Allan E. Seward Engineering Geology, Inc., "Geology/Geotechnical Report" (January 2005)

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ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
Geological And Geotechnical Consultants

GEOLOGIC/GEOTECHNICAL REPORT

EIR-Level Review of Preliminary Grading Study for Western Access Roads to Proposed Mission Village Development (VTTM 61105)

Newhall Ranch
Castaic, California

Prepared for:

The Newhall Land and Farming Company
23823 Valencia Boulevard
Valencia, California 91355

Job No: 05-2023C-9
Dated January 17, 2005

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January 17, 2005 Job No.: 05-2023C-9

The Newhall Land and Farming Company
23823 Valencia Boulevard
Valencia, California 91355

Attention: Mr. Corey Harpole

Subject: **GEOLOGIC/GEOTECHNICAL SUMMARY REPORT**
EIR Level Review of Preliminary Grading Study for Western Access Roads to Proposed Mission Village Development (VTTM 61105)

Project: Mission Village – VTTM 61105 (Formerly referred to as "Mesas East")
Newhall Ranch
Castaic, California

Dear Mr. Harpole:

This geologic and geotechnical evaluation of the Preliminary Grading Study is provided for incorporation into an Environmental Impact Report (EIR). The Preliminary Grading Study consists of three proposed road segments; 1) Magic Mountain Parkway; 2) Valencia Boulevard; and 3) Long Canyon Road; which provide further access to the proposed Mission Village Development (VTTM 61105). This summary report presents our opinions regarding the existing geologic and geotechnical conditions and their effects on the future development of the site.

1.0 SCOPE OF INVESTIGATION

The purpose of this report is to summarize the Geologic and Geotechnical conditions in the immediate vicinity of the three proposed road segments and provide general recommendations for the proposed use for submittal with an Environmental Impact Report. Some additional subsurface explorations and detailed Geologic and Geotechnical analyses will be required to address specific items covered in this report prior to submittal at the Tentative Tract Map stage. Recommendations for future potential development of these areas for residential or commercial use are not a part of this investigation. Geologic and

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Geotechnical constraints that would apply to such future development will require additional review and analysis.

Our study included the following:

1. Review of in-house data compiled by this office.

2. Review of the published references listed in **Appendix A**.

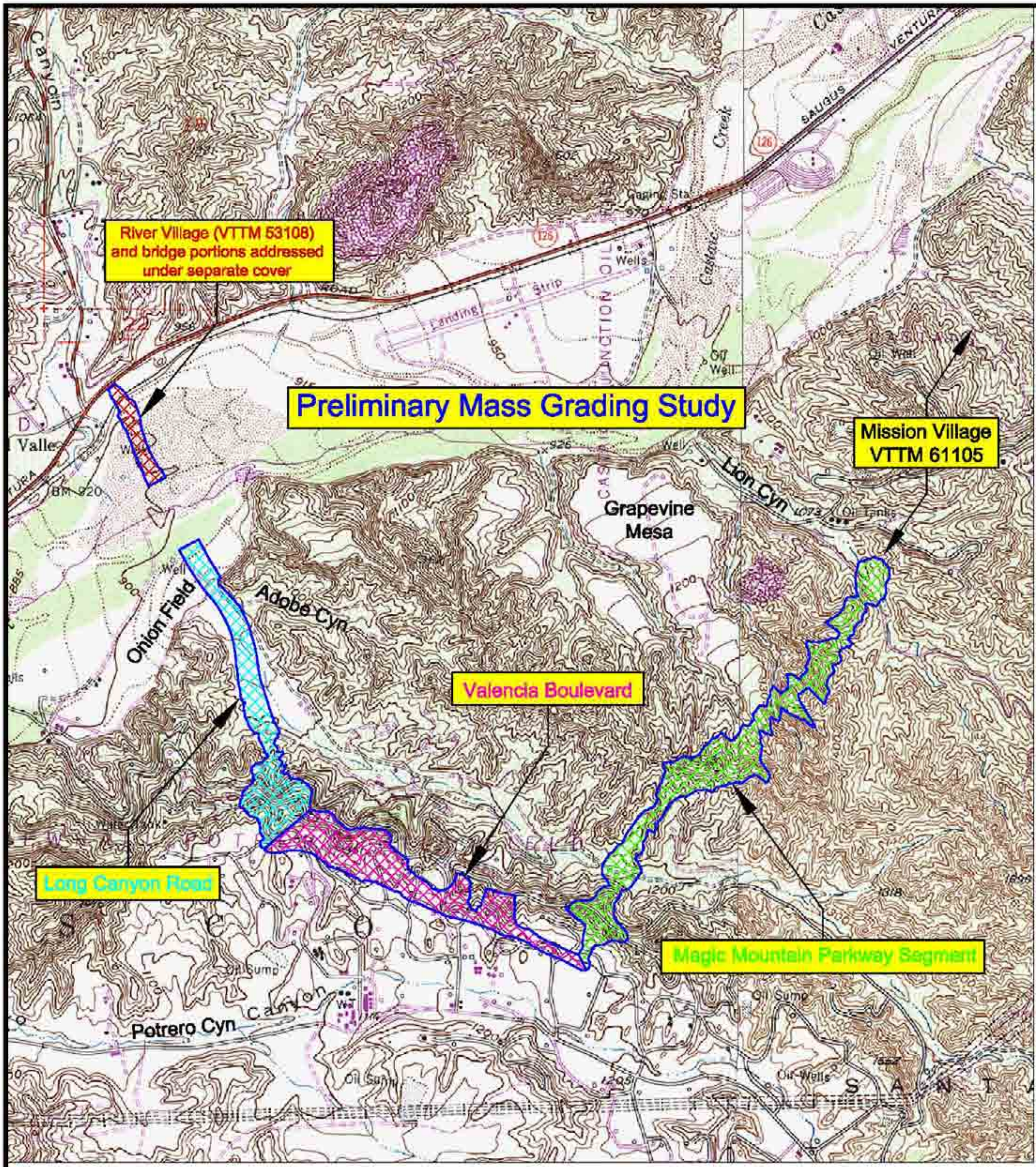
3. Review of the Munger Map Book, California-Alaska, Oil and Gas Fields, 2003.

4. Review of the following aerial photographs.

YEAR	PHOTOS	SCALE	AGENCY
1928	E- 51, E-52, E-71, E-72	±1"=2,000'	Fairchild
1930	A45, A46, A90 & A91	±1"= 1,300'	Fairchild
1946	3:301 & 3: 302	±1"= 800'	Fairchild
1952	2K-26, 2K-27 & 2K-28	±1"= 1,667'	U. S. Dept. of Agriculture
1959	10W 39 & 10W 40	±1"= 1,667'	U.S. Dept. of Agriculture
1963	4 & 5	±1"=1,200'	Mark Hurd Aerial Survey
1968	6-21 & 6-22	±1"=2,000'	Teledyne Geotronics
1977	2-47	±1"=1,500'	Continental
2004	2008, 2009, 2010 & 2011	±1"=1,000'	McElhanney

5. Review of the Newhall Ranch Mesas East "Offsite Backbone Road Excavation Volumes" proposed grades plan prepared by Hunsaker & Associates dated August 6, 2004; Revised November 24, 2004, sheet 1 of 1. The proposed grades by Hunsaker for the pertinent portions addressed herein were utilized in conjunction with the topographic maps for Newhall Ranch prepared by PSOMAS as the base maps for our Geologic Maps. We make no representations regarding the accuracy of these base maps.

6. Delineation of landslides present on the site based on topographic and aerial photo analysis, review of the published maps listed in the references, reconnaissance field



Sources:
U.S. Geological Survey Val Verde Quadrangle,
Dated 1952, Photorevised 1988
U.S. Geological Survey Newhall Quadrangle,
Dated 1952, Photorevised 1988

Approximate Scale: 1"=2,000'

NOTE: THIS IS NOT A SURVEY OF THE PROPERTY

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LOCATION MAP

Job No.: 05-2023C-9	*Date: 1/17/05*

mapping, and limited subsurface exploration completed during our previous geologic investigations.

7. Performance of a probabilistic seismic hazard assessment for the subject sites.

8. Preparation of a Location Map, Geologic Maps and this Report.

2.0 BACKGROUND

This office previously performed limited geologic and geotechnical investigations in the areas encompassing the three proposed road segments. The proposed bridge across the Santa Clara River at Long Canyon Road will be addressed in the future under separate cover. The segment of road north of the bridge to connect to SR-HWY 126 was covered previously in our tentative map review report dated September 27, 2000 for River Village (VTTM 53108). The location of our exploratory test pits and borings are not shown on the Geologic Maps at this time. However, bedding attitudes and geologic contacts obtained from our field mapping and subsurface explorations of each site are shown on the Geologic Maps.

3.0 SITE DESCRIPTION

The site is located in the northeastern portion of the Santa Susana Mountains just south of the Santa Clara River, west of Lion Canyon and easterly and adjacent to Potrero Canyon within the unincorporated portion of Los Angeles County. The site is generally in an undeveloped state with the exception of an access roads and drill pads for oil wells. The site is covered with natural grasses, chaparral and scattered oak trees. Portions of Long Canyon and the lower portion of Adobe Canyon have been used for agricultural purposes. Dumped fill associated with past oil well drilling activities exists at various locations within the site. Elevations range from approximately 900 feet in the vicinity of the Santa Clara River to approximately 1570 feet at the ridgeline near the central portion of the Magic Mountain Parkway segment. The detailed topography of the site is shown on the attached **Location Map** and base maps for the Geologic Maps.

4.0 PRELIMINARY GRADING STUDIES

4.1 Introduction

The preliminary grading study addressed herein is intended to show feasibility of a western access to the Mission Village Development (VTTM 61105), formerly referred to as Mesas East. We utilized the pertinent portions of the offsite road excavation volumes map prepared by Hunsaker (rev. 11/24/04) for our study of the three road segments which indicated that a total of 5,767,000 cubic yards of cut will be generated and 1,610,000 cubic yards of fill will be placed, leaving 4,157,000 cubic yards for export.

For our purposes the road segment divisions occur at their intersections and are marked on our Geologic Map. Hunsaker's map utilized topographic divisions for volume estimation purposes. Specific details for each road segment are described below.

4.2 Magic Mountain Parkway Segment

This proposed segment extends from the southern side of Lion Canyon across very rugged terrain to the northern side of Potrero Canyon and consists of a series of twelve (12) cut slopes and five (5) fill slopes directly adjacent to the roadway to achieve the road grades. The cut slopes face to the southeast on the north side of the road and northwest on the south side, and all of the slopes are proposed at 2:1 (horizontal:vertical) gradients with terrace benches every 25 vertical feet.

The highest proposed cut slope is approximately 245 feet high. The maximum vertical cut to proposed grade is 210 feet near the central portion of this segment. The highest fill slope is approximately 90 feet and the maximum proposed fill is approximately 80 feet thick, located where the proposed roadway crosses Long Canyon.

4.3 Valencia Boulevard Segment

This proposed segment extends along the northern margin of Potrero Canyon from the intersection with Magic Mountain Parkway and across a ridgeline spur where it connects to proposed Long Canyon Road. This segment consist nearly completely of proposed cut slopes with only minor fill proposed at the intersection with Magic Mountain Parkway to achieve the roadway grades. Essentially four (4) major cut slopes are proposed, two of which continue to the north for the Long Canyon Road segment. The cut slopes face south-southwest on the north side of the road and north-northeast on the south side of the road. All of the slopes are proposed at 2:1 (horizontal:vertical) gradients with terrace benches every 25 vertical feet. The highest proposed cut slope is approximately 180 feet. The maximum vertical cut to proposed grade is 220 feet on the steep knob just east of the intersection with the Long Canyon Road segment. The highest fill slope is approximately 15 feet and the maximum proposed fill is approximately 15 feet both at the intersection with Magic Mountain Parkway segment.

4.4 Long Canyon Road Segment

This proposed segment extends from Valencia Boulevard across a steep ridgeline and then follows the bottom of Long Canyon out to The Onion Field area to its connection with the future proposed bridge.

This segment consists of the continuation of the two large cut slopes through the ridgeline from the Valencia Boulevard segment and two long fill slopes over Long Canyon with another minor fill slope (transitioning from the cut portion to fill portion) to achieve the roadway grades.

The cut slope on the west side of the road faces east and the cut slope on the east side of the road faces west. All of these slopes are proposed at 2:1 (horizontal:vertical) gradients with terrace benches every 25 vertical feet. The highest proposed cut slope is approximately 210 feet and the maximum vertical cut to proposed grade is approximately 225 feet located just north of the intersection with the Valencia Boulevard segment. The highest fill slope is approximately 60 feet and the maximum proposed fill is approximately 50 feet located in Long Canyon.

5.0 GEOLOGY

5.1 Regional Geology

The subject site is located along the northeastern margin of the Ventura Basin within the Transverse Ranges geologic province of California. The Ventura Basin consists of an elongated sedimentary trough extending from the Santa Barbara Channel on the west to the San Gabriel fault on the east. The axis of the trough trends east west, reflecting the overall east-west trend of the Transverse Ranges, and generally coincides with the Santa Clara River Valley. This sedimentary basin contains a thick sequence of marine and non-marine sediments that have been uplifted and deformed by past tectonic forces. Bedrock of the Pico Formation and Saugus Formation has been mapped on the site.

5.2 Geomorphology

The site topography is dominated by generally northeasterly trending spur ridges descending longitudinally towards the Santa Clara River and laterally to Long Canyon, Potrero Canyon and Lion Canyon. Potrero and Long Canyons are the most prominent canyons with significantly greater widths than the other surrounding secondary canyon drainages. Many other smaller secondary and tertiary drainages occur in the vicinity of the subject site.

The overall terrain is fairly steep and rugged owing to the large percentage of sandstone outcrops in this area.

The elevated subdued topography (“Mesas”) present north and west of the proposed roads consists of Quaternary Terrace Deposits. Subdued morphology associated with known and suspected landslides is evident on the reviewed aerial photographs.

5.3 Geologic Units

5.3.1 Pico Formation (Tp)

The Pliocene Pico Formation underlies the southern portion of the Valencia Boulevard segment and the southern most portion of the Magic Mountain Parkway and Long Canyon Road segments. This formation is gradational and interfingering with the overlying Saugus Formation (see Geologic Maps). The Pico Formation observed at the site consists of moderately hard, light gray to light greenish-gray sandstone and pebbly sandstone with local interbeds of light greenish-gray to olive-gray siltstone, sandy siltstone and rare moderate-brown mudstone. The sandstones are generally well sorted and massive to locally well bedded with common low angle cross bedding. Pebbles are generally well rounded and commonly crystalline in composition. The siltstone and mudstone units are potentially expansive. Thin, low strength clay seams are present within this formation and can be problematic relative to slope stability.

5.3.2 Saugus Formation (TQs)

The lower portion of the Plio-Pleistocene Saugus Formation is exposed and underlies the majority of the Magic Mountain Parkway segment (north of Long Canyon) and the northern portion of the Long Canyon Road segment. This formation is gradational and interfingering with the underlying Pico Formation. The Saugus Formation was deposited in a fluvial environment between 0.7 and 2.5 Ma (Levi et al., 1986). The observed bedrock is dominated by moderately hard, light gray to yellowish-gray sandstone and conglomerate with local interbeds of greenish-gray siltstone and sandy siltstone, and uncommon reddish-brown mudstone in this area. Pebbles within this formation are typically less rounded and more variable in composition than in the Pico Formation. Siltstone and mudstone units of the Saugus Formation are potentially expansive. Thin, low-strength clay seams occur in the reddish-brown mudstone units both as a result of original deposition and due to flexural slip along bedding during tectonic folding subsequent to deposition. These low strength clay layers may be fairly rare; however where they occur locally they have proven problematic relative to slope stability.

5.3.3 Quaternary Terrace Deposits (Qt)

Large, uplifted, stream terrace deposits are present to the north of the Magic Mountain Parkway segment with only a small portion occurring within the area of proposed grading. The terraced surface is informally known as Grapevine Mesa. As indicated by our explorations, these deposits consist primarily of silty sand and sandy silt with minor pebbly interbeds and a cobble- to locally boulder-rich layer at the base, to depths of greater than 100 feet. A well-developed soil is common in the upper 5 to 10 feet of the terrace deposits. The southern lateral margin of this large deposit occurs near the centerline of proposed Magic Mountain Parkway and will likely be undercut by the proposed grades.

5.3.4 Quaternary Alluvium (Qal)

Significant deposits of alluvium are present in Potrero Canyon, Long Canyon, the Onion Field area and the adjacent Santa Clara River Valley.

Quaternary alluvium in **Potrero Canyon** up to approximately 100 feet. in thickness underlies the main canyon and numerous tributaries of Potrero Canyon. Our subsurface investigations indicate that in the vicinity of proposed Valencia Boulevard, the upper 30 to 40 feet of this materials consists predominately of silt and clay, with local interbeded sand, silty sand and rare pebbly sand and the material greater than 60 feet in depth is predominantly sandy.

Quaternary alluvium in **Long Canyon**, the **Onion Field** and the Santa Clara River Valley consist of moderately consolidated to unconsolidated poorly graded sand with gravel lenses, fine silty sand, sandy silt and clay. The upper 1 to 3 feet of this material has generally been disturbed by agricultural activities in the areas where the roads are proposed. In general the alluvial deposits are on the order of 30 to 50 feet thick in Long Canyon and greater than 50 feet in the Onion Field area in the vicinity of the proposed development.

5.3.5 Slopewash (Qsw)

Slopewash is a non-bedded, heterogeneous accumulation of sand, silt and weathered bedrock fragments deposited by gravity on nearly all of the slopes at both of the sites. This material has accumulated via gradual surface wash and periodic debris flows. The thickest accumulations occur at the toe of slopes and where broad swales join the main drainage areas. This material is generally poorly consolidated and commonly interfingers with the alluvium. The slopewash is designated as Qsw on the Geologic Maps.

5.3.6 Soil

A surficial soil horizon has developed to varying degrees over much of the site. Soils are best developed on old stable geomorphic surfaces such as Grapevine Mesa. Soil horizons are generally poorly developed or lacking on steep slopes and cliffs. Soil is not shown on the geologic maps.

5.3.7 Artificial Fill (af)

Artificial fill exists at various locations on both sites and ranges from minor spill fills to large dumped fill pads associated with oil well activities. Only the larger artificial fill areas are illustrated on the Geologic Maps.

5.4 Landslides

Numerous landslides have been mapped on the subject sites. These landslides are primarily translational failures controlled by the underlying bedding orientation. The landslides vary from small shallow failures to large landslides.

The mapped landslides were identified based on review of previously published and unpublished geologic data, geomorphic features observed on the aerial photos, review of the site topography illustrated on the attached Geologic Maps, reconnaissance field mapping and subsurface explorations. Additional subsurface exploration will be required to confirm the existence of landslides and to accurately delineate the lateral extent and depth of the landslide material where impacted by the proposed grades.

The landslides mapped at the site have been divided into the two following categories:

- (Qls) Landslides that are mapped with moderate to great certainty are designated with a standard boundary and direction of movement arrows on the Geologic Map.

- (Qls?) Where the existence or lateral extent of the landslide is uncertain or inferred, the landslide is queried with a question mark. These landslides will require subsurface exploration to confirm their existence.

5.5 Surficial Failures

Shallow surficial failures involving soil, slopewash and weathered bedrock have not been delineated on the maps at this time. These smaller features will be shown where applicable when the site is evaluated in more detail on larger scale maps. Numerous shallow failures and rock falls/debris flows were activated on the steeper slopes of the site by strong ground motion from the 1994 Northridge Earthquake. Areas underlain by weathered siltstones, which are generally highly fractured, are prone to failure during intense rainfall and/or earthquake generated ground motions.

5.6 Geologic Structure

The subject sites lie within the tectonically active Transverse Ranges of southern California. North-south compression has produced a series of east west to northwest-trending folds in the vicinity of the site. The geologic structure is described below.

The bedrock beneath much of the subject road alignments have been uplifted and deformed by past tectonic forces into a northwest-trending syncline (downfold). The axial trace of this fold is located only at the extreme northeastern portion of the site where it traverses the northern most portion of the Magic Mountain Parkway segment. The geologic structure of the Saugus and the underlying Pico Formation bedrock exposed over much of the site (southern limb of the syncline) strikes northwest and is dipping at angles ranging between 32 and 48 degrees towards the northeast. The geologic structure of the bedding exposed along the northern limb of the syncline is striking towards the northeast and is dipping at angles ranging between 9 and 38 degrees southwest. Faulting has not been observed within the proposed road alignment area.

5.7 Ground Water

Ground water beneath the site can be generally grouped in to two categories: 1) ground water contained in the alluvial deposits; 2) groundwater contained in the bedrock (very deep >1000 feet).

Historic high ground water levels for the alluvial areas were interpolated based on records from ground water contours by Robson (1972), water levels observed in exploratory excavations by Allan E. Seward Engineering Geology, Inc., and nearby piezometer measurements. Due to the elevated nature of the subject site, ground water in the deep bedrock aquifer is not expected to be adversely affected by the project or affect the project. Ground water in the alluvial deposits is not expected to adversely affect the majority of the project however, local portions of Potrero Canyon and the Onion Field area may require remedial measures in order to perform removals or achieve proposed grades which could be in close proximity to or within the interpolated historic high ground water levels. Specific details are discussed below.

The historic high ground water level in Long Canyon is generally 30 feet below the ground surface except at the confluence with Adobe Canyon where it is between 20 to 25 feet below the ground surface and 10 to 15 feet below the ground surface at the mouth of Long Canyon and in the Onion Field area. Removal operations in the vicinity of The Onion Field and the mouth of Long Canyon may encounter groundwater.

The historic high ground water level in the alluvial portions of Potrero Canyon directly adjacent to the proposed Valencia Boulevard segment are 20 to 25 feet below the existing ground surface. Some of the proposed cut depths in alluvium are greater than 20 to 25 feet and deep removals greater than 20 feet will also be likely, due to the soft alluvial materials in this portion of Potrero Canyon and hence ground water will likely be encountered where these conditions occur. Possible mitigation consists of dewatering prior to removal and cut operations and placement of subdrainage systems designed to drain positively down the proposed road alignment.

Perched groundwater within elevated bedrock areas has not been observed on the site. Natural springs or seeps were not observed on the site during our previous investigations.

6.0 POTENTIAL GEOLOGIC AND GEOTECHNICAL HAZARDS, CONSTRAINTS AND POSSIBLE MITIGATION MEASURES

6.1 Seismicity

6.1.1 Introduction

The subject site lies within the seismically active southern California region. Earthquake-related hazards typically include ground rupture, ground shaking and ground failure.

6.1.2 Ground Rupture

The subject road alignments do not lie within any of the State's Alquist-Priolo Earthquake Fault Zones. The L.A. County Seismic Safety Element does not show any faults at the subject road alignments. Regional geologic maps do not show any **active** faults (i.e. faults demonstrated to be active in the last 11,000 years) located on or trending towards the site. No evidence of active faulting or ground rupture was observed on either of the sites during our reconnaissance field mapping and limited subsurface explorations. The closest known active fault (surface trace) to the road alignments is the San Gabriel fault located approximately 4.2 miles towards the northeast.

6.1.3 Ground Shaking

The site is located in southern California, which is an **active** seismic area where large numbers of earthquakes are recorded each year. Historically, the eastern portion of the Santa Susana Mountains area experienced strong ground motion from the 1971 San Fernando earthquake, which was generated on the Sierra Madre-San Fernando fault, and more recently from the 1994 Northridge earthquake. **Table I**, below, summarizes the significant historical earthquakes that have occurred near the site. **Figure 1** shows the most prominent faults and locations of earthquake epicenters within the southern California region.

Figure 1 shows the most prominent faults and locations of earthquake epicenters within the southern California region.

TABLE I
SIGNIFICANT HISTORICAL EARTHQUAKES

EARTHQUAK E	DISTANCE TO EPICENTER (MILES)	EARTHQUAKE MAGNITUDE*	DATE
Fort Tejon	91	7.9	1857
Kern Co.	46	7.7	1952
Santa	56	7.0	1812
San	13	6.4	1971
Northridge	14.7	6.7	1994

*Moment Magnitude after 1933 or above 6, or Local Magnitude prior to 1933 or below 6 (S.C.E.C.)

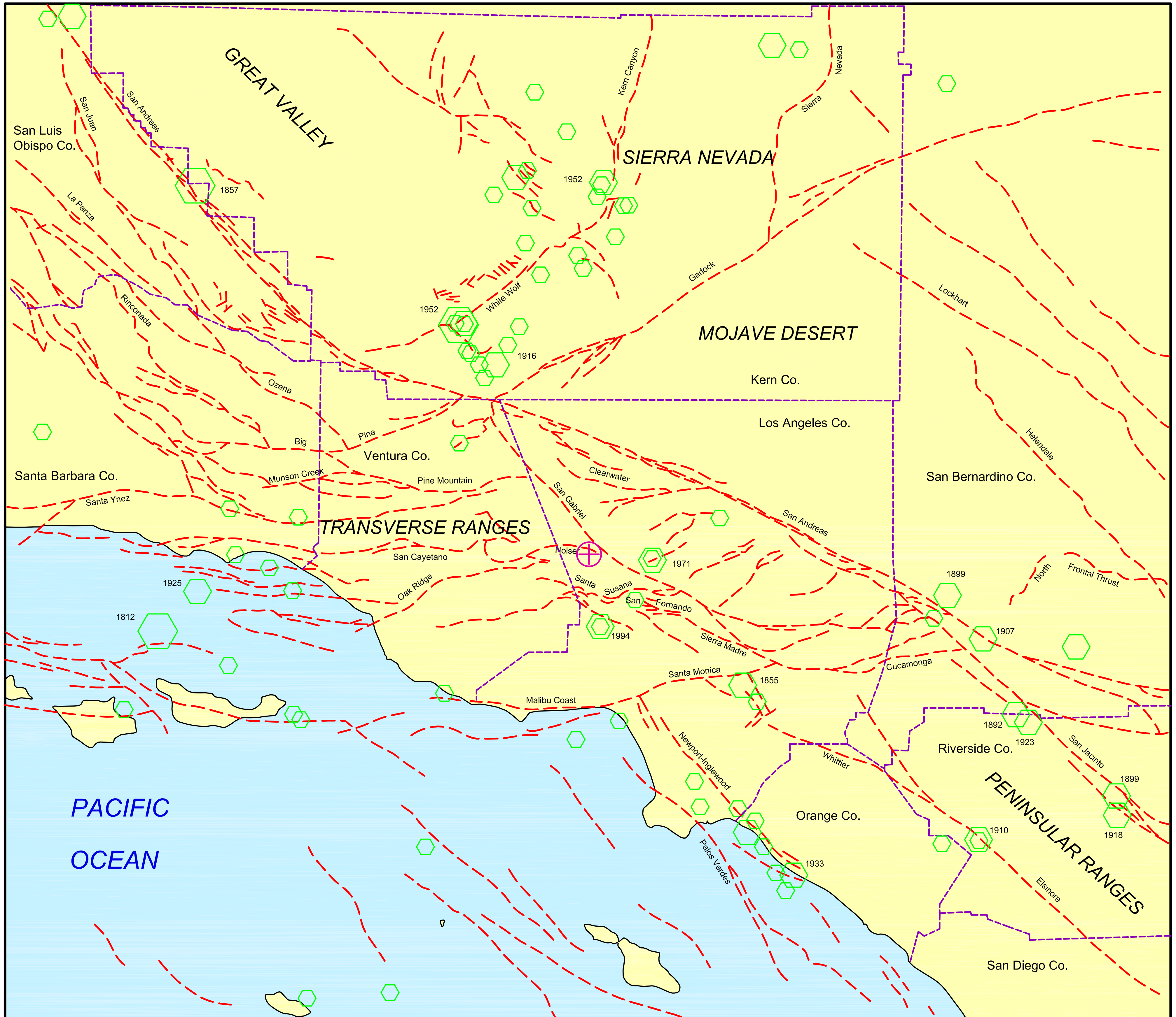
Table II summarizes the more significant potential earthquake sources near the site with estimated maximum moment magnitudes.

TABLE II
SIGNIFICANT REGIONAL FAULTS

FAULT	MAXIMUM MOMENT MAGNITUDE	APPROXIMATE DISTANCE TO SITE
Santa Susana	6.6	5
Sierra Madre-San	6.7	12
San Gabriel	7.0	4.2
Holser	6.5	1.5
San Andreas	7.8	21
Northridge (E. Oak Ridge)	6.9	2.6

*Approximate closest distance to surface trace in miles.

Based upon our probabilistic seismic hazard assessment (PSHA) using the computer program FRISKSP by Thomas F. Blake for site adjacent to the road alignments, the estimated peak horizontal ground acceleration with a 10% chance of exceedance in 50 years will range between 0.88g to 0.98g for the alluvial portions of the site. The estimated accelerations increase toward the southwest over the span of the proposed road alignments.



40 30 20 10 0 40 KILOMETERS

Approximate Scale 1 : 1,250,000

30 20 10 0 30 MILES

EXPLANATION

APPROXIMATE LOCATION OF MAJOR KNOWN FAULTS

San Andreas

EARTHQUAKE EPICENTERS

Location	Magnitude
⬡	5.0 - 5.9
⬡	6.0 - 6.9
⬡	7.0 - 7.9

APPROXIMATE LOCATION OF SUBJECT SITE

Compiled and modified from: Jennings (1994), Real et al. (1978), Yerkes (1985), Ziony and Jones (1989), and Shakal et al. (1994)

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FAULT AND EARTHQUAKE EPICENTER LOCATION MAP

Job No.: 05-2023C-9

Date: 1/17/05 *Figure:* 1

6.1.4 Ground Failure

Ground failure is a general term describing seismically induced secondary permanent ground deformation caused by strong ground motion. This includes liquefaction of granular deposits or fine-grained soils with low plasticity below ground water, lateral spreading, seismic settlement of poorly consolidated materials (dynamic densification), differential materials response, slope failures, sympathetic movement on weak bedding planes or non-causative faults, shattered ridge effects and ground lurching. The most significant types of ground failure are discussed below.

Large portions of the road alignments are underlain by bedrock that is not susceptible to liquefaction. The alluvium present in the canyon areas (see Geologic Maps) may be subject to liquefaction. These alluvial areas are designated as potential liquefiable areas on the State of California Seismic Hazard Zones Maps (Val Verde and Newhall Quadrangles). Detailed liquefaction assessments will be required for the alluvial areas prior to any future development of these areas.

Earthquake-induced slope failures include activation and reactivation of landslides, rock falls, debris flows and surficial failures. The potential for earthquake-induced slope failures is moderate to high on the steep canyon slopes. Most of the hillside areas in the vicinity of the subject road alignment sites are designated on the State of California Seismic Hazard Zones Map (Val Verde and Newhall Quadrangles) to have potential for earthquake-induced slope instability. The proposed cut and fill grading for each site eliminates most of these areas. Slope stability issues are addressed in the following section.

6.2 Slope Stability

6.2.1 Landslides

Four known landslides and one suspected landslide have been mapped within the proposed grading limits for the proposed road segments and have been color-coded orange on the attached Geologic Maps. These landslides are primarily translational failures controlled by the bedding orientation. The occurrence of these landslides relative to the proposed grading design is shown on the Geologic Maps. Cut slopes and/or grading is proposed in landslide material and or landslides are located in areas where they potentially affect the proposed roadway grading. The proposed grading consists of many deep cuts, which will probably result in the removal of a large amount of the affected portions of these landslides. However, these landslides need to be investigated and evaluated in detail via subsurface explorations and slope stability analyses and appropriately mitigated. These landslides can be mitigated by removing the landslide affected bedrock where it occurs in the proposed cut and fill areas, and replacing the areas affected by the removals with compacted fill to the proposed grades with keyways and backdrains where warranted, buttressing, avoidance and building setbacks. Any remaining landslide debris shall be designated as Restricted Use Areas on the Final Maps. These landslides shall be investigated and addressed in more detail at the Tentative Tract Map stage.

6.2.2 Cut Slopes

The proposed cut slopes shown on the attached Geologic Maps are designed at gradients of 2:1 (h:v) with terrace drains every 25 feet. The highest proposed cut slope is approximately 245 feet and the deepest proposed cut area is approximately 225 feet.

Most of the site consists of steeply northeast dipping bedrock and hence most of the proposed cut slopes in bedrock will have antidip (into-slope) to neutral to steeper than the slope face bedding conditions, which are favorable with respect to gross stability.

However, proposed cut slopes with potential unfavorable stability conditions are discussed briefly below, and have been color-coded RED on the attached Geologic Maps.

1. Potentially daylighted bedding conditions occur on the proposed cut-slope located north of the Magic Mountain Parkway segment in the vicinity of proposed road elevations 1210 feet to 1230 feet. The syncline axis traverses the southern edge of this slope and potentially plunges out-of-slope.

2. Potentially daylighted bedding conditions may also occur in the bedrock portions of the proposed northeast facing cut slope located south of the Valencia Boulevard segment.

3. Many of the proposed cut slopes located along the Valencia Boulevard segment will expose alluvium or artificial fill and may also encounter groundwater in the deeper cuts proposed in the alluvium.

4. Five of the proposed cut slopes will partially expose landslide debris.

Proposed cut slopes that will potentially expose weak daylighted bedding planes, alluvium, landslide debris, artificial fill or groundwater will require detailed evaluation and where warranted corrective measures in the form of avoidance, buttresses/stability fills, or be redesigned at shallower (e.g. 3:1) angles or different orientations so that they will be grossly and surfically stable.

6.2.3 Natural Slopes and Debris Flows

Nearly all of the existing natural slopes in close proximity to the area of proposed grading for the road segments are proposed as cut slopes or fill slopes. One ascending natural slope is proposed directly adjacent to the proposed roadway and two descending natural slopes with potentially unfavorable geologic conditions just downhill and "behind" small proposed cut slopes occur on the subject site and are discussed briefly below and have been color-coded PINK on the attached Geologic Maps.

1) South side of the Magic Mountain Parkway segment at proposed road elevation 1290 feet. Portions of this 150 to 200 feet high ascending natural slope are steeper than 2:1 (h:v), but it does not exhibit a daylighted bedding condition. A slope failure on this ascending slope could pose a hazard to the proposed roadway.

2) South side of the Magic Mountain Parkway segment at proposed elevations 1230 feet to 1210 feet where the natural slopes descending to the south "behind" the small proposed cut slopes may exhibit daylighted bedding conditions and a landslide occurs. A slope failure on this descending slope could extend up toward the proposed roadway and adversely affect the stability of the road.

3) East side of Long Canyon Road segment at proposed road elevation 1070 feet to 1090 feet where descending natural "behind" proposed slopes may exhibit a daylighted bedding component condition. A slope failure on this descending slope could extend up toward the proposed roadway and adversely affect the stability of the road.

Due to the steepness or underlying geometry of the bedrock these three natural slopes shall be evaluated in more detail at the tentative tract map stage. If they do not comply with the jurisdictional agency's required minimum factors of safety for static and pseudostatic analyses they will require corrective measures. Corrective measures consist of avoidance, cutting back to a shallower angle or buttressing with compacted fill.

Owing to the proposed design grades, the potential for debris flow hazard is limited to the ascending natural slope located south of Magic Mountain Parkway at proposed road elevation 1290 feet. Colluvial soils (slopewash) in the swale areas of this slope need to be evaluated for debris flow potential. Corrective measures consist of avoidance, construction of appropriately sized impact or debris walls, and/or debris basins, removal of material susceptible to debris flow or stabilization of potential debris flow material with a stability fill.

6.2.4 Fill Slopes

Proposed fill slopes are designed at 2 to 1 (h:v) gradients or shallower with terrace drains every 25 feet. Review of the preliminary Grading Study indicates that the highest proposed fill slope on the site is approximately 90 feet and the deepest proposed fill area is approximately 80 feet. The fill slopes will be suitable for the intended use.

6.2.5 Deep Fill Areas

Proposed fill to be placed in areas of deep fills (greater than 40 feet) may experience more settlement than shallow fills. The current compaction requirement for fills greater than 40 feet below proposed grade is 93 percent of the maximum dry density per ASTM D1557 (1998 California Building Code).

6.3 Hydroconsolidation

The phenomenon of collapsing soils is the result of water interacting with void-bearing sediments. Water in the sediments reorganizes sediment particles into a more compact arrangement, causing reduction of the void space. This causes settlement (hydroconsolidation) of the material, which is potentially hazardous to future overlying structures. Rapidly buried silty sediments such as thick slopewash and alluvium commonly contain void space and are subject to hydroconsolidation. The underlying alluvial and slopewash materials shall be evaluated relative to hydroconsolidation potential where they occur in areas of proposed fill or cut. Soils subject to hydroconsolidation can be mitigated by removal and recompaction or other densification measures of collapsible soils.

6.4 Erosion Potential and Drainage

Some evidence of erosion was observed within the soil of the subject sites. Bedrock is not expected to be as susceptible to erosion as the overlying soil material. However the future fill, bedrock and soil material at the site will be susceptible to erosion if sheet flow drainage is not provided. Water should not be allowed to stand or pond on the future graded areas nor should it be allowed to flow over natural or constructed slopes, but should be directed to designed debris basins where applicable. Debris material generated from the site erosion should be contained within the site boundaries. Debris and erosion of the site materials is referred to the supervising civil engineer relative to providing site drainage containment of material generated during surficial erosion.

6.5 Dam Inundation

Review of the technical appendix to the safety element of the Los Angeles County General Plan (Flood and Inundation Hazards - Plate 6) indicates that The Onion Field Area may be subject to dam inundation hazard.

6.6 Construction Considerations

6.6.1 Rippability

The bedrock at the site is moderately consolidated, and grading operations should be able to be performed with conventional equipment. Heavy single shank ripping will probably be required if massive conglomerate units of the Pico and Saugus Formations are encountered.

6.6.2 Oversize Material

Cobbles and small boulders are commonly present within the alluvium, Quaternary Terrace deposits and the Pico and Saugus Formation present on the site. This oversize material may present some difficulties during cutting operations with some types of equipment; however, it is not considered to be a significant detriment to the development. Oversized material will require special handling during fill construction typical of all grading operations.

6.6.3 Expansive Materials

The fine-grained units of the Saugus Formation and Pico Formation are known to be expansive in nature. The clayey artificial fill, slopewash and alluvium deposits present at the site may contain potentially expansive material. The expansive material shall be evaluated by the Project Geotechnical Engineer during later stages of development. Special foundation designs and reinforcement can be utilized to mitigate expansive material.

6.6.4 Shrinking and Bulking Characteristics of Earth Materials

Typically, landslide materials, slopewash, fill and alluvial deposits shrink in volume when removed and recompacted, and the Saugus Formation and Pico Formation bedrock bulks. Determination of the shrinking or bulking factors of the on-site materials should be performed during the future stages of development to properly assess the cut-fill balance of the proposed grading and verify quantities of fill for export.

6.6.5 Corrosion Potential

Soils on site may have some degree of corrosive characteristics to concrete and ferrous metals. Soil moisture, chemistry, and other physical characteristics all have important effects on corrosivity. Testing shall be performed to determine the corrosion potential of the material. These tests will indicate what special measures, such as cement type or corrosion protection for underground utility pipes will be required for the future site construction.

6.7 Oil Wells

Review of the 2003 Munger Map book and the California Department of Conservation Division of Oil, Gas and Geothermal Resources (DOGGR) data indicate there are fifty-nine (59) documented oil wells present in the vicinity of the proposed grading limits for the site. We limited the oil well search to be within 750 feet of the centerline of the proposed road segments. The approximate locations of these oil wells are shown on the Geologic Maps. If any undocumented oil or gas wells are encountered during the grading operations, their locations should be surveyed and the current well conditions evaluated immediately.

Soils in the vicinity of oil wells could be contaminated with petroleum products spilled during past operations of the wells. Wells may have associated mud pits, which could also contain materials considered to be hazardous under current environmental regulations. The abandonment status and conditions of the nearby soils of each oil well should be addressed during the future stages of the development. The names of the oil wells for each site are provided below.

1. Medallion Calif. Prpts Co. – “Rancho San Francisco #10”
2. Medallion Calif. Prpts Co. – “Rancho San Francisco #13”
3. Medallion Calif. Prpts Co. – “Rancho San Francisco #18”
4. Medallion Calif. Prpts Co. – “Rancho San Francisco #20”
5. Medallion Calif. Prpts Co. – “Rancho San Francisco #21”
6. Medallion Calif. Prpts Co. – “Rancho San Francisco #28”
7. Medallion Calif. Prpts Co. – “Rancho San Francisco #44”
8. Medallion Calif. Prpts Co. – “Rancho San Francisco #45”
9. Medallion Calif. Prpts Co. – “Rancho San Francisco #47”
10. Medallion Calif. Prpts Co. – “Rancho San Francisco #50”
11. Medallion Calif. Prpts Co. – “Rancho San Francisco #51”
12. Medallion Calif. Prpts Co. – “Rancho San Francisco #52”
13. Medallion Calif. Prpts Co. – “Rancho San Francisco #53”
14. Medallion Calif. Prpts Co. – “Rancho San Francisco #54”
15. Medallion Calif. Prpts Co. – “Rancho San Francisco #55”
16. Medallion Calif. Prpts Co. – “Rancho San Francisco #58”
17. Medallion Calif. Prpts Co. – “Rancho San Francisco #69”
18. Medallion Calif. Prpts Co. – “Rancho San Francisco #71”
19. Medallion Calif. Prpts Co. – “Rancho San Francisco #72”
20. Medallion Calif. Prpts Co. – “Rancho San Francisco #80”
21. Medallion Calif. Prpts Co. – “Rancho San Francisco #101”
22. Medallion Calif. Prpts Co. – “Rancho San Francisco #102”
23. Medallion Calif. Prpts Co. – “Rancho San Francisco #105”
24. Medallion Calif. Prpts Co. – “Rancho San Francisco #108”
25. Medallion Calif. Prpts Co. – “Rancho San Francisco #112”
26. Medallion Calif. Prpts Co. – “Rancho San Francisco #113”
27. Medallion Calif. Prpts Co. – “Rancho San Francisco #114”
28. Medallion Calif. Prpts Co. – “Rancho San Francisco #115”
29. Medallion Calif. Prpts Co. – “Rancho San Francisco #118”
30. Medallion Calif. Prpts Co. – “Rancho San Francisco #120”

31. Medallion Calif. Prpts Co. – “Rancho San Francisco #124”
32. Medallion Calif. Prpts Co. – “Rancho San Francisco #126”
33. Medallion Calif. Prpts Co. – “Rancho San Francisco #127”
34. Medallion Calif. Prpts Co. – “Rancho San Francisco #128”
35. Medallion Calif. Prpts Co. – “Rancho San Francisco #129”
36. Medallion Calif. Prpts Co. – “Rancho San Francisco #137”
37. Medallion Calif. Prpts Co. – “Rancho San Francisco #142”
38. Medallion Calif. Prpts Co. – “Rancho San Francisco #143”
39. Medallion Calif. Prpts Co. – “Rancho San Francisco #145”
40. Medallion Calif. Prpts Co. – “Rancho San Francisco #147”
41. Medallion Calif. Prpts Co. – “Rancho San Francisco #150”
42. Medallion Calif. Prpts Co. – “Rancho San Francisco #1A”
43. Oryx Energy Co. – “Rancho San Francisco #5”
44. Oryx Energy Co. – “Rancho San Francisco #8”
45. Oryx Energy Co. – “Rancho San Francisco #11”
46. Oryx Energy Co. – “Rancho San Francisco #15”
47. Oryx Energy Co. – “Rancho San Francisco #17”
48. Oryx Energy Co. – “Rancho San Francisco #46”
49. Oryx Energy Co. – “Rancho San Francisco #48”
50. Oryx Energy Co. – “Rancho San Francisco #57”
51. Oryx Energy Co. – “Rancho San Francisco #61”
52. Oryx Energy Co. – “Rancho San Francisco #75”
53. Oryx Energy Co. – “Rancho San Francisco #79”
54. Oryx Energy Co. – “Rancho San Francisco #85”
55. Oryx Energy Co. – “Rancho San Francisco #123”
56. Oryx Energy Co. – “Rancho San Francisco #131”
57. Oryx Energy Co. – “Rancho San Francisco #138”
58. Oryx Energy Co. – “Rancho San Francisco #155”
59. Exxon Mobile Corp. – “NL & F #22”

7.0 PROJECT FEASIBILITY

The proposed development is feasible from the geologic and geotechnical standpoint and will be safe from geologic hazards provided that the geologic and geotechnical recommendations outlined in this report, along with appropriate building and grading codes, are taken into account during the planning, design and construction phases of the project.

8.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions summarize the primary geologic/geotechnical issues that impact the proposed development.

1. The potential for primary ground rupture to occur on a fault on the site is considered to be **very low to non-existent**.

2. Based upon our probabilistic seismic hazard assessment, the peak horizontal ground acceleration for an earthquake with a 10% chance of exceedance in 50 years is expected to be between 0.88g and 0.98g for the alluvial portions of the site.

3. The alluvial areas within the site are designated as potential liquefiable areas on the State of California Seismic Hazard Zones Map (Val Verde and Newhall Quadrangles). The proposed fills over alluvium and slopewash are to be considered as “structural fill”, and hence subsurface studies need to be performed to determine actual liquefaction and seismic settlement (dynamic densification) potential of these soils. In many cases, liquefaction and cyclic settlement potential can be mitigated by removal and recompaction of the alluvium above groundwater, to provide a cap to bridge effects from liquefaction at depth.

4. Four known landslides and one suspected landslide have been mapped within the area of proposed grading on the subject site and are color-coded ORANGE on the attached Geologic Maps. The proposed grading consists of many deep cuts, which will probably result in the removal of a large amount of the affected portions of these landslides. However, these landslides need to be investigated and evaluated in detail via subsurface explorations and slope stability analyses and appropriately mitigated. Mitigation measures consist of complete or partial removal, buttressing, avoidance, and building setbacks. Restricted Use Areas will need to be established around any unmitigated landslides in open space areas.

5. The majority of the cut slopes shown on the proposed grading study will be grossly stable as designed. However, the proposed cut slopes color-coded RED on the attached Geologic Maps may be potentially unstable and require investigation and slope stability analyses. Proposed cut slopes that will expose weak daylighted bedding planes, alluvium, landslide debris, artificial fill or groundwater will most likely require corrective measures in the form of avoidance, buttress/stability fills, redesign at

shallower angles or different orientations so that they will be grossly and surficially stable.

6. Based on our review of the preliminary grading study virtually all of the natural slopes directly adjacent to the proposed roadways will be eliminated as a result of the proposed grading and hence potentially unfavorable stability issues with respect to natural slopes occurs only in the following areas (color-coded PINK on the Geologic Maps). The steep ascending natural slope located at proposed road elevation 1290 feet on the south side of the Magic Mountain Parkway segment. The two descending natural slopes with potentially unfavorable geologic conditions located south of the Magic Mountain Parkway segment between proposed road elevations 1210 feet and 1230 feet and east of the Long Canyon Road segment at proposed road elevations 1070 feet to 1090 feet. These three natural slopes shall be evaluated in more detail at the tentative map stage and if they do not comply with the jurisdictional agency's required minimum factors of safety for static and pseudostatic analyses will require corrective measures. Corrective measures consist of avoidance, cutting back to a shallower angle or buttressing with compacted fill.

7. A study shall be conducted during the tentative tract map stage to evaluate the potential debris flow hazard in the vicinity of the natural slope located at road elevation 1290 feet on the south side of the Magic Mountain Parkway segment. Debris flow hazards can be generally mitigated by avoidance, the construction of impact or debris walls and/or debris basins, control of run-off or removal of loose surficial materials or construction of a stability fill.

8. Rapidly buried silty and sandy sediments such as thick slopewash and alluvium are subject to hydroconsolidation. The fill material proposed within the alluvial canyon and swale areas is intended to support the future the roadways and hence the underlying alluvial and slopewash materials should be evaluated relative to hydroconsolidation potential. Soils subject to hydroconsolidation can be mitigated by removal and recompaction or other densification measures of collapsible soils.

9. The existing provisions in the Grading Ordinance for planting and irrigation of cut slopes and fill slopes will reduce the potential for erosion

10. The bedrock is moderately consolidated, which indicates that grading operations can be performed with conventional equipment. Heavy single-shank ripping will probably be required if massive conglomerate units are encountered.

11. Cobbles and small boulders are present within the alluvium, Quaternary Terrace Deposits and the Pico and Saugus Formations on the site. This oversize material may present difficulties during cutting operations with some types of equipment. In addition, oversize material will require special handling during fill construction.

12. Groundwater may be encountered during the grading operations in the Onion Field Area and Potrero Canyon Area and dewatering or subdrain systems may be needed. Prior to grading operations these areas should be investigated and recommendations provided where necessary.

13. A study should be conducted to evaluate the expansive potential of the earth materials. If the material is determined to be expansive, it can be mitigated by mixing with soil with low expansive potential or by designing special foundations system.

14. Determination of the shrinking or bulking factors of the on-site materials should be performed during the future stages of development to properly assess the cut-fill balance of the proposed grading and verify quantities of fill for export.

15. Corrosion testing should be performed to determine the corrosion potential of the upper material. These tests will indicate what special measures, such as cement type or corrosion protection for underground utility pipes, will be required for the future site construction/development.

16. Review of the technical appendix to the safety element of the Los Angeles County General Plan (Flood and Inundation Hazards - Plate 6) indicates that the Onion Field area is subject to dam inundation hazard.

9.0 LIMITATIONS

This report has been prepared for the exclusive use of The Newhall Land and Farming Company and their design consultants for the specific site discussed herein. This report should not be considered transferable. Prior to use by others, we should be notified, as additional work may be required to update this report.

In the event that any modifications in the design or location of the proposed development, as discussed herein, are planned, the conclusions and recommendations contained in this report will require a written review by this firm with respect to the planned modifications.

The proposed development is located in southern California, which is in a geologically and seismically active region where large magnitude, potentially destructive earthquakes are common. Therefore, it is reasonable to assume that ground motions from moderate or large magnitude earthquakes could affect the site during the life of a given structure in southern California.

It should be noted that faulting is normally confined to the area immediately adjacent to a known fault, or within a few feet of the last fault movement. Regardless of what criteria is used however, absolute assurance against future fault displacement or strong ground motion cannot be obtained in tectonically active areas. New faults can form, as the orientation and magnitude of deformational forces in the earth's crust change with time. Therefore, the location of new breaks or ground motions during a seismic event cannot be located or anticipated.

In performing these professional services, we have used the degree of care and skill ordinarily exercised, under similar circumstances, by reputable engineering geologists and geotechnical engineers practicing in this or similar localities.

The analyses and interpretations presented in this report have been based on the results of field reconnaissance and review of the referenced reports. It should be recognized that subsurface conditions can vary in time and laterally and with depth at a given site. Our conclusions and recommendations are based on the data available and our interpretation of the data based on our experience and background. Hence, our **conclusions** and **recommendations** are **professional opinions** and are **not meant** to be a control of nature; therefore, **no warranty** is herein **expressed** or **implied**.

This report may not be duplicated without the written consent of this firm.

This opportunity to be of service is appreciated. If you have any questions regarding this report please give us a call.

Respectfully submitted,

Eric J. Seward, CEG 2110
Principal Engineering Geologist
Vice President

Dharmesh P. Amin, M.S., P.E., GE 2553
Principal Geotechnical Engineer

The following attachments complete this report.

References		
Location Map		following page 2
Fault and Earthquake Epicenter Location Map	**Figure 1**	following page 12
Geologic Maps	**Plates I & II**	(In Pocket)
Offsite Backbone Road Excavation Volume Map	**Sheet 1 of 1**	(In Pocket)

Distribution: (1) The Newhall Land and Farming Company
Attn: Addressee
(1) Hunsaker
Attn: Mr. Jason Fukumitsu
(1) Impact Sciences
Attn: Ms. Susan Tebo
(1) Psomas
Attn: Mr. Matt Heideman

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Published

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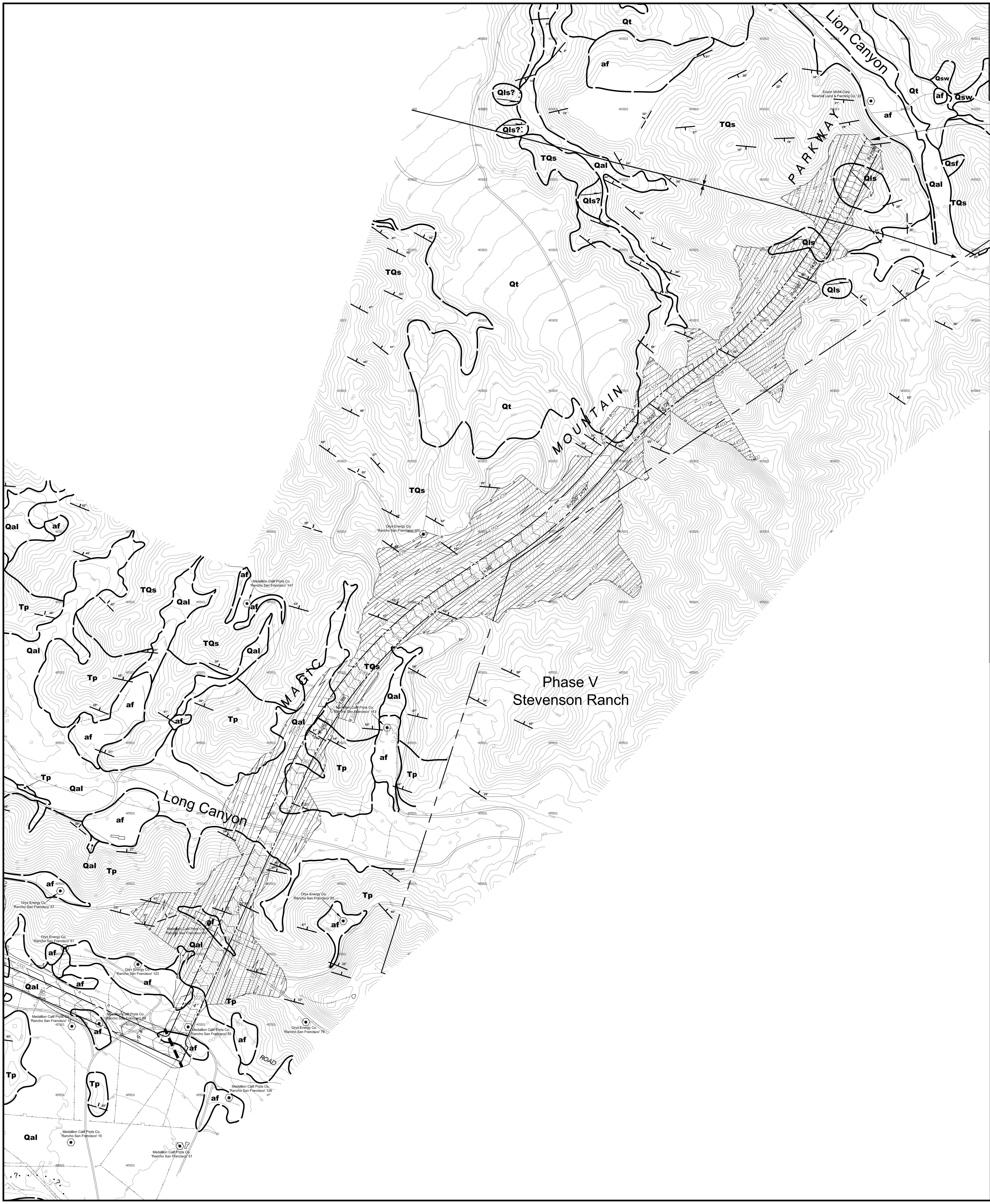
1) Geologic and Geotechnical Report
Review of Vesting Tentative Tract Map 61105 (dated 6/14/04)
Mesas East
Newhall Ranch, California
Dated July 22, 2004 – JN: 04-2023-4

2) Geologic and Geotechnical Report- Addendum No. 1
Response to Los Angeles County Geologic Review Sheet dated 10/24/04
And Soils Engineering Review Sheet dated 10/26/04
Geologic and Geotechnical Report
Review of Vesting Tentative Tract 61105
Mission Village
Newhall Ranch, California
Dated December 22, 1994 – JN: 04-2023-4

3) Geologic and Geotechnical Report
Vesting Tentative Tract 53108 (dated 6/11/00)
River Village, Newhall Ranch
Castaic, California
Dated July 27, 2000 – JN: 00-1702R-4

4) Geologic and Geotechnical Report – Addendum No. 1
Response to County Comments (Review sheets dated 12/12/00 and 1/2/01)
Vesting Tentative Tract 53108 (dated 6/11/00)
River Village, Newhall Ranch
Castaic, California
Dated February 10, 2001 – JN: 01-1702R-4



ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
Geological and Geotechnical Consultants

Geologic Map

Date: 1/17/05	*Job No.:* 05-2023C-5
Scale: 1" = 200'	*CAD File:* Geologic Map Lion to Potrero Map
PLATE I	*Geology by:* N/A / *Drawn by:* GSD/MBW / *Revised:*

Joins Magic Mountain Parkway segment proposed for VTT 61105 (Mission Village)

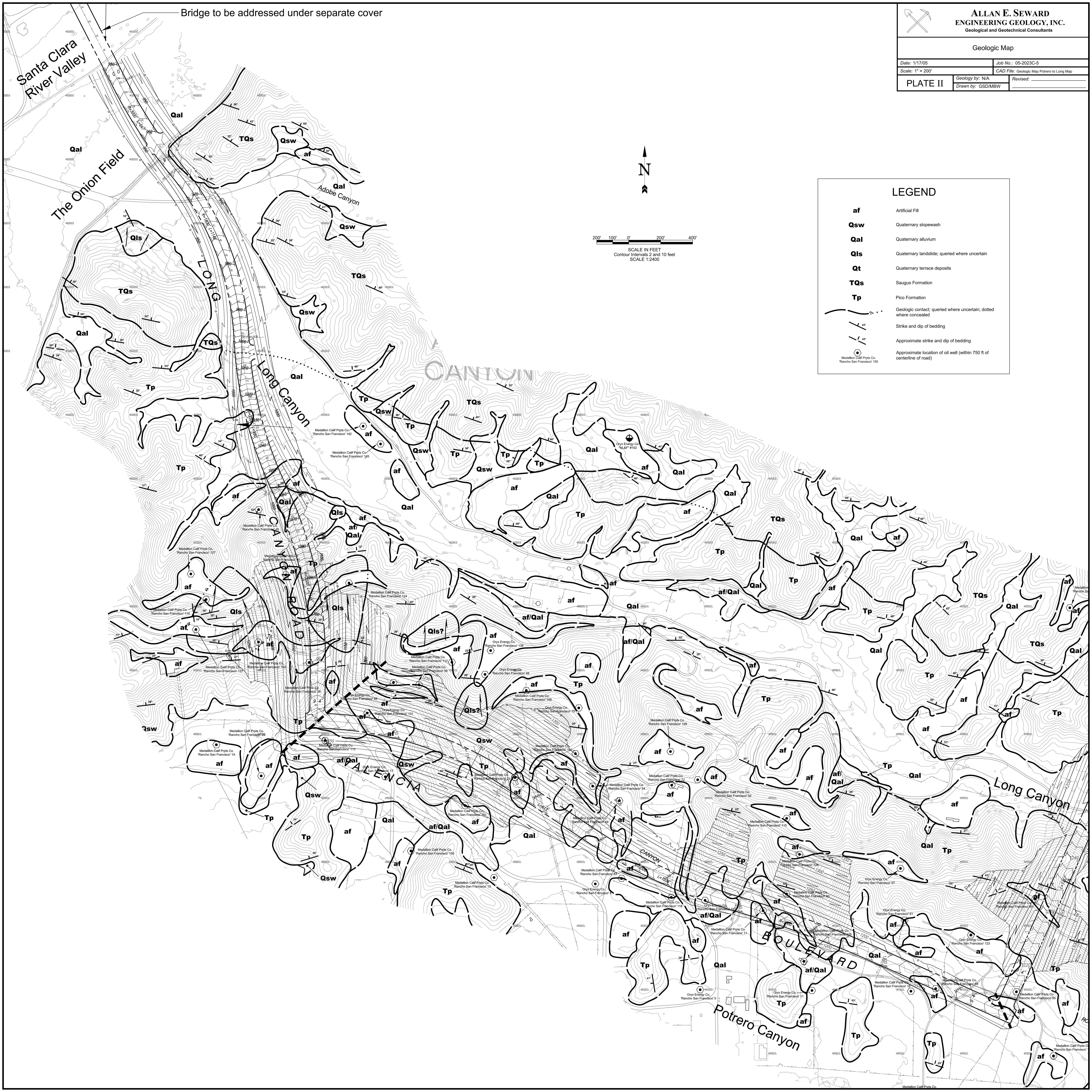
N

200' 100' 0' 200' 400'

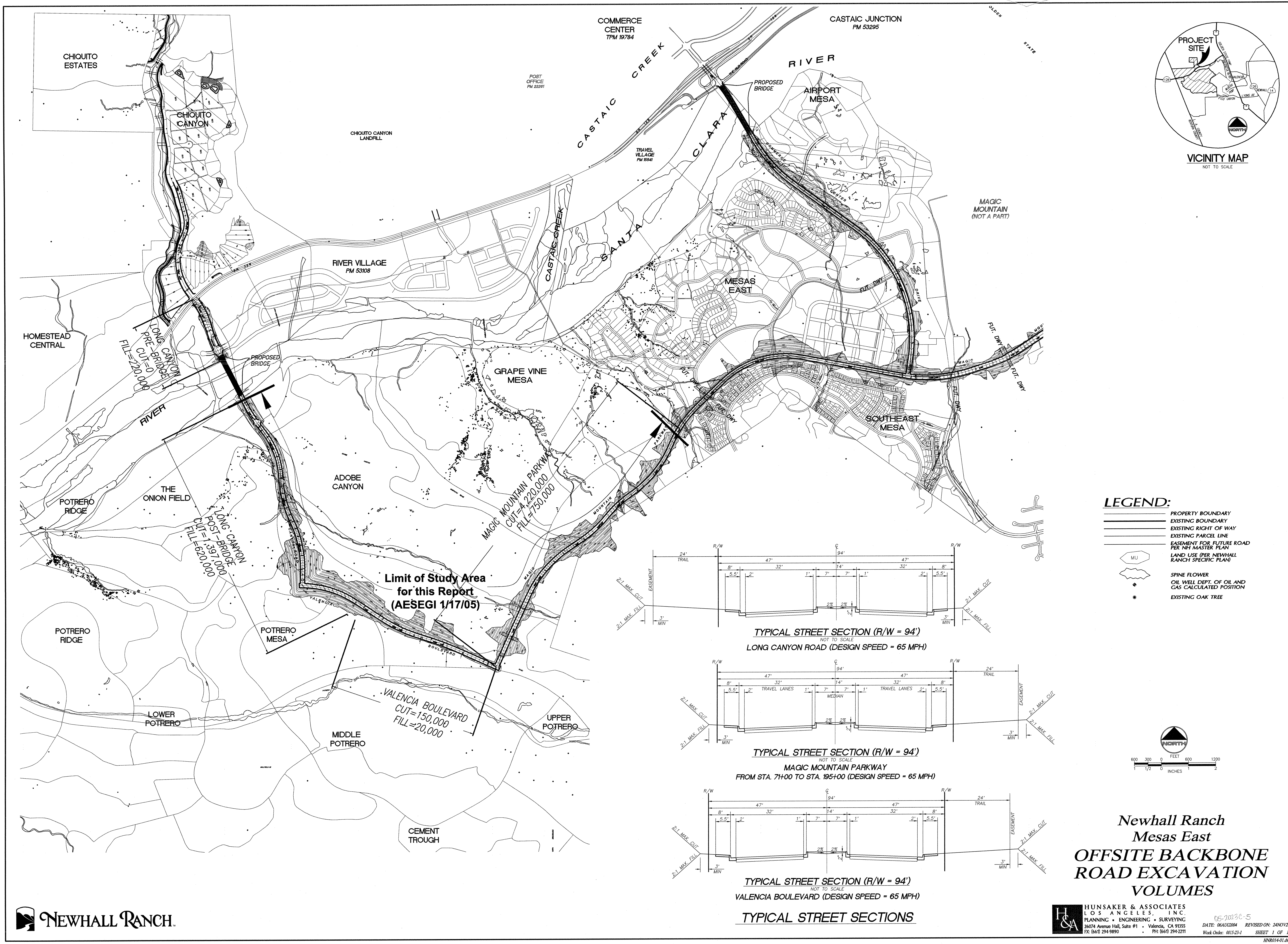
SCALE IN FEET
Contour Intervals 2 and 10 feet
SCALE 1:2400

LEGEND

af	Artificial Fill
Qsw	Quaternary slopewash
Qal	Quaternary alluvium
Qls	Quaternary landslide; queried where uncertain
Qt	Quaternary terrace deposits
TQs	Saugus Formation
Tp	Pico Formation
?• • •	Geologic contact; queried where uncertain; dotted where concealed
	Trace of synicline showing plunge direction
44°	Strike and dip of bedding
44°	Approximate strike and dip of bedding
Medallion Calif Prpts Co. 'Rancho San Francisco' 150	Approximate location of oil well (within 750 ft of centerline of road)



Allan E. Seward
Engineering Geology, Inc.
Geological and Geotechnical Consultants
Geologic Map
Date: 1/17/05
Job No.: 05-2023C-5
Scale: 1" = 200'
CAD File: Geologic Map Potrero to Long Map
PLATE II
Geology by: N/A
Drawn by: GSD/MBW
Revised:
Bridge to be addressed under separate cover
Santa Clara River Valley
The Onion Field
Adobe Canyon
Long Canyon
LONG CANYON ROAD
VALENCIA BOULEVARD
Potrero Canyon
N
200' 100' 0' 200' 400'
SCALE IN FEET
Contour Intervals 2 and 10 feet
SCALE 1:2400
LEGEND
af Artificial Fill
Qsw Quaternary slopewash
Qal Quaternary alluvium
Qls Quaternary landslide; queried where uncertain
Qt Quaternary terrace deposits
TQs Saugus Formation
Tp Pico Formation
Geologic contact; queried where uncertain; dotted where concealed
Strike and dip of bedding
Approximate strike and dip of bedding
Medallion Calif Prpts Co. 'Rancho San Francisco' 150 Approximate location of oil well (within 750 ft of centerline of road)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CHIQUITO CANYON
CHIQUITO CANYON LANDFILL
COMMERCE CENTER
TPM 19784
CASTAIC JUNCTION
PM 53295
POST OFFICE
PM 22261
CASTAIC CREEK
SANTA CLARA RIVER
TRAVEL VILLAGE
PM 15541
PROPOSED BRIDGE
AIRPORT MESA
MAGIC MOUNTAIN
(NOT A PART)
RIVER VILLAGE
PM 53108
MESAS EAST
HOMESTEAD CENTRAL
LONG CANYON
PRE-BRIDGE
CUT=0
FILL=220,000
GRAPE VINE MESA
SOUTHEAST MESA
FUT. DWY
RIVER
ADOBE CANYON
MAGIC MOUNTAIN PARKWAY
CUT=4,220,000
FILL=750,000
THE ONION FIELD
POTRERO RIDGE
LONG CANYON
POST-BRIDGE
CUT=1,397,000
FILL=620,000
Limit of Study Area for this Report (AESEGI 1/17/05)
POTRERO MESA
VALENCIA BOULEVARD
CUT=150,000
FILL=20,000
LOWER POTRERO
MIDDLE POTRERO
UPPER POTRERO
CEMENT TROUGH
PROJECT SITE
VICINITY MAP
NOT TO SCALE
NORTH
LEGEND:
PROPERTY BOUNDARY
EXISTING BOUNDARY
EXISTING RIGHT OF WAY
EXISTING PARCEL LINE
EASEMENT FOR FUTURE ROAD PER NH MASTER PLAN
LAND USE (PER NEWHALL RANCH SPECIFIC PLAN)
SPINE FLOWER
OIL WELL DEPT. OF OIL AND GAS CALCULATED POSITION
EXISTING OAK TREE
TYPICAL STREET SECTION (R/W = 94')
NOT TO SCALE
LONG CANYON ROAD (DESIGN SPEED = 65 MPH)
TYPICAL STREET SECTION (R/W = 94')
NOT TO SCALE
MAGIC MOUNTAIN PARKWAY
FROM STA. 71+00 TO STA. 195+00 (DESIGN SPEED = 65 MPH)
TYPICAL STREET SECTION (R/W = 94')
NOT TO SCALE
VALENCIA BOULEVARD (DESIGN SPEED = 65 MPH)
TYPICAL STREET SECTIONS
TRAVEL LANES
MEDIAN
TRAIL
EASEMENT
2:1 MAX. CUT
2:1 MAX. FILL
3' MIN
FEET
INCHES
Newhall Ranch
Mesas East
OFFSITE BACKBONE
ROAD EXCAVATION
VOLUMES
NEWHALL RANCH
HUNSAKER & ASSOCIATES
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DATE: 06AUG2004 REVISED ON: 24NOV2004
Work Order: 0015-23-1 SHEET 1 OF 1
HNR014-01.dwg
05-2023C-5