydraulic conductivity (Ksat) class limits; Ksat refers to the ease with which pores in a saturated soil transmit water.

3 Based on the erosion factor "Kw whole soil," which is a measurement of relative soil susceptibility to sheet and rill erosion by water.

4 The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

Source: NRCS 2009

Based on Special Report 192, SMAQMD issued Advisory 06-03 declaring that “Areas Moderately Likely to Contain NOA” are subject to the requirements of California Code of Regulations (CCR) Section 93105 (Asbestos Airborne Toxic Control Measure [ATCM] for Construction, Grading, Quarrying, and Surface Mining Operations.) NOA is regulated by the California Air Resources Board (ARB), and concentrations of NOA above 0.25% are considered by ARB as hazardous levels for residential development. The ATCM contains specific requirements for projects where NOA is located, including a Dust Mitigation Plan that must be approved by SMAQMD prior to the start of construction activities. If a registered geologist establishes that asbestos is not present in concentrations above 0.25%, a request for waiver from the ATCM requirements may be submitted to SMAQMD.

Six soil samples from the Sacramento Country Day School property were analyzed for the presence of NOA by Youngdahl Consulting (2003). The Sacramento Country Day School property lies within the Salt Springs Slate geologic formation, and is within an “Area Moderately Likely to Contain NOA” based on Special Report 192. Asbestos was not detected in any of those six samples. However, the remainder of the SPA (approximately 3,420 acres) and the off-site elements have not been sampled for NOA. Therefore, NOA in the SPA could pose a health hazard to construction workers and future residents if present in concentrations above 0.25%, when fragments could become airborne and inhaled. (See also Section 3A.2, “Air Quality – Land,” for additional discussion and mitigation measures regarding NOA.)

Expansive Soils

Expansive soils are composed largely of clays, which greatly increase in volume when saturated with water and shrink when dried. Because of this effect, building foundations may rise during the rainy season and fall during the dry season. If this expansive movement varies underneath different parts of a single building, foundations may crack, structural portions of the building may be distorted, and doors and windows may become warped so that they no longer function properly. The potential for soil to undergo shrink and swell is greatly enhanced by the presence of a fluctuating, shallow groundwater table. Changes in the volume of expansive soils can result in the consolidation of soft clays after the lowering of the water table or the placement of fill.

Based on a review of NRCS (2009) soil survey data and the Preliminary Geotechnical Engineering Reports prepared by Wallace Kuhl & Associates (2004, 2005, 2008) and Youngdahl Consulting Group (2003), near-surface soils in the SPA have a moderate to high shrink-swell potential, meaning that they have a high clay content and therefore would be capable of exerting substantial expansion pressures on structural foundations and exterior flatwork. These soils would be expected to undergo volume changes with increasing or decreasing soil moisture content.

Soil Limitations for Septic Systems

For a septic system to function properly, soils must “perc” – that is, a certain volume of water must flow through the soil in a certain time period, as determined by a licensed soils or geotechnical engineer. Wastewater is “treated” as soil bacteria feed on the waste material and in the process, break down the material into more basic elements that are dispersed into the lower layers of the soil horizon. If wastewater percolates through the soil too quickly, the bacteria do not have enough time to digest the material. On the other hand, if wastewater percolates through the soil too slowly, the bacteria are killed by the lack of oxygen. Most of the SPA soils consist of a shallow layer of silt, sand, or clay, underlain by bedrock. Most of the shallow soils have a low permeability and are subject to water seepage (a high water holding capacity) and thus tend to “perc” too slowly, rendering them unsuitable for septic systems. Most of the bedrock soils have extremely high permeability (a low water holding capacity) and thus tend to “perc” too quickly, rendering them unsuitable for septic systems. Based on a review of NRCS soil data (see Table 3A.7-2), the entire SPA rated with a severe limitation because the soils are unsuitable for conventional septic systems. Neither the Proposed Project nor any of the action alternatives would require the use of septic systems. However, continued development under the existing Sacramento County Ag-80 zoning would require the use of septic systems under the No Project Alternative.

MINERAL RESOURCES

Under the Surface Mining and Reclamation Act (SMARA), the State Mining and Geology Board may designate certain mineral deposits as being regionally significant to satisfy future needs. The Board's decision to designate an area is based on a classification report prepared by CGS and on input from agencies and the public. The SPA lies within the designated Sacramento-Fairfield Production-Consumption Region for Portland cement concrete aggregate, which includes all designated lands within the marketing area of the active aggregate operations supplying the Sacramento-Fairfield urban center.

In compliance with SMARA, the California Division of Mines and Geology (CDMG) has established the classification system shown in Table 3A.7-3 to denote both the location and significance of key extractive resources.

Table 3A.7-3
California Division of Mines and Geology Mineral Land Classification System

Classification	Description
MRZ-1	Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence
MRZ-2	Areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists
MRZ-3	Areas containing mineral deposits, the significance of which cannot be evaluated from existing data
MRZ-4	Areas where available data are inadequate for placement in any other mineral resource zone

Note: MRZ = Mineral Resource Zone
Source: Dupras 1999

The northwestern portion of the SPA is located in the Alder Creek watershed, adjacent to an ancient channel of the American River. Over many thousands of years, weathering eroded various auriferous (gold-bearing) formations in the Sierra Nevada, thus allowing gold flakes, nuggets, and gold-bearing rocks to be carried along in glacial meltwater and in river channels. Depending on the volume of water and the rate of flow, the gold was eventually deposited on the surfaces of ancient river channels. Auriferous rocks eventually became deposited at the mouths of rivers as alluvial fans. Areas around Folsom, Prairie City, and Rancho Cordova, where the American River emptied into the Sacramento Valley, eventually became well known locations for gold miners.

Within weeks after gold was found at Sutter's Mill on the South Fork of the American River in 1848, Mormon Island (now buried underneath Folsom Lake) was being mined. Subsequent gold discoveries and mining operations developed at Beal's Bar, Rattlesnake Bar, Negro Bar, Whiskey Bar, and Prairie City. When the Natomas Water and Mining Company began supplying water to the area around Prairie City in 1853, miners began staking claims along the company's canal. When those claims were exhausted, the Natomas Company (as it was later called) began dredging the nearby ancient American River deposits. Dredging operations in the SPA occurred between 1915 and 1962. Today, as mentioned above, dredge tailings are located along Alder Creek. (See Section 3A.5, "Cultural Resources – Land," for a more detailed discussion of historical mining operations.)

The piles of cobbles deposited during dredging operations in the Rancho Cordova area have proved to be a valuable source of sand and gravel. Nearby aggregate deposits in Rancho Cordova were addressed in the Sacramento County General Plan as the county's "primary remaining aggregate deposits."

Sand and gravel mined in Sacramento County and in Rancho Cordova is used for construction. Construction aggregates are an important building material used in Portland cement concrete, asphalt concrete, plaster, and stucco, and as a road base material. In terms of volume and price, there is no economically feasible substitute for aggregate products in the construction industry. However, the City and County General Plans also recognize that aggregate mining is an interim land use rather than a final use, and recognize the importance of balancing aggregate-mining needs with those of urban development.

As shown in Exhibit 3A.7-3, a small portion of the extreme western edge of the SPA is classified by CDMG as MRZ-1, areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence. However, the majority of the SPA is classified by CDMG as MRZ-3, “areas containing mineral deposits, the significance of which cannot be evaluated from existing data.” Based on a site visit performed by EDAW/AECOM (now AECOM) in 2007, information contained in the preliminary geotechnical engineering reports, and conversation with the project engineer (MacKay & Somps), the only area of the SPA that contains any substantial amount of aggregate resources (cobbles from dredger mining operations) is located in and around the Alder Creek drainage.

Land immediately east of the SPA (in El Dorado County), which is also within the Sacramento-Fairfield Production-Consumption Region, is zoned MRZ-3 and has already been developed with residential housing. Land north of the SPA consists of U.S. Highway 50 (U.S. 50) and the urbanized City of Folsom.

Land immediately west of the SPA, adjacent to Prairie City Road, is owned by Aerojet General Corporation. The northern portion of this land, near U.S. 50, is part of the Easton Project and is planned for residential/commercial development. As shown in Exhibit 3A.7-3, the land on the west side of Prairie City Road is classified by CDMG with the same mineral resource zones as the SPA: MRZ-1 and MRZ-3.

Land south of the SPA, south of White Rock Road, is currently undeveloped and is outside of the Sacramento County Urban Services Boundary. As shown on Exhibit 3A.7-3, land south of the SPA is zoned MRZ-3. The Teichert and Walltown hard rock quarries have been proposed in this area at two locations approximately 2.3 miles south of the SPA. Those quarry proposals are currently undergoing environmental review. There is an existing Granite Construction Company aggregate operation approximately 0.5 southwest of the SPA, immediately south of White Rock Road. Both Teichert and Granite own and operate several aggregate mining and processing facilities in the Rancho Cordova area.

As also shown in Exhibit 3A.7-3, the western edge of the SPA is zoned MRZ-3 for kaolin clay. This zoning was assigned by CDMG because of the presence of the Ione Formation, which does contain kaolin clay in other locations in the state. Kaolin clay is formed from weathering of aluminous minerals such as feldspar with kaolinite as its principal constituent. Kaolin is used as an anti-caking agent in processed foods and an additive to cosmetics, toiletries, and health products. It is also used as an “inert” carrier in some pesticides, and enhances the performance of some microbial products. The geotechnical reports prepared for the project to date do not cover the area of the SPA that is designated MRZ-3 for kaolin clay. Therefore, it cannot be ascertained at this time whether or not a valuable deposit of kaolin clay is present in the SPA.

PALEONTOLOGICAL RESOURCES

Paleontological Resource Inventory Methods

A stratigraphic inventory was completed to develop a baseline paleontological resource inventory of the SPA and surrounding area by rock unit and to assess the potential paleontological productivity of each rock unit. Research methods included a review of published and unpublished literature and a search for recorded fossil sites at the University of California Museum of Paleontology (UCMP). These tasks complied with Society of Vertebrate Paleontology guidelines (1995).

Stratigraphic Inventory

Geologic maps and reports covering the geology of the SPA and surrounding area were reviewed to determine the exposed rock units and to delineate their respective aerial distributions in the project area.

Paleontological Resource Inventory

Published and unpublished geological and paleontological literature were reviewed to document the number and locations and previously recorded fossil sites from rock units exposed in and near the SPA and vicinity, as well as the types of fossil remains each rock unit has produced. The literature review was supplemented by an archival search conducted at the UCMP in Berkeley, California, on August 12, 2009.

Paleontological Resource Field Survey

Portions of the ground surface were completely obscured by vegetation; in those areas where the ground surface was visible, no evidence of paleontological resources was present during a reconnaissance-level field survey conducted by EDAW/AECOM (now AECOM) in June 2007.

Paleontological Resource Assessment Criteria

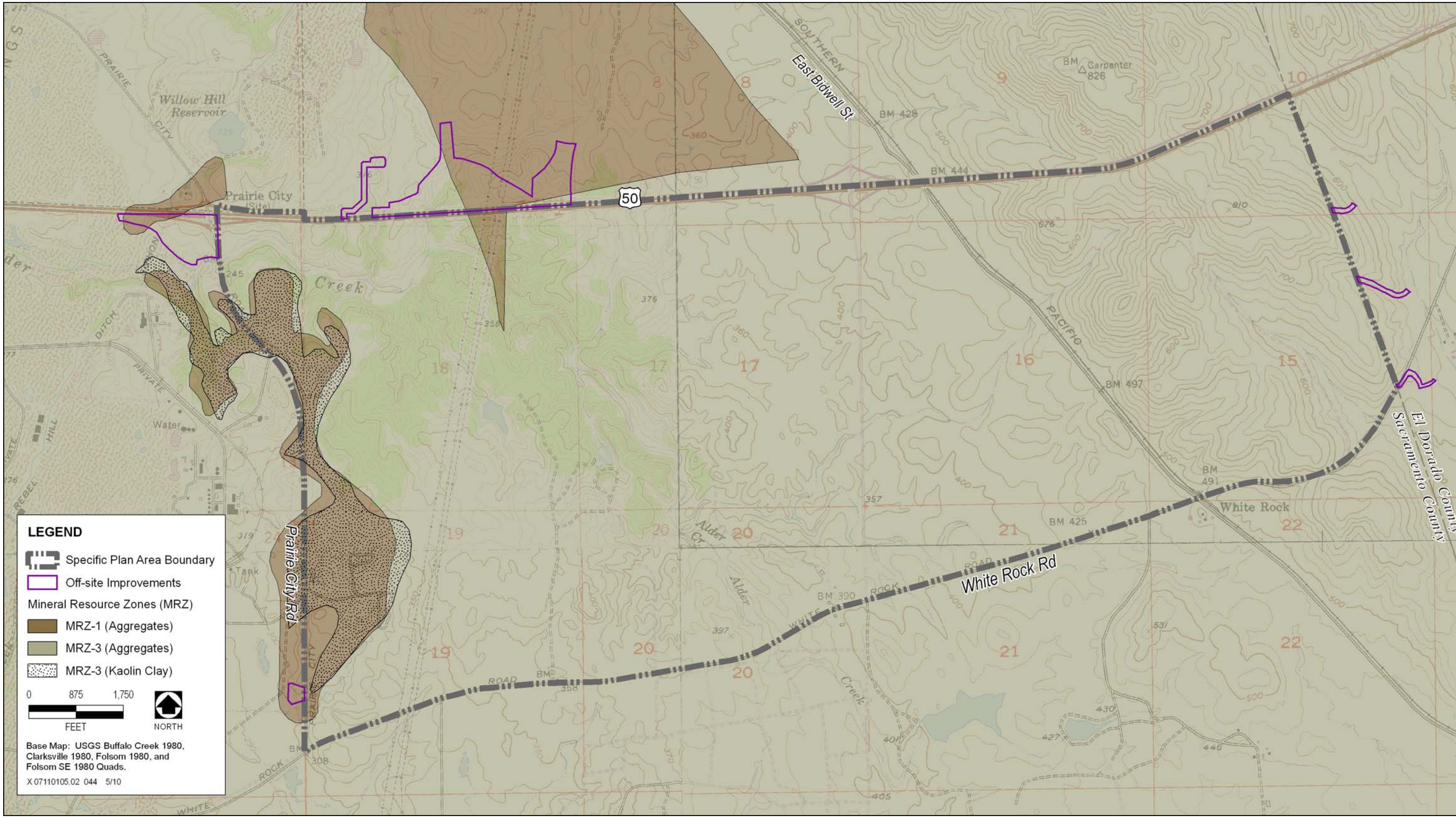
The potential paleontological importance of the SPA can be assessed by identifying the paleontological importance of exposed rock units within the SPA. Because the areal distribution of a rock unit can be easily delineated on a topographic map, this method is conducive to delineating parts of the SPA that are of higher and lower sensitivity for paleontological resources and to delineating parts of the SPA that may require monitoring during construction.

A paleontologically important rock unit is one that has a high potential paleontological productivity rating and is known to have produced unique, scientifically important fossils. The potential paleontological productivity rating of a rock unit exposed in the SPA refers to the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit in and near the SPA. Exposures of a specific rock unit in the SPA are most likely to yield fossil remains representing particular species in quantities or densities similar to those previously recorded from the unit in and near the SPA.

An individual vertebrate fossil specimen may be considered unique or significant if it is identifiable and well preserved and it meets one of the following criteria:

- a type specimen (i.e., the individual from which a species or subspecies has been described);
- a member of a rare species;
- a species that is part of a diverse assemblage (i.e., a site where more than one fossil has been discovered) wherein other species are also identifiable, and important information regarding life history of individuals can be drawn;
- a skeletal element different from, or a specimen more complete than, those now available for its species; or
- a complete specimen (i.e., all or substantially all of the entire skeleton is present).

For example, identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare. The value or importance of different fossil groups varies, depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions, such as part of a research project. Marine invertebrate fossil specimens are generally common, well developed, and well documented. They would generally not be considered a unique paleontological resource.



Source: Dupras 1999

Mineral Resource Zones of On- and Off-Site Project Components **Exhibit 3A.7-3**

The tasks listed below were completed to establish the paleontological importance of each rock unit exposed at or near the SPA.

- The potential paleontological productivity of each rock unit was assessed, based on the density of fossil remains previously documented within the rock unit.
- The potential for a rock unit exposed in the SPA to contain a unique paleontological resource was considered.

Paleontologic Resource Inventory Results

Stratigraphic Inventory

Regional and local surficial geologic mapping and correlation of the various geologic units in the SPA and vicinity have been provided at a scale of 1:48,000 by Loyd (1984) and 1:250,000 by Wagner et al. (1987).

Paleontological Resource Inventory and Assessment by Rock Unit

Based on a record search conducted at UCMP (UCMP 2009), there are no previously recorded fossil localities within the SPA or the off-site elements.

Mehrten Formation

Vertebrate mammal and plant fossils have been reported from the Mehrten Formation throughout the Sierra Nevada foothills and the eastern margin of the Central Valley. The closest recorded vertebrate fossil locality within the Mehrten Formation to the SPA (V-76050) is near Camanche Reservoir, approximately 25 miles south of the SPA, where a specimen of Pliohippus (horse) was recovered. Other vertebrate fossils have been recovered from the Mehrten Formation from over 40 locations in Calaveras, San Joaquin, Stanislaus, Tuolumne, and Merced Counties (UCMP 2009). In addition, several specimens of plant fossils have been recovered locally from the Mehrten Formation in Granite Bay, Roseville, and Rocklin (Sierra College Natural History Museum 2009). Because of the large number of fossils that have been recovered from the Mehrten Formation, it is considered a paleontologically sensitive rock unit under the Society of Vertebrate Paleontology guidelines (1995).

Ione Formation

Vertebrate mammal, plant, and invertebrate fossils have been reported from the Ione Formation throughout the Central Valley. The closest recorded vertebrate fossil locality within the Ione Formation to the SPA (V-6823 through 6833) is located in Pittsburg, approximately 48 miles southwest of the SPA. This locality yielded over 20 specimens of cartilaginous fish (such as skates and rays), bony fish, birds, and cetacea (dolpins, porpoises, and whales). However, numerous plant fossils have been recovered from the Ione Formation at locations closer to the SPA, including Ione (P-43,), Iowa hill (P-43, PA-84, PA-289, and PA-523), and Camanche Reservoir (P-332). Other vertebrate mammal, plant, and invertebrate fossils have been recovered from the Ione Formation from over 300 locations in Nevada, Contra Costa, Placer, Amador, Butte, Alameda, Merced, Tuolumne, Sutter, Sierra, Plumas, Calaveras, Kern, and Stanislaus Counties (UCMP 2009). Because of the large number of fossils that have been recovered from the Ione Formation, it is considered a paleontologically sensitive rock unit under the Society of Vertebrate Paleontology guidelines (1995).

Salt Springs Slate, Copper Hill Volcanics, Gopher Ridge Volcanics

These formations consist of Jurassic-age rocks that formed at depth beneath the earth’s surface and have since been deformed and metamorphosed. The UCMP database does not contain any records of vertebrate or plant fossils within these formations. Because of the nature of these rock formations and the lack of previously recorded vertebrate or plant fossil localities, these formations are not considered to be paleontologically sensitive rock units under the Society of Vertebrate Paleontology guidelines (1995).

3A.7.2 Regulatory Framework

Federal Plans, Policies, Regulations, and Laws

Earthquake Hazards Reduction Act

In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards reduction program. To accomplish this goal, the act established the National Earthquake Hazards Reduction Program (NEHRP). This program was substantially amended in November 1990 by the National Earthquake Hazards Reduction Program Act (NEHRPA), which refined the description of agency responsibilities, program goals, and objectives.

The mission of NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through post earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. The NEHRPA designates the Federal Emergency Management Agency as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology, National Science Foundation, and USGS.

State Plans, Policies, Regulations, and Laws

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (California Public Resources Code [PRC] Sections 2621–2630) was passed in 1972 to mitigate the hazard of surface faulting to structures designed for human occupancy. The main purpose of the law is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Alquist-Priolo Act 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. The maps are distributed to all affected cities, counties, and state agencies for their use in planning efforts. Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (California PRC Sections 2690–2699.6) addresses earthquake hazards from nonsurface fault rupture, including liquefaction and seismically induced landslides. The act established a mapping program for areas that have the potential for liquefaction, landslide, strong ground shaking, or other earthquake and geologic hazards. The act also specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

National Pollutant Discharge Elimination System Permit

In California, the State Water Resources Control Board (SWRCB) administers regulations promulgated by the U.S. Environmental Protection Agency (55 Code of Federal Regulations [CFR] 47990) requiring the permitting of stormwater-generated pollution under the National Pollutant Discharge Elimination System (NPDES). In turn, the SWRCB's jurisdiction is administered through nine regional water quality control boards. Under these Federal regulations, an operator must obtain a general permit through the NPDES Stormwater Program for all construction activities with ground disturbance of 1 acre or more. The general permit requires the implementation of best management practices (BMPs) to reduce sedimentation into surface waters and to control erosion. One element of compliance with the NPDES permit is preparation of a storm water pollution prevention plan (SWPPP) that addresses control of water pollution, including sediment, in runoff during construction. (See Section 3A.9, "Hydrology and Water Quality – Land," for more information about the NPDES and SWPPPs.)

California Building Standards Code

The California Building Standards Commission (BSC) is responsible for coordinating, managing, adopting, and approving building codes in California. In July 2007, the BSC adopted and published the 2006 International Building Code as the 2007 CBC. This new code became effective on January 1, 2008, and updated all the subsequent codes under the California Code of Regulations (CCR) Title 24. Sutter County has adopted the 2007 CBC. The State of California provides minimum standards for building design through the 2007 CBC (CCR, Title 24). Where no other building codes apply, Chapter 29 of the 2007 CBC regulates excavation, foundations, and retaining walls. The CBC applies to building design and construction in the state and is based on the Federal Uniform Building Code (UBC) used widely throughout the country (generally adopted on a state-by-state or district-by-district basis). The CBC has been modified for California conditions with numerous more detailed or more stringent regulations.

The state earthquake protection law (California Health and Safety Code Section 19100 et seq.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes. The 2007 CBC replaces the previous "seismic zones" (assigned a number from 1 to 4, where 4 required the most earthquake-resistant design) with new Seismic Design Categories A through F (where F requires the most earthquake-resistant design) for structures designed for a project site. With the shift from seismic zones to seismic design, the CBC philosophy has shifted from "life safety design" to "collapse prevention," meaning that structures are designed for prevention of collapse for the maximum level of ground shaking that could reasonably be expected to occur at a site. Chapter 16 of the CBC specifies exactly how each seismic design category is to be determined on a site-specific basis through the site-specific soil characteristics and proximity to potential seismic hazards.

Chapter 18 of the CBC regulates the excavation of foundations and retaining walls. This chapter regulates the preparation of a preliminary soil report, engineering geologic report, geotechnical report, and supplemental ground-response report. Chapter 18 also regulates analysis of expansive soils and the determination of the depth to groundwater table. For Seismic Design Category C, Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading. For Seismic Design Categories D, E, and F, Chapter 18 requires these same analyses plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. It also requires addressing mitigation measures to be considered in structural design. Mitigation measures may include ground stabilization, selection of appropriate foundation type and depths, selection of appropriate structural systems to accommodate anticipated displacements, or any combination of these measures. The potential for liquefaction and soil strength loss must be evaluated for site-specific peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions. Peak ground acceleration must be determined from a site-specific study, the contents of which are specified in CBC Chapter 18.

Finally, Appendix Chapter J of the 2007 CBC regulates grading activities, including drainage and erosion control and construction on unstable soils, such as expansive soils and areas subject to liquefaction.

California Surface Mining and Reclamation Act

SMARA (California PRC Section 2710 et seq.) was enacted by the California Legislature in 1975 to regulate activities related to mineral resource extraction. The act requires the prevention of adverse environmental effects caused by mining, the reclamation of mined lands for alternative land uses, and the elimination of hazards to public health and safety from the effects of mining activities. At the same time, SMARA encourages both the conservation and the production of extractive mineral resources, requiring the State Geologist to identify and attach levels of significance to the state's varied extractive resource deposits. Under SMARA, the mining industry in California must plan adequately for the reclamation of mined sites for beneficial uses and provide financial assurances to guarantee that the approved reclamation will actually be implemented. The requirements of SMARA must be implemented by the local lead agency with permitting responsibility for the proposed mining project.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND LAWS

Sacramento County General Plan

The following goals and policies of the Sacramento County General Plan (1998) are applicable to the No Project Alternative, and only to the proposed off-site detention basin east of Prairie City Road under all five action alternatives.

Safety Element

GOAL: Minimize the loss of life, injury, and property damage due to seismic and geological hazards.

- **Policy SA-1:** The County shall require geotechnical reports and impose the appropriate mitigation measures for new development located in seismic and geologically sensitive areas.

Conservation Element

Objective: Orderly extraction of minerals and subsequent reclamation of mined areas with minimal adverse impacts on aquifers, streams, scenic values, and surrounding residential uses.

- **Policy CO-43:** Surface mining operations shall be subject to appropriate mitigation measures and shall avoid creating any significant nuisances, hazards, and adverse environmental impacts unless the Board of Supervisors makes the findings to override as required by CEQA Guidelines Section 15091.

Objective: Sequential timing for mining of aggregate areas linked to the timing of urban development.

- **Policy CO-48:** Due to predicted shortages of aggregates in Sacramento County, mining of mineral resources within the Urban Services Boundary (USB) is encouraged, where consistent with Habitat Conservation Plans or other County initiated conservation programs and where such mining does not preclude successful completion of these plans, to avoid the potential loss of these mineral resources as a result of potential urban development. This policy is not intended to preclude mining outside of the USB.

Objective: Appropriate soil conservation practices regularly used by farmers and ranchers.

Objective: Widespread farmer participation in Resource Conservation District programs.

- **CO-58:** Work with rural landowners and existing Resource Conservation Districts to promote soil conservation practices.

Sacramento County Zoning Code Title II, Article 4, Surface Mining

The County has adopted its own SMARA ordinance, which is modeled after the state's SMARA guidelines (see above). The County's SMARA ordinance is designed to protect mineral resources from incompatible land uses, to manage the mineral resources, to assure the County of an adequate supply of these resources with due consideration for the environment, and to provide for the restoration of mined lands for future use. A Conditional Use Permit is required for surface-mining operations in Sacramento County.

Sacramento County Grading Ordinance

The County's Land Grading and Erosion Control Ordinance (County Code, Title 16, Chapter 16.44) was enacted for the purpose of minimizing damage to surrounding properties and public rights-of-way; limiting degradation of the water quality of watercourses; and curbing the disruption of drainage system flow caused by the activities of clearing, grubbing, grading, filing, and excavating land. The ordinance includes administrative procedures, minimum standards of review, and implementation and enforcement procedures for the control of erosion and sedimentation that are directly related to land-grading activities.

El Dorado County General Plan

The following goals and policies of the El Dorado County General Plan (2004) are applicable only to the two local roadway connections from the Folsom Heights property off-site into El Dorado Hills under the Proposed Project Alternative. There are no El Dorado County goals and policies that are applicable to the No Project Alternative or the other four action alternatives.

Public Health, Safety, and Noise Element

GOAL 6.3: Geologic and Seismic Hazards. Minimize the threat to life and property from seismic and geologic hazards.

- **Policy 6.3.1.1:** The County shall require that all discretionary projects and all projects requiring a grading permit, or a building permit that would result in earth disturbance, that are located in areas likely to contain naturally occurring asbestos (based on mapping developed by the California Department of Conservation [DOC]) have a California-registered geologist knowledgeable about asbestos-containing formations inspect the project area for the presence of asbestos using appropriate test methods. The County shall amend the Erosion and Sediment Control Ordinance to include a section that addresses the reduction of thresholds to an appropriate level for grading permits in areas likely to contain naturally occurring asbestos (based on mapping developed by the DOC). The Department of Transportation and the County Air Quality Management District shall consider the requirement of posting a warning sign at the work site in areas likely to contain naturally occurring asbestos based on the mapping developed by the DOC.

- **Policy 6.3.1.2:** The County shall establish a mandatory disclosure program, where potential buyers and sellers of real property in all areas likely to contain naturally occurring asbestos (based on mapping developed by the California Department of Conservation [DOC]) are provided information regarding the potential presence of asbestos subject to sale. Information shall include potential for exposure from access roads and from disturbance activities (e.g., landscaping).

Conservation and Open Space Element

GOAL 7.1: Soil Conservation. Conserve and protect the County's soil resources.

- **Policy 7.1.2.2:** Discretionary and ministerial projects that require earthwork and grading, including cut and fill for roads, shall be required to minimize erosion and sedimentation, conform to natural contours, maintain natural drainage patterns, minimize impervious surfaces, and maximize the retention of natural vegetation. Specific standards for minimizing erosion and sedimentation shall be incorporated into the Zoning Ordinance.

- **Policy 7.1.2.3:** Enforce Grading Ordinance provisions for erosion control on all development projects and adopt provisions for ongoing, applicant-funded monitoring of project grading.

El Dorado County Grading Ordinance

This ordinance was enacted for the purpose of regulating grading within the unincorporated area of El Dorado County to safeguard life, limb, health, property, and public welfare; to avoid pollution of watercourses; and to ensure that the intended use of a graded site is consistent with the El Dorado County General Plan, any specific plans adopted thereto, the adopted Storm Water Management Plan, California Fire Safe Standards and applicable El Dorado County ordinances including the Zoning Ordinance and the CBC. A project applicant must submit grading plans and other pieces of information required by Grading, Erosion and Sediment Control Chapter of the Design and El Dorado County Improvement Standards Manual.

City of Folsom General Plan

There are no goals or policies of the City of Folsom General Plan (1993) that are applicable to the Proposed Project or any of the alternatives under consideration.

City of Folsom Hillside Development Guidelines

On February 14, 1995, the City of Folsom Planning Department adopted Resolution No. 4604—Hillside Development Guidelines—the purpose of which is to illustrate key design principles and issues that City staff will use in evaluating applications for development of any site within hillside areas of the City. The guidelines address street design, grading, site design, parking, drainage, architecture, landscaping, visual impact, and preservation of natural features, and are based on the City's Hillside Development Procedures and Standards Ordinance (Ordinance No. 798).

Professional Paleontological Standards

The Society of Vertebrate Paleontology (1995, 1996), a national scientific organization of professional vertebrate paleontologists, has established standard guidelines that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, specimen preparation, analysis, and curation. Most practicing professional paleontologists in the nation adhere to the Society of Vertebrate Paleontology assessment, mitigation, and monitoring requirements, as specifically spelled out in its standard guidelines.

3A.7.3 Environmental Consequences and Mitigation Measures

Thresholds of Significance

Geology, Soils, and Minerals

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. These thresholds also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its impacts. The Proposed Project or alternatives under consideration were determined to result in a significant impact related to geology, soils, or mineral resources if they would do any of the following:

- expose people, property, or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving:
    - rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;

- strong seismic ground shaking;
- seismic-related ground failure, including liquefaction; or
- landslides.

► result in substantial soil erosion or the loss of topsoil.

► be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

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

► have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

► result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

Paleontological Resources

Based on the environmental checklist in Appendix G of the State CEQA Guidelines, a project would have a significant impact on paleontological resources if it would directly or indirectly destroy a unique paleontological resource or site. For the purposes of this EIR/EIS, this threshold also encompasses the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its impacts and applies to the Proposed Project and alternatives under consideration. A “unique paleontological resource or site” is one that is considered significant under the professional paleontological standards described below.

An individual vertebrate fossil specimen may be considered unique or significant if it is identifiable and well preserved, and it meets one of the following criteria:

► a type specimen (i.e., the individual from which a species or subspecies has been described);

► a member of a rare species;

► a species that is part of a diverse assemblage (i.e., a site where more than one fossil has been discovered) wherein other species are also identifiable, and important information regarding life history of individuals can be drawn;

► a skeletal element different from, or a specimen more complete than, those now available for its species; or

► a complete specimen (i.e., all or substantially all of the entire skeleton is present).

The value or importance of different fossil groups varies depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions (such as for a research project). Marine invertebrates are generally common; the fossil record is well developed and well documented, and they would generally not be considered a unique paleontological resource. Identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare.

ANALYSIS METHODOLOGY

Evaluation of potential geology, soils, and minerals impacts for the Proposed Project and alternatives under consideration relied in part on the following five reports:

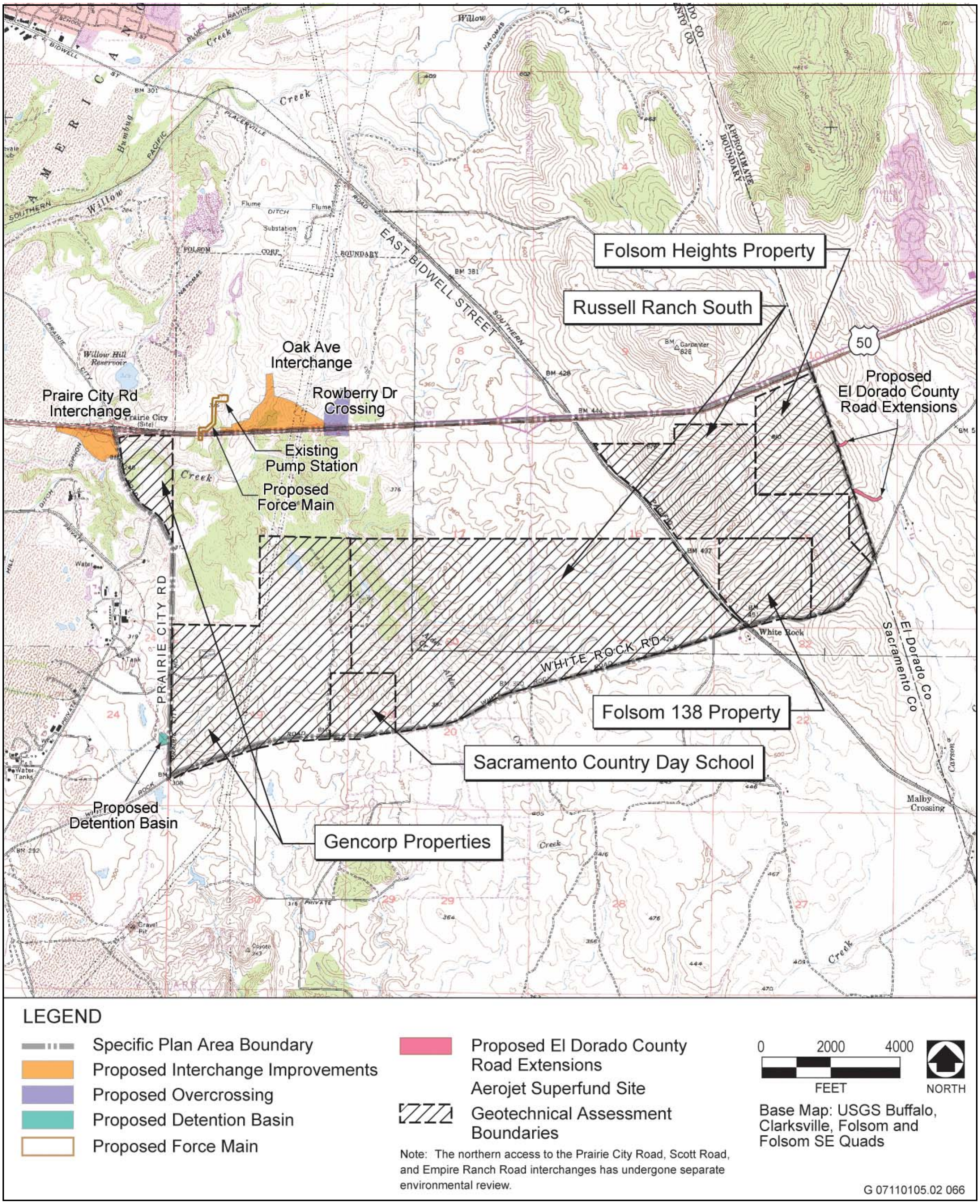
- Youngdahl Consulting Group, Inc. 2003 (August). *Preliminary Geotechnical Engineering Study, Sacramento Country Day School.*
- Youngdahl Consulting Group, Inc. 2007 (May). *Preliminary Geotechnical Engineering Study, White Rock Road/Scott Road 1,440 Acres.*
- Wallace Kuhl & Associates, Inc. 2004 (August). *Preliminary Geotechnical Engineering Report*, *Folsom 138 Property.*
- Wallace Kuhl & Associates, Inc. 2005 (August). Preliminary Geotechnical Engineering Report, *Folsom Heights.*
- Wallace Kuhl & Associates, Inc. 2008 (January). *Preliminary Geotechnical Engineering Report, Gencorp South Folsom Sphere of Influence Property.*

Approximately 65% of the SPA is covered by these five reports (see Exhibit 3A.7-4), which are included as Appendix F1 through Appendix F5 of this EIR/EIS. The remainder of the SPA, and the off-site elements, have not been evaluated by a geotechincal engineer. The analysis prepared for this EIR/EIS also relied on NRCS soil survey data ("Web Soil Survey"), and published geologic literature and maps. The information obtained from these sources was reviewed and summarized to present the existing conditions and to identify potential environmental impacts, based on the thresholds of significance presented in this section. Impacts associated with geology, soils, and mineral resources that could result from project construction and operational activities were evaluated qualitatively based on site conditions; expected construction practices; materials, locations, and duration of project construction and related activities; and a field visit. Conceptual grading exhibits for the SPA (MacKay and Somps 2008) were also used to evaluate potential impacts. These conceptual exhibits are provided in Appendix F6.

In its standard guidelines for assessment and mitigation of adverse impacts on paleontological resources, the Society of Vertebrate Paleontology (1995) established three categories of sensitivity for paleontological resources: high, low, and undetermined. Areas where fossils have been previously found are considered to have a high sensitivity and a high potential to produce fossils. Areas that are not sedimentary in origin and that have not been known to produce fossils in the past typically are considered to have low sensitivity. Areas that have not had any previous paleontological resource surveys or fossil finds are considered to be of undetermined sensitivity until surveys and mapping are performed to determine their sensitivity. After reconnaissance surveys, observation of exposed cuts, and possibly subsurface testing, a qualified paleontologist can determine whether the area should be categorized as having high or low sensitivity. In keeping with the significance criteria of the Society of Vertebrate Paleontology (1995), all vertebrate fossils are generally categorized as being of potentially significant scientific value.

ISSUES NOT DISCUSSED FURTHER IN THIS EIR/EIS

Risks to people or structures caused by surface fault rupture—The SPA is located approximately 50 miles from the nearest Alquist-Priolo Earthquake Fault Zone, and the SPA is not underlain by or adjacent to any known faults. Because the damage from surface fault rupture is generally limited to a linear zone a few yards wide, the potential for surface fault rupture to cause damage to proposed structures is negligible and this impact is not evaluated further in this EIR/EIS.



Source: Wallace, Kuhl & Associates 2004, 2005, 2008; Youngdahl & Associates 2003, 2007; Adapted by AECOM 2009

Site Coverage under Existing Geotechnical Reports **Exhibit 3A.7-4**

IMPACT ANALYSIS

Impacts that would occur under each alternative development scenario are identified as follows: NP (No Action/No Project), NCP (No USACE Permit), PP (Proposed Project/Action), RIM (Resource Impact Minimization), CD (Centralized Development), and RHD (Reduced Hillside Development). The impacts for each alternative are compared relative to the PP at the end of each impact conclusion (i.e., similar, greater, lesser).

IMPACT 3A.7-1	Possible Risks to People and Structures Caused by Strong Seismic Ground Shaking. *The SPA is located in an area of generally low seismic activity; however, structures in the SPA could be subject to seismic ground shaking from an earthquake along active faults in Lake Tahoe.*

On-Site and Off-Site Elements

NP

Under the No Project Alternative, up to 44 rural residences could be developed and agricultural activities could continue under the existing AG-80 land use and zoning designation, and no off-site water facilities would be constructed. The SPA is not located within a known fault zone, or within any faults known to be active during Holocene time. The West Branch of the Bear Mountains Fault is located approximately 5 miles east of the eastern property boundary (Wallace Kuhl & Associates 2005); however, Jennings (1994) does not indicate that fault activity has occurred within the last 11,000 years, and the slip rate of the Foothills fault system is extremely low (0.05 millimeters per year), which is well below the planning threshold for major earthquakes (USGS 2000). As shown in Table 3A.7-1, the Dunnigan Hills fault in Woodland, approximately 40 miles west of the SPA, is the nearest fault that is known to have been active within the last 11,000 years (Holocene time). Other faults that have been zoned as “active” by the CGS are located in the Coast Range (approximately 60 miles west of the SPA) or in the vicinity of Lake Tahoe (approximately 60 miles east of the SPA). Because structures in the SPA could be subject to seismic ground shaking and because geotechnical reports have not been prepared for the entire SPA, the potential for damage from strong seismic ground shaking is considered a **direct, potentially significant** impact. **No indirect** impacts would occur. ***[Similar]***

NCP, PP, RIM, CD, RHD

As described above under the No Project Alternative, the SPA and off-site elements are not located within a known fault zone, or within or adjacent to any faults known to be active during Holocene time. Other faults that have been zoned as “active” by the CGS are located in the Coast Range or in the vicinity of Lake Tahoe (see discussion above under the No Project Alternative for distances). However, geotechnical reports have only been prepared for five of the properties within the SPA. Furthermore, three of those reports evaluated the site using the older CBC criteria (before 2008). As stated above in the “Regulatory Framework” section, the 2007 CBC (adopted in 2008) replaced the previous “seismic zones” (assigned a number from 1 to 4, where 4 required the most earthquake-resistant design) with new Seismic Design Categories A–F (where F requires the most earthquake-resistant design) for structures designed for a project site. Chapter 16 of the CBC specifies exactly how each seismic design category is to be determined on a site-specific basis through the site-specific soil characteristics and proximity to potential seismic hazards. Therefore, because structures in the SPA could be subject to seismic ground shaking, because geotechnical reports have not been prepared for the entire SPA, and because three of the extant reports do not conform to the current CBC criteria, the potential for damage from strong seismic ground shaking is considered a **direct, potentially significant** impact. **No indirect** impacts would occur. ***[Similar]***

Mitigation Measure 3A.7-1a: Prepare Site-Specific Geotechnical Report per CBC Requirements and Implement Appropriate Recommendations.

Before building permits are issued and construction activities begin any project development phase, the project applicant(s) of each project phase shall hire a licensed geotechnical engineer to prepare a final geotechnical subsurface investigation report for the on- and off-site facilities, which shall be submitted for review and approval to the appropriate City or county department (identified below). The final geotechnical engineering report shall address and make recommendations on the following:

- site preparation;
- soil bearing capacity;
- appropriate sources and types of fill;
- potential need for soil amendments;
- road, pavement, and parking areas;
- structural foundations, including retaining-wall design;
- grading practices;
- soil corrosion of concrete and steel;
- erosion/winterization;
- seismic ground shaking;
- liquefaction; and
- expansive/unstable soils.

In addition to the recommendations for the conditions listed above, the geotechnical investigation shall include subsurface testing of soil and groundwater conditions, and shall determine appropriate foundation designs that are consistent with the version of the CBC that is applicable at the time building and grading permits are applied for. All recommendations contained in the final geotechnical engineering report shall be implemented by the project applicant(s) of each project phase. Special recommendations contained in the geotechnical engineering report shall be noted on the grading plans and implemented as appropriate before construction begins. Design and construction of all new project development shall be in accordance with the CBC. The project applicant(s) shall provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the geotechnical report.

Mitigation Measure 3A.7-1b: Monitor Earthwork during Earthmoving Activities.

All earthwork shall be monitored by a qualified geotechnical or soils engineer retained by the project applicant(s) of each project phase. The geotechnical or soils engineer shall provide oversight during all excavation, placement of fill, and disposal of materials removed from and deposited on both on- and off-site construction areas.

Mitigation for the off-site elements outside of the City of Folsom's jurisdictional boundaries must be coordinated by the project applicant(s) of each applicable project phase with the affected oversight agency(ies) (i.e., El Dorado and/or Sacramento Counties, or Caltrans).

Implementation: Project applicant(s) of all project phases.

Timing: Before issuance of building permits and ground-disturbing activities.

Enforcement:

1. For all project-related improvements that would be located within the City of Folsom: City of Folsom Community Development Department.

2. For the two off-site roadway connections from Folsom Heights into El Dorado Hills: El Dorado County Public Works Department.

3. For the off-site detention basin west of Prairie City Road: Sacramento County Planning and Community Development Department.

4. For the U.S. 50 interchange improvements: Caltrans.

Implementation of Mitigation Measures 3A.7-1a and 3A.7-1b would reduce the potentially significant impact of possible damage to people and structures from strong seismic ground shaking under the No USACE Permit, Proposed Project, Resource Impact Minimization, Centralized Development, and Reduced Hillside Development Alternatives to a **less-than-significant** level by requiring that the design recommendations of a geotechnical engineer to reduce damage from seismic events be incorporated into buildings, structures, and infrastructure as required by the CBC, and that a geotechnical or soils engineer provide on-site monitoring to ensure that earthwork is being performed as specified in the plans. However, some of the off-site elements fall under the jurisdiction of El Dorado and Sacramento Counties, and Caltrans; therefore, neither the City nor the project applicant(s) would have control over their timing or implementation.

IMPACT 3A.7-2 Seismically-Induced Risks to People and Structures Caused by Liquefaction. *Construction activities would not occur in areas subject to liquefaction.*

On-Site and Off-Site Elements

NP, NCP, PP, RIM, CD, RHD

Based on a review of information contained in (1) the Preliminary Geotechnical Engineering Reports prepared by Wallace Kuhl & Associates (2004, 2005, 2008) and Youngdahl Consulting Group (2003), (2) published geological maps and literature, and (3) a telephone conference with Wallace Kuhl & Associates (French, pers. comm., 2009), it is unlikely that on- or off-site soils would be subject to liquefaction in the event of an earthquake, for the following reasons:

- the SPA and areas of proposed off-site activities are underlain by small amounts of Pleistocene-age alluvium and primarily by Jurassic-age bedrock formations, which generally are not susceptible to liquefaction;
- the SPA and areas of proposed off-site activities are underlain by a moderately deep groundwater table that is at least 100 feet below the ground surface; and
- the potential sources of seismic activity are a relatively long distance away (approximately 50 miles).

Therefore, **direct** impacts related to potential damage to structures from seismically-induced liquefaction under the No Project, No USACE Permit, Proposed Project, Resource Impact Minimization, Centralized Development, and Reduced Hillside Development Alternative are considered **less than significant**. **No indirect** impacts would occur. ***[Similar]***

Mitigation Measure: No mitigation measures are required.

IMPACT 3A.7-3 Construction-Related Erosion. *Construction activities during project implementation would involve grading and movement of earth in soils subject to wind and water erosion hazard and on steep slopes.*

On-Site and Off-Site Elements

NP

Under the No Project Alternative, development of up to 44 rural residences could occur under the existing Sacramento County agricultural zoning classification AG-80, and no off-site water facilities would be constructed. Construction activities would occur in soils that have moderate wind and water erosion hazard potential. Conducting these activities would result in the temporary disturbance of soil and would expose disturbed areas to winter storm events. Rain of sufficient intensity could dislodge soil particles from the soil surface. If the storm is large enough to generate runoff, localized erosion could occur. On the steeper eastern slopes, severe erosion could occur as a result of project development. In addition, soil disturbance during the summer as a result of construction activities could result in soil loss because of wind erosion. Therefore, **direct** impacts associated with construction-related erosion are **potentially significant. Indirect** impacts from soil erosion, such as sediment transport and potential loss of aquatic habitat, are evaluated in Sections 3A.3, "Biological Resources – Land," and 3A.9, "Hydrology and Water Quality – Land," respectively. ***[Lesser]***

NCP, PP, RIM, RHD

Project implementation would involve intensive grading and construction activities for infrastructure and building and road foundations over more than 3,500 acres of varied terrain, ranging from relatively flat, to gently rolling, to steeply sloped (in the eastern portion of the SPA). Construction activities would occur in soils that have moderate wind and water erosion hazard potential. Conducting these activities would result in the temporary disturbance of soil and would expose disturbed areas to winter storm events. Rain of sufficient intensity could dislodge soil particles from the soil surface. If the storm is large enough to generate runoff, localized erosion could occur. On the steeper eastern slopes, severe erosion could occur as a result of project development. In addition, soil disturbance during the summer as a result of construction activities could result in soil loss because of wind erosion. Therefore, **direct** impacts associated with construction-related erosion are **potentially significant. Indirect** impacts from soil erosion, such as sediment transport and potential loss of aquatic habitat, are evaluated in Sections 3A.3, "Biological Resources – Land," and 3A.9, "Hydrology and Water Quality – Land," respectively. ***[Similar]***

Mitigation Measure 3A.7-3: Prepare and Implement the Appropriate Grading and Erosion Control Plan.

Before grading permits are issued, the project applicant(s) of each project phase that would be located within the City of Folsom shall retain a California Registered Civil Engineer to prepare a grading and erosion control plan. The grading and erosion control plan shall be submitted to the City Public Works Department before issuance of grading permits for all new development. The plan shall be consistent with the City's Grading Ordinance, the City's Hillside Development Guidelines, and the state's NPDES permit, and shall include the site-specific grading associated with development for all project phases.

For the two off-site roadways into El Dorado Hills, the project applicant(s) of that phase shall retain a California Registered Civil Engineer to prepare a grading and erosion control plan. The grading and erosion control plan shall be submitted to the El Dorado County Public Works Department and the El Dorado Hills Community Service District before issuance of grading permits for roadway construction in El Dorado Hills. The plan shall be consistent with El Dorado County's Grading, Erosion, and Sediment Control Ordinance and the state's NPDES permit, and shall include the site-specific grading associated with roadway development.

For the off-site detention basin west of Prairie City Road, the project applicant(s) of that phase shall retain a California Registered Civil Engineer to prepare a grading and erosion control plan. The grading and erosion control plan shall be submitted to the Sacramento County Public Works Department before issuance of a grading permit. The plan shall be consistent with Sacramento County's Grading, Erosion, and Sediment Control Ordinance and the state's NPDES permit, and shall include the site-specific grading associated with construction of the detention basin.

The plans referenced above shall include the location, implementation schedule, and maintenance schedule of all erosion and sediment control measures, a description of measures designed to control dust and stabilize the construction-site road and entrance, and a description of the location and methods of storage and disposal of construction materials. Erosion and sediment control measures could include the use of detention basins, berms, swales, wattles, and silt fencing, and covering or watering of stockpiled soils to reduce wind erosion. Stabilization on steep slopes could include construction of retaining walls and reseeding with vegetation after construction. Stabilization of construction entrances to minimize trackout (control dust) is commonly achieved by installing filter fabric and crushed rock to a depth of approximately 1 foot. The project applicant(s) shall ensure that the construction contractor is responsible for securing a source of transportation and deposition of excavated materials.

Mitigation for the off-site elements outside of the City of Folsom's jurisdictional boundaries must be coordinated by the project applicant(s) of each applicable project phase with the affected oversight agency(ies) (i.e., El Dorado and/or Sacramento Counties).

Implementation of Mitigation Measure 3A.9-1 (discussed in Section 3A.9, "Hydrology and Water Quality – Land") would also help reduce erosion-related impacts.

Implementation: Project applicant(s) of all project phases.

Timing: Before the start of construction activities.

Enforcement:

1. For all project-related improvements that would be located within the City of Folsom: City of Folsom Community Development Department.
2. For the two off-site roadway connections from Folsom Heights into El Dorado Hills: El Dorado County Public Works Department.
3. For the off-site detention basin west of Prairie City Road: Sacramento County Planning and Community Development Department.

CD

Under the Centralized Development Alternative, most of the residential housing and commercial development currently planned for the steep eastern slopes would not occur; instead, that development would be relocated within the gently rolling terrain in the central portion of the SPA. Construction activities for infrastructure and building and road foundations under the Centralized Development Alternative would be reduced by approximately 387 acres as compared to the Proposed Project Alternative; however, construction activities throughout the remaining 3,113-acre SPA would expose soils to erosion hazards from wind and water. Furthermore, the proposed commercial development would still occur along U.S. 50 under this alternative, within the steep terrain of the eastern foothills, where severe erosion could occur. Therefore, **direct** impacts associated with construction-related erosion under the Centralized Development Alternative are **potentially significant**. **Indirect** impacts from soil erosion, such as sediment transport and potential loss of aquatic habitat, are evaluated in Sections 3A.3, "Biological Resources – Land," and 3A.9, "Hydrology and Water Quality – Land," respectively. ***[Lesser]***

Mitigation Measure: Implement Mitigation Measure 3A.7-3.

Implementation of Mitigation Measure 3A.7-3 along with Mitigation Measure 3A.9-1 (discussed in Section 3A.9, "Hydrology and Water Quality – Land"), would reduce potentially significant construction-related erosion impacts under the No USACE Permit, Proposed Project, Resource Impact Minimization, Centralized Development, and Reduced Hillside Development Alternatives to a **less-than-significant** level because grading and erosion control plans with specific erosion and sediment control measures such as those suggested above or listed in Mitigation Measure 3A.9-1 would be prepared, approved by the appropriate City or county department, and implemented. However, some of the off-site elements (two roadway connections in El Dorado County and detention basin in Sacramento County) fall under the jurisdiction of El Dorado and Sacramento Counties; therefore, neither the City nor the project applicant(s) would have control over their timing or implementation.

IMPACT 3A.7-4	**Potential Geologic Hazards Related to Construction in Bedrock and Rock Outcrops, and Unstable Soils.** *Development in the eastern portion of the SPA would occur in steep slopes underlain by bedrock at shallow depths and rock outcrops that could result in geologic hazards during construction.*

On-Site and Off-Site Elements

NP

Under the No Project Alternative, development of up to 44 rural residences could occur under the existing Sacramento County agricultural zoning classification AG-80, and no off-site water facilities would be constructed. Depending on the how the parcels are split, it is possible that several of these rural residences could be built within the eastern foothills. Based on a review of the *Preliminary Geotechnical Engineering Report* prepared by Wallace Kuhl & Associates (2005), the SPA soils are generally stable and suitable for the proposed hillside grading; however, the geotechnical engineer recommended that a seismic refraction survey be performed for the Folsom Heights property to determine which areas can be graded using a large bulldozer/excavator, and which areas may require blasting in order to excavate the materials. Therefore, potential geologic hazards from construction in bedrock/rock outcrops/unstable soils are considered a **direct, potentially significant** impact. The **indirect** impact from project-related construction in bedrock/rock outcroppings is creation of a public safety hazard from blasting operations, which is evaluated in Section 3A.8, "Hazards and Hazardous Materials – Land." ***[Similar]***

NCP, PP, RIM, CD, RHD

The implementation of all five action alternatives would result in construction on slopes in the eastern portion of the SPA, although less development on the slopes would occur under the Centralized Development Alternative. Based on a review of the Conceptual Grading Plans prepared by MacKay & Somps (2008), several areas of steep slopes would need to be created, ranging from approximately 16% to 32%. The *Folsom Plan Area Specific Plan* Section A.4 establishes grading standards for the SPA. The SPA consists of two distinct topographic areas: The eastern region includes all of the property east of Placerville Road and consists of hilly terrain located where the lower foothills of the Sierra Nevada join the Sacramento Valley floor. Elevations vary from 440 feet above mean sea level at the valley floor (along Placerville Road), to 800 feet above mean sea level in the foothills adjacent to the existing communication towers. The hilltop terrain is plateau-like and extends in a gentle slope from U.S. 50 to White Rock Road. On the east side of this area, the topography slopes gradually from the plateau to the El Dorado County line. Existing slopes range from 5%, to small areas in excess of 30%. The majority of slopes in this area average 15%.

The topography of the western region of the SPA consists of gently rolling terrain located on the valley floor between Placerville Road on the east, U.S. 50 on the north, White Rock Road on the south, and Prairie City Road on the east. The majority of slopes in this zone range between 0% and 15%; however, isolated steeper slopes exist along the edges of Alder Creek tributaries and existing seasonal drainages in the western sections of this zone.

Development of the SPA would entail the use of convential, contour, and landform grading, as described below:

- Conventional grading is characterized by uniform slope gradients with angular slope intersections and pad configurations that are rectangular. In the SPA, conventional grading would be mostly associated with non-hillside commercial building pads, homebuilding sites, school sites, municipal uses, parks, and other areas where uniform site grading is the primary consideration.

- Contour grading slopes are curvilinear in plan rather than linear as in conventional grading. Transition zones and slope intersections generally have some rounding applied and the resultant pad configurations are mildly curvilinear. In the SPA, contour grading would most likely occur in hillside-graded slope transition areas as well as highly visible areas where visual aesthetics are an important consideration.

- Landform grading replicates the irregular shapes of natural stable slopes. Landform-graded slopes are characterized by a continuous series of concave and convex forms interspersed with swales and berms that blend into the existing slopes, and thus the resultant pad configurations are irregular. In the SPA, landform grading would most likely occur in hillside areas where the natural blending of slopes is important, including transitions to oak woodlands, natural drainages, and open space.

The specific policies that would govern grading in the SPA, as fully detailed in Section A4 of *Folsom Plan Area Specific Plan*, have been designed to comply with the City's Hillside Grading Ordinance. In some cases, policies in the Ordinance have been refined for use specifically within the SPA. As stated in Folsom Municipal Code Section 17.37.010:

> The purpose of the SP, specific plan district is to provide a vehicle for implementing the city's general plan on an area-specific basis. A specific plan prepared in accordance with the standards set forth in this chapter is intended to serve as a regulatory document, consistent with the General Plan. In the event there is an inconsistency or conflict between an adopted specific plan and comparable regulations of this code, the specific plan will prevail.

In other words, if there is an inconsistency or conflict between the specific plan and other provisions of the Folsom Municipal Code, the specific plan governs.

As shown in Exhibit 3A.7-3, the eastern foothills are underlain by the Copper Hill Volcanics, which consist of weathered and fractured metavolcanic rocks. Rock outcroppings are present throughout the eastern slopes. Based on a review of the *Preliminary Geotechnical Engineering Report* prepared by Wallace Kuhl & Associates (2005), the SPA soils are generally stable and suitable for the proposed hillside grading; however, the geotechnical engineer recommended that a seismic refraction survey be performed for the Folsom Heights property to determine which areas can be graded using a large bulldozer/excavator, and which areas may require blasting in order to excavate the materials.

Potential geologic hazards from construction in bedrock/rock outcroppings within the eastern foothills are considered a **direct, potentially significant** impact. The **indirect** impact from project-related construction in bedrock/rock outcroppings is creation of a public safety hazard from blasting operations, which is evaluated in Section 3A.8, "Hazards and Hazardous Materials – Land." ***[Similar]***

Mitigation Measure: Implement Mitigation Measure 3A.7-1a.

Mitigation Measure 3A.7-4: Prepare a Seismic Refraction Survey and Obtain Appropriate Permits for all On-Site and Off-Site Elements East of Old Placerville Road.

Before the start of all construction activities east of Old Placerville Road, the project applicant(s) of all project phases shall retain a licensed geotechnical engineer to perform a seismic refraction survey. Project-related excavation activities shall be carried out as recommend by the geotechnical engineer. Excavation may include the use of heavy-duty equipment such as large bulldozers or large excavators, and may include blasting. Appropriate permits for blasting operations shall be obtained from the relevant City or county jurisdiction prior to the start of any blasting activities.

Mitigation for the off-site elements outside of the City of Folsom's jurisdictional boundaries must be coordinated by the project applicant(s) of each applicable project phase with the affected oversight agency(ies) (i.e., El Dorado and/or Sacramento Counties).

Implementation: Project applicant(s) of all project phases for on-site and off-site elements east of Old Placerville Road.

Timing: Before or during earthmoving activities.

Enforcement:

1. For all project-related improvements that would be located within the City of Folsom: City of Folsom Community Development Department.

2. For the two off-site roadway connections from Folsom Heights into El Dorado Hills: El Dorado County Public Works Department.

Implementation of Mitigation Measures 3A.7-1a and 3A.7-4 would reduce potential geologic hazards from construction in bedrock/rock outcroppings under the No USACE Permit, Proposed Project, Resource Impact Minimization, Centralized Development, and Reduced Hillside Development Alternative to a **less-than-significant** level because a seismic refraction survey would be performed to determine which areas of the eastern foothills required blasting and which could be excavated using conventional methods, and appropriate permits would be obtained for blasting activities. However, the two roadway connections in El Dorado County fall under the jurisdiction of El Dorado County; therefore, neither the City nor the project applicant(s) would have control over their timing or implementation.

IMPACT 3A.7-5 Potential Geologic Hazards Related to Seasonal Subsurface Water Flows from Surface Infiltration. *SPA excavation is not expected to encounter groundwater, but seasonal subsurface flows due to surface infiltration, as well as surface infiltration from shallow wells, could adversely affect some of the building foundations in the SPA.*

On-Site and Off-Site Elements

NP

Under the No Project Alternative, development of up to 44 rural residences could occur under the existing Sacramento County agricultural zoning classification AG-80, and no off-site water facilities would be constructed. According to the results from text pits excavated by Wallace Kuhl & Associates (2004, 2005, 2008) and Youngdahl Consulting (2003) groundwater was not encountered in any test pit to a maximum of 9.5 feet bgs. However, infiltrated seasonal runoff, and water from several shallow wells in the eastern foothills, can be expected to flow underneath the SPA along the soil/bedrock interface, which may create or increase shallow seasonal groundwater conditions. Furthermore, perched groundwater conditions during the winter months and water seepage conditions may be encountered throughout the SPA. Without proper design techniques, such as installation of French drains, this could result in adverse impacts to building foundations constructed at or near the interface of soil and rock. Therefore, this **indirect** impact is considered **potentially significant**. **No direct** impact would occur. ***[Similar]***

NCP, PP, RIM, CD, RHD

According to the results from text pits excavated by Wallace Kuhl & Associates (2004, 2005, 2008) and Youngdahl Consulting (2003) groundwater was not encountered in any test pit to a maximum of 9.5 feet bgs. However, infiltrated seasonal runoff, and water from several shallow wells in the eastern foothills, can be expected to flow underneath the SPA along the soil/bedrock interface, which may create or increase shallow seasonal groundwater conditions. Furthermore, perched groundwater conditions during the winter months and water seepage conditions may be encountered throughout the SPA. Without proper design techniques, such as installation of French drains, this could result in adverse impacts to building foundations constructed at or near the interface of soil and rock. Therefore, this **indirect** impact is considered **potentially significant**. **No direct** impact would occur. ***[Similar]***

Mitigation Measure 3A.7-5: Divert Seasonal Water Flows Away from Building Foundations.

The project applicant(s) of all project phases shall either install subdrains (which typically consist of perforated pipe and gravel, surrounded by nonwoven geotextile fabric), or take such other actions as recommended by the geotechnical or civil engineer for the project that would serve to divert seasonal flows caused by surface infiltration, water seepage, and perched water during the winter months away from building foundations.

Implementation: Project applicant(s) of all project phases.

Timing: Before and during earthmoving activities.

Enforcement:

1. For all project-related improvements that would be located within the City of Folsom: City of Folsom Community Development Department.

2. For the two roadway connections in El Dorado Hills: El Dorado County Public Works Department.

Implementation of Mitigation Measures 3A.7-5 and would reduce the potential impacts from seasonal subsurface water flows, flows from existing shallow wells, water seepage, and perched winter shallow groundwater conditions under the No USACE Permit, Proposed Project, Resource Impact Minimization, Centralized Development, and Reduced Hillside Development Alternatives to a **less-than-significant** level because subsurface drains, or another methodology recommended by the project geotechnical engineer (and approved by the relevant City or county department), would be installed to channel seasonal water flows away from building foundations. However, two roadway connections in El Dorado County fall under the jurisdiction of El Dorado County; therefore, neither the City nor the project applicant(s) would have control over their timing or implementation.

IMPACT 3A.7-6 Potential Damage to Structures and Infrastructure from Construction in Expansive Soils. *Portions of the SPA are underlain by soils that have a moderate to high potential for expansion when wet and may result damage to structures.*

On-Site and Off-Site Elements

NP

Under the No Project Alternative, development of up to 44 rural residences could occur under the existing Sacramento County agricultural zoning classification AG-80, and no off-site water facilities would be constructed. Expansive soils shrink and swell as a result of moisture change. These volume changes can result in damage over time to building foundations, underground utilities, and other subsurface facilities and infrastructure if they are not designed and constructed appropriately to resist the damage associated with changing soil conditions. Volume changes of expansive soils also can result in the consolidation of soft clays following the lowering of the water table or the placement of fill. Placing buildings or constructing infrastructure on or in unstable soils can result in structural failure. Based on a review of NRCS soil survey data as shown in Table 3A.7-2, most of the on- and off-site project elements consists of soils with a moderate to high shrink-swell potential, indicating the soils are expansive. Soil expansion, including volume changes during seasonal fluctuations in moisture content, could adversely affect road surfaces, interior slabs-on-grade, landscaping hardscapes, and underground pipelines. Therefore, this **direct** impact is considered **potentially significant**. **No indirect** impacts would occur. ***[Similar]***

NCP, PP, RIM, CD, RHD

Expansive soils shrink and swell as a result of moisture change. These volume changes can result in damage over time to building foundations, underground utilities, and other subsurface facilities and infrastructure if they are not designed and constructed appropriately to resist the damage associated with changing soil conditions. Volume changes of expansive soils also can result in the consolidation of soft clays following the lowering of the water table or the placement of fill. Placing buildings or constructing infrastructure on or in unstable soils can result in structural failure. Based on a review of NRCS soil survey data as shown in Table 3A.7-2, most of the on- and off-site project elements consists of soils with a moderate to high shrink-swell potential, indicating the soils are expansive. Soil expansion, including volume changes during seasonal fluctuations in moisture content, could adversely affect road surfaces, interior slabs-on-grade, landscaping hardscapes, and underground pipelines. Therefore, this **direct** impact is considered **potentially significant**. **No indirect** impacts would occur.

Mitigation Measure: Implement Mitigation Measures 3A.7-1a and 3A.7-1b.

Implementation of Mitigation Measures 3A.7-1a and 3A.7-1b would reduce the potentially significant impact of damage to people and structures from construction in expansive soils under the No USACE Permit, Proposed Project, Resource Impact Minimization, Centralized Development, and Reduced Hillside Development Alternatives to a **less-than-significant** level by requiring that the design recommendations of a geotechnical engineer to reduce damage from expansive soils be incorporated into buildings, structures, and infrastructure as required by the CBC, and that a geotechnical or soils engineer provide on-site monitoring to ensure that earthwork is being performed as specified in the plans. However, some of the off-site elements (two roadway connections in El Dorado County and detention basin in Sacramento County) fall under the jurisdiction of El Dorado and Sacramento Counties; therefore, neither the City nor the project applicant(s) would have control over their timing or implementation.

IMPACT 3A.7-7	Suitability of Soils for Use with Septic Systems. *The SPA is underlain by soils that are unsuitable for use with conventional septic systems.*

On-Site and Off-Site Elements

NP

Under the No Project Alternative, up to 44 rural residences could be developed under the existing Sacramento County AG-80 zoning, and no off-site water facilities would be constructed. These residences would require the use of on-site septic systems. Most of the shallow on-site soils have a low permeability and are subject to water seepage (a high water holding capacity) and thus tend to “perc” too slowly, rendering them unsuitable for conventional septic systems. Most of the bedrock on-site soils have extremely high permeability (a low water holding capacity) and thus tend to “perc” too quickly, also rendering them unsuitable for conventional septic systems. Based on a review of NRCS soil data (see Table 3A.7-2), the entire SPA is rated with a severe limitation because the soils are unsuitable for conventional septic systems. Therefore, the unsuitability of SPA soils for septic systems would have a **direct, significant** impact related to lack of treatment capability, and an **indirect, potentially significant** impact related to water quality. ***[Greater]***

NCP, PP, RIM, CD, RHD

Because the No USACE Permit, Proposed Project, Resource Impact Minimization, Centralized Development, Reduced Hillside Development Alternatives would use piped sewer service from Sacramento Regional County Sanitation District and/or El Dorado Irrigation District, septic systems would not be required and there would be **no direct** or **indirect** impact. ***[Similar]***

Mitigation Measure: No mitigation measures are required.

IMPACT 3A.7-8 Possible Loss of Mineral Resources–Construction Aggregate. *The SPA is located within the Sacramento-Fairfield Production-Consumption Region designated by CDMG and contains dredge tailings that could provide a source of construction aggregate.*

On-Site and Off-Site Elements

NP

Under the No Project Alternative, development of up to 44 rural residences could occur under the existing Sacramento County agricultural zoning classification AG-80. Construction of these scattered rural residences would not impede mining of any construction aggregate located in the SPA. There would be no off-site water facilities constructed under this alternative. Therefore, there would be **no direct** or **indirect impact**. ***[Lesser]***

On-Site Elements

NCP, PP, RIM, CD, RHD

The western third of the SPA is located within the Sacramento-Fairfield Production-Consumption Region, a mineral resources area designated by CDMG as containing "regionally significant" mineral deposits that may be needed to meet future demand. As shown in Exhibit 3A.7-3, the western edge of the SPA is classified by CDMG as MRZ-1 for construction aggregate, "areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence." However, the majority of the SPA is classified by CDMG as MRZ-3 for construction aggregate, "areas containing mineral deposits, the significance of which cannot be evaluated from existing data." Based on site visits performed by EDAW/AECOM (now AECOM) in 2007, information contained in the geotechnical reports, and conversations with the project engineer (MacKay & Somps), portions of the western third of the SPA contain piles of cobbles deposited during dredger gold mining operations in the 1800s and early 1900s. Similar piles of dredge tailings are present in nearby areas of Rancho Cordova, and south of White Rock Road in Sacramento County, and those areas are actively being mined or are proposed for mining as an aggregate sand and gravel resource. However, the dredge tailings present within the SPA are located primarily within the Alder Creek drainage. Alder Creek is a perennial watercourse, and its drainage and riparian resources are protected by both Sacramento County and City of Folsom General Plan policies and ordinances. Furthermore, in 2003, the City of Folsom determined that because it did not have any active mining operations, and because none were expected in the future, that it would not update its SMARA ordinance. The SPA is not delineated as an area of known mineral resources in either the City of Folsom or Sacramento County General Plans. Finally, based on conversations with the project engineer (MacKay & Somps), even if it were permissible to mine the Alder Creek dredge tailings, they are not present in a large enough concentration that would warrant an economically viable on-site mining operation. Therefore, this **direct** impact would be **less than significant. No indirect** impacts would occur. ***[Similar]***

Mitigation Measure: No mitigation measures are required.

Off-Site Elements

The off-site elements are located in areas that are either zoned MRZ-1 for construction aggregate (where no mineral resources are present) or are located in MRZ-3 construction aggregate areas that have already been developed with urban uses (where any resources that may have been present have been covered over by development and are no longer available for extraction). Therefore, there would be **no direct** or **indirect** impact related to loss of mineral resources from construction of the off-site elements. ***[Similar]***

Mitigation Measure: No mitigation measures are required.

IMPACT 3A.7-9 Possible Loss of Mineral Resources–Kaolin Clay. *The SPA is located within the Sacramento-Fairfield Production-Consumption Region designated by CDMG and may contain a deposit of kaolin clay.*

On-Site and Off-Site Elements

NP

Under the No Project Alternative, development of up to 44 rural residences could occur under the existing Sacramento County agricultural zoning classification AG-80. Construction of these scattered rural residences would not impede mining of any kaolin clay located in the SPA. There would be no off-site water facilities constructed under this alternative. Therefore, there would be **no direct** or **indirect** impact. ***[Lesser]***

On-Site Elements

NCP, PP, RIM, CD, RHD

As shown on Exhibit 3.8-3, the western edge of the SPA is zoned MRZ-3 for kaolin clay. This classification was applied by CDMG because that area roughly corresponds to the location of the Ione Formation in the SPA. The Ione Formation is known to contain kaolin clay in other locations in northern California. None of the five geotechnical reports prepared for the SPA included an investigation of this area. Therefore, it is currently unknown whether or not an economically valuable deposit of kaolin clay is present. If it were present, the deposit would be unavailable for mining following project implementation, because urban development is planned throughout the area where the Ione Formation occurs in the SPA. Because the potential presence of this valuable mineral resource cannot be ruled out at this time, and because the resource would be lost as a result of project implementation, this **direct** impact is considered **potentially significant. No indirect** impacts would occur. ***[Similar]***

Mitigation Measure 3A.7-9: Conduct Soil Sampling in Areas of the SPA Designated as MRZ-3 for Kaolin Clay and if Found, Delineate its Location and Notify Lead Agency and the California Division of Mines and Geology.

The project applicant(s) of all applicable project phases shall retain a licensed geotechnical or soils engineer to analyze soil core samples that shall be extracted from that portion of the SPA zoned MRZ-3 for kaolin clay, as shown on Exhibit 3A.7-3. In the event that kaolin clay is discovered, the City of Folsom, Sacramento County, and CDMG shall be notified. In addition, the approximate horizontal and vertical extent of available kaolin clay shall be delineated by the geotechnical or soils engineer.

Implementation: Project applicant(s) of all project phases in the Ione Formation.

Timing: Before issuance of building permits for development within the Ione Formation as shown in Exhibit 3A.7-1.

Enforcement: City of Folsom Community Development Department, Sacramento County Planning and Community Development Department, California Division of Mines and Geology.

Implementation of Mitigation Measure 3A.7-9 would provide data that would allow the project applicant(s) and the lead agencies to determine whether or not economically valuable mineral resources are present in the MRZ-3 kaolin clay area of the SPA. However, if economically valuable mineral resources were found to be present, they would be covered over as a result of SPA development with urban land uses, and would no longer be available for mining. Therefore, this impact is considered **potentially significant** and **unavoidable**, because there are no feasible mitigation measures available to avoid or reduce this impact to a less-than-significant level.

Off-Site Elements

The off-site elements are located in areas that are not zoned for kaolin clay and are not located within the Ione Formation. Therefore, there would be **no direct** or **indirect** impact related to loss of kaolin clay mineral resources from construction of the off-site elements. ***[Similar]***

Mitigation Measure: No mitigation measures are required.

IMPACT 3A.7-10 Possible Damage of or Destruction to of Previously Unknown Unique Paleontological Resources during Construction-Related Activities. *Portions of the SPA and the off-site detention basin are underlain by paleontologically sensitive rock formations. Therefore, construction activities could damage or destroy previously unknown, unique paleontological resources in the SPA.*

On-Site and Off-Site Elements

NP

Under the No Project Alternative, development of up to 44 rural residences could occur under the existing Sacramento County agricultural zoning classification AG-80, and no off-site water facilities would be constructed. Construction of any residence within the Ione Formation could damage or destroy unknown, unique paleontological resources that occur within the SPA. The policies in the Sacramento County General Plan that would protect paleontological resources under a tentative subdivision map do not apply to private land that is zoned for agricultural use, because they are generally mutually exclusive. Because earthmoving activities within the Ione Formation could encounter and potentially destroy previously unknown unique paleontological resources, this **direct** impact is **potentially significant**. **No indirect** impacts would occur. ***[Greater]***

NCP, PP, RIM, CD, RHD

As shown in Exhibit 3A.7-1, most of the SPA and the off-site elements are underlain by the Salt Springs Slate, Copper Hill Volcanics, and Gopher Canyon Volcanics. Because of the way in which these rocks formed, they would not contain vertebrate fossils or fossil plant assemblages. Therefore, construction activities that occur in these rock formations would have no impact on unique paleontological resources.

However, the western edge of the SPA (see Exhibit 3A.7-1) is underlain by Eocene-age sediments of the Ione Formation. Vertebrate mammal, plant, and invertebrate fossils have been recovered from the Ione Formation from over 300 locations in Nevada, Contra Costa, Placer, Butte, Alameda, Merced, Tuolumne, Sutter, Sierra, Plumas, Calaveras, Kern, Stanislaus, and Amador counties, including the town of Ione (about 16 miles south of the SPA) (UCMP 2009).

The off-site detention basin west of Prairie City Road would be located within the Mehrten Formation. Vertebrate fossils have been recovered from the Mehrten Formation from over 40 locations in Calaveras, San Joaquin, Stanislaus, Tuolumne, and Merced Counties (UCMP 2009). In addition, several specimens of plant fossils have been recovered locally from the Mehrten Formation in Granite Bay, Roseville, and Rocklin (Sierra College Natural History Museum 2009).

Because of the large number of fossils that have been recovered from the Mehrten and Ione Formations throughout the Central Valley, they are considered paleontologically sensitive rock units under the Society of Vertebrate Paleontology guidelines (1995), thus suggesting that there is a potential for uncovering additional similar fossil remains during construction-related earthmoving activities in these formations in the SPA.

Therefore, the potential for damage to previously unknown unique paleontological resources during earthmoving activities in the SPA and the off-site detention basin is considered a **potentially significant, direct** impact. **No indirect** impacts would occur. ***[Similar]***

Mitigation Measure 3A.7-10: Conduct Construction Personnel Education, Stop Work if Paleontological Resources are Discovered, Assess the Significance of the Find, and Prepare and Implement a Recovery Plan as Required.

To minimize potential adverse impacts on previously unknown potentially unique, scientifically important paleontological resources, the project applicant(s) of all project phases where construction would occur in the Ione and Mehrten Formations shall do the following:

- Before the start of any earthmoving activities for any project phase in the Ione or Mehrten Formations, the project applicant(s) shall retain a qualified paleontologist or archaeologist to train all construction personnel involved with earthmoving activities, including the site superintendent, regarding the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction, and proper notification procedures should fossils be encountered.

- If paleontological resources are discovered during earthmoving activities, the construction crew shall immediately cease work in the vicinity of the find and notify the appropriate lead agency (identified below). The project applicant(s) shall retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with Society of Vertebrate Paleontology guidelines (1996). The recovery plan may include, but is not limited to, a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations in the recovery plan that are determined by the lead agency to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.

Mitigation for the off-site elements outside of the City of Folsom's jurisdictional boundaries must be coordinated by the project applicant(s) of each applicable project phase with the affected oversight agency(ies) (i.e., Sacramento County).

Implementation: Project applicant(s) of all project phases within the Ione and Mehrten Formations.

Timing: During earthmoving activities in the Ione and Mehrten Formations as shown in Exhibit 3A.7-1.

Enforcement:

1. For all project-related improvements that would be located within the City of Folsom: City of Folsom Community Development Department.
2. For the off-site detention basin west of Prairie City Road: Sacramento County Planning and Community Development Department.

Implementation of Mitigation Measure 3A.7-10 would reduce potentially significant impacts related to damage or destruction of unique paleontological resources within the Ione and Mehrten Formations to a **less-than-significant** level under the No USACE Permit, Proposed Project, Resource Impact Minimization, Centralized Development, and Reduced Hillside Development Alternatives because construction workers would be alerted to the possibility of encountering paleontological resources, and in the event that resources were encountered, fossil specimens would be recovered and recorded and would undergo appropriate curation. However, the off-site detention basin in Sacramento County falls under the jurisdiction of Sacramento County; therefore, neither the City nor the project applicant(s) would have control over the timing or implementation.

3A.7.4 RESIDUAL SIGNIFICANT IMPACTS

With implementation of Mitigation Measures 3A.7-1, 3A.7-3, 3A.7-4, 3A.7-5, and 3A.7-7, impacts related to strong seismic ground shaking, construction-related erosion, construction in bedrock/rock outcrops and landslides, subsurface water flows, and unsuitability for septic systems would be reduced to less-than-significant levels. Implementation of Mitigation Measure 3A.7-9 would provide data that would allow the project applicant(s) and the lead agencies to determine whether or not economically valuable mineral resources are present in the MRZ-3 kaolin clay area of the SPA. However, if economically valuable kaolin clay deposits were found to be present, they would be covered over as a result of SPA development with urban land uses, and would no longer be available for mining. Therefore, this impact is considered potentially significant and unavoidable under the No USACE Permit, Proposed Project, Resource Impact Minimization, Centralized Development, and Reduced Hillside Development Alternatives.

In addition, some of the off-site elements fall under the jurisdiction of El Dorado and Sacramento Counties, and Caltrans; therefore, neither the City nor the project applicant(s) would have control over the timing or implementation of mitigation measures for these off-site elements. Because the City does not control implementation of mitigation measures for off-site improvements constructed in areas under the jurisdiction of El Dorado and Sacramento Counties, and Caltrans, Impacts 3A.7-1, 3A.7-3, 3A.7-4, 3A.7-5, 3A.7-6, and 3A.7-10 are considered potentially significant and unavoidable for off-site improvements which would be located in Sacramento or El Dorado County, or Caltrans jurisdiction.