Appendix 3-I

Preliminary Geotechnical Assessment – Geosyntec Consultants

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25 July 2025

VIA EMAIL

Ronelle Candia
Dudek
605 Third Street
Encinitas, CA 92024

Subject: **Ventura Steel Site Location**
Ventura Compressor Station Modernization Project
Seismic Design Desktop Review
Ventura, California

Dear Ms. Candia

Geosyntec Consultants, Inc. (Geosyntec) is pleased to submit this letter report to Dudek presenting a summary of a desktop review completed for the Southern California Gas Company's (SoCalGas') proposed Ventura Compressor Station Modernization Project (Project) in Ventura, California to address comments from the California Public Utilities Commission's (CPUC) Data Request #1 dated 1/17/25 related to item DR 1.6. This letter report provides a summary of the desktop review, a discussion of the findings, an estimated site-class designation, and a preliminary seismic design category for the potential Ventura Steel site location identified by Dudek.

BACKGROUND

The objective of the desktop review is to evaluate anticipated subsurface conditions, geologic hazards, and estimate the seismic design category for the potential Ventura Steel site in response to requests made by the CPUC for the Proponent's Environmental Assessment (PEA). Based on discussions with Dudek, Geosyntec was requested to prepare a written summary detailing the following preliminary information related to the Soils and Geology component of the PEA, specifically the following bullets for the site of interest.

- Normal geologic information - soil types, depth to bedrock, depth to groundwater, etc.
- Landslide potential
- Rockfall hazards
- Fault crossing proximity
- Liquefaction potential
- Seismic design category

METHODOLOGY

Geosyntec performed a PEA-level desktop review to evaluate the anticipated subsurface conditions at the Ventura Steel site location provided to Geosyntec via GoogleEarth™ file on 22 May 2025. The desktop review included reviewing publicly available aerial imagery, published geologic maps of the immediate site areas, geologic literature, accessing the California Department of Transportation's (CalTrans) GeoDOG database, and utilizing the American Society of Civil Engineers (ASCE) Vs_{30} Hazard Tool and California Geological Survey (CGS) Map Sheet 48.

We understand the purpose of this desktop evaluation is for preliminary constructability and project planning purposes and should be re-evaluated using site-specific information once design and associated project components are further developed.

SITE AND GEOLOGIC CONDITIONS

Regional Geology

The potential Ventura Steel site is situated within the western margin of the Ventura Basin in the Transverse Ranges geomorphic province, which extends approximately 320-miles east from Point Arguello and San Miguel Island to the Pinto Mountains of the Mojave Desert. The Transverse Ranges province is characterized by a series of east-west-trending mountain ranges and valleys that are oblique to the predominant northwest-southeast structural fabric of southern California. This atypical orientation is the result of a restraining bend in the San Andreas fault system that has rotated and compressed the region into its current configuration. The compression has resulted in folding, thrust and reverse faulting, and rapid regional uplift with a similar east-west trend.

The Ventura Basin consists of an elongated sedimentary trough that developed within an east-west trending syncline, with its fold axis roughly parallel to the Santa Clara River. Locally, the basin is situated between the Red Mountain fault zone (RMFZ) to the north and the Oak Ridge fault to the south and extends from eastern Piru to Ventura before continuing offshore beneath the Santa Barbara Channel. Sedimentation within the basin began in the early Miocene (22 million years ago [mya]) during crustal stretching and consists of a thick sequence of marine and non-marine sediments and bedrock including shale, sandstone, and conglomerate. The onshore portion of the basin was later uplifted during the Pleistocene to its present configuration. A regional geologic map and the approximate limits of the potential Ventura Steel site, is presented in Figure 1.

Seismic Setting

Faults in California are generally classified as "Holocene-active," "Pre-Holocene active," and "age-undetermined." The division of these major groups is based on criteria by the CGS for the Alquist-Priolo Earthquake Fault Zoning Program [CGS, 2018]. By definition, a Holocene-active fault is one that has experienced displacement within the Holocene (last 11,700 years). A Pre-Holocene fault has evidence of displacement prior to the last 11,700 years, and an age-undetermined fault has either not been studied or the results were inconclusive regarding the age of displacement.

The Ventura Basin lies within a seismically complex region of the Transverse Ranges and is bordered by the Red Mountain fault zone (RMFZ) and Oak Ridge fault. The RMFZ extends northwest in a series of en echelon side-stepping reverse faults and continues offshore, paralleling the Mission Ridge and Santa Ynez fault zones, and the offshore Pitas Point fault. The Pitas Point and RMFZ onshore-offshore system is characterized by high rates of Pliocene-Quaternary fault slip and may be capable of generating frequent large earthquakes [Sorlien et al., 2000]. The Oak Ridge fault delineates the southern boundary of the Ventura Basin, extends onshore from the Santa Barbara Channel, and trends northeast to the Santa Susana Mountains. The Oak Ridge fault is the longest south-dipping reverse/thrust fault in the western Transverse Ranges, which contrasts the region's predominantly north-dipping reverse faults [Yeats, 1988]. The RMFZ and Oakridge fault have absorbed significant strain during the clockwise rotation and crustal shortening in the Transverse Ranges throughout the Miocene [Sorlien et al., 2000], making them potential sources of seismic hazards in the Ventura Basin.

The RMFZ (South Strand) and Ventura fault are the closest major Holocene-active faults to the Ventura Steel site. The RMFZ is a well-constrained series of reverse faults that trend south from Ojai Valley, continue northwest subparallel to the Pacific Ocean coastline, and extend offshore south of Carpinteria. Estimated slip rates on the RMFZ are between 1.0 millimeters per year (mm/yr) and 5.0 mm/yr [Treiman, 2006]. According to the Uniform California Rupture Forecast, Version 3 [UCERF3, Field et al., 2015], the RMFZ (South Strand) has a mean 30-year probability of an earthquake equal to or greater than 6.7 moment magnitude (**M**) (30 Year **M**≥6.7 probability) of 3.00 percent, a mean 30 Year **M**≥7.0 probability of 2.42 percent, and a mean 30 Year **M**≥7.5 probability of 0.13 percent. The mean 30 Year **M**≥8.0 probability was not recorded. The onshore Ventura fault is a well-constrained, north-dipping, reverse fault that extends approximately 8.1 miles east from the Pacific Ocean along the southern base of Ventura's foothills. Recent studies indicate the Ventura fault has a slip rate between 0.2 mm/yr and 1.0 mm/yr and is likely an extension of the offshore Pitas Point fault [Perry and Bryant, 2017]. According to UCERF3, the Ventura fault has a mean **M**≥6.7 probability of 1.42 percent, a mean 30 Year **M**≥7.0 probability of 1.40 percent, a mean 30 Year **M**≥7.5 probability of 0.97 percent, and a mean 30 Year **M**≥8.0 probability of <0.01 percent.

Other Holocene-active faults closest to the potential Ventura Steel site include the Javon Canyon fault to the northwest and the Faults near Oakview and Meiners Oaks to the north. Regional Holocene-active faults in the vicinity of the potential sites of interest include the Northridge blind thrust to the east and the San Andreas fault zone to the north. The closest pre-Holocene fault to the potential site includes a moderately constrained unnamed fault immediately south of the Project site, which extends approximately 2.3 miles west from the foothills of northern Ventura, and into the foothills to the west. These faults, with their respective distances from the sites and UCERF3 participation probabilities, are presented in Table 1 on the following page. The locations of regional faults are shown on Figure 2.

Table 1. Summary of Nearby Faults

Fault Name	Distance and Direction from Ventura Steel Site[1]	Mean 30 Year Participation Probability (%)[2]			
		M≥ 6.7	M≥ 7.0	M≥ 7.5	M≥ 8.0
Unnamed fault in California	1.6 miles NE	NR	NR	NR	NR
Ventura-Pitas Point	2.3 miles S	1.42	1.40	0.97	<0.01
Red Mountain fault zone (South Strand)	5.8 miles NW	3.00	2.42	0.13	NR
Javon Canyon	5.8 miles NW	NR	NR	NR	NR
Sisar	6.5 miles NE	0.60	0.60	0.53	<0.01
Faults near Oakview and Meiners Oaks	5.7 miles NE	NR	NR	NR	NR
San Cayetano	13.2 miles NE	1.69	1.58	0.82	<0.01
Santa Ynez	13.9 miles N	1.37	1.30	0.54	NR
Mission Ridge fault system (Mission Ridge section)	19.8 miles NW	0.64	0.59	0.49	NR
Pine Mountain	20.7 miles NE	0.42	0.24	0.04	NR
Oak Ridge (Bardsdale section)	19.8 miles E	1.90	1.54	1.05	<0.01
Big Pine fault zone	25.3 miles N	0.32	0.15	0.05	NR
Northridge	33.7 miles NE	0.85	0.79	0.50	<0.01
San Gabriel fault zone	37.6 miles NE	0.59	0.57	0.52	0.03
San Andreas fault zone	39.2 miles NE	17.03	16.97	16.82	6.61

Notes:
1. Distances from site noted are the closest distance to the surface trace or inferred projection of the fault as measured from mapped traces in the USGS Quaternary Fault and Fold Database of the United States (USGS, 2017).
2. As reported by the "According to the Uniform California Earthquake Rupture Forecast", Version 3 (UCERF3, Field et al., 2015). "NR" = Not Reported

Surface Conditions

The Ventura Steel site location is located approximately 2.7 miles north of U.S. Route 101 and 0.3 miles east of Highway 33/Shell Road. The site is bound by foothills to the east and E. Shell Road, North Ventura Ave, and Hartman Turnoff to the south, west, and north, respectively. Based on aerial imagery, the site consists of oil well pumps, valve stations, and various equipment. The ground surface is relatively flat and gently slopes to the west. The Ventura Steel site is underlain by Holocene-age stream terrace deposits of unconsolidated clayey sand and sandy clay with gravel [Tan et al, 2003].

GEOLOGIC HAZARDS

Fault Ground Rupture

Seismically induced fault surface rupture occurs as the result of differential movement across a fault that propagates to the ground surface. The potential for fault surface rupture is generally considered to be significant along "Holocene active" faults and to a lesser degree along "Pre-Holocene active" faults [CGS, 2018]. A review of published geologic maps did not identify the presence of an active fault crossing or projecting towards the potential site [CDMG, 1998]; however, the United States Geological Survey (USGS) Quaternary Fold and Fault Database and CGS fault activity map viewer, indicates the presence of a moderately constrained pre-Holocene (late Quaternary) unnamed fault segment immediately south of the Project site that trends east-west across the Ventura River Valley. While the unnamed fault is considered a potential source for fault related ground rupture by definition, given the "Pre-Holocene active" designation, no readily available information regarding the unnamed fault is available. Furthermore, the unnamed fault segment is not mapped as being laterally continuous beyond the limits of the Ventura River valley and is not identified in other published geologic maps [Tan et al, 2003] or within the CGS earthquake hazard maps [CGS, 2003] and may be representative of a non-seismic lineament such as the Ventura anticline which extends along a similar trend as the unnamed fault. Given the lack of additional information and other stated observations described herein, the potential for fault ground rupture associated with the unnamed fault or other nearby faults is considered low.

Strong Ground Shaking

The potential site is located in a seismically active region and will likely experience moderate to severe ground shaking due to a large magnitude earthquake that occurs on a local or regional active fault during the proposed compressor station's expected lifespan. Therefore, seismically induced ground shaking resulting from an earthquake on a nearby active fault, such as the RMFZ, or a regional fault like the Santa Ynez or San Andreas fault zones, is considered to be the major geologic hazard affecting the Project.

Landslide and Rockfall

Landslides within the Ventura area are abundant due to rapid uplift and deformation of sedimentary formational deposits that range greatly in consistency from unconsolidated to well indurated. Specific formational units such as the Santa Barbara and Pico Formations are typically more prone to landsliding following periods of above average rainfall or seismic shaking from near or more distant seismic sources.

According to the California Geological Survey (CGS; Figure 3) Earthquake Zones of Required Investigation, Ventura Quadrangle map [CGS, 2003], the potential Ventura Steel site is not located within mapped landslide zones, and due to the relatively flat conditions at each site, the risk of slope instability associated with landslides is considered low.

Rockfall hazards are typically associated with unstable rock outcrops on steep terrain that undergo climatic or biological changes, which include pore pressure, freeze-thaw cycles, root growth, and weathering. Topography within the Project's mapped buffer zone (Figure 5) does not include slopes that exceed 60 degrees, therefore, rockfall hazards are considered low.

Liquefaction

Seismically induced liquefaction is a phenomenon where saturated soils lose a significant portion of their strength and gain some mobility due to seismic shaking or other large cyclic loading. The material types most susceptible to liquefaction are loose to medium-dense granular soils and low plasticity fine-grained soils. A rapid increase in groundwater pressures (excess pore water pressure) leads to the loss of soil strength. Signs of soil liquefaction may include a loss of bearing capacity beneath foundations, surface settlements, tilting in level ground, and instabilities in sloping areas. Soil liquefaction can also result in increased lateral and uplift pressures on buried structures, e.g., lightweight or unrestrained buried structures may float upward to the ground surface during a liquefaction event. Other factors, such as soil mineralogy, void ratio, and age, contribute to liquefaction susceptibility. Generally, the older or denser a deposit, the less susceptible it is to liquefaction.

According to the CGS Earthquake Zones of Required Investigation, Ventura Quadrangle [CGS, 2003], the Ventura Steel site is located within mapped liquefaction zones. Based on groundwater data obtained from the California Department of Water Resources (DWR), depth to water table estimates (Figure 6), and the proximity to the Ventura River suggest groundwater is moderately shallow (10 feet below ground surface [ft bgs] to 20 ft bgs) at these sites. Therefore, the liquefaction potential at the Ventura Steel site is considered moderate; however, Geosyntec recommends obtaining site-specific subsurface data to provide a more accurate geotechnical design.

SITE CLASS ESTIMATION

Site class designations categorize the soil and rock conditions at sites evaluated through geotechnical field investigations. These investigations generally include, but are not limited to, standard penetration tests (SPTs), geotechnical lab testing, and geophysical surveys (i.e., shear wave velocity [Vs_{30}]). Where site-specific data are not available to a depth of 100 feet (30 meters), soil properties are estimated based on assumed subsurface geologic conditions.

Based on Geosyntec's desktop review and project understanding, site-specific geotechnical investigations or geotechnical subsurface data is not currently available at the potential Ventura Steel site. Due to limited subsurface data, site class designations were estimated based on topographical and geomorphological features, the averaged Vs_{30} data calculated with CGS Map Sheet 48, and the professional experience of Geosyntec. Vs_{30} results are compared with Table 20.3-1 ASCE 7-16 [ASCE, 2016] and used to estimate the site classification. Depth to bedrock estimates are presented on Figure 7.

Averaged Vs_{30} data for the Ventura Steel site location from CGS Map Sheet 48 (~1,155 ft/s, Figure 9 and 10) indicates that the site is estimated as Site Class D. Additionally, due to the geomorphological features within the broad Ventura River Valley, it is Geosyntec's professional opinion that the depth to sedimentary bedrock is deeper than the surrounding foothills. Stiff soils are anticipated within the upper 100 feet. Therefore, Site Class D is estimated for the Devil's Canyon and Ventura Steel sites.

SEISMIC DESIGN CATEGORY

Based on the values presented in Table 2 below, the S_1 value was reported at greater than 0.75 for the proposed site location. In accordance with ASCE 7-16, Section 11.4.8, and 2022 CBC Section 1613.2.5, the Seismic Design Category was estimated as E for Type III risk structures, and F for Type IV risk structures. Geosyntec recommends these estimations be re-evaluated as part of detailed project design with a site-specific geotechnical investigation.

The seismic ground motion values listed in Table 2 were derived in accordance with the ASCE 7-16 Standard[1] and the 2022 California Building Code (CBC)[2]. Using the estimated site class and the project location, the following site coefficients and parameters were calculated using the ASCE 7 Hazard Tool[3] online application:

Table 2: Seismic Ground Motions and Seismic Design Category

PARAMETER	Ventura Steel
Estimated Site Class	D
Latitude, Longitude	34.31696; -119.287889
Mapped Spectral Response Acceleration Parameter, S_1	0.779
Design Spectral Response Acceleration, Parameter S_{DS}	1.377
Design Spectral Response Acceleration, Parameter S_{D1}	Note 1
Peak Ground Acceleration PGA_M	0.998
Seismic Design Category (Note 2) Risk Category III Risk Category IV	 E F

Notes:

1) Requires site specific ground motion hazard analysis.
2) In accordance with CBC, sites with S_1>0.75 will be designated as SDC E and F for Type III and IV structures, respectively.

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[1] American Society of Civil Engineers (ASCE), 2016. "Minimum Design Loads and Associated Criteria for Buildings and Other Structures" ASCE Standard 7-16

[2] California Building Code, 2022. Title 24, Part 2, Volume 2.

[3] ASCE Hazard Tool, 2025. https://ascehazardtool.org. Accessed 19 March 2025

LIMITATIONS

The desktop review for the project site was based on publicly available information. The recommendations made herein are based on the assumption that soil conditions do not deviate appreciably from those identified in the available referenced documents. This desktop review has been prepared in accordance with current practices and the standard of care exercised by scientists and engineers performing similar tasks in this area. The conclusions contained in this report are based solely on the analysis of the conditions observed by Geosyntec personnel. We cannot make any assurances concerning the completeness of the data presented to us.

No warranty, expressed or implied, is made regarding the professional opinions expressed in this report. Geosyntec is not liable for any use of the information contained in this report by persons other than Dudek or their subconsultants, or the use of information in this report for any purposes other than referenced in this report without the expressed, written consent of Geosyntec.

California, including Ventura County, is an area of high seismic risk. It is generally considered economically unfeasible for construction-related excavations to resist earthquake loadings without damage. Proposed structures designed in accordance with the recommendations presented in this report could experience limited distress/damage if subjected to strong earthquake shaking.

Sincerely,

Cory Russell, PE, GE
Senior Geotechnical Engineer

Alexander Greene, PG, CEG
Senior Principal Engineering Geologist

FIGURES
Figure 1 – Regional Geologic Map
Figure 2 – Regional Fault Map
Figure 3 – Earthquake Fault and Seismic Hazard Zones
Figure 4 – Landslides
Figure 5 – Rockfall Map
Figure 6 – Depth to Groundwater
Figure 7 – Depth to Bedrock
Figure 8 – Ventura Steel Site V_{S30} Map Sheet

ATTACHMENTS
Attachment A – ASCE 7 Hazard Tool Output

REFERENCES

Bryant, W.A. and Hart E.W., 2007. "Fault-Rupture Hazard Zones in California – Interim Revision 2007," CDMG, Special Publication 42.

California Division of Mines and Geology (CDMG), 1998. "Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada." Prepared for International Conference of Building Officials to be used with 1997 UBC, February.

California Department of Transportation (Cal Trans). GeoDOG – Digital Archive of Geotechnical Data, https://geodog.dot.ca.gov. Accessed 19 March 2025

California Geological Survey (CGS), 2018. "Earthquake Fault Zones, A Guide For Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California," Special Publication 42.

California Geological Survey (CGS), 2003. "Seismic Hazard Zone Report for the Ventura 7.5-Minute Quadrangle, Ventura County, California", Seismic Hazard Zone Report 067. Online viewer accessed on 19 May 2024. Earthquake Zones of Required Investigation

CGS Map Sheet 48: Shear-wave Velocity in Upper 30m of Surficial Geology (VS30). https://gis.data.cnra.ca.gov/datasets/cadoc::cgs-map-sheet-48-shear-wave-velocity-in-upper-30m-of-surficial-geology-vs30/explore. Accessed 19 March 2025.

GoogleEarth™, 2025. Aerial imagery, January 2025, www.googleearth.com.

Perry, S., and Bryant, W.A., compilers, 2002, Fault number 91, Ventura fault, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 05/22/2025 02:31 PM.

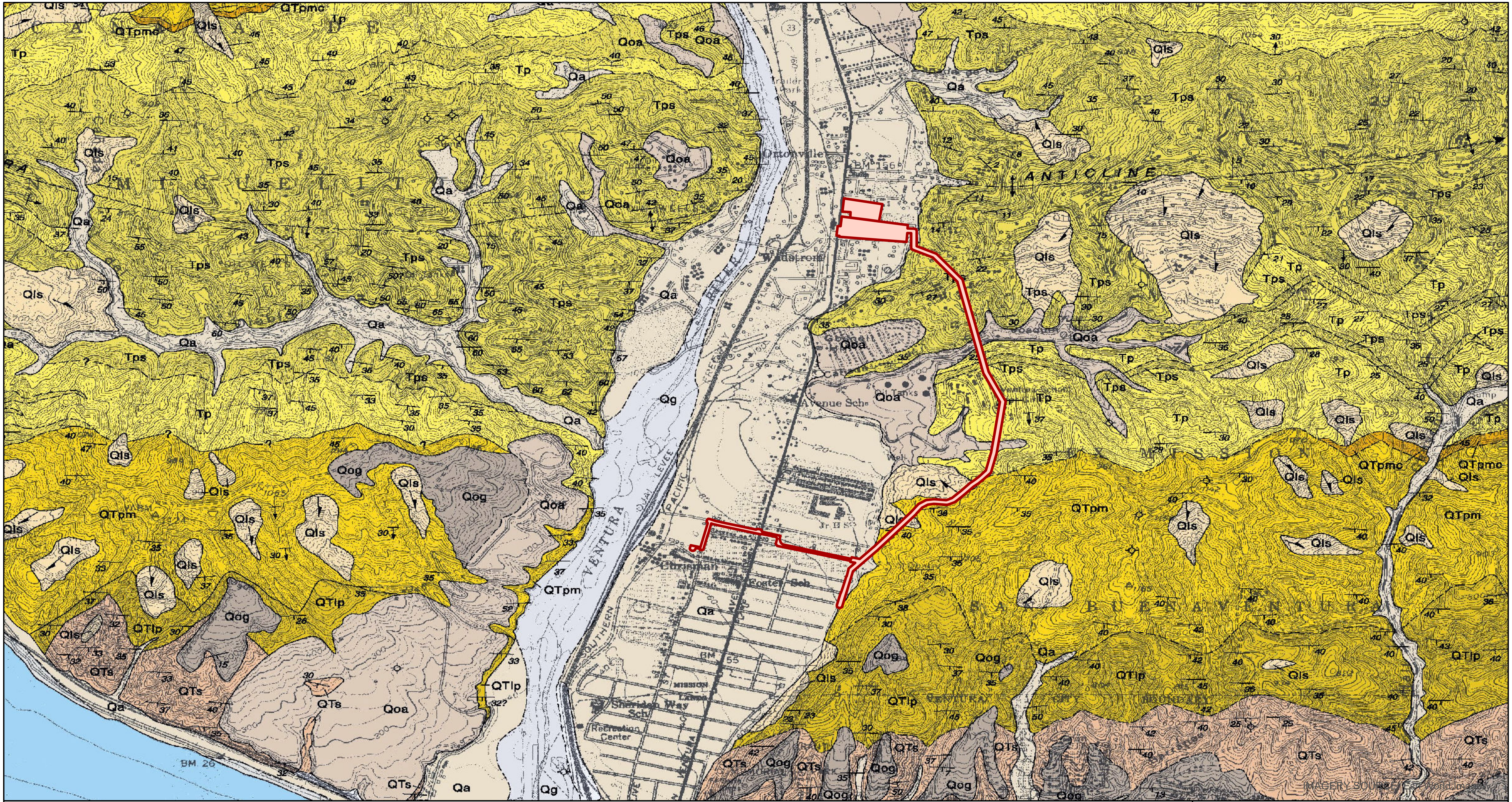
Sorlien C., Gratier J., Luyendyk B., Hornafius J., Hopps T., 2000. Map Restoration of Folded and Faulted Late Cenozoic Strata Across the Oak Ridge Fault, Onshore and Offshore Ventura Basin, California, Geological Society of America Bulletin.

Tan, Siang S., Jones, Terry, A., Clahan, Kevin, B., 2003. "Geologic Map of the Ventura 7.5' Quadrangle, Ventura County, California: A Digital Database," California Geological Survey.

Treiman, J.A., compiler, 2006, Fault number 90, Red Mountain fault zone, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 05/22/2025 01:29 PM.

Yeats, R. S., 1988, Oak Ridge Fault, Ventura Basin, California; Slip Rates and Late Quaternary History, U.S. Geological Survey Open-File Report 89-34.

FIGURES



af: Artificial fill (Surficial Sediments)
Qs: Beach sand deposits (Surficial Sediments)
Qg: Stream channel deposits of gravel, sand and silt (Surficial Sediments)
Qa: Alluvium; unconsolidated floodplain deposits of silt, sand and gravel (Surficial Sediments)
Qls: Landslide Debris
Qoa: Remnants of weakly consolidated older alluvial deposits of gravel, sand and silt (Older Dissected Surficial Sediments)
Qog: Cobble-boulder fan gravel and fanglomerate deposits composed largely of sandstone detritus (Older Dissected Surficial Sediments)
QTs: Weakly consolidated alluvial deposits; gray to tan cobble-pebble gravel of mostly sandstone and some siliceous shale detritus in light brown sandy matrix; contains shell fragments at Grant Park and westward (Saugus Formation: Nonmarine to littoral marine; early (?) Pleistocene age)
QTlp: Weakly indurated tan to yellowish-brown fossiliferous sand; includes pebbly sand strata with pebbles of siliceous shale and hard sandstone (Las Posas Sandstone: Marine regressive; early Pleistocene age)

QTpm: Mudpit Claystone Member (Santa Barbara Formation of Yerkes, et al, 1987; Yeats and Grigsby, 1987, Grigsby, 1988) early Pleistocene to possible late Pliocene age, massive to vaguely bedded gray claystone or mudstone; includes **QTpmc** light gray sandstone and conglomerate with pebbles of hard sandstone and shite siliceous shale (Pico Formation: Marine; Pliocene and Pleistocene ages)
Tp: Pico Formation, mostly gray claystone, vaguely bedded, and few thin strata of sandstone (Pico Formation: Marine; Pliocene and Pleistocene ages)
Tps: Pico Formation, mostly light gray to tan sandstone, well bedded, in some places pebbly; includes some interbedded claystone, as above (Pico Formation: Marine; Pliocene and Pleistocene ages)
Tpsc: Sandstone as above, and conglomerate of pebbles and cobbles of hard sandstone (Pico Formation: Marine; Pliocene and Pleistocene ages)
Tpr: "Repetto" Member; gray claystone similar to Tp, contains microfauna of early Pliocene (Repettian Stage of Grigsby, 1988) (Pico Formation: Marine; Pliocene and Pleistocene ages)
GEOLOGY SOURCE: Dibblee and Ehrenspeck, 1988. "Geologic map of the Ventura and Pitas Point quadrangles, Ventura County, California", 1:24,000, California Division of Mines and Geology

Site Boundary

N

0 1,000 2,000 4,000
Feet

Regional Geologic Map

Ventura Steel Site
Ventura Compressor Station
Modernization Project
Ventura, California

Geosyntec consultants

Figure 1

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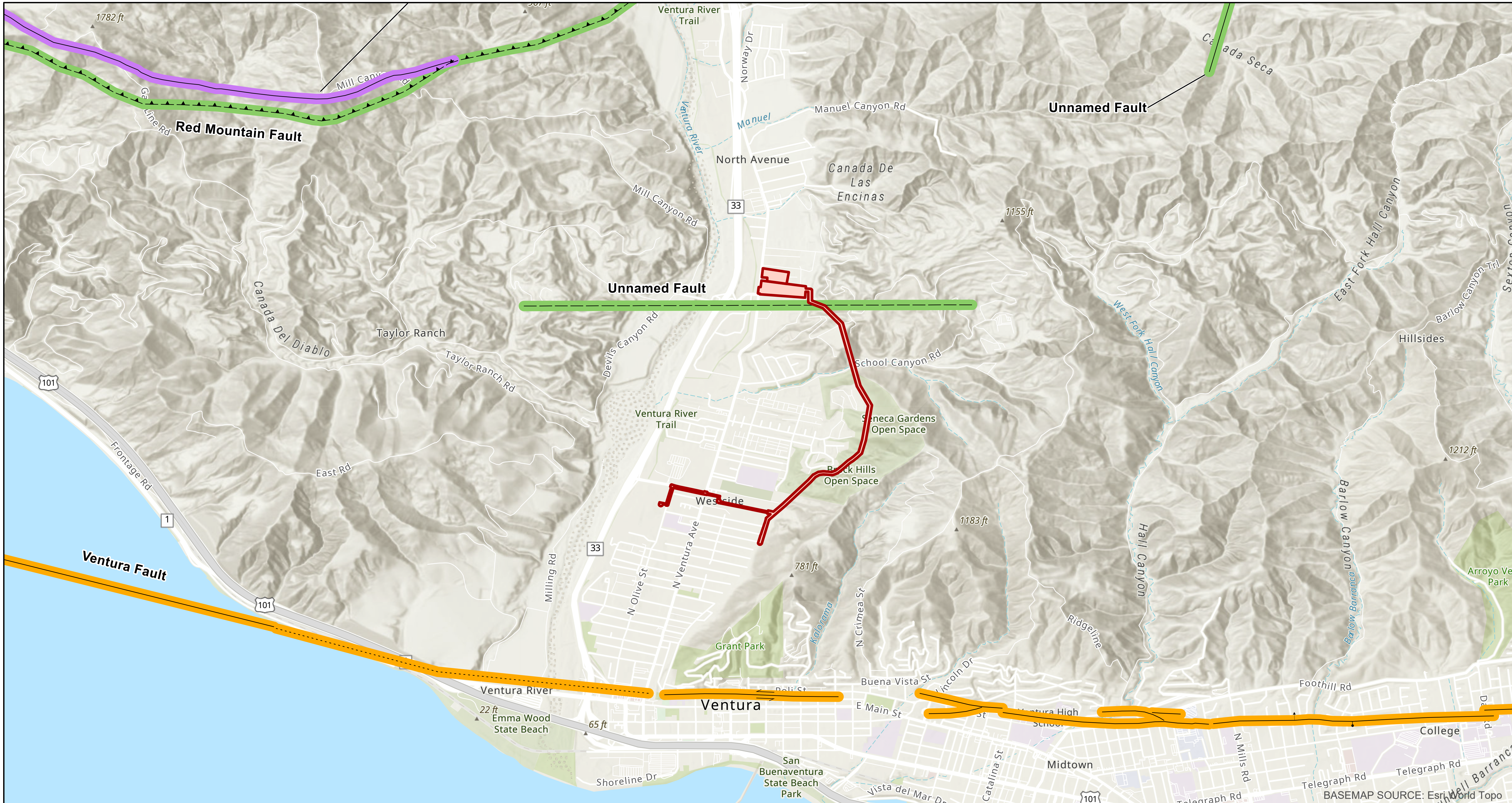

Holocene displacement (< 15,000 years)
- Mapped Fault Location
- Dashed were Approximated
- Concealed

Late Quaternary displacement (< 750,000 years)
- Mapped Fault Location
- Dashed were Approximated
- Concealed

Quaternary & unspecified displacement (< 1,600,000 years)
- undifferentiated Quaternary Well Constrained
- undifferentiated Quaternary Moderately Constrained
- undifferentiated Quaternary Inferred
- Site Boundary

SOURCE:
- Faults: Fault Activity Map of California, CGS (California Geological Survey) Jennings and Bryant, 2010

Additional Fault Symbols:
- Bar and ball on downthrown side (relative or apparent)
- Arrows along fault indicate relative or apparent direction of lateral movement
- Arrow on fault indicates direction of dip
- Low angle fault (barbs on upper plate). Fault surface generally dips less than 45 degrees but locally may have been subsequently steepened. On offshore faults, barbs simply indicate a reverse fault regardless of steepness of dip.

N

0 1,500 3,000 6,000
Feet

Regional Fault Map

Ventura Steel Site
Ventura Compressor Station
Modernization Project
Ventura, California

Geosyntec consultants

Figure 2

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Liquefaction Zone
Landslide Zone
Alquist-Priolo Earthquake Fault Zone
Alquist-Priolo Earthquake Fault Trace
Site Boundary

SOURCE: Seismic hazard datasets were compiled and published by the California Geologic Survey in 2023.

N

0 1,000 2,000 4,000
Feet

Earthquake Fault and Seismic Hazard Zones

Ventura Steel Site
Ventura Compressor Station
Modernization Project
Ventura, California

Geosyntec consultants

Figure
3

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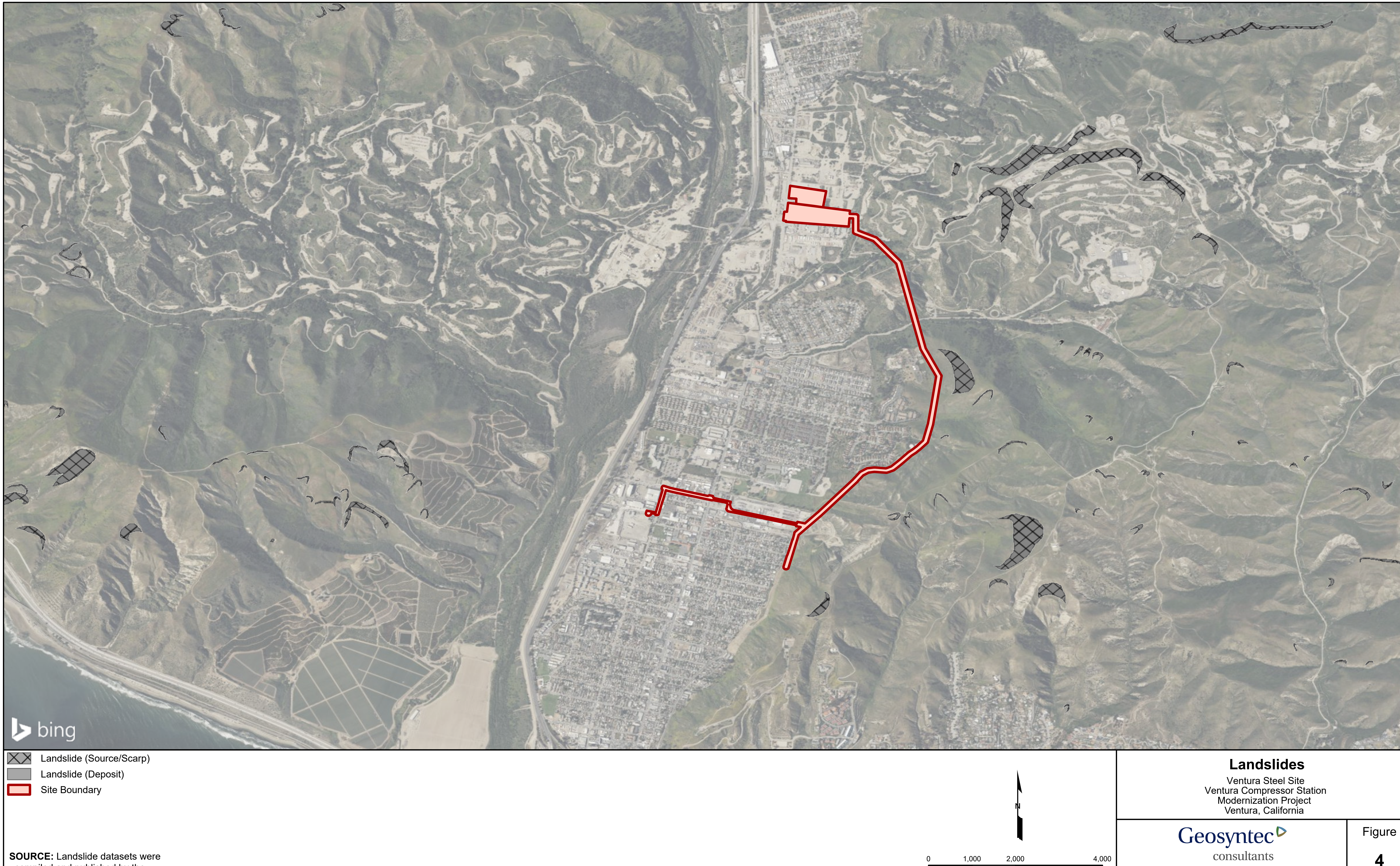

SOURCE: Landslide datasets were compiled and published by the California Geologic Survey.

Landslides

Ventura Steel Site
Ventura Compressor Station
Modernization Project
Ventura, California

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Figure 4

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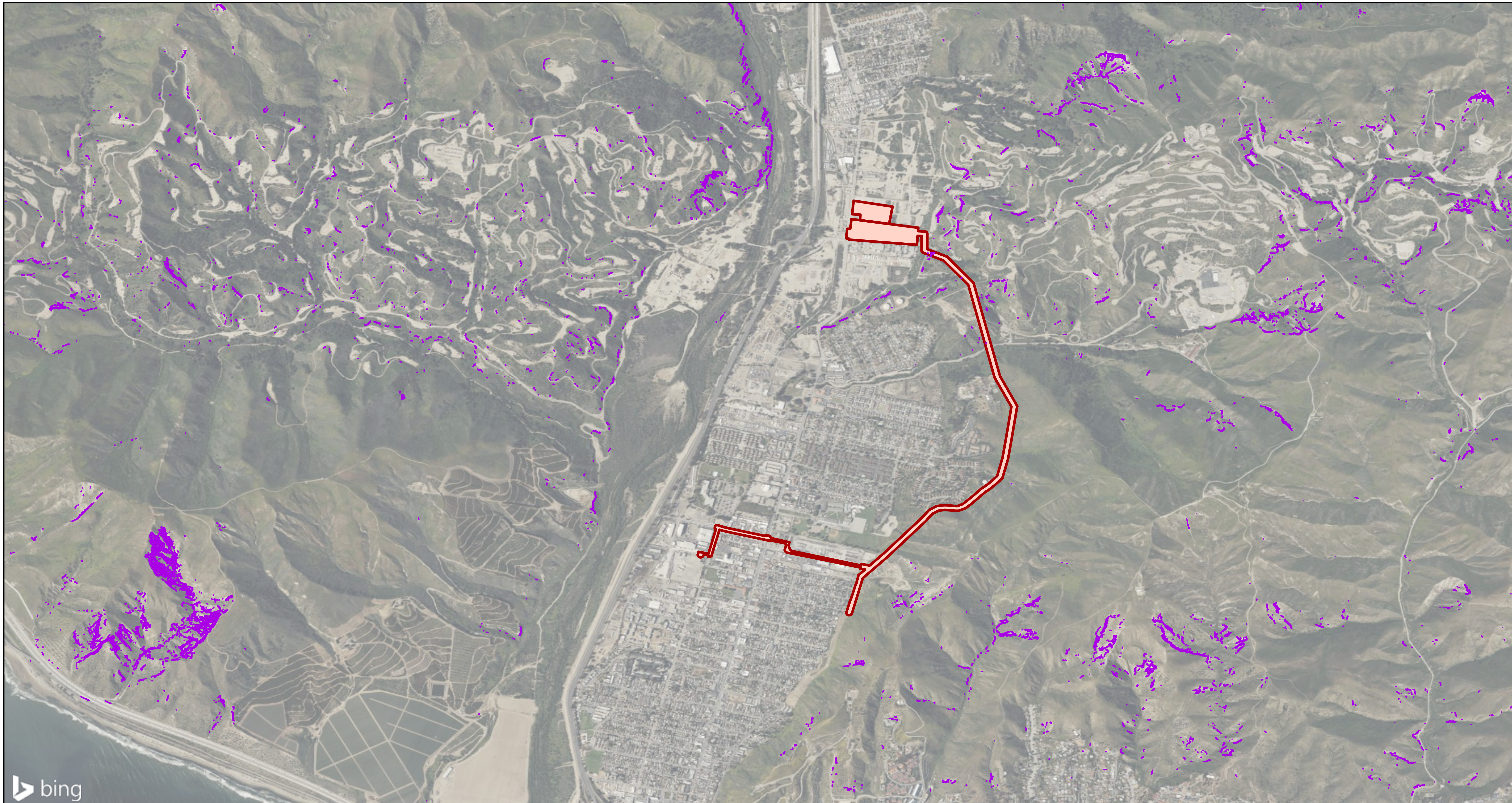

Area with Slope Greater than 60 Degrees

Site Boundary

N

0 1,000 2,000 4,000

Feet

SOURCE: Slope areas created from UGSG elevation data.

Rockfall Hazards

Ventura Steel Site
Ventura Compressor Station
Modernization Project
Ventura, California

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Figure 5

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Estimated Depth to Groundwater

- 10-20 ft bgs
- >40 ft bgs
- Site Boundary

SOURCE: Depth to groundwater grossly approximated based on California Geologic Survey geology data and basic hydrogeology principles.

bgs: below ground surface

N

0 1,000 2,000 4,000
Feet

Depth to Groundwater

Ventura Steel Site
Ventura Compressor Station
Modernization Project
Ventura, California

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San Diego	July 2025	Figure 6

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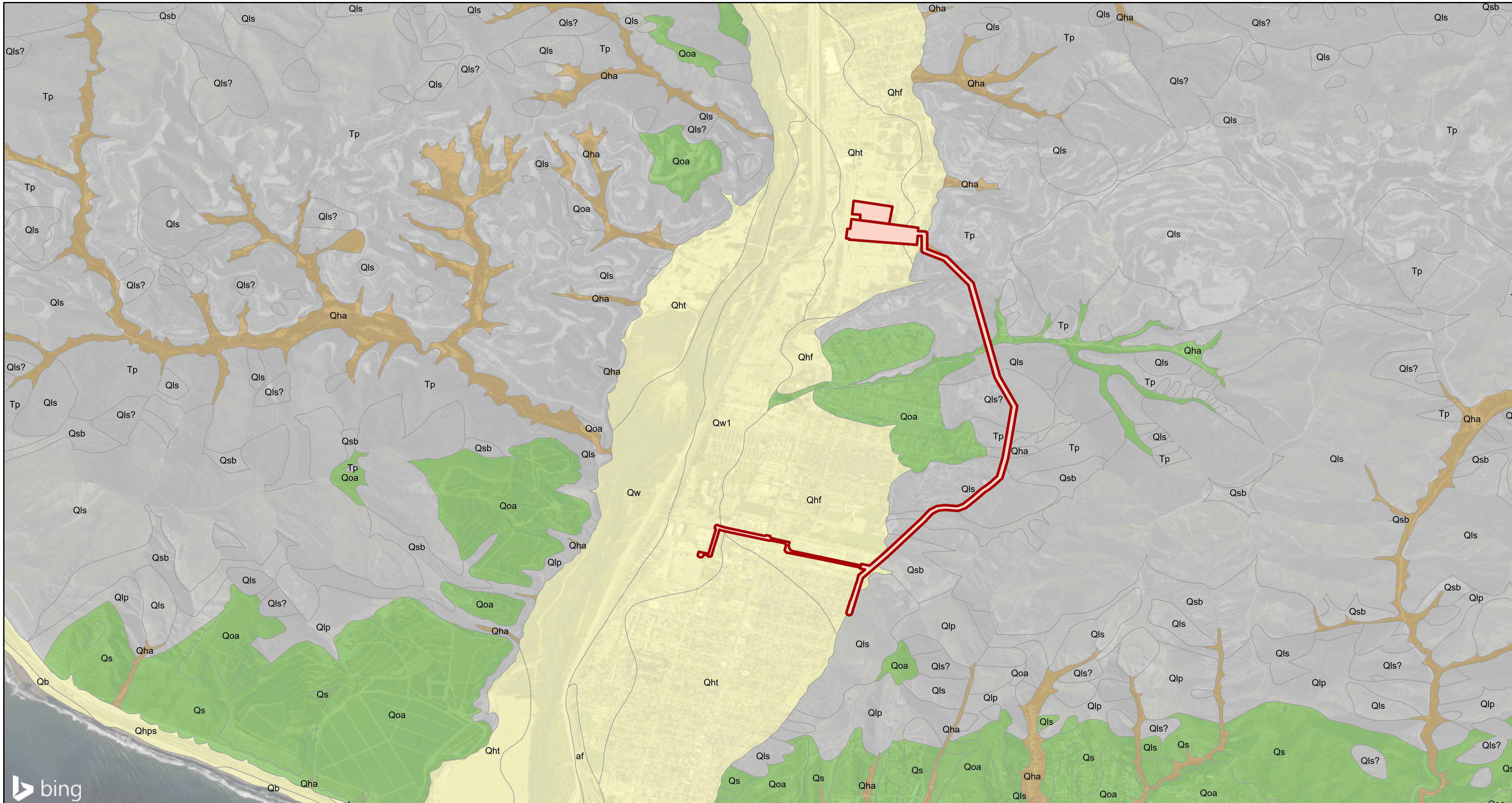


Estimated Depth to Bedrock

- 0-5 ft bgs
- 10-75 ft bgs
- 20-100 ft bgs
- 20-300 ft bgs
- Site Boundary

SOURCE: Depth to bedrock grossly approximated based on California Geologic Survey geology data and basic hydrogeology principles.

bgs: below ground surface

N

0 1,000 2,000 4,000
Feet

Depth to Bedrock
Ventura Steel Site
Ventura Compressor Station
Modernization Project
Ventura, California

Geosyntec consultants

San Diego | July 2025

Figure 7

\\az-ctxfs-t3\SDC\PRJ\SC1584_Ventura\PROJECT\SC15841_Ventura_Report\SC15841_Ventura_Report.aprx\SC1584_Ventura_Fig7_Bedrock_VS 6/6/2025 8:46 PM Matthew.Murchison

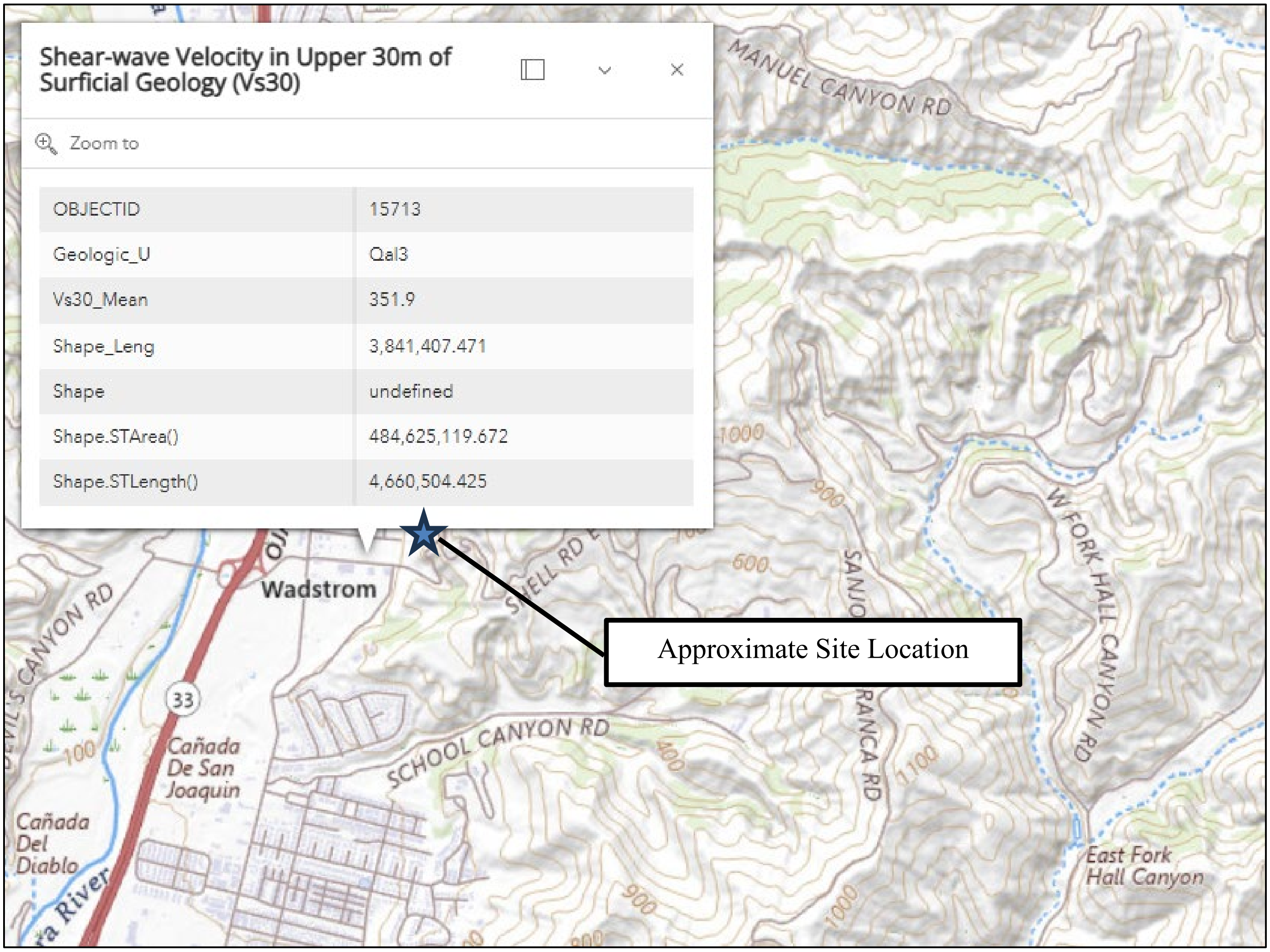


FIGURE 8 – VENTURA STEEL SITE V_{S30} MAP SHEET

ATTACHMENT A

ASCE 7 Hazard Tool Output

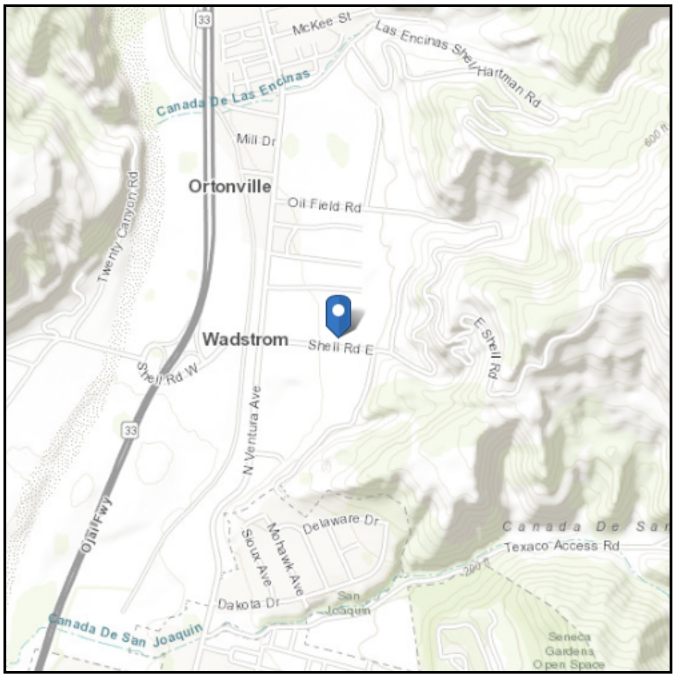
AMERICAN SOCIETY OF CIVIL ENGINEERS

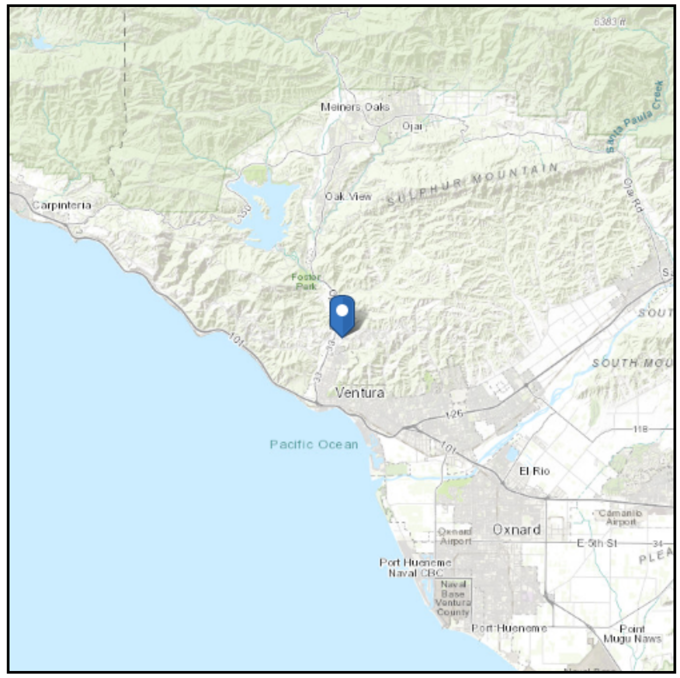
ASCE Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: III
Soil Class: D - Stiff Soil

Latitude: 34.31696
Longitude: -119.287889
Elevation: 160.5996361004743 ft (NAVD 88)





Seismic

Site Soil Class: D - Stiff Soil

Results:

S_S :	2.065	S_{D1} :	N/A
S_1 :	0.779	T_L :	8
F_a :	1	PGA :	0.908
F_v :	N/A	PGA_M :	0.998
S_{MS} :	2.065	F_{PGA} :	1.1
S_{M1} :	N/A	I_e :	1.25
S_{DS} :	1.377	C_v :	1.5

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Thu Mar 20 2025

Date Source: USGS Seismic Design Maps

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