4.6 GEOLOGY AND SOILS

4.6.1 INTRODUCTION

The Geology and Soils chapter of this EIR describes the geologic and soil characteristics of the Eastview Specific Plan & Annexation Project (proposed project) site and evaluates the extent to which implementation of the project could be affected by the following geologic and seismic hazards: rupture of a known earthquake fault; strong seismic ground shaking; seismic-related ground failure, including liquefaction; soil erosion; soil stability; and expansive soils. Information in this chapter is drawn from the *2030 Galt General Plan*[1] and associated Existing Conditions Report[2] and EIR,[3] and the *Geotechnical Engineering Investigation* prepared for the Liberty Ranch site by MatriScope Engineering Laboratories, Inc. (see Appendix G).[4]

4.6.2 EXISTING ENVIRONMENTAL SETTING

The following background setting information focuses on the regional and site geology of the Eastview Specific Plan area.

Regional Geology

The City of Galt is located in the southern portion of the Sacramento Valley, a large northwest trending structural trough filled with sediment and sedimentary rocks that extend to depths of more than 50,000 feet. The sediment and sedimentary rocks that fill the Sacramento Valley are derived largely from the Sierra Nevada and Klamath Mountain Ranges, and are from the Jurassic (150 to 200 million years old) to Holocene (fewer than 10,000 years old) period.

A "geomorphic province" is an area comprised of similar geologic origin and erosional history. The City of Galt is located in the Great Valley province, one of two geomorphic provinces in Sacramento County. The Great Valley province can be further subdivided into other geomorphic subunits. The City of Galt is situated within an area where the River Floodplain (Cosumnes River) and the Alluvial Plain subunits come together.

Although all of California is typically regarded as seismically active, the Great Valley region does not commonly experience strong ground shaking resulting from earthquakes along known and previously unknown active faults. Based on the California Geology Survey (CGS) for the County of Sacramento, the seismic ground-shaking hazard in the County is relatively low and ranks among the lowest in the State of California.

Faults in the region exhibiting historic displacement (activity within the last 200 years) include the Concord-Green Valley and Hayward faults located approximately 45 miles west-southwest and 60 miles southwest of the City of Galt, respectively. In addition, portions of the Calaveras

fault zone have been rated as active within the last 200 years and are located approximately 56 miles southwest of the City.

Project Site Geology

The project site consists of agricultural land used for clover and seed crop production and some urban land approximately 504 acres in size. The agricultural fields are subdivided by irrigation channels and levee roads. On-site irrigation infrastructure includes agricultural wells, surface and subsurface pipes, mains, and sumps. In addition, ten water wells are located within the site. In general, the Liberty Ranch site is vacant except for the abandoned houses on Cherokee Lane and structures near the intersection of Cherokee Lane and the Union Pacific Railroad. The non-participating properties contain Liberty Ranch High School, Estrellita Continuation High School, and several rural residences along Marengo Road and Twin Cities Road. The "Future Growth Area" includes agricultural land and the Union Pacific Railroad (UPRR) tracks. Based on the U.S. Geological Survey (USGS) topographic map for the Galt Quadrangle, the site grade varies from approximately 65 feet above mean sea level (msl) in the northeast corner to 50 feet msl in the southwest corner of the site. The site grade is considered relatively flat.

Based on the 1981 California Division of Mines and Geology (CDMG) Geologic Map of California – Sacramento Sheet, the near-surface soils at the site vicinity are recognized as Holocene alluvium deposits which consist of fine sands, silts, and occasional clays. The alluvium deposits are underlain by the Riverbank Formation and other Cenozoic and Upper Cretaceous continental and marine sediments of the Great Valley Sequence.

Groundwater was not encountered in any of the borings completed during the field investigation. Based on the Fall 2007 Groundwater Elevations Map prepared by the County of Sacramento, Department of Water Resources, groundwater in the vicinity of the project site is estimated to be at below 50 feet mean sea level (at least 100 feet below the ground surface). It should be noted that soil moisture conditions within the site will vary depending on rainfall, irrigation practices, and/or runoff conditions not apparent at the time of the field investigation. Soil moisture conditions will commonly change seasonally.

Project Site Soils

The proposed project site consists of approximately 504 acres, only approximately 338 acres of which is proposed to be developed as part of the project. The 338-acre portion of the project site proposed for development is known as Liberty Ranch. The remaining portion of the project site consists of non-participating properties (148 acres) and the "Future Growth Area" (17.4 acres) which are not currently proposed for development. The soils on the project site are discussed below in further detail, including descriptions of current soil conditions, seismic hazards, liquefaction, expansive soils, and soil corrosion potential.

Soil Conditions

Subsurface soils encountered in the soil borings consist of soft clay/silt to depths of approximately two feet below the ground surface. Underlying the upper soft soils are competent

soils and hardpan which consist of stiff to very stiff clay and/or very dense silty sand to the maximum explored depths of six to 16.5 feet below the existing ground surface.

According to the Soil Survey of Sacramento County, the project site is made up of the following soils:[5]

- San Joaquin silt loam, leveled, zero to one percent slopes (map symbol 213);
- San Joaquin silt loam, zero to three percent slopes (214);
- San Joaquin-Durixeralfs complex, zero to one percent slopes (216);
- San Joaquin-Galt complex, leveled, zero to one percent slopes (217);
- San Joaquin-Xerarents complex, leveled, zero to one percent slopes (221); and
- Xerarents-San Joaquin complex, zero to one percent slopes (238).

San Joaquin silt loam, leveled, zero to one percent slopes (213) is moderately deep, moderately well drained, and is located on low terraces. Permeability of this San Joaquin silt loam is very slow. Surface runoff is very slow, and the erosion hazard is none to slight.

San Joaquin silt loam, zero to three percent slopes (214) is moderately deep, moderately well drained, and is located on low terraces. Permeability of this San Joaquin silt loam is very slow. Surface runoff is slow, and the erosion hazard is slight. The available water capacity is low.

San Joaquin-Durixeralfs complex, zero to one percent slopes (216) is moderately deep, moderately well drained, and is located on low terraces. Permeability of this San Joaquin-Durixeralfs complex is slow to very slow. Surface runoff is very slow, and the erosion hazard is none to slight.

San Joaquin-Galt complex, leveled, zero to one percent slopes (217) is moderately deep, moderately well drained, and is located on low terraces. Permeability of this San Joaquin-Galt complex is slow to very slow. Surface runoff is very slow, and the erosion hazard is slight.

San Joaquin-Xerarents complex, leveled, zero to one percent slopes (221) is moderately deep, moderately well drained, and is located on low terraces. Permeability of this San Joaquin-Xerarents complex is moderate to very slow. Surface runoff is very slow, and the erosion hazard is none to slight.

Xerarents-San Joaquin complex, zero to one percent slops (238) is moderately deep to very deep, well drained, and is located on low terraces. Permeability of this Xerarents-San Joaquin complex is moderate to very slow. Surface runoff is slow to very slow, and the erosion hazard is none to slight.

Seismic Hazards

As noted previously, the Concord-Green Valley, Hayward, and Calaveras faults are located approximately 45 miles west-southwest, approximately 60 miles southwest, and approximately 56 miles southwest of the City of Galt, respectively. According to the Geotechnical

Investigation, the project site is approximately 20 miles or further from any known active fault zones. Active or potentially active faults are not known to underlie the site based on the California Geology Survey (CGS) fault activity maps reviewed in the Geotechnical Investigation. In addition, the site is not located within an Alquist-Priolo Earthquake Fault Zone, and surface evidence of faulting was not observed during site reconnaissance.

Liquefaction

Three factors are required for liquefaction to occur: loose, granular sediment; saturation of the sediment by groundwater; and strong ground shaking.[6] The site is underlain by stiff and dense soil and groundwater is deeper than 100 feet below existing site grades. Therefore, the Geotechnical Investigation concluded that liquefaction of soils beneath the site during strong earthquake ground shaking is highly unlikely.

Expansive Soils

Based on the results of eleven Expansion Index (EI) tests performed on selected near surface soil samples from the Liberty Ranch site, the site soils have EI values of one to 88. Most tested soil samples are considered as having low expansion potential (EI less than 50). The exceptions include soil samples obtained from soil borings B7 (east of the proposed Liberty Ranch Road and south of the Walnut Avenue extension) and B25 (southwestern corner of the project site) which have medium expansion potential (EI greater than 50, but less than 90). As such, the on-site clays are considered potentially capable of exerting significant expansion pressures upon building foundations and concrete slabs.

Soil Corrosion Potential

Soil samples from the Liberty Ranch site were utilized to determine resistivity, pH, chloride, and sulfate concentrations to help evaluate the potential for corrosive attack upon reinforced concrete and buried metal. According to the Geotechnical Investigation, the corrosivity test results do not indicate that a significant corrosive potential to buried concrete structures exists.

4.6.3 REGULATORY CONTEXT

The following section includes a brief summary of the regulatory context under which soils and geologic hazards are managed at the federal, State, and local levels.

Federal Regulations

The following are the federal environmental laws and policies relevant to geology and soils.

Federal Earthquake Hazards Reduction Act

Passed by Congress in 1977, the Federal Earthquake Hazards Reduction Act is intended to reduce the risks to life and property from future earthquakes. The Act established the National Earthquake Hazards Reduction Program (NEHRP). The goals of NEHRP are to educate and

improve the knowledge base for predicting seismic hazards, improve land use practices and building codes, and to reduce earthquake hazards through improved design and construction techniques.

Uniform Building Code

The Uniform Building Code (UBC) was first published in 1927 by the International Council of Building Officials and is intended to promote public safety and provide standardized requirements for safe construction. The UBC was replaced in 2000 by the new International Building Code (IBC), published by the International Code Council (ICC), which is a merger of the International Council of Building Officials' UBC, Building Officials and Code Administrators International's National Building Code, and the Southern Building Code Congress International's Standard Building Code. The intention of the IBC is to provide more consistent standards for safe construction and eliminate any differences between the three preceding codes. All State building standard codes are based on the federal building codes.

State Regulations

The following are the State environmental laws and policies relevant to geology and soils.

Alquist-Priolo Earthquake Fault Zoning Act

The 1972 Alquist-Priolo Earthquake Fault Zoning Act (AP Zone Act) was passed to prevent the new development of buildings and structures for human occupancy on the surface of active faults. The Act is directed at the hazards of surface fault rupture and does not address other forms of earthquake hazards. The locations of active faults are established into fault zones by the AP Zone Act. Local agencies regulate any new developments within the appropriate zones in their jurisdiction.

The AP Zone Act regulates development near active faults so as to mitigate the hazard of surface fault rupture. The AP Zone Act requires that the State Geologist (Chief of the CDMG) delineate "special study zones" along known active faults in California. Cities and counties affected by these zones must regulate certain development projects within these zones. The AP Zone Act prohibits the development of structures for human occupancy across the traces of active faults. According to the AP Zone Act, active faults have experienced surface displacement during the last 11,000 years. Potentially active faults are those that show evidence of surface displacement during the last 1.6 million years. A fault may be presumed to be inactive based on satisfactory geologic evidence; however, the evidence necessary to prove inactivity sometimes is difficult to obtain and locally may not exist.

California Building Standards Code

The State of California regulates development within the State through a variety of tools that reduce or mitigate potential hazards from earthquakes or other geologic hazards. The 2013 California Building Standards Code (CBC) (California Code of Regulations [CCR], Title 24) governs the design and construction of all building occupancies and associated facilities and

equipment throughout California. In addition, the CBC governs development in potentially seismically active areas and contains provisions to safeguard against major structural failures or loss of life caused by earthquakes or other geologic hazards. The California building standards include building standards in the national building code, building standards adapted from national codes to meet California conditions, and building standards adopted to address particular California concerns.

Seismic Hazards Mapping Act

The California Seismic Hazards Mapping Act of 1990 (California Public Resources Code Section1690-2699.6) addresses non-surface rupture earthquake hazards, including liquefaction, induced landslides, and subsidence. A mapping program is also established by this Act, which identifies areas within California that have the potential to be affected by such non-surface rupture hazards. The Seismic Hazards Mapping Act 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.

Local Regulations

The following are the local environmental laws and policies relevant to geology and soils.

2030 Galt General Plan

The following applicable goals and policies are taken from the Safety and Seismic Element of the *2030 Galt General Plan*.

Goal SS-1 To protect the community from injury and damage resulting from natural catastrophes and hazardous conditions.

Policy SS-1.7 The City shall continue to require that alterations to existing buildings and new buildings be built according to the seismic requirements of the California Building Standards Code (CBC).

Goal SS-2 To minimize the loss of life, injury, hardships, and property damage due to seismic and geologic hazards.

Policy SS-2.1 The City shall require soils reports for new projects and use the information to determine appropriate permitting requirements.

Policy SS-2.2 The City shall ensure that all existing and future public structures, such as buildings and water storage tanks, are of sufficient construction to withstand seismically induced ground shaking and related geologic hazards.

Policy SS-2.3	The City shall require grading and erosion control plans to be prepared by a qualified engineer or land surveyor.

Galt Municipal Code

Chapter 15.01, California Building Codes, of the Galt Municipal Code includes definitions, standards, and enforcement guidelines to ensure all new development comply with the CBC. Section 15.04.160 outlines the violations and penalties for any person who violates or fails to comply with any of the provisions in Chapter 15.01 of the Municipal Code.

4.6.4 IMPACTS AND MITIGATION MEASURES

This section describes the standards of significance and methodology utilized to analyze and determine the proposed project's potential impacts related to geology and soils. A discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Impacts related to geology and soils are considered significant if the proposed project would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area based on other substantial evidence of a known fault;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction;
  - Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral, spreading, subsidence, liquefaction or collapse; or
- Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code.
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Method of Analysis

The analysis for the proposed project is based on the Geotechnical Engineering Investigation prepared by MatriScope Engineering Laboratories, Inc., the *2030 Galt General Plan* and the associated EIR. MatriScope's geotechnical analysis for the project site is comprised of a number of analytical tasks, including site reconnaissance, review of USGS topographic maps, geological maps, available groundwater level measurements, subsurface exploration (drilling and sampling of 25 soil borings to depths of six to 16.5 feet), laboratory testing of selected soil samples to

determine various soil engineering properties, and engineering analyses. The study area for the Geotechnical Engineering Investigation included the Liberty Ranch site and the "Future Growth Area." The proposed project's components are compared to the existing conditions of the project site, and the Standards of Significance identified above to determine the severity of potential impacts.

Project-Specific Impacts and Mitigation Measures

The following discussion of geology and soils impacts is based on implementation of the proposed project in comparison to existing conditions and the standards of significance presented above. The discussions and mitigation measures presented below apply to Liberty Ranch, "Future Growth Area," and non-participating properties unless otherwise stated.

4.6-1 Risks to people and structures associated with seismic activity, including ground shaking and ground failure, such as liquefaction. Based on the analysis below, the impact is *less than significant.*

Non-Participating Properties

Development of the non-participating properties is not proposed at this time. While a site-specific geotechnical report has not been prepared for the non-participating properties, the findings from the *Geotechnical Engineering Investigation* for the neighboring Liberty Ranch site are expected to be similar with respect to seismic activity, given the close proximity of the two sites. In addition, because the project site is not located at or near any slopes, the risk of landsliding during an earthquake is considered low. Furthermore, future development of the non-participating properties would be required to adhere to the provisions of the 2013 CBC as well as Chapter 15 of the Galt Municipal Code.

Future Growth Area

According to the *Geotechnical Engineering Investigation*, the "Future Growth Area" is not underlain by any active or potentially active faults based on published records and geological maps. In addition, the "Future Growth Area" is not located within an Alquist-Priolo Earthquake Fault Zone, and surface evidence of faulting was not observed by MatriScope during site reconnaissance. Although all of California is typically regarded as seismically active, the Great Valley region does not commonly experience strong ground shaking resulting from earthquakes along known and previously unknown active faults. Based upon these factors, MatriScope has concluded that ground rupture at the project site resulting from seismic activity is unlikely. Similarly, because the "Future Growth Area" is underlain by medium stiff clay/silt over competent soils/hardpan and groundwater is deeper than 100 feet below existing site grades, MatriScope has concluded that the liquefaction potential of the soils beneath the site during strong earthquake ground shaking is minimal. Furthermore, because the "Future Growth Area" is not located at or near any slopes, the risk of landsliding during an earthquake is considered low.

Because the project does not include development of the "Future Growth Area," the proposed project would not directly result in risks to people and structures associated with seismic activity, including ground shaking and ground failure, such as liquefaction.

Liberty Ranch

According to the *Geotechnical Engineering Investigation*, the Liberty Ranch site is not underlain by any active or potentially active faults based on published records and geological maps. In addition, the project site is not located within an Alquist-Priolo Earthquake Fault Zone, and surface evidence of faulting was not observed by MatriScope during site reconnaissance. Although all of California is typically regarded as seismically active, the Great Valley region does not commonly experience strong ground shaking resulting from earthquakes along known and previously unknown active faults. Based upon these factors, MatriScope has concluded that ground rupture at the project site resulting from seismic activity is unlikely. Similarly, because the project site is underlain by medium stiff clay/silt over competent soils/hardpan and groundwater is deeper than 100 feet below existing site grades, MatriScope has concluded that the liquefaction potential of the soils beneath the site during strong earthquake ground shaking is minimal. Furthermore, because the project site is not located at or near any slopes, the risk of landsliding during an earthquake is considered low.

Notwithstanding the fact that damage to structure and risks to people from ground rupture and ground failure, including liquefaction, is highly unlikely at the project site, it is important to note that the design of all project structures would be required to adhere to the provisions of the 2013 CBC. The 2013 CBC contains provisions to safeguard against major structural failures or loss of life caused by earthquakes or other geologic hazards. In addition, Chapter 15.01, California Building Codes, of the Galt Municipal Code includes definitions, standards, and enforcement guidelines to ensure all new development comply with the CBC.

Conclusion

As a result of the above considerations, seismic activity in the area of the proposed project would not expose people or structures to substantial ground rupture, groundshaking, or liquefaction; and therefore, the impact is considered ***less than significant***.

Mitigation Measure(s)
None required.

4.6-2 Risks associated with substantial erosion or loss of topsoil. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Buildout of the proposed project would involve construction-related activities and, during the early stages of construction, topsoil would be exposed due to utility excavation, grading, and leveling of the site. Unless surface soils are mixed with subsurface soil

material during grading, impacts related to the loss of topsoil may occur. However, topsoil exposure would be temporary during site preparation and would cease once development of buildings and structures occurs.

Development of buildings and structures as well as landscaped ground cover would reduce the amount of exposed soil that may be lost or displaced due to wind. In addition, landscaping throughout the project site would reduce the amount of exposed soil. As such, development on the project site would preclude erosion, and erosion would not be considered an issue during operation of the project. Therefore, after grading and leveling and prior to overlaying the ground surface with structures, the potential exists for wind erosion to occur, which could affect the project area and potentially inadvertently transport eroded soils to downstream drainage facilities, causing a ***potentially significant*** impact to occur.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.6-2 *Prior to issuance of a grading permit, the project applicant shall submit, for the review and approval by the City of Galt Public Works Department, an erosion and sediment control plan that will utilize standard best management practices to limit the erosion effects during construction of the proposed project. Measures could include, but are not limited to:*

- *Hydro-seeding;*
- *Placement of erosion control measures within drainageways and ahead of drop inlets;*
- *The temporary lining (during construction activities) of drop inlets with "filter fabric" (a specific type of geotextile fabric);*
- *The placement of straw wattles along slope contours;*
- *Directing subcontractors to a single designation "wash-out" location (as opposed to allowing them to wash-out in any location they desire);*
- *The use of silt fences; and*
- *The use of sediment basins and dust palliatives.*

4.6-3 Risks to people and structures associated with unstable or expansive soils and use of on-site soils as engineered fill. Based on the analysis below and with implementation of mitigation, the impact is *less than significant.*

The proposed project includes annexation of approximately 504 acres and development of approximately 338 acres of land for mixed residential neighborhood uses, including low density, medium density, and high density residential, parks, open space, schools, and minor commercial and public facilities. The 338-acre portion of the project site proposed for development is known as Liberty Ranch. The "Future Growth Area" contains the UPRR tracks and two triangle parcels containing agricultural fields. The

remaining portion of the project site consists of non-participating properties, including several rural residences, Liberty Ranch High School, and Estrellita Continuation High School. It should be noted that a development plan for the non-participating properties does not currently exist.

Construction of the proposed roadways, residential development, and commercial development would require solid building surfaces. Expansive soils shrink and swell as a result of moisture changes, causing heaving and cracking of slabs-on-grade, pavements, and structures founded on shallow foundations.

The *Geotechnical Engineering Investigation* determined the Liberty Ranch project site consists of a combination of soils with low to medium expansive potential and near-surface soft clay/silt. Underlying the upper soft soils are stiff to very stiff clay and/or very dense silty sand to the maximum explored depths of six to 16.5 feet below the existing ground surface. According to the *Geotechnical Engineering Investigation*, although the site soils are generally considered as having low to medium expansion potential, the clayey soils, if encountered, are considered capable of exerting significant expansion pressures upon building foundations and concrete slabs. However, measures can be taken to reduce the effects of expansive soils on the project site, as provided in the *Geotechnical Engineering Investigation.*

Because expansive soils are present on-site and the use of stockpiled soils as engineered fill could be subject to certain limitations if not properly treated, a ***potentially significant*** impact would result if the recommendations contained in the *Geotechnical Engineering Investigation* are not incorporated into project grading and foundation plans.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impacts to a *less-than-significant* level.

Non-Participating Properties

4.6-3(a) *In conjunction with the submittal of development plans for the non-participating properties, the future project applicant shall submit a site-specific, design-level geotechnical report produced by a California Registered Geotechnical Engineer to the City of Galt Engineering Division for review and approval. The geotechnical report shall include, but would not be limited to, an analysis of the on-site geologic and seismic conditions, including soil sampling and testing, to determine whether expansive or unstable soils are located on the project site. Recommendations shall be included regarding project design measures to avoid risks to people and structures, including compliance with the latest CBC regulations, structural foundations, and grading practices.*

The design-level geotechnical report shall consider the results and recommendations of the Geotechnical Engineering Investigation,

Proposed Eastview Development, dated March 14, 2014, prepared for the proposed project. All recommendations in the design-level geotechnical report shall be incorporated into the project design and all grading and foundation plans, subject to review and approval by the City of Galt Engineering Division, to ensure that all geotechnical recommendations specified in the design-level geotechnical report are properly incorporated and utilized in the design.

Future Growth Area

4.6-3(b) *In conjunction with the submittal of development plans for the "Future Growth Area," the future project applicant shall submit to the City of Galt Engineering Division, for review and approval, a design-level geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer. The report shall include the recommendations in the report entitled, Geotechnical Engineering Investigation, Proposed Eastview Development, dated March 14, 2014. The design-level report shall address, at a minimum, the following:*

- *Compaction specifications for on-site soils;*
- *Sidewalk and pavement design;*
- *Structural foundations;*
- *Grading practices; and*
- *Expansive/unstable soils.*

It is the responsibility of the developer to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report. Proof that earthwork has been performed in accordance with the recommendations of the design-level geotechnical report shall be provided to the City of Galt Engineering Division.

Liberty Ranch

4.6-3(c) *Prior to approval of Grading Plans and issuance of grading permit for Liberty Ranch, the project applicant shall submit to the City of Galt Engineering Division, for review and approval, a design-level geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer. The report shall include the recommendations in the report entitled, Geotechnical Engineering Investigation, Proposed Eastview Development, dated March 14, 2014. The design-level report shall address, at a minimum, the following:*

- *Compaction specifications for on-site soils;*
- *Sidewalk and pavement design;*

- *Structural foundations;*
- *Grading practices; and*
- *Expansive/unstable soils.*

It is the responsibility of the developer to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report. Proof that earthwork has been performed in accordance with the recommendations of the design-level geotechnical report shall be provided to the City of Galt Engineering Division.

4.6-4 Risks associated with soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems. Based on the analysis below, the project would have *no impact.*

The proposed project would connect to the existing City wastewater collection infrastructure and be served by the City's Wastewater Treatment Plant. Therefore, the proposed project would not utilize a septic tank system and ***no impact*** would occur.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

The continuing buildout of developments in the City of Galt and surrounding areas would be expected to increase the need for surface grading and excavation, and, therefore, increase the potential for impacts related to soil erosion, unforeseen hazards, and exposure of people and property to earthquakes.

4.6-5 Cumulative increase in the potential for geological related impacts and hazards. Based on the analysis below, the project would have *no impact.*

Development of the proposed project would increase the number of structures that could be subject to the damaging effects of expansive soils. Site preparation would also result in temporary and permanent topographic changes that could affect erosion rates or patterns. However, potentially adverse environmental effects associated with geologic or soils constraints, topographic alteration, and erosion, are usually site-specific and generally would not combine with similar effects that could occur with other projects in Galt. Furthermore, all projects would be required to comply with the CBC, the City of Galt's General Plan, and other applicable regulations. Consequently, the proposed project would generally not be affected by, nor would it affect, other development approved by the City of Galt. Therefore, the project would have ***no impact*** related to cumulative geology and soils.

Mitigation Measure(s)
None required.

Endnotes

[1] City of Galt. *2030 Galt General Plan Policy Document*. April 2009.
[2] City of Galt. *2030 Galt General Plan Existing Conditions Report*. November 2005.
[3] City of Galt. *Draft Environmental Impact Report for the 2030 Galt General Plan.* July 2008.
[4] MatriScope Engineering Laboratories, Inc. *Geotechnical Engineering Investigation.* March 14, 2014.
[5] U.S. Department of Agriculture, Soil Conservation Service, S*oil Survey of Sacramento County, California*, 1993.
[6] U.S. Geological Survey. *Factors of Liquefaction.* Last modified August 18, 2006. Available at: http://geomaps.wr.usgs.gov/sfgeo/liquefaction/factors.html.